Pliny the Younger was governor of Pontus/Bithynia from 111-113 AD. We have a whole set of exchanges of his letters with the emperor Trajan on a variety of administrative political matters. These two letters are the most famous, in which P. encounters Christianity for the first time.

Pliny, *Letters* 10.96-97

Pliny to the Emperor Trajan

It is my practice, my lord, to refer to you all matters concerning which I am in doubt. For who can better give guidance to my hesitation or inform my ignorance? I have never participated in trials of Christians. I therefore do not know what offenses it is the practice to punish or investigate, and to what extent. And I have been not a little hesitant as to whether there should be any distinction on account of age or no difference between the very young and the more mature; whether pardon is to be granted for repentance, or, if a man has once been a Christian, it does him no good to have ceased to be one; whether the name itself, even without offenses, or only the offenses associated with the name are to be punished.

Meanwhile, in the case of those who were denounced to me as Christians, I have observed the following procedure: I interrogated these as to whether they were Christians; those who confessed I interrogated a second and a third time, threatening them with punishment; those who persisted I ordered executed. For I had no doubt that, whatever the nature of their creed, stubbornness and inflexible obstinacy surely deserve to be punished. There were others possessed of the same folly; but because they were Roman citizens, I signed an order for them to be transferred to Rome.

Soon accusations spread, as usually happens, because of the proceedings going on, and several incidents occurred. An anonymous document was published containing the names of many persons. Those who denied that they were or had been Christians, when they invoked the gods in words dictated by me, offered prayer with incense and wine to your image, which I had ordered to be brought for this purpose together with statues of the gods, and moreover cursed Christ--none of which those who are really Christians, it is said, can be forced to do--these I thought should be discharged. Others named by the informer declared that they were Christians, but then denied it, asserting that they had been but had ceased to be, some three years before, others many years, some as much as twenty-five years. They all worshipped your image and the statues of the gods, and cursed Christ.

They asserted, however, that the sum and substance of their fault or error had been that they were accustomed to meet on a fixed day before dawn and sing responsively a hymn to Christ as to a god, and to bind themselves by oath, not to some crime, but not to commit fraud, theft, or adultery, not falsify their trust, nor to refuse to return a trust when called upon to do so. When this was over, it was their custom to depart and to assemble again to partake of food--but ordinary and innocent food. Even this, they affirmed, they had ceased to do after my edict by which, in accordance with your instructions, I had forbidden political associations. Accordingly, I judged it all the more necessary to find out what the truth was by torturing two female slaves who were called deaconesses. But I discovered nothing else but depraved, excessive superstition.

I therefore postponed the investigation and hastened to consult you. For the matter seemed to me to warrant consulting you, especially because of the number involved. For many persons of every age, every rank, and also of both sexes are and will be endangered. For the contagion of this superstition has spread not only to the cities but also to the villages and farms. But it seems possible to check and cure it. It is certainly quite clear that the temples, which had been almost deserted, have begun to be frequented, that the established religious rites, long neglected, are being resumed, and that from everywhere sacrificial animals are coming, for which until now very few purchasers could be found. Hence it is easy to imagine what a multitude of people can be reformed if an opportunity for repentance is afforded.

Trajan to Pliny

You observed proper procedure, my dear Pliny, in sifting the cases of those who had been denounced to you as Christians. For it is not possible to lay down any general rule to serve as a kind of fixed standard. They are not to be sought out; if they are denounced and proved guilty, they are to be punished, with this reservation, that whoever denies that he is a Christian and really proves it--that is, by worshiping our gods--even though he was under suspicion in the past, shall obtain pardon through repentance. But anonymously posted accusations ought to have no place in any prosecution. For this is both a dangerous kind of precedent and out of keeping with the spirit of our age.

Founders Online

From George Washington to The States, 8 June 1783

(Circular)

Head Quarters Newburgh June 8-21st 1783

Sir

The great object, for which I had the honor to hold an Appointment in the service of my Country being accomplished, I am now preparing to resign it into the hands of Congress, and to return to that domestic retirement; which it is well known I left with the greatest reluctance, a retirement for which I have never ceased to sigh through a long and painfull absence, and in which (remote from the noise and trouble of the World) I meditate to pass the remainder of life, in a state of undisturbed repose: But before I carry this resolution into effect, I think is a duty incumbent on me, to make this my last official communication, to congratulate you on the glorious events which Heaven has been pleased to produce in our favor, to offer my sentiments respecting some important subjects which appear to me to be intimately connected with the tranquility of the United States, to take my leave of your Excellency as a public Character, and to give my final blessing to that Country, in whose service I have spent the prime of my life, for whose sake I have consumed so many anxious days and watchful nights, and whose happiness, being extremely dear to me, will always constitute no inconsiderable part of my own.

Impressed with the liveliest sensibility on this pleasing occasion, I will claim the indulgence of dilating the more copiously on the subjects of our mutual felicitation—When we consider the magnitude of the prize we contended for, the doubtfull nature of the Contest, and the favorable manner in which it has terminated, we shall find the greatest possible reason for gratitude and rejoycing—This is a theme that will afford infinite delight to every benevolent & liberal Mind, whether the event in contemplation be considerd as the source of present enjoyment or the parent of future happiness; and we shall have equal occasion to felicitate ourselves, on the lot which Providence has assigned us, whether we view it in a natural, a political, or a moral point of light.

The Citizens of America, placed in the most enviable condition, as the sole Lords and Proprietors of a vast tract of Continent, comprehending all the various Soils and Climates of the World and abounding with all the necessaries and conveniences of life, are now, by the late satisfactory pacification, acknowledged to be possessed of absolute freedom and Independancy—They are from this period to be considered as the Actors, on a most conspicuous Theatre, which seems to be peculiarly designated by Providence for the display of human greatness and felicity, here they are not only surrounded with every thing which can contribute to the completion of private and domestic enjoyment, but Heaven has crowned all its other blessings by giving a fairer opportunity for political happiness, than any other Nation has ever been favored with—Nothing can illustrate these observations more forcibly than a recollection of the happy conjuncture of times and circumstances under which our Republic assumed its Rank among the Nations—the foundation of our Empire was not laid in the gloomy Age of ignorance and superstition, but at an Epocha when the rights of Mankind were better understood and more clearly defined, than at any former period—The researches of the human Mind after social happiness have been carried to a great extent, the treasures of knowledge acquired by the labours of Philosophers, Sages and Legislators, through a long succession of years, are laid open for our use and their collected wisdom may be happily applied in the establishment of our forms of Government. The free cultivation of letters, the unbounded extension of Commerce, the progressive Refinement of manners, the growing liberality of sentiment, and, above all, the pure and benign light of Revelation, have had a meliorating influence on Mankind and encreased the blessings of Society. At this Auspicious period the United States came into existence as a Nation, and if their Citizens should not be completely free & happy, the fault will be entirely their own.

Such is our situation, and such are our prospects: but nowithstanding the Cup of blessing is thus reached out to us, notwithstanding happiness is ours if we have a disposition to seize the occasion and make it our own, yet it appears to me there is an option still left to the United States of America; that it is in their choïce and depends upon their conduct, whether they will be respectable and prosperous or contemptible and Miserable as a Nation. This is the time of their political probation: this is the moment when the eyes of the whole World are turned upon them—This is the moment to establish or ruin their National Character for ever—This is the favorable moment to give such a tone to our fœderal Government, as will enable it to answer the ends of its institution—or this may be the ill fated moment for relaxing the powers of the Union, annihilating the cement of the Confederation and exposing us to become the sport of European Politicks, which may play one State against another, to prevent their growing importance and to serve their own interested purposes; for according to the System of Policy the States shall adopt at this moment, they will stand or fall, and by their confirmation or lapse, it is yet to be decided whether the Revolution must ultimately be considered as a blessing or a curse: a blessing or a curse, not to the present Age alone, for with our fate will the destiny of unborn Millions be involved.

With this conviction of the importance of the present Crisis, silence in me would be a crime; I will therefore speak to your Excellency the language of freedom and sincerity without disguise. I am aware, however, that those who differ from me in political sentiment may perhaps remark I am stepping out of the proper line of my duty, and they may possibly ascribe to arrogance or ostentation what I know is alone the result of the purest intention; but the rectitude of my own heart, which disdains such unworthy motives; the part I have hitherto acted in life; the determination I have formed of not taking any share in public business hereafter; the ardent desire I feel and shall continue to manifest of quietly enjoying in private life, after all the toils of War, the benefits of a wise and liberal Government, will, I flatter myself, sooner or later convince my Country men that I could have no sinister views in delivering, with so little Reserve, the opinions contained in this address.

There are four things, which I humbly conceive are essential to the well being, I may even venture to say to the existence, of the United States as an independent Power.

1st An indissoluble Union of the States under one federal Head.

2ndly A sacred regard to public Justice.

3dly The adoption of a proper Peace Establishment—and

4thly The prevalence of that pacific and friendly disposition among the people of the United States, which will induce them to forget their local prejudices and policies, to make those mutual concessions which are requisite to the general prosperity, and, in some instances, to sacrifice their individual advantages to the interest of the community.

These are the pillars on which the glorious fabrick of our Independancy and National Character must be supported — Liberty is the basis—and whoever would dare to sap the foundation or overturn the Structure under whatever specious pretexts he may attempt it, will merit the bitterest execration and the severest punishments which can be inflicted by his injured Country.

On the three first Articles I will make a few observations, leaving the last to the good sense and serious consideration of those immediately concerned.

Under the first head, altho it may not be necessary or proper for me in this place to enter into a particular disquisition of the principles of the Union and to take up the great question which has been frequently agitated, whether it be expedient and requisite for the States to delegate a larger proportion of Power to Congress or not, yet it will be a part of my duty, and that of every true Patriot; to assert without reserve and to insist upon the following positions—That unless the States will suffer Congress to exercise those prerogatives they are undoubtedly invested with by the Constitution, every thing must very rapidly tend to Anarchy and confusion—that it is indispensible to the happiness of the individual States that there should be lodged somewhere, a supreme power to regulate and govern the general concerns of the confederated Republic, without which the Union cannot be of long duration—That there must be a faithfull and pointed compliance on the part of every State with the late proposals and demands of Congress, or the most fatal consequences will ensue; that whatever measures have a tendency to dissolve the Union, or contribute to violate or lessen the Sovereign Authority, ought to be considered as hostile to the Liberty and Independancy of America and the Authors of them treated accordingly; and lastly, that unless we can be enabled, by the concurrence of the States, to participate of the fruits of the Revolution, and enjoy the essential benefits of civil Society, under a form of Government so free and uncorrupted, so happily guarded against the danger of oppression as has been devised and adopted by the Articles of Confederation, it will be a subject of regret that so much blood and treasure have been lavished for no purpose; that so many sufferings have been encounter'd, without a compensation and that so many sacrifices have been made in vain.

Many other considerations might here be adduced to prove, that without an entire conformity to the spirit of the Union we cannot exist—as an independant Power. It will be sufficient for my purpose, to mention but one or two which seem to me of the greatest ïmportance. It is only in our United Character, as an Empire, that our Independance is acknowledged, that our power can be regarded or our Credit supported among foreign Nations—the Treaties of the European Powers with the United States of America will have no validity on a dissolution of the Union. We shall be left nearly in a State of Nature, or we may find by our own unhappy experience, that there is a natural and necessary progression from the extreme of Anarchy to the extreme of Tyranny, and that arbitrary power is most easily established on the ruins of Liberty abused to Licentiousness.

As to the second Article, which respects the performance of public justice, Congress have in their late address to the United States almost exhausted the Subject, they have explained their ideas so fully and have enforced the obligations the States are under to render compleat justice to all the public Creditors, with so much dignity and energy, that in my opinion no real friend to the honour and Independancy of America, can hesitate a single moment respecting the propriety of complying with the just and honorable measures proposed—If their Arguments do not produce conviction, I know of nothing that will have greater influence, especially when we recollect that the System referred to, being the result of the collected wisdom of the Continent, must be esteemed, if not perfect, certainly the least objectionable of any that could be devised, and that if it shall not be carried into immediate execution, a National bankruptcy, with all its deplorable consequences, will take place before any different plan can possibly be proposed and adopted, so pressing are the present circumstances! and such is the alternative now offerd to the States!

The ability of the Country to discharge the debts which have been incurred in its defence, is not to be doubted, an inclination I flatter myself will not be wanting: the path of our duty is plain before us—honesty will be found on every experiment to be the best and only true policy—let us then as a Nation be just—let us fulfill the public Contracts which Congress had undoubtedly a right to make for the purpose of carrying on the War, with the same good faith we suppose ourselves bound to perform our private engagements; in the mean time let an attention to the chearfull performance of their proper business as individuals and as members of Society be earnestly inculcated on the Citizens of America—then will they strengthen the hands of Government & be happy under its protection, every one will reap the fruit of his Labours, every one will enjoy his own acquisitions without molestation and without danger.

In this state of absolute freedom and perfect security, who will grudge to yield a very little of his property to support the common interests of Society and ensure the protection of Government? who does not remember the frequent declarations at the commencement of the War that we should be completely satisfied, if at the expence of one half, we could defend the remainder of our possessions! where is the Man to be found who wishes to remain indebted for the defence of his own person and property to the exertions, the bravery and the blood of others, without making one generous effort to repay the debt of honor and of gratitude? In what part of the Continent shall we find any Man or body of Men who would not blush to stand up and propose measures purposely calculated to rob the Soldier of his Stipend and the public Creditor of his due and were it possible that such a flagrant instance of injustice could ever happen, would it not excite the general indignation and tend to bring down upon the authors of such measures the aggravated vengeance of Heaven?

If after all, a spirit of disunion or a temper of obstinacy and perverseness should manifest itself in any of the States; if such an ungracious disposition should attempt to frustrate all the happy effects that might be expected to flow from the Union; if there should be a refusal to comply with the Requisitions for funds to discharge the annual Interest of the public Debts and if that refusal should revive again all those jealousies and produce all those evils which are now happily removed, Congress, who have, in all their transactions, shewn a great degree of magnanimity and justice, will stand justified in the sight of God and Man and the State alone which puts itself in opposition to the aggregate wisdom of the Continent and follows such mistaken and pernicious councils, will be responsible for all the Consequences.

For my own part, conscious of having acted, while a servant of the public, in the manner I conceived best suited to promote the real interests of my Country, having in consequence of my fixed belief, in some measure, pledged myself to the Army that their Country would finally do them compleat and ample Justice and not wishing to conceal any instance of my official conduct from the eyes of the World, I have thought proper to transmit to your Excellency the inclosed collection of papers relative to the half-pay & commutation granted by Congress to the Officers of the Army. From these communications my decided sentiment will be clearly comprehended, together with the conclusive reasons which induced me, at an early period, to recommend the adoption of this measure in the most earnest and serious manner. As the proceedings of Congress, the Army and myself are open to all and contain in my opinion sufficient information to remove the prejudices and errors which may have been entertained by any, I think it unnecessary to say anything more, than just to observe, that the resolutions of Congress now alluded to, are undoubtedly as absolutely binding upon the United States, as the most solemn

Acts of Confederation or Legislation. As to the idea which, I am informed, has in some instances prevailed, that the half pay and Commutation are to be regarded merely in the odious Light of a pension, it ought to be exploded forever—that provision should be viewed as it really was, a reasonable compensation offerd by Congress at a Time when they had nothing else to give to the Officers of the Army for services then to be performed. It was the only means to prevent a total dereliction of the Service—it was a part of their hire, I may be allowed to say, it was the price of their blood and of your Independancy—it is therefore more than a common debt, it is a debt of honor—it can never be considered as a pension or gratuity nor be cancelled untill it is fairly discharged.

With regard to a distinction between Officers and Soldiers, it is sufficient that the uniform experience of every Nation of the World combined with our own, proves the utility and propriety of the discrimination—Rewards in proportion to the Aids the Public derives from them, are unquestionably due to all its Servants—In some Lines, the Soldiers have perhaps generally had as ample a compensation for their Services, by the large bounties which have been paid them, as their Officers will receive in the proposed commutation; in others, if besides the donation of Lands, the payment of Arrearages of Cloathing and Wages (in which Articles all the component parts of the Army must be on the same footing) we take into the estimate the bounties many of the Soldiers have received and the gratuity of one years full pay which is promised to all, possibly their situation (every circumstance being duly considered) will not be deemed less eligible than that of the Officers, should a farther Reward however be judged equitable, I will venture to asert no one will enjoy greater satisfaction than myself, on seeing an exemption from Taxes for a limitted time (which has been petitioned for in some instances) or any other adequate compensation or immunity, granted to the brave defenders of their Countrys cause; but neither the adoption or rejection of this proposition, will in any manner affect, much less militate against, the Act of Congress by which they have offer'd five Years full pay in lieu of half pay for life, which had been before promised to the Officers of the Army.

Before I conclude the Subject of public justice, I cannot omit to mention the obligations this Country is under to that meritorious class of veteran non Commission'd Officers and Privates who have been discharged for inability, in consequence of the resolution of Congress of the 23d April 1782, on an annual pension for life; their peculiar sufferings, their singular merits and claims to that provision, need only be known, to interest all the feelings of humanity in their behalf; nothing but a punctual payment of their annual allowance, can rescue them from the most complicated misery, and nothing could be a more melancholy and distressing sight, than to behold those who have shed their blood or lost their limbs in the service of their Country, without a shelter, without a friend and without the means of obtaining any of the necessaries of life or comforts of life compelled to beg their daily bread from door to door! Suffer me to recommend those of this description belonging to your State to the warmest patronage of your Excellency and your Legislature.

It is necessary to say but a few words on the third topic which was proposed and which regards particularly the defence of the Republic—As there can be little doubt but Congress will Recommend a proper Peace Establishment for the United States in which a due attention will be paid to the importance of placing the Militia of the Union upon a regular and respectable footing—If this should be the case, I would beg leave to urge the great advantage of it in the strongest terms—the Militia of this Country must be considerd as the Palladium of our security and the first effectual resort, in case of hostility; It is essential therefore, that the same system should pervade the whole—that the formation & discipline of the Militia of the Continent should be absolutely uniform and the same species of Arms, Accoutrements & Military Apparatus should be introduced in every part of the United States. No one, who has not learned it from experience, can conceive the difficulty, expence & confusion which result from a contrary System, or the vague Arrangements which have hitherto prevailed.

If in treating of political points, a greater latitude than usual has been taken in the course of this address—the importance of the Crisis and the magnitude of the objects in discussion, must be my apology—It is, however, neither my wish or expectation, that the preceding observations should claim any regard, except so far as they shall appear to be dictated by a good intention, consonant to the immutable rules of Justice—calculated to produce a liberal system of Policy and founded on what ever experience may have been acquired by a long and close Attention to public business—Here I might speak with the more confidence, from my actual observations and if it would not swell this Letter (already too prolix) beyond the bounds I had prescribed myself, I could demonstrate to every mind open to conviction, that in less time & with much less expence than has been incurred, the War might have been brought to the same happy, conclusion if the resources of the Continent could have been properly drawn forth—that the distresses and disappointments, which have very often occurred, have in too many instances resulted more from a want of energy in the Continental Government, than a deficiency of means in the particular

States—That the inefficacy of measures, arising from the want of an adequate authority in the supreme Power, from a partial compliance with the requisitions of Congress in some of the States and from a failure of punctuality in others, while it tended to damp the Zeal of those which where more willing to exert themselves, served also to accumulate the expences of the War and to frustrate the best concerted plans; and that the discouragement, occasioned by the complicated difficulties & embarrasments in which our affairs were by this means involved, would have long ago produced the dissolution of any Army, less patient, less virtuous and less persevering than that which I have had the honor to Command. But while I mention these things, which are notorious facts, as the defects of our Federal Constitution, particularly in the prosecution of a War, I beg it may be understood, that as I have ever taken a pleasure in gratefully acknowledging the assistance and support I have derived from every class of Citizens, so shall I always be happy to do justice to the unparralled exertions of the individual States on many interesting occasions.

I have thus freely disclosed, what I wished to make known, before I surrendered up my Public trust to those who committed it to me—the task is now accomplished—I now bid adieu to your Excellency, as the Chief Magistrate of your State at the same time I bid a last farewell to the cares of Office and all the employments of public life.

It remains then to be my final and only request, that your Excellency will communicate these sentiments to your legislature at their next meeting and that they may be considered as the Legacy of one who has ardently wished on all occasions to be usefull to his Country and who even in the shade of Retirement will not fail to implore the divine benediction upon it.

I now make it my earnest prayer, that God would have you and the State over which you preside, in his holy protection that he would incline the hearts of the Citizens to cultivate a spirit of subordination & obedience to Government, to entertain a brotherly affection and love for one another, for their fellow Citizens of the United States at large and particularly for their brethren who have served in the field—and finally that he would most graciously be pleas'd to dispose us all to do Justice, to love mercy and to demean ourselves, with that Charity, humility & pacific temper of mind, which were the Characteristicks of the Divine Author of our blessed Religion & without an humble immitation of whose example in these things, we can never hope to be a happy Nation. With the greatest regard and esteem, I have the honor to be Sir Your Excellency's Most Obedient and most humble Servant

Go: Washington

NNPM.

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DU PONT
REG. U.S. PAT. OFF.
ESTABLISHED 1802
E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON 98, DELAWARE

EXECUTIVE OFFICES

August 24, 1945

To all employees of
E. I. du Pont de Nemours & Company:

All of you have unquestionably read and heard a great deal about the releasing of atomic energy, culminating in the dropping of two atomic bombs on Japanese cities. Some of you have been engaged in work in this field. Those who have not been directly connected with the project have by now almost certainly heard that our company had a part in it.

In preparing this report, the purpose has been to inform all of you of du Pont's connection with this work, so that you will know what was done and what some of us here in Wilmington thought about it. I do not mean to go into the technical details of our operations, as it is the company's feeling that it is up to the Government to decide what should be said on that score. I do want to cover the non-technical aspects of the project with some thoroughness.

In the first place, the Government has indicated that our part of the work was accomplished to its complete satisfaction. In the second place, the du Pont Company did not, and does not, make atomic bombs. Our part in the project has been to produce one of the essential ingredients used in the ultimate construction of the weapon which helped to bring the war to an end. It has been quite a job, and the story of that job begins in the fall of 1942.

It was at that time that Major General Leslie R. Groves, representing the War Department, came to du Pont with the request that our company undertake a share of a project of great importance in the war effort. This project dealt with the release of atomic energy. The atom had been split in laboratory experiments, and scientists believed that if a way could be found to release this force at will and if adequate means of production could be developed, the United States would have an explosive enormously more powerful than any previously known, and could undoubtedly bring the war to a quick end.

All available evidence strongly indicated that our enemies, especially Germany, were seeking the same end. If they got it first, even at the last minute before collapse, the entire course of the war would be changed. This fact was brought to our attention by General Groves.

He also made it very plain that he was asking the company to go into a field about which little was known beyond the fundamental scientific theory. He realized fully that the chance of failure was so high as to make the project inadvisable under ordinary circumstances. He knew that it might well involve dangers for those engaged in the work. But the fact that our enemies were after the same result left the Government no choice. The attempt had to be made, and General Groves explained to us—that is to say, the Executive Committee of the company—that the Government regarded du Pont as the organization best qualified to undertake a major phase of the work.

We hesitated to accept the proposed responsibility for two reasons: the first was that the company was already so heavily burdened with war work, accepted at the urgent request of the armed services, that we feared our personnel would be hopelessly overloaded if we took on anything of the magnitude of this task; the second was that du Pont is a chemical company, and while it has done considerable pioneering work, it has always been in the general field of chemistry, where we had the aid that comes with experience. Now we were asked to enter the field of nuclear physics, and we felt it was out of our line.

General Groves pressed his argument. He told us that President Roosevelt, Secretary of War Stimson, and General Marshall, Chief of Staff, all felt that this was a matter of the utmost urgency. He pointed out that victory in the war would go to the nation that solved the problem first. His presentation of the situation made it evident that, whatever the odds against success, the country could not afford to give the Axis a clear field in the attempt to liberate atomic energy. He reiterated the Government's confidence in du Pont.

This being the case, we felt compelled to give up our hesitation about participating in the project, taking the position that if the Government believed du Pont's assistance was needed, we could not refuse.

We did, however, insist upon two conditions. The first was that du Pont make no profit whatever from the work it did. The contract accordingly gave du Pont a fixed fee of one dollar on work that ultimately was to necessitate the expenditure of about $350,000,000, and the design, construction, and operation of by far the largest plant that du Pont ever built or operated. The second was that no patent rights growing out of du Pont's work on the project should go to du Pont. Our feeling was that the importance to the nation of the work on releasing atomic energy was so great that control, including patent rights, should rest with the Government. The Government accepted this condition, too.

Having made these two conditions, we felt that we were justified in asking that the Government provide very complete protection to the company as to costs, expenses, claims, and losses. The Government found this request reasonable, and agreed to protect du Pont. It of course agreed to pay all costs of the work.

The project was assigned to the Explosives Department, which organized a new division known as "TNX" to handle the work. The department drew heavily on its own personnel from commercial and war plants as well as from nearly all departments of the company, so that in the end TNX represented a group of the du Pont men best suited for the work, irrespective of their previous locations. Thus it was, and continued to be, an over-all du Pont effort under the able guidance of the Explosives Department.

In this connection, the contributions of the Engineering Department were outstanding, and the design and construction problems met and solved by it were the greatest the company ever encountered.

At the beginning of our conversations with General Groves, the nature of du Pont's share in the project was necessarily somewhat vague. The truth was that no one knew enough about the field into which we were going to be definite. Responsibility for the fundamental research and development essential to the success of the work done by du Pont was entrusted to the

University of Chicago by the Government. By essential, I mean that if the University had not fully done its job, du Pont could not have carried through its share in the project.

We were asked first to engineer, design, and construct a small-scale semi-works plant which was to be operated by the University. This semi-works plant was built by du Pont at Clinton, Tennessee, where the larger Oak Ridge project was also constructed by others. In addition, a number of key du Pont technical men were loaned to the University, which needed skilled assistance along lines of industrial experience.

In the meantime, the pressure on the Government for haste grew to such proportions that du Pont was asked to go ahead with the engineering, design, construction, and operation of a large-scale plant to produce one of the essential materials for atomic bombs, a new chemical element called plutonium.

The request was without precedent. In normal procedure, a large-scale plant is constructed on the basis of the experience gained in semi-works operations. The semi-works is, so to speak, a practice model where the "bugs" can be eliminated and workable methods of production perfected. The Government representatives were frankly doubtful as to whether it was possible to short-circuit this normal procedure by going ahead with a large-scale plant before waiting for the results of the semi-works project. They wanted du Pont's opinion as to the feasibility of such procedure. The company pointed out the difficulties involved, but in the end, as I have said above, agreed to proceed if that was the way the Government wanted it. It was.

Complete secrecy had to be observed. That the secret was well kept is now obvious. Much technical information is still highly secret, and will presumably continue to be for a long time to come.

Many new and unusual problems were encountered by du Pont in carrying through this project. We had aid from the University of Chicago, to which we turned for consultation and advice, using this knowledge to augment our industrial and engineering experience. The University answered many specific questions put to it by us, and in addition studied and concurred in the final du Pont decisions and designs.

The War Department, in a press release concerning the Hanford plant, commented that "The story of its construction and operation is a story of ingenuity, intelligent planning, and bold innovations in design and construction. It is a story of action, sacrifice, high morale, and loyal, hard-working employees. It is the epic of American industry's and the American workers' answer to the challenge of a great emergency."

A few facts about Hanford may be of interest. The area owned or controlled through lease by the Government exceeds 600 square miles. The manufacturing area is subdivided into three large areas, each of which is again subdivided into sections miles square. One of the three main sections contains three enormous groups of structures in which material is produced. The second area contains three huge chemical plants where the material is purified and concentrated. The third prepares the raw materials.

As an adjunct to construction of the plant itself, it was necessary to build housing for construction workers at Hanford, a community which mushroomed to 60,000 inhabitants in the course of two years. The actual construction force reached 45,000 at its maximum in June of 1944. The separate village of Richland, built to house the plant operating force, has a population of 15,000.

Construction of Hanford involved the use of 8,500 major pieces of construction equipment, and the building of 345 miles of permanent roads and 125 miles of railroad. Twenty-five million cubic yards of earth were excavated and 780,000 cubic yards of concrete were placed along with 1,500,000 concrete blocks and 750,000 cement bricks. Forty thousand carloads of materials were received, including 40,000 tons of steel, 160,000,000 board feet of lumber, and 11,000 poles for the electric power and lighting system.

The plants at the Hanford Engineer Works are huge structures. They are plants in which materials in enormous quantities are handled through many successive processes with no human eye ever seeing what actually goes on, except through a complicated series of dials and panels that enable the operators, in many cases behind concrete walls, to maintain perfect control of every single operation at all times.

Reference has been made to the hazards which we thought might be involved. Largely because of the great care taken by all who worked on the various projects to see that all possible safety measures were provided and rigidly observed, construction and ordinary operating accidents were held to a minimum. There have been no accidents due to the hazards inherent in the process.

Although the semi-works at Clinton was not of use as a complete early edition of Hanford, because design, procurement, and some construction for Hanford had to go on while Clinton was being built, things worked out all right at the Washington State plant. And Clinton proved very helpful in the solution of the many completely new problems encountered in the large-scale operation.

In addition to the Clinton and Hanford projects, on which the Explosives and Engineering Departments did such a splendid job, the du Pont Company made several other contributions to the atomic program. I should mention specifically the Ammonia, Grasselli, Organic Chemicals, Pigments, and Plastics Departments, all of which aided greatly by doing research or supplying materials to Hanford and to other parts of the atomic project. The work these departments did was not covered by the Clinton-Hanford contract, but by other agreements of a more usual nature. The auxiliary departments contributed substantially.

In concluding this report, I want to express the company's profound gratitude to all du Pont employees who had a part in the atomic program. They did their work faithfully and well, and the satisfactory conclusion of their efforts is in itself a tribute beyond any words that I, or anyone else, can address to them.

W. S. Carpenter, Jr., *President*

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8-23-1971

The Memo

Lewis F. Powell Jr.

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CONFIDENTIAL MEMORANDUM

ATTACK ON AMERICAN FREE ENTERPRISE SYSTEM

TO: Mr. Eugene B. Sydnor, Jr.
Chairman
Education Committee
U.S. Chamber of Commerce

DATE: August 23, 1971

FROM: Lewis F. Powell, Jr.

This memorandum is submitted at your request as a basis for the discussion on August 24 with Mr. Booth and others at the U.S. Chamber of Commerce. The purpose is to identify the problem, and suggest possible avenues of action for further consideration.

Dimensions of the Attack

No thoughtful person can question that the American economic system is under broad attack.* This varies in scope, intensity, in the techniques employed, and in the level of visibility.

There always have been some who opposed the American system, and preferred socialism or some form of statism

*Variously called: the "free enterprise system", "capitalism", and the "profit system". The American political system of democracy under the rule of law is also under attack, often by the same individuals and organizations who seek to undermine the enterprise system.

(communism or fascism). Also, there always have been critics of the system, whose criticism has been wholesome and constructive so long as the objective was to improve rather than to subvert or destroy.

But what now concerns us is quite new in the history of America. We are not dealing with episodic or isolated attacks from a relatively few extremists or even from the minority socialist cadre. Rather, the assault on the enterprise system is broadly based and consistently pursued. It is gaining momentum and converts.

Sources of the Attack

The sources are varied and diffused. They include, not unexpectedly, the Communists, New Leftists and other revolutionaries who would destroy the entire system, both political and economic. These extremists of the left are far more numerous, better financed, and increasingly are more welcomed and encouraged by other elements of society, than ever before in our history. But they remain a small minority, and are not yet the principal cause for concern.

The most disquieting voices joining the chorus of criticism, come from perfectly respectable elements of society: from the college campus, the pulpit, the media, the intellectual and literary journals, the arts and sciences, and from politicians. In most of these groups the movement against the system is participated in only by minorities. Yet, these often are the most articulate, the most vocal, the most prolific in their writing and speaking.

Moreover, much of the media - for varying motives and in varying degrees - either voluntarily accords unique publicity to these "attackers", or at least allows them to exploit the media for their purposes. This is especially true of television, which now plays such a predominant role in shaping the thinking, attitudes and emotions of our people.

One of the bewildering paradoxes of our time is the extent to which the enterprise system tolerates, if not participates in, its own destruction.

The campuses from which much of the criticism emanates are supported by (i) tax funds generated largely from American business, and (ii) contributions from capital funds controlled or generated by American business. The Boards of Trustees of our universities overwhelmingly are composed of men and women who are leaders in the system.

Most of the media, including the national TV systems, are owned and theoretically controlled by corporations which depend upon profits, and the enterprise system to survive.

Tone of the Attack

This memorandum is not the place to document in detail the tone, character, or intensity of the attack. The following quotations will suffice to give one a general idea:

William Kunstler, warmly welcomed on campuses and listed in a recent student poll as the "American lawyer most admired", incites audiences as follows:

> "You must learn to fight in the streets, to revolt, to shoot guns. We will learn to do all of the things that property owners fear".*

The New Leftists who heed Kunstler's advice increasingly are beginning to act - not just against military recruiting offices and manufacturers of munitions, but against a variety of businesses:

> "Since February 1970, branches (of Bank of America) have been attacked 39 times, 22 times with explosive devices and 17 times with fire bombs or by arsonists".**

Although New Leftist spokesmen are succeeding in radicalizing thousands of the young, the greater cause for concern is the hostility of respectable liberals and social reformers.

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*Richmond News-Leader, June 8, 1970. Column of William F. Buckley, Jr.

**N. Y. Times Service article, reprinted Richmond Times-Dispatch, May 17, 1971.

It is the sum total of their views and influence which could indeed fatally weaken or destroy the system.

A chilling description of what is being taught on many of our campuses was written by Stewart Alsop:

> "Yale, like every other major college, is graduating scores of bright young men who are practitioners of 'the politics of despair'. These young men despise the American political and economic system . . . (their) minds seem to be wholly closed. They live, not by rational discussion, but by mindless slogans".*

A recent poll of students on 12 representative campuses reported that:

> "Almost half the students favored socialization of basic U.S. industries".**

A visiting professor from England at Rockford College gave a series of lectures entitled "The Ideological War Against Western Society", in which he documents the extent to which members of the intellectual community are waging ideological warfare against the enterprise system and the values of western society. In a foreword to these lectures, famed Dr. Milton Friedman of Chicago warned:

> "It (is) crystal clear that the foundations of our free society are under wide-ranging and powerful attack - not by Communist or any

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*Stewart Alsop, Yale and the Deadly Danger, Newsweek, May 18, 1970.

**Editorial, Richmond Times Dispatch, July 7, 1971.

other conspiracy but by misguided individuals parroting one another and unwittingly serving ends they would never intentionally promote".*

Perhaps the single most effective antagonist of American business is Ralph Nader who - thanks largely to the media - has become a legend in his own time and an idol of millions of Americans. A recent article in Fortune speaks of Nader as follows:

> "The passion that rules in him - and he is a passionate man - is aimed at smashing utterly the target of his hatred, which is corporate power. He thinks, and says quite bluntly, that a great many corporate executives belong in prison - for defrauding the consumer with shoddy merchandise, poisoning the food supply with chemical additives, and willfully manufacturing unsafe products that will maim or kill the buyer. . . . He emphasizes that he is not talking just about 'fly-by-night hucksters' but the top management of blue-chip business".**

A frontal assault was made on our government, our system of justice, and the free enterprise system by Yale professor Charles Reich in his widely publicized book: "The Greening of America", published last winter.

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*Dr. Milton Friedman, Prof. of Economics, U. of Chicago, writing a Foreword to Dr. Arthur A. Shenfield's Rockford College lectures entitled "The Ideological War Against Western Society", copyrighted 1970 by Rockford College.

**Fortune, May 1971, p. 145. This Fortune analysis of the Nader influence includes a reference to Nader's visit to a college where he was paid a lecture fee of $2,500 for "denouncing America's big corporations in venomous language . . . bringing (rousing and spontaneous) bursts of applause" when he was asked when he planned to run for President.

The foregoing references illustrate the broad, shotgun attack on the system itself. There are countless examples of rifle shots which undermine confidence and confuse the public. Favorite current targets are proposals for tax incentives through changes in depreciation rates and investment credits. These are usually described in the media as "tax breaks", "loop holes", or "tax benefits" for the benefit of business. As viewed by a columnist in the Post, such tax measures would benefit "only the rich, the owners of big companies".*

It is dismaying that many politicians make the same argument that tax measures of this kind benefit only "business", without benefit to "the poor". The fact that this is either political demagoguery or economic illiteracy, is of slight comfort. This setting of the "rich" against the "poor", of business against the people, is the cheapest and most dangerous kind of politics.

The Apathy and Default of Business

What has been the response of business to this massive assault upon its fundamental economics, upon its philosophy, upon its right to continue to manage its own affairs, and indeed upon its integrity?

*The Washington Post, Column of William Raspberry, June 28, 1971.

The painfully sad truth is that business, including the boards of directors and the top executives of corporations great and small and business organizations at all levels, often have responded - if at all - by appeasement, ineptitude and ignoring the problem. There are, of course, many exceptions to this sweeping generalization. But the net effect of such response as has been made is scarcely visible.

In all fairness, it must be recognized that businessmen have not been trained or equipped to conduct guerrilla warfare with those who propagandize against the system, seeking insidiously and constantly to sabotage it. The traditional role of business executives has been to manage, to produce, to sell, to create jobs, to make profits, to improve the standard of living, to be community leaders, to serve on charitable and educational boards, and generally to be good citizens. They have performed these tasks very well indeed.

But they have shown little stomach for hard-nose contest with their critics, and little skill in effective intellectual and philosophical debate.

A column recently carried by the Wall Street Journal was entitled: "Memo to GM: Why Not Fight Back?"* Although addressed to GM by name, the article was a warning to all American business. Columnist St. John said:

*Jeffrey St. John, The Wall Street Journal, May 21, 1971

> "General Motors, like American business in general, is 'plainly in trouble' because intellectual bromides have been substituted for a sound intellectual exposition of its point of view".

Mr. St. John then commented on the tendency of business leaders to compromise with and appease critics. He cited the concessions which Nader wins from management, and spoke of "the fallacious view many businessmen take toward their critics. He drew a parallel to the mistaken tactics of many college administrators:

> "College administrators learned too late that such appeasement serves to destroy free speech, academic freedom and genuine scholarship. One campus radical demand was conceded by university heads only to be followed by a fresh crop which soon escalated to what amounted to a demand for outright surrender".

One need not agree entirely with Mr. St. John's analysis. But most observers of the American scene will agree that the essence of his message is sound. American business "plainly is in trouble"; the response to the wide range of critics has been ineffective, and has included appeasement; the time has come - indeed, it is long overdue - for the wisdom, ingenuity and resources of American business to be marshaled against those who would destroy it.

Responsibility of Business Executives

What specifically should be done? The first essential - a prerequisite to any effective action - is for businessmen to confront this problem as a primary responsibility of corporate management.

The overriding first need is for businessmen to recognize that the ultimate issue may be survival - survival of what we call the free enterprise system, and all that this means for the strength and prosperity of America and the freedom of our people.

The day is long past when the chief executive officer of a major corporation discharges his responsibility by maintaining a satisfactory growth of profits, with due regard to the corporation's public and social responsibilities. If our system is to survive, top management must be equally concerned with protecting and preserving the system itself. This involves far more than an increased emphasis on "public relations" or "governmental affairs" - two areas in which corporations long have invested substantial sums.

A significant first step by individual corporations could well be the designation of an executive vice president (ranking with other executive VP's) whose responsibility is to counter - on the broadest front - the attack on the enterprise system. The public relations department could be one of the fundations assigned to this executive, but his responsibilities should encompass some of the types of activities referred to subsequently in this memorandum. His budget and staff should be adequate to the task.

Possible Role of the Chamber of Commerce

But independent and uncoordinated activity by individual corporations, as important as this is, will not be sufficient. Strength lies in organization, in careful long-range planning and implementation, in consistency of action over an indefinite period of years, in the scale of financing available only through joint effort, and in the political power available only through united action and national organizations.

Moreover, there is the quite understandable reluctance on the part of any one corporation to get too far out in front and to make itself too visible a target.

The role of the National Chamber of Commerce is therefore vital. Other national organizations (especially those of various industrial and commercial groups) should join in the effort, but no other organizations appears to be as well situated as the Chamber. It enjoys a strategic position, with a fine reputation and a broad base of support. Also - and this is of immeasurable merit - there are hundreds of local Chambers of Commerce which can play a vital supportive role.

It hardly need be said that before embarking upon any program the Chamber should study and analyze possible courses of action and activities, weighing risks against probable effectiveness and feasibility of each. Considerations of cost, the assurance of financial and other support from members, adequacy of staffing and similar problems will all require the most thoughtful consideration.

The Campus

The assault on the enterprise system was not mounted in a few months. It has gradually evolved over the past two decades, barely perceptible in its origins and benefitting from a gradualism that provoked little awareness much less any real reaction.

Although origins, sources and causes are complex and interrelated, and obviously difficult to identify without careful qualification, there is reason to believe that the campus is the single most dynamic source. The social science faculties usually include members who are unsympathetic to the enterprise system. They may range from a Herbert Marcuse, Marxist faculty member at the University of California at San Diego, and convinced socialists, to the ambivalent liberal critic who finds more to condemn than to commend. Such faculty members need not be in a majority. They are often personally attractive and magnetic; they are stimulating teachers, and their controversy attracts student following; they are prolific writers and lecturers; they author many of the textbooks; and they exert enormous influence - far out of proportion to their numbers - on their colleagues and in the academic world.

Social science faculties (the political scientist, economist, sociologist and many of the historians) tend to be liberally oriented, even when leftists are not present. This is not a criticism per se, as the need for liberal thought is essential to a balanced viewpoint. The difficulty is that "balance" is conspicuous by its absence on many campuses, with relatively few members being of conservative or moderate persuasion and even the relatively few often being less articulate and aggressive than their crusading colleagues.

This situation extending back many years and with the imbalance gradually worsening, has had an enormous impact on millions of young American students. In an article in Barron's weekly, seeking an answer to why so many young people are disaffected even to the point of being revolutionaries, it was said:

"Because they were taught that way".*

Or, as noted by columnist Stewart Alsop, writing about his alma mater:

> Yale, like every other major college, is graduating scores of bright young men . . . who despise the American political and economic system".

As these "bright young men", from campuses across the country, seek opportunities to change a system which they have been taught to distrust - if not, indeed "despise" - they seek employment in the centers of the real power and influence in our country, namely: (i) with the news media, especially television; (ii) in government, as "staffers" and consultants at various levels; (iii) in elective politics; (v) as lecturers and writers; and (v) on the faculties at various levels of education.

Many do enter the enterprise system - in business and the professions - and for the most part they quickly discover the fallacies of what they have been taught. But those who eschew the mainstream of the system, often remain in key positions of influence where they mold public opinion and often shape governmental action. In many instances, these "intellectuals"

*Barron's National Business and Financial Weekly, "The Total Break with America, The Fifth Annual Conference of Socialist Scholars", Sept. 15, 1969.

end up in regulatory agencies or governmental departments with large authority over the business system they do not believe in.

If the foregoing analysis is approximately sound, a priority task of business - and organizations such as the Chamber - is to address the campus origin of this hostility.

Few things are more sanctified in American life than academic freedom. It would be fatal to attack this as a principle. But if academic freedom is to retain the qualities of "openness", "fairness" and "balance" - which are essential to its intellectual significance - there is a great opportunity for constructive action. The thrust of such action must be to restore the qualities just mentioned to the academic communities.

What Can Be Done About the Campus

The ultimate responsibility for intellectual integrity on the campus must remain on the administrations and faculties of our colleges and universities. But organizations such as the Chamber can assist and activate constructive change in many ways, including the following:

Staff of Scholars

The Chamber should consider establishing a staff of highly qualified scholars in the social sciences who do believe in the system. It should include several of national reputation, whose authorship would be widely respected - even when disagreed with.

Staff of Speakers

There also should be a staff of speakers of the highest competency. These might include the scholars, and certainly those who speak for the Chamber would have to articulate the product of the scholars.

Speaker's Bureau

In addition to full time staff personnel, the Chamber should have a Speaker's Bureau which should include the ablest and most effective advocates from the top echelons of American business.

Evaluation of Textbooks

The staff of scholars (or preferably a panel of independent scholars) should evaluate social science textbooks, especially in economics, political science and sociology. This should be a continuing program.

The objective of such evaluation should be oriented toward restoring the balance essential to genuine academic freedom. This would include assurance of fair and factual treatment of our system of government and our enterprise system, its accomplishments, its basic relationship to individual rights and freedoms, and comparisons with the systems of socialism, fascism and communism. Most of the existing textbooks have some sort of comparisons, but many are superficial, biased and unfair.

We have seen the civil rights movement insist on re-writing many of the textbooks in our universities and schools. The labor unions likewise insist that textbooks be fair to the viewpoints of organized labor. Other interested citizens groups have not hesitated to review, analyze and criticize textbooks and teaching materials. In a democratic society, this can be a constructive process and should be regarded as an aid to genuine academic freedom and not as an intrusion upon it.

If the authors, publishers and users of textbooks know that they will be subjected - honestly, fairly and thoroughly - to review and critique by eminent scholars who believe in the American system, a return to a more rational balance can be expected.

Equal Time on the Campus

The Chamber should insist upon equal time on the college speaking circuit. The FBI publishes each year a list of speeches made on college campuses by avowed Communists. The number in 1970 exceeded 100. There were, of course, many hundreds of appearances by leftists and ultra liberals who urge the types of viewpoints indicated earlier in this memorandum. There was no corresponding representation of American business, or indeed by individuals or organizations who appeared in support of the American system of government and business.

Every campus has its formal and informal groups which invite speakers. Each law school does the same thing. Many universities and college officially sponsor lecture and speaking programs. We all know the inadequacy of the representation of business in these programs.

It will be said that few invitations would be extended to Chamber speakers.* This undoubtedly would be true unless the Chamber aggressively insisted upon the right to be heard - in effect, insisted upon "equal time". University administrators and the great majority of student groups and committees would not welcome being put in the position publicly of refusing a forum to diverse views. Indeed, this is the classic excuse for allowing Communists to speak.

The two essential ingredients are (i) to have attractive, articulate and well-informed speakers; and (ii) to exert whatever

*On many campuses freedom of speech has been denied to all who express moderate or conservative viewpoints.

degree of pressure - publicly and privately - may be necessary to assure opportunities to speak. The objective always must be to inform and enlighten, and not merely to propagandize.

Balancing of Faculties

Perhaps the most fundamental problem is the imbalance of many faculties. Correcting this is indeed a long-range and difficult project. Yet, it should be undertaken as a part of an overall program. This would mean the urging of the need for faculty balance upon university administrators and boards of trustees.

The methods to be employed require careful thought, and the obvious pitfalls must be avoided. Improper pressure would be counterproductive. But the basic concepts of balance, fairness and truth are difficult to resist, if properly presented to boards of trustees, by writing and speaking, and by appeals to alumni associations and groups.

This is a long road and not one for the fainthearted. But if pursued with integrity and conviction it could lead to a strengthening of both academic freedom on the campus and of the values which have made America the most productive of all societies.

Graduate Schools of Business

The Chamber should enjoy a particular rapport with the increasingly influential graduate schools of business. Much that has been suggested above applies to such schools.

Should not the Chamber also request specific courses in such schools dealing with the entire scope of the problem addressed by this memorandum? This is now essential training for the executives of the future.

Secondary Education

While the first priority should be at the college level, the trends mentioned above are increasingly evidenced in the high schools. Action programs, tailored to the high schools and similar to those mentioned, should be considered. The implementation thereof could become a major program for local chambers of commerce, although the control and direction - especially the quality control - should be retained by the National Chamber.

What Can Be Done About the Public?

Reaching the campus and the secondary schools is vital for the long-term. Reaching the public generally may be more important for the shorter term. The first essential is to establish the staffs of eminent scholars, writers and speakers, who will do the thinking, the analysis, the writing and the speaking. It will also be essential to have staff personnel who are thoroughly familiar with the media, and how most effectively to communicate with the public. Among the more obvious means are the following:

Television

The national television networks should be monitored in the same way that textbooks should be kept under constant surveillance. This applies not merely to so-called educational programs (such as "Selling of the Pentagon"), but to the daily "news analysis" which so often includes the most insidious type of criticism of the enterprise system.* Whether this criticism results from hostility or economic ignorance, the result is the gradual erosion of confidence in "business" and free enterprise.

This monitoring, to be effective would require constant examination of the texts of adequate samples of programs. Complaints - to the media and to the Federal Communications Commission - should be made promptly and strongly when programs are unfair or inaccurate.

*It has been estimated that the evening half-hour news programs of the networks reach daily some 50,000,000 Americans.

Equal time should be demanded when appropriate. Efforts should be made to see that the forum-type programs (the Today show, Meet the Press, etc.) afford at least as much opportunity for supporters of the American system to participate as these programs do for those who attack it.

Other Media

Radio and the press are also important, and every available means should be employed to challenge and refute unfair attacks, as well as to present the affirmative case through these media.

The Scholarly Journals.

It is especially important for the Chamber's "faculty of scholars" to publish. One of the keys to the success of the liberal and leftist faculty members has been their passion for "publication" and "lecturing". A similar passion must exist among the Chamber's scholars.

Incentives might be devised to induce more "publishing" by independent scholars who do believe in the system.

There should be a fairly steady flow of scholarly articles presented to a broad spectrum of magazines and periodicals - ranging from the popular magazines (Life, Look, Reader's Digest, etc.) to the more intellectual ones (Atlantic, Harper's, Saturday Review, New York, etc.)*, and to the various professional journals.

Books, Paperbacks and Pamphlets

The news stands - at airports, drugstores and elsewhere - are filled with paperback and pamphlets advocating everything from revolution to erotic free love. One finds almost no attractive, well-written paperbacks or pamphlets on "our side". It will be difficult to compete with an Eldridge Cleaver or even a Charles Reich for reader attention, but unless the effort is made - on a large enough scale and with appropriate imagination to assure some success - this opportunity for educating the public will be irretrievably lost.

Paid Advertisements

Business pays hundreds of millions of dollars to the media for advertisements. Most of this supports specific products;

*One illustration of the type of article which should not go unanswered appeared in the popular "New York" of July 19, 1971. This was entitled "A Populist Manifesto" by ultra liberal Jack Newfield - who argued that "the root need in our country is 'to redistribute wealth'".

much of its supports institutional image making; and some fraction of it does support the system. But the latter has been more or less tangential, and rarely part of a sustained, major effort to inform and enlighten the American people.

If American business devoted only 10% of its total annual advertising budget to this overall purpose, it would be a statesman-like expenditure.

The Neglected Political Arena

In final analysis, the payoff - short of revolution - is what government does. Business has been the favorite whipping-boy of many politicians for many years. But the measure of how far this has gone is perhaps best found in the anti-business views now being expressed by several leading candidates for President of the United States.

It is still Marxist doctrine that the "capitalist" countries are controlled by big business. This doctrine, consistently a part of leftist propaganda all over the world, has a wide public following among Americans.

Yet, as every business executive knows, few elements of American society today have as little influence in government as the American businessman, the corporation, or even the millions of corporate stockholders. If one doubts this, let him

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undertake the role of "lobbyist" for the business point of view before Congressional Committees. The same situation obtains in the legislative halls of most states and major cities. One does not exaggerate to say that, in terms of political influence with respect to the course of legislation and government action, the American business executive is truly the "forgotten man".

Current examples of the impotency of business, and of the near-contempt with which businessmen's views are held, are the stampedes by politicians to support almost any legislation related to "consumerism" or to the "environment".

Politicians reflect what they believe to be majority views of their constituents. It is thus evident that most politicians are making the judgment that the public has little sympathy for the businessman or his viewpoint.

The educational programs suggested above would be designed to enlighten public thinking - not so much about the businessman and his individual role as about the system which he administers, and which provides the goods, services and jobs on which our country depends.

But one should not postpone more direct political action, while awaiting the gradual change in public opinion to be effected through education and information. Business must learn the lesson, long ago learned by Labor and other self-interest groups. This is the lesson that political power is necessary; that such power must be assidously cultivated; and that when necessary, it must be used aggressively and with determination - without embarrassment and without the reluctance which has been so characteristic of American business.

As unwelcome as it may be to the Chamber, it should consider assuming a broader and more vigorous role in the political arena.

Neglected Opportunity in the Courts

American business and the enterprise system have been affected as much by the courts as by the executive and legislative branches of government. Under our constitutional system, especially with an activist-minded Supreme Court, the judiciary may be the most important instrument for social, economic and political change.

Other organizations and groups, recognizing this, have been far more astute in exploiting judicial action than American business. Perhaps the most active exploiters of the judicial system have been groups ranging in political orientation from "liberal" to the far left.

The American Civil Liberties Union is one example. It initiates or intervenes in scores of cases each year, and it files briefs amicus curiae in the Supreme Court in a number of cases during each term of that court. Labor unions, civil rights groups and now the public interest law firms are extremely active in the judicial arena. Their success, often at business' expense, has not been inconsequential.

This is a vast area of opportunity for the Chamber, if it is willing to undertake the role of spokesman for American business and if, in turn, business is willing to provide the funds.

As with respect to scholars and speakers, the Chamber would need a highly competent staff of lawyers. In special situations it should be authorized to engage, to appear as counsel amicus in the Supreme Court, lawyers of national standing and reputation. The greatest care should be exercised in selecting the cases in which to participate, or the suits to institute. But the opportunity merits the necessary effort.

Neglected Stockholder Power

The average member of the public thinks of "business" as an impersonal corporate entity, owned by the very rich and managed by over-paid executives. There is an almost total failure to appreciate that "business" actually embraces - in one way or another - most Americans. Those for whom business provides jobs, constitute a fairly obvious class. But the 20 million stockholders - most of whom are of modest means - are the real owners, the real entrepreneurs, the real capitalists under our system. They provide the capital which fuels the economic system which has produced the highest standard of living in all history. Yet, stockholders have been as ineffectual as business executives in promoting a genuine understanding of our system or in exercising political influence.

The question which merits the most thorough examination is how can the weight and influence of stockholders - 20 million voters - be mobilized to support (i) an educational program and (ii) a political action program.

Individual corporations are now required to make numerous reports to shareholders. Many corporations also have expensive "news" magazines which go to employees and stockholders. These opportunities to communicate can be used far more effectively as educational media.

The corporation itself must exercise restraint in undertaking political action and must, of course, comply with applicable laws. But is it not feasible - through an affiliate of the Chamber or otherwise - to establish a national organization of American stockholders and give it enough muscle to be influential?

A More Aggressive Attitude

Business interests - especially big business and their national trade organizations - have tried to maintain low profiles, especially with respect to political action.

As suggested in the Wall Street Journal article, it has been fairly characteristic of the average business executive to be tolerant - at least in public - of those who attack his corporation and the system. Very few businessmen or business organizations respond in kind. There has been a disposition to appease; to regard the opposition as willing to compromise, or as likely to fade away in due time.

Business has shunted confrontation politics. Business, quite understandably, has been repelled by the multiplicity of non-negotiable "demands" made constantly by self-interest groups of all kinds.

While neither responsible business interests, nor the United States Chamber of Commerce, would engage in the irresponsible tactics of some pressure groups, it is essential that spokesmen for the enterprise system - at all levels and at every opportunity - be far more aggressive than in the past.

There should be no hesitation to attack the Naders, the Marcuses and others who openly seek destruction of the system.

There should be not the slightest hesitation to press vigorously in all political arenas for support of the enterprise system. Nor should there be reluctance to penalize politically those who oppose it.

Lessons can be learned from organized labor in this respect. The head of the AFL-CIO may not appeal to businessmen as the most endearing or public-minded of citizens. Yet, over many years the heads of national labor organizations have done what they were paid to do very effectively. They may not have been beloved, but they have been respected - where it counts the most - by politicians, on the campus, and among the media.

It is time for American business - which has demonstrated the greatest capacity in all history to produce and to influence consumer decisions - to apply its great talents vigorously to the preservation of the system itself.

The Cost

The type of program described above (which includes a broadly based combination of education and political action), if undertaken long term and adequately staffed, would require far more generous financial support from American corporations than the Chamber has ever received in the past. High level management participation in Chamber affairs also would be required.

The staff of the Chamber would have to be significantly increased, with the highest quality established and maintained. Salaries would have to be at levels fully comparable to those paid key business executives and the most prestigious faculty members. Professionals of the great skill in advertising and in working with the media, speakers, lawyers and other specialists would have to be recruited.

It is possible that the organization of the Chamber itself would benefit from restructuring. For example, as suggested by union experience, the office of President of the Chamber might well be a full-time career position. To assure maximum effectiveness and continuity, the chief executive officer of the Chamber should not be changed each year. The functions now largely performed by the President could be transferred to a Chairman of the Board, annually elected by the membership. The Board, of course, would continue to exercise policy control.

Quality Control is Essential

Essential ingredients of the entire program must be responsibility and "quality control". The publications, the articles, the speeches, the media programs, the advertising, the briefs filed in courts, and the appearances before legislative committees - all must meet the most exacting standards of accuracy and professional excellence. They must merit respect for their level of public responsibility and scholarship, whether one agrees with the viewpoints expressed or not.

Relationship to Freedom

The threat to the enterprise system is not merely a matter of economics. It also is a threat to individual freedom.

It is this great truth - now so submerged by the rhetoric of the New Left and of many liberals - that must be reaffirmed if this program is to be meaningful.

There seems to be little awareness that the only alternatives to free enterprise are varying degrees of bureaucratic regulation of individual freedom - ranging from that under moderate socialism to the iron heel of the leftist or rightist dictatorship.

We in America already have moved very far indeed toward some aspects of state socialism, as the needs and complexities of a vast urban society require types of regulation and control that were quite unnecessary in earlier times. In some areas, such regulation and control already have seriously impaired the freedom of both business and labor, and indeed of the public generally. But most of the essential freedoms remain: private ownership, private profit, labor unions, collective bargaining, consumer choice, and a market economy in which competition largely determines price, quality and variety of the goods and services provided the consumer.

In addition to the ideological attack on the system itself (discussed in this memorandum), its essentials also are threatened by inequitable taxation, and - more recently - by an inflation which has seemed uncontrollable.* But whatever the causes of diminishing economic freedom may be, the truth is that freedom as a concept is indivisible. As the experience of the socialist and totalitarian states demonstrates, the contraction and denial of economic freedom is followed inevitably by governmental restrictions on other cherished rights. It is this message, above all others, that must be carried home to the American people.

Conclusion

It hardly need be said that the views expressed above are tentative and suggestive. The first step should be a thorough study. But this would be an exercise in futility unless

*The recent "freeze" of prices and wages may well be justified by the current inflationary crisis. But if imposed as a permanent measure the enterprise system will have sustained a near fatal blow.

the Board of Directors of the Chamber accepts the fundamental premise of this paper, namely, that business and the enterprise system are in deep trouble, and the hour is late.

L.F.P., Jr.

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Memorandum of conversation between M. S. Gorbachev and U.S. Secretary of State G. Shultz. Excerpt.
October 23, 1987

Gorbachev: First of all, I would like to extend a warm welcome to you, Mr. Secretary of State. Taking into account the fact that you came here soon after your meeting with E. A. Shevardnadze in Washington, maybe we can say that our relations are becoming more dynamic. We welcome this. The main thing now is the substance. And here, as it appears to us, something is emerging.

Shultz: We always want to concentrate our attention on the substance. At the same time, it is true that more and more active contacts at the upper levels help move the work on the substance of important issues further. Therefore, a certain interconnectedness exists between the process of our interaction and progress on the concrete issues. I think we can make note of considerable progress on the substantive issues. In my toast at breakfast yesterday, I said that in ten years history will register the fact that in Reykjavik we achieved more than at any other summit in the past.

Gorbachev: I agree with you. I would say that an intellectual breakthrough took place in Reykjavik, and that it was very powerful, that it had a shocking effect, resembling a reaction at a stock exchange. Later, when many things calmed down, and when people figured things out, it became generally accepted that Reykjavik opened a new, very important stage in the political dialogue between our countries, especially on the most important issues of security.

I would like to welcome Mr, Carlucci, who arrived with you. We are hoping that he will make a positive contribution to our search for resolutions on the issues under discussion.

Shevardnadze: Mr. Carlucci made a constructive contribution to our work in Washington.

Gorbachev: Why don't we do the same here?

Shultz: I have worked with Mr. Carlucci since the 1970s, when he was with the government's Office of Economic Opportunity—the organization, which works on helping to solve such problems as poverty, assistance to the poor, and so on. Then he worked with me at the Office of Management and Budget. That is the organization whose members constantly reject requests for resources from other government bureaus. Overall, Mr. Carlucci has more extensive experience in various government bureaus than perhaps anybody else. He has worked in the departments of Defense and State, in intelligence, and on issues of domestic policy. He has rich experiences and we always work well together.

Gorbachev: Then he should know well that there cannot be any agreement if the interests of the partner in a negotiation are not taken into account. I say this because S. F. Akhromeev and P. Nitze, who are present here, act differently: they want to bargain for better conditions for their side, to achieve superiority for the Soviet Union and for the USA, respectively.

Shultz: I am sure this does not characterize Akhromeev. It does characterize Nitze.

Akhromeev: We were able to agree with him on many issues.

Gorbachev: I think that the fact that the military takes part in our meetings is also very important. It shows that our relations have reached a new stage. If we don't intend to fight each other and, more than that, if we are going to disarm, —then our militaries should also know each other and work together.

Shultz: I completely agree with that. If one looks at the history of Soviet-American relations, then one sees that in one sphere [our] cooperation was able to survive all the highs and lows of our relations, and to preserve its constructive character. I have in mind the interaction of our navies within the framework of the agreement on preventing accidents on the high seas. Therefore, we would consider it important that meetings be held between our defense ministers and other military representatives, meetings between Marshal Akhromeev and the chairman of the U.S. Joint Chiefs of Staff, Admiral Crowe.

Gorbachev: Good. Let us now discuss how we are going to conduct our meeting. We are in a process of democratization in our country now. And that means that this issue should also be resolved in a democratic fashion taking into account both your and our considerations. Maybe you could tell us what you discussed with E. A. Shevardnadze. And then it will be clear what we should discuss with you today.

Shultz: Good. I would like to summarize briefly the discussions that took place. We have developed a certain process, which allows us to consider all the issues that are of interest to both sides. Within the framework of this process, the work is conducted on the basis of combining meetings in a comparatively narrow circle with the work of the working groups, which discuss more concrete issues. We believe that this is a good process.

Gorbachev: Yes, this organization of [our] work has proven itself.

Shultz: We have assembled a good group to conduct the main negotiations: from the Soviet side it is E. A. Shevardnadze together with A. F. Dobrynin and A. A. Bessmertnykh; and from our side, myself, F. Carlucci, and R. Ridgeway. We created working groups, which did some good work on such issues as bilateral relations, human rights and humanitarian issues, arms control. We also created, I would say spontaneously, a group on conventional weapons. Nonetheless, the most productive part of the discussion on regional issues took place within the small group.

We discussed a number of arms control issues. The working group on conventional weapons tried as much as possible to help the discussions, which are now conducted in Vienna, about the mandate for future negotiations on conventional weapons. Another group held a useful discussion, in our view, on chemical weapons. As far as negotiations on nuclear and space weapons are concerned, we had a separate working group on INF and SRINF, as well as a working group, which discussed strategic weapons and space—the ABM. In addition, these latter issues were discussed in a detailed way at the ministerial level.

We came here with a task and instructions from the President to complete the bulk of our work on the treaty on intermediate and medium-range missiles, i.e. if not to literally dot the last "i", then to reach a stage where it would be sufficiently clear that this task is solvable. The President also starts from the assumption that the key issue is strategic weapons. We have also noted your statement to the effect that this is the cardinal problem, as well as another statement in which you said that the work on the strategic offensive weapons could be completed before the spring of next year. We agree with this task and we would like to have a sufficient degree of progress to allow us to talk not about the INF but mainly about strategic weapons during your visit to the USA, which we hope will take place, and to establish a foundation for completing our work in this area. This is our goal.

We clarified a number of issues on INF and SRINF. It relates in particular to the so-called problem of Pershing 1A [missiles] in the FRG, as well as to some other issues. We have to say that we resolved most of those issues at the ministerial level. There remain a number of issues, which the working group was working on last evening and night. I must say that I was disappointed with the report of that working group. I think that we should make them do some serious work. We hear too many statements that such-and-such issue should be left for consideration in Geneva, to which I say: no, this issue should be resolved here because the people working in Geneva receive their instructions from Moscow and Washington. Today, the people who can make the appropriate decisions are gathered here, and it is necessary to resolve those issues.

In short, I was hoping to inform you that the main issues on INF and SRINF weapons have been resolved. Unfortunately, I cannot do that. However, I can say that all of these issues seem to be quite resolvable.

As far as the ABM and space are concerned, those discussions between us and within the working group were, I believe, not useless. I think that we were at least able to identify those key issues, on which we will need major political decisions. It also became clear which issues will require a more comprehensive, detailed working through. I believe that now, when we, while maximizing our efforts, are taking the final steps toward the treaty on INF and SRINF, it has become especially clear how complex the issues of verification are in all their detail and specifics. And when we start talking about the treaty on strategic weapons, where even after the cuts there will remain a large quantity of armaments subject to verification, the complexity and difficulty of control will be even greater.

That is why we agreed that it is necessary right now to step up our efforts seriously in this sphere. This is especially relevant to one big problem, which we admit. I have in mind our differences on ground-based mobile missiles. As I explained, the problem is not that we have objections in principle to mobile missiles. To the contrary, these weapons in principle have some advantages. The problem is that everything on which we agree should be subject to reliable verification. That is why we agreed that this issue will be given priority attention, so that by the time of your visit, which we hope will take place, substantial work will have been conducted that will help you and the President to discuss that issue.

Shevardnadze: In principle, I agree with the assessments presented by the Secretary of State.

Gorbachev: I see, you have agreed on everything? What is left for me and the President?

Shevardnadze: I said—in principle.

Shultz: If not for the work accomplished by you, Mr. General Secretary, and the President, in particular in Reykjavik, we would now be so mired in a bog that we would not be able to move a step.

Shevardnadze: Of course, the agreement achieved in Washington on the liquidation of two classes of missiles was made possible only on the basis of Reykjavik. One has to say that even after Washington, the positive tendency has continued, thanks to which we have been able to achieve agreement on a number of issues that seemed very difficult. Yesterday we were able to agree on a formula regarding warheads for the Pershing-1A. That is a complex and sensitive matter. On that issue, we were able to find a solution that will be acceptable to the USA, the FRG, taking their alliance obligation into account, and to us as well.

The issue of the overall timetable for eliminating intermediate and shorter-range missiles turned out to be rather difficult. Yesterday we agreed in principle that for medium-range missiles it would be a three-year period, and for shorter-range missiles a year and a half, with consideration for technological capabilities in this sphere.

Discussion of a number of issues will be continued. We had a good discussion on the issue of non-circumvention, not allowing transfers of relevant technolgies to third countries. I think a mutually acceptable compromise is emerging in this sphere.

There are still quite a few difficult problems in the area of verification and inspections. These problems can be solved on the basis of an objective approach with the understanding that there are a number of sensitive problems and difficult aspects touching upon the interests of the United States and the Soviet Union.

Gorbachev: I think Mr. Shultz put it right when he said that the most important issue now is no longer intermediate and shorter-range missiles, but the prospects for resolving the problem of strategic offensive weapons, and the shifting of negotiations to the plane of practical decisions. As far as the remaining issues of the INF treaty are concerned, they should be resolved in such a way that both of us have complete confidence and there will be no anxiety regarding treaty implementation.

Shevardnadze: Yes, this is precisely the basis on which we should continue the discussions. At the same time we emphasize that the United States has its own system of missile production and deployment, which differs from our system. We have our own system. And today we stated that in order to work out a realistic agreement, it is necessary to take these differences into account.

Shultz: I agree with that. We do not argue with that.

Shevardnadze: I think that on some fundamental issues it is necessary to make a decision now, today. We have to be clear. In the opposite case, if we leave these issues open, if we transfer them to Geneva, they could persist for a long time.

Gorbachev: Yes, the main issues should be decided here, and leave only technical issues for Geneva. We have the appropriate experience.

Shevardnadze: The second group of issues is disarmament. This, as was correctly noted here, consists of the cardinal problem of radical reductions in strategic offensive weapons and the ABM treaty. In this sphere, results have been more modest. I would say that it is hard to speak of any results whatsoever. Yesterday I openly told the Secretary of State that after Reykjavik the Soviet side made substantial changes, which took into account the interests of the United States, and made significant steps toward the U.S. position. However, precisely after Reykjavik, the U.S. administration added a number of complicating factors to its position, which are causing problems in the negotiations and retarding progress on the main issue.

Gorbachev: If we recall our Reykjavik marathon, then it was precisely the issue of the ABM in space, which became the main obstacle that we were not able to overcome in the end. Obviously, you drew the attention of the Secretary of State to the fact that space remains the biggest obstacle. One also has to note that while we introduced positive elements, elements of flexibility, into our position, the American side continued to stand on its position of reinforced concrete. And it is precisely that position which impedes progress toward an agreement on this issue, which is not only central to Soviet-American relations, but is the most important issue for the entire world. How are we going to move ahead?

Shevardnadze: Yes, it was precisely after Reykjavik that the new elements that are making negotiations more difficult, such as the demand to eliminate all Soviet heavy missiles, appeared in the American position.

Gorbachev: And by the way, we were ready to eliminate them, but in tandem with you, in tandem with the elimination of all nuclear weapons.

Shevardnadze: Absolutely true. And the American side is presenting demands to resolve this issue on a purely unilateral basis. They are also raising the issue of banning mobile ICBMs, and proposing to count middle-range bombers as strategic weapons when that question was already decided in 1979 when the SALT II treaty was negotiated. Also, the American side does not agree to resolve the issue of limiting the number of sea-based cruise missiles. As you know, in Reykjavik we agreed to resolve this issue separately, outside the framework of the main strategic triad. However, it is clear that if sea-based cruise missiles are not limited, it could open a new channel in the arms race, and create an opportunity to circumvent the treaty.

The American side raised the issue of stepping up discussions of verification. We believe that if the main fundamental issues of the future agreement are resolved, we would be able to find a solution to the issues of verification.

As far as the ABM treaty is concerned, yesterday I presented our position in detail. The essence of it is that if there is any retreat from the mutual understanding achieved in Reykjavik about the need for a 10-year period of non-withdrawal from the ABM Treaty, along with strict compliance with its provisions, it would make it impossible to achieve agreement on strategic offensive weapons. The American side is aware of the fact that we developed and clarified our position on such issues as laboratory research, research conducted at plants, testing grounds, etc. The USA is also aware of our new proposals regarding development of a list of devices that would be banned from space, and our proposals regarding the specific parameters and characteristics of such devices.

It so happened that we did not have time for a sufficiently comprehensive discussion of this group of questions. But yesterday we reminded the American side that in order for the summit to be fruitful and full-scale, it would be very important to coordinate our key positions on these issues.

As far as chemical and conventional weapons are concerned, they were discussed within the working groups. Today we will listen to their reports on those issues. We also discussed such regional issues as the situation in the Persian Gulf in particular. Yesterday, while discussing those themes, we stayed up almost until midnight. The discussion was serious, and at times sharp.

Gorbachev: On this last issue I would like to say the following. It might seem to you that sometimes we present demands against the position of the American side that are too great. But here are two instances of principal importance. First of all, we are not sure that you have calculated everything well, that you really understand where this policy might lead for you, for us, and for the entire world.

Secondly—although in terms of importance it might be the main instance—we believe that our interaction in the Persian Gulf is the freshest example that proves the possibility of constructive cooperation between the USSR and USA in resolving a most acute international problem. It was precisely this cooperation that led to the adoption of well-known documents by the [U.N.] Security Council. We believe, and we have told you that and stated it publicly, that we still have substantial potential there. And we need to use our coordinated positions on Resolution 598[1] to the fullest extent, [in order] not to allow that situation to escalate to a new level.

However, the United States is apparently offended by the fact that we did not support its demand for sanctions, for a second resolution, and [you] decided to act alone, like "the good old days." We believe that the cooperation that has developed there is a positive new factor, and is important for our overall relations. However, the United States has preferred to throw away this interaction and to act alone. I will not talk about the reasons for why it happened, but I want to say that your withdrawal from cooperation with us creates disappointment. This political line is wrong. In addition, I repeat, we believe that it could have very serious consequences, which, you, apparently, did not analyze. We are watching America's actions. For our part, we are searching for ways to improve relations with the U.S., ways to lead them to a new stage.

Shevardnadze: Mikhail Sergeevich, I presented our position during yesterday's discussions in that exact same spirit. We believe that it is very important to preserve the unity of the permanent members of the Security Council. The Soviet Union proceeds from the assumption that resolution of the conflict in the Persian Gulf is possible. But for this it is imperative to use the capabilities of the UN Security Council, in particular an organ such as the Military Staff Committee, to the fullest extent.

I would like to summarize. The agreement on INF and SRINF does not look like a distant possibility any longer. Given mutual desires, I believe it is possible to complete all work on this treaty in, let's say, three weeks' time. As far as the key principles of strategic offensive weapons and the ABM are concerned, here some serious work is required. But now, regrettably, we do not have a serious basis for resolving the issue of a 50% reduction in strategic offensive weapons under conditions of preserving the ABM Treaty. I think that our task is to prepare a serious, solid basis for resolving this problem for the summit.

Shultz: Speaking broadly, we have approximately the same impression. Nothing to argue about here. As far as INF are concerned, I think that we should try to resolve the majority of issues on the list prepared by the [working] group today. All that should be left for Geneva would be editing work, dotting the last "i's". We would prefer not to leave the resolution of serious issues for Geneva, where participants in the negotiations would have to wait for instructions from Washington and Moscow.

Gorbachev: We would welcome such approach.

Shultz: As far as strategic weapons are concerned, this is a very important sphere where we want to achieve some progress. E. A. Shevardnadze told me that you personally have devoted a lot of time and attention to these issues, and that you probably would have some thoughts, which you will present today personally. We would like to hear them.

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[1] A key Security Council resolution calling for an end to the Iran-Iraq War.

Several words about the Persian Gulf. As you noted, one very good opportunity has emerged—the cooperation between us within the framework of U.N. diplomatic efforts. We want this cooperation to produce results. We believe that it could help resolve this military conflict, which is poisoning the entire international situation. We think that there could be nothing better to strengthen the prestige of the U.N. than to achieve success in resolving a difficult problem. A success of that kind would be miraculous medicine for the United Nations. Success would show people that if we undertake something, we are capable of achieving our goals.

I would like to assure you that we do not strive to act alone. We want the process to function, to work within the U.N. framework. As far as our ships in the Gulf are concerned, there are now more ships from European states and from the Gulf states there. American ships constitute only a third, or maybe a fourth, of the overall number of ships there. Why do we and others find ourselves there? Because Iran and the war in this regions represent a threat—a threat to our friends in the Gulf and to the flow of oil, the main source of energy for the countries of the West. We have to provide support for our friends in the Gulf. We have to ensure the safety of supplies of such an important source of energy. Because now and in the future this region will remain one of the main suppliers of oil for the entire world.

I told your Minister that our forces deployed in the Gulf would be reduced if the acuteness of the problem is reduced. They are deployed there precisely in connection with this problem, not to create a permanent presence there. […]

[…] We cannot discount that. At the same time we are not looking for confrontation. However, we cannot allow the Iranians to have a blank check.

Yesterday we discussed this issue in detail. We discussed it from the perspective of the situation in the Security Council. In the immediate future the U.N. General Secretary will present a new version of a package solution on implementing the Security Council Resolution for consideration by all sides. Iraq will accept this proposal. We discussed the issue of what we would do if by the end of the month it becomes clear that Iran is continuing to play games. How should we act in the Security Council in that case? We believe that we should take this to the end. We cannot allow Iran to make a laughing stock out of the U.N. Security Council. The Council has defined its position and it is necessary that it take this to the end.

Gorbachev: I don't want to get into detailed discussion of this issue right now. But it is a serious, important issue. This problem could bury many things, including, unfortunately, things in our relationship. I only want to say: we hope that you will weigh all this, that you will not be overpowered by certain forces and emotions. This is very serious business. It might lead to very serious consequences. Let us continue the line that we have worked out together. Its potential has not yet been exhausted.

Shultz: I can agree with that. Indeed, we need to work within the U.N. framework because something really important has happened at the U.N.

Gorbachev: I would like to return to what we were discussing earlier. Indeed, we can see that it is not just that the tempo of our progress that is accelerating. There is also a certain amount of progress on the concrete issues under consideration. I would say that if one takes a look at the progress from Geneva through Reykjavik to today, we have succeeded in clarifying many issues.

[.…]

In their search for solutions the sides undertook concrete steps to meet each other halfway. I must say sincerely: in our view, we undertook more of those steps. And in you we still detect a tendency to squeeze as much as possible out of us. What can one do, somebody has to do more, take this additional step, and we decided to do it. But this movement that started gave birth to great expectations among our peoples, and in the entire world. Therefore the anticipation that the next stage of our relations should produce concrete results is completely natural. They have been waiting for them for a long time now. If that does not happen, it would be a big loss both for the American administration and for us. You cannot discount that.

It is from this perspective that I react to reports about the work conducted by you and E. A. Shevardnadze. I have the impression that in the immediate future we could finalize our work on the agreements on INF and SRINF. I agree that the principal issues should be resolved here, in Moscow, while leaving our delegations in Geneva only technical, editing issues.

I would even say: if we complete our work like this, that would be very important in and of itself. It would be a very important event in the eyes of the peoples of the world. But then people will rightfully ask: if we understand the importance of that agreement and if we conclude that agreement in the immediate future, why would we then continue any kind of activity in the sphere of production, testing and deployment of mid-range missiles? Therefore, the right thing to do would be to announce a joint moratorium on such activities. It could be introduced beginning November 1. I repeat, if we have an agreement in principle that we will sign the treaty, then a joint moratorium on deployment and any activities in the sphere of INF would be an important step that would strengthen this political decision. It would show that the agreement would start working *de facto* even before we actually sign it. I think that this important step would determine the degree of our accord on this issue.

Now I move to the central issue—the issue of strategic offensive weapons and space. You recalled my words in this connection. I confirm those words. We believe that resolution of the issues of strategic offensive weapons and space would indeed be extremely important for the security of the USA and the USSR because it is precisely these matters that define the strategic situation. Therefore, finding mutually acceptable solutions to nuclear and space questions becomes especially important and pressing.

In Reykjavik we had a serious exchange of opinions on those issues. After Reykjavik we tried to do something to reaffirm our readiness to reach resolutions on the complex of those problems. What is the essence of the mutual understanding reached in Reykjavik? The essence is the 50% reductions in offensive strategic weapons and the 10-year non-withdrawal from the ABM Treaty. And what is happening in Geneva? Essentially, bargaining is taking place there. Therefore we have been thinking a lot about what else we could do to move ahead with a resolution to this problem in Geneva. Many issues are being discussed there, a lot is being said. However, if you put it all aside, there are two genuinely big issues. The first is ensuring strict compliance with the ABM Treaty, and the second is the optimal correlation between the elements [that constitute] strategic forces, the strategic triad.

As far as the first issue is concerned, we proposed to the United States not to use the right of withdrawal from the ABM Treaty for ten years. We also proposed a second version, which is also connected with the idea of non-withdrawal from the ABM Treaty. Trying to meet the U.S. halfway, we proposed to discuss which devices could be deployed in space, and which could not. We are waiting for your reaction.

As far as the second issue is concerned—the issue of optimal correlation between the different elements [comprising] strategic forces, we considered this matter carefully once more. We are proposing a new formula, on the basis of which we could determine the limits on concentrations of warheads for each element of the triad. Besides, each side would have an opportunity to compensate for the lower number of delivery vehicles on one kind by increasing the number of delivery vehicles of a different kind within the overall limit.

Therefore, we propose [the following]: the United States agrees to legally undertake an obligation not to use its right of withdrawal from the ABM Treaty for ten years under strict compliance with all of its provisions. The Soviet Union agrees to establish limits on concentrations of warheads on different kinds of U.S. and Soviet strategic armaments. Within the [overall] limit of 6,000 warheads, we propose to have not more than 3,000-3,300 warheads on ICBMs, no more than 1,800-2,000 warheads on SLBMs, and not more than 800-900 warheads on air-launched cruise missiles.

We believe that this kind of movement toward each other's positions would lead us in the nearest term to work out key positions on these issues. This would prepare the ground for the next step—the move toward concluding the agreement. In that case, as I understand it, when I arrive in the U.S., we would create the agenda, which we discussed during your visit in April of this year. First of all, we would sign the treaty on the elimination of INF and SRINF. Secondly, we would agree on the key provisions regarding strategic offensive weapons based on the new compromise proposals. And finally, we would incorporate the agreement about initiating negotiations on the problem of nuclear testing that was reached between you and E. A. Shevardnadze. I think that would be a solid agenda.

We see that not everybody in the United States is in favor of such agreements. There are those who wish to undermine this process. They use all kinds of arguments for this purpose, in particular the issue of the Krasnoyarsk radar station. I have to say that we also have complaints about American radar stations. We could remove these complaints on a reciprocal basis. Now I would like to inform you about our unilateral step. The Soviet Union announces a 12-month moratorium on all work on the Krasnoyarsk radar station. We are expecting a similar step from the U.S. in regard to the American radar station in Scotland.

I think that we can take on the issues of strategic offensive weapons and space as they are connected in a substantive, fundamental way.

Shultz: Thank you. I would like to respond to the proposals you have outlined. Of course, every time you introduce proposals on important issues, we study and analyze them carefully. Now I can provide you some considerations based on our analysis.

First of all, I welcome what you said on the INF, and your words about your readiness to give additional stimulus to this work. We are also instructing our representatives so that the main issues will already be resolved in Moscow.

As far as the ABM and related issues are concerned, among other things we have been trying to clarify what your proposals consisted of. We believe that there is a certain amount of progress here. I would like to have total clarity as to whether I understand the proposals that you presented. This does not presuppose that the President agrees with them. As you know, for him this is a very delicate, sensitive issue. I would like to have an opportunity to present the factual substance of your position to him as precisely as possible. Thus, as I understand it, you are proposing that we define a ten-year period of non-withdrawal from the ABM Treaty with strong compliance with the Treaty in the form in which it was developed.

Gorbachev: As it was before 1983. Then we did not have any differences. And besides, that was not just our point of view. That is the point of view of the U.S. Congress. And the Congress is, I am convinced, a very serious, very important body, which receives reports, including reports from departments in which Mr. Carlucci has worked, from the National Security Council, in which Mr. Matlock worked then, and other detailed information. At that time we shared the same position.

Shultz: I would like to clarify—do you have in mind compliance with the Treaty in the form in which it was presented, for example, in the report of our Defense Department from March 1985? I mention this report because it was mentioned by your representatives at the negotiations.

Gorbachev: In the form as this Treaty was understood and adhered to by both sides before 1983.

Shultz: I would not want to enter into any secondary arguments right now, because different opinions exist about what was adhered to and how, and what they had in mind. In our country, some people believe, for example, that the Soviet Union insists on an even more narrow interpretation of the Treaty than the narrow interpretation itself. I named one document for a reference, which your representatives cited, in order to understand your point of view better.

Gorbachev: I repeat: we are talking not only about that, but also about the fact that before 1983 the Treaty was interpreted and effectively enforced by both sides in the same way. If now this creates some difficulties for you, I told the President in Reykjavik that I am ready to help him out of the situation that was created as a result of the launching of the SDI program. Our proposal—to agree on what can and cannot be deployed in space under conditions of non-withdrawal from the ABM Treaty—allows [you] to conduct research within the SDI framework. In particular, the second version proposed by us presupposes defining concrete parameters for devices that are allowed to be deployed in space. With that, naturally, it is understood that there should be no weapons in space. But as far as the orders you have already placed with companies and research organizations, they can be carried out within the limits of these agreed-upon parameters. This proposal represents a compromise.

Besides that, we are moving in the direction of your requests regarding limits. For example, when I say that there would be a limit of 3,000-3,300 ICBM warheads within the total limit of 6,000 warheads, this represents 50%. This is what I promised the President. As you can see, we are true to our word.

Shultz: I would like to clarify certain aspects. You should not interpret the fact that I am clarifying certain issues related to space and ABM as indicating that I was accepting your positions. I am not able to do that. I can only report on them to the President. Do I understand correctly that within the ten-year period of non-withdrawal from the ABM Treaty, activities which correspond to the Treaty in its traditional interpretation would be allowed, along with activities in space within the limits of the ceilings proposed by you? At the same time, such activities could not include deployments prohibited by the ABM Treaty.

Gorbachev: As well as weapons tests in space. As far as permitted activities are concerned, we could discuss and define that together.

Shultz: I think that enough has been said on this issue within the bounds of what can be said at the present stage. I repeat, I was only asking clarifying questions, which do not signify agreement with your proposals on behalf of the President. I believe that we should conduct our conversation directly and openly.

Now another side of the question—how to implement the 50% reductions of strategic armaments in practice? We believe that significant progress has been achieved on this issue. I would like to present an alternative proposal for your consideration. Realizing that the idea of sub-limits, at least of certain kinds of sub-limits has repeatedly caused problems, in particular during our discussions in April during my visit, we undertook an analysis of the situation. Now we have a joint draft text of the treaty, at this point with many brackets. We agreed on a total limit on warheads—6,000. We agreed that the number of delivery vehicles and bombers will be 1,600. We agreed on the limit of warheads on heavy missiles—1,540. We agreed on the rule of counting the bombers. We have an agreement that the throwweight would be reduced by 50%, and now we would like to achieve a legal affirmation of that in the text of the treaty, as well as a confirmation that after such a reduction in throwweight there would be no future increases. In principle, I think we have an agreement on this; however, we would like to confirm that in the formulations of the Treaty. One of the limitations, which we have proposed, and which was reflected today in your response, is the limitation on the number of warheads on ICBMs—3,300. In Washington you proposed a sub-limit of 3,600 units, but that was proposed as a maximum level for any of the elements of the triad.

We believe that the most serious difference between the elements of the triad is the difference between ballistic missiles and warheads that are delivered by air and jet-propelled systems. Of course, land-based missiles are more precise than SLBMs. However, the main distinction is between ballistic missiles and non-ballistic means. Therefore, we would like an agreement to have as a minimum a certain number of warheads on the air-based part of the triad. For this purpose, we proposed a limit of 4,800 for ICBM warheads. In the interests of moving forward, we would be ready to remove our proposal about establishing separate sub-limits for ICBM and SLBM warheads in return for your accepting the proposal on a summary sub-limit of 4,800 units for ICBM and SLBM warheads. Within this ceiling, each side would be free to determine the constituent parts.

As I said before, when we start talking about mobile missiles, it becomes very important to be confident that the limits stipulated by the treaty could be verified. We are ready to engage in work on this issue in Geneva. Frankly speaking, we do not see a satisfactory answer to the problem of verification of mobile missiles. But maybe you can show us how that can be done. Maybe we will be able to work on this issue before your visit to the U.S. At the same time, I have to admit, I do not see how to solve this problem. However, we are ready to work on it.

So here is the structure that we propose. Yes, and there remains the sub-limit of 1,650 units that we proposed. However, as you can see, in general we are making the problem of sub-limits easier, on the condition that there would be a general limit on warheads on ballistic missiles.

Gorbachev: I think that if we find an approach that would allow us to begin movement on all the complex of issues of strategic offensive weapons and space in their interconnectedness, then we should be able to resolve the issue of mobile missiles. By the way, you too are planning to build mobile missiles. You are already building railway-based MX missiles. Therefore it is a problem both for you and for us.

Shultz: Yes, indeed, we are working on this. However, I would like to assure you that we would prefer to introduce a ban on mobile missiles; we are ready to abandon this program.

Gorbachev: But mobile strategic missiles already exist. Besides, as I said in Reykjavik, they have a very short flight time. And what do you do with such a mobile system as a submarine? They come very close to our territory. Besides, while it is known where ICBMs start their flight, it is unknown with SLBMs.

Shultz: Both missiles have a short flight time. Beside that, once ballistic missiles are launched, it is impossible to recall them. In short, ballistic missiles represent the greatest threat, and that is why we consider it necessary to establish a limit on ballistic missile warheads in view of their differences with air-based means.

Gorbachev: You have your own concerns, and we have ours regarding your strategic armaments. I think that these issues should be discussed at the negotiations.

Shultz: I agree.

Gorbachev: I want to reiterate again what I have said many times before. We do not want the United States, after the reductions, to find itself in a situation that would be unfavorable for you, that would weaken your security, weaken your confidence in your security. That would be bad for us as well. Because if one of the sides finds itself in such a situation, it would try to find a way out of it, to seek the possibility of compensation. Experience shows that both of us have found [such] answers. But it is clear that this would not correspond to our interests.

Shultz: You expressed that idea in Geneva. I believe that it is a strong, important idea. I agree with it. You also emphasized the differences in the structure of our strategic forces then, the fact that neither of the sides could force the other to imitate an alien structure. Precisely for this reason, having analyzed the situation, we decided to propose a joint limit on the number of warheads on ballistic missiles, within which the sides would have freedom—at least at the present stage—to determine the combination of warheads. We cannot achieve everything at once. But it seems that it is possible to move considerably ahead on this basis.

Gorbachev: I think now we have a basis on which to work on the key elements of strategic offensive weapons. This could become the central element of the Washington summit because as far as the agreement on INF and SRINF is concerned, all that remains is to sign it. Signing key positions [on strategic weapons] could become the most important outcome of the summit. We could give our delegations concrete instructions on the basis of these key positions to work out a draft text of the treaty, which the President and myself could sign during the President's visit to Moscow.

Recently some of your representatives, Mr. Kampelman, for example, said that we need to start seriously developing a treaty on strategic offensive weapons. They said if we could do that, then it would be easier to resolve the space issues. I want to say at the outset, this is an unrealistic position, an unrealistic approach. Let's not waste time on such approaches. Issues of strategic offensive weapons and space need to be resolved together because they are interconnected. On this basis, we are ready to move forward, taking into account as much as possible each other's security interests.

Shultz: I think that in terms of numbers and parameters, we have said all that we can for now. I think that we sense a certain flexibility, a readiness for collective work. I have the impression that it is unlikely that our representatives in Geneva will be able to produce much in this sense. These are questions for you and for the President. However, our delegations could create a good foundation for a fruitful meeting between you and the President. I have several thoughts about this.

First of all, we could say to our delegations in Geneva that they should tackle the problems of verification energetically and as their priority, especially the verification of mobile missiles. Now we see how difficult the problems of verification are. We should not leave them for February or March. We should focus on them seriously now.

As far as concrete positions are concerned, I think that our delegations in Geneva should not so much bargain about numbers as place an emphasis on clarifying each side's principal approaches. We should talk about why you consider certain provisions important, and why we consider other provisions important. I think that that would help you and the President find resolution to those problems during your meeting.

Finally, I would propose that in addition to continuing our work on removing the brackets in the joint text, which is useful, we should focus on the goal of having your meeting with the President result in joint instructions for our delegations in Geneva regarding parameters for the future treaty. I think that would be a good result of the meeting, which would complement the work that will already have been done on coordination of the treaty.

Gorbachev: From the very start I see weak spots in your proposals. First of all, you did not even mention the problem of space. But if we leave this issue outside the boat, then moving ahead on strategic offensive weapons will not make any sense. We have to consider them as interrelated. Why does the American delegation in Geneva avoid discussing the space issues, especially discussing the latest Soviet proposals?

Overall, I have an impression that with your three considerations, it is as if you are throwing away the idea of developing key positions on strategic offensive weapons and space. Instead, you propose to limit ourselves to some foggy formulas, talk about the need to clarify positions, etc. Of course, resolution of the verification problem, clarification of positions, removal of brackets—all this is necessary. However, our goal should be the preparation of key positions, which we could consider and sign, so that by the time of the President's visit to Moscow, we would have an agreement on the entire set of these issues.

Your approach strikes me as undefined and foggy. In essence, it rejects everything that we said for the purpose of clarifying [our positions] and signaling flexibility on concrete problems.

I would like to repeat: we propose that our delegations in Geneva concentrate on developing key positions for their adoption during the visit. Then it would make sense. Otherwise, everything is moving beyond the term of the present administration. And that would be too bad. Because we wanted to resolve [these issues] precisely with the present administration. And this is possible. A lot has been already done. And we, as we see it, are capable of concluding a good treaty with the current administration. Precisely a good treaty: neither one of us needs a bad one.

Shultz: I would not object to defining coordinated positions. I do not want to offer you anything foggy, not at all. I want to look ahead. Some things are already agreed upon, mainly as a result of the agreements achieved by you and the President in Reykjavik. The question is—what should be done in order to prepare these key positions, these instructions for our negotiators. With all respect for our representatives in Geneva, the main, key positions should be adopted by you and the President. Our representatives in Geneva do not have political mandate for that. But they can prepare the grounds, and we can work to prepare the grounds for your decisions. That is why I emphasize the need for more precision, for working on the issues of verification, especially regarding the mobile missiles.

Gorbachev: Let's still prepare a draft of key positions before we, as you propose, start discussing the issues, so to say, in a scattered way.

Shultz: Of course, the more we could move ahead before the summit, the better. The main decision will have to be taken by you and the President. We, as well as you, want the achieved breakthrough to be be written in the treaty, to receive a practical implementation. It would be very good for you and for us, and would be a present to the entire world.

Gorbachev: Yes, Reykjavik already has a place in history. But a second Reykjavik will not happen. We should not meet with the President and engage in improvisation. I think it is very good that we stood for Reykjavik. There were many people who wanted to bury it. But if everything is limited to a second Reykjavik, it might lead to big political losses both for you and for us. And to the contrary, if we find right political decisions, it would bring both of us great political benefits. You need to decide what you want.

I have an impression that you still cannot decide what it is you want. Maybe it is Ambassador Matlock who informs you in such a manner that you still cannot figure it out? Do you want the Soviet Union to develop successfully, or you don't want that? [Do you want] the Soviet Union to develop in the direction of greater democracy or in the opposite [direction]? [Do you want] us to have stagnation or to move forward?

Shultz: It is your business. It is all up to you to decide, but I can give you my opinion: what is happening in your country is very interesting, and I follow all these changes very closely.

[Source: Archive of the Gorbachev Foundation, Moscow,
Published in *Mirovaya Ekonomika i Mezhdunarodnye Otnosheniya*, nos. 10, pp. 69-81 and 11, pp. 73-84, 1993
Translated by Svetlana Savranskaya for the National Security Archive]

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9TH AUGUST, 1940.

WAR CABINET.

BREVITY.

Memorandum by the Prime Minister.

To do our work, we all have to read a mass of papers. Nearly all of them are far too long. This wastes time, while energy has to be spent in looking for the essential points.

I ask my colleagues and their staffs to see to it that their Reports are shorter.

(i) The aim should be Reports which set out the main points in a series of short, crisp paragraphs.

(ii) If a Report relies on detailed analysis of some complicated factors, or on statistics, these should be set out in an Appendix.

(iii) Often the occasion is best met by submitting not a full-dress Report, but an Aide-memoire consisting of headings only, which can be expanded orally if needed.

(iv) Let us have an end of such phrases as these: "It is also of importance to bear in mind the following considerations......", or "Consideration should be given to the possibility of carrying into effect.....". Most of these woolly phrases are mere padding, which can be left out altogether, or replaced by a single word. Let us not shrink from using the short expressive phrase, even if it is conversational.

Reports drawn up on the lines I propose may at first seem rough as compared with the flat surface of officialese jargon. But the saving in time will be great, while the discipline of setting out the real points concisely will prove an aid to clearer thinking.

W.S.C.

10, Downing Street.

9TH AUGUST, 1940.

Three and half years ago, I enthusiastically joined Yahoo ! The magnitude of the opportunity was only matched by the magnitude of the assets. And an amazing team has been responsible for rebuilding Yahoo!
It has been a profound experience. I am fortunate to have been a part of dramatic change for the Company. And our successes speak for themselves. More users than ever, more engaging than ever and more profitable than ever!
I proudly bleed purple and yellow everyday! And like so many people here, I love this company

But all is not well. Last Thursday's NY Times article was a blessing in the disguise of a painful public flogging. While it lacked accurate details, its conclusions rang true, and thus was a much needed wake up call. But also a call to action. A clear statement with which I, and far too many Yahoo's, agreed. And thankfully a reminder. A reminder that the measure of any person is not in how many times he or she falls down - but rather the spirit and resolve used to get back up. The same is now true of our Company.
It's time for us to get back up.

I believe we must embrace our problems and challenges and that we must take decisive action. We have the opportunity - in fact the invitation - to send a strong, clear and powerful message to our shareholders and Wall Street, to our advertisers and our partners, to our employees (both current and future), and to our users. They are all begging for a signal that we recognize and understand our problems, and that we are charting a course for fundamental change. Our current course and speed simply will not get us there. Short-term band-aids will not get us there.

It's time for us to get back up and seize this invitation.

I imagine there's much discussion amongst the Company's senior most leadership around the challenges we face. At the risk of being redundant, I wanted to share my take on our current situation and offer a recommended path forward, an attempt to be part of the solution rather than part of the problem.

Recognizing Our Problems

We lack a focused, cohesive vision for our company. We want to do everything and be everything -- to everyone. We've known this for years, talk about it incessantly, but do nothing to fundamentally address it. We are scared to be left out. We are reactive instead of charting an unwavering course. We are separated into silos that far too frequently don't talk to each other. And when we do talk, it

isn't to collaborate on a clearly focused strategy, but rather to argue and fight about ownership, strategies and tactics.
Our inclination and proclivity to repeatedly hire leaders from outside the company results in disparate visions of what winning looks like -- rather than a leadership team rallying around a single cohesive strategy.
I've heard our strategy described as spreading peanut butter across the myriad opportunities that continue to evolve in the online world. The result: a thin layer of investment spread across everything we do and thus we focus on nothing in particular.
I hate peanut butter. We all should.

We lack clarity of ownership and accountability. The most painful manifestation of this is the massive redundancy that exists throughout the organization. We now operate in an organizational structure -- admittedly created with the best of intentions -- that has become overly bureaucratic. For far too many employees, there is another person with dramatically similar and overlapping responsibilities. This slows us down and burdens the company with unnecessary costs.
Equally problematic, at what point in the organization does someone really OWN the success of their product or service or feature? Product, marketing, engineering, corporate strategy, financial operations... there are so many people in charge (or believe that they are in charge) that it's not clear if anyone is in charge. This forces decisions to be pushed up - rather than down. It forces decisions by committee or consensus and discourages the innovators from breaking the mold... thinking outside the box.
There's a reason why a centerfielder and a left fielder have clear areas of ownership. Pursuing the same ball repeatedly results in either collisions or dropped balls. Knowing that someone else is pursuing the ball and hoping to avoid that collision - we have become timid in our pursuit. Again, the ball drops.

We lack decisiveness. Combine a lack of focus with unclear ownership, and the result is that decisions are either not made or are made when it is already too late. Without a clear and focused vision, and without complete clarity of ownership, we lack a macro perspective to guide our decisions and visibility into who should make those decisions. We are repeatedly stymied by challenging and hairy decisions. We are held hostage by our analysis paralysis.
We end up with competing (or redundant) initiatives and synergistic opportunities living in the different silos of our company.

- YME vs. Musicmatch
- Flickr vs. Photos
- YMG video vs. Search video
- Deli.cio.us vs. myweb
- Messenger and plug-ins vs. Sidebar and widgets
- Social media vs. 360 and Groups

- Front page vs. YMG
- Global strategy from BU'vs. Global strategy from Int'l

We have lost our passion to win. Far too many employees are "phoning" it in, lacking the passion and commitment to be a part of the solution. We sit idly by while -- at all levels -- employees are enabled to "hang around". Where is the accountability? Moreover, our compensation systems don't align to our overall success. Weak performers that have been around for years are rewarded. And many of our top performers aren't adequately recognized for their efforts.

As a result, the employees that we really need to stay (leaders, risk-takers, innovators, passionate) become discouraged and leave. Unfortunately many who opt to stay are not the ones who will lead us through the dramatic change that is needed.

Solving our Problems

We have awesome assets. Nearly every media and communications company is painfully jealous of our position. We have the largest audience, they are highly engaged and our brand is synonymous with the Internet.

If we get back up, embrace dramatic change, we will win.

I don't pretend there is only one path forward available to us. However, at a minimum, I want to be part of the solution and thus have outlined a plan here that I believe can work. It is my strong belief that we need to act very quickly or risk going further down a slippery slope, The plan here is not perfect; it is, however, FAR better than no action at all.

There are three pillars to my plan:

1. Focus the vision.
2. Restore accountability and clarity of ownership.
3. Execute a radical reorganization.

1. Focus the vision

a) We need to boldly and definitively declare what we are and what we are not.

b) We need to exit (sell?) non core businesses and eliminate duplicative projects and businesses.

My belief is that the smoothly spread peanut butter needs to turn into a deliberately sculpted strategy -- that is narrowly focused.

We can't simply ask each BU to figure out what they should stop doing. The result will continue to be a non-cohesive strategy. The direction needs to come decisively from the top. We need to place our bets and not second guess. If we believe Media will maximize our ROI -- then let's not be bashful about reducing our investment in other areas. We need to make the tough decisions, articulate them and stick with them -- acknowledging that some people (users / partners / employees) will not like it. Change is hard.

2. Restore accountability and clarity of ownership
a) Existing business owners must be held accountable for where we find ourselves today -- heads must roll,
b) We must thoughtfully create senior roles that have holistic accountability for a particular line of business (a variant of a GM structure that will work with Yahoo!'s new focus)
c) We must redesign our performance and incentive systems.
I believe there are too many BU leaders who have gotten away with unacceptable results and worse -- unacceptable leadership. Too often they (we!) are the worst offenders of the problems outlined here. We must signal to both the employees and to our shareholders that we will hold these leaders (ourselves) accountable and implement change.
By building around a strong and unequivocal GM structure, we will not only empower those leaders, we will eliminate significant overhead throughout our multi-headed matrix. It must be very clear to everyone in the organization who is empowered to make a decision and ownership must be transparent. With that empowerment comes increased accountability -- leaders make decisions, the rest of the company supports those decisions, and the leaders ultimately live/die by the results of those decisions.
My view is that far too often our compensation and rewards are just spreading more peanut butter. We need to be much more aggressive about performance based compensation. This will only help accelerate our ability to weed out our lowest performers and better reward our hungry, motivated and productive employees.

3. Execute a radical reorganization
a) The current business unit structure must go away.
b) We must dramatically decentralize and eliminate as much of the matrix as possible.
c) We must reduce our headcount by 15-20%.
I emphatically believe we simply must eliminate the redundancies we have created and the first step in doing this is by restructuring our organization. We can be more efficient with fewer people and we can get more done, more quickly. We need to return more decision making to a new set of business units and their leadership. But we can't achieve this with baby step changes, We need to fundamentally rethink how we organize to win.
Independent of specific proposals of what this reorganization should look like, two key principles must be represented:

Blow up the matrix. Empower a new generation and model of General Managers to be true general managers. Product, marketing, user experience & design, engineering, business development & operations all report into a small number of focused General Managers. Leave no doubt as to where accountability lies.

Kill the redundancies. Align a set of new BU's so that they are not competing against each other. Search focuses on search. Social media aligns with community and communications. No competing owners for Video, Photos, etc. And Front Page becomes Switzerland. This will be a delicate exercise -- decentralization can create inefficiencies, but I believe we can find the right balance.

I love Yahoo! I'm proud to admit that I bleed purple and yellow. I'm proud to admit that I shaved a Y in the back of my head.

My motivation for this memo is the adamant belief that, as before, we have a tremendous opportunity ahead. I don't pretend that I have the only available answers, but we need to get the discussion going; change is needed and it is needed soon. We can be a stronger and faster company - a company with a clearer vision and clearer ownership and clearer accountability.
We may have fallen down, but the race is a marathon and not a sprint. I don't pretend that this will be easy. It will take courage, conviction, insight and tremendous commitment. I very much look forward to the challenge.

So let's get back up.
Catch the balls.
And stop eating peanut butter.

SAM HINKIE
3601 SOUTH BROAD STREET
PHILADELPHIA, PENNSYLVANIA 19148
[redacted]

April 6, 2016

To the equity partners of Philadelphia 76ers, L.P.:

I hope this letter finds you well. I have been serving the Sixers at your pleasure for the past 34 months. Atul Gawande, a Surgeon at Brigham and Women's Hospital in Boston, remains (from afar) one of my favorite reads. He laughs that reading scientific studies has long been a guilty pleasure. Reading investor letters has long been one of mine.

What I hope to accomplish here is to give you insight into what has transpired behind the scenes in ways you might not have otherwise heard about. Many of you attended our most recent board meeting in New York, where many of these topics were addressed. But for all twelve of you, I hope that this provides a deeper look into what you have at your organization. Accordingly, you should anticipate some mild cheerleading (of others) sprinkled with a healthy dose of self-flagellation about things I've done wrong.

There has been much criticism of our approach. There will be more. A competitive league like the NBA necessitates a zig while our competitors comfortably zag. We often chose not to defend ourselves against much of the criticism, largely in an effort to stay true to the ideal of having the longest view in the room. To attempt to convince others that our actions are just will serve to paint us in a different light among *some* of our competitors as progressives worth emulating, versus adversaries worthy of their disdain. Call me old-fashioned, but sometimes the optimal place for your light is hiding *directly* under a bushel.

Lastly, this letter will only speak to the part of the business that I'm today's steward of: the basketball team and its attendant operations. With Scott O'Neil running our business operations, you are in good hands. I can assure you that when your team is eventually able to compete deep into May, Scott will ably and efficiently separate the good people of the Delaware Valley from their wallets on your behalf. Worry not.

A league with 30 intense competitors requires a culture of finding new, better ways to solve repeating problems. In the short term, investing in that sort of innovation often doesn't look like much progress, if any. Abraham Lincoln said "give me six hours to chop down a tree and I will spend the first four sharpening the axe."

In May of 1969, a 38-year-old Warren Buffett sat down at a typewriter to inform his investors that he was closing his fund (then Buffett Partnership). His reason: market conditions were such that he no longer had the requisite confidence that he could make good decisions on behalf of the investors and deliver on his commitments to them. So he would stop investing on their behalf.

For me, that's today. Given all the changes to our organization, I no longer have the confidence that I can make good decisions on behalf of investors in the Sixers—you. So I should step down. And I have.

In one sense, it pains me that it has come to this and that I would go at the end of a particularly down year in the standings, one that has been painful for all of us. But the fact is—and a young Buffett said it much better than I ever could—"I am not attuned to this environment, and I don't want to spoil a decent record by trying to play a game I don't understand just so I can go out a hero."

Yup.

Thinking about thinking

I admire Seth Klarman a great deal. I am consistently impressed by his conviction and humility, a rare combination. About their approach at Baupost, he says, "it isn't the only way of thinking, but it's how we approach it." Below is some insight into a few things we value and how we've approached decision making at the Sixers.

First, this list is anything but exhaustive, and hardly mine alone. Whenever possible, I think cross-pollinating ideas from other contexts is far, far better than attempting to solve our problems in basketball as if no one has ever faced anything similar. Accordingly, this approach comes from a frequent search into behavioral economics, cognitive science, and a lot of observation and trial and error over my 11 years in the NBA. And mistakes. Lots and lots of mistakes.

To begin, let's stand on the shoulders of Charlie Munger, a giant to me. He is a man that's been thinking about thinking longer than I've been alive. Let's start with him and his approach. His two-part technique is:

1. First, what are the factors that really govern the interests involved, rationally considered?
2. Second, what are the subconscious influences where the brain at a subconscious level is automatically doing these things—which by and large are useful, but which often malfunctions?

To do this requires you to divorce process from outcome. You can be right for the wrong reasons. In our business, you're often lionized for it. You can be wrong for the right reasons. This may well prove to be Joel Embiid. There is signal everywhere that Joel is unique, from the practice gyms in Lawrence, Kansas to Bala Cynwyd, Pennsylvania to Doha, Qatar where he does something awe inspiring far too regularly. We remain hopeful (and optimistic) about his long-term playing career, but we don't yet know exactly how it will turn out. The decision to draft Joel third, though, still looks to me to be the correct one in hindsight given the underlying reasoning. But to call something that could be wrong ("failed draft pick") right ("good decision") makes all of our heads hurt, mine included.

So we have to look deeper at process. Here's a go at it:

(I would be dismayed if you don't see pockets of this kind of thinking throughout the organization. In fact, I will feel like I've let you down.)

The importance of intellectual humility

Lifelong learning is where it's at. To walk down that path requires a deep-seated humility about a) what's knowable, and b) what each of us know. We hire for this aggressively. We celebrate this internally. And we've been known to punish when we find it woefully lacking.

We talk a great deal about being curious, not critical. About asking the question until you understand something truly. About not being afraid to ask the obvious question that everyone else seems to know the answer to. And about the willingness to say three simple words, "I don't know."

Tesla's Elon Musk describes his everyday stance as, "You should take the approach that you're wrong. Your goal is to be less wrong." The physicist James Clerk Maxwell described it as a "thoroughly conscious ignorance—the prelude to every real advance in science." Bill James of the Boston Red Sox (and, I might add, a Kansas basketball expert) added a little flair when asked whether the learnings available via examining evidence were exhausted: "we've only taken a bucket of knowledge from a sea of ignorance."

A way to prop up this kind of humility is to keep score. Use a decision journal. Write in your own words what you think will happen and why before a decision. Refer back to it later. See if you were right, and for the right reasons (think Bill Belichick's famous 4th down decision against Indianapolis in 2009 which summarizes to: good decision, didn't work). Reading your own past reasoning in your own words in your own handwriting time after time causes the tides of humility to gather at your feet. I'm often in waist-deep water here.

The other reason to keep track yourself is you're often the only one to see the most insidious type of errors, the ones the narrative generating parts of our lizard brains storytell their way around—errors of omission. You don't have a wobbly understanding of just the things you got wrong, but the things you got right but not right *enough*. Listen to Charlie Munger talk about how he and Berkshire Hathaway should be measured not by their success, but by how much more successful they would have been if they bought more of something: "We should have bought more Coke."

* * * * * * * * * * * *

The necessity of innovation

Investing in disruptive innovation doesn't ferment misunderstanding, it *necessitates* it. Jeff Bezos says it this way: "There are a few prerequisites to inventing…You have to be willing to fail. You have to be willing to think long-term. You have to be willing to be misunderstood for long periods of time."

A yearning for innovation requires real exploration. It requires a persistent search to try (and fail) to move your understanding forward with a new tool, a new technique, a new insight. Sadly, the first innovation often isn't even all that helpful, but may well provide a path to ones that are. This is an idea that Steven Johnson of *Where Good Ideas Come From* popularized called the "adjacent possible." Where finding your way through a labyrinth of ignorance requires you to first open a door into a room of understanding, one that by its very existence has new doors to new rooms with deeper insights lurking behind them.

In most endeavors, it's fine to be content to woodshed until you get something near perfect. You want that to be you. Grit matters. But it won't be long until some innovation makes all that effort newly obsolete. You want that to be you, too.

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The longest view in the room

It is critical to be cycle aware in a talent-driven league. In a situation like yours at the Sixers, where a variety of circumstances left you near a trough in the cycle (and falling), amplifying this cycle became crucial. Today's outcomes for every team are heavily impacted by decisions past (who to draft, sign, trade, hire, etc.).

Jeff Bezos says that if Amazon has a good quarter it's because of work they did 3, 4, 5 years ago—not because they did a good job that quarter. Today's league-leading Golden State Warriors acquired Draymond Green, Andrew Bogut, and Klay Thompson almost 4 years ago, nearly 4 years ago exactly, and almost 5 years ago. In this league, the long view picks at the lock of mediocrity.

While some organizations (like ours) have this as part of their ethos, for others it *is* the ethos. Check out the 10,000 Year Clock. It is no mere thought experiment, but an actual clock being designed to be placed inside a mountain in West Texas, wound, and left to tick and chime for ten thousand years. Why? Because to design something that lasts that long makes us all consider what the world will look like between now and then. In return, we might be inspired to do something about it.

More practically, to take the long view has an unintuitive advantage built in—fewer competitors. Here's Warren Buffett in the late 80s on this topic: "In any sort of a contest—financial, mental, or physical—it's an enormous advantage to have opponents who have been taught that it's useless to even try." Ask who wants to trade for an in-his-prime Kevin Garnett and 30 hands will go up. Ask who planned for it three or four years in advance and Danny Ainge is nearly alone. Same for Daryl Morey in Houston trading for James Harden. San Antonio's Peter Holt said after signing LaMarcus Aldridge this summer, "R.C. [Buford] came to us with this plan three years ago, four years ago—seriously. And we've worked at it ever since."

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A contrarian mindset

This one is tricky, and getting more so in a league as healthy and popular as the NBA that is covered by beat writers, columnists, bloggers, commentators, and fans minute-to-minute. If you want to have real success you have to *very often* be willing to do something different from the herd.

A few examples might help. Step away from basketball and imagine for a moment this is investment management, and your job is to take your client's money and make it grow. It's January 1, 2015 and the S&P 500 is $171.60, exactly the same price it has been since January 1, 1985. No fluctuation up or down. Flat every single day. And your job for every day of the past 30 years is to make money for your clients by investing. What would you do?

In the NBA, that's wins. The same 82 games are up for grabs every year for every team. Just like in 1985 (or before). To get more wins, you're going to have to take them from someone else. Wins are a zero-growth industry (how many of you regularly choose to invest in those?), and the only way up is to steal share from your competitors. You will have to do something different. You will have to be contrarian.

Howard Marks describes this as a necessary condition of great performance: you have to be non-consensus and right. Both. That means you have to find some way to have a differentiated viewpoint from the masses. And it needs to be right. Anything less won't work.

But this is difficult, emotionally and intellectually. Seth Klarman talks about the comfort of consensus. It's much more comfortable to have people generally agreeing with you. By definition, those opportunities in a constrained environment winnow away with each person that agrees with you, though. It reminds me of when we first moved to Palo Alto. Within about a week of living there a voice kept telling me, "This is great. Great weather, 30 minutes to the ocean, 3 hours to ski, a vibrant city 30 miles away, and one of the world's best research universities within walking distance. People should really move here." Then

I looked at real estate prices. I was right, yes, but this view was decidedly *not* a non-consensus view. My viewpoint as a Silicon Valley real estate dilettante, which took a whole week to form, had been priced in. Shocker.

To develop truly contrarian views will require a never-ending thirst for better, more diverse inputs. What player do you think is most undervalued? Get him for your team. What basketball axiom is most likely to be untrue? Take it on and do the opposite. What is the biggest, least valuable time sink for the organization? Stop doing it. Otherwise, it's a big game of pitty pat, and you're stuck just hoping for good things to happen, rather than developing a strategy for how to make them happen.

There has to be a willingness to tolerate counterarguments, hopefully in such a way that you can truly understand and summarize the other side's arguments at least as well as they can. And then, after all that, still have the conviction to separate yourself from the herd.

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A tolerance of uncertainty

This one can be really difficult, especially when the stakes are high. But it's critical to making rational decisions over the long term. We are all so tempted to simplify when something is hard to think about, simply to get it out of our mind by treating it as impossible.

This goes from academic sounding to <u>life altering</u> in basketball team building, though. Looking at a player with an estimated 10% or 20% chance of being a star over the next three or four years can't be written to zero—*that's about as high as those odds ever get*. That's surely a very, very high number for any player that is ever available to you to be added to your team. Once you accept that, it becomes clear that shrinking the confidence interval around that estimate (and the estimates of the downside risk at the other end of the spectrum) becomes pretty darn important.

But our well worn thinking patterns often let us down here. Phil Tetlock, from just down the street at Penn, addresses this well in his most recent remarkable book *Superforecasting* where he quotes the great Amos Tversky saying, "In dealing with probabilities…most people only have three settings: "gonna happen," "not gonna happen," and "maybe"." Jeff Van Gundy sums it up succinctly on our telecasts, "it's a make or miss league." He's right.

In some decisions, the uncertainties are savage. You have to find a way to get comfortable with that range of outcomes. If you can't, you're forced to live with many fewer options to choose amongst which leads over the long term to lesser and lesser outcomes.

The illusion of control is an opiate, though. Nonetheless, it is annoyingly necessary to get comfortable with many grades of maybe. Sixers fans come up to me to say hello and many of them say the same thing (almost instinctively) as we part, "Good luck." My standard reply: "Thanks. We'll need it."

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Be long science

Science is about predictions. Understanding the world until you can make a prediction about what will happen next. If you're not sure, test it. Measure it. Do it again. See if it repeats.

"So if we want to think like a scientist more often in life, those are the three key objectives—to be humbler about what we know, more confident about what's possible, and less afraid of things that don't matter." That's from Tim Urban, who will soon be recognized as one of tomorrow's polymaths (like many of you, he lives in New York—I'd recommend meeting him for coffee sometime).

For the Sixers, this has meant efforts like tracking every shot in every gym where we shoot, making predictions in writing about what we think will happen with a player or a team, and generally asking more questions about the game than some are comfortable to have said aloud.

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A healthy respect for tradition

While contrarian views are absolutely necessary to truly deliver, conventional wisdom is still wise. It is generally accepted as the conventional view because it is considered the best we have. Get back on defense. Share the ball. Box out. Run the lanes. Contest a shot. These things are real and have been measured, precisely or not, by thousands of men over decades of trial and error. Hank Iba. Dean Smith. Red Auerbach. Gregg Popovich. The single best place to start is often wherever they left off.

There are plenty of caricatures of our approach on your behalf, the most common of which is that folks here don't even watch the games. That instead there is some mystical way by which we make decisions that doesn't have anything to do with building a basketball team. That's simply untrue.

Maybe someday the information teams have at their disposal won't require scouring the globe watching talented players and teams. That day has not arrived, and my Marriott Rewards points prove it from all the Courtyards I sleep in from November to March. There is so much about projecting players that we still capture best by seeing it in person and sharing (and debating) those observations with our colleagues. What kind of teammate is he? How does he play under pressure? How broken is his shot? Can he fight over a screen? Does he respond to coaching? How hard will he work to improve? And maybe the key one: will he sacrifice—his minutes, his touches, his shots, his energy, his body—for the ultimate team game that rewards sacrifice? That information, as imperfect and subjective as it may be, comes to light most readily in gyms and by watching an absolute torrent of video.

Some tradition awaits us everyday at the office. I inherited Marlene Barnes as my executive assistant, a widowed lifelong Philadelphian that joined the Sixers in the fall of 1977. I was born in the winter of 1977. Marlene has worked for 11 different GMs and 5 head coaches at the Sixers. The names evoke many memories for you lifelong Sixers fans and students of history like me: Pat Williams, John Nash, Gene Shue, Jim Lynam, John Lucas, Brad Greenberg, Larry Brown, Billy King, Ed Stefanski, Rod Thorn. With us, she was immediately thrown into a new, more entrepreneurial work environment with a boss full of quirks different than any she had ever encountered. She adapted wonderfully, and now is a regular Slack wizard along with much of our staff, has seamlessly plugged into one productivity hack after another, and has ordered more books from Amazon than she ever thought possible. Her presence served as an everyday reminder to me of the impermanence of my leadership. I told her within a few weeks of working together that when I see her in the mornings I'm reminded that I am a steward—*today's* steward—of her Sixers.

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A reverence for disruption

So often a new management regime looks at an organization and decides that the primary goal is to professionalize the operation. For you, I hope that doesn't happen next. As I described to you in our first ever board meeting, we were fundamentally aiming for something different—disruption. We should concentrate our efforts in a few key areas in ways others had proven unwilling. We should attempt to gain a competitive advantage that had a chance to be lasting, hopefully one unforeseen enough by our competition to leapfrog them from a seemingly disadvantaged position. A goal that lofty is anything but certain. And it sure doesn't come from those that are content to color within the lines.

This is true everywhere, as the balance in any market or any ecosystem ebbs and flows until something mostly unexpected lurches ahead. We see it in spades—past, present, and future.

- New Zealand's flightless bird the moa (measuring in at 10 ft, 400 lbs.) had *the life* tramping around the South Island for a great long run; then the first Māori explorers washed ashore in canoes, and that was that.
- I still miss Blackberry's keyboard, but the 2007 iPhone debut rendered it nearly obsolete to all but a few of us curmudgeons.
- Watch what's happening with the collaboration between IBM's Watson and M.D. Anderson or Google DeepMind's AlphaGo. It won't be just an ancient board game that's disrupted. It's also anything but a game to Lee Sedol.

Nobel Prize winning physicist Max Planck got right to it: "A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die." That sounds harsh, more harsh than anything I would ever say. But think about it in your context as an equity partner in the Sixers. Every April you will watch 16 of the 30 teams—the last time that exact configuration of players and coaches will ever be together—"die" as their season ends. Within a few weeks, another seven go fishing. By early June, 29 of the 30 opponents are forced to see the light of the competition's greatness as only one raises the Larry O'Brien trophy.

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I can imagine that some of these sound contradictory: contrarian thinking, but respect for tradition, while looking to disrupt. That yin and yang is part of it—keep looking. Questioning.

Investment objectives

Starting position

In May of 2013 when I spoke with several of you—and even when we first met in the summer of 2012—the situation was clear. Your crops had been eaten. A team that clawed its way to a disappointing 34 wins in 2012-13 had a few handfuls of those wins walking out the door (Dorell Wright, Nick Young, Damien Wilkins, Royal Ivey) and a player that drove a bit more who had just undergone a surgery and was expected to be out for the season (Jason Richardson). That left the club with expected wins in the low 20s before replacing anyone. The young players on rookie-scale deals numbered two: Evan Turner & Arnett Moultrie. Two future first round picks were gone as was the recent youth pipeline of Nik Vučević & Moe Harkless. Gulp.

Outsiders agreed. ESPN regularly ranks the forward-looking three years for each team in their Future Power Rankings. They take into account the team's current roster and future potential of those players as about half the rating, then include future draft picks, cap position, coaching, management, etc. The Sixers near-term future ranked 24th in a 30-team league.

In the press conference announcing my arrival at the Sixers, I said:

- Our challenge was not for the faint of heart. *It wasn't*.
- Our challenge was big enough to humble me to think about the enormity of it. *It did.*

We would have to get so very much right.

Goals

The strategy we settled on was straightforward, even if arduous. Replenish the talent pipeline, improve the quality and quantity of players on the roster, shift the style of play towards tomorrow's champions, and become a culture focused on innovation.

You heard me speak of these goals at each of our quarterly board meetings; always the same since June of 2013. Variety is overrated.

This continuity of focus has served to frustrate many. I've found those most frustrated are those that either underestimate the enormity of the challenge or fundamentally want something else.

Specifically, we set out to maximize the odds of acquiring star players using all three available methods of acquiring players (draft, free agency, and trade).

1. Draft: invest in the deepest pool of star players—young players via the NBA Draft.

2. Free Agency: maintain financial flexibility to assume contract liabilities of other teams to acquire picks and prospects and move quickly toward special opportunities in signings/trade.

3. Trade: gather attractive, improving players to (best case) develop to win games for the Sixers, or (worst case) trade for better players or players likely to improve at a faster rate.

We determined to play a faster style that recognizes the importance of speed in tomorrow's NBA and one that quickly integrates young players. We set out to improve our shot selection toward high efficiency basketball. We also wanted to build a defensive identity that—in time—could thwart tomorrow's high-efficiency offenses. Lastly, we needed to build a world-class training center, develop an ever-evolving player development program, and change the organization's culture to one of innovation and a constant search for competitive edge.

These goals were not to fit some preferred style of play, but instead were aiming for where future champions would be crowned. That original document I gave to Josh and David in 2012 said:

> *History's lessons are clear, but tomorrow's championship caliber teams may break from historical trends:*
>
> - *Example: A 3PA-happy champion like Orlando under Stan Van Gundy*
> - *Example: A fast-paced champion like Phoenix under Mike D'Antoni*

Fast forward three years and Golden State made the 3rd most 3s in NBA history to win the Finals against the Cleveland Cavaliers, who made the 8th most 3s in NBA history. Coach Van Gundy's most 3PA-happy team from Orlando proudly sits smack dab between them in 5th place all time (for now). The Warriors did this in part by playing at the fastest pace of any NBA team last season, considerably faster than Coach D'Antoni's fastest Suns team.

Results

The dozen of you know much about our team, our players, and how we're positioned. I won't waste your time by going through each person in detail, as you have had many opportunities to meet our coaches and players, hear about our talented staff, and see their performance dissected and analyzed in our meetings. Instead, I will try to make the best use of your time by sharing some insight into the inner workings behind the scenes and a few details that aren't appropriate for wider consumption.

Players

It is worth noting that over the long term, basketball teambuilding is about one primary thing—the players. Those players the team has on the roster at the time and those they hold the rights to. Plus those that are to follow. All of the operations, from management to coaches to support staff to systems only exist for one reason—the players.

We have had the good fortune of drafting relatively early, giving us access to some especially talented players, including Jahlil Okafor (#3), Joel Embiid (#3), and Nerlens Noel (#6). Many in our office tried to set a line of when Jahlil would see his first double team in this league. Those with the under looked smart by the end of opening night, where he went for 26 points and 7 rebounds.

We also put ourselves into position to draft in the second round, where we found two 22-year-old gems to date, including Jerami Grant (#39) and Richaun Holmes (#37). Outside of the top 60 selections delivered two more players with real NBA futures in 24-year-old T.J. McConnell and 25-year-old Robert Covington.

Robert is a mistake I rubbed my own nose in for over a year. The 2013 Draft was a flurry of activity for us—a handful of trades and selections in both the first and second rounds. We had more action following the draft as we tried to finalize our summer league team and get the myriad trade calls set up with the NBA. I could see this coming a few days before and we informed the media that this kind of approach might lead to an unusually late start for the post-draft press conference. Several of you were still there late that night. At about 1:00 a.m. I went downstairs to address an equally exhausted media on deadline from their editors. When I returned upstairs, the undrafted Robert Covington was gone, having agreed to play for another club's summer league team, eventually making their regular season roster. He torched the D-League that year, haunting me all the while. When he became available 17 months later, we pounced. But I shudder, even now, at that (nearly) missed opportunity.

Even our efforts to support our players serve as a reminder of the enormity of our challenge. Something important to us is to find ways to be supportive to our players' larger extended families and loved ones that take this journey with them. One group, too casually referred to as "the wives club" at many NBA teams, helps support players' families in getting acclimated to the city by handling tickets for loved ones, volunteering in community events, hosting baby showers, and the like. In 2013 my wife and I arrived at the arena one night to host a few from this group. While I was prepared to highlight for the group the team's family room, child care at the arena, etc., it turned out that our attendance at this event totaled two. Two mothers. It was a pointed reminder of just how young our team was.

This story underscores what our players, particularly our best players, are in greatest need of—time. The gap between driving wins today and driving wins tomorrow will be heavily influenced by a bunch of factors, but the biggest one is time. For players like Jahlil, Nerlens, and Jerami, getting much nearer the middle of their new NBA cohort will go a long way toward letting their talents shine through, just as it has their whole basketball lives when they were nearer the middle of those cohorts. Get down the experience curve, the faster the better. They are 20, 21, and 22 years old.

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A larger quiver

We need to identify high potential prospects and find ways to add them to our program. Then we need to work with them on their game in a targeted way to maximize their performance, their impact on the floor, and their value. One way is to draft them and put them on our 15-man roster. We do that.

Another is to draft them and hold their exclusive NBA rights while they play professionally in a league that doesn't start with N and end with A. Now we do that.

These players can develop under our guidance while not counting against our roster, giving us not just 15 opportunities at one time, but several more. When appropriate for our team—but subject to buyout clauses in their professional contracts abroad—we can sign them to our club as one of our 15. This can happen within a season, at season's end, or whenever their contract is available for buyout.

These sets of players are viable players for the Sixers and viable options to trade in the interim. The goal is simple—a larger quiver. This quiver will give us more options immediately and more options over time. Several players have been affiliated with us during the past several years while playing for teams in Australia, Asia, several clubs in Europe, and our minor-league affiliate the Delaware 87ers. As of now, we hold three players on this list, highlighted by the 21-year-old Dario Šarić. Dario is a 6-10 forward with a guard's skills and a big's toughness. Twice voted as FIBA European Young Player of the Year, we were in position to draft him in part because he required something you've had in ample supply: one part courage, two parts patience. He will look great in Sixers blue.

This approach, like many that create value, isn't popular, particularly locally. But it's also nothing new, just the same typeface bolded. It requires deep player evaluations around the globe, is helped by a network of international relationships, and most of all, patience. The venerable San Antonio Spurs don't have three rights-held players playing internationally like we now do, they have thirteen. Most of their names are hard for many fans to pronounce. Ginobili used to be, too.

The NBA began this season with 100 international players from 37 countries on opening night rosters, comprising over 20% of the league. This is no set of wallflowers either, with four of the last thirteen Finals MVPs in this group. I pine for the days of the Long Beach Summer League at the Pyramid—I now spend as much time in China as Los Angeles.

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Draft picks

While the young players on our team and rights-held players internationally continue to show promise, our ability to add to that group by layering in additional high quality talent via the draft, free agency, and trade is at an all-time high.

In the first 26 months on the job we added more than one draft pick (or pick swap) per month to our coffers. That's more than 26 new picks or options to swap picks over and above the two per year the NBA allots each club. That's not any official record, because no one keeps track of such records. But it *is* the most ever. And it's not close. And we kick ourselves for not adding another handful.

Many of us remember exactly where we were when tragedy strikes and we think of what could have been. For me—and this is sad for my own mental well being—that list includes the January day in 2014 when Miami traded Joel Anthony and two second round picks to our formidable competitors the Celtics. I can still picture the child's play table I paced around at Lankenau Medical Center on my cell phone while negotiating with Miami's front office. This was in between feedings for our newborn twins, when my wife and I were still sleeping in the hospital. Danny Ainge finalized that deal (and several other better ones) and received one first-place vote for Executive of the Year that season: mine.

We have used several of those picks to move around in the draft, to facilitate other deals, in trade for players to add to our team, and to select players for our team. Players like Jerami Grant (part of the haul from the Spencer Hawes trade), Nerlens Noel & Dario Saric (via the Jrue Holiday trade and its derivative), Ish Smith (used one of the two picks we acquired in the Eric Maynor trade, plus another), Richaun Holmes (part of the proceeds via the K.J. McDaniels trade), and others. Yet we still retain the rights to more future 2nd round picks at our disposal going forward than 27 other NBA teams.

In the upcoming May draft lottery, we have what will likely be the best ever odds to get the #1 overall pick (nearly 30%), a roughly 50/50 chance at a top-2 pick (the highest ever), and a roughly 50/50 chance at two top-5 picks, which would be the best lottery night haul ever. That same bounce of a ping pong ball (almost a flip of a coin) will determine if we have three first round picks this year (unusual) or four (unprecedented). That's this year. Or this quarter, if you will.

If you were to estimate the value of those firsts and the ones to follow, from this point forward we have essentially two NBA teams' worth of first round pick value plus the third most second round picks in the league.

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Salary cap position

Our salary cap position going forward is easily the NBA's best. The most room, the most flexibility, providing the widest available set of options in free agency or trade of any club. This stockpile can be used all at once or strategically over the ensuing years to acquire players that fit your team, improve in your development program, and help you move up the standings. During this phase of acquiring players and picks to really invest in our future and climb higher than we have in over 30 years, we spent a bit over $135M on payroll across the three seasons, while the NBA median spend was over $200M. That won't last, as over time a climb up the standings will see spend rise precipitously as well.

These advantages over our competitors are material, but well short of deterministic. From here a whole host of solid decisions are necessary to play our hand out of this stacked deck.

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Other

Building a talent pipeline into our program, while important, is of course not the only goal we had. Even with young players and expected roster turnover, we needed to move the club toward a style that was conducive to winning in tomorrow's NBA. We improved our pace from below average to 1st immediately, then settled into about 6th for the next two seasons. We moved our shot selection from consistently bottom two in the league to consistently 2nd in the league. And our defensive principles are increasingly top-notch, showing that we can play above average defense (13th) when we had solid veteran defenders like Luc Mbah a Moute on the roster, but also struggle with some of the NBA's youngest talent defending every night (bottom 5).

Outlook

Your club is on solid footing now, with much hard work yet to be done. As we continued to invest in young players, acquire more draft selections, and maintain cap flexibility the forward-looking markets took notice. Our Future Franchise Rankings (ESPN's) that began at 24th in a 30-team league in May of 2013 climbed to 19th in 2014, 17th in 2015, and most recently via RealGM's rankings in December of 2015, 12th. I think that is imminently reasonable, as is a couple of spots higher.

Lottery night will be nerve-wracking for most and exciting for all. I said to Josh & David last year during the NBA's Draft Lottery that it is rare for the importance of luck in our lives to be laid bare for the whole world to see. Walking out with a top-5 pick in each hand would be exciting, but it's not necessary. The rights to those picks don't extinguish, but instead move forward to a future year, one filled with new possibilities and challenges both.

Regardless of the haul that comes out of a May night in New York, the team is likely to see additional lottery pick talent hit the court next season regardless. Two additional first round picks this year are available to you as well. Plus additional draft picks are set to flow in regularly for many years to come. Plus the league's best cap position. A bevy of young players. A deep and passionate coaching staff. An innovative management team. A beautiful new practice facility set to open before training camp. In a city with wonderful basketball heritage. You could do worse.

The NBA can be a league of desperation, those that are in it and those that can avoid it. So many find themselves caught in the zugzwang, the point in the game where all possible moves make you worse off. Your positioning is now the opposite of that.

A sincere thank you

Thank you for the opportunity you all gave me to lead this storied franchise. My gratification is beyond my power to express. What is unequivocal is that the principal beneficiary of your largesse has been me. Thank you.

Philadelphia has been wonderful to our family. Two of our children were born here. Lincoln said that to meet with the public "renewed in me my perceptions of responsibility and duty." Those words rang hollow until we moved here and I talked with our fans. Everywhere I went, lifelong Sixers fans told me stories about how they wanted the team to be good again—really good.

It's clear now that I won't see the harvest of the seeds we planted. That's OK. Life's like that. Many of my NBA friends cautioned me against the kind of seed sowing that felt appropriate given the circumstances for exactly this reason. But this particular situation made it all the more necessary, though. Part of the reason to reject fear and plow on was *exactly because* fear had been the dominant motivator of the actions of too many for too long.

I will be repotted professionally. That is often uncomfortable; most growth is. But it's also often healthier over the longer sweep of history, too.

In the interim, I'll probably be with my wife and kids for a few weeks. If you need to reach me—now or later—I am available at [redacted] and I suspect someday soon on Twitter via @samhinkie.

I wish you the best of luck. Like other Sixers fans, I will cross my fingers for you on lottery night in New York.

We Don't Sell Saddles Here

Stewart Butterfield Follow 12 min read · Feb 17, 2014

> *The memo below was sent to the team at Tiny Speck, the makers of* ***Slack****, on* July 31st, 2013. *It had been a little under seven months since development began and was two weeks before the launch of Slack's 'Preview Release'. It is presented verbatim, as written (including original pull-quotes), with two exceptions: the removal of an introductory section discussing launch logistics and replacement of a link which pointed to an internal company resource with the equivalent public link.*

Build Something People Want

We know that we have built something which is genuinely useful: almost any team which adopts Slack as their central application for communication would be significantly better off than they were before. That means we have something people want.

However, almost all of them have no idea that they want Slack. How could they? They've never heard of it. And only a vanishingly small number will have imagined it on their own. They think they want something different (if they think they want anything at all). They definitely are not looking for Slack. (But then no-one was looking for Post-it notes or GUIs either.)

Just as much as our job is to build something genuinely useful, something which really does make people's working lives simpler, more pleasant and more productive, our job is also to understand what people think they want and then translate the value of Slack into their terms.

A good part of that is "just marketing," but even the best slogans, ads, landing pages, PR campaigns, etc., will fall down if they are not supported by the experience people have when they hit our site, when they sign up for an account, when they first begin using the product and when they start using it day in, day out.

Therefore, "understanding what people think they want and then translating the value of Slack into their terms" *is something we all work on.* It is the sum of the exercise of all our crafts. We do it with copy accompanying signup forms, with fast-loading pages, with good welcome emails, with comprehensive and accurate search, with purposeful loading screens, and with thoughtfully implemented and well-functioning features of all kinds.

"Marketing from Both Ends"

Much has been written about "product-market fit" in the last few years, probably as a result of the popularity of the lean startup movement (though the idea has been around much longer). The term refers to the degree to which a product *could* be successful, given sufficient promotion, appropriate pricing, adequate customer support and so on (before you find that fit, all the pushing in the world won't get you up the hill).

In this classic post on Marc Andreessen's old blog, he calls getting to product-market fit the "only thing that matters" for startups and offers a way of thinking about the life of the startup that divides it into two distinct phases: before product-market fit and after. Once the product fits the market, a company is able to step on the gas, spending to promote a product that will actually sell. The things you need to do before are very different from the things you need to do after (generally test & iterate vs scale & optimize).

We are right in the middle of that first phase. It seems we are doing well and there are many encouraging signs, but we're definitely still in the first phase and it is very, very hard to tell how far we have to go to cross over into the promised land (the last 10% is 90% of the work, etc.) So, we should be working carefully from *both* the product end and the market end:

- Doing a better and better job of providing what people want (whether they know it or not)
- Communicating the above more and more effectively (so that they know they want it)

In the best case, there is a dialectic at play here: the product itself and the way people use it should suggest new ways of articulating the value — and refinements to how we communicate the value should lead to principles which clarify decision-making around product features and design.

Our position is different than the one many new companies find themselves in: we are not battling it out in a large, well-defined market with clear incumbents (which is why we can't get away with "Other group chat products are poisonous. Slack is toasted."). Despite the fact that there are a handful of direct competitors and a muddled history of superficially similar tools, we are setting out to define a new market. And that means we can't limit ourselves to tweaking the product; we need to tweak the market too.

Sell the innovation, not the product

The best — maybe the only? — real, direct measure of "innovation" is change in human behaviour. In fact, it is useful to take this way of thinking as definitional: innovation *is* the sum of change across the whole system, not a thing which *causes* a change in how people behave. No small innovation ever caused a large shift in how people spend their time and no large one has ever failed to do so.

By that measure, Slack is a real and large innovation. It is not as eye-catching as self-driving cars or implantable chips — it is not basic research-y kind of stuff. But, for organizations that adopt it, there will be a dramatic shift in how time is spent, how communication happens, and how the team's archives are utilized. There will be changes in how team members relate to one another and, hopefully, significant changes in productivity.

We are unlikely to be able to sell "a group chat system" very well: there are just not enough people shopping for group chat system (and, as pointed out elsewhere, our current fax machine works fine).

> That's why what we're selling is organizational transformation.

What we are selling is *not* the software product — the set of all the features, in their specific implementation — because there are just not many buyers for this software product. (People buy "software" to address a need they already know they have or perform some specific task they need to perform, whether that is tracking sales contacts or editing video.)

However, if we are selling "a reduction in the cost of communication" or "zero effort knowledge management" or "making better decisions, faster" or "all your team communication, instantly searchable, available wherever you go" or "75% less email" or some other valuable *result* of adopting Slack, we will find many more buyers.

That's why what we're selling is organizational transformation. The software just happens to be the part we're able to build & ship (and the means for us to get our cut).

We're selling a reduction in information overload, relief from stress, and a new ability to extract the enormous value of hitherto useless corporate archives. We're selling better organizations, better teams. That's a good thing for people to buy and it is a much better thing for us to sell in the long run. We will be successful to the extent that we create better teams.

To see why, consider the hypothetical Acme Saddle Company. They could just sell saddles, and if so, they'd probably be selling on the basis of things like the quality of the leather they use or the fancy adornments their saddles include; they could be selling on the range of styles and sizes available, or on durability, or on price.

Or, they could sell *horseback riding*. Being successful at selling horseback riding means they grow the market for their product while giving the perfect context for talking about their saddles. It lets them position themselves as the leader and affords them different kinds of marketing and promotion opportunities (e.g., sponsoring school programs to promote riding to kids, working on land conservation or trail maps). It lets them think big and potentially be big.

> Because the best possible way to find product-market fit
> is to define your own market.

This isn't a new idea. There are many brands whose marketing activities or positioning has them selling something other than (and usually larger than) their product: Harley Davidson sells motorcycle riding, but it especially sells freedom and independence. Most luxury brands sell something that comes down to "being better than you are" (richer, better looking, more attractive to those you find desirable, etc.)

My favorite recent example is Lululemon: when they started, there was not a large market for yoga-specific athletic wear and accessories. They sold yoga like crazy: helping people find yoga studios near their homes, hosting free classes, sponsorships and scholarships, local ambassadors and training, etc. And as a result, they sold just under $1.4 billion worth of yoga-specific athletic wear and accessories in their most recent fiscal year.

But going back to the Acme Saddle Company, the better analogy to what we are doing now is to imagine them selling horseback riding … about 4,000 years ago. It is almost inevitable that centralized internal communication systems will gradually replace email for most organizations over the next 10-20 years and we should do what we can to accelerate the trend and "own it". We are at the beginning of a transition. We have an opportunity to both define the category and push hard for the whole market's growth. We'd be crazy not to take it, because the best possible way to find product-market fit is to define your own market.

Who Do We Want Our Customers to Become?

A few months ago, I read a fairly mediocre ebook called "Who Do You Want Your Customers to Become?" (available here). It was mediocre because it was nearly 70 pages when it could have been 20, not because the ideas were bad: in fact, the core ideas of the piece are fascinating and, I think, very useful to us as we think about the next year or so of Slack.

A central thesis is that *all products are asking things of their customers*: to do things in a certain way, to think of themselves in a certain way — and usually that means changing what one does or how one does it; it often means changing how one thinks of oneself.

We are asking a lot from our customers. We are asking them to spend hours a day in a new and unfamiliar application, to give up on years or even decades of experience using email for work communication (and abandon all kinds of ad hoc workflows that have developed around their use of email). We are asking them to switch a model of communication which defaults to public; it is an almost impossibly large ask. Almost.

To get people to say yes to a request that large, we need to (1) offer them a reward big enough to justify their effort and (2) do an exceptional, near-perfect job of execution.

The best way to imagine the reward is thinking about who we want our customers to become:

- We want them to become relaxed, productive workers who have the confidence that comes from knowing that any bit of information which might be valuable to them is only a search away.
- We want them to become masters of their own information and not slaves*, overwhelmed by the neverending flow.
- We want them to feel less frustrated by a lack of visibility into what is going on with their team.
- We want them to become people who communicate purposively, knowing that each question they ask is actually building value for the whole team.

This is what we have to be able to offer them, and it is the aim and purpose of all the work we are doing. We need to make them understand what's at the end of the rainbow if they go with Slack, and then we have to work our asses off in order to ensure they get there.

How Do We Do It?

We do it really, really fucking good.

The reason for saying we need to do 'an exceptional, near-perfect job of execution' is this: When you want something really bad, you will put up with a lot of flaws. But if you do not yet know you want something, your tolerance will be much lower. That's why it is especially important for us to build a beautiful, elegant and considerate piece of software. Every bit of grace, refinement, and thoughtfulness on our part will pull people along. Every petty irritation will stop them and give the impression that it is not worth it.

That means we have to find all those petty irritations, and quash them. We need to look at our own work from the perspective of a new potential customer and *actually see what's there.* Does it make sense? Can you predict what's going to happen when you click that button or open that menu? Is there sufficient feedback to know if the click or tap worked? Is it fast enough? If I read the email on my phone and click the link, is it broken?

> None of the work we are doing to develop the product is an end in itself.

It is always harder to do this with one's own product: we skip over the bad parts knowing that we plan to fix it later. We already know the model we're using and the terms we use to describe it. It is very difficult to approach Slack with beginner's mind. But we have to, all of us, and we have to do it every day, over and over and polish every rough edge off until this product is as smooth as lacquered mahogany.

Each of you knows "really good". Each of you is able to see when things are not done well. Certainly we all complain enough about other people's software, and we all know how important first impressions are in our own judgements. That is exactly how others will evaluate us.

Putting yourself in the mind of someone who is coming to Slack for the first time — especially a real someone, who is being made to try this thing by their boss, who is already a bit hangry because they didn't have time for breakfast, and who is anxious about finishing off a project before they take off for the long weekend — putting yourself in their mind means looking at Slack the way you look at some random piece of software in which you have no investment and no special interest. Look at it hard, and find the things that do not work. Be harsh, in the interest of being excellent.

Why?

There's no point doing this to be small. We should go big, if only because there are a lot of people in the world who deserve Slack. Going big also means that it will have to be really, really good. But that's convenient, since there's also no point doing it if it is not really, really good. Life is too short to do mediocre work and it is definitely too short to build shitty things.

To do this well, we need to take a holistic approach and not just think about a long list of individual tasks we are supposed to get through in a given week. We get 0 points for just getting a feature out the door if it is not actually contributing to making the experience better for users, or helping them to understand Slack, or helping us understand them. None of the work we are doing to develop the product is an end in itself; it all must be squarely aimed at the larger purpose.

Consider the teams you see in action at great restaurants, and the totality of their effort: the room, the vibe, the timing, the presentation, the attention, the anticipation of your needs (and, of course, the food itself); nothing can be off. There is a great nobility in being of service to others, and well-run restaurants (or hotels, or software companies) serve with a quality that is measured by its attention to detail. This is a perfect model for us to emulate.

Ensuring that the pieces all come together is not someone else's job. It is your job, no matter what your title is and no matter what role you play. The pursuit of that purpose should permeate everything we do.

But Slack is a bit more complicated than a restaurant (at least in some ways). Since it is new and less familiar, we are less able to fall back on well-established best practices. That means we need to listen, watch & analyze carefully. We'll need to build tools to capture users' behaviour and reactions. And then we'll need to take all that information and our best instincts and be continuously improving.

We are an exceptional software development team. But, we now also need be an excellent customer development team. That's why, in the first section of this doc, I said "build a customer base" rather than "gain market share": the nature of the task is different, and we will work together to understand, anticipate and better serve the people who trust us with their teams' communications, one customer at a time.

The answer to "Why?" is "because why the fuck else would you even want to be alive but to do things as well as you can?". Now: let's do this.

> *Slack's preview release began two weeks after this document was sent, on August 14th, 2013. A little under six months later, on February 12th, 2014, it was*

From: Howard Schultz
Sent: Wednesday, February 14, 2007 10:39 AM Pacific Standard Time
To: Jim Donald
Cc: Anne Saunders; Dave Pace; Dorothy Kim; Gerry Lopez; Jim Alling; Ken Lombard; Martin Coles; Michael Casey; Michelle Gass; Paula Boggs; Sandra Taylor
Subject: The Commoditization of the Starbucks Experience

As you prepare for the FY 08 strategic planning process, I want to share some of my thoughts with you.
Over the past ten years, in order to achieve the growth, development, and scale necessary to go from less than 1,000 stores to 13,000 stores and beyond, we have had to make a series of decisions that, in retrospect, have lead to the watering down of the Starbucks experience, and, what some might call the commoditization of our brand.
Many of these decisions were probably right at the time, and on their own merit would not have created the dilution of the experience; but in this case, the sum is much greater and, unfortunately, much more damaging than the individual pieces. For example, when we went to automatic espresso machines, we solved a major problem in terms of speed of service and efficiency. At the same time, we overlooked the fact that we would remove much of the romance and theatre that was in play with the use of the La Marzocca machines. This specific decision became even more damaging when the height of the machines, which are now in thousands of stores, blocked the visual sight line the customer previously had to watch the drink being made, and for the intimate experience with the barista. This, coupled with the need for fresh roasted coffee in every North America city and every international market, moved us toward the decision and the need for flavor locked packaging. Again, the right decision at the right time, and once again I believe we overlooked the cause and the affect of flavor lock in our stores. We achieved fresh roasted bagged coffee, but at what cost? The loss of aroma—perhaps the most powerful non-verbal signal we had in our stores; the loss of our people scooping fresh coffee from the bins and grinding it fresh in front of the customer, and once again stripping the store of tradition and our heritage? Then we moved to store design. Clearly we have had to streamline store design to gain efficiencies of scale and to make sure we had the ROI on sales to investment ratios that would satisfy the financial side of our business. However, one of the results has been stores that no longer have the soul of the past and reflect a chain of stores vs. the warm feeling of a neighborhood store. Some people even call our stores sterile, cookie cutter, no longer reflecting the passion our partners feel about our coffee. In fact, I am not sure people today even know we are roasting coffee. You certainly can’t get the message from being in our stores. The merchandise, more art than science, is far removed from being the merchant that I

believe we can be and certainly at a minimum should support the foundation of our coffee heritage. Some stores don't have coffee grinders, French presses from Bodum, or even coffee filters.

Now that I have provided you with a list of some of the underlying issues that I believe we need to solve, let me say at the outset that we have all been part of these decisions. I take full responsibility myself, but we desperately need to look into the mirror and realize it's time to get back to the core and make the changes necessary to evoke the heritage, the tradition, and the passion that we all have for the true Starbucks experience. While the current state of affairs for the most part is self induced, that has lead to competitors of all kinds, small and large coffee companies, fast food operators, and mom and pops, to position themselves in a way that creates awareness, trial and loyalty of people who previously have been Starbucks customers. This must be eradicated.

I have said for 20 years that our success is not an entitlement and now it's proving to be a reality. Let's be smarter about how we are spending our time, money and resources. Let's get back to the core. Push for innovation and do the things necessary to once again differentiate Starbucks from all others. We source and buy the highest quality coffee. We have built the most trusted brand in coffee in the world, and we have an enormous responsibility to both the people who have come before us and the 150,000 partners and their families who are relying on our stewardship.

Finally, I would like to acknowledge all that you do for Starbucks. Without your passion and commitment, we would not be where we are today.

On 5/5/14, 8:22 AM, "Sheryl Sandberg" <sheryl@fb.com> wrote:

>Adding Fischer and Dan
>
>I love the basic vision - performance-based ads. Lots of work to do to
>make this happen so we need to prioritize, as Mark points out.
>
>I think figuring out the prioritization, especially on the
>business-facing side is important. We need to give businesses quick
>and easy - but important ways - to think of their Page or FB presences
>(whatever it might be) as their hub for mobile as there will be a huge
>push to be first in doing this and once businesses start investing,
>easier to get them to do more. The good news is that with 25M SMB
>Pages, we are ahead.
>
>One other point is that both our ads system and Google's have the
>property that we have built-in incentives for ads to be relevant and
>perform well. We need those for our ad delivery mechanisms too. I
>believe that is part of what mark is saying below - but worth calling
>out as this is so important.
>
>-----Original Message-----
>From: Mark Zuckerberg
>Sent: Monday, May 05, 2014 1:09 AM
>To: Javier Olivan; Mike Vernal; Sheryl Sandberg; Dan Rose; Mike
>Schroepfer; Tom Stocky; Deborah Liu; Sam Lessin; Andrew Bosworth
>Subject: Thoughts on Messenger business ecosystem
>
>In this note, I'm going to sketch out how I think the Messenger
>business ecosystem will work.
>
>At the highest level, I believe Messenger will be a performance-based
>ads business. That is, I expect businesses to pay us to get people to
>perform concrete actions within Messenger or within their stores.
>
>When I say performance-based ads, I am specifically contrasting to two
>other potential businesses: brand ads and payments.
>
>I do not believe Messenger is a good medium for brands ads because
>people need to choose to open messages, which makes it inferior for
>mass reach of rich content, especially compared with our other products
>like News Feed and Instagram.
>
>I also do not believe our business will be payments directly, because
>charging for payments themselves will not allow us to price
>discriminate and receive a higher percentage of the value delivered like ads do.
>
>That said, I do expect payments and transactions to be critical in this
>ecosystem. A great payment system dramatically reduces friction in all
>transactions and therefore significantly increases the value of ads.

>For example, consider the value of search ads on desktop vs mobile ads today.
>The mobile ads are worth far less because of all the friction to
>transacting: the landing pages are worse and payments are worse.
>
>So even though businesses will bid to pay us for performance actions
>like getting someone to buy something or getting someone into their
>store rather than paying us for the payments directly, building out
>payments and transactions is strategically important despite not being
>our direct business. In fact, I think our ideal strategy is to give
>away payments for free -- or at no profit margin for ourselves -- in
>order to build up the transactional capacity of our network so we can
>ultimately have the best performing ads business.
>
>----------
>
>Like any ads business, the two levers to understand its potential scale
>are how many ads you can show and how well the ads perform.
>
>I'm going to start by outlining some of the touch points for people to
>interact with businesses in Messenger. Further below, I'll outline a
>framework for how many ads we can show at different stages in the
>evolution of this business.
>
>At the most basic level, there are three ways that I expect people will
>interact with business content:
>
>- A business can send you a message just like a person can today.
>Alternatively, you can send the business a message and it can reply.
>
>- We will have a discovery tab within Messenger where, in addition to
>highlighting organic suggestions like people nearby, we can also
>highlight relevant businesses, paid content or suggest apps to install.
>
>- While you're in a thread messaging with a person, we can show content
>inline if it's very relevant to your conversation.
>
>I'll discuss how much inventory will be available in each of these in
>more detail below, but for now I just want to call out that while the
>first and third touch points will eventually make up the vast majority
>of our inventory, they each need to have an extremely high quality bar
>before we start inserting any paid content there. The discovery tab
>will have much less traffic, but it will be very important for building
>this ecosystem by enabling people to engage with businesses organically
>as we build enough scale and quality to fill the first two touch points
>with good content.
>
>You can think about the discovery tab roughly like how we or Google
>thought about our right hand column ads before putting ads in News Feed
>or on top of search respectively. It's lower volume but enough to start
>building quality and building the business.
>
>Next, I'll go through each of those three basic touch points in a bit

>more detail.
>
>----------
>
>The first touch point is message threads with businesses.
>
>This branches into two very different experiences: a business messaging
>you out of the blue, and you messaging a business and it replying to you.
>
>The first experience -- a business messaging you out of the blue -- is
>where I expect most of our business to be over time. However, it's also
>one of the most sensitive experiences that we need to be careful with.
>The whole value proposition of Messenger is that it is a high signal
>channel where every message you receive has an expectation of intimacy
>and urgency. If we start buzzing your pocket with ads daily, then we
>could easily destroy this experience.
>
>There are a couple ways around this over the long term. The first is to
>not send you a push notification for these messages, so you just see
>them in your inbox when you open the app but they don't interrupt you
>otherwise. A "silent message" like this is a new behavior we'd have to
>build since it doesn't exist today. WeChat and Line both support this
>notion today. The second is to make sure the quality is high enough so
>people actually want these pushes. My guess is that we'll eventually do
>both: we'll have silent messages for most paid messages, but for ones
>that are very relevant we will consider doing pushes.
>
>As we phase these in, we[1]ll need to make the product perform such that
>most businesses pay on a per-action rather than per-impression basis.
>The basic math of this is that even in the limit there will be so many
>fewer impressions here than in News Feed ‹ both because total time
>spent is lower in Messenger and because the intimacy of the product
>affords fewer intrusions ‹ that if we only support the same kinds of
>advertiser value propositions we do in News Feed, this will never be as
>big of a business for us as we hope.
>
>Instead, I think we will need to do the hard work to make payments and
>offers work frictionlessly inline. This can create much higher value
>impressions ‹ more similar to search ‹ that take advantage of the
>intimate and interruptive nature of the environment. For example, a
>business will be able to message people with specific offers when
>people are nearby and people will be able to redeem them inline,
>include paying right there.
>
>Even though this is fundamentally structured as an ads auction, a large
>percent of the work will be doing everything necessary to make the
>payment experience seamless so these offers actually convert and
>deliver value for both people and businesses. It will be easy for us to
>underestimate the amount of payments work required here compared to ads
>work since we have historically focused on ads rather than payments,
>but I expect there will be a very deep thread of work to do to make
>this payments experience integrated enough ‹ both into people's

>accounts and businesses' workflows ‹ that this experience really works end to end.
>
>If we can pull this off, then we can enable experiences like you're
>walking down the street and get a notification for a personalized offer
>to a nearby shop based on your identity and history there. You can open
>the notification and tell the cafe or store what you want, pay inline,
>and have it ready for you as soon as you walk in, all while receiving a
>discount and building a profile to have better personalized experiences
>in the future.
>
>Interruptive examples like this may be the long term, but before we get
>there we will likely want to explore silent messages first since
>they1re less disruptive. These can still be a good testing ground for
>inserting relevant nearby content when you1re in the app.
>
>‹
>
>Regardless, even silent messages are disruptive to the high signal and
>intimate feeling of the product today, so I wouldn't even start there.
>Instead, I'd start by building person-initiated threads with businesses
>and over time work up to enabling businesses to message people out of
>the blue.
>
>That brings us to the second experience -- you messaging a business and
>having it reply to you. In the Messenger business ecosystem, a thread
>with a business is the equivalent of a page on Facebook. It will be
>relatively low frequency that a person visits this thread -- just like
>it's relatively low frequency that a person visits a business page
>directly -- but it's a fundamental part of how businesses exist in the
>ecosystem and an organic way that people can interact with them.
>
>The next question is how will the business actually reply to messages?
>
>The naive answer is that the business owner can reply when they get
>around to it. I think we can support this behavior, but this is very
>slow and not a great experience for the person messaging the business.
>
>Instead, I think we should build an automated system that understands
>basic natural language so that business entities can respond
>automatically and instantaneously to people.
>
>This would enable businesses to respond to both informational questions
>like "Are you open now?" as well as actionable questions like "Can you
>make me a tall mocha frappucino?". In the first case, the business,
>could just answer with the information. In the second, ideally this
>would then ask the person to pay inline in the thread and then tell a
>barista to start making the frappucino so it would be ready as soon as
>you walked into the Starbucks.
>
>There are a few reasons this is a very powerful new way to interact
>with businesses, especially local businesses. First, everyone knows
>language but people hate calling businesses, so texting is a natural

>way to interact that doesn't require learning anything new. Second, the
>payment experience can be stored and optimized, which takes a huge
>amount of friction out of these interactions, especially compared with
>web-based interfaces or other apps you'd have to install. Third, most
>businesses you want to interact with will be on Messenger eventually,
>which is vastly preferable to using a large number of different apps.
>
>I expect that when you want to interact with a business, you'll search
>for them on Messenger and then begin a message thread with them. Before
>you send a message, I imagine each business will have some default
>message that starts every thread with them. This default message can
>outline what things the business knows how to do on Messenger, like
>order a frapuccino, buy tickets or so on. This message can also contain
>structured links to different functionality directly, so you can do
>some things without having to type any text at all. We should look at
>what others have done here, like WeChat, for example, has links to
>inline [3]stores[2] that graphically list the business[1]s inventory and let
>you browse and purchase inline.
>
>You'll also be able to type whatever you want, and we'll have to build
>a system that is smart enough at understanding your input and easy
>enough for businesses to configure for themselves that we can take your
>input and map it to what the business knows how to do, or at least come
>up with some other intelligent response.
>
>It will be difficult to build a good natural language system like this
>and it will require real investment, but it should be possible. The
>technological advantage we'll develop doing this will also be a
>competitive barrier for other messaging products like WeChat that try
>to compete with us for either consumer attention or business dollars.
>
>Over time, it will be possible for our systems to deliver more nuanced
>responses. It will also be possible to deliver types of replies that
>don't make sense in traditional search- or web-based interfaces, like
>time-delayed replies or follow-on replies later when more information
>becomes available. You should be able to ask a business a question like
>"tell me when a table becomes available" and in addition to being able
>to reply immediately to confirm it will do this, it should also be able
>to message you at a future point when it has the answer to your question.
>
>It's worth noting that time-delayed responses to person-initiated
>messages could be a great way to ease people into getting push
>notifications when businesses message them. We should probably ease
>people into this use case by building organic use cases like this
>before enabling purely paid messages that send push notifications.
>
>In addition to being able to message businesses back and forth with
>text, we will want the ability to send money and other kinds of
>structured data
>-- like loyalty card data -- as well. These kinds of interactions will
>be necessary to make sure that businesses actually get value from
>interacting with people on Messenger, especially since the branding

>value will be relatively minimal.
>
>Payments as a primitive is simple to explain but will be very
>complicated to fully implement. Within a messages thread, anyone should
>be able to either send money to or request money from anyone else.
>Within the UI, this would take the form of another kind of content you
>could attach to a message, just like a photo, sticker or voice clip.
>
>To make this really work as a social behavior, we'll need to create a
>social norm around people being comfortable sending money through
>messaging. To make this work as a product, we'll need to make it
>frictionless and cheap, which means we'll need credentials on file for
>large percentages of people. Over time, we'll need not only credit
>cards but also bank account information so we can make transfers cheap.
>
>A whole thread of our strategy is going to need to be focused on
>increasing payments usage and helping people add credentials. We'll
>need to support use cases like person-to-person money transfer to help
>establish this norm, even though it won't be a direct revenue driver
>for our business. As part of this, I imagine we're going to need to run
>constant promotions like WeChat has to encourage people to pay and
>transfer money in different ways -- as gifts on new years, paying for
>taxis, investing in mutual funds, etc. This is a very deep thread of
>work that will require a lot of work, but will ultimately be necessary
>for making the ads and interactions that businesses pay for valuable.
>
>In addition to investment of people on our teams and financial
>resources, we'll also need to dedicate real estate within our app to
>this promoting interactions with payments. At a minimum, I expect
>payments will be a permanent item within the message composer in
>message threads, a major part of the real estate on the Settings tab,
>and initially a large number of the promotions and recommended content
>on the discovery tab. We[1]ll also need to do significant work on the
>business side, probably integrating into our own business-facing UIs
>like Page Manager as well as making sure we support businesses' own payment systems.
>
>Another example of structured exchange between people and businesses is
>loyalty programs. We should be able to build the best loyalty programs
>in the world based on our understand of people[1]s identity and locations
>coupled with the business interfaces we[1]ve built. If you can message a
>business to initiate a loyalty card / relationship and then ever time
>you go to that business from then on you get a message updating you on
>your status and available offers, that could be very compelling.
>
>Of course, a lot of the nuance of designing business threads is going
>to come down to important details around how interruptive they can be,
>what they need to do to get permission to be interruptive, how easily
>you can mute them or turn them off, and so on. These rules can evolve
>over time, but making sure we get them right at each stage will be very important.
>
>Finally, it[1]s worth noting that even though everything I[1]ve discussed
>here has been in the context of businesses, these kinds of business

>threads should be available to anyone who would currently have a page
>on Facebook today, including celebrities, politicians, bands and other
>types of entities that we don[1]t typically think of as businesses but
>who produce important content for our ecosystem.
>
>----------
>
>After message threads, the second business touch point is the discovery
>tab.
>
>Imagine this tab as a new second tab in the app's main navigation,
>between Recent and Groups.
>
>The primary purpose of the discovery tab is to introduce people to new
>people, businesses and content that can improve their messaging
>experience.
>
>This is important because people will not just wake up one morning and
>start messaging businesses. First, we need to introduce the idea of
>businesses within Messenger to people and show people how they can be
>useful. The brute force way of doing this would be by starting to
>inject business content into the main inbox that the person had not
>directly asked for yet. That seems dangerous and unnatural, so the
>alternative is giving people a space where they can discover this
>business content on their own and start messaging businesses themselves
>rather than just having businesses start messaging them out of the blue.
>
>Of course, this presents its own problem: why would people ever go to
>the discovery tab? The answer is that we have to include content here
>that is relevant not just to the business ecosystem, but also for the
>social experience people are looking to have with Messenger.
>
>For example, you could imagine an early incarnation of the discovery
>tab being called Nearby and focusing on people and business that are nearby.
>We could use Aura to show friends nearby, highlight friends visiting
>from out of town and potentially even show other people nearby if they
>want to meet new people -- which is a very popular feature on WeChat.
>We could expand it beyond Nearby over time to include friends with
>birthdays or major life events, etc. I think this tab would quickly
>become more useful and more used than the static Groups and People
>tabs, which is why I suggested we'd place it second in the nav above.
>
>Once we build an experience here that is organically useful, the second
>stage is to insert business-related content to educate people about the
>value of the business ecosystem we're building. We could highlight
>businesses that can do useful things over Messenger and get you to
>engage with those first. Perhaps we'd start by making partnerships with
>a few chains or larger companies to increase the coverage of people who
>would have relevant business content here.
>
>For example, we might make a nationwide deal with Starbucks that
>enables you to order drinks through Messenger. You could tap on

>Starbucks in nearby and it would create a thread that would sit in your
>inbox from then on. When you first open the thread, you'd see
>Starbucks's default message and maybe some structured menu items, and
>you could tap or type to order something, pay inline, and then when you
>show up the barista will have your drink ready and hand it to you,
>knowing who you are because your identity shows up on an iPad at the cashier.
>
>Beyond Starbucks, another good example could be ordering a cab. This is
>worth mentioning because it's how WeChat started building up their
>payment base, and we are currently in discussions with Uber about doing
>something similar with them. That said, I don't think WeChat made this
>a great experience beyond just sending you to the taxi app, so there's
>a lot more we'd want to do here as well. I'll get into that more below.
>
>Initially, I expect we'd highlight these businesses on Messenger for
>free or very cheaply. But once we have a good number in there, then the
>third stage of evolution for the discovery tab is to turn this into a
>market and start charging for paid placement in addition to showing
>good organic people and business content.
>
>As I said above, the discovery tab is like the right hand column of
>Facebook or Google. It will be enough volume to get some interesting
>behaviors going within the ecosystem and to start building the
>business, but given the much smaller volume of visits compared the main
>inbox, this will never turn into a huge business by itself. This
>roadmap by itself is a stepping stone to the main business of
>interacting with businesses in the main inbox by getting people used to
>engaging with businesses in Messenger.
>
>One open question is whether we want to use the discovery tab to only
>promote business interactions on Messenger, or whether we want to run
>more general ads here, including app install ads.
>
>The argument for app install ads is that it's easier and more
>understandable for businesses, especially early on. For example, the
>taxi integration that WeChat did was primarily just about driving app
>installs to the taxi app rather than doing much actual integration.
>It's easy to imagine how we could make some money adding app install
>ads, especially early on, before we had a full business ecosystem.
>
>The argument against app install ads is that any space we allocate to
>them has a large opportunity cost against building the business we
>eventually want in the main inbox. Any app install ad that sends a
>person to another app is a wasted opportunity to educate people on
>interacting with businesses in Messenger. Arguably, WeChat is stuck at
>the stage of running ads in a secondary discovery tab because they took
>the easy money and never built out a full enough ecosystem to be able
>to monetize the main inbox where most of the traffic is. They're still
>doing at a bit more than ~$3 per person annually, but our goal is to
>reach the monetization levels we see in News Feed of greater than $10
>per person, if not more.
>

>There are other types of content to consider, like stickers or
>in-message games. These could help us make money, but they will also
>have the property that they make Messenger better for people and get
>people more invested in the product. So these are a different kind of
>tradeoff and opportunity cost that we'll have to weigh when we get
>there. It's easy to say these things are silly, but I think this is how
>WeChat and Line make 30-50% of their revenue today.
>
>My guess is that we'll want to experiment with all of these things but
>will need to be careful. We'll need to be disciplined about starting
>off by building a valuable people-centric consumer experience, then we
>can add some business content with the goal of educating people that
>you can have good business experiences within Messenger. Only after
>these two should we really think about adding other content and making
>any real money from the discovery tab itself.
>
>----------
>
>After message threads and the discovery tab, the third business touch
>point is inline during message threads with people you1re talking to.
>
>This is different from the ecosystem of interacting with business
>entities described in the first two touch points above because in this
>case you're not actually communicating with a business.
>
>Instead, this plays on the technical work we're going to have to do to
>understand the context of messages in order to support automatic,
>instantaneous replies from business for the above use cases. Once we
>have the technical ability to do this, we can use it to show relevant
>context in other places as well.
>
>The basic idea here is that if you ask a friend a question as part of
>your message thread with them and we know the answer, it could be
>useful for to show you the answer inline in your conversation. For
>example, if you ask a friend if a movie is playing or when an event is,
>we can quickly add that information to the thread. If you ask your
>friend if they want to get dinner but you don1t know where to meet, we
>can also show suggestions inline.
>
>Intuitively, this seems like it would be useful, but there's a very
>high quality and relevance bar before this becomes annoying. It would
>be very easy to create terrible experiences by inserting the wrong
>information at the wrong times. Because of this risk, we should be very
>conservative about when and how we insert information while we1re ramping up.
>
>It's worth noting that what businesses pay us for here will be
>different from in the ecosystem above where people interact with
>business entities directly. In the ecosystem of interacting with
>businesses, person-initiated interactions are free for businesses, and
>businesses will need to pay for distribution to get in front of people
>in non-person-initiated cases. In a way, this has similarities to a
>traditional display ads business. However, this next ecosystem of

>inserting relevant context inline is closer to a traditional search
>business. We can show only show relevant context inline in response to
>the right prompt, and when that prompt appears, we can show whichever
>bit of relevant context we think is most valuable, taking into account
>both engagement and revenue.
>
>Because this is a different kind of business, we could postpone
>developing this touch point until later and just focus on the touch
>points above for the first few years.
>
>However, the technology required to understand natural language context
>to power this touch point will be significantly overlapping with the
>technology required to build the first ecosystem above, so once we've
>developed it I see little reason to wait to get started here.
>
>Further, getting good at showing relevant content in response to
>contextual cues is something we're already working on in Utility with
>After Party, where we show relevant contextual information after you
>check in or post with other structured minutia from the composer in our
>main app. That means we should be able to take that team's effort,
>apply it to Messenger and start seeing an early experience here without
>many months of work.
>
>Focusing After Party on Messenger is also about where there's the most
>leverage. There are currently only ~50 million After Party-eligible
>actions in the main composer today, so the ~7 billion mobile messages
>in Messenger and >20 billion in WhatsApp should be a more leveraged
>surface to redirect this work once it's a good experience. Even if only
>1% of messages have any relevant context for an After Party experience,
>that would still be more After Party actions in Messenger alone than in
>the main app.
>
>---
>
>There are other threads of work related to contextual understanding and
>inline replies as well.
>
>One question I've thought a lot about is how people will find the right
>businesses to message in the first place. One possible answer to this
>is that you'll search for them. For example, if you want to see if a
>restaurant is open or get reservations, you could search for that
>restaurant and then ask it your question. But this seems clunky to me.
>
>So much of the value in the messages UI paradigm is that it's not search.
>If people wanted to use search to find out something about a business,
>it's probably easier to just use Google. The reason people would use
>this is because it's a more natural and less search-based UI than where
>Google is today.
>
>There's a good reason to believe the future of search is moving in this
>direction -- and it's that even Google (as well as Microsoft and Apple)
>seem to think it is. They're all focused on building the next version

>of their search products as digital assistants that you communicate
>with by asking conversational questions, and they try to provide you
>with answers rather than a list of links.
>
>If search companies think that conversation is the future of search
>rather than initiating queries by searching, then why would we want our
>conversational UI to be initiated by searching? It doesn't make much
>sense.
>
>Instead, what makes more sense to me is that we'd develop our own kind
>of assistant that lives inside Messenger. Think of it as the entity
>"Facebook" and you could message it just like you'd message any other
>business in this system. The only difference is that this entity
>performs one special task that the others don't -- it mediates between
>all of the other entities. If the other business entities act as
>digital assistants for interacting with those businesses, then the
>Facebook entity is a sort of meta-assistant that helps you interact
>with all of those other assistants. This means that instead of ever
>having to search for a business, you could just message the Facebook
>business entity and it will connect you with the right business entity directly.
>
>For example, you could ask this special entity when some business is
>open until, and this entity would be able to do two things: first, it
>could communicate with the other entity in the background and answer
>your question for you; and second, it could connect you directly to the
>right entity to talk to in the future so you don't have to search for
>it yourself.
>
>This may sound very abstract and complex, but I actually think it would
>be relatively simple to build once we had the technology we needed for
>business entities to make automatic, instantaneous replies themselves,
>which is required to build this ecosystem anyway.
>
>Once we have that technology, then we'll already be able to understand
>the meaning of many questions. We'll also already have a registry of
>what businesses know how to answer which questions and do which things,
>since this is required for us to have them reply automatically. With
>these pieces, building this meta-assistant is just a matter of enabling
>our special Facebook entity to answer any question that has a
>registered response from any other entity in our system.
>
>The biggest technical problems we'd have to solve would be figuring out
>which of the entities that say they can answer a question are actually
>the best to do it.
>
>For example, if I message Facebook and say I want a taxi, then we will
>likely know of multiple services that have registered with us to be
>able to answer queries about wanting a taxi, so we'll need to decide
>which one is best and connect you with that service. The solution here
>will be a mix of machine learning reputations and quality scores for
>the different entities, plus figuring out how we accept financial bids
>in our system. I assume that if we are in a position where we're

>deciding which taxi service you're going to use, then we will make
>money from whichever service we send you to.
>
>This meta-assistant vision may seem far-fetched right now. It's
>possible we don't need to start working on it today. But I would. From
>two different perspectives, this seems like the right approach. First,
>digital assistants from Google, Apple and Microsoft are becoming more
>useful and important over time, so I don't see why this metaphor
>wouldn't hold for us too. Second, this really is the simplest way to
>interact with all of the different businesses in our system. It's much
>better than searching and starting a thread yourself.
>
>If we follow this approach, I think there's a good chance our
>meta-assistant could become the most useful of all. Google and everyone
>else are building their assistants by trying to have a single
>search-like system understand everything. We're taking the opposite
>approach by having everyone create individual entities, and then we're
>just linking all those different entities together.
>
>In the real world, there doesn't tend to be one person or assistant
>that you want to ask all your questions to. There are lots of different
>people you ask different questions to. We're constructing our system
>the way people interact in the real world. There would be one
>meta-assistant that could help you navigate who you talk to, but in
>general you'd be asking questions and interacting with different domain
>experts rather than always with a single assistant.
>
>If we can succeed in building the most useful assistant -- for which
>the most important step would be getting as many businesses as possible
>into Messenger -- then this could actually be the future of search in
>addition to a big part of the future of advertising and commerce.
>
>----------
>
>Those are all of the main touch points for people to interact with
>businesses in this ecosystem.
>
>Now here's a list of all the different threads of work that I discussed
>above.
>
>1. Business entities
>
>   - Entity accounts and scaffolding
>
>   - Natural language response system
>
>   - Menus and structured stores
>
>   - Loyalty programs
>
>   - Policies around when businesses can message and interrupt you
>

>2. Payments
>
>   - Basic primitives of sending and requesting money
>
>   - Optimizing friction, credentials and rates for people
>
>   - Integrating with businesses' workflows
>
>   - Promotions and deals to drive adoption and credentials
>
>3. Discovery tab
>
>   - Nearby people recommendations
>
>   - Business entity recommendations
>
>   - App install ads
>
>   - Other content, like stickers and games
>
>4. Inline content suggestions
>
>   - After Party for messages
>
>   - Inline games
>
>5. Meta-assistant
>
>   - Registry of all entity knowledge and actions
>
>   - Mediate requests with multiple handlers
>
>   - Special UI for meta-assistant
>
>6. Ad system integration
>
>   - Auction for inbox messages and discovery space
>
>   - Performance-based bid options
>
>7. Language technology investments
>
>   - Natural language research
>
>   - Voice recognition improvements
>
>----------
>
>Thanks for reading all the way through this. I know it was very long,
>as I tried to be as detailed as possible. I'm looking forward to
>discussing further soon.
>

Mark Zuckerberg
I'm glad we got a chance to talk yesterday. I appreciate the open style you have for working through these issues. It makes me want to work with you even more.

I was thinking about our conversation some more and wanted to share a few more thoughts.

On the thread about Instagram joining Facebook, I'm really excited about what we can do to grow Instagram as an independent brand and product while also having you take on a major leadership role within Facebook that spans all of our photos products, including mobile photos, desktop photos, private photo sharing and photo searching and browsing. This would be a role where we'd be working closely together and you'd have a lot of space to shape the way that the vast majority of the workd's photos are shared and accessed.

We have ~300m photos added daily with tens of billions already in the system. We have almost 100m mobile photos a day as well and it's growing really quickly -- and that's without us releasing and promoting our mobile photos product yet. We also have a lot of our infrastructure built p around storing and serving photos, querying them, etc which we can do some amazing things with. Overall I'm really excited about what you'd be able to do with this and what we could do together.

One thought I had on this is that it might be worth you spending some time with [redacted] to get a sense for the impact you could have here and the value of using all of the infrastructure that we've built up rather than having to build everything from scratch at a startup. This would probably be a useful perspective for you to have.

On the thread of integrating OG deeply (whether or not Instagram joins Facebook), you expressed some doubt about whether it would be good for Instagram to send so many photos over to Facebook. I think it would be quite good for everyone -- users, Instagram and Facebook -- and I wanted to share one mental model I use for thinking about this.

I often think about Wikipedia as the best example of a crowd-sourced corpus of content. One interesting thing about it is that they allow anyone to download their whole encyclopedia and copy it to use as their own. This might seem like a bad business strategy for the same reasons you're concerned, but in fact it's really helpful for them and doesn't hurt them at all. The reasons why it helps them are obvious -- they get more distribution, authors want to contribute more since they know their work will be in many places, etc. The reasons why it doesn't hurt them are more interesting. I think the best way to look at this is that the value of Wikipedia isn't really that it's an Encyclopedia; it's that it is a community and engine that continually produces the best Encyclopedias. Because of this, they know that even if people use their data that they have all the leverage since they're the engine that produces the core data set.

I actually think you guys are in a similar position with us. By pushing a lot of data into OG, you get distribution but you remain the engine that produces Instagram photos, which will become more powerful over time. From this perspective you may wonder why Facebook is happy with the arrangement, and the answer is that we're playing a meta-game. Rather than being the engine that produces photos or any specific kind of content, our goal is to be the engine (or platform) that helps produce other engines (or apps) that produce content. That's the only way we'll ever scale to helping people share every kind of thing they want.

So in short: I'm really excited about the acquisition and I think it would set up Instagram and you personally to have the biggest impact possible. If we do that -- or even if we don't -- I still think having a deep OG integration is very good for both companies and all of or users.

Let me know when you want to talk some more. If you have any feedback on my offer I'd love to hear it. I'm looking forward to continuing the conversation.

March 19Kevin Systrom
Hey - I wanted to go away and think about our conversation a bit and have a reply that was well formed. I know where our head's at now and I'll drop you a longer note today. Thanks man

March 20Kevin Systrom
Hey Mark -

I've been thinking a lot since we talked last, and I wanted to share how my thinking has evolved. Getting to chat about our paths and how they cross has been eye-opening I think for us in many ways.

First, it's humbling to to know that you guys look at what we're doing in the mobile space and think it's as innovative and strong as we'd like it to be. I've always been a fan of what you're doing – and in many ways I've shared similar passions for the problems that you've wanted to solve along the way as well. There's a mutual respect that I think will help us get a bunch of things done together around OG going forward.

Second, I've never had to stand back and look at our company at a 50k foot level and ask what it might look like as part of something larger. For this reason alone I wanted to meet with you to understand what Instagram would mean to you and to Facebook.

In many ways we're aligned. We both believe in the power of mobile to change the way people share information. We see the transformation happening very quickly as people adopt new products like Instagram, etc. We are both, at our core, engineering-driven in culture and vision. We both have a passion for social products, and realize that by building what we're building we can (and have the responsibility to) positively influence culture and the world at large.

I also realize that Instagram is a foreign citizen in the world of Facebook. We produce more photos week over week that have found a home inside Facebook. At the same time, we have a very independent and disparate browsing and 'friend' experience within our own network. Most of the photos on Instagram are not social photos, but instead tend towards photos of the world around us. Our graphs are significantly different as well. For one, we have an asymmetric visual interest graph – one which I'm sure differs from most peoples' fb graphs. Also, we're primarily mobile in experience, we have no web in our DNA as of yet, and for this reason we've focused on mobile photos rather than photos in general.

Regardless, I think there's a world where Instagram with Facebook just makes a lot of sense. Though the particular balance at this time makes Mike and I feel that we'd like to stay independent for the time being. Really it just comes down to wanting complete independence to pave our own path. This in particular means not limiting the scope of Instagram to just photos - but to explore other mediums as well which support the original vision of Burbn being to improve the way we communicate and share in the real world. There's volatility and optionality that make both Mike and I really excited to build a long-term viable business from where we are today long into the future.

To be clear, you've been nothing but helpful. When asked if it made sense for you to think about acquiring our company, there wasn't any fuss around it – it was a straightforward yes/no decision that you made with confidence and for that I'm thankful. I'm not coming back at you asking to change the offer because I don't think that's what drives us. Of course there's a limit to that logic, but honestly I'm not sure at the point we discuss those limits that we're doing this for the right reason.

Either way I think we should start a more open discussion because even if it's not now it could make sense in the future. Of course this may mean the economics are less favorable given a large raise, but it's worth it to me to explore what we're actually building here. Is it a next-generation photos app or is it a next-generation communication app? I don't mean to get overly philosophical, but the limits of our ambitions have really yet to be tested, and I want to see that through at least for now. The desire to have an effect at the scale of FB is real and tangible, and one that is actually quite hard to balance in our minds. That being said, I think you should meet Mike my co-founder and we should spend more time with your leadership going forward. I hope this clarifies my current position and if anything helps you understand the depth of our ambition to create something really meaningful in the world.

***

On the OG stuff, you're right. I do think there's a valid question in thinking through whether or not sending all our photos to FB makes sense. I actually don't think we'd ever go out of our way to discourage or make it difficult for anyone to share from Instagram to Facebook, we just want to make sure it's up to the user. Right now, users are voting that 15% of all photos on Instagram end up on Facebook. Whether or not that's because it's a different audience, or a different type of content I'm really not sure. All I can go on is data - and I think we're giving a pretty good experience so far in the form of full photos in the timeline with absolutely no restrictions. We win when users are happy - and users seem to be really happy with that option of selectively sending over content. We rarely if ever hear complaints that the share to a service toggle not being sticky is a problem, so it makes me feel that we shouldn't go out of our way to make that the default without a really clear thesis on why it's better for everyone.

I think your comparison to Wikipedia has its merits, but in some ways isn't as applicable. Wikipedia doesn't care that their content is distributed and copied elsewhere because they realize that the freshest and most up to date content will always be on Wikipedia. Since they have the economies of scale, there's no incentive for people to go anywhere other that WP to make edits, etc.

With FB, we have a different situation. You guys actually have all the economies of scale around photos. That is, you guys have all the systems to make a photos experience really awesome. In many ways, once we send our original content over to FB, it starts getting likes, comments, etc and takes a life of its own. It's as if a Wikipedia article gets copied somewhere else, and starts evolving on another site with larger scale. Trust me, I realize the comparison is a bit tenuous but I hope it shows where I'm coming from and why I think the Wikipedia comparison is hard for me to grok exactly.

At the same time, I think your point around being the meta-engine makes total sense. I agree that FB should be really happy when engines like us come along and plug in. I guess I wouldn't feel nearly as strongly if independently you weren't building a mobile photos app that makes people choose which engine to use. Listen, this is all based on me not actually knowing what the overlap in what you're doing and what we're doing is – rather it's based on the speculation that there's a future where all our content flows away from Instagram and over time Instagram becomes less of the place for people to share and interact with content from the real world because the scale and tools exist elsewhere (FB).

I actually think that if done well, complete integration around likes + maybe even comments could be really cool. I think have my preferences expressed to my fb friends could be really valuable to me as a user but also to Instagram for distribution.

I don't want to seem as though I'm against the idea of open graph at all - I think it could totally set us up for incredible distribution. It's just very hard to balance sending over all our original content that lives inside a very separate photos experience which creates a fractured experience of two comment streams, two like streams and two feeds for Instagram and Fb separately.

I hope you take this as open and honest feedback for how a developer in the ecosystem is trying to balance the decisions of sharing/not-sharing with the hope that it sets of a discourse where we are both very happy about the integration going forward.

Either way I think I've had some of the most interesting conversations I've had in a long time with you over the last few weeks. It's made me think about our company in a different way, and also helped push me to form a stronger opinion about what we are and what we aren't. Regardless, it's been super valuable and I hope we can continue that going forward.

I'm happy to chat about this more in person – just let me know. And thanks again for all your support for everything we're trying to do.

Best,
Kevin

March 20Mark Zuckerberg
A few thoughts on both pieces:

On acquisition, everything you're saying seems reasonable, but it's a pretty unfulfilling conclusion for me since it doesn't feel like you've explored it fully. The process began with you asking if we'd do this at $500m, but then you didn't want to end up doing it at that valuation. I am curious to know at what valuation you would do this, and then I can just let you know whether we'd do that. I get that you're not primarily doing this for money, but there usually is some continuum here and given the time we've put into this so far I do think it would be worth it to be honest about where that is.

Related, you reference flexibility and things you'd like to do independently that you couldn't do at Facebook. I'm curious what you think you couldn't do at Facebook, given that what I offered was for you to keep building out Instagram as a separate product and brand. I actually think you'll be able to do all the same things with Instagram at Facebook plus you'll have more distribution firepower behind you, so there will be a bigger chance anything you do takes off. So I'm curious to hear what your concerns are here.

A final sub-point on this is that if you choose to stay independent, it's really important to me that this doesn't become a public story about how you guys turned us down to go do something independently. That just isn't a positive story. I know it won't leak from my team so I'd ask that you make sure it doesn't leak from yours either.

On Open Graph, there's a lot of nuance here that you haven't captured in your note.

I'm not suggesting that you make your current setting sticky. What I've specifically suggested is making it so there's a toggle where all of your social activity -- photos, likes, comments and follows -- get synced to your timeline in the background. In this mode, these items wouldn't show up on in News Feed as you post them, but you'd still have them as a collection on your timeline. This addresses a major pain point for people which is that they don't want to spam their friends. I would implement this so that when a user connects to Facebook this is turned on and they can turn it off at any time. In addition to this, I'd also keep the current option you have to broadcast any individual photo to your friends on Facebook.

If you did this, I think you'd create a lot of value for your users, Instagram and Facebook. People may not be asking for a sticky toggle, but that's not what this is. If you listen to your user feedback on why people share more or less on different networks a lot of it is because they don't want to spam their friends/followers on different networks, but they want to share these photos and are comfortable doing it in a photo-specific setting like Instagram. Using Open Graph the way I'm suggesting allows that. It's not simply a matter of people voting that they want to share 15% of their photos. The actual dynamics around how this works are very important.

Most photos on Instagram are public and many people follow all of their friends, so this clearly isn't a privacy issue -- it's an issue of how the photos are shared. Simply saying that people want to share only 15% of photos is overly simplistic. I think you know that, so making this argument just makes me think you don't want to do this for some other reason.

The whole point of Open Graph is to create a social dynamic where it is socially acceptable to sync all of your social activity in another app with your timeline without spamming your friends, so this is the core problem we're trying to solve. This creates better timelines for our users and lots of distribution and brand awareness for you. You can use Open Graph to sync individually photos like you're experimenting with now, but fundamentally there's nothing special about using Open Graph over our traditional APIs for this, so over time we wouldn't really consider this a deep Open Graph implementation.

At some point soon, you'll need to figure out how you actually want to work with us. This can be an acquisition, through a close relationship with Open Graph, through an arms length relationship using our traditional APIs, or perhaps not at all. I'm willing to put effort into whichever approach you'd like to take, but you should be clear and honest with me about what you'd like to do so I don't waste time working on things you're not interested in. Of course, at the same time we're developing our own photos strategy, so how we engage now will also determine how much we're partners vs competitors down the line -- and I'd like to make sure we decide that thoughtfully as well.

Overall though, I'm still very optimistic about what you're doing and would love to find a way to work together. My preference is to work together extremely deeply since I think there are lots of things we can do together than can't currently be exposed through our current Open Graph implementation that we'd need to work on closely together -- either as one company or two.

March 20Kevin Systrom
Hey Mark - thanks for the thoughts. I would never leak this, and I think it would be really bad for a bunch of reasons for us so I'm on the same page. I've messaged that to [redacted] and Mike so we're on the same page.

I realize it's unfulfilling - and I agree we haven't explored it fully. We have a board meeting today. I'm going to spend a significant amount of time discussing our relationship with Facebook. I want to be respectful of your time as I know you have many things to deal with, so let us come to you with a clear thesis. I tried my best to explain where my head's at, but I take your points and I'm going to work on it.

I have a feeling we should probably discuss this in person as the sincerity for how I'd like to work with you probably gets lost in a message. Would you be ok with that?

March 20Mark Zuckerberg

FYI, apparently it leaked to the Wall Street Journal that we and Twitter were talking to you about acquisition. I didn't tell anyone on my side that you were talking to Twitter, so this must have come from your end.

March 20Kevin Systrom
Hey - honestly it didn't come from me or anyone inside my circle (you know [redacted] an [redacted]). It's absolutely not in my interest for this to be out

March 20Kevin Systrom
If you're down, I'd like to chat live - can be phone or in person. Have some thoughts after our board mtg that I can share. Let me know

March 21Mark Zuckerberg
Sure -- I'm around later this afternoon and evening if you want to talk.

March 21Kevin Systrom
Ok. 7:30 phone? Wsj/spencer just reached out to me via email btw. My plan would be to chat with him and stonewall on anything around financing/our discussions. If you guys have talked to him and I should have context let me know
(not responding may be more of a signal than not)

March 21Mark Zuckerberg
Let's talk at 7:30. We can cover this other stuff then too.

March 21Kevin Systrom
Ok. Call me? [redacted]

March 22Mark Zuckerberg
Following up from last night:

- On acquisition, I'll wait to hear more from you here. Given the leaks and that I put the last offer on the table, it doesn't make sense for me to put another offer on the table before you provide more guidance on what you'd accept. If you're not comfortable doing this then we can just discuss this down the line, but it seems like the right next step now and one you should be able to do is for you to give me clear guidance on what you'd accept.

- On partnership and Open Graph, the ball is also in your court here. Although you've said that you want Instagram users to be able to share and sync whatever they want on Facebook and elsewhere, it seems like you have real strategic discomfort around the idea of moving the percent of photos synced to Facebook from 15% up to 40-50%. Obviously if you don't actually want your users to be able to do this then we won't produce something good together, so I'm just going to wait for you to answer this question before engaging further.

I'm obviously happy to help out and support you guys in any way I can. On these two things issues, let me know when you want to talk more.

April 2Mark Zuckerberg
I just got back from my trip to China. I'm not sure if you're ready to follow up on either of these things, but if so I'm back in town now.

April 3Kevin Systrom
I am - sorry about the lack of response. Was on a trip overseas and today was (am) dealing with android stuff. What's your week looking like? We can do in person or over phone
Haven't slept in 36 hrs so bear with me

April 3Mark Zuckerberg
Congrats on the Android launch. It looks great. I just got back a trip out of the country as well, so no worries on that. I'm around tomorrow evening and around lunch time Thursday if either of those work for you.

April 3Kevin Systrom
Let me check on tomorrow night and get back to ya. Thanks again for your patience

April 4Kevin Systrom
Tonight 7:30ish at your place or somewhere in palo alto work?

April 4Mark Zuckerberg
Sure -- want to come by my place?

April 4Kevin Systrom
Sounds good. Looking fwd to hanging

April 4Mark Zuckerberg
BTW, I've already eaten, but I'm happy to go out and grab some food if you're hungry.

April 4Kevin Systrom
No prob at all. I'm down for meeting elsewhere but don't want to call attention to the conversation given the topics. Up to you - I was

going to grab something before I left.

April 4Mark Zuckerberg
If you're eating too, then let's just meet at my place. See you in a bit.

April 4Kevin Systrom
Traffic is stopped here at millbrae. Will be there 745 if that's ok

April 4Mark Zuckerberg
No worries

April 5Kevin Systrom
Hey can we schedule a call for whenever your free post lunch?

April 5Mark Zuckerberg
Hey, I had a chance to talk to Sheryl and David last night and then again this morning for a while. I was planning to call you during lunch after a couple of meetings I have, but I was wondering instead if you'd be up for getting together in person this afternoon or evening.

April 5Kevin Systrom
I am yes. What're you thinking?

April 5Mark Zuckerberg
I'm done with meetings today around 3:30. Want to meet up then?

April 5Kevin Systrom
Yes where's good?

April 5Mark Zuckerberg
If you're down here then we can meet at my place again.

April 5Kevin Systrom
Ok 3:30?

April 5Mark Zuckerberg
Also, just to be clear so I don't waste your time here, I can't get to $2 billion. But if you're open to doing something in the range and structure we discussed last night, with an earn-out, valuing Facebook aggressively, etc, then I'm optimistic we can do something -- especially since we both seem to want to work together. If that's not worth discussing for you, then I totally understand though.

April 5Mark Zuckerberg
How about 4 so I have time to get home.

April 5Kevin Systrom
We should have the discussion - 2 was my yes absolutely number. Less is just something to think through together is that ok?
4 is good

April 5Mark Zuckerberg
Okay, see you then.

April 5Kevin Systrom
Ok

April 5Kevin Systrom
Any chance we could meet ASAP? It's really the pressure of this round. I don't mean to make you cancel meetings but a few hours makes a big difference. We could also just chat on the phone

April 5Mark Zuckerberg
I can move some meetings around and end early. Want to come down now? I can meet at 2.

April 5Kevin Systrom
Yes I will leave in 10

April 5Mark Zuckerberg
Great, see you in a bit.

April 5Mark Zuckerberg
Are you still coming?

April 5Kevin Systrom
Can I come over and chat?

April 5Mark Zuckerberg
Sure

April 5Kevin Systrom
Be there in 5

April 5Mark Zuckerberg
Just wrapped up my interview. Ready to talk more?

April 5Kevin Systrom
Ya finishing up a call in 10ish
Coming now

April 5Kevin Systrom
On a call with the guys.

April 5Mark Zuckerberg
Okay, let me know when you're done.

This doesn't have to be so long. Just tell them you want to do this and they'll let you!

April 5Kevin Systrom
Sorry give me 5

April 5Mark Zuckerberg
Take your time.

April 6Kevin Systrom
Can mike and I meet with you when you're free? 10 would work

April 6Mark Zuckerberg
Sure, I'll see you guy at 10.

April 6Mark Zuckerberg
Hey -- when I was explaining the terms to [redacted] I realized I misspoke on one important term. Most of the upfront deal consideration portion for you guys also needs to vest in addition to the retention package. It will have the same provisions of double-trigger etc to guarantee you eventually get it, but we can't just transfer all of the money immediately. You probably understood what I was saying here from other deals you've done, but I just wanted to clear this up since I think I misspoke on it.

April 6Kevin Systrom
Ok I understand now. Let's push forward. We need a term sheet to start the lawyers say. Can you guys put something together?

April 6Mark Zuckerberg
Yeah, [redacted] is getting started on this.

April 6Kevin Systrom
Ok

April 7Mark Zuckerberg
Want to talk this morning to try to finalize the open high level terms, like cash amount, cash/stock exchange rate, etc?

April 7Kevin Systrom
Yes but can I finish my calls with the lawyers over here?
Prob 11:30ish

April 7Mark Zuckerberg
Yeah, of course. I just woke up so I wanted to send you a note so you know I can talk whenever.

April 7Kevin Systrom
Great. Sounds good

April 7Mark Zuckerberg
How is everything going from your perspective?

April 7Kevin Systrom
Good, you? Want to meet in person and discuss this stuff? I think it's probably best

April 7Mark Zuckerberg

Sure. Want to come by at 11:45?

April 7Kevin Systrom
Sure I'm up in the city and need to pack up. Will try to hit 11:45 maybe closer to 12?

April 7Mark Zuckerberg
Sure, come by whenever.
12 is fine. I was just suggesting 11:45 earliest so I'd have time to finish waking up, getting dressed, etc.

April 7Kevin Systrom
Haha no worries. I'll get down there

April 7Kevin Systrom
More like 12:15 now just. As a heads up

April 7Kevin Systrom
Hey just to let you know things are going well and I'm here with [redacted] ironing things out

April 7Mark Zuckerberg
Awesome. I'm at home but let me know of there's anything I can help out with.

April 7Kevin Systrom
Ok cool

April 8Kevin Systrom
Congrats, man - really excited for everything. Looking forward to working together

April 8Mark Zuckerberg
Congrats to you too! This is going to be great. I'm looking forward to working more closely together as well.

April 9Mark Zuckerberg
Excited to announce this?
How is it going with your team?

April 9Kevin Systrom
Yes! Lots of talking and questions

April 9Mark Zuckerberg
But everyone is generally excited and happy?
T-minus 15 minutes on the announcement

April 9Kevin Systrom
Yes! Totally excited and surprised
I think you should spend a little time with everyone explaining how excited you are. I think maybe we're coming down?

April 9Mark Zuckerberg
Yeah, I'm definitely happy to do that whenever.

April 9Kevin Systrom
Ok will work out with schrep

April 9Mark Zuckerberg
Posted. Congrats!

SDCA10046

The Walt Disney Company.

Memorandum

To: Distribution

From: Jeffrey

Subject: The Attached

Date: 1/11/91

Extension: 6500

Attached is a memo that reflects some thinking that I've been doing over the past several weeks about our studio. My hope is that after everybody has had a chance to read it that we will sit down together to review and discuss it. It is meant for internal use only.

Distribution:

- Michael Eisner
- Frank Wells
- Rich Frank
- David Hoberman and Disney/Touchstone Creative Staff
- Ricardo Mestres and Hollywood Creative Staff
- Dick Cook
- Helene Hahn
- Marty Katz
- Bob Levin
- Chris McGurk
- Bill Mechanic
- Randy Reiss
- Peter Schneider

The World Is Changing:

Some Thoughts on Our Business

January 11, 1991

The Problem

As we begin the new year, I strongly believe we are entering a period of great danger and even greater uncertainty. Events are unfolding within and without the movie industry that are extremely threatening to our studio.

Some of you might be surprised to read these words. After all, wasn't Disney number one in 1990? Yes, but our number one status was far from a sign of robust health. Instead, it merely underscored the fact that our studio did the least badly in a year of steady decline for all of Hollywood . . . a year that was capped off by a disastrous Christmas for nearly everyone. Although we led at the box office in 1990, our bottom line profits in the movie business were the lowest in three years.

Now, added to that, the nation's economy is acknowledged to be in a recession . . . a recession that I am convinced will be quite devastating to our industry.

That's the bad news. Now the good news. No one is better positioned to weather the coming storm than we are. We are the current box office champ. But, more important, our underlying philosophy of moviemaking lends itself especially well to lean times.

As a result, we are not only in the strongest position to succeed during a time of economic adversity, but we have the potential to establish a very high platform from which to launch into the next round of good times, whenever they may come.

Make no mistake about it, ours is a cyclical business and we are once again repeating the cycle. The purpose of this memo is to reaffirm our commitment to our core philosophy, because I am convinced that this is what embodies our key to success in the days ahead.

Interestingly, even if the economic outlook were rosy, I believe we at Disney would still be due for a major self-examination.

Since 1984, we have slowly drifted away from our original vision of how to run our movie business. Once we had a fairly strict and pretty successful strategy, which we referred to as our "Singles and Doubles Philosophy." At some point, we seemed to have replaced it with a strategy that might best be called the "Yes, But Philosophy" . . . as in, "Yes, he's expensive, but it's a great opportunity for us" or "Yes, that's a lot to spend on marketing, but we have too much at stake not to" or "Yes, the sequel will require a big budget, but it's a potential franchise." There should always be room for exceptions to rules, but of late the exceptions seem to be the rule. Not surprisingly, our control of our own destiny has been eroded.

We are far from unique in this state of affairs . . . something I take little comfort from.

The current condition of our business is typical enough of American businesses that an entire management theory has been developed to describe it. This theory is formally called the Product Life Cycle. It holds that businesses go through a natural development process that is comprised of four stages: Introduction, Growth, Maturity and Decline.

In 1984, The Walt Disney Studios had already been through the full cycle. We arrived here fresh, energetic and ready to create an entire movie studio from the ground up. We succeeded spectacularly in growing a new business and re-starting the cycle. Now, there are ominous signs of the stagnation of Maturity which leads inexorably to the disaster of Decline.

This is why, even if there were no recession, I hope that I would be feeling as I do and would still be writing this memo. However, because of the severe economic environment we are entering, this review of our way of doing business is now not only timely, but critically essential.

In good times, drift can be tolerable. In bad times, it can prove fatal.

Back in 1984, our initial success at Disney was based on the ability to tell good stories well. Big stars, special effects and name directors were of little importance. Of course, we started this way out of necessity. We had small budgets and not much respect. So we substituted dollars with creativity and big stars with talent we believed in. Success ensued.

With success came bigger budgets and bigger names. We found ourselves attracting the calibre of talent with which "event" movies could be made. And, more and more, we began making them. The result: costs have escalated, profitability has slipped and our level of risk has compounded. The time has come to get back to our roots.

In urging this course, I recognize that we have some serious disadvantages and some extraordinary advantages relative to when we first started out six years ago.

Our biggest disadvantage is that, unlike 1984, when times were relatively normal, a tidal wave is now hitting Hollywood . . . a tidal wave of runaway costs and mindless competition.

But this fact plays into our biggest advantage -- you. We have a proven team that has come through time and again. Others will scramble for higher and higher ground, spending feverishly to keep their noses above water. We, on the other hand, have the internal talent, creativity and absolute ability to control our own destiny. With this strength, we can plunge in and successfully find our way no matter how strong the current. What I am asking is difficult and challenging. But it is clear that we couldn't have in place a more remarkable group of able and experienced individuals to pull it off.

Ironically, your outstanding abilities are also responsible for one of our disadvantages -- namely, our success. In 1984, when Disney was last and unprofitable, the worst that could happen was that we would remain last. Now we are Number One. Our shareholders, Wall Street and the public expect us to be a leader. Such expectations can be inhibiting. *We can't let them be*. Instead, we must lay out our goals with as clear a vision as when we were unconstrained by success.

In returning to an emphasis on creative story development, there will be the risk of failure, as one project or even a series of projects misses the mark. Intelligently approached, risk is a necessary component to success in the movie business. It is impossible to create new and original -- and therefore appealing -- new works without taking on the chance that you'll fall flat on your face. Remember that before "Pretty Woman," we had five misses in a row.

But, if a return to our roots will entail the risk of acceptable failure . . . if we remain on our present course, there will be the *certainty* of calamitous failure, as we will inevitably come to produce our own "Havana" or "Two Jakes" or "Air America" or "Another 48 HRS" or "Bonfire of the Vanities" . . . and then have to dig ourselves out from under the rubble.

I know that my negative outlook for our industry will be challenged by many Wall Street analysts. These pundits will argue that the film industry is recession resistant or even recession proof because, when there is fear and uncertainty in the real world, people seek escape and entertainment in their local movie theaters.

Right argument, wrong conclusion.

When there is fear and uncertainty, the people have craved *bargain* entertainment. During previous downturns, the best escapist entertainment value was at the movie theaters. But no longer.

The notion of the film industry being recession proof began during The Great Depression. People wanted escape and the movies offered it cheap -- 10 cents a ticket, or the cost of a loaf of bread. Today, a ticket to the movies costs the equivalent of six or seven loaves of bread. What's more, a family of four requires $20-$30 to get in to see a movie. Add popcorn, parking, etc. and the total reaches $35-$40 or even more.

On the other hand, that same family can go to the local video store and rent a videotape for a mere $2.00 . . . 50 cents each -- less than the cost of a loaf of bread.

So, when times get tough I have no doubt that people will still want to escape to the movies, but they'll want it for the historic cost of a loaf of bread.

This may be a reason to re-think our approach to home video. Perhaps we should consider charging $200 for a rental title. This would force stores to charge $5 for a popular title, but $5 -- one loaf per person -- would still be an excellent entertainment bargain.

Such strategizing among our divisions, divorced from pre-conceived notions, is the kind of thinking we will need to cope with the recession.

As big a factor as the recession is, I believe we would be making a grave mistake to blame our industry's woes on the national downturn. Just as the seeds of a sick economy were growing before Iraq's invasion, the seeds of a sick movie business were growing before the recession.

And the seeds were planted by the "blockbuster mentality" that has gripped our industry. Because of this homerun thinking, every studio has increasingly been out to have the biggest weekend opening and the biggest first week gross and the earliest $100 million total.

It used to be that there was a reliable criterion for a film's success -- whether or not it had "legs." Studios would toy with different strategies for opening a film, all with the goal of helping it develop "legs" through positive word of mouth. Now the term "legs" has all but disappeared from the Hollywood vocabulary. Thanks to the dictates of the blockbuster mentality, the shelf life of many movies has come to be somewhat shorter than a supermarket tomato.

With such a make-or-break emphasis on the first weekend's numbers, studios have been cranking out highly promoted, big budget films. The logic is that this kind of film is the surest bet for attracting a big turnout for the picture's opening weekend.

The result has been a paradox. In an effort to make "risk-free" movies, Hollywood has been willing to put tens of millions of dollars on the line with each major release.

Unfortunately, our industry has travelled this road before. During the late 1950s and into the '60s, studios spent larger and larger amounts to produce historical epic films. This trend climaxed with the 1963 release of "Cleopatra," a film that cost $44 million at the time -- a staggering *$186 million* in 1990 dollars. These bloated "event" films and the red ink they left in their wake marked the beginning of the decline of many major studios and the rise of independent film production. Now that we have gone full circle and many of the independents have gone under while the majors are experiencing a resurgence, it would be ironic if we failed to learn from the not-so-distant past and instead blindly go about repeating the mistakes of our mogul predecessors.

Here at Disney, our biggest effort to compete in blockbuster terms, "Dick Tracy," is a case in point as to how the box office mentality is affecting the moviegoing experience. "Dick Tracy" was in the works for nearly ten years. But by the time it was ready for release, we were upon the summer of 1990 and we knew that its success would be for the most part judged by its opening weekend box office performance. So, we did everything that we could in order to get the film the audience and recognition we felt it deserved, including the unheard of notion of "clothing" our opening night audience.

The result was a film that did very well, a film we were rightly proud of, a film that was critically acclaimed . . . and a film that is still being savagely disparaged as "having failed to achieve Batman-like success at the box office."

This is not a healthy situation. If every major studio release must aspire to repeat the 1989 success of "Batman," then we will undoubtedly soon see the 1990's equivalent of "Cleopatra," a film that was made in the hope of repeating the 1959 success of "Ben Hur."

Not surprisingly, this box office mania is fostering a frenzy among actors, writers, directors and their agents as they try to claim their share of the big budget pie. If a leading star who received $6 million for his last film reads that another star is getting $10 million for a picture, he immediately calls his agent insisting on nothing less than $12 million for his next movie.

It seems that, like lemmings, we are all racing faster and faster into the sea, each of us trying to outrun and outspend and out-earn the other in a mad sprint toward the mirage of making the next blockbuster.

In this atmosphere of near hysteria, I feel that we at Disney have been seriously distracted from doing what we do best. It is a tribute to our abilities that, even as we have strayed, we have continued to be successful. But it is instructive to re-visit the film that anchored our success in 1990. "Pretty Woman" is in fact the kind of modest, story-driven movie we tended to make in our salad days.

The extraordinary popularity of such films as "Pretty Woman," "Ghost" and "Home Alone" teaches the real lesson of 1990: Despite all the hype and promotional noise, in the end the public will search out the movies it wants to see. And these films, more often than not, will be primarily based on two basic elements -- *a good story, well executed*. Not stars, not special effects, not casts of thousands, not mega-budgets, not hype.

So, as we begin 1991, let's *really* look at those weekly box office figures and hear what the numbers are saying . . . what I believe they are telling us is to stop concentrating so much on what happens in that little room where the tickets are sold and instead concentrate on what happens in the big room where the lights dim and the magic is supposed to happen.

Magic is the key. Regardless of the recession, people will still leave their VCR's to go to the movie theater . . . *if* they are convinced that the experience that awaits them there will be magical enough.

We are lucky. We get to manufacture magic and, in so doing, produce a product that makes a difference.

Most other jobs exist to create products that are purely functional. While any profession can have its rewards, the range of impact in producing shoes or cars or toothpaste is limited. Our product has no function other than *to entertain*. Its only limits are set by *our imaginations*.

In a way, there is something quite noble about what we do. Our potential impact can not be minimized and should never be trivialized. At the same time that America has lost its dominance of the world's economy, it has become a pre-eminent force in the world's culture. And this is largely because of what we do. People around the world may no longer drive in American cars, build with American steel or listen to American radios. But they go see American films. They share our hopes and dreams and values when they experience the joy of a "Pretty Woman," the enchantment of a "Little Mermaid" or the inspiration of a "Dead Poets Society."

Across America and around the world, our customers expect us to offer them two hour journeys away from the mundane of day-to-day life to new worlds of experience. For the price of admission, they want to be transported to places and people they would otherwise never know. If the trip we provide is wondrous enough, then the $7 price for a ticket to ride will still be an exceptional bargain indeed.

Especially during these economic hard times, *we must not fool with the public's expectations . . . we must deliver on them.*

I have written this memo in the hope of offering a blueprint for a business that can deliver on the public's expectations with some consistency. A business that can weather the economic storms because it is governed by a sensible strategy designed to foster fiscal success . . . and, in the end, create magic.

A Solution

Because the world has changed, we need to get back to basics. For this reason, there will not be any revolutionary new ideas presented in the following pages. Rather, what I want to offer is a restatement of our underlying philosophy, adapted to today's changing times.

In writing this, I take some comfort in knowing that I am preaching to the already converted. After all, together we've built Hollywood's number one studio largely by adhering to the concepts I'll be expounding here. But, with greater and greater success have come greater and greater temptations to stray from our guiding principles.

This memo is intended to be a working document, a reference guide to help us more effectively resist temptation so that this studio can not only survive, but thrive, in the challenging times ahead.

The Idea is King

In the dizzying world of moviemaking, we must not be distracted from one fundamental concept: *the idea is king*. Stars, directors, writers, hardware, special effects, new sound systems . . . all of these can have a role to play in the success of a film, but they must all serve as humble subjects to the supremacy of the idea.

If a movie begins with a great, original idea, chances are good it will be successful, even if it is executed only marginally well. However, if a film begins with a flawed idea, it will almost certainly fail, even if it is made with "A" talent and marketed to the hilt.

People don't want to see what they've already seen. So, we need to be bold enough to stretch bounds, push the envelope of creativity and follow our hearts along with our heads. When we fail, let it be because we tried to innovate, not emulate. And, by so doing, I am convinced that we will continue to reap success.

This is the key for controlling our destiny -- to have the courage to search out authentic, great ideas . . . and then have the steadfastness to control the material that is subsequently developed.

If the idea and the screenplay are strong, then it is possible to hire a less established star and a less established director and as a result be less of a hostage to the marketplace. Or, conversely, an idea and screenplay can be so great as to attract major talent, who will be sufficiently excited that they will agree to terms that are acceptable to us.

Of course, this idea of internal development runs counter to the actions of many of our competitors, who have been paying $2-3 million for screenplays. While their willingness to pay such sums may be a sign of financial strength, it is also a blatant admission of creative bankruptcy.

In a world where we can come up with our own idea and engage a young writer for $50,000-$70,000 or a proven writer for $250,000 to develop it, it is hard to understand how the amounts being paid for spec scripts can be justified. Creative studio executives should be in the business of developing ideas, not buying them.

To be sure, after having worked so hard and achieved such considerable success at Disney, the temptation is to kick back and spend our hard-won profits on a "Basic Instinct" or a Richard Donner in the hope that their mere acquisition will lead to continued success. It's a temptation we'll keep having to resist.

It's our job to find the great idea, then nurture it and manage it until it has a shot at finding its audience.

It's not easy.

But whoever said it was.

The Lowdown on High Concept

One of the most misunderstood and misused phrases in the Hollywood lexicon is "high concept." The phrase was introduced by Michael for internal use by creative executives at Paramount as a guide for evaluating ideas. But it quickly spread throughout Hollywood and has since been widely misinterpreted and abused.

"High concept" was intended to describe a unique idea whose originality could be conveyed briefly. The emphasis was supposed to be on "originality" but has come to be placed on "briefly," so that today "high concept" is thought to mean an idea that can be summarized in a logline in TV Guide.

This is unfortunate, because "high concept" is a useful, complex, thoughtful encapsulation of what we should all be working toward. It makes a link between movie making and movie marketing. It embellishes the concept that "the idea is king" by asserting that the idea that forms the basis of a film should not only be one that is compelling but also one that can be communicated.

The real meaning of high concept is that ingenuity is more important than production values. This is why we should constantly be looking for creative solutions, not financial ones.

The Fallacy of the Floor

It seems that the root cause of the blockbuster mentality is the notion that one can construct a film project in such a way that it has a "floor" for its anticipated revenues. The theory goes that the way to ensure a successful movie is to release a high profile, highly promoted film, featuring at least one major star. It is felt that this kind of film not only has a built-in audience, but that it also ensures a big opening weekend.

This approach to filmmaking was seen to get its ultimate vindication with the success of "Batman," which combined action and hardware with an established fictional hero and an established real-life star, Jack Nicholson. The movie that ensued became one of the all-time box office champs and landed its producers at the helm of a major studio.

So, it was particularly interesting to see what happened when the blockbuster mentality got its true test last year. "Back To The Future Part III," "Gremlins 2: The New Batch," "Another 48 HRS," "Days of Thunder," "Rocky V," "Havana" and "Bonfire of the Vanities" are just some of the major releases that, as "Variety" reported, were "headed for miniscule profits at best."

Of course, there are those who will say that these days the ancillary markets can rescue films that do poorly at the domestic box office. To be sure, international box office, cable and, especially, home video have increased the profit potential of many films and have helped some marginal films creep into the black. But these markets have never rescued a box office bomb.

There simply is no such thing as a revenue floor. Those who think a major sequel is a sure financial bet, consider the fate of "The Two Jakes" or "Robocop II." Those who think an epic, romantic movie is a sure bet, consider "Havana." Those who think a star-driven package is a sure bet, consider "Family Business" or "Bonfire of the Vanities."

Any film can fail at the box office. And that's o.k. It's part of our business. No one can know for certain what the public will want to see. So the basic problem with the above movies wasn't that they were ill conceived or misguided or even bad entertainments. The problem was that they were just too expensive.

Tracy, Tracy, Tracy

So, what about "Dick Tracy?" By every rational measure, it was a success. It topped $100 million in domestic box office, sold millions of dollars of merchandise and was by all accounts a cultural event.

Nevertheless, having tried and succeeded, we should now look long and hard at the blockbuster business . . . and get out of it.

As profitable as it was, "Dick Tracy" made demands on our time, talent and treasury that, upon reflection, may not have been worth it. The number of hours it required, the amount of anxiety it generated and the amount of dollars that needed to be expended were disproportionate to the amount of success achieved. As a company trying to bring to market 25 to 30 films a year, we simply can't afford to indulge in the blockbuster mentality, even as a sidelight, even as a hobby.

Even if one accepts the homerun approach to moviemaking as valid, consider what it does to the other films on the agenda -- the singles and doubles. When there is so much at stake with the $40-$60 million films, an inordinate amount of time must be lavished on them in an effort to protect the massive investment. But, with a finite number of development, production, distribution and marketing people, this time has to come from somewhere else and it inevitably must come from the less costly projects.

The result is a few mega-budget projects that _have to_ do well and a bunch of smaller projects whose full potential may be jeopardized because the big projects drained away the executive attention the smaller ones needed and deserved.

This is why, when Warren Beatty comes to us to pitch his next movie -- a big period action film, costing $40 million, with huge talent participation, directed by the man who is arguably the most brilliant filmmaker today at making movies that are successful commercially and artistically, owned and controlled by Beatty and Levinson -- we must hear what they have to say, allow ourselves to get very excited over what will likely be a spectacular film event, then slap ourselves a few times, throw cold water on our faces and soberly conclude that it's not a project we should choose to get involved in.

Does this mean we abandon big, event movies altogether? Definitely not. But, we should approach them in as intelligent a manner as possible.

One way to do this is represented by our Cinergi deal. Under the terms of the agreement, for five years, we will be associated with Andy Vajna, who has a very good track record in the big budget action movie business. But our relationship is merely as a distributor, allowing us to enjoy considerable upside potential with minimal downside risk. Cinergi will continue to produce big action films featuring major stars and geared toward an international market. In this hemisphere, they will go out under the Hollywood banner, thereby adding to our library and maintaining us as a player in the Big Movie market. In this way, we should be able to profit from a business we don't want to directly be in ourselves, while still devoting most of our energy to smaller movies, many of which will still have breakthrough potential.

Another alliance we are currently working on is with Don Simpson and Jerry Bruckheimer. Some might think that this effort runs counter to the sentiments being expressed in this memo. Nothing could be further from the truth. Don and Jerry are among the best and most responsible producers in the business. I know that the "conventional wisdom" holds that they can only make giant big budget movies. As usual, the "conventional wisdom" is wrong. I worked with Don for ten years and helped bring him together with Jerry. They understand the supremacy of the idea and they know what it means to get value for the production dollar. When talented people like this are available, we should be smart enough to try and find a way to bring them on under terms that make sense to us. If a deal is signed, it will be entirely unlike their Paramount contract. It will be structured so that they will be extremely well rewarded in success. But they will also be at substantial risk, along with us, in failure.

Of course, we still have some Big Movies of our own already on our plate. "Scenes From a Mall," "Billy Bathgate" and "What About Bob?" are all outstanding projects. But there are too many of them. In varying degrees, each of them will require a disproportionate amount of energy on our part to achieve the level of revenues such films require. We'll get them done, and we'll do them right, but in the future we'll have to do a better job of controlling our appetite.

There's a fourth Big Movie underway that should be instructive as to the kind of event film I feel we must continue to make. "Rocketeer" is, to be sure, a high-risk film at over $35 million. But all the money will be up on the screen. And, if the film succeeds, most of the rewards will be ours. There are no giant stars, no big gross participants, we own the rights, we control the licensing and we have talent contracts covering sequels in the event it works.

"Dick Tracy" was a great experience. It was a solid hit and an outstanding accomplishment that was remarkable for making *Variety*'s list of ten biggest grossers and The New York Times' list of ten best films. But, as much as "Dick Tracy" was about successful filmmaking, it was also about losing control of our own destiny. And that's too high a price to pay for any movie.

Betting on Talent

We started out in 1984 as the most cost-conscious of all studios. One of our primary means for controlling costs was by avoiding the reigning stars of the moment. Instead we featured stars on the downward slope of their career or invented new ones of our own.

Robin Williams suggested to Newsweek magazine that we recruited talent by standing outside the back door of the Betty Ford Clinic.

The first instance of this approach to movie-making was "Down & Out in Beverly Hills," a film that re-ignited the careers of its three stars, Bette Midler, Richard Dreyfuss and Nick Nolte. We have maintained long-term relationships with all three, especially Bette Midler.

But, it would be an extreme understatement to say that a Bette Midler movie today is not the same thing as a Bette Midler movie was then. In 1984, we paid Bette only for her considerable talent. Now, we must also pay her for her considerable and well-earned celebrity.

This is what might be called the "celebrity surcharge" that must be ante'd up when hiring major stars. And, more and more, we've been working with the biggest stars in the industry. It's hard to say "no" to the likes of Steve Martin, Bill Murray, Dustin Hoffman and Sylvester Stallone. But, when we say "yes" in the future, we need to develop these relationships in a way that works both for them and for us.

These are the kind of luminaries who are said to be "bankable stars." But, 1990 should have demolished for once and for all this notion. This concept of the "bankable star" maintains that there are some stars whose very presence guarantees a certain level of box office performance. If this were true, then how can one explain what happened to 1990's vehicle for 1989's "most bankable star," Jack Nicholson, to say nothing of the heralded return to the screen of Robert Redford?

The fact is that "bankability" places too much of a burden on the star. He or she is expected to open the movie as well as to carry it. Dustin Hoffman, who is perhaps the most talented actor of our time, has never "opened" a film with a blockbuster first weekend. But his talent has been instrumental in making a number of films phenomenally successful.

And that's what it's all about. Talent. It is a performer's talent that can make a film a success. Celebrity can be an important bonus, but celebrity is really all about timing. It comes and goes and sometimes comes back again. A performer's talent endures. This is what we should be betting on.

This is why we must try to blaze a path away from unreasonable salary and participation deals. These kinds of deals can only make sense if a star's presence can absolutely guarantee monstrous success for a film. And, as we have seen, there are no such guarantees.

Unreasonable salaries coupled with giant participations comprise a win/win situation for the talent and a lose/lose situation for us. It results in us getting punished in failure and having no upside in success.

We have to find ways to make deals with major stars that work for everyone. And we have to summon the energy to go out and find the new people who have just as much talent and will be the stars of the future.

If the idea and story are strong enough, a movie shouldn't be dependant on any particular performer to be a success. This is why we should be aggressive on all fronts -- at the bargaining table with major stars, at the comedy clubs searching for future stars, and at the back door of the Clinic picking up the stars that once were and can be again.

Stories That Make Us Care

The idea may be king and high concepts may be powerful, but the crucial step is translating them into compelling stories.

It is the story that people remember. It is the story that gives the movie business its extraordinary power to impact the world.

Part of what makes a story work is mystical. Its originality, its theme, its characters, its dialogue -- all these are undefinable ingredients that contribute to the alchemy of a successful story.

But, given this, there are still some overall guidelines of key importance in telling a good story. Most important of these is the need to create one or more central characters who confront something elemental about themselves by the end of the film. This sounds much more cerebral than it is.

All this means is that there should be a sympathetic protagonist who goes through some transforming experience with which the audience can relate. This applies to the whole enormous and extraordinary range of film experience. Name any truly successful movie and you will find that this is the case.

Blockbuster? In "Raiders of the Lost Ark," a cocky Indiana Jones is humbled by the realization that there are forces even he should not challenge. Science Fiction? "2001" is about the transformation not just of a man but of mankind. War Film? "Patton" focuses on a man's struggle to achieve his destiny and, upon achieving it, accept that he is now a dinosaur. Comic Book? In "Superman," he must reconcile his desire to be mortal with his destiny to be a superhero. Social Comedy? "Tootsie" is about a man becoming a better man by being a woman. Comedy Comedy? In "Airplane," Ted Striker overcomes his "drinking problem" and past to save the day. Auteur Film? "All That Jazz" concerns a man who realizes he must change, only to find it is too late. Classics? "Casablanca" is about Rick regaining his convictions, "Gone With the Wind" is about Scarlett realizing her self-sufficiency, "The Wizard of Oz" is about Dorothy learning that there's no place like home and, that most classic of classics, "Citizen Kane," from first word of dialogue to final image, is about a man who, at the end of a tumultuous life's journey, comes to understand what's important in life.

We can play this game with our own major hits: In "Three Men and a Baby," the three men learn to grow up and accept responsibility. In "Good Morning, Vietnam," Adrian Cronauer must confront the meaning of the war in which he had been a play soldier. In "Who Framed Roger Rabbit," Eddie Valiant comes to terms with his past and, in a climactic moment, gives up booze. In "The Little Mermaid," Ariel realizes the price she must pay to realize her dreams. In "Dead Poets Society," John Keating leaves the school with the knowledge that he has made a difference. In "Pretty Woman," both Edward and Vivian choose to change their lives for each other.

These films didn't just involve transformation . . . they involved transformations that were affirmative and uplifting. More than anything else, I believe that these are the feelings that audiences seek out when they go to the movies. These are the feelings that audiences want to take home with them and treasure.

But let's not just pat ourselves on our backs over our successes. If we are to make an honest appraisal of where we've come from and where we're going, we must be willing to be soberly self-critical.

With this in mind, I'd like to also discuss two films where we may have missed the mark in developing the story. This is not to point fingers and not to lay blame. After all, I am as responsible for the resulting films that are produced here as anyone. But, if we are to do better in the future, we should consider instances where we might have done better in the past.

The two films I have in mind are "The Rescuers Down Under" and "Dick Tracy."

These two films would seem to be essentially dissimilar. But they actually share some fundamental traits. Both films are as close to technical perfection as we can get. "Dick Tracy" is an unqualified masterpiece in its imagery and "Rescuers" proved that we can match or exceed the quality of animation produced during this studio's golden era.

Interestingly, in elemental terms, both films told the same story. Inasmuch as the main character of "Dick Tracy" is Dick Tracy and "Rescuers" is Bernhard, when you cut through all of the action, the basic story of both of these movies concerns how these two characters came to make their marriage proposals.

This may sound absurd, but it is absolutely true. And it is a key reason why these to brilliantly executed films failed to develop the "legs" that we had hoped for. The core stories were uninvolving. There was no central character who had to confront his or her demons or resolve anything more challenging than when to mouth the words, "Will you marry me?"

In both movies, everything remained static for the main characters. At the end, nothing elemental had changed.

To compensate for the lack of an emotionally driving core story, the two films showered the audience with dazzling and inventive "business." But much of this failed another test of storytelling -- i.e., the movies would still have made sense had many of these scenes been cut. Just like songs in a musical, no matter how beautiful the melody, if they don't move the plot along, they don't belong.

These are post mortems and as such are inherently unfair. As an immensely complex collaborative process, a film project can trip up anywhere along the way. In the final analysis, it can't be definitively quantified.

But we should never let this fact serve as an excuse to eschew any attempts at after-the-fact analyses of what worked or didn't work in a film. Every avenue is worth pursuing if it will improve our abilities at the single most important aspect of our business: *telling the story*.

Getting Writers Who Can Tell the Stories

One reason for our quick and early success upon arriving at Disney was that we established a stable of writers under long-term contracts. These were talented individuals whom we could work with and who felt they had a stake in this studio. Just as our marketing division's success is in part attributable to the fact that the people there are part of the give-and-take of the ongoing creative process here, so, too, did this group of writers that was integrated into our operation function particularly well.

Now the stable is nearly empty. We should fill it again.

I know that many will argue that this just isn't feasible anymore. Agents won't let their clients sign long-term contracts because the spec script market is too lucrative.

All this means is it will be tougher. It doesn't mean it's impossible.

We need to somehow find the writers and convince them that an association here is in their interests. And this may not be as difficult as it seems. If and when the $3 million dollar scripts turn into box office duds, the speculative bubble will quickly pop and long-term contracts at a stable studio will regain some of their lost luster.

But we shouldn't wait for this to happen. All the big time writers have one thing in common. They were all once unknown and thrilled just to make a sale. The future big time writers are out there and would be grateful just to be considered by our studio. To find them, we have to search harder, dig deeper . . . and be there first.

Kids Movies Aren't Just for Kids

Too often, people think there are two broad categories of films: adult movies and kids' movies. Consequently, creative executives think there are two kinds of stories to develop: adult stories and kids' stories.

This is wrong and, especially at this company, dangerous thinking.

Our Disney franchise is of incomparable value. But it didn't get that way by making "kids" movies. It got that way by making "family" movies.

But, this, too, is a misleading term. It summons up images of movies that can only be enjoyed by Ozzie and Harriet and David and Ricky sitting in a row together sharing popcorn.

A "family movie" doesn't mean a movie that can only be enjoyed by the whole family together. It means a movie that can be enjoyed by the family individually. "Honey, I Shrunk the Kids" was a success because it was funny to an adult even when the children didn't come along. "The Little Mermaid" was a hit with late night date audiences. And, the movie that will be the biggest film of 1990, "Home Alone," didn't achieve that status without parents getting as much a kick out of its story as did their children.

These films didn't talk down to the kids. They let everybody in on the fun.

When we consider our roots, we should keep in mind the deep roots of this company which have earned such enormous trust from the general public. Walt Disney put it best when he said, "I do not make pictures for children, at least not just for children. I won't play down to them. I'll temper a story, yes. But I won't play down, and I won't patronize." He made movies for the kid that exists in each and every one of us.

Marketing & Testing

There is an unfortunate tendency to think that when a film does great, it's because it's a great film. But when it does poorly, it's because of poor marketing. While this logic is convenient, it can be empirically disproven.

A look at international performance will show that American films almost invariably do parallel business overseas to what they did domestically. Films that "didn't do well because of marketing" never do substantially better overseas when the marketing campaigns are substantially altered.

Marketing is an important tool. In the case of Dick Tracy it was critically important. It can also be a scapegoat, but an erroneous one.

Just as marketing can be overemphasized, so can another tool -- testing. In fact, it can be dangerous, because it can lead us to trust the test rather than trusting our instincts.

How often has a film tested "off the charts" and failed to do well at the box office? One of the weaknesses of testing appears to be that inoffensively pleasant films can test misleadingly high. People enjoy the films. They write down positive responses. We get excited . . . and then they fail to perform to our inflated expectations.

Testing has the aura of science about it. And there is <u>nothing scientific</u> about the movie business.

Ancillaries

One of the reasons that big budget action movies are thought to have revenue floors is because of the ancillary markets. Ten years ago, theatrical grosses represented 80% of revenues. Today they comprise only 30%. What's more, international box office has grown by 50%, whereas domestic box office has been relatively flat.

These fairly compelling statistics could lead one to believe that (a) there's a lot more money to be made out there, which can justify bigger and bigger budgets, and (b) movies can be successfully made by targeting one or more of the ancillary markets.

Ergo, the spate of big-budget, star-driven action movies, which in theory play well in any language.

If this logic is so overwhelming, then how can one explain a film like "Dead Poets Society?" The only thing more remarkable than its domestic box office of nearly $100 million was its international box office, which <u>exceeded</u> domestic by 24%.

We're talking about a film in which the subject matter was specific to a certain place and time in America, in which the biggest action scene consisted of some kids running through a forest and in which the "talky" screenplay offered overseas moviegoers the chance to hear some anonymous native-speaking voice-over actor impersonate Robin Williams impersonating John Wayne doing Macbeth. This would seem to be a film that was tailor made to flop in international markets. So, how could it have defied "conventional wisdom" to such a great extent?

Because it told a good story.

The ancillary markets are wonderful. They increase the rewards for a successful film. But consider their name. "Ancillary" is defined in Websters as "subordinate, subsidiary, auxiliary, supplementary." So, one must ask the question: What are the ancillary markets subordinate, subsidiary, auxiliary and supplementary to? Answer: The domestic theatrical market.

In almost every instance, the performance of a film in the ancillaries echoes its performance in domestic theatrical. It is the engine that drives the product through the distribution pipeline. And the fuel that powers the engine is the story. A clean, well-refined, high-octane story can transport a film over all kinds of terrain, down the carpeted aisles of pristine first-run theaters, past the floors of sticky fifth-run theaters, around the globe, onto home video, off satellite dishes, through cable and over the networks.

But, if the story is low grade, so too will the performance be, no matter how large the engine or how shiny and well-packaged the vehicle.

To count on a single element to carry a film in a particular market -- such as an action star in international theatrical -- is like playing Russian Roulette. Each time the formula works, the cost goes up, the stakes get higher and you get closer to the inevitable time when your luck runs out . . . and all that's left is an ugly mess.

Our job is not to count on re-cycled formulas, but to create and develop fresh, new stories. By so doing, we will give our projects the best chance to take off in their initial domestic theatrical runs and then to keep on succeeding through whatever subsequent entertainment technologies await them.

A Hands-on Haven for Talent

One of the ways to combat the high cost of movie making is to create a haven for talent here at Disney. Since we're not willing to offer talent top dollar, we can offer something no less tangible -- a genuine concern for their careers.

This means Disney should be a place where new talent can be recognized, where old talent can be rejuvenated and where current reigning stars can come to be both protected and try something new.

This does not mean offering talent total creative freedom. It does mean offering them a framework in which they can be challenged, nurtured and have a real shot at success.

This means recognizing the needs of individual writers, directors and actors, and addressing them. Someone like Garry Marshall is a tremendous collaborator and wants a constant interaction with others to bring out the best in himself. Others, like Peter Weir, are most successful when they can go pursue their independent vision within understood guidelines that have been established with the studio.

To make it all work requires that we pay maniacal attention to every facet of our operation. This hands-on approach may be a source of irritation to some. But, if it is done in an atmosphere of mutual respect, to most it makes sense.

An example of the positive effects of such a love/hate relationship can be seen in the following comments by Leslie Dixon, who wrote "Outrageous Fortune," in which she discusses a scene from the film where Shelley Long asks her parents for a handout by talking to the security apartment building's speaker rather than confronting them in their apartment:

"Disney was too cheap to build a set and hire actors. This provoked me to come up with a more creative scene of Shelley Long never being allowed in her parents' apartment. That's rewriting for budget, and good things can come out of it creatively."

The process works if everyone is committed to making it work. If we provide a focused, directed environment, where the objectives and vision are clear and success is well-defined, talent will respond.

Most talent welcomes a strong, knowledgeable support system that provides a clear context for the thousands of content decisions they must make. This is why it's worth the $7,500 extra each week to double print the dailies. This is why it makes sense to put extra money in a film's budget for re-shoots, so that a director doesn't feel that he has to get everything perfect the first time. This is why we should recognize the needs of a first-time director by providing him or her the best support people possible, such as a top editor or cinematographer, etc.

Most important, this is why we should provide a place where talent has the right to fail. By making long-term arrangements with talent we believe in, we can control costs while they can gain the security that's necessary for taking creative risks and going in new directions. As the blockbuster mentality rages around us, this can be a place that talent can go to be relieved of the pressure of having to try to make the next "Batman."

But the best way to attract good talent remains the best way to make a good movie -- with a good story. Most great talent will ultimately be drawn to great material since they know only too well that good scripts are hard to come by.

If we can consistently come up with good material, we will find ourselves with a leverage that dollars just can't buy. To paraphrase a competitor's film (one that was about as non-formulaic and unexpectedly successful as they get):

"If we provide it, they will come."

Success Requires Access

We can be neither hands-on nor a haven if we allow ourselves to become stratified. Access has to be maintained and encouraged no matter how big and successful we become.

This is why Hollywood Pictures was created. The decision-making pyramid should remain short and squat, with a minimal distance between the place where the ideas come in and the verdicts get delivered.

Only in this way can a creative, productive give-and-take be fostered. If we should ever become bureaucratic, we will then make the kinds of movies that bureaucracies make -- boring ones.

Every one of us was once one of the little guys trying to get noticed. Let's keep our doors open.

The Big Screen vs. the Little Screen

In deciding on a project, consideration should be made as to where it will play best. Nowadays, every film produced will ultimately end up on a television screen. But it's initial reason for being should be with the theater in mind. A couple is only going to pay $12-$15 for a pair of tickets to a movie -- knowing full well that in six months they can rent it on video for $2.00 -- if they feel they are going to experience something they can't get at home.

So, what are the differences between seeing something on the movie screen and the TV screen? The differences are as difficult to define as they are real.

The most obvious is that things can look bigger, more powerful, more complex, more detailed and more involving on a large screen. The same "Star Wars" Death Star that appears so awesome in the theater looks remarkably like a model on television. But, being the most obvious difference, size is also the least important.

The more significant distinction between the big screen and the little screen isn't the screen at all. It's the audience. Television is an individual experience. The theater is a communal one. And there's something about seeing a film with several hundred strangers that makes a comedy funnier, a horror film scarier and a tearjerker more heart wrenching. The entire range of emotions registers with greater force in the theater.

Home entertainment technology will not change this. No matter how big the TV screen gets or how well defined the picture, it still won't be the same as going out to the movies. To understand this, one need only imagine seeing a film today in a large state-of-the-art theater . . . alone. Without the presence of fellow moviegoers, the vastness of the screen and the theater would only serve to inhibit rather than enhance the experience.

For this reason, it can be supposed that people will often rent movies they've already seen on the big screen for two reasons: Consciously, they simply want to see the film again. But, subconsciously, they want to evoke the memory of the theatrical experience itself.

As we develop ideas for theatrical release, these are all factors that should be at least subliminally kept in mind in narrowing down the 1,000 ideas to the 100 projects to the 10 films that ultimately get made.

As much as the recent emphasis -- mistakenly I think -- has been placed on hardware and home delivery systems, we should not be fooled. _The theater is something special. The products we strive to put into them should be equally special._

The Rising Sun

Of course, the focus has shifted to hardware for a very good reason. The people who make the hardware have been buying up Hollywood.

This has resulted in a rising tide of hysteria and paranoia that has bordered on panic.

Let's calm down.

The Japanese have been buying studios in the belief that if they can control the software, there will be great synergistic advantages of vertical integration with their hardware. This may make sense if you're in the auto business and you own the company that makes the sparkplugs for your cars. I contend that it simply doesn't make sense in the movie business.

It all started when Sony was first on the VCR scene with its Betamax, only to lose out to the VHS format. Sony chairman Akio Morita has concluded that history would have been different if Sony had owned an American studio and therefore been able to direct the market by putting film titles on Beta tapes.

This thinking is absurd. By owning Columbia, Sony now controls less than 15% of Hollywood software output. Fifteen percent does not comprise the critical mass necessary to direct a market.

Beta didn't lose to VHS because it didn't have the software. VHS won, despite not being the first out of the gate, because of a superb manufacturing, distribution and marketing effort that ultimately succeeded in making VCR and VHS synonymous in the marketplace. And it was also a better product.

Now, Matsushita is making what I believe is a defensive move by following in its competitor's path and buying MCA. This is not unlike what occurred in our business a few years ago when many of the studios followed one another into the theater business. Like the Japanese hardware manufacturers, these studios believed that some sort of synergy/vertical integration magic would happen if they controlled the screens their movies played on. Ridiculous prices were paid for assets that are now declining in value.

Luckily, we stayed out of the theater business, sticking instead with the business we understand best.

And this is where the wisdom of the Columbia and MCA purchases is particularly questionable. The Japanese are getting into a business that is to some extent outside of their cultural context.

Filmmaking at its essence is about the conveyance of emotion. Not coincidentally, filmmakers by their nature are an emotional group -- from the actors on the screen to the dealmakers behind the scenes. It is said to be a crazy business and most of its practitioners admittedly are, by normal standards, a bit eccentric.

The Japanese, on the other hand, culturally err on the side of withholding emotion. In saying this, I am not simply offering an American perspective; The Japanese are the first to tell you this about themselves.

This sense of discipline and self-control has no doubt been a major factor in achieving the Japanese economic miracle that has turned a small island nation into one of the world's pre-eminent industrial powers.

But it is also why I firmly believe that the recent marriages between Japanese hardware makers and American movie makers may not be ones made in entertainment heaven.

There will be a chasm in the fundamental understanding of the movie business that will likely prove exceedingly frustrating for Japanese and Americans alike.

But, whether I am right in this expectation of incompatibility or not, one fundamental truth will continue to hold forth during the era of Japanese studio ownership: *only the product matters*.

If we at Disney continue to produce a successful slate of films, they'll line up down Buena Vista Street to buy our products to display on every one of their new fangled gadgets.

We don't need to be associated with hardware manufacturers any more than we needed to be associated with exhibitors.

We only need to be associated with good movies.

Rules

In this paper, I've implied a lot of rules -- go for singles and doubles, hold down costs, keep hands on, watch your appetite, be wary of the Big Stars, pay ancillaries no mind, etc. Here's one more rule -- there are always exceptions to the rules.

Filmmaking is not a science. This memo is being offered as a reflection on and a re-thinking of our business. Clearly, there are going to be instances of "yes, but . . .," as in, "Yes, I know this project violates Rule X, but the concept is so compelling that it's worth it."

But, to as great an extent as possible, we should try to adhere to a set of reasonable, rational rules. Not so much for us, but for *them*, i.e. the outside world.

If we exercise the necessary discipline to make some rules stick, then the people we deal with will have a clear set of expectations when they sit down to the table with us. By self-enforcement of a clear code, we will make it possible for agents to think, "As long as they treat everyone else that way, at least I know it's not personal." People will come to us understanding our terms and framework in advance. Or, if they don't agree with our approach to business, they will avoid us and save everyone from wasting a lot of each other's time.

And, if we are consistent in asserting our bottom line, in the long run we are likely to make less expensive and more profitable films. There is no way to minimize the long-term importance of being willing to walk away from any one movie. There are over 200 projects under active consideration at any given time at this studio. None of them is a certain winner, since there is no such thing. If we can't make one, there will be another to take its place. We must always keep this in mind when we sit down to negotiate. We must always be willing to walk away at the moment that a deal no longer makes sense for us. For every project we lose in the short run, in the long run we are likely to get five others on terms advantageous to us because the other side will know that we mean it when we say, "That's it."

While there is always going to be some flexibility on many of the rules discussed in this memo, there are two rules that must never be broken:

1. *Always exercise intelligence and good taste.*

These are two things to never compromise. If we decide to make a "tent pole" movie, then let's make it as intelligently as possible, with intelligent risk. If we choose to use a major star, let it be an intelligent choice for *that* role and for *that* movie. And, as we develop projects, let us always keep in mind the indefinable question of taste. Disney films mean something very specific. But, Touchstone and Hollywood films also reflect a certain entertainment ethic, one that we can be proud of and one that we should continually respect.

2. *Reserve the right to fail.*

We've become big enough and successful enough that no one movie can be the difference between profitability and unprofitability for our studio. If we are to achieve greater success, we must be creative. If we are to be creative, we must risk failure. Therefore, to succeed we must occasionally fail. And sometimes, not so occasionally.

"Pretty Woman" came on the heels of five consecutive failures. In the scheme of running this movie studio, those five failures were necessary for that one extraordinary success. And they were worth it.

If we remain intelligent about our projects and exercise good taste, then the failures will remain manageable. And we will continue to be successful.

Passion

And, as long as we're making rules, here's just one more: Everyone here should feel a passion for making movies.

Like other businesses, we manufacture a product that is sold to the public. Unlike other businesses, the product we manufacture can not be held, worn, driven or played with. But, even though it is totally ephemeral, the best of our output has come to be something that consumers will treasure for years and years.

Since we want the final result of our efforts to inspire a sense of passion on the part of our consumers, it is imperative that we feel an equal measure of passion in its production.

Any successful movie should stir emotions in its viewers, making them laugh, cry, shriek or simply be moved by what they are seeing on the screen. This is pretty powerful stuff to achieve by projecting some light on a wall.

It's magical for the audience and it should be magical for us.

The fact is that there is no natural momentum for a movie. It is not an orderly production process from design to assembly line to wholesale to retail.

Movies only result when there is a collective passion that moves it forward past one hurdle after another. One important ingredient in this collective passion is undeniably the talent. But it's often a sporadic ingredient, as actors, directors and writers are seldom involved in a project from beginning to end. What's more, their passion is sometimes restrained by their natural fear of failure. Therefore, passion needs to consistently come from us at the studio.

Passion is the only word that can explain why one would choose to burrow through 10-15 scripts every weekend on the chance of uncovering something great. Passion is the only word that can explain why one would spend a 60-hour week at a studio and then, for fun, on the weekend go see three movies. Passion, however misdirected, is the only word that can explain why a lot of otherwise rationale individuals would get caught up in the blockbuster mania that has engulfed our industry to such lemming-like effect.

This is a special business to be in. And people on the outside sense it. That's why they not only love to go to the movies, it is why they have become fixated on the inner-workings of the industry. They want to know how we make the magic. As much as "Entertainment Tonight" and its ilk can be irritants as they accelerate the blockbuster mentality, the mere fact these programs exist is a recognition of the specialness of what we do.

So, let's go back to the drawing board and get back to basics. And, as we do, let's not be afraid to admit to others and to ourselves, up front and with passion . . . that we love what we do.

Most consultants are full of shit. The good news is, with respect to their advice, you can take it or leave it.

The opinions herein are just that: one man's opinions. The only certain thing in entertainment is uncertainty. No one really knows which ideas will work.

Inasmuch as only John and Fred will use this information, I'm going to be very direct. I hope you'll forgive me in advance for that. I realize it's much easier to be a Monday morning quarterback than a Sunday afternoon one.

FIVE NOTES:

1. I make recommendations throughout - more than 200 in total. An addendum is included recapping all the recommendations, but read the text first – they'll make more sense.

2. For those of you who are ADD, yes, there is a section dealing with near-term emergency moves. See the Index; flip there first if you need to.

3. I'm going to re-live history in the initial sections. Forgive me, but the history around current launches in particular, is provided as context for recommendations that flow from the historical experience.

4. I've relied on information provided by your incredible team, and I did this in three weeks. I haven't triple checked all facts, so if something is inaccurate, forgive me.

5. MTV Networks is a brand-driven company, but I'll share thoughts regarding the VH1 brand last, for reasons that will become apparent.

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ONLY IN HINDSIGHT......

When asking how to improve the current situation, it's beneficial to first understand how we got here.

When analyzing the most recent ratings history of VH1, we need look no further than Behind The Music.

In the year leading up to BTM's premiere, VH1's quarterly ratings had risen almost 30%, from .21 HH to .27, due mostly to Pop Up Video. On August 24, 1997, BM premiered with a 1.2 rating. For the remainder of 1997, BTM averaged a .7, the highest rated series ever.

1998 was a tremendously successful year for development. BTRS and Where Are They Now were bonafide hits. Ratings were powered by four, record-breaking series, acting synergistically. Ratings rose to a .32 by the end of 1998.

Here's where it gets really interesting. In early 1999, VH1 made the decision to strip BTM. As a result, by the second quarter of 1999, BTM accounted for 38% of prime time hours, 25% of the schedule. One in every 4 hours was BTM!

Think about it – the most potent force ever for VH1 was unleashed, airing 42 times a week on average. In addition, liberal repeats of three hit series (pop up, BTRS, Where Are They Now), as well as valuable supporting players filled out the schedule. Ratings powered to a .37 in Q2 1999.

Here's the key point. When you first strip a hit series, the resulting ratings fuel will be initially strong, even out of control. The impact of suddenly scheduling six relatively fresh BTM's a week vs. one is immeasurable.

However, when you strip episodes, you immediately begin burning them far more rapidly. Episodes began to burn faster than they could be replaced with new weekly premieres. By Q3, 1999, we also saw a waning of the BTM average, and the quarter slipped to a .36. By the fourth quarter of 1999, the average household rating slipped to a .32, back to our previous baseline.

Don't get me wrong: stripping BTM in 1999 was the right move. However, we made a crucial error in not understanding the aberration represented by this .37 quarter. Every series has an arc, and the essence of the programming challenge is constantly compensating for these natural arcs with new product. Self-syndicating, or stripping hit series fast is a great trick, but as a programmer, you better have five more tricks up your sleeve for the next quarter.

Since we bought the "reality" and sustainability of the .37, we forecast a .40 HH upfront projection. Sure, seems reasonable, at barely 10% growth. But in fact, VH1 was more realistically an underlying .32 network at the time. Still great given where they'd been, but not a .40.

By early 2000, a very burned BTM slid to an average .38 rating across the schedule (includes originals and repeat airings). Think about it: if BTM, our highest rated series, couldn't even achieve the average upfront rating, how could we ever hit a .40?

The stripping of BTM through 1999 masked another very important fact: We didn't launch any new material hits in 1999 or 2000. BTM, the strip, easily carried us through 1999, even into 2000, so we didn't worry soon enough. By mid-2000, as a stripped BTM began it's natural burn, the lack of new hit franchises became strikingly apparent. By 2001, ratings slid into the .2's.

It's tempting to think of VH1's troubles as a recent phenomenon. But the current ratings of a network are a measure of work 24 months prior. The current troubles really began in late 1999, when we failed to replenish our inventory of hits. The stripping of BTM masked the impending problem.

By that same measure, it's going to be a challenge to solve a problem two years in the making overnight. VH1's brief moment as a .37 network was powered by a cultural phenomenon in BTM, plus 3 other big hits, several supporting franchises, and the rocket fuel provided by stripping BTM for the first time.

Today, 2002, only BTM remains on the schedule, and for perhaps just another year as we run out of artists.

To climb from a .24 back to a mid 3's network, we must build back our inventory of hits, and volume of original episodes, to the level that fueled 1999. And, unlike last time, we must sustain and refresh that model.

That's how I've framed the challenge addressed in the rest of this report.

One last note: it's been said that 9/11 affected VH1's ratings. Other than positive increases for the cable news networks, there's no credible evidence that any television networks ratings materially changed after 9/11. VH1 was tracking at a .17 18-49 for Q3 prior to 9/11. Q4 tracked at the same .17 18-49 after 9/11. All material decline really occurred through 2000 and early 2001. This red herring could derail our focus, so I reference it here.

WHAT SHOULD BE OUR TARGET:

Numbers don't lie. In order really to understand the challenge ahead of VH1, we need to understand what's required to move the numbers. Currently, we are tracking at .24 HH. We sold a .4. Ratings therefore would need to increase 66% to achieve the upfront projections.

Series (or premiere hours) impact the ratings mix most significantly. How many premiere hours would be required per quarter to move the rating?

See EXHIBIT A: What it takes to achieve a .32

By way of explanation, the model uses past performance of BTM premieres in prime as our benchmark. In analyzing past performance, we found:

- The top third of BTM's premiered at an average .83 rating over the last year. We optimistically forecast finding two series which premiere at this level by Q2 2003.
- The middle third of BTM's premiered at an average .52 this past year. Fred indicated .50 was the threshold for success. We forecast finding four series that premiere at this level by Q2 2003.
- The bottom third of BTM's premieres averaged a .34 this past year. Consequently, these episodes do us little good.

It's ambitious but reasonable to land 6 working franchises within one year, or Q2 2003. We further assumed these programs would repeat aggressively in the quarter, at least 9 times each, in all time periods. We likewise used BTM repeat averages from this past year.

Finally, we assumed about 8 original hours of each series per quarter. If it's an hour series, this equates to 32 hours per year. (Obviously, half hour series would yield less within the quarter; strips would yield more episode hours within the quarter. But on average, 8 hours per program per quarter seemed reasonable.)

So, 6 series times 8 hours each, or 48 hours of original content per quarter. To put this in perspective in Q1, only 9 hours (mostly BTM's and TV Moments, a couple of Driven's) have reached performance levels assumed in our model.

So the apples to apples comparison: we assume 48 well-rated original hours in Q2 2003. In Q1, 2002, we have just 9 well-rated hours.

- 27% of our prime time hours would be new premieres by Q2, 2003, vs. 14% in Q1 2002.
- 48% of our weekday hours would be "new" repeats of new content.

This is a rather dramatic channel makeover – every other hour new in twelve months. The rating would move to approximately .32HH, an increase of 33% over our current .24HH. We'd still be 20% shy of our .4, but .32 was probably always the realistic baseline.

Consider that it took 30 months to move VH1 from a .27 in 1996 to a .36 in 1999. This model is aggressive for three reasons:

- We presume we can achieve similar growth in just 12 months.
- We assume new hits rate similar to our biggest hit ever, BTM, or even better;
- We may lose our main engine, BTM, by Q2 2003 due to lack of artists. So all series here must be new, building on no existing equities.

Ratings growth to a .34 in Q4 2002 has been mentioned as an internal target. We could always be pleasantly surprised, but the model suggests otherwise. Also, given where we are with respect to new series launches throughout 2002 (more later), this seems unlikely.

MTV has grown anywhere from 40-50% over 4.5 years, outpacing literally every top twenty network over the same period. To achieve even a .34 on VH1, we'd be asking for 40% growth in twelve months. VH1 slid to this point over two plus years, not instantly.

At MTV, we estimate ratings six months out, hour by hour, daypart by daypart, week by week. For example, we know what the rating will be last week of August, 2002. This helps allocate resources, anticipate growth, manage expectations, etc.

This would be overkill for VH1 just now, but I'd suggest strongly adapting topside modeling, as we've done, to track and forecast progress against future targets. This keeps the challenge in constant, hard perspective. Colleen concurs.

For example, if we know we're launching, say, 4 new shows in late summer, then Q3 2002 is likely to have a hit or two, plus increased volume. It would be of great use to know right now what level of ratings growth that will translate to, and manage our business accordingly.

Recommendations:

- Adapt the hit and volume targets herein to frame the next 12 months of work. Measure progress against this model often.
- Have research adapt modeling on an ongoing and real time basis.
- Use this information to manage the development and series output, iteratively.
- Use this information to communicate accurate ratings targets internally.
- Use this information to manage other aspects of the business, including resource allocation.
- Consider whether the hoped-for Q4 2002 increases are realistic against this model.

Incidentally, we used this model to determine what's required to achieve .4.

See EXHIBIT B: What it takes to achieve a .40

To achieve a .4, one would need 72 hours of new content per quarter, performing at BTM's highest levels (including higher rated premieres from 1998 and 1999 in our average).

For perspective, compare this model to our best ever .36 quarter. In effect, when BTM was stripped to air 6 times a week, and Pop Up, BTRS, and Where Are They Now were in their hey day, we had the equivalent of approximately 9 Rockets on our schedule. Do we see this happening by Q2 2003? Doubtful. Therefore, we adapted the more realistic .32 trajectory, which nonetheless calls for an astronomical 33% growth in 12 months, 6 rockets on the schedule.

Recommendation:

- Take this modeling information into account when determining VH1's 2003 upfront projections and forecasting ADU management.
- To the extent future strips, or one-time ratings aberrations power deceptively high ratings, take the money by jacking scatter rather than upfront projections.

CURRENT LAUNCHES: The Time Factor:

Overnight sensations are seldom "overnight". Television programming isn't prone to instant success either. Managing the development timeline is key. Work should always be more than one year out. Time is everything.

We lost maybe a year transitioning between programmers. Thereafter, Fred made the choice to abandon all but one of the projects on the prior slate, which is not atypical.

Fred was hired in May, 2000; Steve Tao was hired thereafter. Per Steve's and Fred's representation, development monies were short or nonexistent in 2001 (given the cuts?). Steve, the critical development player, couldn't spend development dollars until 2002.

Apparently, this changed October 2001, when, given the declining ratings, $1Million in development monies were made available. By this time, VH1 had lost another six months. The cupboard had not been replenished with hit shows since 1998. Choosing to delay development, or fund other 2001 priorities over development, was a mistake.

Recommendation:

- Despite the current revenue situation, avoid cutting development funds at all costs. This expenditure is the foundation of any recovery, period.

The accompanying October 2001 mandate was for new series, on air, in Q1, 2002. This, at a time when there was but one pilot was in house (Evolution, to become Driven). In fact, none of the new series pilots would be completed by the end of 2001, but were instead delivered mid-late February for early March premieres. This was record turnaround, frankly, but still way too late.

Development is a process, and time is the enemy of that process. Development timelines vary, but the most ambitious timeline involving full pilots would be: 8 weeks research/writing/testing/casting; 10 weeks pilot, 12 weeks greenlight series production to air. Or, another way, 6 months is the minimum timeline, idea to launch.

Driven is performing best so far; doubtful that's a coincidence. Driven evolved from a materially developed entity, BTRS, produced by a seasoned team. An entire pilot was shot, aired, and tested under the title Evolution. Further refinements were made before Driven premiered in Q1. By the time Driven premiered, it was real television.

Any circumventing of this process *materially* increases the risk of series failure.

A lot of hard, good creative work went into the current series, and it's uncool to trash any creative work. The following comments examine simply how rushed *processes* impacted the series specifically.

- Never Mind the Buzzcocks: The focus groups were unambiguous on this one. "None of the elements were well received: title, questions, look, host, set, theme music". It was not "fun to watch, exciting, compelling". When interpreting focus groups, it's important to get past the noise ("I don't understand the scoring") and get to the essence of whether people could be entertained. In this case, it would have been infinitely cheaper to do another pilot, and do another test, or abandon altogether, but we rushed to series. The focus groups foretold the ratings so far.

- Being was received somewhat better, but was still questionable. 58% called the show "boring". 73% rejected the show; only 6% would make any effort to watch it. 48% tuned out, and dial stats tend to be most important. Also, from the focus groups, the show is potentially celebrity dependent, not unlike Diary on MTV. In such a case, booking is everything. Apparently three episodes were booked, and material talent problems developed thereafter, such that episodes 4 and 5 will not air, 6 may not air, etc. Considerable off-channel monies, cross-channel and VH1 promo time were dedicated to launching a show that, because of a rushed development process, will air three weeks and out.

- Ultimate Albums tested better, but John and others had material notes. When notes are material, it's wise to allow for a recut period to ensure they're realizable. Sometimes they are, sometimes they're not, and it's cheap to find out. In this case, John's notes were not ultimately addressed to his satisfaction, but the show was already racing to air, and that's that.

- Driven, as mentioned, is most developed, and is the best as a result. That said, because of the rush to series, and the fact that news/talent feels no particular obligation to news (producing division), this series also can not be delivered according to an initial plan, in succession. Four episodes apparently are airing now, and the balance of the 8 episodes will come intermittently in the second quarter, if at all. Besides the wasted promotion (above), this makes a scheduler's task near impossible.

- Zach's project went to air with an extremely short run thru period, no formal pilot, a late test on tape, no advanced backlog of taped pieces, few confirmed bookings, etc. Given the tremendous financial gamble represented by this series, that's tough.

Rushing series is tempting, especially during critical times.

But what if all of the March premieres fail, partly as a result of a rushed development process? VH1 will yield zero hits, AND because production consumed our staff's development time, few if any completed backup pilots. By rushing shows that were, by several measures, unready for air, we end up in May 2002, EXACTLY where we were May of 2001. Few pilots, no hits.

The thinking tends to go: "we can't afford to wait an extra ten weeks for the shows to hit air". In fact, the cost of rushing things to air will be infinitely greater: you could lose, per above, a year, plus $10M. The projects were worthy; rushing them undermined the projects.

Recommendations:

- No matter how dire things become, rushing one-liners or poorly received pilots to air is ALWAYS more costly. Seriously reconsider any projects currently slated for summer air without proper and complete development.
- Focus groups shouldn't be the ultimate driver. But when the rejection is rather unambiguous, with rare exception, pass or redevelop.
- With respect to the current crop of new launches, what I'd recommend:
  - Air Buzzcocks for 5 weeks, with multiple runs across the schedule. If ratings do not increase, shelve the remaining eight and save the amortization. $143 an episode times 8 remaining (if you hold as an asset until 2003) amounts to $1,120M in 2002 expense savings.
  - Air the three-four Beings, but then hold until multiple additional episodes can be booked and confirmed. This will likely require John Sykes' intervention or endorsement, given music/talent does not report to Fred.
  - Creatively, Being has a shot, pending the following significant notes:
    1. Choose more electric "flashpoints" in the artist's lives: launch of a new album, breakup of a band, plotting a comeback, firing a manager, getting married, starring in their first movie.
    2. Capture first person camera angles only stars could experience, i.e. behind the Grammy podium, in their home/bedroom, on stage in front of ten thousand people.
    3. Market and position the show according to the highly unique situations and viewpoints. Example: "Join Bono as he prepares for his celebrated Grammy performance. See what it feels like walking to the podium and accepting an award in front of millions". Bag the more abstract promotion.

- Pursue Driven, with JSykes to intervene in the booking process, per above. Creatively, and this could be key: ratchet up the "eclectic" factor, seeking out more colorful past contacts: Brittany's best friend in kindergarten, even if he has but one silly soundbite. A teacher who advised her to pursue academics instead. The scary landlord of their NYC apartment. A competitive girl in her ballet and tap classes. Etc.... So far, ratings correlate with artist popularity. More colorful, crazy, even inflammatory participants could allow Driven to transcend specific bookings. If talent resists this direction, produce only a handful on A artists. Program as specials.
- Pursue Ultimate Albums. This has a shot at working, simply because it's Behind the Music Act III blown out into an hour. My note, from left field: this show would be far more potent as a half hour.
- Per my original notes to John S., Late World with Zach, (along with Buzzcocks) makes me most nervous. Zach's 10 minute stand up (or sit down at the piano) is amazing and original. He's got "it", but there's no evidence the format captures "it". The financial exposure is tremendous (five times the risk of other launches). Also, because every day is a different exercise, day/date talk shows consume staff resources disproportionately. Also, ratings in this genre mean almost nothing initially. Therefore, compile weekly highlights (good and bad), view with your extended management team in real time, and make your call based on creative growth by Memorial Day.

Recommendations:

- Vis a vis Driven and Ultimate albums, even if these shows premiere to flat numbers (at least matching prior time period), stick with these for six months. Not so much because they'll become hits, but because they'll create the illusion of "new" on VH1, and hopefully increase cume slightly.
- Regarding future launches, do not spend off-channel advertising, cross-channel or on-VH1 promotion until you can confirm the lock for multiple episodes. Otherwise, this is entirely wasted.
- Someone mentioned Ad sales asked for March launches to provide an advanced upfront story. While this is a worthy aspiration, again, it's proven costly.

  Premiering individual episodes, specials, or using pilot footage can, in the future, create the illusion of momentum without requiring rushed or misguided series launches.

The obvious, and most important management question, given these lessons, would be: are we allowing for adequate development time for upcoming summer (and beyond) launches?

SUMMER 2002 LAUNCHES:

For summer, Fred is anticipating 6 June/July launches.

Two locks are:

- Joel Stein's animated half hour comedy. This show is excellent. The writing is tight and strong. The hook of "real" interviews incorporated into the story comes off naturally. The lead (Joel) is affable, empathetic, goofy. The self referential VH1 television show imparts a cool vibe to the channel overall.

  My two concerns:

  1. As piloted, the flash animation may alienate a few viewers.
  2. This show will seem an island on VH1. It's animated, fictional, half hour story-centric, unlike the rest of our fare. And with it's decidedly campy overtones, it seems from the days of Pop Up, Where Are they Now, BTRS.

Recommendations:

- Go forward. The development cycle was clearly long, and complete.
- Plan around the inevitable animation lag cycle, so you're ready to go with more episodes, should the show work. For example, pick up six scripts now.
- Consider pursuing an international partner to finance upgraded animation (likely too late?)
- For launch, consider acquiring an animated lead-in (Beavis, Critic from Comedy Central.)
- Consider producing like specials from aforementioned old titles as lead-ins.
- Seed the show as "blocks" early on in traditional animated time periods (Sunday a.m. would be strong.)
- Consider seeding on sister channels simultaneously, just initially, to reach non-VH1 viewers (Nick at Nite, MTV, maybe TNN.)
- Make this available for review. Given it's a peer's project, and given it's good, you'll likely make some noise.

- Military Diaries, from RJ Cutler. This project, currently shooting, profiles 5-6 military personnel's personal stories, presumably exploring the emotional connection to music. The premise is timely. VH1 was the only channel jumping on the military bandwagon, prior to the ABC Bruckheimer series announcement. I like very much the way this project stretches VH1's brand mission (more later). As one reference point, first person soldier stories worked well as part of MTV's USO show.

  That said, there are concerns. Foremost, no presentation or pilot was shot. This is an unusual endeavor (name a show like it?) We could have sent producers overseas initially for three weeks, edited a quick tape of two-three stories, and evaluated what we had. VH1 is in full production, but has yet to see one daily, for a show launching in less than ten weeks. Moreover, RJ Cutler, a fantastically respected Oscar winning documentarian, is just that – a documentarian. His work, in particular the great American High, feels slower, more introspective. This works for doc films; it may work less well as 22 minute, commercial laden, remote controlled world of television. It didn't work for American High.

Recommendations:

- Insist on screening the first dailies now.
- Work to isolate the "gold", i.e. those story moments that suggest emotion and promise.
- Unless the outtakes stand on their own (they may), ask for a rough avid edit stateside of 2-3 stories immediately, by mid-April.

- While it's likely too late to recognize any cost savings from stopping production, you'd still have 6-8 weeks to work on isolating the best stories, storytelling style, mix of stories, pace, etc. In other words, let's do a parallel and real time pilot while we're actively shooting the series, as an inexpensive insurance policy.
- This also allows us to intervene in the production now during shooting, should we require changes in the field.

A third show is considered highly likely, if not firm for summer:

- 24 Hour Show, from New Line Television. This is an idea based on an MTV pilot produced by New Line, Stephen Tao's former employer. MTV passed because the show proved a rather vicarious and unsatisfying experience, sort of inside, indy.

  VH1 has revived the concept (a Tao favorite from his days at New Line), with a potentially new twist: paying off with a music video rather than a short film, OR featuring rock stars in the final short film. Moreover, it's expected the recurring crew characters will add another dimension to the series. These are strong creative changes.

  A pilot is being shot April 8, but given it will be completed April 30, there's no time to test, evaluate etc. Essentially, the greenlight has to be or has been made now, in advance of the pilot, for the production machine to make July, barely.

  Per Stephen, he's willing to go straight to series regardless of the focus groups, because he believes in the project. His passion is to be appreciated. However, this repeats the same questionable pattern employed over the last six months. Under no scenario is the risk worth making it to air 8 weeks early.

Recommendations:

- The twists are smart, with the video payoff and rock star participation making it stronger. Move forward with development.
- That said, given the MTV test results and decision to pass, and the potential "inside" nature of this project, the risk is too great to forgo a pilot and proper testing.
- Moreover, since this is booking dependent, consider the experiences with Driven and Being, both of which are easier to book than this puppy. Do the pilot, involve music and talent and book the first episodes, then greenlight the series.

MTV Note: MTV is mid-pilot on "the 24 hour single". The idea is not dissimilar structurally, but the payoff is a produced single. Also, Korn has signed on to allow a viewer to direct their third video, which we will feature as a special episode of MTVideo. Neither has any worrisome overlap. This is just an fyi.

In addition to the aforementioned three summer series, Fred has, wisely, isolated those short-list projects most likely to round out the summer. The essential management question, circa March 2002, is: *given Fred's plan for 6 summer series, can we put the proper amount of development into said projects to make educated, smart programming decisions for summer?*

Essentially, to make June, we'd be making pick ups based on completed pilots or prototypes now (or really, a month ago). As reference, the close date for summer pickups at MTV is Feb 15; we've veered from that once or twice, but that's it.

Besides Joel Stein and Military Diaries, there are 7 additional projects under consideration for June/July launches. These 7 additional pilots need to yield 3-4 series greenlights, to give Fred his total 6 summer launches. Is it realistic to assume these 7 projects can be fully developed and evaluated imminently?

Each of the "summer" possibilities are evaluated in more creative detail in the next section, but with respect to summer feasibility:

CLASSIC SITCOMS: This is the rare idea that could be approached without a pilot, given scripts are "written", and it's all "stunt casting". That said, rights negotiations could make this unlikely for the summer, despite encouraging signs from Paramount.

THE BACK ROOM: The concept is talking heads, one of the most notoriously difficult forms to make entertaining. While easy to produce, a pilot, or two, is essential. This might be possible for late summer.

PRISON STAR SEARCH: No producer has been hired; no access to the prison system has been granted. Unlikely for summer.

LOOSE LIPS: Given the unusual nature of this project, transcript research, run thru's and certainly a pilot, are required. Unlikely for summer.

REUNIONS: A pilot has been shot, but is not loved at this point. Likely only if this pilot comes through; we will know March 20. Otherwise, a reshoot is required.

I LOVE THE 80's: Most doable, given pre-existing format, and similarity to VH1's production expertise. That said, rights maybe are required, and we've yet to make initial contact.

WORLD'S MOST DANGEROUS PLACES with Ted Nugent: Only a treatment has been submitted to his agency, and a pilot is definitely required. Unlikely for summer.

Again, it's very smart to have isolated these front-burner projects. However, from the aforementioned list, 2 to 4 have a shot for late summer, IF we pursue proper development steps essential for maximizing the possibility of ratings success.

Considering Joel and Military Diaries a lock for summer, expect you'll have a maximum of 3-4 projects from which to choose 1-2 additional late summer projects. It's important to be realistic, so we can begin planning for alternative ratings plays in the near term (more to come.)

Recommendations:

- Mobilize all efforts immediately behind the 2-4 projects from this list that, if everything went perfectly, could make summer.
- Plan for proper development processes around all projects. (see next section)
- Plan for no more than a total 4 launches for summer, counting Joel and Military Diaries as 2 of 4.
- Postpone expectations/calendarization/schedule planning for said projects to late summer.
- Explore alternatives to pilots to save time (see next section).
- Revise internal expectations. Currently, the cross promotion deck details two new series for April, two for May. Unless I missed something, this is misinformation.

THE SLATE:

There were some intriguing and entertaining one-liners in the development slate. There are clearly some talented and creative people contributing ideas, and that's great news.

To get a handle on the true launch possibilities between now and our long term target, Q2 2003, each project was evaluated according to:

- BG Instincts around the concept. Please know: this is subjective in the extreme, and you should develop any idea you like, regardless of my opinion.
- BG Instincts around the simplicity or complexity of realizing said concepts. Here, my thoughts are probably worth greater consideration.

Each project was ultimately ranked 1-5, as follows:

1. Great commercial concept and easy to realize. Go for it
2. Good concept, but development has more variables. Try it, but beware special steps.
3. Better than Average concept, material challenges in the development process.
4. Either because of the idea or difficulty of developing the idea, this is a longshot. View skeptically.
5. For specific reasons, don't count on this project at all. Kill now.

As follows:

1's ......

- **Tribute Band, aka Rock Star the series:** Great idea. Genuine curiosity around people who would live, breath and worship Journey. The promise of said geeks meeting their idols creates a compelling thru line. Consider two segments per half hour so it moves.
- **Green Room:** Edited footage from the world's most famous greenrooms – backstage at u2's concert, the Grammy's, VH1's own award shows – is a strong idea. The web brought green rooms into the home. In this "behind the scenes of everything" age, this seems perfect. Loosely speaking, this would be "vignette" driven rather than story driven. There was mention that TNN was producing a like show and that VH1 might drop this; I'd still pursue separately, and/or engage them in a dialogue around shared title, different content.
- **Diva's Search, The Reality Series:** Not a favorite internally, but leveraging an existing title, one that already implies intrigue and drama, seems a no-brainer. 500 thousand would-be's, narrowed to 25, narrowed to 5 (living together, of course), with the payoff coming on Diva's Live. The winner performs on the show. Press-worthy.
- **Camp Chaos:** Agree the writing is uneven, but there are moments of brilliance and the voice and look are very pure. I'd at least commission script #2, involving other writers.

MTV Note: If you pass on this, MTV would consider picking it up, given it's very young skew.

- **Video Hall of Fame: The Series:** Pitched as an event (see below), but would you consider this as a series? Choose three, even five classic videos per half hour, interview all the players, relive the moment. Production inside's, creative disagreements and the ultimate impact on culture. At the least, it's a very obvious, fast and easy pilot.
- **Reunions:** Likewise, this is a great idea. When you hear a certain song, you're powerfully transported back in time. Reuniting these people, with music as your window in, is clever and proven on countless talk shows.

2's......

- Crush: Straightforward idea, and universally appealing "if they could see me now" angle. You're rich and famous, let's visit the crush who spurned you. I have it as a two only because, if we can't book Bring or Driven, I'm not sure how we're going to get Jewel to visit the high school dork who rejected her.

MTV Note: We completed a pilot, and picked up a series called Virgin Chronicles, produced by John Stamos. In it, famous people (in the pilot, Rebecca Romain Stamos) reunite with their first teacher, first friend, first employer, and their first crushes. In the pilot, Rebecca is reunited with her first "boyfriend". There are similarities here. Do we put Virgin Chronicles on VH1?

- **I Love The 80's.** The simplicity of the umbrella, and the tone of the British series is great. In ways, VH1 has been here before, but I love the blatant celebration this represents. I include as a 2 only because cloning tone is tricky, and it's unclear whether you need to pursue format rights or not.

- **Prison Star Search.** Who wouldn't watch, especially if we get first person backstories. The show is based on something happening organically in prisons anyway; we're not "manufacturing" the situation. Included as a two only because access to prisoners is, obviously, limited and legalistic. I've shot comedy specials in prisons before, and it's dicey; moreover, no producer with relevant experience is yet attached.

- **U are There, aka Loose Lips.** Reading transcripts is clever. It's new territory, yet entirely consistent with VH1's occasionally tabloid past. The comedy potential is fresh. My only concern: making this visual without seeming absurd. As reading, I'm sure the transcripts are hilarious.... Unclear whether that translates to television, but worth a solid shot

- **Rock The House.** Trading Spaces and Cribs are two of the hottest shows in cable. There's something here, definitely, but as presented, the format seems unformed. The notion of following four rock stars in various stages of house purchasing-remodeling seems interesting, but may not sustain multiple episodes, or compel viewers to return. Likely better to self-contain the episodes. Moreover, Trading Spaces has a great hook and payoff. Listed as a two, only because serious format work should be done in advance of shooting.

- **Unauthorized.** Because this anthological news show is fronted by a talent Jake Tapper, it has potential to emerge with a unique identity. He seems worth the risk; thereafter, it's all about topic choice. The first two seem strong. This is likely a series of 12 specials annually rather than a series, but could be an important ratings contributor. The trick: transcend "just another news special" and emerge as a real franchise.

3.....s

- **Classic Sitcoms:** This idea has been hot in Hollywood since the Brady Bunch Play, which was brilliant. That said, no one has ever secured adequate rights. If you can pull it off, it's genius, but I include as a 3 simply because no one else has.

- **Isaac Hayes Pilot:** I Like him, but I question cooking shows in general. Word is this pilot may not be so spectacular. The challenge of turning a cooking show into a national phenomenon makes this a 3.

- **Deeper.** Hmmm... with artists appearing 127 different ways on both channels, it's unclear we need a regular Barbara Walter sit-down session. Her show works because she gets the absolute controversies or people of the moment; that seems a challenge for VH1. Moreover, this is currently without anchor talent. This is a 3, bordering on a 4 in my mind. I leave it here, simply because it is easy to continue exploring.

- **What If:** This is one of those ideas that sounds great, until you actually hear the stories. I'd greenlight to story research, and see if the paper treatments move you.

- **Rock Channel:** Hey, mediums are hot; the rock and roll John Edwards, why not. That said, this is 100% talent dependent. So while we should pursue, the project remains a 3 until you actually have substantive talent, which is not a guarantee.
- **Backroom:** If you compile random, eclectic, and broad (i.e. not Tina Brown) players, it's worth a cheap shoot. As previously mentioned, talking heads is tough. Politically Incorrect does it as well as anyone ever will, and it still rates subpar.
- **Routes:** A band goes home, retells their story, and then performs. It's a good idea, but it's also darn close to Road Home? Take Road Home as a show, and we'll share the franchise. There were mixed opinions on whether this project was going forward, so this may be a non-issue.
- **Rock Band on Tour.** Believe you were leaning towards killing this, but I'd consider it worthwhile. It's entirely casting-dependent (hence the 3), but if a major act signed up and allowed 24/7 access over a few months, the drama could result in 10 great episodes of television.
- **Street Cred:** Magazine shows are notoriously difficult to get over, and this premise tries to cover a lot of ground. Magazine shows challenge the audience because they're often a bit of everything, but nothing special in aggregate.
- **In the Closet:** I think Stephen Cacaharo is a unique talent, but fashion as television always ends up very "inside", no matter how much Fubu you feature. Worth a shot since you have talent attached, but beware the perils.

4's....

- **Onion.** It's a clever publication. But the players rotate and they've had one endless development deal after another in Hollywood, to no end. Since we've yet to even contact them, I'd consider this a longshot. Pursue, sure, but it's not real yet.
- **Stalkers:** The idea does capture one's imagination. That said, the legal implications are significant enough as to derail the development. Moreover, I've tended to find shows where we "go along for the hunt" to be very vicarious. Example A: Search and Record, a failed MTV pilot – I always feel outside these experiences, regardless of the producing approach.
- **Rock and Roll Beverly Hillbillies, The Vegas Hotel, Golden Girls Diva's, Music City...** All of these premises are sharp, imaginative and appropriate for VH1. That said, scripted television is, by far, the most difficult to develop. Consider out of 10,000 pitches, 500 scripts, 150 pilots, 25 launches every season, the networks land maybe two hits. More variables – writers, actors, premise, chemistry, moment -- are in play here. Also, across the cable dial (excluding network-like HBO), only Lifetime has managed to succeed with scripted programming. Moreover, about half the VH1 scripted premises are internal, and then we shop for a writer. This can work, but I've seen it work far more often when writers pitch premises about which they're personally knowledgeable and passionate (S. Tao is moving in this direction as we speak). Also, this form of television is extremely expensive. For all of these reasons, view scripted development as worthy, but as a long term, longshot. You've balanced it nicely here in your portfolio.
- **Hill Harper.** Talented, yes, but I have no idea what the show is, or why this is the personality for the times. "Bennetton" of talk shows seems sufficiently vague as to say 4.
- **You Wish:** dreams are fulfilled but sometimes they go wrong.... Maybe, I like the dark undertones, but I can't grasp the concept as presented. This needs some serious paper work before graduating to a 1-3.
- **World's Most Dangerous.** Ted definitely has a right wing voice that is intriguing, but my read of the idea is: "hey, let's send right wing Ted to liberal San Francisco". Then what...? What's the television series here, beyond a funny premise. Moreover, no substantive conversations have been had with Ted. Meet the guy, sure, but you'll need more of a premise to make this worth pursuing.
- **Paul's Place:** Talent in search of a concept. Love Paul, but feel any Paul project would have to be about the format, which is non-existent. Analogously, this is a network talent holding deal – be on the

lookout for an appropriate project, but don't count on it evolving magically into a stand-alone series.

- **Music Video hours Development.** I include the entire category here, simply as a product of my experience desperately trying to dress up, superimpose, and telestrate my way to higher video ratings. Some of these video exercises led to successful, traditional "series" (TRL, Say What Karoke both started as video shows). But on their own, few if any have led to higher ratings. In as much as resources and executive man-hours are limited, all video hour development should be viewed through that prism. Longshots, worthy always, but with minimal costs and only prototype caliber expenses (test for $10-25K a pop, max).

5's..... (Kills)

(A word about kills... many of these are vague one-liners, or simply "arena's" rather than television concepts. Noodles are fine, but should be separated from active development.)

- **John Ciao...** based on staff representations, kill.
- **Quarterly Sports Specials.** Not an idea, a vague programming category
- **Fame-o-Meter.** I get the Hollywood Stock Exchange reference, but I have no idea how the television would work.
- **Rock and Roll Parents.** It's a psychographic observation, but it's not a tv show.
- **Vision Quest.** Don't see profiling someone who left computers to pursue his dream of teaching skydiving earning a 1.0
- **Godzilla Rocks.** Funny when you're sitting around stoned with your friends ragging on old movies, but less funny translated as television. Developed often, barely succeeded once (Mystery Science Theatre)
- **Indy Cable:** Sounds funny until you're presented with the first reel of "wacky" programming... then you realize why it's on access in the first place
- **Static:** Concept seemed confused. Agree with Fred here; there are better scripted premises to pursue.
- **Just for One Day:** Watching Kid Rock serve French Fries holds up for about 60 seconds before it feels slightly desperate.
- **Rock and Roll Dog Show** ... I love it, but it's a special. Should be moved off the series slate.

Recommendations:

- Reorganize slate to highlight favored 1's and 2's. Beware of risks inherent with 3's. Refocus the organization to focus primarily on the 1-3's.
- Consider killing or putting on the back burner all 4's and 5's.
- Consider putting all scripted projects on the backburner. Develop, but do not depend on these for short term ratings wins.
- Consider developing more writer-driven scripted projects, rather than writer-assigned projects.
- Reduce and/or be realistic about music video series development. The upside is seldom there.
- Separate "noodles" from the core development slate, so as to accurate read and predict pilots and series possibilities.

See EXHIBIT C: Slate Evaluation

To recap, we have 12 solid, development-ready concepts (1's and 2's), and a handful of 3's that may surprise us. For perspective, this isn't bad at all. My likes and dislikes, with natural exceptions, tend to mirror Fred's.

Roughly, you might expect 1/3 of those to yield series-worthy pilots. Or, another way, from the existing slate as I dissect it, it's reasonable to expect a yield of 4 or 5 more launches (in addition to the two locked summer greenlights).

This would mean 6 or 7 more launches this year; Fred's target is twelve.

12 is probably not realistic, but that's ok. If we aim for 12, I fear we'll repeat the last six months – bypassed development, premature launches, an overtaxed staff focusing on production rather than development, and ultimately, little ratings impact.

So what's the right number? If, say, 35% of our shows hit (a fair to optimistic ratio in television), we'd need to launch 17 shows to land 6 hits by Q2, 2003, our model target previously.

It might break out this way:

- we've launched 4 already in 2002
- we launch another 8 this year (6 are already likely from our current slate)
- we launch 5 more, Q1 2003

In total, 17 launches over twelve months, aiming for 6 hits and a .32 by Q2 2003.

But our current slate of 1's and 2's suggest maybe 6 pilots at best for 2002. We need more concepts in development. We need to fast track our existing 1's and 2's, and find some more.

Recommendation:

- Adapt the real target of 12 plus pilots, and 8 additional launches for 2002.
- Measure progress throughout the year against these targets.
- Work to expand the development slate to ensure 8 additional launches in 2002.

Regarding these targets, real life is never so clean. Creativity will most certainly unfold in different, unexpected and inexact ways (hey, that's the fun of this). But these are fair targets, real goals tied to real, mathematically modeled results. It gives us a road map, something to shoot for.

Since we expect our current slate of 1-3's to account for only 6 launches yet this year:

- How can we fast track the current 1's and 2's to ensure they're developed completely, but in time for 2002 launches?
- How can we expand our slate of 1's and 2's slightly in the very near term, in an effort to produce not 12 but as many as 15 pilots this year, enabling up to 8 launches.

The next section will address these two questions.

FAST TRACKING THE 1'S and 2's (and even 3's)

Currently, one-liner concepts go either to pilot, or even straight to series. Pilots cost an average of $150,000. With a development budget of $3.8M, take $1M off the top for movie development, small miscellaneous development, etc.

The remaining $2,250M funds approximately 15 pilots annually. Consider we've produced a handful of pilots already (Joel, March launches), so we can afford perhaps 8-10 remaining pilots. Per our targets, we need to produce 12-15 pilots this year.

Moreover, we need to do it fast. And pilots generally take anywhere from 10 to 16 weeks. A project put in development (deal closed) by, say, Memorial Day, would be piloted thereafter, delivering in, say, late August. An immediate series greenlight would result in a November or December launch. That's close.

One solution involves isolating projects for "alternative" development. "Full development" doesn't always mean "full pilot". Often, an idea can be adequately developed, even tested, with in-room run thru's, pilot presentation tapes, prototypes, "ten minute" pilots, staged readings, etc. It takes a bit more expertise to evaluate as television, but it's doable. And it stretches your development budget further, which we need to do in 2002.

Some suggestions for "alternative development" around our 1-3's follows; these approaches can be adopted for like product in the future:

1's....

- **Tribute Band:** Produce one half the program, focusing on the tribute band and their backstory. Forgo the performance, or shoot single camera without bells and whistles for participants reactions – we know what a performance looks like, and performances cost disproportionate amounts of money.
- **Green Room:** Wire the Diva's green rooms, dressing rooms (when possible), and hire a supreme editor to play with the footage immediately thereafter. Look for potential vignette's (produce a couple) and answer the question: how would this be structured as a half hour (on paper).
- **Diva Search:** Given there are countless reality talent shows, forgo the pilot and hire the best producing team of Bunim Murray to develop the series steps.
- **Vid Hall of Fame:** Choose one video and produce a small 7 minute prototype, complete with interviews. Research on paper two other stories, with pre-interview notes
- **Reunions:** Requires a full pilot

2's....

- **Crush:** Produce one segment only, ten minute pilot
- **Love The 80's:** Do a prototype focusing simply on tone.
- **Prison Star Search:** Produce one story fully, with backstory, set up, etc. Find ten other stories, researched fully with pre-interviews on paper. Shoot an accompanying DV reel of actual cabaret performances.
- **Unauthorized:** Back door pilot, as you're doing.
- **Rock the House:** Stage one needs to focus on generating format ideas. Do not go to pilot until this happens, then make determination as to the right next step.
- **Loose Lips:** Research transcripts quickly; circulate. If the material's there, stage run thru's, culminating in an in-room read-thru for senior execs.

3's……

- **Classic Sitcoms:** Straight to "special" as backdoor pilot, or series.
- **What If:** Research stories on paper to see if these are worth shooting.
- **Rock Channel:** If talent search yields a strong candidate, do in-room run thru's initially. This may or may not tell you about series, but it will let you know whether to bother with a pilot.
- **Backroom:** Shoot down and dirty, 12 minute pilot, DV, in our own studio.
- **Routes:** Evaluate Road Home as an alternative.
- **Rock Band on Tour:** Since a pilot is not feasible, search out the best reality team.
- **Street Cred:** Work this fully on paper; initial treatment looked good. A pilot will be required, but could potentially piggy back other daily news work.
- **In the Closet:** I think a pilot is required here, after working through segments on paper.

There are no hard and fast rules; instinctually, there is generally a question, or a couple of questions that really need to be evidenced. Some examples:

- Game Formats like Buzzcocks work particularly well as in-room run thru's.
- Reality programs involving backstory and set up (Reunions, Crush) should be shot, but a shortened pilot may do.
- Actor driven projects (Loose Lips) work well as staged mini-theatre productions. More complicated dramatic scripts can be worked this way as well (we do it at MTV), but it's risky.
- Amateur Talent programs work well with DV samples of said crazies.
- Talent driven projects work well with multiple run thru's, leading to an exec run thru for pick up.
- Format driven projects (Rock The House) generally require a full segment shoot.
- Story driven projects (What If) are often better tested with paper research; you'll still likely need a pilot, but this step can save you a wasted pilot. Likewise a magazine concept like Street Cred.
- Projects where tone is key almost always require an edited prototype (80's.)

Recommendation:

- Fast Track your 1's-3's, considering these alternative development options, conserving both time and financial resources.
- Reallocate development savings to fund additional development in 2002.
- Likewise, for some projects, insert paper steps which, although they add a step, may save you mistaken pilot pickups.
- Develop fast-track options for future ideas.

EXPANDING THE SLATE:

In the near term, we should expand our development slate to ensure 15 pilots and 8 launches for 2002. As discussed, we're 80% there, which is good. But we need sustained development for 24 months to achieve our goals, and that's where I'd be worried.

VH1 needs a very fast, very smart development infusion for 2002.

Steve Tao represented he's after 20 more projects by Memorial Day, which is great.

Recommendations:

- Create a "buying retreat" in L.A. When development is low, we (MTV) stage a "buying retreat" at the House Of Blues. Over 48 hours, the junior development staff presents, with agents and talent, their favorite pitches. Our promise to the players: We'll buy the project and commit within 24 hours. This creates a real heat around the process, and people come to play. We have legal sit in, so as to facilitate fast-track deals. This has been tremendously successful for MTV
- For three months, eliminate the "paper" treatment phase, whereby paper presentations are made to John and Fred. Do paper work only when your debating whether a project warrants a pilot.
- In tandem, for three months, allow S Tao to directly buy projects up to $25K, up to $250K total. Things will move fast, and you'll get more voices reflected.
- Set very specific three months targets for Kim, Rob. W. and Michael H. to ensure we hit 20.
- To the extent this is successful, consider institutionalizing these mini, lower-level development funds to reduce inevitable senior executive bottlenecks.

Another observation regarding VH1's slate: a disproportionate number of projects seem to be internally generated and produced. Many involve former VH1 staffers. Two of our active series involve Steve's former New Line colleagues. In all, 70% of Tao's projects and 100% of Michael's are internally generated, or say 80% overall.

By contrast, about 50% of MTV's projects are internal. TRL was internal, CDM was external. Cribs was internal, Tuff Enuff was external. Making the Video was internal, Dismissed was external. We'd be in sad shape with, say, just half those hits.

Internal ideas have unique benefits. They're cheaper. You save time negotiating deals, key when we're looking for fast product. The staff has personal passion. However, when rapidly expanding a development slate, we need as many ideas as possible. We can canvas our internal staff of 20 players, or we can invite 200 additional outside players to contribute as well.

In my experience, more novice development staffs fall back on their own ideas initially, and sometimes near exclusively. It's fun to get your own ideas made, but it excludes other potentially winning ideas. It may make sense to rapidly expand the number of outside pitches and partners, and per Stephen's representation, he's turning here next.

As reference only, attached is a list of 20 interesting production entities with interesting taste and track records. Undoubtedly, your staff knows many or most of these players, but if not...... If you're looking for projects in particular realms, we can likewise augment with more specific lists easily.

See EXHIBIT D: Sample Producer List

Recommendations:

- Consider expanding the universe to include more outside pitches/players
- Rely on MTV if you'd like expanded lists of worthy meetings in various realms.

I've also reviewed the MTV development slates; there are projects that could be appropriate for VH1. Obviously, this introduces an entirely new set of issues, but for sport, here is a sampling of the types of projects that might make sense. All are in active development; no executives or producers have been approached regarding feasibility. Please respect confidentiality here:

See EXHIBIT E: MTV Show Concepts With VH1 Applications

Microphone Sessions
Make it or Break it
Fanography
Chatterbox
Music Therapy
Forensics (not first, buried)
Colleen Fitzpatrick
Virgin Chronicles
LIPA
Oneal Empire
Dorian Gray
Platinum
Skirts
Intervention
Movie House

Recommendations:

- Determine if any projects are, categorically, of interest. Organizationally, Tom Freston to decide whether we'd ever share slates and/or product being developed. Analyze repercussions for MTV projections, and staff.

- While expanding the development slate, consider some current trends, or shows that seem to be working:

  Life based reality, particularly on TLC, MTV and elsewhere. This, as opposed to "vote someone off the island" backstabbing, game based reality, which is cooling.

  Hip Hop. It's hot for perhaps the fifth go around. BET numbers outta control, works on VH1. There exists a complete dearth of urban programming just now, on networks and elsewhere.

  Anime. Sure, it's kids stuff, but it's now working for Cartoon Network with adults 25-34 in their Adult Swim.

  Behind the Scenes ANYTHING. Expand VH1 coverage to go inside not only music, but movies, television, fashion, etc. BET's Access Granted, E Making Of, Project Greenlight. It's not enough to make a video; you must make the making of the video.

  Verite strips. Studio strips are out. Field strips, from Blind Date to Real TV to Dismissed to key "real life" fall talk projects, are in.

  Exaggerated human risk. Fear Factor, Jackass, The Chair. Ripley's is the highest rated original Turner program.

SCHEDULING STRATEGY

This section will be full of potentially counterintuitive suggestions, so get ready.

To start, Ben has been wonderfully helpful in laying out his strategies and sharing information. Thank you!

Is scheduling strategy important just now? You'd think so, but No. Scheduling strategy is a downstream issue, simply because we haven't the product to schedule. There exists a perception VH1 could increase ratings by simply rearranging the pieces. Just now, there are no pieces to rearrange. Keep the focus on new content.

The current scheduling philosophy is network-centric. The big three have morning shows, so VH1 has Jump Start. Networks program access with strips; we're prepping the Unhappy Hour for access. Becker is weak, so we programmed Buzzcocks opposite Becker. Networks have late night talk shows; VH1 launches Late World with Zach at 11p.

Since we older folk in management grew up in a "three network, one local independent" world, it's tempting to mimic those schedules. These philosophies seem to match our audience's routine. Ben did reference, as his main competition, the three networks, and MTV.

Is it sensible to schedule as the networks? You'd think so, but no. In a .2, or even a .5 or .8 world, VH1 is playing a different ballgame. Truth is, people are spending very little time with our channel, even in the .4 heyday. VH1 is not a primary destination for any specific audience, save a handful of music junkies (all of whom are already in the tent anyway). We are a secondary destination, a channel people surf to when they're bored watching Law and Order. Relative to Law and Order, we have 1/25 the audience. *NBC should create schedules to mirror the audience's every daily move; we should create schedules to capture NBC's overflow.*

A cable-centric philosophy for VH1: put your best shit on in the highest HUT time periods, behind the best lead-in's you've got, regardless of the competition. Run the best new content as often as you can, in all time periods for maximum exposure, driving cume and sampling over time.

Other than avoiding major cable or broadcast events, all competitive concerns are noise. People are unlikely to choose the Buzzcocks over Becker, or even have any cognizance of the option. VH1's goal: to have our best foot forward when the audience might, for ten seconds, surf away from Becker and land on BTM. Our secondary goal is to hold anyone then seduced by BTM into sampling new content thereafter. I know it seems simplistic, but look at the research. VH1 is not "the first place they go". Rather, VH1 is a place our audience "flips to between commercials". Let's take advantage of that.

Ben's emphasis on prime is smart. HUTS are highest; our broader audience surfs in prime. Rather than worry about targeted daypart development, just develop great shows. Most can premiere in prime.

If traditional dayparting is irrelevant, the "Draft" effect is everything. Your most powerful tool in broad cable, always, will be the lead-in. Ben is scheduling Ultimate albums after original BTM episodes, which is very smart. You just doubled the rating for Ultimate Albums. Even after multiple repeats, Driven got its highest rating ever and the third highest rating on VH1 for 2002 as a result of following Michael Jackson's 30th Anniversary show.

However, because of late delivery issues on Ultimate Albums (as with our other new launches), only four episodes of Ultimate albums arrive in time to take advantage of the original BTM's lead-ins. Therefore, tragically, we'll be throwing away the original BTM lead in April and beyond. We only have 22 or so BTM's a year. It's key to orchestrate new product following each and every new BTM premiere, or behind every high rated movie premiere, acquisition, Diva's, etc. Otherwise, you're throwing the "draft effect" away.

For reference, at MTV, we very often hold content 2 and 3 months to orchestrate matching premieres, slating weaker content behind stronger leads. Diary is a hit because we match Cribs and Diary delivery; otherwise, Diary would get half the rating.

Remember also Being, due to booking issues, is original for only three weeks. Thereafter, original Buzzcocks will follow Being repeats, which is uncool. Had this been anticipated, it would have been smarter to put Buzzcocks at 9p, and have programmed strong 8p lead-ins.

From a scheduling point of view, it's impossible to orchestrate "the draft effect" with wildly inconsistent delivery patterns. Ultimately, someone has to intervene and create some order and structure around this entire process. Moreover, rushed series orders have created this scheduling chaos. We're throwing away ratings.

82% of your audience doesn't know when shows are on. Another contrary position: it doesn't matter. All that matters is giving the original new content a strong lead. The audience says they love videos too. I promise you: this should not enter the conversations around scheduling. Let the networks create appointments; let's maximize our chances of catching the overflow. I've seen endless conversations around correcting this problem; fuck it.

In an attempt to "let the audience know when things are on", VH1 made the choice to schedule BTM repeats at 8p, somewhat exclusively, hoping to make this a destination. To be fair, E, A&E and others have done this successfully with True Hollywood Story, Biography, etc. It's usually smart, because your audience isn't going to remember the intricacies of your schedule. But they may, over time, remember if they're bored watching any network show at 8, they can flip over to VH1 and get BTM. It's a singular, simple counter-programming message; a brilliant way to maximize your chances of capturing the overflow. However, there's a major difference. A&E, for example, had enough overall ratings health to hold Biography almost exclusively for 8p since the beginning. Also, A&E premieres multiple Biographies at 8p many weeks. Therefore, Biography content at 8p is generally "newish". Likewise, E.

We could have mirrored this strategy, say, in early 1999, when BTM was new and repeats had been limited. But we went down this path in 2001. By then, BTM episodes had already aired 50, 70, 90 times. Plus our audience was fully conditioned to the fact that BTM is on everywhere, always. It's a sensible strategy for our next hit, but it's too late for this particular asset. Ben concurs the notion of BTM exclusively at 8p hasn't worked.

BTM's perform synergistically far better when ran in tandem, in marathon, etc. This is smarter than singular 8p airings. The dam has already burst... let's go back to what worked. Run multiple episodes vertically, and get a short-term lift in Q2 2002.

Wisdom says we should preciously guard our new programs, driving the audience to premiere airings, and repeating infrequently, yes? No way. To seed shows, it's essential, on a .2 service, to give maximum exposure early on. We're running our new programs about 5 times in the initial week. With Being, for example, it occupies only 2.5 hours of 168 hours a week, just over 1% of our schedule. The odds of a typical surfer catching Being are 99 to 1. To be precious with the asset simply means no one sees your new material, period.

Air new product a minimum of 10 times the first week out, and at least twenty times the first month out.

But this will exacerbate the perception that VH1 runs a lot of repeats, right? No, exactly the opposite is true. If we run Being 20 times, the show now covers maybe 3% of our schedule. If our other new content runs twenty times as well, new content now comprises 15% of our schedule. We've increased the odds an average viewer might actually see something "new" when surfing through. Seeing something new, even if you see it twice, is better for the brand than airing #156 of Poison's BTM. I have that thing memorized.

Now, to freak you out even further: Weekend stunting drives ratings? No, not that I can tell. Elaborate repackaging of tired content is generally a waste of time and resources. I looked hard for evidence of higher ratings attached to packaged (as opposed to unpackaged) repeats. Weekend ratings are indeed higher, but only to the extent HUTS are higher. The team reports John loves the weekend stunts. The audience tunes in for compelling new content, not compelling reorganization of old content. No amount of interstitial will compel someone to stick through Cher BTM if they're not interested. Money and resources allocated to repackaging repeats is misguided, and organizationally, I fear it takes your eye off the ultimate prize: New content!

Around Mother's and Father's Day's, Fred is intending to produce new content (one hour specials each) for the weekend. This is infinitely more justifiable, but scheduling the new content in prime might do you just as well. Remember, ADU's accrue evenly Sunday through Saturday. Therefore, we need to pump the lower rated weekdays, rather than the higher rated weekends.

And some notes regarding formats....

Strips, by definition, are disproportionately potent. Each strip amounts to 2.5 hours (half hours times five days), or 5 hours (one hour times five days) of new content per week. Weeklies amount to one half or one hour a week. In reviewing our 1's and 2's, only a couple have potential as strips. Increase strip development for the fastest near term ratings infusion.

Certain weeklies (Reunion, for example) will be hard to produce five per week. Alternatively, consider producing 2-3 a week, and stockpiling the episodes until you can launch contiguously as a strip for maximum impact. We've pursued this strategy with Fanatic, Dismissed, and other more complicated verite productions to decent effect. It's easier in ways to market and "seed" a strip as well, given it's uber-presence.

Both Being, and Driven are artist dependent formats. Zach may prove to be artist-dependent. Artist dependent formats are fine, but they're also limiting. At any one time, 6-15 artists pop a number, no more. Diary, for example, is artist dependent; therefore, it's difficult to produce more than 15 episodes per year. When pursuing new greenlights, eyeball the overall schedule. Offset artist dependent formats with artist independent formats.

Two last words re: scheduling...

The biggest "scheduling" issue VH1 faces is the demise of BTM, which now accounts for 22 higher rated original hours per year. Per Fred and others, BTM will run out of artists by early 2003. It's Anthrax and Garbage this cycle. If ever there was an incentive to get things together, it's the imminent demise of BTM. The mathematical impact is significant; even in the last year, with lesser artists, BTM's average premiere has declined significantly.

Finally, Ben and others referenced MTV as VH1's primary competition. Perhaps you'll find this contrary also, but MTV is not your competition. There are 13 other services with higher 25-34 numbers than MTV. There are 20 plus services with higher 18-49 numbers than MTV.

MTV's competition is for 12-24 year olds. And that means Comedy Central, Disney Channel, Cartoon Network. Not, respectably, VH1. Both channels traffic in music, and even occasionally compete for like artists, true. But from a pure television point of view, both services should focus on outsiders rather than each other. We fight over No Doubt while TLC eats both our lunches.

Scheduling recommendations (recap):

- Realize scheduling does not provide a short term solution; only new content will drive ratings at this point.
- Adapt a cable-centric, rather than network-centric approach, focusing on capturing network overflow 24/7.
- Continue with the emphasis on prime, abandon specific development for other dayparts.

- Recognize lead-in's are everything. Schedule limited original, established series and special in tandem with new content premieres
- Resolve production issues, so scheduling can plan to maximize and coordinate lead-ins. Consider creating a forum for program planning. J Sykes to intervene as necessary, given music/talent reports directly to the President.
- Forget about "letting the audience know when things are on" regularly. Focus instead on premieres.
- Abandon the 8p BTM scheduling strategy. It's too late with this property. Return to effective weekday verticals.
- Increase runs of new content dramatically, in an attempt to seed shows. Worry not: unduplicated cume will remain high.
- Abandon production of weekend repackaging stunts.
- Consider creating original weekend content instead. Consider programming some original weekend content in prime.
- Increase strip development, given the scheduling/ratings potency.
- Develop Artist-independent formats to compliment the current artist-dependent formats.
- Begin aggressive contingency planning for the potential demise of BTM in 2003.
- Recognize MTV is not your primary competition; this is a red herring.

EMERGENCY MOVES

This report is a long-term plan based on original content, which I believe is the path to ultimate salvation for VH1. That said, Rome is burning. We need some emergency moves, fast.

Now, we have long term series development people acting, dangerously, like short-term emergency crisis managers. This has led to immense complications, detailed previously.

Let's approach the challenge in a bifurcated way for the balance of 2002.

Create one forum and one defined group of individuals to focus daily on emergency programming moves. Create a war room, and meet daily, if only for ten minutes. Deal with the range of options presented below.

Simultaneous, the series development people need to be "de-coupled" from this process, and allowed to focus on proper development timelines and the longer term series wins.

Management needs to align accordingly, de-coupling the tasks, employing different management styles, creating different forums, and hiring the separate expertise required.

What follows are 27 potential paths to explore. These are taken only so far, because many of the suggestions require third party interaction. Moreover, some are off-point for the brand. Yet, it seemed wisest to generate a reasonably comprehensive list initially.
(Also, a handful of these suggestions may be in motion, per a memo I just received Friday from Ben Z and company)

1. **Pursue an agressive Bridge Strategy involving real time, quick turnaround Specials.**

   In Q1 2002, Orange County and Hate Rock Specials will premiere. Two (Mother's Day and Father's Day) are in production for Q2 2002. A few others are greenlit for undetermined delivery.

   VH1 could, in the very near term, produce 8 specials per quarter. 8 original hours, repeated with frequency, could move the ratings 2-3%. An editor's gut is required when choosing topics, since there's no pilot phase, I'd defer to your team in deciding who's got the best commercial instincts. To the extent we could help, MTV hits editorially about 85% of the time.

   Examples:

   a) One hour verite wedding special, following five couples through matrimony, celebrating the special songs that brought them together.

   b) Brandy's having a baby. Let's follow her for four months, capturing the entire experience.

   c) Let's count down the top 50 Novelty songs in a highly contested two-hour (no full videos) special.

   d) Diva's Look back: Behind the scene's interviews with those involved, offering the juicy details of each prior taping. Always works for MTV.

   e) VH1 red carpet round up. Best Red Carpet moments from the Grammies, AMA's, other music and awards shows. Also works well for MTV.

   f) Greatest hip hop Videos of All Times, two hour long form. Hip Hop is bangin' (sorry) for VH1.

   g) Hottest Couples – Lets countdown the 25 hottest couples in Rock music today complete with all the juicy details.

   h) Video's that Launched Careers: Countdown the top 50 most outrageous career starters complete with all the never before heard stories.

TRULY THE LIST IS ENDLESS.

MTV Note: We just landed item (b) for MTV.

2. **Turn Unauthorized into an immediate, opportunistic series.**

   Fast track one of the pilot special segments, and see what you've got. If it's halfway decent, go straight into production, with the same editorial focus as above.

3. **MTV Library Product.**

   MTV has content that is still reasonably fresh, skews slightly older, and is no longer airing on MTV. It would likely rate on VH1.

   The attached document has 3,510 hours. We've highlighted those programs that potentially are most appropriate. In eyeballing the list, specials may represent more viable product. Many specials are timeless, whereas certain series feel tethered to an "era"

See EXHIBIT F: Available MTV Library Product

Some examples, and per my instinct the likeliest to rate, are:

- Diary, Celine, Nickleback, Backstreet Boys and others
- When Lyrics Attack (highly rated always)
- When Sex goes Pop
- Beavis and Butthead. Believe it or not, this is already nostalgia, and it features videos. It would likely rate
- Spring break Uncensored (as we approach MTV's spring break, works for both channels)
- Other non-MTV Uncensoreds: Jim Carey, Ben Stiller
- Road Home episodes, many artists skewed a bit older
- Jammed No Doubt and others
- Sex in the 90's series
- Loveline late night.. hasn't aired in a bit, and always did well with an older audience
- Fashionably Loud, four older episodes
- Fashionably Loud, Sports Illustrated swimsuit edition (Current and old)
- Most Expensive Videos
- Limp Bizkit Playboy Bash
- Andy Dick, the series
- Fleetwood Mac, the Dance concert. Always did well for MTV.
- Hook Ups that Shook Up MTV
- I was an MTV VJ, various editions

The product was generally retired when delivering in the .6, or .7 range. If we could deliver a .4 for VH1, it's probably worth it. Who knows, this could kick things up 3-5% as well.

4. **Bring back All Access.**

   I know this has been discussed. Do it fast, if you're not already. Deliver by late Q2.

   I've eyeballed the topic list editorially, and I think it's strong. My read: 40% of the titles are ratings getters, another 20% possibly. 40% strike me as less likely to earn a rating. Some favorites:

- Satanism
- Tribute Bands
- Drugs Rock and Roll
- Rock Restaurants
- The 80's resurgence
- Rock Cars
- Sex Rock and Roll

5. Pursue Broken Series.

USA has built a business picking up 32 episodes of cancelled series. Two of a Kind, cancelled by ABC after 22 episodes, went on to become Family Channel's highest rated series.

- Family Guy - is in the marketplace but is not currently airing. It's exceptionally written, with a cult following willing to seek the show out.
- Watching Ellie - if it continues to fall in week three, could be a busted series by spring. It would do well on VH1.
- Freaks and Geeks - critically acclaimed, worked on Fox family but they are no longer airing it. DIS
- Once and Again - given Lifetime's window and the fact that the show is nearly dead, we might be able to get some sort of deal on it.
- Relativity – Once and Again's younger sibling about a new relationship.
- The Tick – critical favorite.
- Clerks – animated now available on DVD.
- Snoops – David Kelley's failed Sunday night/ABC drama about private detectives.
- Cupid – Scott Winant and Rob Thomas good hearted romantic comedy from ABC.
- Jack and Jill – WB's Felicity replacement scored well with young women.
- Felicity - she's all done at the end of the season.
- Grapevine – CBS' ill-fated comedy that was SEX AND THE CITY before SATC - they brought it back for a very limited run 2 years ago...hilarious show from David Frankel.
- Theives - John Stamos' attempt to bring back MOONLIGHTING.
- Savannah - WB's first glossy Aaron Spelling soap - a true original with sexy women, handsome men and 29 original episodes.
- The Others - NBC's paranormal look at a group of misfit young adults with psychic powers.
- Gideons Crossing - ABC's Andre Braugher mis-step -- set in hospital...amazing production values and writing from Paul Attanansio.
- Square Pegs - the original misfits in high school idea - very retro for the 80s with Sarah Jessica Parker.
- Grosse Point Blank - spoof on 90210 from WB -- very popular with 18-24 year olds.
- Original 90210 and Melrose Place - a kitschy retro 2-hour block with the Aaron Spelling granddaddies.
- Hype! - WB's answer to SNL and Mad TV - not as consistent, but the others aren't available.
- Get a Life - Chris Elliot turned this sitcom into a cult classic - early FBC property.

- 2000 Malibu Road - a short-run series from Joel Schumacher with Drew Barrymore, Jennifer Beals and Lisa Hartman-Black - a true classic.
- Two Guys and A Girl - hey, it wasn't classic, but it held a sizeable audience for 4 years on ABC.
- Jenny - Jenny McCarthy's quick NBC show partnered with HITZ, UPN's MTV Productions sitcom.
- Murder One - compelling detective/soap opera from Steven Bochco.
- Bette -- Bette Midler's short-lived CBS comedy

SOME LAST DITCH EFFORTS:

Freakylinks; Players (with Ice-T); Crackerl; Men Behaving Badly; Lois & Clark; That's Life (too soft?); Fugitive; Popular (too young?); Get Real (too soft?);

6. **Cherry pick "music-centric" Nick at Nite/ TV Land episodes.**

Tutti sings, Woody croons, Fonz goes to the sock hop. There may be as many as 50 relevant episodes. Theme the week or weekend, countdown the best musical episodes of all time. Program counter to Nick ad Nite. Judging from our sister service's ratings, this is worth a 40plus% time period bump, 1-2% on the quarter.

7. **Obviously, the option of co-opting an entire Nick at Nite or TV Land series exists as well.**

Options might include:

- Cheers
- Cosby
- All in the Family
- Family Ties
- Three's Company
- Brady Bunch
- Get Smart
- Laverne
- Dick Van Dyke
- Mary Tyler Moore

8. **The latest trend is second cable windows on existing prime series.**

Twenty months ago, perhaps only Chris Isaak and a few others were available. Thanks to the economic downturn and consolidation, current hit shows like Charmed, Once and Again, 24, Law and Order, SVU and others now have cable second windows.

It's also worth noting that, while other vertically integrated companies have aggressively promoted synergistic windows (AOL Time Warner with WB and TBS, Disney with ABC and ABC Family, Fox with the Network and FX), only Viacom seems hands-off here.

Examples include:

- That 70's Show, That 80's Show - some sort of combo with these 2 shows could be win/win for VH1's nostalgic audience.
- Ed - a terrific show.
- Gilmore Girls - wonderfully done.

- The Practice - but only if FX doesn't have second windows.
- Smallville - probably too young.
- Scrubs - critically acclaimed and getting raves for re-inventing the sitcom.
- Pasadena - it looks like FBC will give up on Mike White.
- Third Watch - young/medics/police.
- The Guardian – he is a true star.
- Alias.
- Wolf Lake.
- How To Be a Rockstar - Oliver Hudson is hot.

9. Network Reality series

A rather recent phenomenon, they have not traditionally been syndicated to great effect (other than Cops). However, Unsolved Mysteries powered Lifetime to record ratings. Consider:

- Survivor – early seasons
- The Mole.
- Millionaire (network version).
- Weakest Link.
- Amazing Race - first season, critically acclaimed.
- Wayne Brady – upcoming shows (may go straight to ABC Family).
- Who's Line is it Anyway has worked.
- Rebuild Your Life -- UPN's reality show with Endemol is being reworked with notes from CBS who is now overseeing the project...getting a 2nd window on that shouldn't be too difficult, either
- Temptation Island 1-2, this will rate.
- Love Cruise
- Chains of Love

10. Re-purpose day and date entertainment-based magazines

MTV currently has a pilot with Paramount re-purposing Entertainment Tonight's younger skewing stories of the week into a weekend half-hour. ET on MTV. David Foster's daughter Sarah is host, and the pilot is shooting now. The cost is expected to be well under $50K/half hour for infinite weekend runs. VH1 could pursue second windows on other entertainment-based day and date access strips. Access Hollywood, Inside Edition, (Paramount), Extra. You could pursue comp episodes, as above, or day and date strip repeats. These deals are challenging because station contracts generally prohibit competitive exhibition, but the world is changing. We could offer to program in prime, for example, to avoid this issue.

11. Another new trend involves buying first run syndicated product for "cable syndication" a few years later.

The hottest property soon to be available is Blind Date. This would likely work for VH1. For positioning, block "musical" episodes (dates who saw live music), produce a launch special counting down the best musical moments, have the writer's "bubble" other series on VH1, etc.

12. **Rosie is perhaps the most intriguing first-run option rumored to be available for cable.**

It's unclear to me whether dated celebrity chat will work. She's a brand name, certainly. Other more evergreen talkers (Ricki Lake, Jenny Jones, hey Jerry Springer) might perform better.

13. **Other currently syndicated fare worth exploring could include:**

- Change of Heart
- Judge Judy (Paramount)
- Other court shows
- Ebert and Roper (customize with music segments)
- Hot Ticket
- The Other Half (kidding.. but it's got Dick Clark and Danny Bonaduce)..
- Dr. Phil, the supposed new hit of the fall.

14. **Off Cable shows. Except for HBO properties (Dream On, Sex in the City?), this is not a long list.**

But in as much as we want the war room to explore every path, also consider:

- E News Daily – perhaps as a comp show.
- Breaking News-- TNT's busted series that was shot through New Line TV, starring Ken Olin, is supposed to be really good...and it's just sitting on a shelf.
- Project Greenlight -- maybe VH1 gets the right to rerun the entire series as a 2nd cable window from HBO.

15. **Studios are very aggressive with second windows on current pilots, which is an entirely new trend.**

For example, Paramount is negotiating with MTV for a second window on Save the Last Dance, the television series. We were also approached regarding Miss American Pie, a pilot for NBC. Also, MTV has a meeting early next week with Dawn O. (UPN) on Empire, a hip-hop label project from F.F. Coppola. We have a comprehensive list of all pilots being produced and perhaps some would be right for VH1. Also, two already piloted series may be of interest; Greg the Bunny and The Andy Richtor show, both have great buzz.

16. **In Living Color**

It always performed exceptionally well on FX. Is there still life for VH1? Hey, they had fly girls.

17. **Conan / Late night partners**

As mentioned to Fred, philosophically, I wouldn't have passed on Conan. Fred was concerned we had our own talk entry. I'd offer that Conan, or like product, is the perfect access lead-in to drive sampling of Zach's show. The draft theory of scheduling. Easy for me to say, but I think it would have worked well. Likewise, I would have jumped in the game for SNL, with it's live music. Since these are gone, we should consider Craig Kilborne, or a shared window on MADtv with TNN, or perhaps even a shared window on Politically Incorrect (gone to ABC family?) In the future, philosophically, view acquisitions as complimentary rather than competitive.

18. **The dialogue may have changed around Letterman in the last week.**

If ABC prevailed, word is they would have demanded an airing on ABC Family. Since this may have been put on the table, a five minute call to Les/Mel seems worth it.

19. Recut BTM to generate extended life.

For example, a series of one hour repackages, counting down:

- the wildest addiction stories ever
- the best comebacks ever
- the most inflammatory breakups ever
- the craziest rock star moments

We slice and dice existing shows frequently on MTV to extend the life. Cribs presents Rock Star Cars, for example, is just old footage in a new context, and it worked

20. Acquire television movies.

Lifetime, as the only real buyer here, has built a business rerunning disease of the week flicks. In the last few years, the complexion of network movies has become more sophisticated. We could pursue Annie, Cinderella and other ABC musicals. Steve Warner, former Lifetime scheduling and acquisitions executive, could be an immensely valuable consultant here. This is an easier market to penetrate than the theatrical market.

21. Cherry pick current movie avails.

Expand the filter to include movies that had great soundtracks, spoke for a generation, etc. Since we're likely to end up with limited, special windows, brand damage is minimal. Ben is on this, but I'd caution against over-exuberance here. USA/TBS etc. pony up major cash to limit access to these titles. Ben mentioned his target was 30 titles in 2002. Great, go for it, but don't hold your breath.

Note: The recent successes on VH1 include House Party 3, Blues Brothers 2000, The Jacksons, Too Legit (Hammer), and Selena. This list is interesting because none (save maybe Selena) were huge commercial successes initially. However, all involve "brand name" personalities or titles. Something to keep in mind when making acquisitions.

Ben and Company are deep into TNN's library, Paramount also.

22. Early windows on 2003 fall syndicated product

Dawson's is the only major unsold series just now, and I'm suspect. It's not clear to me serialized dramas work in repeats. Party of Five was a disaster for Lifetime. If you can buy with TNN, and limit your exposure, why not. Otherwise, I'm skeptical. Product for Fall 2002 is mostly spoken for. Consider looking at 2003 fall syndication list, for 2 reasons.

1. It's still early enough to carve out a cable window in station contracts.
2. Some programs may be made available early with the broadcasting networks permission

23. Pop culture retrospective

While we've not done well with actual episodes of Arsenio, American Bandstand, Solid Gold, etc., we could do definitive retrospectives (Uncensored format, for example) on these franchises. I think they'd rate, and repeat well. Survey the television landscape, and this list could be expanded to include 20 nostalgic franchises, tangentially connected to music. E has had absolutely incredible success with retrospectives on everything from The Facts of Life to The Price Is Right. Also, Carol Burnette's retrospective and Michael Jackson's comeback concert did fantastically well on network. 20 Pop Culture Retrospectives over 12 months could be worth 1-2%.

24. Buy Glitter.

No one saw it, but everyone will stop when they see Mariah. Seriously, I predict cable success for this puppy... it really was a tv movie after all. No impact until '03, but one of the few currently available cable premieres in the near term. Per Ben, Fred's not into Rock Star, but I'd pick it up immediately. It features America's biggest female television star, and it too played like a television movie. It will rate

25. **Showtime**

It has come to MTV asking us to partially fund certain movies in exchange for a post-showtime window. To consider for a few right titles. It's a ten-minute exercise to review the slate, and you could effectively double your TV movie output – something we can't do via development at this late date.

26. **Produce "musical" episodes of hit programs.**

Unlike RNR Jeopardy, which recast the format, produce a weeklong tournament with Alex, airing first in syndication. Vh1 takes the second window. Likewise, MTV was approached last year to produce and re-air a musical Hollywood Squares theme week. Produce two musical episodes of Whose Line Is It Anyway directly for VH1, with the same cast. Put Rock Stars in The Chair for God's sake. Generate a list and make the approaches. A handful would move the dial, because these are recognizable brands and established hits.

27. **George Moll's 100 greatest stunts have done well historically.**

Currently, VH1 is planning for two per year. In reviewing his development list, many of the concepts are strong and commercial. Bubble Gum Babylon and Hip Hop Nation are great. I'd immediately greenlight those, and plan on four per year for at least the next two years. This could be worth 2% at least in said quarters.

Optimistically, if we pursue these paths immediately, you'd recognize a minimum 10% ratings growth by Q3 2002. 10% growth is worth a minimum of $20M per Doug Rohrer. VH1 may, in the process, end up landing some new permanent building blocks for its schedule.

At present, the process around these and like initiatives feels either non-existent, or a bit scattered. I'd return to my original premise: there are 27 diverse, convoluted initiatives here. This process needs to be driven intensely, in some forum, by someone, daily and separate from the development process. (Ann Sarnoff role?)

Also, do you have the right expertise to execute against all of these initiatives? Ben, who's great, also has a full time scheduling job to do. At best, what's that leave him 15 hours a week maybe? And his acquisition head is director level, which is very junior for the magnitude of the task ahead.

I'd suggest bringing in some complimentary expertise to work directly with Ben. Acquisitions is a very specialized universe. Hollywood "big leagues" (for second windows, pilot participation, etc) is yet another closed universe. "Editorial calls" on instant specials is yet another unique specialty. Getting this emergency machine fully staffed and functioning is priority one.

Recommendations:

- Bifurcate the challenges, creating a forum/team to work exclusively on emergency moves in the near term. Allow the series development steps to unfold separately and properly over the longer term.
- Finalize a comprehensive list of all possible initiatives, beginning with the 27 herein.
- Determine which initiatives are acceptable for the brand, and which are not.
- Bring the necessary expertise in-house to pursue unusual acquisitions, second windows, and make editorial calls on "instant" content.
- Meet daily in the war room to track progress.
- Target a minimum 10% growth through these initiatives by Q3 2002.

HOW DO WE FINANCE A RATINGS – ORIENTED VH1?

Over the next 12 months, VH1 needs to transition to a more ratings-oriented financial model.

The ratings model indicates the number of launches and series required to move the needle by Q2, 2003. Clearly, to fund additional development in 2002 (15 more pilots, per the above) and 9 more series launches, we need to liberate funds. Per the current budget, we're short.

Moreover, we need to fund any and all emergency initiatives, and the current acquisitions budget is Zero.

So what goes? Consider the actual ratings returns for dollars spent.

See EXHIBIT G: Cost Per GRP Calculations

Format driven shows, like BTRS, Where Are They Now, and BTM cost $20,000 or less per gross ratings point. They're not as cheap as video shows to produce, but they deliver far more bang for the buck over time.

Recommendation:

- Analyze the slate for evergreen, format driven franchises. Consider those the best immediate return.

By contrast, video shows, like Red Eye, Fresh or Jump Start, cost north of $35,000 per gross ratings point, and actually perform below the channel average rating. We spend money against Jump Start on a time period that isn't even rated. There is no rationale for spending significant production dollars on low rated, perishable video shows in this climate.

Recommendation:

- Cease spending production dollars on Red Eye, Fresh, Jump Start, and other low rated video shows, netting 2002 savings of $2.9M, annual savings in 2003 of at least $4M.
- If you choose to keep these banners alive, produce with minimal studio wraps, graphic and contexting instead. This allows you to be, for example, in the "fresh" music video business without blowing $20K a pop.

Let's consider Daily News. The return on interstitial news bits, from a ratings point of view, zero. The subjective brand measures fail to suggest VH1 news is key.

MTV news has quietly migrated from daily news briefs to primarily well rated series (True Life, Cribs) and well rated specials. Over the last five years, our daily news budget has actually declined. Today, daily news footage is collected primarily in support of well-rated library driven specials, or mtv.com, where news actually works to drive traffic.

VH1 should consider halving the news budget, at least for the next year.

We should also have the conversation regarding shared MTV and VH1 news footage.

Recommendation:

- Consider eliminating $1M in costs from daily news collection
- Per the previous section, migrate the news division towards series and special's development and production
- Consider sharing footage collection resources with MTV. (I have not vetted the feasibility of this)

Between Video programming and News, we've now liberated $3.9M for 2002.

Because Late World with Zach can only repeat, say, 4 times, even at a liberal rating of .4, the program costs $55K per gross ratings point. This further underscores the extreme nature of the gamble. Today, at a .2 and two airings, the cost per gross rating point jumps to nearly $200K. Give the show it's fair shot, but bear in mind a go/no go decision by Memorial Day returns $5.6M to the coffers.

Recommendation:

- Bear in mind the significant financial recoupment should we opt out of Zach. Endeavor to determine next steps by Memorial Day.

I'd far rather Zach emerge as a hit show. But if it does not, we've liberated $9.5M in additional funds for 2002, thanks to the aforementioned reallocations.

Finally, let's talk about VH1 events. At a .7, the Fashion Awards, even with all repeats in, costs an astounding $245K per gross rating point. My VH1 awards similarly costs $275K per gross ratings point.

If there exists the opportunity for thorough, ratings-oriented creative reinvention, we should explore that option. At a distance, I'd say Fashion is notoriously "inside". And My VH1 Awards, while very enjoyable to attend, lacks a television hook that resonates as distinct in a sea of award shows.

Sales revenues are attached to these events. But longer term, greater sales revenues are attached to ratings (as we're now seeing). Ratings are powered by series. It's counterintuitive perhaps, but liberating monies from disproportionately expensive events will drive more revenue longer term through additional series hours and higher ratings.

It's important to address the sales impact near term, and preserve the revenue during any transition away from these events. For example, Fashion Awards might become Fashion and Style theme week, wherein we produce the ultimate style countdown, Fashionably Loud on the beach, offer themed video blocks, throw a party for advertisers, etc. We could execute all-in for $750 and potentially drive the same revenue. Likewise, My VH1 awards. Eliminating these two events, even allowing for reinvestment in alternatives, liberates another $4.5M.

The other option is to create new events as alternatives. Video Hall of Fame is a great idea. Given our other challenges, I'd suggest no more than one new event, and only if we eliminate the aforementioned events.

Recommendation:

- Consider strongly transitioning Fashion and My VH1 Awards to less costly, potentially higher rated, equally attractive revenue vehicles.
- Consider making this move for the 2003 Upfront.
- Consider developing as an alternative VH1 Video Hall of Fame.

If all recommendations herein were adopted, we'd liberate more than $13-15M annually to fund ratings-oriented content. $15M would fund 100 pilots, or 7 series launches, or countless acquisitions. So the good news is, if we make these moves fast, funding is not our major issue.

But, to be blunt, if some combination of cuts aren't made (always painful), it's impossible to fund enough development and series launches to achieve a .32 by Q2 2003. Or to fund emergency moves, with an acquisitions budget of, currently, zero.

It would seem further MTVN investment in VH1 per se should be secondary to self-funding through said cuts, which will also have the incidental benefit of focusing existing staff on the right endeavors. I didn't examine other budget areas (marketing, online, whatever) for other self-funding opportunities.

THE ORGANIZATION

Can we execute and sustain this plan?

I wouldn't presume to evaluate individuals in the mix. Everyone has been exceedingly gracious and great.

More broadly speaking, I have a general observation about the organization.

At VH1, there are a lot of "idea" people who can wax poetic about the brand. There's no shortage of one liner tv ideas, high concepts, positioning lines. No shortage of brand research decks. No shortage of abstract contrasts between the old and new VH1. No shortage of Gen X psychographic references. No shortage of passion or good intentions. This is all fantastic.

There is, however, a substantial dearth of knowledge with respect to what I'd call "the great middle". On the front side, top executives can identify and generate some solid television concepts. On the back side, top executives can figure out how to market those concepts.

But in television, the magic is seldom in the initial one liner, or the eventual marketing campaign. The magic occurs in that great, experimental middle where we screw with actual content, and make it real. The accidental and beautiful chemistry of a cast after 419 reads. The magic storytelling tone realized on the fifteenth edit. The marriage of executive producer and host that makes one plus one equal 200. The twist in segment two that made everything work. And on and on.

There is a great deal of science involved in producing hit television shows. Experience in the "great middle" -- having evaluated thousands of paper treatments, sat thru hundreds of run thru's, read hundreds of scripts, closed thousands of deals, lived through successful pilots and failed pilots, successful launches and failed launches – it counts for something.

By everyone's own objective and refreshingly candid admission, there exists a decided lack of development or programming experience just now. The top executives – president, programming head, news and production head – all lack direct experience here. The lead L.A. development executive, by all accounts, is very respected and has a great reputation, but his specific expertise is scripted programming - which I'd offer is the least important element in the VH1 Mix, for at least the next 12-18 months. People who did know television – Gaspin, Brand, Zalaznick – are all gone. An SVP who knew acquisitions is gone.

John mentioned early on, "VH1 has great ideas, if we could just get someone in there to make sure they turn out decent".

Respectfully, that is the very essence of the business, the very key to your future success just now, and the hardest thing of all to achieve. I have 1,000 one-liner concept treatments on file; they're essentially meaningless. What matters is allowing the right people with the right sensibility and right life experience to play endlessly in the right place with the right toys and the right talent until something magical happens. The great middle – where all the experiments are worthy and most fail - that's the game.

Somehow, organizationally, it's essential to proxy for this lack of experience. I'm not suggesting anyone lose their job, get a boss, or any noise like that. To the contrary – I put this down on paper because everyone at VH1 has been fantastic, and everyone at MTVN wants VH1 to succeed. You can proxy for this lack of direct content experience any number of ways, and it's completely up to you.

In addition to bringing the appropriate experience in house, I'm concerned structurally about serious content and development bottlenecks.

Networks have comedy, drama, reality and movie development to ensure product from a variety of sources, always. The only way to leverage a small staff across an infinite number of possible products and producers is to divide and conquer. At MTV, we've consciously created seven competing development departments, all of which spend their own development monies without my specific authority.

As a result, if Series Development has a bad year, Music Development carries the year with the Ozbournes. If Music Development has a bad year, News and Docs can carry the organization with CRIBS, or whatever. Everyone has hot and cold seasons. Moreover, as is classic, when a development team gets into production on pilots or series, their development drops to low levels. If those pilots or series fail, they're in deep trouble unless another part of the organization is ready with new content.

Ostensibly, we have three sources of VH1 content: Series and Movie Development in L.A. (Tao), News and Production (Michael Hirschhorn), and George Moll (BTM, 100 Greatest). And each is responsible for programs currently being launched. Upon closer inspection, it becomes clear that development isn't really functioning actively across all departments.

Michael, who seems smart and great, admits candidly that his experience at Spin magazine leaves him wanting for development expertise. Michael has about ten shows on his slate (included in the work above). He mentioned his charge, per Fred, was to have multiple series ready for summer, but is unclear how we'd get said series ready. Even if concepts went to pilot tomorrow, they'd deliver late May, for greenlight to series three months hence: that would be fall, not summer. Obviously, at a magazine, today's idea can go in next month's issue. Television is a different reality.

Moreover, Michael's two current series didn't stem from development per se. Driven evolved from a prior program and existing staff. Being was "assigned" as I understand it. The two current launches are a bit misleading with respect to News' ability to deliver future series.

George Moll focuses exclusively on Behind the Music, and 100 Greatest. He "Develops" new concepts for "100 Greatest", but that's it for his slate. He's producing Ultimate Albums as a series, but beyond that, his anticipated contribution to VH1's future is, negligible. Essentially, he too functions as a "producer for hire", executing projects one at a time.

So, where does that leave us? All new content must essentially flow through Steve Tao's group. Steve has 8 development executives, but how many are really working on our future? Rob Weiss, Head of East coast series, is spending 80% of his time on current programming. David Ladik, Director, is 100% on the talk show (current programming). Scott Reich, Director, has been co-opted to produce stunts and specials, having done little or no development until recently. The L.A. bodies – Kim, Julio, Lisa, Brook – are all about 75% development.

Do the math, and there are about four equivalent "bodies", all working for Stephen, responsible for series development - and that's it. That's your great middle! And if that's your great middle, that, organizationally, is the key to VH1's future. Right there..... Is that enough?

Contrast this with the number of total bodies working in daily news, production of video hours, weekend packaging, on major events – all of which, all taken together, are statistically insignificant with respect to ratings growth.

- 5 people are responsible for 90% of the future ratings mix (series)
- 36 plus people are responsible for 10% of the future ratings mix.

We have all the one liners, brand research, and gen ex expertise, and ratings are still declining. VH1 needs to structure it's development operations to facilitate "the great middle".

Recommendations:

- Endeavor to create at least four, if not five separate, functioning development areas, each with different sensibilities and goals. Areas could include L.A. series development, NYC series development, NYC News and Specials, possibly development in the NYC Production Group, Docs and Stunts under George Moll.

- In all areas, proxy for the relative lack of development expertise. You can get there a variety of ways -- changing executives, adding bosses, proxying with competent direct reports. Ultimately, any more specifics here would require me to evaluate individuals, which I'm loathe to do based on such limited information.
- Set very specific development targets for each group. 20 Active noodles at all times, 10 projects in active development, minimum 5 pilots per year. As a result, you have 50 projects in development at all times, and produce a minimum of 25 pilots annually.
- To facilitate a broader, flatter organization, make individual funds available for each group. Require each of five groups to manage their budget independently.
- Add a Junior Executive in Fred's office to track calendarization of all projects across development divisions, so as to manage future product inventory.

NOW FINALLY, ABOUT OUR BRAND

Oscar Wilde said, "The basis of optimism is sheer terror." It's more than a clever line. Times of crisis are also times of creative ferment, the hours when new ideas rise on the ashes of the old. This can be an incredibly creative – and optimistic – moment for VH1. Really, if we channel our great energy in the right direction.

I saved discussion of the VH1 brand for the end of what has turned out to be an alarmingly lengthy document. I did that despite the fact MTVN is a brand-based company first and foremost. And we have some of the best brands in the world, certainly on television.

Based on my limited days with VH1, there seems to be endless conversations about the brand. Everyone spoke of the old VH1 vs. the new VH1, with the old accused of being nostalgic, retro, 80's, older-skewing, 18-49, 25-54, etc. By contrast, the new VH1 is hipper, gen ex, fresh, funny, 18-24 and 25-34.

"New" is everywhere. The VH1 budget presentation talked about gen ex and their new target. Fred spoke to critics about the "new" VH1 at TCA. John talked about it at the sales conference. Research produced lots of brand studies evaluating old and new.

At the end of the day, all this talk has me perplexed. Because by virtually every objective and subjective measure I've seen -- in the research decks, from the audience, from the ad sales folks – everyone raves about the brand. In the last Brand Tracking, overall ratings were up to 59% (4 or 5 on a 5 point scale) from 52%; viewer satisfaction with their last brand experience was up to 59% as well, from 50%. In fact, everything we know suggests VH1 is a tremendous brand, beloved by consumers, historically adored by advertisers. As Doug Rohrer said, "VH1 is the easiest brand to sell, bar none, if we had the ratings."

There are some great marketers in the senior executive ranks at VH1. Maybe it's only natural that, as the ratings go down, marketers have begun analyzing the brand. But is that really the problem? When the elevators in a skyscraper are broken, you don't tear down the building. The building is fine. But if you want to get back to the top, you'd better fix those damned elevators.

Our problem isn't the brand. The brand is still standing tall. Our problem is a lack of compelling content. And without compelling content, we're not going to bring people into the building and we're never going to get back to the top.

The brand still has strong equities. Research says, "smart," "mature," "sophisticated," "informative," "not so trendy" (a good thing), "deeply evocative of memories and feelings." VH1 is "great entertainment about pop culture and music" that creates a sense of "comfort and belonging" and "validation." Our cume remained high <u>long</u> after the quality of content declined. In fact, the ratings declined for 6 quarters before the cume declined.

<u>There is no doubt that we have brand equity. What we're missing is content equity</u>.

As we develop content, what are the brand parameters? If the research is a reliable guide, it suggests a programming direction that is less "new" than we're aiming for.

- In the music segmentation study, our audience loves broader pop, alternative, grunge, 80's, aor, rock, with an interest in more 90's hip hop and r&b. In the past, VH1's positioning was highly compatible with those affinities. Now, however, we're exploring other music mixes for which I see no mandate from the audience.
- Research shows nostalgia starts as early as 27. Nostalgia doesn't have to imply grandma's black and white photos. Dr. Dre, folks, is nostalgia. Early 90's hip hop, which has scored for VH1, is nostalgia. That's how fast the world moves.

- In the past month, VH1 Classic was sampled by 53% of the audience who had it available – an astounding sampling for a nascent digital channel. Arguably, there is more interest in VH1 classic than MTV2, despite our relentless 360 promotion. This tells you something: "classic" is "cool".
- One research deck had the audience rejecting promos with Jennifer Lopez music because "that's not our music". This is 25-34's. Yet we hit them with a new "Fresh" music show.
- In another research deck, the audience cited their other favorite channels: History, CNBC, Lifetime and The Learning Channel. These are smart, substantive, adult options (ok, maybe not The Division.) Do these same people want crazy camera angles and Marilyn Manson?
- Only 15% of the audience visited the web in the past month, yet we continue to push VH1.com, connectivity and interactivity on air. The research says we offer great .com satisfaction, so it's not us – it's just that our audience isn't into it.
- Fred mentioned we would embrace nostalgia if we could "laugh and wallow" in it. I take his point – let's have some fun. But there's a line beyond which we're mocking, rather than earnest. I don't see the audience digging this.

Don't get me wrong. VH1 can play with Hip Hop, Brittany Spears and great new music, MTV be damned. But when branching out, you have to be careful not to stray too far from the foundation. New artists need to be introduced in the context of older artists. Hip Hop artists introduced in the context of Behind The Music. Christina in the context of Diva's.

For a 15-year-old watching MTV, pop music is a phenomenon solely of the present. But the VH1 audience has a sense not only of history, but of continuity, as well. You can build bridges between the old and the new, increasing the comfort level with new artists and new music. What you can't do is simply abandon all that came before and leave your audience stranded on the far shore, unable to get back home. .

In 1997, there was serious discussion at MTV about abandoning Real World. Because we had no other shows that worked, we repeated Real World endlessly. The entire season repeated 34 times in Q4 1997 (I kid you not).

Because ratings were declining, people thought the brand must be whack. If repeats of RW were harming the brand, many advocated, loudly, throwing the show overboard to "help the brand." I advocated keeping the show, using it as a foundation to rebuild our schedule. We needed to *add* on to it, not *abandon* it. Don't throw the baby out with the bathwater, as the cliché goes.

Look at where we're losing our audience: 18-24's declined only 17%, quarter to date; 18-49's declined 31 percent; and 25-54's declined 35%. In prime, where we're putting our "new" energies, the story is more severe: 18-24's have only declined 7% quarter to date; 25-34's have declined 29%; and 35-49's have declined a whopping 41%.

So great, you're hipper and younger. *But the available audience thanks to the population bubble is 25-49!* It's simple math. 33 year olds watching CNBC are not likely to watch Being: Nelly Furtado Ask yourself: are you EVER going to get enough 18-24's to offset 30-40% declines among 25-39's? *You'd need to more than quadruple your 18-24 numbers to simply break even. To grow, you'd have to increase your 18-24's six times over.*

The hard core music junkies, 18-24's, are a limited audience and you've got them already, clearly. The real opportunities for growth are, to steal terms from one of the decks, "pressured parents" and "forever young's." These groups are less tethered to their televisions, less likely to be hard-core viewers, and have other things going on in their life. So you won't be front and center in their lives. So what

They're also affluent, relevant, and a much larger group -- large enough to grow ratings significantly.

You tap into something powerful and important when you get people 25-49 to mark the times of their lives through music. To get in touch with their inner rock-n-roller; to reflect on their past and present relevance via pop culture; to remind themselves they can still be sort of hip. And not least, to take up the offer of an entertainment alternative to the History Channel.

Moreover, if you look across the television dial, top cable performers – TV Land, Nick at Nite, E, TLC, History, A&E, Discovery – they've all tapped into this with tremendous ratings success. We walk away, while in that subset – the relevant subset – VH1, has the chance to do it better, funkier, fresher. You can't go back to senior year, but you have the opportunity to be the class hotty at the 10th reunion.

Since I'm the MTV guy, you may conveniently dismiss this, believing I'm just pushing VH1 away from my youthful territory. Trust me: if the numbers and research led me somewhere else, I'd have gone there instead. Look back: I suggested offering you our series, our development ideas, our library, our producer's lists, our news footage, and on and on. This isn't about MTV; it's about VH1: an incredible brand with equities we're surrendering too easily.

At the end of the day, it comes down to content. VH1's current brand equities reflect the channel's content. Eighty percent associate the brand VH1 with "stories behind the music." It's the highest brand attribute by far, followed by "songs and artists you like but haven't seen in a while."

Why? Because the audience watches more BTM than any other show. To them, that show is VH1. More than anything else, the shows define the brand in the first place.

MTV did the hard brand filter work with Simon. We decided that one of our brand filters was irreverence. But until we put irreverent content on the air, that brand work is meaningless to the audience. MTV is "irreverent" because we put "Jackass" on television. Case closed.

So if you want to help the brand, stop talking about the brand and start creating content that advances the brand with our audience.

Finally, the issue of broadening the filter: Can the brand broaden the filter so that music is central, but not necessarily first?

Music evokes great memories about life - all of life. And it does that for a universal audience. A few people might get misty-eyed recalling their first Sam Shepard play in the East Village in the 70's. But tens of millions are transported by a great song from a unique moment in time. They carry the music inside them. And when we strike that particular chord, it has a powerful effect – one that extends beyond a single pop song and speaks to them more broadly about their lives and their place in American culture. The music defines a part of them. And when it's presented in a context that's meaningful and contemporary, it also stretches and extends that definition into new emotional terrain.

So can the brand broaden the filter? I think we all know the answer. We can think of 20 ideas right now that both serve and stretch the brand definition at the same time.

So my final advice is this: Don't focus on the brand. You've done enough of that just now. The brand is strong; it will take care of itself as long as Galager and Loni Anderson don't return. But only – ONLY – if you begin to create some real content equity. Content equity will translate over time to brand equity. That's the real task at hand. That's the mandate. And that's the key to the future of VH1.

EXHIBIT E
MTV show concepts with VH1 Applications

Microphone Sessions
A reality series about underprivileged aspiring artists undergo an intensive 13week process requiring them to do tough soul-searching as they work to "own the mic".

Make It Break It
Picking up where Fanatic left off. The life story of an artist told by those who know them best, their fans.

Chatterbox
A new video show giving you the truth behind the rumors that have scathed your favorite stars reputation.

Music Therapy
Up-and-coming bands open up to our panel of experts as they try to solve the usual problems a band incurs, trying to keep them off the road to destruction and becoming another fallen rock band statistic.

Forensics
A serious approach to light hearted cases using forensic analysis.

Colleen Fitzpatrick
Colleen Fitzpatrick, a.k.a. Vitamin C takes us through the ups and downs of pop stardom, with fictionalized stories that mirror her real life as a mature rock and roller version of a girl-pop sensation.

Virgin Chronicle
Music celebrities take a trip down memory lane, revisiting their "first"; first kiss, first car, first crush, first gig and their *first time*.

LIPA
Only the most talented artists are accepted. We follow the lives of students at the Liverpool Institute of Performing Arts, a FAME-like breeding pool where Paul McCartney teaches and mentors.

O'Neal Empire
From the creative mind of Robert Townsend comes a twisted look at the music industry through an up-and-coming record label.

Dorian Gray
Dorian Gray, set in the modern world of Rock and Roll.

Skirts
Former Laker girl and pop sensation Paula Abdul plays a Dallas cowboy cheerleader who starts her life over again when she decides to head up a high school girls cheerleading squad - set to the latest music of course.

Give Your Mate A Break
Everyday people are unwittingly thrust into a talent competition by their friends. Watch them as they frantically prepare to take the stage and take home the ultimate prize.

Intervention
On INTERVENTION, a new person is nominated each week by his/her friends to get their act together. The show's hosts and its experts will provide the person everything they need to start their lives anew.

Movie House
All about the fun and excitement of going to the movies without the long lines and sticky floors! Along with many clips and fun movie facts, the on-site audience of this half-hour series views and rates the week's most highly anticipated release, giving it a soon-to-be-famous MTV Movie House Rating.

Social history of
A ½ hour that traces the history of ever present pop culture items from Tattoo's to sneakers to cell phones.

EXHIBIT F: MTV LIBRARY PRODUCT

MTV EVENTS:

- **Movie Awards Uncensored (1 hr.)**
  (window leading up to MTV premiere w/ MTV promotion)
- **Spring Break (10.5 hrs.)**
  (window post SB on MTV)
- **MTV Icon: Janet Jackson (1.5 hrs.)**
  (window in April leading up to Aerosmith ICON)
- **Fashionably Loud (5 hrs.)**
  -Four episodes including MTV Europe's version
  -Swimsuit version

TOTAL HOURS: 18 HRS.

SPECIALS:

- **MTV F*Ups (2 hrs.)**
- **N*Sync's Greatest MTV Moments (2 hrs.)**
- TRL Presents MTV's Best Performances (30 min.)
- **So You Want to be a TRL Superstar: Debuts and Demos (1 hr.)**
- **TRL Presents: Most Expensive Videos (2 hrs.)**
- TRL Retirement Home (2 hr. version)
- **TRL Presents: Total Disclosure w/ Carson Daly (30 min.)**
- TRL's Best of the Backstreet Boys (1 hr.)
- **Limp Bizkit's Playboy Bash (90 min.)**
- MTV All Star Update (2 hrs.)
- **MTV's Most Outrageous Moments (2 hrs.)**
- **MTV/Rolling Stone: 100 Greatest Pop Songs Ever (6 hrs.)**
- **I Was An MTV VJ (90 min.)**
- **Fleetwood Mac: The Dance Concert (90 min.)**
- **Kiss and Tell: 20 Years of Making Out on MTV (1 hr.)**
- **Hook-Ups That Shook Up MTV (30 min.)**

TOTAL HOURS: 25.5 HRS.

MTV NEWS AND DOCS:

• 9 FOR THE 90'S

1/30/99	9 Days That Rocked The 90s	60:00
6/2/99	9 Movie Moments That Made The 90s	60:00
11/14/99	9 Signs That Defined The 90's	30:00

9 FOR THE 90'S	2.5 hrs

• CHOOSE OR LOSE

8/15/92	Choose Or Lose Telethon: Vote Loud!	120:00
10/21/92	Choose Or Lose: The Al Gore Forum	60:00
11/1/92	Choose Or Lose Interview Special	30:00
11/1/92	Choose Or Lose Wrap-Up Special	30:00
2/19/96	Race And The Race: An MTV Choose Or Lose Special	30:00
3/26/96	Choose Or Lose: Live With Everclear	60:00
6/10/96	Learn It: A Choose Or Lose Education Special	30:00
8/12/96	Choose Or Lose: The Party Pitch	30:00
8/12/96	The Bus Stops Here: A Choose Or Lose Road Report	30:00
8/13/96	Choose Or Lose Live w/311	60:00
8/28/96	Choose Or Lose Live With Sponge	60:00
11/2/96	Choose Or Lose Votefest	60:00
11/5/96	'96 Live News Election Wrap-Up	30:00
1/26/00	Choose Or Lose: Launch 2000	30:00
1/26/00	Choose Or Lose: Where Were You At 22?.	60:00
5/10/00	Choose Or Lose: Uncensored	30:00
5/22/00	Choose Or Lose 2000: The Gun Fight	30:00
7/30/00	Choose Or Lose: Why Care?	30:00
8/3/00	Choose or Lose: Party 2000 (Republicans)	30:00
8/17/00	Choose Or Lose: Party 2000 (Democrats)	30:00
9/26/00	Choose Or Lose 2000: Town Hall Forum with Al Gore	90:00
10/23/00	Choose or Lose: Sex Laws	30:00
11/3/00	Choose Or Lose: Votefest 2000	90:00
11/10/00	Choose Or Lose: Election Wrap-Up	30:00

CHOOSE OR LOSE	18.5hrs

• FIGHT FOR YOUR RIGHTS: CRIMINAL

1/14/01	MTV's Criminal (Pilot)	30:00
10/3/01	101 Punks Vs. Preps: The Brian Deneke Story	30:00
10/10/01	102 Hate in the Hallways	30:00
10/17/01	103 For Race and Nation: The Skinhead Murderer	30:00
10/24/01	104 Pride or Prejudice	30:00
10/31/01	105 Less Than Human: The Amy Robinson Murder	30:00

FIGHT FOR YOUR RIGHTS: CRIMINAL	3 hrs.

• FIGHT FOR YOUR RIGHTS PROGRAMMING

4/22/99	Fight For Your Rights: Warning Signs	30:00

5/28/99	Fight For Your Rights: Point Blank	60:00
10/24/99	Fight For Your Rights: Through My Eyes	30:00
11/17/99	Fight For Your Rights: Hate Crimes	30:00
1/10/01	Fight For Your Rights Scroll	90:00
1/10/01	Fight For Your Rights: Anatomy Of a Hate Crime Special	30:00
4/12/01	**Fight For Your Rights: When Hate Goes Pop**	**60:00**
11/17/01	Fight For Your Rights: The Aftermath Of Terror	60:00

FIGHT FOR YOUR RIGHTS PROGRAMMING	6.5 hrs.

- ## MTV 20 PROGRAMMING

1/20/01	**MTV's 20th Anniversary: 20 Most Outrageous Moments**	**120:00**
3/17/01	**TESTIMONY: 20 Years of Rock on MTV**	**120:00**
4/4/01	**MTV's 20th Anniversary: Contests Uncensored**	**30:00**
5/5/01	**MTV20: GRAB THE MIC - a Hip-Hop History**	**60:00**
5/19/01	**MTV's 20th: Laugh Track: 20 Years Of Comedy On MTV**	**60:00**
5/19/01	**MTV's All-Time Funniest Videos**	**30:00**
7/14/01	**MTV 20: Everybody Talk About...Pop Music!**	**60:00**
8/1/01	**MTV20: Buggles To Bizkit**	**12 Hrs**
8/1/01	**MTV20: Live & Almost Legal**	**3 Hrs 30**
Min		

MTV 20 PROGRAMMING	23.5 hrs.

- ## MTV NEWS NOW

5/20/00	MTV News Now Special Report Eminem: Hits And Disses	30:00
5/25/00	MTV News Now Special Report: Napster: Grand Theft Audio?	30:00
7/28/00	Napster: Facing the Music: An MTV News Now Special Report	30:00
8/21/00	**MTV News Now Special Report: When Lyrics Attack**	**30:00**
12/9/00	**MTV News Now Special Report: When Sex Goes Pop**	**30:00**
1/22/01	MTV News Now: Buck Wild at The Golden Globes	30:00
1/26/01	MTV News Now Special Report: Puffy On Trial: Victory Or No Way Out?	30:00
2/21/01	MTV News Now: Backstage At The Grammys	60:00
2/23/01	MTV News Now Special Event: Grammy Wrap-Up Show	30:00
3/16/01	MTV News Now: Puffy On Trial: The Verdict	30:00
5/1/01	MTV News Now Special Report: Hard Rhymes. High Stakes	30:00
8/28/01	MTV News Now Special Report: The Life of Aaliyah	30:00
9/21/01	MTV News Now Special Report: Our New Reality	30:00
11/17/01	MTV News Now Special Report: Bullies	30:00
1/25/02	Jay-Z vs. Nas: Beats, Battles and Beef: An MTV News Now Special Report	30:00

MTV NEWS NOW	8 hrs.

- ## MTV NEWS AND DOCS SPECIALS

11/6/91	Generation: An MTV News Special Report	60:00

3/3/93	Straight From The Hood: An MTV News Special Report	60:00
6/16/93	Hate Rock: An MTV News Special Report	30:00
8/11/93	Seven Deadly Sins: An MTV News Special Report	60:00
5/25/94	Gangsta Rap: An MTV News Special Report	30:00
8/16/94	Freaks, Nerds & Weirdos: An MTV News Special Report	30:00
8/23/94	Straight Dope	60:00
9/27/94	Smart Sex	60:00
4/18/95	MTV News: Inside Unplugged	30:00
7/11/95	Fight Back: An MTV News Special Report	30:00
10/30/95	Megadose I	30:00
4/1/96	Megadose II	30:00
10/7/96	Smashed: An MTV News Special Report	30:00
10/21/96	Do Something: An MTV News Special	30:00
12/29/96	MTV News Presents: Roundtable	30:00
3/30/97	MTV News Presents: A Conversation with Sean "Puffy" Combs	30:00
4/6/97	MTV News Presents - Black & White TV	30:00
6/1/97	MTV News Presents: Megadose III	30:00
6/22/97	MTV News Presents: Breaking Ranks	30:00
10/12/97	Fight For The Right: The Crackdown	30:00
10/19/97	Fight For The Right: An MTV News Special Report- "Express Yourself"	30:00
10/26/97	Fight For The Right: An MTV News Special Report- "Sexual Matters"	30:00
12/1/98	Staying Alive	30:00
8/1/99	**Scared Straight! '99**	**60:00**
10/7/00	Journey Of Dr. Dre	60:00
12/2/00	**The Fake ID Club**	**30:00**
12/1/00	Staying Alive II	30:00
12/10/00	MTV News Tours 2000: Backstage, Behind The Scenes and Over The Top	30:00
5/19/01	**So Five Minutes Ago**	**30:00**
9/22/01	MTV Comes Together: Artists And Viewers Speak	3 Hrs
10/19/01	Remember Rebuild: An MTV Special	30:00
11/24/01	**The Fake ID Club (2001)**	**30:00**
12/1/01	Staying Alive III	30:00
1/18/02	We Shall Overcome: Stories from the Children's Defense Fund	30:00
2/2/02	**Fake ID Club Jr.**	**30:00**

MTV NEWS AND DOCS SPECIALS	**23.5hrs**

- ## ROCKUMENTARY

3/25/89	Rockumentary: New Women In Rock	30:00
4/1/89	Rockumentary: Australian Rock	30:00
4/15/89	Rockumentary: Poison	30:00
4/22/89	Rockumentary: Roy Orbison	30:00
5/20/89	Rockumentary: REM	30:00
5/27/89	Rockumentary: Rod Stewart	30:00
6/3/89	Rockumentary: Eric Clapton	30:00
6/10/89	Rockumentary: INXS	30:00
6/17/89	Rockumentary: Rapumentary	30:00
6/24/89	Rockumentary: The Cure	30:00
7/8/89	Rockumentary: Tom Petty	30:00
7/15/89	Rockumentary: Guitar Greats	30:00
7/22/89	Rockumentary: John Cougar Mellencamp	30:00
7/29/89	Rockumentary: Van Halen	30:00

8/5/89	Rockumentary: Pink Floyd	30:00
8/26/89	Rockumentary: Moscow Music Peace Festival	30:00
9/9/89	Rockumentary: Def Leppard	30:00
1/13/90	Rockumentary: Billy Joel	30:00
2/10/90	Rockumentary: B-52's	30:00
3/24/90	Rockumentary: Paul McCartney	30:00
4/5/90	Rockumentary: Rolling Stones	30:00
4/19/90	Rockumentary: Fine Young Cannibals	30:00
4/21/90	Janet Jackson Rockumentary	30:00
4/26/90	Rockumentary: David Bowie	30:00
5/5/90	Rockumentary: Madonna	30:00
5/12/90	Aerosmith Rockumentary I	30:00
5/19/90	Rockumentary: Motley Crue	30:00
5/26/90	Rockumentary: Guns N' Roses	30:00
6/14/90	Rockumentary: Don Henley	30:00
6/28/90	Rockumentary: Phil Collins	30:00
8/11/90	Rockumentary: Elton John	30:00
9/15/90	Rockumentary: George Michael	30:00
9/29/90	Jimi Hendrix Rockumentary	30:00
10/7/90	Rockumentary: Billy Idol	30:00
11/17/90	Led Zeppelin Rockumentary	30:00
11/25/90	Behind The Stage Door: The Groupie Story	30:00
2/16/91	Rockumentary: MC Hammer	30:00
2/28/91	Rockumentary: The Doors	30:00
4/27/91	Rockumentary: REM II	30:00
6/15/91	Rockumentary: Metalmentary	30:00
6/22/91	Rockumentary: Yes	30:00
6/29/91	Sting Rockumentary	30:00
9/7/91	Rockumentary: Bryan Adams	30:00
9/14/91	Rockumentary: AC/DC	30:00
10/5/91	Rockumentary: Tom Petty II	30:00
10/19/91	Rockumentary: Van Halen II	30:00
12/12/91	Rockumentary: Metal II	30:00
12/15/91	Clash Rockumentary	30:00
7/14/92	Rockumentary: Genesis	30:00
7/18/92	Rockumentary: Metallica	30:00
7/23/92	U2 Rockumentary	30:00
9/22/92	Rockumentary: Def Leppard II	30:00
10/20/92	Rockumentary: Paula Abdul	30:00
11/11/92	Rockumentary: Bruce Springsteen	30:00
4/18/93	Rockumentary: Ice-T	30:00
5/7/93	Rockumentary: LL Cool J	30:00
8/10/93	Whitney Houston Rockumentary	30:00
8/10/93	Janet Jackson Rockumentary II	30:00
10/17/93	Depeche Mode Rockumentary	30:00
11/1/93	Aerosmith Rockumentary II	30:00
2/27/94	Pearl Jam Rockumentary	30:00
4/5/95	Boyz II Men Rockumentary	30:00
4/25/95	Tom Petty Rockumentary III	30:00
9/12/95	Rockumentary: Red Hot Chili Peppers	30:00
10/17/95	Smashing Pumpkins Rockumentary	30:00
11/20/95	Rockumentary: Mariah Carey	30:00
4/2/96	Stone Pilots Rockumentary	30:00
6/18/96	Rockumentary: Metallica II	30:00
7/3/96	Lollapalooza Rockumentary	30:00
9/30/96	Cranberries Rockumentary	30:00

7/22/97	Wu Tang Clan Rockumentary	30:00
7/29/97	Aerosmith Rockumentary III	30:00
8/26/97	Oasis Rockumentary	30:00

ROCKUMENTARY	36.5hrs

• SEX IN THE 90S

9/12/90	Sex In The '90s	60:00
4/17/91	More Sex In The '90s	30:00
11/24/93	Sex In The '90s III: Foreplay	30:00
4/13/94	Sex In The '90s IV: Then And Now	30:00
11/2/94	Sex In The '90s V: Love Sucks	30:00
11/22/95	Sex In The '90s VII: What She Wants	30:00
11/22/95	Sex In the '90s VI: What He Wants	30:00
7/1/96	Sex In The '90s VIII: Living Together	30:00
11/11/96	Sex In The '90s IX: The Safest Sex Of All	30:00
11/23/97	Sex In The 90s X: Mating & Dating	30:00
11/21/98	Sex In the 90s XI: It's A Group Thing	30:00
3/23/99	Sex In The 90s XII: Fact Or Fiction	30:00
12/19/99	Sex In The 90s XIII: Generation Sex	30:00

SEX IN THE 90S	7 hrs.

• TRUE LIFE

3/31/99	Fatal Dose	30:00
4/7/98	No Money, Mo' Problems	60:00
4/28/98	Take It Like A Man	30:00
5/5/98	Who Is Jesse Camp?	30:00
5/12/98	Freaknik	60:00
5/19/98	She's A Player	30:00
5/26/98	On The Rocks	30:00
6/7/98	Coming To Terms Update	30:00
6/28/98	Fight For The Right: The Crackdown Update	30:00
7/5/98	Fight For The Right: Express Yourself Update	30:00
7/12/98	Fight For The Right: Sexual Matters Update	30:00
10/21/98	Stressed Out	30:00
11/11/98	Matthew's Murder	30:00
12/1/98	It Could Be You	30:00
12/9/98	Megadose Update #1	30:00
12/16/98	Megadose Update #2	30:00
12/27/98	Megadose Update #3	30:00
10/13/99	I'm a Hacker	30:00
10/27/99	Driving While Black (FFYR)	30:00
11/21/99	I'm A Model	30:00
2/9/00	I'm On Crystal Meth	60:00
2/16/00	I'm A Star At Sundance	30:00
2/23/00	I'm The Youngest Tycoon In The World	30:00
3/1/00	I'm A Comic	30:00
3/8/00	I'm On The Runway	30:00
4/12/00	I'm An Actor	60:00
4/19/00	The Travelers	60:00
11/11/00	I Want To Be A Millionaire	30:00

11/16/00	I'm A Candidate	60:00
11/30/00	I'm On Ecstasy	60:00
1/17/01	I'm An NFL Rookie	30:00
1/22/01	I'm An Actress	30:00
10/6/01	I'm Coping With Terrorism	30:00
11/14/01	I Can't Breathe	30:00
12/13/01	I'm Hooked on OxyContin	60:00
3/10/02	I'm Wasted	30:00

TRUE LIFE 26.5 hrs.

• ULTRA SOUND

2/22/98	101	Back In The Day	60:00
2/28/98	102	Inside Madonna	30:00
3/8/98	103	Biggie: A Life Story	30:00
3/15/98	104	Sugar And Spice And Everything Nice	30:00
3/29/98	105	Metallica: Locked & Loaded	30:00
4/5/98	106	For Your Listening Pleasure	30:00
4/12/98	107	Wu-Tang Forever	30:00
4/19/98	108	I Was An MTV VJ	30:00
4/26/98	109	The Dave Matthews Band	30:00
5/3/98	110	Hair Are They Now?	30:00
5/10/98	111	Rock & Roll Feuds	30:00
5/17/98	112	Godzilla Rocks	30:00
5/31/98	113	Smashing Pumpkins Beyond Melancholy	30:00
6/7/98	114	Growing Up Brandy	30:00
6/14/98	115	Tibet Freedom Concert	90:00
6/28/98	116	All Hail Black Sabbath	30:00
7/5/98	117	Janet Jackson: Behind The Velvet Rope	30:00
8/9/98	119	The Mourning After	30:00
9/27/98	120	Tori Amos	30:00
12/12/98	121	Ladies Nite	120:00
12/19/98	122	Year In Rock	60:00
1/9/99	123	Revenge Of The Boy Bands	30:00
1/23/99	124	Money For Nothing	30:00
3/7/99	126	Ghetto Superstars	60:00
3/13/99	127	Life On Death Row	60:00
4/12/99	125	TLC, You've Got Mail	30:00
4/17/99	128	I Was An MTV VJ Too	30:00
6/20/99	129	Limp Bizkit	30:00
7/3/99	130	Latin Groove	30:00
7/18/99	131	Woodstock Uncensored	30:00
10/16/99	132	One Hit Wonders	120:00
12/11/99	133	Year In Rock	120:00
3/11/00	134	Rock N' Roll Feuds II	30:00
3/18/00	135	*NSYNC	60:00
4/22/00	136	Will Smith	60:00
4/22/00	137	I Was An MTV VJ III	30:00
5/4/00	139	Backstreet: The One On Ones	30:00
5/20/00	138	The Deal That Changed My Life	30:00
2/10/01	140	Break-Ups and Make-Ups	30:00
3/3/01	141	Two Hit Wonders	60:00
3/17/01	142	Rock & Roll Feuds III	30:00
4/26/01	143	Who Is?	30:00

8/28/01	144 Who Is?	30:00
2/20/02	145 Who Is? (Grammy Edition)	30:00

ULTRA SOUND	**31 hrs.**

- **UNfiltered**

7/17/95	101	30:00
8/21/95	102	30:00
10/23/95	103	30:00
1/15/96	104	30:00
4/29/96	105 Best Of	30:00
4/30/96	106	30:00
5/1/96	107	30:00
5/2/96	108	30:00
9/23/96	109 Yack Live	30:00
12/22/96	110	30:00
2/9/97	111	30:00
4/13/97	112	30:00
10/5/97	113	30:00
1/4/98	114	30:00
4/21/98	115	30:00
6/21/98	116	30:00
10/14/98	117 Spiritualized	30:00
12/27/98	118	30:00
3/30/99	119 Parents	30:00

UNfiltered	**9.5 hrs.**

TOTAL HOURS: 196 HRS.

SERIES:

- **Real World**
  - Seasons 5 & 6 (limited due to MTV's schedule/overlap)
- **Diary** (select episodes only)
- **Animation**
  - **Beavis & Butthead** (triggers $100,000 payment to Mike Judge)
  - Daria
  - Spy Groove (older appeal/could work)
  - Aeon Flux
  - Downtown (not necessarily rating hit)
  - Cartoon Sushi
- **Library** (Some still pending)
  - Remote Control

- The Grind
- Biorhythm
- Buzzkill
- **Singled Out**
- Jon Stewart (51 episodes)
- Sex in the 90s
- Rodman World Tour
- **Love Line**
- Fanatic (selected episodes only)
- **Jenny McCarthy**

MTV ORIGINAL SERIES INVENTORY

Series Premieres as of 3/12/2002

SERIES TITLE	PREMIERE DATE	# OF EPISODES	TOTAL HOURS
Club MTV	3/13/89	105 x 30:00	**52.5 Hours**
Remote Control	3/13/89	60 x 30:00	**30 Hours**
Now Hear This!	3/13/89	29 x 30:00	**14.5 Hours**
1/2 Hour Comedy Hour	3/14/89	164 x 30:00	**82 Hours**
Just Say Julie	3/15/89	44 x 30:00	**22 Hours**
Comic Strip	3/19/89	4 x 30:00	**2 Hours**
Big Picture	3/23/89	85 x 30:00	**42.5 Hours**
House Of Style	6/2/89	71 x 30:00	**35.5 Hours**
MTV Unplugged	1/21/90	63 x 30:00, 37 x 60:00, 6 x 90:00	**77.5 Hours**
The Ben Stiller Show	1/25/90	12 x 30:00	**6 Hours**
Buzz	4/22/90	30 x 30:00	**15 Hours**
Earth To MTV	4/29/90	22 x 30:00	**11 Hours**
Turn It Up	6/30/90	62 x 30:00	**31 Hours**
This Is Horror	10/6/90	4 x 60:00	**4 Hours**
Bootleg MTV	1/16/91	10 x 30:00	**5 Hours**
Classic MTV	2/19/91	6 x 30:00	**3 Hours**
Idiot Box	3/23/91	6 x 30:00	**3 Hours**
Liquid Television	6/2/91	22 x 30:00	**11 Hours**
Fade To Black	6/20/91	56 x 60:00, 3 x 90:00	**60.5 Hours**
Like We Care	10/28/91	68 x 30:00	**34 Hours**
MTV Sports	1/25/92	81 x 30:00	**40.5 Hours**
Lip Service	2/22/92	189 x 30:00	**94.5 Hours**
The Real World (New York City)	5/21/92	13 x 30:00	**6.5 Hours**
The Grind	8/10/92	418 x 30:00	**209 Hours**
Liquid Extract	12/12/92	6 x 30:00	**3 Hours**
Liquid Assets	1/16/93	3 x 30:00	**1.5 Hours**
You Wrote It, You Watch It	2/13/93	13 x 30:00	**6.5 Hours**
Beavis & Butt-head	3/8/93	393 x 30:00, 1 x 60:00	**197.5 Hours**
Comikaze	3/13/93	48 x 30:00	**24 Hours**
Rockumentary	3/27/93	75 x 30:00	**37.5 Hours**
Real World II (Los Angeles)	6/24/93	22 x 30:00	**11 Hours**
Jon Stewart Show	8/4/93	51 x 30:00	**25.5 Hours**
The State	12/25/93	29 x 30:00	**14.5 Hours**
Red Johnny And The Round Guy	2/14/94	20 x 30:00	**10 Hours**
Trashed	2/14/94	50 x 30:00	**25 Hours**
Sandblast	3/18/94	77 x 30:00, 3 x 60:00	**41.5 Hours**

Dead At 21	6/9/94	13 x 30:00	6.5 Hours
Real World III (San Francisco)	6/23/94	20 x 30:00	10 Hours
Beach MTV	7/4/94	43 x 30:00	21.5 Hours
Brothers Grunt	8/15/94	44 x 30:00	22 Hours
Get Late With Kennedy	12/5/94	4 x 30:00	2 Hours
MTV Oddities: The Head	12/19/94	16 x 30:00	8 Hours
MTV Oddities: The Maxx	4/8/95	8 x 30:00	4 Hours
Singled Out	6/5/95	310 x 30:00	155 Hours
Real World IV (London)	6/28/95	23 x 30:00	11.5 Hours
UNfiltered	7/17/95	19 x 30:00	9.5 Hours
Road Rules I	7/19/95	15 x 30:00	7.5 Hours
Aeon Flux	8/8/95	10 x 30:00	5 Hours
Reggae Sound System	10/16/95	13 x 30:00	6.5 Hours
Bootleg	10/21/95	2X 60:00, 1 X 90:00, 1 X 30:00	4 Hours
Squirt TV	2/23/96	6 x 30:00	3 Hours
Buzzkill	3/22/96	23 x 30:00	11.5 Hours
Real World V (Miami)	7/10/96	22 x 30:00	11 Hours
Road Rules II	7/15/96	16 x 30:00	8 hours
From The Buzz Bin	8/12/96	3 x 30:00	1.5 Hours
AMP	9/4/96	50 x 60:00	50 Hours
The Rodman World Tour	12/8/96	15 x 30:00	7.5 Hours
Idiots Savants	12/9/96	65 x 30:00	32.5 Hours
Loveline	12/9/96	370 x 60:00	370 Hours
Road Rules III	1/13/97	13 x 30:00	6.5 Hours
Daria	3/3/97	66 x 30:00	33 Hours
The Jenny McCarthy Show	3/5/97	22 x 30:00	11 Hours
Indie Outing	3/17/97	20x 30:00	10 Hours
Grind	6/2/97	24 x 30:00	12 Hours
Oddville, MTV	6/12/97	66 x 30:00	33 hours
Apartment 2F	7/13/97	13 x 30:00	6.5 Hours
Road Rules IV	7/14/97	14 x 30:00	7 hours
Real World VI (Boston)	7/16/97	23 x 30:00, 1 x 60:00	12.5 Hours
Cartoon Sushi	7/17/97	10 x 30:00	3 Hours
Authentic Reproduction	7/19/97	16 x 30:00	8 Hours
Austin Stories	9/10/97	12 x 30:00	6 Hours
12 Angry Viewers	9/22/97	169 x 30:00	84.5 Hours
Live From The 10 Spot	10/14/97	5 x 30:00, 11 x 60:00	13.5 Hours
Road Rules: The Northern Trail	1/19/98	15 x 30:00	7.5 hours
Ultra Sound	2/22/98	33 x 30:00, 7 x 60:00, 1 x 90:00, 3 x 120:00	31 Hours
True Life	3/31/98	40 x 30:00, 19 x 60:00, 1 x 90:00	40.5 Hours
Road Rules All-Stars	4/20/98	5 x 30:00	2.5 Hours
Celebrity Deathmatch	5/9/98	63 x 30:00	31.5 Hours
The Daily Burn	5/26/98	20 x 30:00	10 Hours
Eye Spy Video	6/15/98	63 x 30:00, 1 x 60:00	32.5 Hours
Real World VII (Seattle)	6/16/98	20 x 30:00, 1 x 60:00	12 Hours
Road Rules VI	6/22/98	13 x 30:00	6.5 Hours
BIOrhythm	6/23/98	36 x 30:00	13 Hours
Fanatic	7/6/98	70 x 30:00	35 Hours
Jim Breuer	7/13/98	13 x 30:00, 1 x 60:00	7.5 Hours
Sifl & Olly	7/13/98	68 x 30:00	34 Hours
Super Adventure Team	7/23/98	6 x 30:00	3 Hours
Seaside Undercover	8/31/98	3 x 30:00	1.5 Hours

The Cut	9/28/98	43 x 30:00, 1 x 90:00	23 Hours
MTV's Revue	10/14/98	6 x 30:00	3 Hours
The Real World/Road Rules Challenge	11/9/98	6 x 30:00	3 Hours
Video Cliches	1/9/99	20 x 30:00	10 Hours
Road Rules VII	1/18/99	15 x 30:00	7.5 houres
The Tom Green Show	1/25/99	20 x 30:00, 2 x 60:00	12 Hours
The Blame Game	2/6/99	131 x 30:00	65.5 Hours
Station Zero	3/8/99	20 x 30:00	10 Hours
Say What? Karaoke	5/31/99	211 x 30:00, 2 x 60:00, 2 x 2hour	109.5 Hours
MTV's Global Groove	5/31/99	54 x 30:00	27 Hours
Real World VIII (Hawaii)	6/15/99	23 x 30:00, 1 x 60:00	12.5 Hours
Road Rules VIII	6/21/99	19 x 30:00	9.5 hours
Making The Video	6/28/99	94 x 30:00,1 x 60:00	48 Hours
Diary	7/21/99	42 x 30:00, 3 x 60:00	24 Hours
Undressed	7/26/99	185 x 30:00	92.5 Hours
Downtown	8/3/99	13 x 30:00	6.5 Hours
Head Trip	10/25/99	20 x 30:00	10 Hours
Web Riot	11/29/99	127 x 30:00	63.5 Hours
Real World/Road Rules Challenge 2000	1/17/00	11 x 30:00	5.5 Hours
Senseless Acts Of Video	1/27/00	20 x 30:00	10 Hours
The Lyricist Lounge Show	2/8/00	18 x 30:00	9 Hours
The Lowdown	4/5/00	3 x 30:00	1.5 Hours
Sisqo's Shakedown	5/29/00	50 x 30:00	25 Hours
MTV's House Of Style Presents Mission: Makeover	5/30/00	42 x 30:00	21 Hours
Real World New Orleans	6/13/00	23 x 30:00, 2 x 60:00	12.5 Hours
Road Rules IX: The Maximum Velocity Tour	6/19/00	20 x 30:00	10 hours
Spy Groove	6/26/00	10 x 30:00	5 Hours
Live Through This	8/9/00	13 x 60:00	13 Hours
2Gether	8/15/00	18 x 30:00	9 Hours
Fear	9/21/00	10 x 60:00, 1 x 90:00	11.5 Hours
1st Listen	9/29/00	2 x 30:00, 1 X 60:00	2 Hours
WWF Heat	10/1/00	75 x 60:00	75 Hours
Jackass	10/1/00	18 x 30:00, 1 x 60:00	10 Hours
MTV Cribs	10/5/00	33 x 30:00	16.5 Hours
MTV's Truth	10/16/00	14 x 30:00	7 Hours
Road Home	12/18/00	5 x 30:00	2.5 Hours
The Real World/Road Rules Extreme Challenge 2001	1/9/01	17 x 30:00, 1 x 60:00	9.5 Hours
Kathy's So-Called Reality	2/4/01	6 x 30:00	3 Hours
Andy Dick Show	2/27/01	17 x 30:00	8.5 Hours
MTV's Celebrity Undercover	4/2/01	20 x 30:00	10 Hours
Undergrads	4/22/01	6 x 30:00	3 Hours
Music In High Places	4/23/01	8 x 60:00	8 Hours
MTV's Mandy	6/4/01	24 x 30:00	12 Hours
Carmen Electra's Hypermix	6/4/01	10 X 30:00	5 Hours
Becoming	6/11/01	24 x 30:00	12 Hours
MTV's Sink Or Swim	6/18/01	28 x 30:00	14 Hours
Spyder Games	6/18/01	64 x 30:00	32 Hours
WWF Tough Enough	6/21/01	12 x 30:00, 3 x 60:00	9 Hours
Real World X (New York City)	7/3/01	22 x 30:00	11 Hours
Road Rules X	7/9/01	17 x 30:00	8.5 hours
Live At The Rock & Roll Hall Of Fame	7/11/01	10 x 30:00	5 Hours
Flipped	8/6/01	14 x 30:00	7 Hours

Who Knows The Band?	10/1/01	40 x 30:00	**20 Hours**
Fight For Your Rights: Criminal	10/3/01	5 x 30:00	**2.5 Hours**
Dismissed	10/8/01	48 x 30:00, 1 x 60:00	**25 Hours**
mtvJAMMED	10/20/01	2 x 30:00	**1 Hour**
Sex 2K	12/18/01	3 x 30:00	**1.5 Hours**
Real World XI (Chicago)	1/8/02	26 x 30:00	**13 Hours**
Making The Band	1/19/02	8 x 30:00	**4 Hours**
Kidnapped	1/28/02	22 x 30:00	**11 Hours**
The Real World/Road Rules: Battle Of The Seasons	1/28/02	17 x 30:00	**8.5 Hours**
$2 Bill Presents	2/16/02	1 x 30:00	**30 Minutes**
Senor Moby's House Of Music	2/23/02	1 x 30:00	**.5 Hours**
The Osbournes	3/5/02	2 x 30:00	**1 Hour**

TOTAL HOURS: 3,510 HRS.

Summary of Recommendations

MODELING

- Adapt the hit and volume targets herein to frame the next 12 months of work. Measure progress against this model.
- Use this information to manage the development and series output.
- Have research adapt modeling on an ongoing and real time basis (this happens to some degree now).
- Use this information to communicate accurate ratings targets internally.
- Use this information to manage other aspects of the business, including resource allocation.
- Consider whether the hoped-for Q4 2002 increases are realistic against this model.
- Take this modeling into account when determining VH1's 2003 Upfront projections and forecasting ADU management.
- To the extent future strips, or one-time ratings aberrations power deceptively high ratings, take the money by jacking scatter rather than upfront projections.

CURRENT CROP OF LAUNCHES

- Despite the revenue situation, avoid cutting development funds at all costs hereforward. This expenditure is the foundation of any recovery, period.
- No matter how dire things become, rushing one-liners or poorly received pilots to air is ALWAYS more costly. Seriously reconsider any projects currently slated for summer air without proper and complete development.
- Reconsider all projects currently slated for summer air without proper and complete development.
- Focus groups shouldn't be the ultimate driver, but when the rejection is rather unambiguous, pass or redevelop.

- ***Buzzcocks***
  1. Air for 5 weeks with multiple runs across the schedule. If ratings do not increase, shelve the remaining eight and save the amortization.
- ***Being***
  1. Air the three-four Beings, but then hold until multiple additional episodes can be booked. This will likely require J. Sykes intervention, given music/talent does not report to Fred.
  2. Creatively, Being has a shot, pending the following significant notes:
     (a) Choose more electric "flashpoints" in the artist's lives: launch of a new album, breakup of a band, plotting a comeback, firing a manager, getting married, starring in their first movie.

(b) Capture first person camera angles heretofore unseen, i.e. behind the Grammy podium, in their home/bedroom, on stage in front of 10 thousand people.
(c) Market and position the show according to the highly unique situations and viewpoints. Example: "Join Bono as he prepares for his celebrated Grammy performance. See what it feels like walking to the podium and accepting an award in front of millions

- ***Driven***
  1. Pursue Driven, with J. Sykes to intervene in the booking process, per above. Creatively, and this could be key: up the eccentric factor, seeking out increasingly obscure, colorful past contacts:
     Brittany's best friend in kindergarten, even if he has one silly sound-bite. A clip of a teacher who gave her advice to pursue academics instead, her scary landlord of their NYC apartment, competitive girl in her ballet and tap classes etc... So far, ratings correlate with artist popularity. More colorful, crazy even inflammatory participants could allow Driven to transcend specific bookings. If talent resists this direction, produce only a handful of A artists. Program as specials.

- ***Ultimate Albums***
  1. Pursue Ultimate albums. This has a shot at working, simply because it's Behind the Music act III blown out into an hour. My note, from left field: this show would be far more potent as a half hour.

REGARDING Driven and Ultimate Albums, even if these show premiere to flat numbers (at least matching prior time period), stick with these for 6 months. Not so much because they'll become hits, but because they'll create the illusion of "new" on VH1 and hopefully increase cum slightly.

- ***Late World with Zach***
  1. Per my original notes to J. Sykes, Late World with Zach (along with Buzzcocks) makes me most nervous. Zach's 10 minute stand up (or sit down at the piano) is amazing and original. He's got "it" but there's no evidence the format to date captures "it". The financial exposure is tremendous (five times the risk of other launches). Also, because every day is a different exercise, day/date talk shows consume staff resources disproportionately. Also, ratings in this genre mean almost nothing initially. Therefore, compile weekly highlights (good and bad), view with your extended management team in real time, and make your call based on creative growth by Memorial Day.

FUTURE LAUNCHES

- Do not spend money on off-channel advertising, cross-channel or on-VH1promotion until you can confirm the lock for multiple episodes. Otherwise, this is entirely wasted.
- Premiering individual episodes, specials, or using pilot footage can, in the future, create the illusion of momentum without requiring rushed or misguided series

launches. Particularly useful if Ad Sales needs the illusion of momentum and product.

SUMMER LAUNCHES

Hey Joel

- Go Forward. The development cycle was clearly long, and complete.
- Plan around the inevitable animation lag cycle, so you're ready to go with more episodes, should the show work. For example, pick up six scripts now.
- Consider pursuing an international partner to finance upgraded animation (likely too late?)
- For launch, consider acquiring an animated lead-in (Beavis, Critic from Comedy Central).
- Consider producing like specials from aforementioned old titles as lead-ins.
- Seed the show as "blocks" early on in traditional animated time periods (Sunday a.m. would be strong).
- Consider seeding on sister channels simultaneously, just initially, to reach non-VH1 viewers (Nick at Nite, MTV, maybe TNN).
- Make this available for review. Given it's a peers project, and given it's good, you'll likely make some noise.

Military Diaries

- Insist on screening the first dallies now
- Work to isolate the "gold", i.e. those story moments that suggest emotion and promise.
- Unless the outtakes stand on their own (they may), ask for a rough avid edit stateside of 2-3 stories immediately, by mid-April.
- While its likely too late to recognize any cost savings from stopping production, you'd still have 6-8 weeks to work on isolating the best stories, storytelling style, mix of stories, pace etc. In other words, led to do a parallel and real time pilot while we're actively shooting the series, as an inexpensive insurance policy.
- This also allows us to intervene in the production now, while the machine is shooting, should we require changes in the field.

24 Hours Show

- The twists are smart, with the video payoff and rock star participation making it stronger. The idea of featuring a recurring crew is likewise smart. Move forward with development.
- That said, given the MTV test results and decision to pass, and the potential "inside" nature of this project, the risk is too great to forgo a pilot and proper testing.
- Moreover, since this is booking dependent consider the experiences with Driven and Being, both of which are easier to book than this puppy. Do the pilot, test it, involve music and talent and book the first episodes, then greenlight the series.

OVERALL SUMMER

- Mobilize all efforts immediately behind the 2-4 projects from this "summer series" list that, if everything went perfectly, could make summer.
- Plan for no more than a total of 4 launches for summer, counting Joel and Military Diaries as 2 of 4.
- Revise expectations/calendarizations/schedule planning for said projects to late summer.
- Explore alternatives to pilots to save time (see next section).
- Revise internal expectations. Currently, the cross promotion deck details two new series for April, two for May. Unless I missed something, this is misinformation.

THE SLATE

Each Project ranked 1-5 as follows:

- Great commercial concept and easy to realize. Go for it
- Good concept, but development has more variables. Try it, but beware special steps.
- Better than average concept, material challenges in the development process.
- Either because of the idea or difficulty of developing the idea, this is a longshot. View skeptically.
- For specific reasons, don't count on this project at all. Kill now.

1. Tribute Band
   Greenroom
   Diva's Search
   Camp Chaos
   Video Hall of Fame: the series
   Reunions

2. I love the 80's
   Prison Star Search
   Crush
   U are There, a.k.a. Loose Lips
   Rock the House
   Unauthorized

3. Classic Sitcoms
   Isaak Hayes pilot
   Deeper
   What If
   Rock Channel
   Backroom
   Routes
   Rock Band on Tour
   Street Cred
   In the Closet

4. Onion
   Stalkers
   Rock and Roll Beverly Hillbillies
   Hill Harper
   You Wish
   World's Most Dangerous
   Paul's Place
   Music Video hours development

3. Johnny Ciao
   Quarterly Sports Specials
   Fame-o-Meter
   Rock and Roll Parents
   Vision Quest
   Godzilla Rocks
   Indy Cable
   Static
   Just for One Day
   Rock and Roll Dog Show

- Reorganize slate to highlight favored 1's and 2's. Beware of risks inherent with 3's. Refocus the organization to focus primarily on the 1-3's.
- Consider killing or putting on the back burner all 4's and 5's.
- Consider putting all scripted projects on the backburner. Develop, but do not depend on these for short-term ratings wins.
- Consider developing more writer-driven scripted projects, rather than writer-assigned projects.
- Reduce and/or be realistic about music video series development. The upside is seldom there.
- Separate "noodles" from the hardcore development slate, so as to accurately read and predict pilots and series possibilities.

DEVELOPMENT SLATE OUTLOOK

We have 12 solid, development-ready concepts (1,s and 2's) and a handful of 3's that may surprise us. For perspective, this isn't bad at all. My likes and dislikes, with natural exceptions, tend to mirror Fred's.

- Adapt the real target of 12 plus pilots, and 8 additional launches for 2002.
- Measure progress throughout the year against these targets.
- Work to expand the development slate to ensure 8 additional launches in 2002.

FAST TRACKING

Some suggestions for "alternative development" around our 1-3's follows; these approaches can be adopted for like product in the future.

1's

- Tribute Band: produce one half the program, focusing on the tribute band and their back-story. Forgo the performance, or shoot single camera without bells and whistles for participants reactions – we know what a performance looks like, and it costs a disproportionate amount of money.
- Green Room: Wire the Diva's green rooms, dressing rooms (when possible), and hire a supreme editor to play with the footage immediately thereafter. Look for potential vignette's (produce a couple) and answer the question: how would this be structured as a half hour (on paper).
- Diva Search: Given there are countless reality talent shows, forgo the pilot and hire the best producing team of Bunim Murray to develop the series steps.
- Vid Hall of Fame: Choose one video and produce a small prototype, complete with interviews. Research on paper two other stories, with pre-interview notes

2's

- Crush: Produce one segment only, ten minute pilot
- Love The 80's: Do a prototype focusing simply on tone.
- Prison Star Search: Produce one story fully, with back-story, set up, etc. Find ten other stories, researched fully with pre-interviews on paper. Shoot an accompanying DV reel of their actual cabaret performances.
- Unauthorized: Back door pilot, as you're doing
- Rock the House: Stage one needs to focus on generating format ideas. Do not go to pilot until this happens, then make determination as to the right next step.
- Loose Lips. Research transcripts quickly; circulate. If the material's there, stage run thru's, culminating in an in-room read-thru for senior execs.

3's

- Classic Sitcoms: straight to "special" as backdoor pilot, or series
- What If: Research stories on paper to see if these are worth shooting
- Rock Channel: If talent search yields a strong candidate, do in-room run thru's initially. This may or may not tell you about series, but it will let you know whether to bother with a pilot.
- Backroom: Shoot down and dirty, 12 minute pilot, DV, in our own studio.
- Routes: Evaluate Road Home as an alternative.
- Rock Band on Tour: Since a pilot is not feasible, search out the best reality team.
- Street Cred: Work this fully on paper; initial treatment looked good. (may be in pilot here?)

There are no hard and fast rules; instinctually, there is generally a question, or a couple of questions that really need to be evidenced. Some examples:

- Game Formats like Buzzcocks work particularly well as in-room run thru's
- Reality programs involving back-story and set up (Reunions, Crush) should be shot, but a shortened pilot may do
- Actor driven projects (loose lips) work well as staged mini-theatre productions. More complicated dramatic scripts can be worked this way as well (we do it at MTV), but it's risky.
- Amateur Talent programs work well with DV samples of said crazies.
- Talent driven projects work well with multiple run thru's, leading to an exec run thru for pick up
- Format driven projects (Rock The House) generally require a full segment shoot.
- Story driven projects (What If) are often better tested with paper research; you'll still likely need a pilot, but this step can save you a wasted pilot. Likewise a magazine concept like Street Cred.
- Projects where tone is key almost always require an edited prototype (80's)

RECOMMENDATION

- Fast Track your 1's-3's, considering these alternative development options, conserving both time and financial resources.
- Reallocate development savings to fund additional development in 2002.
- Likewise, for some projects, insert paper steps which, although they add a step, may save you mistaken pilot pickups.
- Develop fast-track options for future ideas

EXPANDING THE SLATE

Steve Tao represented he's after 20 more projects by Memorial Day, which is great

- Create a "buying retreat" in L.A. When development is low, we (MTV) stage a "buying retreat" at the House Of Blues. Over 48 hours, the junior development staff presents, with agents and talent, their favorite pitches. Our promise to the players: We'll buy the project and commit within 24 hours. This creates a real heat around the process, and people come to play. We have legal sit in, so as to facilitate fast-track deals. This has been tremendously successful for MTV
- For three months, eliminate the "paper" treatment phase, whereby paper presentations are made to John and Fred. Do paper work only when you're debating whether a project warrants a pilot.
- In tandem, for three months, allow S Tao to directly buy projects up to $25K, up to $250K total. Things will move fast, and you'll get more voices reflected.
- Set very specific three months targets for Kim, Rob. W. and Michael H. to ensure we hit 20.
- To the extent this is successful, consider institutionalizing these mini, lower-level development funds, to reduce inevitable senior executive bottlenecks.

- Determine if any MTV projects are, categorically, of interest. Organizationally, it for Tom Freston to decide whether we'd ever share slates and/or product being developed. Analyze repercussions for MTV projections and staff issues.

Recommendation
- Consider expanding the universe to include more outside pitches/players
- Rely on MTV if you'd like to expanded lists of worthy meetings in various realms. Some are attached in an exhibit.

SCHEDULING RECAP

- Realize scheduling does not provide a short term solution; only new content will drive ratings at this point.
- Adapt a cable-centric, rather than network-centric approach, focusing on capturing network overflow 24.7
- Continue with the emphasis on prime; abandon specific development for other day parts
- Recognize lead-in's are everything. Schedule limited original, established series and special in tandem with new content premieres
- Resolve production issues, so scheduling can plan to maximize and coordinate lead-ins. Consider creating a forum for program planning. J. Sykes to intervene as necessary, given music/talent reports directly to the President.
- Forget about "letting the audience know when things are on" regularly. Focus instead on premieres.
- Abandon the 8p BTM scheduling strategy. It's too late with this property. Return to effective weekday marathons.
- Increase runs of new content dramatically, in an attempt to seed shows. Worry not: unduplicated cume will remain high.
- Abandon production of weekend re-packaging stunts.
- Consider creating original weekend content instead; consider programming some original weekend content in prime weekdays instead. Consider programming some original weekend content in prime.
- Increase strip development, given the scheduling/ratings potency.
- Develop Artist-independent formats to compliment the current artist-dependent formats
- Begin aggressive contingency planning for the potential demise of BTM in 2003.
- Recognize MTV is not your primary competition; this is a red herring.

SHORT TERM "EMERGENCY" PATHS TO EXPLORE

- Bifurcate the challenges, creating a forum/team to work exclusively on emergency moves in the near term, and allowing development to work separately towards the long term.
- Bring the necessary expertise in-house to pursue unusual acquisitions, second windows, and make editorial calls on "instant" content.

- Meet daily in the war room to track progress
- Target a minimum 10% growth though these initiatives by Q32002.
- Determine which initiatives are acceptable for the brand, and which are not.
- Finalize a comprehensive list of all possible initiatives, beginning with the 27 herein.

1. Pursue an aggressive Bridge Strategy involving real time, quick turnaround specials
2. Turn Unauthorized into an immediate, opportunistic series. Fast track one of the pilot segments, and see what you've got. If it's halfway decent, go straight into production, with same editorial focus as above.
3. MTV Library Product. MTV has content which is still reasonably fresh, skews slightly older, is no longer airing on MTV. It would likely rate on VH1. Exhibit is attached.
4. Bring back All Access. I know this has been discussed. Do it fast, if you're not already. Deliver by late Q2. BG preferred topics herein.
5. Pursue broken series. Multiple examples are in the text.
6. Cherry pick "music-centric" Nick at Nite/TV Land episodes. Tutti sings, Woody croons, Fonz goes to the sock hop. There may be as many as 50 relevant episodes. We could theme the week or weekend, countdown the best musical episodes of all time.
7. Obviously, the option of co-opting an entire Nick at Nite or TV Land series exists as well.
8. The latest trend is second cable windows on existing prime series. A full list of possibilities is included in the text.
9. Network Reality series, syndicated or real time windows.
10. Get in on pilot second windows now, a new trend. Examples included.
    Consider assuming MTV's ET comp pilot.
11. Likewise, pursue second windows on day and date entertainment-based access strips
12. Another new trend involves buying first run syndicated product for "Cable syndication" a few years later. The hottest property soon to be available is Blind Date, which would work.
13. Rosie is perhaps the most intriguing first-run option rumored to be available for cable. Explore.
14. Other currently syndicated fare worth exploring. List is included.).
15. Off Cable shows. List is included.
16. In Living Color always performed exceptionally well on FX. Is there still life for VH1
17. Consider not passing on future "competitive" properties like Conan, as they're not competitive. List of post-Conan alternatives from late night included.
18. The dialogue may have changed around Letterman in the last week. Call.
19. Re-cut BTM to generate extended life. For example, a series of one hour repackages, counting down:
    - the wildest addiction stories ever
    - the best comebacks ever
    - the most inflammatory breakups ever
    - the craziest rock star moments
20. Acquire television movies. Contacts and dynamics included.

21. Cherry pick current movie avails. Staff already on this.
22. Dawson's Creek is the only major unsold series just now, and I'm suspect, but explore. Consider jumping on 2003 avails for early windows.
23. Re-comp nostalgic music series as two hour "look back" specials, rather than running in pattern. Examples included.
24. Buy Glitter. Also buy Rock Star.
25. Fund Showtime properties in exchange for post-Showtime windows to double in-house made for's.
26. Produce "musical" episodes of hit programs. Examples included.
27. Double the number of 100 greatest stunts immediately. Included are best next two greenlights.

HOW DO WE FINANCE A RATINGS ORIENTED MODEL

- Analyze the slate for evergreen, format driven franchises. Consider those the best immediate return.
- Cease spending production dollars on low rated video shows – Red Eye, Fresh New Music, Jump Start. Netting a savings of $2.9M, annual savings in 2003 of at least $4M
- If you choose to keep these banners alive, produce with minimal studio wraps, graphic and contexting instead. This allows you to be, for example, in the "fresh" music video business without blowing $20K a pop.
- Consider eliminating $1M in costs from daily news collection
- Consider sharing footage collection resources with MTV. (I have not vetted the feasibility of this)
- Per the previous section, migrate News division towards series and specials development and production.
- Keep in mind the significant financial recoupment should we opt out of Zach. Endeavor to determine next steps by Memorial Day. Savings if cancelled: $5.6M
- Consider strongly transitioning Fashion and My VH1 Awards to less costly, potentially higher rated, equally attractive revenue vehicles. Savings: north of $4M.
- Consider making these moves for the 2003 Upfront.
- Consider developing as an alternative VH1 Video Hall of Fame.
- Total programming funds liberated annually: north of $15M. Use for series, and to increase current emergency acquisitions budget up from zero.

THE ORGANIZATION

- Create 4, if not 5 separate, functioning development areas, each with different sensibilities and goals.
- Areas could include L.A. series development, NYC series development, NYC News and Specials, possibly development in the NYC Production Group, Docs and Stunts under George Moll.
- In all areas, proxy for the relative lack of development expertise. You can get there a variety of ways

- Set very specific development targets for each group. Be sure to have 20 active noodles at all times, 10 projects in active development, minimum 5 pilots per year. As a result, you have 50 projects in development at all times, and produce a minimum of 25 pilots annually.
- To facilitate a broader, flatter organization, make individual funds available for each group. Require each of five groups to manage their budget independently.
- Junior Executive in Fred's office to track calendarization of all projects across development divisions, so as to manage future product inventory.

We are extremely happy to announce a broad content agreement between Viacom and Hulu that brings ***The Daily Show*** and ***The Colbert Report*** back to Hulu and now also to **Hulu Plus**, beginning this morning. Each of the shows will be available the morning after they originally air.

As part of the agreement, a selection of great current programming from MTV, Comedy Central, VH1, TV Land, BET and other Viacom channel brands will also be added to Hulu Plus. Each episode of leading shows like ***Jersey Shore***, ***Teen Mom 2***, and ***Tosh.0*** will be available starting 21 days after their on-air premiere, and all episodes will remain on the service through the end of their respective season. Welcome to Hulu Plus, Snooki.

In the coming weeks on Hulu Plus, we also will be adding more than 2,000 episodes of shows from Viacom's library including *Chappelle's Show*,*The Hills*, *Reno 911*, and many more.

While the new content above is **news** on its own, I thought it would be appropriate to use this opportunity to also share the Hulu team's point of view on the future of TV. For those interested, read on. For those not interested, may we suggest the latest episode of ***The Daily Show***?

Jason Kilar

CEO Hulu

jason@hulu.com

The Hulu team is often asked about our thoughts on the future of TV. The following represents our point of view, which has been materially influenced by our daily interactions with users, advertisers, and content owners. We are fortunate to have such meaningful interactions with these three customer sets, and we are relentlessly inventing better ways to serve them.

The future of TV.

Distributors will certainly play a role in the future of TV, but we believe that three potent forces will be far more powerful in shaping that future: consumers, advertisers and content owners.

Consumers have spoken emphatically as to what they want and what they do not want in their future television experience. What we've heard:

* Traditional TV has too many ads. Users have demonstrated that they will go to great lengths to avoid the advertising load that traditional TV places upon them. Setting aside sports and other live event programming, consumers are increasingly moving to on-demand viewing, in part because of the lighter ad load (achieved via ad-skipping DVRs, traditional video on demand systems, and/or online viewing).

* Consumers want TV to be more convenient for them. People want programs to start at a time that is convenient for their schedules, not at a time dictated to them. Consumption of original TV episodes will eventually mirror theatrical movie attendance: big opening Friday nights, but more consumption will be in the days and weeks afterward. Consumers also want the freedom to be able to watch TV on whatever screen is most convenient for them, be it a smartphone, a tablet, a PC, or, yes, a TV.

* Consumers are demonstrating that they are the greatest marketing force a good television show or movie could ever have, given the powerful social media tools at consumers' disposal. Consumers now also have the power to

immediately tank a bad series, given how fast and broad consumer sentiment is disseminated. This is nothing short of a game-changer for content creators, owners, and distributors.

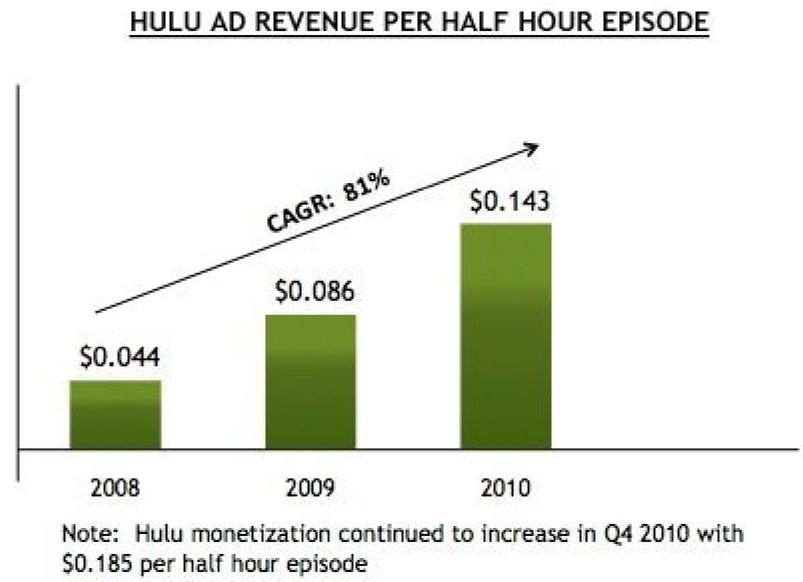
The above trends are a reality and we believe the wise move is to find ways to exploit these new trends and leverage them to build great businesses. History has shown that incumbents tend to fight trends that challenge established ways and, in the process, lose focus on what matters most: customers. Hulu is not burdened by that legacy.

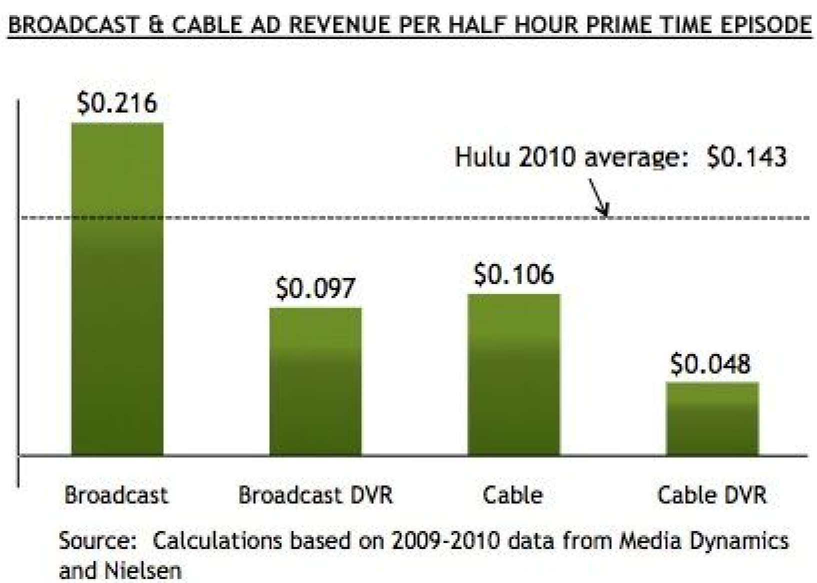
Advertisers have weighed in heavily on the future of TV, with both their thoughts and their considerable wallets. Advertisers are increasingly expecting to present their advertising messages to just their desired audience…and not to anyone else. For over 60 years, video advertising could only be bought via a TV show's projected audience, which served as a blunt proxy for a certain target audience. The result has been many wasted impressions and an often irrelevant experience for consumers. In the near future, advertisers will demand the ability to target their messages to people rather than targeting their messages to TV shows as proxies for people.

Content owners, the third factor in the future of TV, have been very clear: they as a group need to make a fair return on their significant investment in creating content. Content owners will license their best content in the best windows to those distributors that pay the most on a per-user per-month basis. Content owners will bundle their content to the degree customers will respond, simply because it is in the content owners' economic interest to do so. If enough customers refuse to purchase their bundles, then the bundles will either be reduced in price/scope (possible) or dismantled (far less likely). Customers will ultimately make the decisions here.

With the above dynamics in mind, we believe that there is going to be tremendous near-term innovation in the pay TV distribution business. The internet has made it possible for new entrants to innovate quickly and materially. Consumers will have more choice and convenience going forward. This competition will drive prices and margins down in pay TV distribution. A greater percentage of the economic pie will flow back to content owners and creators. As mentioned before, advertisers will be able to target their messages to people, not to TV shows as proxies for people. Going forward, rapid innovation, low margins, and customer obsession will define the winners in pay TV distribution.

The above has influenced the path the Hulu team has taken to date. In 2007, we began the process of building what is now the leading online video advertising service. Based on metrics from Nielsen/IAG, Hulu's video advertising service is roughly 2x as effective as traditional TV video advertising services. Our point of view since 2007 has been that if we become the most effective video advertising service, then we could earn higher advertising revenues (per hour of content consumed) than anyone else's ad business. We also have been highly focused on the reality that advertising monetization during a DVR session is headed steadily downhill, which is a looming issue for content owners. And the answer is not adding a full broadcast ad load to the video-on-demand experience (that will just drive DVR viewing – and ad-skipping – further north). Our conviction remains that if we respect the customer and innovate effectively, we can pay content owners more from the ad side of the business than anyone else's ad service can do (be that live/linear consumption or DVR viewing). The below chart compares how much revenue Hulu currently generates from advertising per half-hour tv episode versus the advertising revenue that traditional distribution





generates.

In the near to mid term, we anticipate being able to generate higher advertising returns than any traditional channel can from their advertising service, for any type of content. We've invented patentable technology that has enabled us to deliver much more relevant video advertising and to do so in a manner that generates much higher recall and purchase intent than other video advertising services. The market is responding: we expect to approach half a billion in total revenues (advertising and subscription combined) in 2011, up from $263 million in 2010, which was up from $108 million in 2009.

But advertising is only part of the equation. The other part is subscription. **We officially launched Hulu Plus on November 17, 2010**, 11 weeks ago. Hulu Plus is a dual revenue stream subscription service; one revenue stream from the subscription fee, the other from a modest amount of advertising (half the advertising that you'll see on traditional TV). Hulu Plus includes full current season access to many of TV's top programs, on an array of internet connected devices, available anytime in an unlimited fashion, for $7.99/month. Our subscriber count will pass 1 million this year, to our knowledge the fastest start of any online video subscription service. In the fall, we expect Hulu Plus as a business will have a revenue run rate north of $200 million. A key element of Hulu Plus is that we are able to compensate content owners more per-user per-month than anyone else for the same body of content. We are able to do this because of the subscription fee, our unusually effective and market-leading advertising service, and our tolerance for thin margins.

The opportunity for content owners.

We believe content owners are in a strong position to make higher returns from TV content distribution in the future than they have historically. If studios and networks license their content to distributors with per-user per-month economics as the model (as opposed to a fixed fee model), then they will be able to extract a higher portion of the total economics their content will generate. We state this given our belief that the majority of the US population (and a material percent of the globe) will be subscribers to some flavor of digital premium content service going forward. We also believe that any number of digital distribution companies have the ability to quickly get to scale; getting to scale is not the hard part about this business. Over the past 4 years, studios and networks have not always insisted on per-user per-month economics in their digital licensing agreements, which has resulted in a regretted under-pricing of their content to digital distributors. That said, we believe that all studios and networks will recognize that it is in their economic interest to insist on per-user per-month pricing in all their distribution relationships (library content and current content). Given the above future, we see strong upside for content owners that are laser-focused on the per-user per-month economics. A greater percentage of the pie should flow to content owners and creators in the future.

Free, ad-supported services.

Given all this talk of dual revenue streams, what becomes of free, ad-supported services like the original Hulu service? We think content owners will pursue one of two paths for each individual piece of content, each for valid reasons:

1. A portion of content will leverage free, ad-supported services aggressively, given a digital service like Hulu provides unusually high ad monetization when compared to DVR sessions and even the bulk of live linear ad monetization. For a substantial body of content, we suspect that Hulu's ad supported free service will provide the best financial return available to those content owners/creators. We expect significant experimentation will continue as it relates to windowing, as we have seen these past 3 years.

2. Another portion of content will only be available to users that either subscribe directly to a digital service or, alternatively, authenticate that they already have a traditional pay TV subscription. Once a user is recognized as a pay TV service subscriber, the user will be able to watch a specified body of content.

Hulu's responsibility is to deliver the world's leading dual revenue stream service and to deliver the world's leading free, ad-supported service. We expect the free Hulu service to be a core part of our business for years to come, and one that will continue to earn enthusiasm from our users. The stronger the returns we can drive in our free, ad-supported service, the more content will show up in that service. The same goes for our Hulu Plus dual revenue stream service. Clearly, content owners will decide which distribution channels are best for them. As we deliver leading services, Hulu will pay content owners and creators more per-user per-month than anyone else. At the same time, we will be able to price our services for consumers lower than anyone else offering the same body of content, given our market-leading ad service and our tolerance for low margins.

The relentless pursuit of better ways.

It is clear to us that — because of the internet and the increased competition/innovation it brings — the future of TV is going to be very good to users, advertisers and content owners/creators. Users will have convenient access to much more content. We also expect to see lower consumer prices, which will be a function of a marked increase in distribution competition. Advertisers will be able to efficiently and effectively target their messages to just their desired audience, thanks to the internet medium. And content owners will have the opportunity to make higher financial returns, which will be a function of disciplined per-user per-month licensing strategies, along with the benefits that come with intensified distribution competition.

Our journey at Hulu involves significant risk. That is the nature of innovation, particularly the business of re-inventing television. A number of you that are reading this might be thinking that we'd have to be crazy to think that our small team can actually re-invent television and compete effectively against a landscape of distribution giants like cable companies, satellite companies, and huge online companies. We are crazy. All entrepreneurs need to be. If it was easy, everyone would be doing it and there would be no naysayers. We are nothing if not a team that believes in the value of convictions, thoughtful stubbornness, and the relentless pursuit of better ways.

Jason Kilar

Hulu CEO

jason@hulu.com

A memo drafted by David Ogilvy for the management to circulate as they saw fit:

September 7, 1982

How To Write

The better you write, the higher you will go in Ogilvy & Mather.
People who *think* well, *write* well.

Good writing is not a natural gift. You have to *learn* to write well.
Here are 10 hints:

(1) Read the Roman-Raphaelson book on writing.* Read it three times.
(2) Write the way you talk. Naturally.
(3) Use short words, short sentences and short paragraphs
(4) Never use jargon words like *reconceptualize*, *demassification*, *attitudinally*, *judgmentally*. They are hallmarks of a pretentious ass.
(5) Never write more than two pages on any subject.
(6) Check your quotations.
(7) Never send a letter or a memo on the day you write it. Read it aloud the next morning—and then edit it.
(8) If it is something important, get a colleague to improve it.
(9) Before you send your letter or memo, make sure it is crystal clear what you want the recipient to do.
(10) If you want ACTION, *don't write*. Go and tell the guy what you want.

David

Ogilvy

*Writing That Works, Harper & Row, 1981

ATTACHMENT B

[Redactions [Filed Under Seal.]

From: Steve Jobs <sjobs@apple.com>
To: Eddy Cue <cue@apple.com>
Subject: Fwd: HarperCollins
Received(Date): Sun, 24 Jan 2010 22:31:31 -0800

My last email to James Murdock.

Sent from my iPhone

Begin forwarded message:

> **From:** Steve Jobs <sjobs@apple.com>
> **Date:** January 24, 2010 11:31:24 AM PST
> **To:** James Murdoch [REDACTED]
> **Cc:** Steve Jobs <sjobs@apple.com>
> **Subject: Re: HarperCollins**
>
> James,
>
> Our proposal does set the upper limit for ebook retail pricing based on the hardcover price of each book. The reason we are doing this is that, with our experience selling a lot of content online, we simply don't think the ebook market can be successful with pricing higher than $12.99 or $14.99. Heck, Amazon is selling these books at $9.99, and who knows, maybe they are right and we will fail even at $12.99. But we're willing to try at the prices we've proposed. We are not willing to try at higher prices because we are pretty sure we'll all fail.
>
> As I see it, HC has the following choices:
>
> 1. Throw in with Apple and see if we can all make a go of this to create a real mainstream ebooks market at $12.99 and $14.99.
>
> 2. Keep going with Amazon at $9.99. You will make a bit more money in the short term, but in the medium term Amazon will tell you they will be paying you 70% of $9.99. They have shareholders too.
>
> 3. Hold back your books from Amazon. Without a way for customers to buy your ebooks, they will steal them. This will be the start of piracy and once started there will be no stopping it. Trust me, I've seen this happen with my own eyes.
>
> Maybe I'm missing something, but I don't see any other alternatives. Do you?
>
> Regards,
> Steve

On Jan 23, 2010, at 1:56 PM, James Murdoch wrote:

Steve,

I think the crux of this is our flexibility to offer product elsewhere at price-points you don't like.

If we could offer to you that a certain percentage of releases (>50%) would be available within your pricing structure (< or = 14.99), does that give you enough comfort?

I think we are worried more about the absolute holdback of product elsewhere, and our ceding of pricing to Apple, than we are about the actual haggle over what the price will be.

I haven't shared this with HC directly -- so this is only hypothetical. But if you were willing to accept that a supplier can exploit other avenues (at prices not disadvantageous to you), with a guarantee of substantial volume through Apple -- maybe I could work with HC to get to some common ground.

Please let me know.

A different question: we have four areas of discussion (related to our product) between our teams right now: Books, US Video, Int'l Video, and newspapers. All at different stages of maturity, these discussions are all centered, for us, around the desire to make our product widely available, and to make yours and our products more attractive for our customers. It seems though that we in each one we largely encounter a "take it or leave it" set of terms, and predictably we've so far failed to really strike the kind of partnerships that could move things forward.

Is it worth considering in the round, over the next few months or weeks, whether or not some of these loose ends can be tidied up? It's clear that Apple is already becoming an attractive platform for so many of our customers -- all over the world. As a creative company at our core, NWS should be more engaged with Apple, and I think Apple could be more engaged with NWS, globally, than either of us are today.

Best,

JRM

James,

A few thoughts to consider (I'd appreciate it if we can keep this between you and me):

1. The current business model of companies like Amazon distributing ebooks below cost or without making a reasonable profit isn't sustainable for long. As ebooks become a larger business, distributors will need to make at least a small profit, and you will want this too so that they invest in the future of the business with infrastructure, marketing, etc.

2. All the major publishers tell us that Amazon's $9.99 price for new releases is eroding the value perception of their products in customer's minds, and they do not want this practice to continue for new releases.

3. Apple is proposing to give the cost benefits of a book without raw materials, distribution, remaindering, cost of capital, bad debt, etc., to the customer, not Apple. This is why a new release would be priced at $12.99, say, instead of $16.99 or even higher. Apple doesn't want to make more than the slim profit margin it makes

distributing music, movies, etc.

4. $9 per new release should represent a gross margin neutral business model for the publishers. We are not asking them to make any less money. As for the artists, giving them the same amount of royalty as they make today, leaving the publisher with the same profits, is as easy as sending them all a letter telling them that you are paying them a higher percentage for ebooks. They won't be sad.

5. Analysts estimate that Amazon has sold slightly more than one million Kindles in 18+ months (Amazon has never said). We will sell more of our new devices than all of the Kindles ever sold during the first few weeks they are on sale. If you stick with just Amazon, B&N, Sony, etc., you will likely be sitting on the sidelines of the mainstream ebook revolution.

6. Customers will demand an end-to-end solution, meaning an online bookstore that carries the books, handles the transactions with their credit cards, and delivers the books seamlessly to their device. So far, there are only two companies who have demonstrated online stores with significant transaction volume - Apple and Amazon. Apple's iTunes Store and App Store have over 120 million customers with

credit

cards on file and have downloaded over 12 billion products. This is

the type of online assets that will be required to scale the ebook

business into something that matters to the publishers.

So, yes, getting around $9 per new release is less than the $12.50 or

so that Amazon is currently paying. But the current situation is not

sustainable and not a strong foundation upon which to build an ebook

business. [REDACTED]
[REDACTED]

Apple is the only other company currently capable of making a serious

impact, and we have 4 of the 6 big publishers signed up already. Once

we open things up for the second tier of publishers, we will have

plenty of books to offer. We'd love to have HC among them.

Thanks for listening.

Steve

On Jan 22, 2010, at 3:54 PM, James Murdoch wrote:

Steve,

Thanks for your call earlier today, and for the time last week.

I spoke to Brian Murray and Jon Miller tonight -- and Brian is

sending a

note to Eddy today. I thin I have a handle on this now. In short -- we

would

like to be able to get something done with Apple -- but there are

legitimate

concerns.

The economics are simple enough. Kindle pays us a wholesale price of

$13 and

sells it for 9.99.

An author gets $4.20 on the sale of a hardcover and $3.30 on the sale

of the

e-book on the Kindle. [REDACTED]
[REDACTED]

[REDACTED]

[REDACTED]

Basically -- the entire hypothetical benefit of a book without raw

materials

and distribution cost accrues to Apple, not to the publisher or to the

creator of the work.

The other big issue is one of holdbacks. If we can't agree on the fair

price for a book, your team's proposal restricts us from making that

book

available elsewhere, even at a higher price. This is just a bridge too

far

for us.

Also, we are worried about setting prices to high -- lots of ebooks are

$9.99. A new release window with a lower commission (say 10) for the

first

six months would enable us to proce much more kenly for Apple customers.

We'd like to da that.

More on this below in Brian's note to Eddy. We outline a deal we can do.

Feel free to call or write anytime over the weekend to discuss if you

like.

I am in the UK (so eight hours ahead of CA). My home number is [REDACTED]

[REDACTED]

I check the email regularly.

Steve, make no mistake that across the board (TV, Studios, Books, and

Newspapers) we would much rather be working with apple than not. But

we, and

our partners who produce, write, edit, and otherwise make all this

with us,

have views on fair pricing, and care a lot about our future

flexibility. I

hope we can figure out a way, if not now and in time for this launch of

yours, then maybe in the future.

Best,

JRM

From: Murray, Brian (HarperCollins US)

Sent: Friday, January 22, 2010 6:16 PM

To: Eddy Cue

Subject: Apple / HarperCollins

Eddy,

Thanks for coming in again this morning. We've talked over the

proposal and

I want to make sure that you have a summary of the deal that

HarperCollins

would be willing to do in your timeframe.

1. Pricing: We need flexibility to price on a title by title basis

outside the prescribed tiers in the contract. We will use our best

efforts

to meet the tiers we discussed.

2. MFN: In the event that HarperCollins and Apple disagree on a

consumer price for a title, HarperCollins needs to ability to make that

title available through other agents who support the higher price.

3. Commissions: We need a lower commission (10%) on new releases

for

the economics to work for us and our authors. We believe a 30%

commission

will lead to more authors asking for ebooks to be delayed a result that

will not work for Apple or HarperCollins.

4. The new release window: We need to have flexibility on the

agency

window. We believe this window should be 6 months rather than 12

months in

the event that one or more large retailers do not move to an agency

model.

Leslie will be sending Kevin a contract that reflects these points in

the

event you wish to move forward on these terms.

Thanks

Brian

"Please consider the environment before printing this e-mail"

The Newspaper Marketing Agency: Opening Up Newspapers:

http://www.nmauk.co.uk/

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http://www.nmauk.co.uk/

Subject: Communication Within Tesla

There are two schools of thought about how information should flow within companies. By far the most common way is chain of command, which means that you always flow communication through your manager. The problem with this approach is that, while it serves to enhance the power of the manager, it fails to serve the company.

Instead of a problem getting solved quickly, where a person in one dept talks to a person in another dept and makes the right thing happen, people are forced to talk to their manager who talks to their manager who talks to the manager in the other dept who talks to someone on his team. Then the info has to flow back the other way again. This is incredibly dumb. Any manager who allows this to happen, let alone encourages it, will soon find themselves working at another company. No kidding.

Anyone at Tesla can and should email/talk to anyone else according to what they think is the fastest way to solve a problem for the benefit of the whole company. You can talk to your manager's manager without his permission, you can talk directly to a VP in another dept, you can talk to me, you can talk to anyone without anyone else's permission. Moreover, you should consider yourself obligated to do so until the right thing happens. The point here is not random chitchat, but rather ensuring that we execute ultra-fast and well. We obviously cannot compete with the big car companies in size, so we must do so with intelligence and agility.

One final point is that managers should work hard to ensure that they are not creating silos within the company that create an us vs. them mentality or impede communication in any way. This is unfortunately a natural tendency and needs to be actively fought. How can it possibly help Tesla for depts to erect barriers between themselves or see their success as relative within the company instead of collective? We are all in the same boat. Always view yourself as working for the good of the company and never your dept.

Thanks,

Elon

From: Mike Beckerman
Sent: Friday, January 17, 2003 5:09 PM
To: Ian Mercer; John Martin, Michael Halcoussis, Linda Averett
Cc: Chadd Knowlton; Ming-Chieh Lee; Allan Poore
Subject: RE: Windows Usability Systematic degradation flame

So, I take from this that we have lots of opinions and input However, no one appears to be saying that we, WMPG, are chartered and/or should own this. So my feedback on the thread would then be that Dave should take ownership for driving groups around today's inconsistencies, and that we should send this mail to Bharat (owns WU) as well and ask who in his team can take requirements from DMD.

Any disagreement on this?

---- Original Message ----
From: Ian Mercer
Sent: Friday, January 17, 2003 5:02 PM
To: John Martin; Mike Beckerman; Michael Halcoussis; Linda Averett
Cc: Chadd Knowlton; Ming-Chieh Lee; Allan Poore
Subject: RE: Windows Usability Systematic degradation flame

I don't think you can abdicate this entirely to marketing. If WU is the preferred way to deliver bits to end users we all need to drive WU to deliver what we need, both individually and as a collective request from DMD.

One of the biggest issues today is that WU provides no way to *promote* a download to an end-user. We want to promote MM2 and WMP9S to end-users as something new and cool that they can get for Windows. Three lines of text describing it buried under "Windows XP" in a page that the user has to purposefully go find just isn't good enough. Why can't the WU client-side piece proactively display a bubble "Look! Cool, new features for Windows XP" and the option to display a much richer "advertisement" for the feature if the user wants to read more?

Other issues:-

MUI - I guess this is getting fixed now but it's always been an issue for us

Link to download through WU - why can't we send a user right in to WU to get MM2 without them having to wade through the whole site?

Critical updates that aren't really critical - if you machine is behind a firewall many just aren't critical

Too many fixes bombarding users all the time - I routinely ignore them now and perhaps update once a month as otherwise I'd be rebooting all the time

WU's inflexible release schedule. If there is a major tradeshow at which we want to announce we need flexibility in timing the release

-Ian
-----Original Message-----
From: John Martin
Sent: Friday, January 17, 2003 11:52 AM
To: Mike Beckerman; Ian Mercer; Michael Halcoussis; Linda Averett
Cc: Chadd Knowlton; Ming-Chieh Lee
Subject: RE: Windows Usability Systematic degradation flame

I have always been concerned about this and feel that this has a lot of engineering implications. I also feel that the reason is it such a mess is because marketing teams own release to web in this company. Frankly, we should be up in arms about this and want to program manager and develop whatever code we need to to ensure that every customer that even thinks they want to download our bits can do so in as easy and painless a way as possible. Downloading is the first step to setup and we should think of them equally or as one experience. But, if

Plaintiff's Exhibit
7199
Comes V. Microsoft

you want nothing revolutionary and want to band-aid (which is fine and understandable) then I agree with your plan to give it to Dave.
John

---- Original Message ----
From: Mike Beckerman
Sent: Friday, January 17, 2003 7:36 AM
To: Mike Beckerman; John Martin; Ian Mercer; Michael Halcoussis; Linda Averett
Cc: Chadd Knowlton; Ming-Chieh Lee
Subject: RE: Windows Usability Systematic degradation flame
Importance: High

haven't heard anything from any of you on this.

My take is that this web-experience mess spans many groups and deliverables (like Plus), that we need one person/team to own the overall picture, driving it, tracking the experience, etc., and that WMPG isn't really the right place. I'm thinking Dave's team. What do you think?

From: Mike Beckerman
Sent: Wed 1/15/2003 4:39 PM
To: John Martin; Ian Mercer; Michael Halcoussis; Linda Averett
Cc: Chadd Knowlton; Ming-Chieh Lee
Subject: FW: Windows Usability Systematic degradation flame

More.

---- Original Message ----
From: Dave Fester
Sent: Wednesday, January 15, 2003 4:31 PM
To: Mike Beckerman; Amir Majidimehr; Tim Lebel
Subject: RE: Windows Usability Systematic degradation flame

I am working with MS.com to directly address the download/discoverability of our bits (both MP9S and MM2)

---- Original Message ----
From: Mike Beckerman
Sent: Wednesday, January 15, 2003 4:28 PM
To: Dave Fester; Amir Majidimehr; Tim Lebel
Subject: RE: Windows Usability Systematic degradation flame

I'm thinking about this and am discussing with my team.

I don't know what it means to "own website issues", nor am I yet sure the best way to handle the complex mess of coordinating between product teams, WU, and MS.COM. Dave, would you please forward the other reply you mentioned?

I expect to send more on this thread in a day or two.

---- Original Message ----
From: Dave Fester
Sent: Wednesday, January 15, 2003 3:58 PM
To: Amir Majidimehr; Mike Beckerman; Tim Lebel
Subject: RE: Windows Usability Systematic degradation flame

I replied as well. I am owning the website issues, but Mike should own the others.

---- Original Message ----
From: Amir Majidimehr
Sent: Wednesday, January 15, 2003 3:55 PM
To: Mike Beckerman; Tim Lebel; Dave Fester
Subject: FW: Windows Usability Systematic degradation flame

Can you guys coordinate between you on how to deal with this situation on our bits? Bill's situation is worse than my personal experience but still, this aspect of the system needs to be looked at carefully and become a sign off item for each release.

Please let me know which one of you going to be BOL for this moving forward.

Amir

---- Original Message ----
From: Will Poole
Sent: Wednesday, January 15, 2003 1:27 PM
To: Amir Majidimehr; Chris Jones (WINDOWS)
Cc: Dave Fester; Rick Thompson
Subject: FW: Windows Usability Systematic degradation flame

Guess we should start working on a list of things that need to be fixed w/ the web sites, WU, and with windows, and identify owners. Bill's frustration is not unreasonable.

---- Original Message ----
From: Bill Gates
Sent: Wednesday, January 15, 2003 10:05 AM
To: Jim Allchin
Cc: Chris Jones (WINDOWS); Bharat Shah (NT); Joe Peterson; Will Poole; Brian Valentine; Anoop Gupta (RESEARCH)
Subject: Windows Usability Systematic degradation flame

I am quite disappointed at how Windows Usability has been going backwards and the program management groups don't drive usability issues.

Let me give you my experience from yesterday.

I decided to download Moviemake and buy the Digital Plus pack r so I went to Microsoft.com. They have a download place so I went there.

The first 5 times I used the site it timed out while trying to bring up the download page. Then after an 8 second delay I got it to come up

This site is so slow it is unusable.

It wasn't in the top 5 so I expanded the other 45.

These 45 names are totally confusing. These names make stuff like: C:\Documents and Settings\billg\My Documents\My Pictures seem clear.

They are not filtered by the system I can in on and so many of the things are strange.

I tried scoping to Media stuff. Still no moviemaker. I typed in moviemaker. Nothing. I typed in movie maker. Nothing.

So I gave up and sent mail to Amir saying - where is this Moviemaker download? Does it exist?

So they told me that using the download page to download something was not something they anticipated

They told me to go to the main page search button and type movie maker (not moviemaker!).

I tried that The site was pathetically slow but after 6 seconds of waiting up it came.

I thought for sure now I would see a button to just go do the download.

In fact it is more like a puzzle that you get to solve. It told me to go to Windows Update and do a bunch of incantations.

This struck me as completely odd. Why should I have to go somewhere else and do a scan to download moviemaker?

So I went to Windows update. Windows Update decides I need to download a bunch of controls. Now just once but multiple times where I get to see weird dialog boxes.

Doesn't Windows update know some key to talk to Windows?

Then I did the scan. This took quite some time and I was told it was critical for me to download 17megs of stuff.

This is after I was told we were doing delta patches to things but instead just to get 6 things that are labeled in the SCARIEST possible way I had to download 17meg.

So I did the download. That part was fast. Then it wanted to do an install. This took 6 minutes and the machine was so slow I couldn't use it for anything else during this time.

What the heck is going on during those 6 minutes? That is crazy. This is after the download was finished.

Then it told me to reboot my machine. Why should I do that? I reboot every night - why should I reboot at that time?

So I did the reboot because it INSISTED on it. Of course that meant completely getting rid of all my Outlook state.

So I got back up and running and went to Windows Update again. I forgot why I was in Windows Update at all since all I wanted was to get Moviemaker.

So I went back to Microsoft.com and looked at the instructions. I have to click on a folder called WindowsXP. Why should I do that? Windows Update knows I am on Windows XP.

What does it mean to have to click on that folder? So I get a bunch of confusing stuff but sure enough one of them is Moviemaker.

So I do the download. The download is fast but the Install takes many minutes. Amazing how slow this thing is.

At some point I get told I need to go get Windows Media Series 9 to download.

So I decide I will go do that. This time I get dialogs saying things like "Open" or "Save". No guidance in the instructions which to do. I have no clue which to do.

The download is fast and the install takes 7 minutes for this thing.

So now I think I am going to have Moviemaker. I go to my add/remove programs place to make sure it is there.

It is not there.

What is there? The following garbage is there. Microsoft Autoupdate Exclusive test package, Microsoft Autoupdate Reboot test package, Microsoft Autoupdate testpackage1. Microsoft AUtoupdate testpackage2, Microsoft Autoupdate Test package3.

Someone decided to trash the one part of Windows that was usable? The file system is no longer usable. The registry is not usable. This program listing was one sane place but now it is all crapped up.

But that is just the start of the crap. Later I have listed things like Windows XP Hotfix see Q329048 for more information. What is Q329048? Why are these series of patches listed here? Some of the patches just things like Q810655 instead of saying see Q329048 for more information.

What an absolute mess.

Moviemaker is just not there at all.

So I give up on Moviemaker and decide to download the Digital Plus Package.

I get told I need to go enter a bunch of information about myself.

I enter it all in and because it decides I have mistyped something I have to try again. Of course it has cleared out most of what I typed

I try tryping the right stuff in 5 times and it just keeps clearing things out for me to type them in again.

So after more than an hour of craziness and making my programs list garbage and being scared and seeing that Microsoft com is a terrible website I haven't run Moviemaker and I haven't got the plus package

The lack of attention to usability represented by these experiences blows my mind. I thought we had reached a low with Windows Network places or the messages I get when I try to use 802.11. (don't you just love that root certificate message?)

When I really get to use the stuff I am sure I will have more feedback.

To	Executive Staff and direct reports
From	Bill Gates
Date	May 26, 1995

The Internet Tidal Wave

Our vision for the last 20 years can be summarized in a succinct way We saw that exponential improvements in computer capabilities would make great software quite valuable Our response was to build an organization to deliver the best software products In the next 20 years the improvement in computer power will be outpaced by the exponential improvements in communications networks The combination of these elements will have a fundamental impact on work, learning and play Great software products will be crucial to delivering the benefits of these advances. Both the variety and volume of software will increase

Most users of communications have not yet seen the price of communications come down significantly Cable and phone networks are still depreciating networks built with old technology. Universal service monopolies, and other governmental involvement around the world have kept communications costs high Private networks and the Internet which are built using state of the art equipment have been the primary beneficiaries of improved communication technology The PC is just now starting to create additional demand that will drive a new wave of investment. A combination of expanded access to the Internet, ISDN, new broadband networks justified by video based applications and interconnections between each of these will bring low cost communication to most businesses and homes within the next decade.

The Internet is at the forefront of all of this and developments on the Internet over the next several years will set the course of our industry for a long time to come. Perhaps you have already seen memos from me or others here about the importance of the Internet. I have gone through several stages of increasing my views of its importance. Now I assign the Internet the highest level of importance. In this memo I want to make clear that our focus on the Internet is crucial to every part of our business. The Internet is the most important single development to come along since the IBM PC was introduced in 1981. It is even more important than the arrival of graphical user interface (GUI) The PC analogy is apt for many reasons The PC wasn't perfect. Aspects of the PC were arbitrary or even poor. However a phenomena grew up around the IBM PC that made it a key element of everything that would happen for the next 15 years. Companies that tried to fight the PC standard often had good reasons for doing so but they failed because the phenomena overcame any weaknesses that resisters identified

The Internet Today

The Internet's unique position arises from a number of elements The TCP/IP protocols that define its transport level support distributed computing and scale incredibly well The Internet Engineering Task Force (IETF) has defined an evolutionary path that will avoid it running into future problems even as virtually everyone on the planet connects up The HTTP protocols that define HTML Web browsing are extremely simple and have allowed servers to handle incredible traffic reasonably well All of the predictions about hypertext - made decades ago by pioneers like Ted Nelson - are coming true on the Web Although other protocols on the Internet will continue to be used (FTP, Gopher, IRC, Telnet, SMTP, NNTP), HTML with extensions will be the standard that defines how information will be presented Various extensions to HTML including content enhancements like tables, and functionality enhancements like secure transactions, will be widely adopted in the near future There will also be enhanced 3D presentations providing for virtual reality type shopping and socialization

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Another unique aspect of the Internet is that because it buys communications lines on a commodity bid basis and because it is growing so fast, it is the only "public" network whose economics reflect the latest advances in communications technology. The price paid for corporations to connect to the Internet is determined by the size of your "on-ramp" to the Internet and not by how much you actually use your connection. Usage isn't even metered. It doesn't matter if you connect nearby or half way around the globe. This makes the marginal cost of extra usage essentially zero encouraging heavy usage.

Most important is that the Internet has bootstrapped itself as a place to publish content. It has enough users that it is benefiting from the positive feedback loop of the more users it gets, the more content it gets, and the more content it gets, the more users it gets. I encourage everyone on the executive staff and their direct reports to use the Internet. I've attached an appendix which Brian Fleming helped me pull together that shows some hot sites to try out. You can do this by either using the .HTM enclosure with any Internet browser or, if you have Word set up properly, you can navigate right from within this document. Of particular interest are the sites such as "YAHOO" which provide subject catalogs and searching. Also of interest are the ways our competitors are using their Websites to present their products. I think SUN, Netscape and Lotus do some things very well.

Amazingly it is easier to find information on the Web than it is to find information on the Microsoft Corporate Network. This inversion where a public network solves a problem better than a private network is quite stunning. This inversion points out an opportunity for us in the corporate market. An important goal for the Office and Systems products is to focus on how our customers can create and publish information on their LANs. All work we do here can be leveraged into the HTTP/Web world. The strength of the Office and Windows businesses today gives us a chance to superset the Web. One critical issue is runtime/browser size and performance. Only when our Office – Windows solution has comparable performance to the Web will our extensions be worthwhile. I view this as the most important element of Office 96 and the next major release of Windows.

One technical challenge facing the Internet is how to handle "real-time" content —specifically audio and video. The underlying technology of the Internet is a packet network which does not guarantee that data will move from one point to another at a guaranteed rate. The congestion on the network determines how quickly packets are sent. Audio can be delivered on the Internet today using several approaches. The classic approach is to simply transmit the audio file in its entirety before it is played. A second approach is to send enough of it to be fairly sure that you can keep playing without having to pause. This is the approach Progressive Networks Real Audio (Rob Glaser's new company) uses. Three companies (Internet Voice Chat, Vocaltec, and Netphone) allow phone conversations across the Internet but the quality is worse than a normal phone call. For video, a protocol called CU-SeeMe from Cornell allows for video conferencing. It simply delivers as many frames per second as it sees the current network congestion can handle, so even at low resolution it is quite jerky. All of these "hacks" to provide video and audio will improve because the Internet will get faster and also because the software will improve. At some point in the next three years, protocol enhancements taking advantage of the ATM backbone being used for most of the Internet will provide "quality of service guarantees". This is a guarantee by every switch between you and your destination that enough bandwidth has been reserved to make sure you get your data as fast as you need it. Extensions to IP have already been proposed. This might be an opportunity for us to take the lead working with UUNET and others. Only with this improvement and an incredible amount of additional bandwidth and local connections will the Internet infrastructure deliver all of the promises of the full blown Information Highway. However, it is in the process of happening and all we can do is get involved and take advantage.

I think that virtually every PC will be used to connect to the Internet and that the Internet will help keep PC purchasing very healthy for many years to come. PCs will connect to the Internet a variety of ways. A normal phone call using a 14.4k or 28.8k baud modem will be the most popular in the near future. An ISDN connection at 128kb will be very attractive as the connection costs from the RBOCs and the modem costs come down. I expect an explosion in ISDN usage for both Internet connection and point-to-point connections. Point-to-point allows for low latency which is very helpful for interactive games. ISDN point-to-point allows for simultaneous voice data which is a very attractive feature for sharing information. Example scenarios include planning a trip, discussing a contract, discussing a financial transaction like a bill or a purchase or taxes or getting support questions about your PC answered. Eventually you will be able to find the name of someone or a service you want to connect to on the Internet and rerouting your call to temporarily be a point-to-point connection will happen automatically. For example when you are browsing travel possibilities if you want to talk to someone with expertise on the area you are considering, you simply click on a button and the request will be sent to a server that keeps a list of available agents who can be working anywhere they like as long as they have a PC with ISDN. You will be reconnected and the agent will get all of the context of what you are looking at and your previous history of travel if the agency has a database. The reconnection approach will not be necessary once the network has quality of service guarantees.

Another way to connect a PC will be to use a cable-modem that uses the coaxial cable normally used for analog TV transmission. Early cable systems will essentially turn the coax into an Ethernet so everyone in the same neighborhood will share a LAN. The most difficult problem for cable systems is sending data from the PC back up the cable system (the "back channel"). Some cable companies will promote an approach where the cable is used to send data to the PC (the "forward channel") and a phone connection is used for the back channel. The data rate of the forward channel on a cable system should be better than ISDN. Eventually the cable operators will have to do a full upgrade to an ATM-based system using either all fiber or a combination of fiber and Coax–however, when the cable or phone companies will make this huge investment is completely unclear at this point. If these buildouts happen soon, then there will be a loose relationship between the Internet and these broadband systems. If they don't happen for some time, then these broadband systems could be an extension of the Internet with very few new standards to be set. I think the second scenario is very likely.

Three of the biggest developments in the last five years have been the growth in CD titles, the growth in On-line usage, and the growth in the Internet. Each of these had to establish critical mass on their own. Now we see that these three are strongly related to each other and as they come together they will accelerate in popularity. The On-line services business and the Internet have merged. What I mean by this is that every On-line service has to simply be a place on the Internet with extra value added. MSN is not competing with the Internet although we will have to explain to content publishers and users why they should use MSN instead of just setting up their own Web server. We don't have a clear enough answer to this question today. For users who connect to the Internet some way other than paying us for the connection we will have to make MSN very, very inexpensive - perhaps free. The amount of free information available today on the Internet is quite amazing. Although there is room to use brand names and quality to differentiate from free content, this will not be easy and it puts a lot of pressure to figure out how to get advertiser funding. Even the CD-ROM business will be dramatically affected by the Internet. Encyclopedia Brittanica is offering their content on a subscription basis. Cinemania type information for all the latest movies is available for free on the Web including theater information and Quicktime movie trailers.

Competition

Our traditional competitors are just getting involved with the Internet. Novell is surprisingly absent given the importance of networking to their position however Frankenberg recognizes its importance and is driving them in that direction. Novell has recognized that a key missing element of the Internet is a good directory service. They are working with AT&T and other phone companies to use the Netware Directory Service to fill this role. This represents a major threat to us. Lotus is already shipping the Internotes Web Publisher which replicates Notes databases into HTML. Notes V4 includes secure Internet browsing in its server and client. IBM includes Internet connection through its network in OS/2 and promotes that as a key feature.

Some competitors have a much deeper involvement in the Internet than Microsoft. All UNIX vendors are benefiting from the Internet since the default server is still a UNIX box and not Windows NT, particularly for high end demands. SUN has exploited this quite effectively Many Web sites, including Paul Allen's ESPNET, put a SUN logo and link at the bottom of their home page in return for low cost hardware. Several universities have "Sunsites" named because they use donated SUN hardware. SUN's Java project involves turning an Internet client into a programmable framework. SUN is very involved in evolving the Internet to stay away from Microsoft. On the SUN Homepage you can find an interview of Scott McNealy by John Gage where Scott explains that if customers decide to give one product a high market share (Windows) that is not capitalism SUN is promoting Sun Screen and HotJava with aggressive business ads promising that they will help companies make money.

SGI has also been advertising their leadership on the Internet including servers and authoring tools. Their ads are very business focused. They are backing the 3D image standard, VRML, which will allow the Internet to support virtual reality type shopping, gaming, and socializing.

Browsing the Web, you find almost no Microsoft file formats. After 10 hours of browsing, I had not seen a single Word DOC, AVI file, Windows .EXE (other than content viewers), or other Microsoft file format. I did see a great number of Quicktime files. All of the movie studios use them to offer film trailers. Apple benefited by having TCP support before we did and is working hard to build a browser that built from OpenDoc components Apple will push for OpenDoc protocols to be used on the Internet, and is already offering good server configurations. Apple's strength in education gives them a much stronger presence on the internet that their general market share would suggest.

Another popular file format on the Internet is PDF, the short name for Adobe Acrobat files Even the IRS offers tax forms in PDF format. The limitations of HTML make it impossible to create forms or other documents with rich layout and PDF has become the standard alternative For now, Acrobat files are really only useful if you print them out, but Adobe is investing heavily in this technology and we may see this change soon.

Acrobat and Quicktime are popular on the network because they are cross platform and the readers are free Once a format gets established it is extremely difficult for another format to come along and even become equally popular

A new competitor "born" on the Internet is Netscape' Their browser is dominant, with 70% usage share, allowing them to determine which network extensions will catch on They are pursuing a multi-platform strategy where they move the key API into the client to commoditize the underlying operating system. They have attracted a number of public network operators to use their platform to offer information and directory services. We have to match and beat their offerings including working with MCI, newspapers, and other who are considering their products.

One scary possibility being discussed by Internet fans is whether they should get together and create something far less expensive than a PC which is powerful enough for Web browsing This new platform would optimize for the datatypes on the Web Gordon Bell and others approached Intel on this and decided Intel didn't care about a low cost device so they started suggesting that General Magic or another operating system with a non-Intel chip is the best solution

Next Steps

In highlighting the importance of the Internet to our future I don't want to suggest that I am alone in seeing this. There is excellent work going on in many of the product groups Over the last year, a number of people have championed embracing TCP/IP, hyperlinking, HTML, and building clients, tools and servers that compete on the Internet. However, we still have a lot to do. I want every product plan to try and go overboard on Internet features One element that will be crucial is coordinating our various activities The challenge/opportunity of the Internet is a key reason behind the recent organization. Paul Maritz will lead the Platform group to define an integrated strategy that makes it clear that Windows machines are the best choice for the Internet. This will protect and grow our Windows asset. Nathan and Pete will lead the Applications and Content group to figure out how to make money providing applications and content for the Internet This will protect our Office asset and grow our Office,

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Consumer, and MSN businesses. The work that was done in the Advanced Technology group will be extremely important as it is integrated in with our products

We must also invest in the Microsoft home page, so it will be clear how to find out about our various products Today it's quite random what is on the home page and the quality of information is very low If you look up speeches by me all you find are a few speeches over a year old I believe the Internet will become our most important promotional vehicle and paying people to include links to our home pages will be a worthwhile way to spend advertising dollars. First we need to make sure that great information is available One example is the demonstration files (Screencam format) that Lotus includes on all of their products organized by feature. I think a measurable part of our ad budget should focus on the internet. Any information we create - white papers, data sheets, etc., should all be done on our Internet server

ITG needs to take a hard look at whether we should drop our leasing arrangements for data lines to some countries and simply rely on the Internet.

The actions required for the Windows platform are quite broad. Paul Maritz is having an Internet retreat in June which will focus on coordinating these activities. Some critical steps are the following:

1 Server. BSD is working on offering the best Internet server as an integrated package We need to understand how to make NT boxes the biggest performance HTTP servers Perhaps we should have a project with Compaq or someone else to focus on this Our initial server will have good performance because it uses kernel level code to blast out a file We need a clear story on whether a high volume Web site can use NT or not because SUN is viewed as the primary choice Our plans for security need to be strengthened. Other Backoffice pieces like SMS and SQL server also need to stay out in front in working with the Internet. We need to figure out how OFS can help perhaps by allowing pages to be stored as objects and having properties added. Perhaps OFS can help with the challenge of maintaining Web structures. We need to establish distributed OLE as the protocol for Internet programming. Our server offerings need to beat what Netscape is doing including billing and security support. There will be substantial demand for high performance transactions servers We need to make the media server work across the Internet as soon as we can as new protocols are established. A major opportunity/challenge is directory. If the features required for Internet directory are not in Cairo or easily addable without a major release we will miss the window to become the world standard in directory with serious consequences. Lotus, Novell, and AT&T will be working together to try and establish the Internet directory. Actually getting the content for our directory and popularizing it could be done in the MSN group.

2. Client. First we need to offer a decent client (O'Hare) that exploits Windows 95 shortcuts. However this alone won't get people to switch away from Netscape. We need to figure out how to integrate Blackbird, and help browsing into our Internet client. We have made the decision to provide Blackbird capabilities openly rather than tie them to MSN. However, the process of getting the size, speed, and integration good enough for the market needs work and coordination. We need to figure out additional features that will allow us to get ahead with Windows customers. We need to move all of our Internet value added from the Plus pack into Windows 95 itself as soon as we possibly can with a major goal to get OEMs shipping our browser preinstalled This follows directly from the plan to integrate the MSN and Internet clients. Another place for integration is to eliminate today's Help and replace it with the format our browser accepts including exploiting our unique extensions so there is another reason to use our browser We need to determine how many browsers we promote Today we have O'Hare, Blackbird, SPAM MediaView, Word, PowerPoint, Symetry, Help and many others Without unification we will lose to Netscape/HotJava

Over time the shell and the browser will converge and support hierarchical/listquery viewing as well as document with links viewing The former is the structured approach and the later allows for richer presentation We need to establish OLE protocols as the way rich documents are shared on the Internet. I am sure the OpenDoc consortium will try and block this

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3 **File sharing/Window sharing/Multi-user.** We need to give away client code that encourages Windows specific protocols to be used across the Internet. It should be very easy to set up a server for file sharing across the Internet. Our PictureTel screen sharing client allowing Window sharing should work easily across the Internet. We should also consider whether to do something with the Citrix code that allows you to become a Windows NT user across the Network. It is different from the PictureTel approach because it isn't peer to peer. Instead it allows you to be a remote user on a shared NT system. By giving away the client code to support all of these scenarios, we can start to show that a Windows machine on the Internet is more valuable than an arbitrary machine on the net. We have immense leverage because our Client and Server API story is very strong. Using VB or VC to write internet applications which have their UI remoted is a very powerful advantage for NT servers.

4 **Forms/ Languages.** We need to make it very easy to design a form that presents itself as an HTML page. Today the Common Gateway Interface (CGI) is used on Web servers to give forms "behavior" but its quite difficult to work with. BSD is defining a somewhat better approach they call BGI. However we need to integrate all of this with our Forms3 strategy and our languages. If we make it easy to associate controls with fields then we get leverage out of all of the work we are doing on data binding controls. Efforts like Frontier software's work and SUN's Java are a major challenge to us. We need to figure out when it makes sense to download control code to the client including a security approach to avoid this being a virus hole.

5 **Search engines.** This is related to the client/server strategies. Verity has done good work with Notes, Netscape, AT&T and many others to get them to adopt their scaleable technology that can deal with large text databases with very large numbers of queries against them. We need to come up with a strategy to bring together Office, Mediaview, Help, Cairo, and MSN. Access and Fox do not support text indexing as part of their queries today which is a major hole. Only when we have an integrated strategy will we be able to determine if our in-house efforts are adequate or to what degree we need to work with outside companies like Verity.

6 **Formats.** We need to make sure we output information from all of our products in both vanilla HTML form and in the extended forms that we promote. For example, any database reports should be navigable as hypertext documents. We need to decide how we are going to compete with Acrobat and Quicktime since right now we aren't challenging them. It may be worth investing in optimizing our file formats for these scenarios. What is our competitor to Acrobat? It was supposed to be a combination of extended metafiles and Word but these plans are inadequate. The format issue spans the Platform and Applications groups.

7 **Tools.** Our disparate tools efforts need to be brought together. Everything needs to focus on a single integrated development environment that is extensible in an object oriented fashion. Tools should be architected as extensions to this framework. This means one common approach to repository/projects/source control. It means one approach to forms design. The environment has to support sophisticated viewing options like timelines and the advanced features SoftImage requires. Our work has been separated by independent focus on on-line versus CD-ROM and structured display versus animated displays. There are difficult technical issues to resolve. If we start by looking at the runtime piece (browser) I think this will guide us towards the right solution with the tools.

The actions required for the Applications and Content group are also quite broad. Some critical steps are the following:

1 Office. Allowing for collaboration across the Internet and allowing people to publish in our file formats for both Mac and Windows with free readers is very important. This won't happen without specific evangelization. DAD has written some good documents about Internet features. Word could lose out to focused Internet tools if it doesn't become faster and more WYSIWYG for HTML. There

is a crucial strategy issue of whether Word as a container is a strict superset of our DataDoc containers allowing our Forms strategy to embrace Word fully.

2 MSN The merger of the On-line business and Internet business creates a major challenge for MSN It can't just be the place to find Microsoft information on the Internet. It has to have scale and reputation that it is the best way to take advantage of the Internet because of the value added A lot of the content we have been attracting to MSN will be available in equal or better form on the Internet so we need to consider focusing on areas where we can provide something that will go beyond what the Internet will offer over the next few years Our plan to promote Blackbird broadly takes away one element that would have been unique to MSN. We need to strengthen the relationship between MSN and Exchange/Cairo for mail security and directory We need to determine a set of services that MSN leads in - money transfer, directory, and search engines Our high-end server offerings may require a specific relationship with MSN

3 Consumer. Consumer has done a lot of thinking about the use of on-line for its various titles On-line is great for annuity revenue and eliminating the problems of limited shelf-space However, it also lowers the barriers to entry and allows for an immense amount of free information. Unfortunately today an MSN user has to download a huge browser for every CD title making it more of a demo capability than something a lot of people will adopt. The Internet will assure a large audience for a broad range of titles However the challenge of becoming a leader in any subject area in terms of quality, depth, and price will be far more brutal than todays CD market. For each category we are in we will have to decide if we can be #1 or #2 in that category or get out. A number of competitors will have natural advantages because of their non-electronic activities

4 Broadband media applications. With the significant time before widescale iTV deployment we need to look hard at which applications can be delivered in an ISDN/Internet environment or in a Satellite PC environment. We need a strategy for big areas like directory, news, and shopping We need to decide how to pursue local information. The Cityscape project has a lot of promise but only with the right partners

5 Electronic commerce. Key elements of electronic commerce including security and billing need to be integrated into our platform strategy. On-line allows us to take a new approach that should allow us to compete with Intuit and others. We need to think creatively about how to use the internet/on-line world to enhance Money. Perhaps our Automatic teller machine project should be revived. Perhaps it makes sense to do a tax business that only operates on on-line. Perhaps we can establish the lowest cost way for people to do electronic bill paying Perhaps we can team up with Quickbook competitors to provide integrated on-line offerings Intuit has made a lot of progress in overseas markets during the last six months All the financial institutions will find it very easy to buy the best Internet technology ~~tools for~~ us and others and get into this world without much technical expertise.
from

The Future

We enter this new era with some considerable strengths Among them are our people and the broad acceptance of Windows and Office I believe the work that has been done in Consumer, Cairo, Advanced Technology, MSN, and Research position us very well to lead Our opportunity to take advantage of these investments is coming faster than I would have predicted The electronic world requires all of the directory, security, linguistic and other technologies we have worked on It requires us to do even more in these areas than we were planning to There will be a lot of uncertainty as we first embrace the Internet and then extend it Since the Internet is changing so rapidly we will have to revise our strategies from time to time and have better inter-group communication than ever before

Our products will not be the only things changing. The way we distribute information and software as well as the way we communicate with and support customers will be changing We have an opportunity to

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do a lot more with our resources Information will be disseminated efficiently between us and our customers with less chance that the press miscommunicates our plans. Customers will come to our "home page" in unbelievable numbers and find out everything we want them to know.

The next few years are going to be very exciting as we tackle these challenges and opportunities The Internet is a tidal wave It changes the rules. It is an incredible opportunity as well as incredible challenge I am looking forward to your input on how we can improve our strategy to continue our track record of incredible success.

HyperLink Appendix

Related reading, double click to open them On-line! *(Microsoft LAN only, Internet Assistant is not required for this part!!)*:

- Gordon Bell on the Internet email by Gordon Bell
- Affordable Computing: advertising subsidized hardware. by Nicholas Negroponte
- Brief Lecture Notes on VRML & Hot Java email by William Barr
- Notes from a Lecture by Mark Andreessen (Netscape) email by William Barr
- Application Strategies for the World Wide Web by Peter Pathe (Contains many more links!)

Below is a hotlist of Internet Web sites you might find interesting. I've included it as an embedded .HTM file which should be readable by most Web Browsers. Double click it if you're using a Web Browser like O'Hare or Netscape.

HotList.htm

A second copy of these links is below as Word HTML links. *To use these links, you must be running the Word Internet Assistant, and be connected to the Web*

Cool Cool, Cool..

The Lycos Home Page
Yahoo
RealAudio Homepage
HotWired - New Thinking for a New Medium

Competitors

Microsoft Corporation World-Wide-Web Server
Welcome To Oracle
Lotus on the Web
Novell Inc. World Wide Web Home Page
Symantec Corporation Home Page
Borland Online
Disney/Buena Vista
Paramount Pictures
Adobe Systems Incorporated Home Page
MCI
Sony Online

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Sports

ESPNET SportsZone
The Gate Cybersports Page
The Sports Server
Las Vegas Sports Page

News

CRAYON
Mercury Center Home Page

Travel/Entertainment

ADDICTED TO NOISE
CDnow! The Internet Music Store
Travel & Entertainment Network home page
Virtual Tourist World Map
City Net

Auto

Dealernet
Popular Mechanics

I was at Amazon for about six and a half years, and now I've been at Google for that long. One thing that struck me immediately about the two companies -- an impression that has been reinforced almost daily -- is that Amazon does everything wrong, and Google does everything right. Sure, it's a sweeping generalization, but a surprisingly accurate one. It's pretty crazy. There are probably a hundred or even two hundred different ways you can compare the two companies, and Google is superior in all but three of them, if I recall correctly. I actually did a spreadsheet at one point but Legal wouldn't let me show it to anyone, even though recruiting loved it.
I mean, just to give you a very brief taste: Amazon's recruiting process is fundamentally flawed by having teams hire for themselves, so their hiring bar is incredibly inconsistent across teams, despite various efforts they've made to level it out. And their operations are a mess; they don't really have SREs and they make engineers pretty much do everything, which leaves almost no time for coding - though again this varies by group, so it's luck of the draw. They don't give a single shit about charity or helping the needy or community contributions or anything like that. Never comes up there, except maybe to laugh about it. Their facilities are dirt-smeared cube farms without a dime spent on decor or common meeting areas. Their pay and benefits suck, although much less so lately due to local competition from Google and Facebook. But they don't have any of our perks or extras -- they just try to match the offer-letter numbers, and that's the end of it. Their code base is a disaster, with no engineering standards whatsoever except what individual teams choose to put in place.
To be fair, they do have a nice versioned-library system that we really ought to emulate, and a nice publish-subscribe system that we also have no equivalent for. But for the most part they just have a bunch of crappy tools that read and write state machine information into relational databases. We wouldn't take most of it even if it were free.
I think the pubsub system and their library-shelf system were two out of the grand total of three things Amazon does better than google.
I guess you could make an argument that their bias for launching early and iterating like mad is also something they do well, but you can argue it either way. They prioritize launching early over everything else, including retention and engineering discipline and a bunch of other stuff that turns out to matter in the long run. So even though it's given them some competitive advantages in the marketplace, it's created enough other problems to make it something less than a slam-dunk.
But there's one thing they do really really well that pretty much makes up for ALL of their political, philosophical and technical screw-ups.
Jeff Bezos is an infamous micro-manager. He micro-manages every single pixel of

Amazon's retail site. He hired Larry Tesler, Apple's Chief Scientist and probably the very most famous and respected human-computer interaction expert in the entire world, and then ignored every goddamn thing Larry said for three years until Larry finally -- wisely -- left the company. Larry would do these big usability studies and demonstrate beyond any shred of doubt that nobody can understand that frigging website, but Bezos just couldn't let go of those pixels, all those millions of semantics-packed pixels on the landing page. They were like millions of his own precious children. So they're all still there, and Larry is not.

Micro-managing isn't that third thing that Amazon does better than us, by the way. I mean, yeah, they micro-manage really well, but I wouldn't list it as a strength or anything. I'm just trying to set the context here, to help you understand what happened. We're talking about a guy who in all seriousness has said on many public occasions that people should be paying him to work at Amazon. He hands out little yellow stickies with his name on them, reminding people "who runs the company" when they disagree with him. The guy is a regular... well, Steve Jobs, I guess. Except without the fashion or design sense. Bezos is super smart; don't get me wrong. He just makes ordinary control freaks look like stoned hippies.

So one day Jeff Bezos issued a mandate. He's doing that all the time, of course, and people scramble like ants being pounded with a rubber mallet whenever it happens. But on one occasion -- back around 2002 I think, plus or minus a year -- he issued a mandate that was so out there, so huge and eye-bulgingly ponderous, that it made all of his other mandates look like unsolicited peer bonuses.

His Big Mandate went something along these lines:

1. All teams will henceforth expose their data and functionality through service interfaces.
2. Teams must communicate with each other through these interfaces.
3. There will be no other form of interprocess communication allowed: no direct linking, no direct reads of another team's data store, no shared-memory model, no back-doors whatsoever. The only communication allowed is via service interface calls over the network.
4. It doesn't matter what technology they use. HTTP, Corba, Pubsub, custom protocols -- doesn't matter. Bezos doesn't care.
5. All service interfaces, without exception, must be designed from the ground up to be externalizable. That is to say, the team must plan and design to be able to expose the interface to developers in the outside world. No exceptions.
6. Anyone who doesn't do this will be fired.
7. Thank you; have a nice day!

Ha, ha! You 150-odd ex-Amazon folks here will of course realize immediately that #7 was a little joke I threw in, because Bezos most definitely does not give a shit about your day.

#6, however, was quite real, so people went to work. Bezos assigned a couple of Chief Bulldogs to oversee the effort and ensure forward progress, headed up by Uber-Chief Bear Bulldog Rick Dalzell. Rick is an ex-Armgy Ranger, West Point

Academy graduate, ex-boxer, ex-Chief Torturer slash CIO at Wal*Mart, and is a big genial scary man who used the word "hardened interface" a lot. Rick was a walking, talking hardened interface himself, so needless to say, everyone made LOTS of forward progress and made sure Rick knew about it.
Over the next couple of years, Amazon transformed internally into a service-oriented architecture. They learned a tremendous amount while effecting this transformation. There was lots of existing documentation and lore about SOAs, but at Amazon's vast scale it was about as useful as telling Indiana Jones to look both ways before crossing the street. Amazon's dev staff made a lot of discoveries along the way. A teeny tiny sampling of these discoveries included:

- pager escalation gets way harder, because a ticket might bounce through 20 service calls before the real owner is identified. If each bounce goes through a team with a 15-minute response time, it can be hours before the right team finally finds out, unless you build a lot of scaffolding and metrics and reporting.
- every single one of your peer teams suddenly becomes a potential DOS attacker. Nobody can make any real forward progress until very serious quotas and throttling are put in place in every single service.
- monitoring and QA are the same thing. You'd never think so until you try doing a big SOA. But when your service says "oh yes, I'm fine", it may well be the case that the only thing still functioning in the server is the little component that knows how to say "I'm fine, roger roger, over and out" in a cheery droid voice. In order to tell whether the service is actually responding, you have to make individual calls. The problem continues recursively until your monitoring is doing comprehensive semantics checking of your entire range of services and data, at which point it's indistinguishable from automated QA. So they're a continuum.
- if you have hundreds of services, and your code MUST communicate with other groups' code via these services, then you won't be able to find any of them without a service-discovery mechanism. And you can't have that without a service registration mechanism, which itself is another service. So Amazon has a universal service registry where you can find out reflectively (programmatically) about every service, what its APIs are, and also whether it is currently up, and where.
- debugging problems with someone else's code gets a LOT harder, and is basically impossible unless there is a universal standard way to run every service in a debuggable sandbox.

That's just a very small sample. There are dozens, maybe hundreds of individual learnings like these that Amazon had to discover organically. There were a lot of wacky ones around externalizing services, but not as many as you might think. Organizing into services taught teams not to trust each other in most of the same ways they're not supposed to trust external developers.
This effort was still underway when I left to join Google in mid-2005, but it was

pretty far advanced. From the time Bezos issued his edict through the time I left, Amazon had transformed culturally into a company that thinks about everything in a services-first fashion. It is now fundamental to how they approach all designs, including internal designs for stuff that might never see the light of day externally. At this point they don't even do it out of fear of being fired. I mean, they're still afraid of that; it's pretty much part of daily life there, working for the Dread Pirate Bezos and all. But they do services because they've come to understand that it's the Right Thing. There are without question pros and cons to the SOA approach, and some of the cons are pretty long. But overall it's the right thing because SOA-driven design enables Platforms.
That's what Bezos was up to with his edict, of course. He didn't (and doesn't) care even a tiny bit about the well-being of the teams, nor about what technologies they use, nor in fact any detail whatsoever about how they go about their business unless they happen to be screwing up. But Bezos realized long before the vast majority of Amazonians that Amazon needs to be a platform.
You wouldn't really think that an online bookstore needs to be an extensible, programmable platform. Would you?
Well, the first big thing Bezos realized is that the infrastructure they'd built for selling and shipping books and sundry could be transformed an excellent repurposable computing platform. So now they have the Amazon Elastic Compute Cloud, and the Amazon Elastic MapReduce, and the Amazon Relational Database Service, and a whole passel' o' other services browsable at aws.amazon.com. These services host the backends for some pretty successful companies, reddit being my personal favorite of the bunch.
The other big realization he had was that he can't always build the right thing. I think Larry Tesler might have struck some kind of chord in Bezos when he said his mom couldn't use the goddamn website. It's not even super clear whose mom he was talking about, and doesn't really matter, because nobody's mom can use the goddamn website. In fact I myself find the website disturbingly daunting, and I worked there for over half a decade. I've just learned to kinda defocus my eyes and concentrate on the million or so pixels near the center of the page above the fold.
I'm not really sure how Bezos came to this realization -- the insight that he can't build one product and have it be right for everyone. But it doesn't matter, because he gets it. There's actually a formal name for this phenomenon. It's called Accessibility, and it's the most important thing in the computing world.
The. Most. Important. Thing.
If you're sorta thinking, "huh? You mean like, blind and deaf people Accessibility?" then you're not alone, because I've come to understand that there are lots and LOTS of people just like you: people for whom this idea does not have the right Accessibility, so it hasn't been able to get through to you yet. It's not your fault for not understanding, any more than it would be your fault for being blind or deaf or motion-restricted or living with any other disability. When software -- or idea-ware

for that matter -- fails to be accessible to anyone for any reason, it is the fault of the software or of the messaging of the idea. It is an Accessibility failure.
Like anything else big and important in life, Accessibility has an evil twin who, jilted by the unbalanced affection displayed by their parents in their youth, has grown into an equally powerful Arch-Nemesis (yes, there's more than one nemesis to accessibility) named Security. And boy howdy are the two ever at odds.
But I'll argue that Accessibility is actually more important than Security because dialing Accessibility to zero means you have no product at all, whereas dialing Security to zero can still get you a reasonably successful product such as the Playstation Network.
So yeah. In case you hadn't noticed, I could actually write a book on this topic. A fat one, filled with amusing anecdotes about ants and rubber mallets at companies I've worked at. But I will never get this little rant published, and you'll never get it read, unless I start to wrap up.
That one last thing that Google doesn't do well is Platforms. We don't understand platforms. We don't "get" platforms. Some of you do, but you are the minority. This has become painfully clear to me over the past six years. I was kind of hoping that competitive pressure from Microsoft and Amazon and more recently Facebook would make us wake up collectively and start doing universal services. Not in some sort of ad-hoc, half-assed way, but in more or less the same way Amazon did it: all at once, for real, no cheating, and treating it as our top priority from now on.
But no. No, it's like our tenth or eleventh priority. Or fifteenth, I don't know. It's pretty low. There are a few teams who treat the idea very seriously, but most teams either don't think about it all, ever, or only a small percentage of them think about it in a very small way.
It's a big stretch even to get most teams to offer a stubby service to get programmatic access to their data and computations. Most of them think they're building products. And a stubby service is a pretty pathetic service. Go back and look at that partial list of learnings from Amazon, and tell me which ones Stubby gives you out of the box. As far as I'm concerned, it's none of them. Stubby's great, but it's like parts when you need a car.
A product is useless without a platform, or more precisely and accurately, a platform-less product will always be replaced by an equivalent platform-ized product.
Google+ is a prime example of our complete failure to understand platforms from the very highest levels of executive leadership (hi Larry, Sergey, Eric, Vic, howdy howdy) down to the very lowest leaf workers (hey yo). We all don't get it. The Golden Rule of platforms is that you Eat Your Own Dogfood. The Google+ platform is a pathetic afterthought. We had no API at all at launch, and last I checked, we had one measly API call. One of the team members marched in and told me about it when they launched, and I asked: "So is it the Stalker API?" She got all glum and said "Yeah." I mean, I was joking, but no... the only API call we offer is to get

someone's stream. So I guess the joke was on me.
Microsoft has known about the Dogfood rule for at least twenty years. It's been part of their culture for a whole generation now. You don't eat People Food and give your developers Dog Food. Doing that is simply robbing your long-term platform value for short-term successes. Platforms are all about long-term thinking.
Google+ is a knee-jerk reaction, a study in short-term thinking, predicated on the incorrect notion that Facebook is successful because they built a great product. But that's not why they are successful. Facebook is successful because they built an entire constellation of products by allowing other people to do the work. So Facebook is different for everyone. Some people spend all their time on Mafia Wars. Some spend all their time on Farmville. There are hundreds or maybe thousands of different high-quality time sinks available, so there's something there for everyone.
Our Google+ team took a look at the aftermarket and said: "Gosh, it looks like we need some games. Let's go contract someone to, um, write some games for us." Do you begin to see how incredibly wrong that thinking is now? The problem is that we are trying to predict what people want and deliver it for them.
You can't do that. Not really. Not reliably. There have been precious few people in the world, over the entire history of computing, who have been able to do it reliably. Steve Jobs was one of them. We don't have a Steve Jobs here. I'm sorry, but we don't.
Larry Tesler may have convinced Bezos that he was no Steve Jobs, but Bezos realized that he didn't need to be a Steve Jobs in order to provide everyone with the right products: interfaces and workflows that they liked and felt at ease with. He just needed to enable third-party developers to do it, and it would happen automatically.
I apologize to those (many) of you for whom all this stuff I'm saying is incredibly obvious, because yeah. It's incredibly frigging obvious. Except we're not doing it. We don't get Platforms, and we don't get Accessibility. The two are basically the same thing, because platforms solve accessibility. A platform is accessibility.
So yeah, Microsoft gets it. And you know as well as I do how surprising that is, because they don't "get" much of anything, really. But they understand platforms as a purely accidental outgrowth of having started life in the business of providing platforms. So they have thirty-plus years of learning in this space. And if you go to msdn.com, and spend some time browsing, and you've never seen it before, prepare to be amazed. Because it's staggeringly huge. They have thousands, and thousands, and THOUSANDS of API calls. They have a HUGE platform. Too big in fact, because they can't design for squat, but at least they're doing it.
Amazon gets it. Amazon's AWS (aws.amazon.com) is incredible. Just go look at it. Click around. It's embarrassing. We don't have any of that stuff.
Apple gets it, obviously. They've made some fundamentally non-open choices, particularly around their mobile platform. But they understand accessibility and

they understand the power of third-party development and they eat their dogfood. And you know what? They make pretty good dogfood. Their APIs are a hell of a lot cleaner than Microsoft's, and have been since time immemorial.

Facebook gets it. That's what really worries me. That's what got me off my lazy butt to write this thing. I hate blogging. I hate... plussing, or whatever it's called when you do a massive rant in Google+ even though it's a terrible venue for it but you do it anyway because in the end you really do want Google to be successful. And I do! I mean, Facebook wants me there, and it'd be pretty easy to just go. But Google is home, so I'm insisting that we have this little family intervention, uncomfortable as it might be.

After you've marveled at the platform offerings of Microsoft and Amazon, and Facebook I guess (I didn't look because I didn't want to get too depressed), head over to developers.google.com and browse a little. Pretty big difference, eh? It's like what your fifth-grade nephew might mock up if he were doing an assignment to demonstrate what a big powerful platform company might be building if all they had, resource-wise, was one fifth grader.

Please don't get me wrong here -- I know for a fact that the dev-rel team has had to FIGHT to get even this much available externally. They're kicking ass as far as I'm concerned, because they DO get platforms, and they are struggling heroically to try to create one in an environment that is at best platform-apathetic, and at worst often openly hostile to the idea.

I'm just frankly describing what developers.google.com looks like to an outsider. It looks childish. Where's the Maps APIs in there for Christ's sake? Some of the things in there are labs projects. And the APIs for everything I clicked were... they were paltry. They were obviously dog food. Not even good organic stuff. Compared to our internal APIs it's all snouts and horse hooves.

And also don't get me wrong about Google+. They're far from the only offenders. This is a cultural thing. What we have going on internally is basically a war, with the underdog minority Platformers fighting a more or less losing battle against the Mighty Funded Confident Producters.

Any teams that have successfully internalized the notion that they should be externally programmable platforms from the ground up are underdogs -- Maps and Docs come to mind, and I know GMail is making overtures in that direction. But it's hard for them to get funding for it because it's not part of our culture. Maestro's funding is a feeble thing compared to the gargantuan Microsoft Office programming platform: it's a fluffy rabbit versus a T-Rex. The Docs team knows they'll never be competitive with Office until they can match its scripting facilities, but they're not getting any resource love. I mean, I assume they're not, given that Apps Script only works in Spreadsheet right now, and it doesn't even have keyboard shortcuts as part of its API. That team looks pretty unloved to me.

Ironically enough, Wave was a great platform, may they rest in peace. But making something a platform is not going to make you an instant success. A platform needs a killer app. Facebook -- that is, the stock service they offer with walls and

friends and such -- is the killer app for the Facebook Platform. And it is a very serious mistake to conclude that the Facebook App could have been anywhere near as successful without the Facebook Platform.
You know how people are always saying Google is arrogant? I'm a Googler, so I get as irritated as you do when people say that. We're not arrogant, by and large. We're, like, 99% Arrogance-Free. I did start this post -- if you'll reach back into distant memory -- by describing Google as "doing everything right". We do mean well, and for the most part when people say we're arrogant it's because we didn't hire them, or they're unhappy with our policies, or something along those lines. They're inferring arrogance because it makes them feel better.
But when we take the stance that we know how to design the perfect product for everyone, and believe you me, I hear that a lot, then we're being fools. You can attribute it to arrogance, or naivete, or whatever -- it doesn't matter in the end, because it's foolishness. There IS no perfect product for everyone.
And so we wind up with a browser that doesn't let you set the default font size. Talk about an affront to Accessibility. I mean, as I get older I'm actually going blind. For real. I've been nearsighted all my life, and once you hit 40 years old you stop being able to see things up close. So font selection becomes this life-or-death thing: it can lock you out of the product completely. But the Chrome team is flat-out arrogant here: they want to build a zero-configuration product, and they're quite brazen about it, and Fuck You if you're blind or deaf or whatever. Hit Ctrl-+ on every single page visit for the rest of your life.
It's not just them. It's everyone. The problem is that we're a Product Company through and through. We built a successful product with broad appeal -- our search, that is -- and that wild success has biased us.
Amazon was a product company too, so it took an out-of-band force to make Bezos understand the need for a platform. That force was their evaporating margins; he was cornered and had to think of a way out. But all he had was a bunch of engineers and all these computers... if only they could be monetized somehow... you can see how he arrived at AWS, in hindsight.
Microsoft started out as a platform, so they've just had lots of practice at it.
Facebook, though: they worry me. I'm no expert, but I'm pretty sure they started off as a Product and they rode that success pretty far. So I'm not sure exactly how they made the transition to a platform. It was a relatively long time ago, since they had to be a platform before (now very old) things like Mafia Wars could come along.
Maybe they just looked at us and asked: "How can we beat Google? What are they missing?"
The problem we face is pretty huge, because it will take a dramatic cultural change in order for us to start catching up. We don't do internal service-oriented platforms, and we just as equally don't do external ones. This means that the "not getting it" is endemic across the company: the PMs don't get it, the engineers don't get it, the product teams don't get it, nobody gets it. Even if individuals do,

even if YOU do, it doesn't matter one bit unless we're treating it as an all-hands-on-deck emergency. We can't keep launching products and pretending we'll turn them into magical beautiful extensible platforms later. We've tried that and it's not working.
The Golden Rule of Platforms, "Eat Your Own Dogfood", can be rephrased as "Start with a Platform, and Then Use it for Everything." You can't just bolt it on later. Certainly not easily at any rate -- ask anyone who worked on platformizing MS Office. Or anyone who worked on platformizing Amazon. If you delay it, it'll be ten times as much work as just doing it correctly up front. You can't cheat. You can't have secret back doors for internal apps to get special priority access, not for ANY reason. You need to solve the hard problems up front.
I'm not saying it's too late for us, but the longer we wait, the closer we get to being Too Late.
I honestly don't know how to wrap this up. I've said pretty much everything I came here to say today. This post has been six years in the making. I'm sorry if I wasn't gentle enough, or if I misrepresented some product or team or person, or if we're actually doing LOTS of platform stuff and it just so happens that I and everyone I ever talk to has just never heard about it. I'm sorry.
But we've gotta start doing this right.

THE ELEVEN LAWS OF SHOWRUNNING

Javier Grillo-Marxuach

1.20.16

Upon finding this essay, any number of showrunners with whom I have worked in the past will assume it is a personal attack in the language of a management lesson. No matter that what follows is a distillation twenty years of experience - and has been in the works since I ran my first show, *The Middleman* - I expect to be excoriated by some who will believe I am writing out of envy, or to avenge some perceived slight, or was just too cowardly to say it to their faces.

It takes that level of ego to be a television writer/producer: the conviction that what you have to say matters so much that it is worth not only mastering the tropes of an entire medium, but also the risk that all the intermediaries required to create the finished product will ruin it all with some fatal blend of incomprehension, or incompetence.

For many, the undeniable triumph that is pitching a series idea, having a pilot ordered, successfully producing it, and then having it ordered to series is nothing less than a validation: not only of their voice and talent, but also their Way of Doing Things. This often translates to an intractable adherence to the notion that "my creative process" is so of the essence that all other concerns must be made subordinate lest the delicate alchemy that made success possible be snuffed.

This often leads to incompetent and - whether through ignorance or ego - abusive senior management. I'm not talking about "the lack of experienced showrunners" currently written about in industry publications, but rather that the management culture of television shows as represented by both experienced and novitiate showrunners is beset by a cult of idiosyncrasy over professionalism, and tolerance of toxic behavior; all enabled by the exigencies of getting the show on-air, and keeping it there by any means necessary.

This is exacerbated by there only being two sins for which a showrunner pays with a pink slip: wasting time and squandering money. However, these contingencies are amply prepared for in studio plans and budgets; and an entire army of dedicated professionals stands beneath the showrunner day in and out to ensure neither occurs.

Why? Because they depend on the show - and the perceived creative and managerial genius of the showrunner - for their living. So, once they have a show on the air, even the worst managers muddle through on something resembling time and budget: usually by the sweat of a lot of talented individuals doing everything humanly possible to keep the ship afloat.

One of the most jealously guarded secrets of TV is the reality that those who get their pilots made and show picked up on any given year are usually no more gifted, visionary, or prodigious, than the ones who did not. There are as many television writers who work regularly as there are professional NBA players at any given time - by that metric, we are all breathing rarefied air - but the process by which television shows are made and selected is by no means some mystical divination by which the artistry of very special snowflakes is empowered that it may elevate the art form as a whole.

Television is - quite simply - a business: with winners, losers, seasonal patterns, production schedules, budgets, and deliverables... just like any other business.

What we do is nothing more - or less - than hard work... hard work that is not exclusive to any one person, but helped along by scores of competent, experienced professionals whose job security is tied to the longevity of the endeavor... hard work that can be done efficiently, thoughtfully, and in a way that doesn't ask anyone involved to sacrifice their personal life, dignity, and - sometimes - personal safety.

Historically, there never was much of an apprenticeship/ mentorship mentality in television. Writers are notoriously taciturn and parochial about their "creative process." However, when there were only three to five broadcast networks and a much longer queue to the top, someone who worked their way up from staff writer (the lowest and least paid position) to show creator/executive producer/showrunner could at least be reliably understood to have at least spent many years learning how to make the trains run on time under the tutelage of writer/producers who had endured the same trials.

Nowadays, programming outlets are as likely to buy television pilots from more junior writers, as well as playwrights, screenwriters, novelists, investigative journalists, and bloggers whose "my year of doing this and not that" article managed to break the Internet as they are from seasoned writer/producers -

and then put them in the position of having to manage what is essentially a start-up corporation with a budget in the eight figures and a hundred-plus employee workforce. More often than not, the weight of that responsibility sends both the experienced and inexperienced into the warm embrace of a mistaken belief that it was all put there to service their creative process and nothing else.

As special and wonderful as creativity and process may be, they are assets that can be channeled, managed, made to work on call, and sent to bed at a decent hour. Any television show - from the most formulaic, to the most genre-defining, medium-transforming phenomenon - can be made on time, on budget, and without demanding that any of the employees put more time at the mine than they absolutely have to, if the showrunners simply apply basic, commonsensical management strategy to their stewardship of the enterprise.

Why is it so hard for showrunners to implement simple strategies in the name of running the show efficiently and humanely?

The answer is that "simple" doesn't mean "easy". The simplest decisions are often hardest because they demand a painful concession to an unpleasant truth. Every one of the Eleven Laws asks for the same thing: the surrender of a quantum of attachment to a showrunner's idea of themselves as the fountainhead of the show's greatness to serve the show and those who work to make it.

It seems like a contradiction - to ask someone from whom visionary leadership is demanded to surrender their ego - but it isn't, because of...

THE FIRST LAW OF SHOWRUNNING
IT'S ALL ABOUT YOU STOP MAKING IT ALL ABOUT YOU

You pitched an idea, sold a script, and got it made. Now you have sixty million dollars and thirteen hours of network airtime - with a strong possibility for much more - for a bully pulpit. Nothing goes in front of the lens that you do not approve. Nothing gets on the screen without your stamp. To the studio, network - and the general public - you and your show are one and the same.

Because it's all about you, you also need to face the truth that your staff works for you in exchange for a paycheck, not out of a genuflecting admiration of your genius. They will do whatever you need done because they enter every conversation knowing that you can fire them. Their indenture is a given. Their loyalty is not.

It's on you to invest your staff in the vision of the show - in your vision - and turn them into true believers and dedicated workers who will go the extra mile. You can do that by giving them the opportunity to express themselves within the framework you have created.

You can also do that by instilling fear - of job insecurity, of the loss of political capital in the show's hierarchy, or simply the harsh judgment of a capricious father figure. You have the power to be either an enabler of your employees's creativity, or make them the enablers of your whims.

What will you do with that power? Will you garret yourself until you absolutely have to emerge to tell your staff what to do? Will you demand that everyone jockey for your favor in order to have the information they need to do their job... or will you provide that information freely so that creativity blooms because - and not in spite - of you?

Are you strong and secure enough in your talent and accomplishment to accept the possibility that other people - properly empowered by you - can actually enhance your genius... or will you cling to the idea that only you can be the source of that genius?

How you answer that question determines the leader you will be.

THE SECOND LAW OF SHOWRUNNING
KNOW YOUR SHOW AND TELL EVERYONE WHAT IT IS

It seems weird that someone would sell a show and then not really "know" what it is - or be unwilling to share that information. Kind of like Steve Jobs not telling his staff more about the iPod than that "it's white and needs a dial"... and yet, not knowing - or not telling - what the show is a common showrunner dysfunction.

Your employees need specific knowledge of the tone, texture, and technique of the show to do their jobs. Even after producing the pilot episode, most of that crucial information still remains in your head. The pilot episode was a prototype. Now you have to discern what it was that worked so well in the pilot and turn that into a reproducible result. You also have to figure out the things that didn't work - with a certain amount of honesty and self-reflection - and then articulate to your team how you want them fixed. Most of your work as a showrunner is to communicate information to other people so that they can execute it within their field of expertise.

One of the great contradictions of the way we make television in the United States is that writers are given managerial control over the entire enterprise... but writers are very often bad communicators outside the page. Also, talking to people non-stop, all day, with great specificity about a project this size is hard, and tiring. That much said, there are seven words no competent showrunner should ever say:

"I'll know it when I see it."

When you're a showrunner, it is on you to define the tone, the story, and the characters. You are NOT a curator of other people's ideas. You are their motivator, their inspiration, and the person responsible for their implementation.

Bottom line: the creativity of your staff isn't for coming up with your core ideas for you, it's for making your core ideas bigger and better once you've come up with them. To say "I'll know it when I see it" is to abdicate the hard work of creation while hoarding the authority to declare what is or isn't good.

While anyone can say "I'll know it when I see it," it is the writer's ability to create that is the reason we are the showrunners in American television. To be effective, you have to articulate what Maya Lin referred to as "a strong, clear vision." You have to draw the boundaries of the sandbox with precision, detail, consistency, and integrity.

This is a difficult task that requires intellectual and creative rigor, a measure of non-solipsistic introspection, and that you make a discipline out of talking to other people and being on message at all times. As a showrunner, you must communicate your vision so that everyone understands it, and then preach it, day in and out, to the point of exhaustion until everyone feels it in their soul like a gospel. And here's the great part of successfully communicating a shared vision: your employees will love you for it.

Loyalty to an employer begins with the knowledge of what the job is. Loyalty comes from knowing that your bosses have your back both in the form of giving out the information necessary to do what you do and do it right, and the empowerment to use your own abilities to improve on the baseline.

THE THIRD LAW OF SHOWRUNNING
ALWAYS DESCRIBE A PATH TO SUCCESS

Describing a path to success is the natural outgrowth of the Second Law. This advice was given to me by the non-writing Executive Producer on my show *The Middleman* - a very seasoned production executive who strove to create an environment where I could excel in communicating the goals of the show to all comers.

"Always Describe a Path to Success" means - in its most practical form - "Do not leave a meeting without letting everyone there know what they are expected to do/deliver next."

If you tell your staff how to please you, two out of three times they will come back with a way to do exactly what you want. If they can't, they will often come up with a number of better ideas out of a desire to address the spirit, if not the letter, of a clear directive.

Every clear directive you issue is a gift because it relieves your staff of the stress of having to divine your goals. A clear directive is an indication of trust: your way of saying "I have taken the time and effort to figure out our goal. I now acknowledge that you have the knowledge and resources to figure out the process."

To successfully define a path to success, you don't even have to know the exact hill to take. The grinding race that is television often means that you may not always know the next goal; but even if you articulate your order as "Help me figure out the next hill to take," or "Let me know what our resources are so that I can make an educated decision about where to attack next," that alone constitutes a directive with a defined outcome.

You will be amazed at how much even that measure of clarity will galvanize a team. When you define the problems, you not only control the direction of the enterprise, you also free your staff to do what they do best: dedicate their unique skills to their solution.

THE FOURTH LAW OF SHOWRUNNING
MAKE DECISIONS EARLY AND OFTEN

As the days, weeks, and months churn away, you will find that - whether you like it or not, and whether it's in your comfort zone or not - everyone constantly solicits decisions from you. Remember the First Law.

And yet, an aversion to making decisions is a massively common showrunning dysfunction. It comes out of an understandable insecurity: once you make a decision, the world knows where you stand. Once you say "This is what this is," you have made your taste and opinion clear: the world will judge you. Decision aversion can also be a stalling tactic designed to let you have it your way without ruffling too many feathers on an interpersonal and creative level. Wanting to be seen as "a nice person" and a "good employer" are understandable desires.

While "nice" can mean "affable" and "pleasant," a second definition of "nice" is also "precise and demanding careful attention." In my experience, nice people - and good bosses - rip off the Band-Aid early, make the case for their decision, hear out any remaining arguments, then shut down the discussion and send everyone off to get on with their work.

Avoiding decisions causes your staff to run themselves ragged coming up with contingencies and robs them of the time they need to properly execute your vision. There's also the sad - and very frustrating and demoralizing to your employees - truth that most decision-averse managers usually return to one of the first things they were pitched as their final answer.

Your job is to make ideas come to life. The first step is to commit. Commit early. Commit often. Make committing the same as breathing: you might as well do it now, because you will have to do it eventually.

Most importantly, the sooner you make a decision, the sooner you will know from your crew what is achievable, and the sooner they will be able to expand upon - and use their talents to - elevate it. The time you spent not deciding is time you rob from your staff's ability to make whatever the object of the decision the best it can be. The show simply cannot go on until you say what the show is.

THE FIFTH LAW OF SHOWRUNNING
DO NOT DEMAND A FINAL PRODUCT AT THE IDEA STAGE

When you sold your pilot, you didn't take an eight million dollar film of your script to the network meeting. You talked the executives through your idea for a series, the characters, and your story for the pilot, and they proceeded to entrust you with millions of dollars to fulfill your vision. Considering how much the creation of a TV series depends on a studio and network's ability to visualize a bunch of words coming out of some writer's mouth, it is surprising that many showrunners lack the skill to visualize story when pitched to them by their own staff.

Architects can see buildings off blueprints. That's their job. Yours is to see the gross anatomy of the stories the writers pitch you off the shorthand of the board, and to let them run with the details. The next step is to visualize even further down the line as the writers refine the muscular, circulatory, and nervous systems in the slightly more detailed treatment of the story, plot, and scenes in an outline, and - if you don't like the shape of the surface once the script come in - for you to give notes and rewrite if necessary.

If, as a showrunner, you repeatedly have to return stories to the board after they have been outlined or scripted - or find yourself sending your writers off to script and outline in frustration, only to then rewrite from page one, you need to consider doing some work on your own ability to create and discern story from the foundations up.

Not all writers have this ability, but it is something that can and should be learned - and which is crucial to making television - because the physical production of the scripts depends on the departments having consistent, and accurate communication from the writers office as to what is coming down the pike.

One of things increasingly lost as showrunners are no longer asked to work their way up the ranks in the television hierarchy is a comfort level with collaboration in the form of the writers room, and a knowledge of story - usually born of coming up with one story after another on other people's shows. It is from this longitudinal experience of collaboration and story generation that most showrunners learn how to visualize.

How, then, if you do not come from a lifetime of conference and teamwork, but find yourself forced into collusion with a writers room - whom you need, if for no other reason, to generate the sheer volume of material the show demands - do you develop this skill? The answer is trust. You take the leap of faith that the professionals you hired can execute on the page what is shorthanded on the board. You trust that someone pitching you "meet cute" knows how to render that on the page given an adequate amount of time. You trust that other writers occasionally need to retire to their keyboards to do their job to the fullest... and understand that, because you will decide whether or not they have to be fired after they turn their draft, they are profoundly invested in doing a good job...

As showrunner, you have to divest yourself from the desire to be the audience. You are the chief designer and architect. Sure, you can demand to be "entertained" by work that feels complete in its gestational phase, but often, the inevitable product of that demand is that will you be bored by it by the time it reaches your desk because you will have effectively destroyed a crucial part of your staff's creative process.

Ironically, it's the part of the process that many dysfunctional showrunners guard jealously for themselves...

THE SIXTH LAW OF SHOWRUNNING
WRITE AND REWRITE QUICKLY

Scripts are an expression of a writers soul... but that's not all they are. A script is also work order.

Without a complete script, no one can decide where they are going to take the trucks with all the lights and cameras and costumes, and for how long. Without a script, no one can figure out how much it's going to cost to make this episode of your series. Without a script, the actors can't prepare for their work in front of the camera.

A script is the most specific description of the work ahead of the production for weeks to come. If you procrastinate - or allow yourself to become precious - you are creating a void in which no one knows what their job is; especially your writing staff.

A studio has given you millions of dollars to hire a group of people whose mission is to learn how to produce work that reads and sounds like your voice. Reproducing that voice is the primary goal of your writing staff. The best and most efficient way they can do that is by reading your prose and dialogue. The faster you write, the sooner they can integrate your idiosyncrasies into the process... and the faster you rewrite their work, the faster they can internalize your changes to their work into the matrix of that learning process.

For most competent writers working under the exigencies of a television season, a week to a week and a half is considered ample time to write the first draft of a script from a solid story break and outline... and yet, dysfunctional showrunners routinely avail themselves significantly longer spans of time to write their own scripts. This destroys morale - as your staff sees you taking liberties you would not give to any of them - and causes chaos in production. Your show's scripts, as written - or rewritten - by you are your most effective tool in your performance of the Second Law. You can't talk to everyone at all times, and eventually, you have a responsibility to take your talk from the theoretical to the real.

A script ultimately represents the concretization of your voice and gesture. A script is your proof of concept, and if its fate is to fail that proof, then you are better off knowing sooner rather than later, so that you - and all of your employees - can use the time to fix what's broken and right the ship while there is still time.

Scripts are how you talk to cast, crew, studio, and network. Write them quickly, rewrite them impassively and efficiently. Work your scripts until they are ready, but recognize that in a fast-moving business like television, most of the time they will only be ready enough.

Your best ideas will survive criticism, the worst ones... there's no amount of attachment that can keep them alive, and it may not be worth fighting so hard for your precious children: the horizon is full of other children, all of whom need your immediate attention and will quickly make you forget the ones you've had to leave behind.

THE SEVENTH LAW OF SHOWRUNNING
TRACK MULTIPLE TARGETS EFFICIENTLY BY DELEGATING RESPONSIBILITY

In the 1980's, the members of the Berlin Symphony told joke about their imperious conductor, Herbert Von Karajan: The *maestro* gets into a taxi. The driver asks "Where to?" "It doesn't matter," Von Karajan declaims, "I'm needed EVERYWHERE!"

With or without the colossal arrogance, that is one of the essential truths of showrunner life. This is why understanding the First Law, and practicing the Second, are so important. At any given moment during the course of a season, there are six stories that have to be minded: the story in development on the board in the writers room, the story in outline, the story being scripted, the story being prepared for production, the story in production, and the story being completed in editing and post production.

That means meetings. Costume meetings, set decoration meetings, hair and make-up meetings, budget meetings, casting concept calls, network and studio notes calls on multiple drafts of multiple scripts, outlines, and stories, sound and special effects spotting in post-production... enough meetings to wear down even the most extroverted mass-communicator.

And yet, your job is to track all those targets. Because that is a manifestly impossible task, you have a secret weapon in your arsenal designed to combat the fatigue that comes from always having someone at your door who needs to be told What is What.

That weapon is, of course, your writers.

Though you don't realize it just yet, your writers are, in fact, your <u>apostles</u>. Yes: that motley bunch is a band of spiritual warriors ready to spread your Evangel to every corner of your show's domain.

The reason the ranking system of writers goes from staff writer, to story editor, to executive story editor, to co-producer, producer, supervising producer, and co-executive producer, is because you're not just running a show - you're also running a producer/showrunner academy. Even if you are woefully uninterested in teaching/under qualified to teach this discipline, this is the duty that fate has thrust upon you. The way you run a producer/showrunning academy is by making the writers in the room the privileged bearers of your knowledge of What The Show Is and then sending them off to all these meetings to give voice to your unique vision.

The reason the Second Law is so important is that, once you use it to empower your people to spread the Word, it actually takes stress and labor off your hands. TV production is a nigh-insurmountable, and ever-rising, Everest of work. It is for that reason that, over decades, a system evolved by which a team of highly creative people were put in a privileged position of access to the seat of power and knowledge. All you have to do is share with your writer/producers/showrunners-in-training What You Want, then send them off to all the meetings and have them report back. You do not have to give up your command authority: remember the First Law, and remember that there will always be a final meeting on all these matters before the scenes are shot.

Why should you ask for this help and take yourself out of at least part of the loop? Because it all begins with the story: you need to focus your energy on making sure that the stories are developed to your satisfaction from the ground up. The writers room is the forge of your show's creation - the single most important place in the universe as far as you should be concerned - even though everything conspires to keep you away from it; jealously guarding your time in the writers room should be your prime target.

The more your stories represent the purest version of your vision, the more involved will be your writers's knowledge of that vision... and the better your scripts are going to convey the vision to everyone else involved with the production (as well as the outlying regions, like the people who cut your promos at the network, or the people who license the show for merchandising).

This is why conveying your vision clearly - making sure the work of the writers room reflects it first and foremost - and delegating the conveyance of that vision to others is so important. You are in the business of telling stories: you must strive to free your mental bandwidth to make sure they are your first, and final priority.

THE EIGHTH LAW OF SHOWRUNNING
RESIST THE SIREN CALL OF THE "SEXY GLAMOROUS JOBS"

In the business of entertaining people, many facets of the process of entertaining people are entertaining in and of themselves. Consider the costume designer's workshop. They have drawings of pretty girls on the walls, the costumers are frequently young and attractive - and have a great sense of style and design - and, every once in a while, beautiful actors come in and put on a fashion show for you.

The same applies for production design and prop fabrication - festooned as they are with blueprints, concept art, fabric samples, and awesome gizmos in various stages of construction. And wait 'til you hit the VFX office, where the boffins will regale you with endless tales of pre-vis and fluid dynamics simulations.

Then there's casting. That's where you can hear actors come in and say your lines in every manner possible. That's right, pretty people come in, say your words back to you, and you get to JUDGE them with impunity!

These are "the sexy, glamorous jobs." You can convince yourself that your direct supervision of these tasks is of the essence... especially if you are stuck on a difficult story knot and the other writers keep telling you the direction you want to go isn't going to untangle it. But you're damaging the show by believing it.

There's another pernicious aspect to the siren song of the sexy glamorous jobs; the longer you spend with your other departments, the more you rob from them the time they need to actually do their job (the designing and construction of things that will look great before the camera and not just sound great in your conversation)... and, by and large, most of them will be too nice to tell you to go away and let them work.

So don't be a Time Bandit (or a "Time Vampire"). Tell people what you want concisely... and then leave... or better yet, tell one of your writer/producers, let them have the discussion with the different department heads first, and then make course corrections later when there's an adequate level of proof of concept.

All of this brings me to post-production. In the late twentieth century - thanks to advances in computer software and memory, and the development of the non-linear/non-destructive editing workflow - post-production changed from a fairly recondite and artisanal process to becoming the single most seductive time suck for showrunners. A showrunner can now go into the editing suite with a large leather couch and massive high-definition screens with a pipeline to the editing system, and watch an episode, a sequence, a scene - even a single sequence of shots - over and over again, and demand any change that enters his/her mind... and, thanks to the miracle of computerized cut-and-paste and endless levels of "undo" and "redo" see it all in real time, and continue to demand changes until every combination of every frame that was shot has been considered.

It feels like real work, but it isn't, I promise. More often than not, all of the consideration and reconsideration done by showrunners of the material in post-production is a distraction from the the far less immediately rewarding work of the writers room. The trick to maintaining a healthy balance between the editing room and the writers room is to not fool yourself into thinking that post-production is where the show truly is. If you repeatedly find yourself "looking for the show" in post, it is because you most likely lost it in the writers room.

So how do you mitigate the siren call? By keeping your eye on the story, and by delegating to those who know the story best the task of making sure that the cut has been maximized toward the telling of the story before you step foot in post. Instead of going into the editing room to watch the first cut of the show from the leather couch - where you can be tempted to start taking things apart before the theme music plays - watch it in your office with the editor and the episode writer. Have a thorough discussion with them as to whether the scenes are telling the story (concerns of style and flair can wait until the story is solid) while an assistant takes notes, and then send the editor off to perform the notes.

When the editor is ready with the next iteration of the episode, do NOT look at it. Send the writer of the episode in to look at the next cut and let him or her decide whether the notes were addressed and give the next round of feedback: again, focussing on whether or not the film is telling the story. Only after you've allowed these steps to take place - maybe more than once - should you get on the leather couch and make it sing.

When you begin to work this way, you may feel like you're abandoning a child during a crucial developmental stage, but I promise you - what you are doing is giving the children being conceived a fighting chance at life.

Now, just because I am an advocate of delegating to your staff doesn't mean I am blind to the truth that all of your hires may be up to the tasks you assign for them, which leads to...

THE NINTH LAW OF SHOWRUNNING
EXPECT YOUR STAFF TO PERFORM AT VARYING LEVELS OF COMPETENCE

As I mentioned previously, you are not just running a corporation, but also a spoke of the apprentice-to-master wheel which many of your writers will ride all the way to becoming senior level writer/producers themselves. Among the many keys to being a successful mentor is the understanding that - when you have a room full of writers of different ranks and levels of ability - they will all perform on the page, and in the writers room, differently.

The executive producer-level writer with twenty-five years of experience - who ran his or her own show last year and is now on your staff as your Number Two - should be reliably expected to turn in drafts in which the story and scene structure are solid, and the characters speak with a voice close to what you have established. You may not ultimately like this writer's execution- that part is subjective - but you should have no doubt that you are in the hands of a pro.

This is what your senior level writer/producer has been doing for twenty-five years: learning how to solve story problems in script, mastering the craft of creating scenes that have a discrete beginning, middle, and end, and figuring out how to weave the prosaic concerns of plot and theme into dialogue that conceals the storytelling machinery beneath.

The assistant whom you promoted to staff writer as a reward for loyalty, hard work, and support - and because you read a spec script that you don't really know how long they took to write (or how much input they had from others in its creation) - cannot be expected to deliver on that level. It's on you to not only budget your time and energy to both give them thoughtful notes and rewrite their material, but also to muster the *largesse* to judge their work leniently.

To most showrunners, this seems unfair... and it is, to be honest, something of a damned nuisance. Nevertheless, it's on you to help your junior staff up the long ladder to mastery. The more well-considered your feedback, the better the scripts your writers will produce. It isn't some glacial process: give your staff accurate and specific information about what you want, and constructive feedback as to the how and why (and yes, describing to them WHAT to write counts - don't think they will resent your telling them exactly what you want the scene to look/sound like), and you will see marked improvement from script to script.

It sounds simple, and yet, many showrunners can't wrap their heads around that concept. Sometimes it's just more expedient to stall until you find the time to fix it yourself. It's also wrong. You hired them. You teach them.

The flip side of judging writers without considering their level of experience is the privileging of notes and feedback from "trusted" outsiders. I have seen every variation in this over twenty years, and have been called upon to perform notes given on scripts by the parents, spouses, and children of showrunners, as well as longtime assistant, and even the line cook of a restaurant (whom the showrunner believed was his link to staying "real").

Though it is the accepted wisdom in creative disciplines that "the best idea wins, regardless of where it came from," the most well-meaning attempts to enact this belief end often badly for all parties involved. Imagine a relatively benign version of this scenario: a showrunner asks an assistant to come in from the bullpen and pitch a script note to the twenty-five year veteran.

Here's a few of the reasons why this well-meaning gesture often ends in tears:

A. By the time a pitch/outline/script comes to the showrunner, the writers room has undoubtedly discussed it to every possible endgame. The outsider's idea was most likely already tossed around, taken for a test drive, kicked on the tires, and judged wanting for reasons that you have not yet had the time to examine.
B. You have told the more senior staffer - the one whom you should be trusting with the stewardship of your vision - that you trust them so little that you are looking for help anywhere you can get it.
C. You have sent the message that it's OK for an inexperienced staffer to speak out against a superior. That's not necessarily a sin, but applied capriciously and frequently, it breeds an entitlement in which junior staffers hold back the process because they believe they have the right to veto marching orders from anyone but the showrunner.
D. You have put a younger member of the hierarchy in the awkward position of being shut down in front of you by another one of his/her mentors. Everyone loses face.
E. You are privileging the counsel of people whose power differential with yours is so steep that they will <u>never question your decisions in a productive way</u>.

Now let's say that someone who answers the phones in the front office comes to you with an idea that you do find undeniable. How do you present it to your staff without triggering the awkwardness described above? You give the note yourself without the staffer in the room: if it succeeds the tests, you then graciously give credit to the junior member, also preferably without them in the room, and then later let them know that their idea is being used and that everyone knows where it came from. If the idea is proven to have already been talked about and discarded - and you realize you yourself are behind the mainstream of the creative process in your own room by pitching it - you take the blame, shrug it off, and move on. You're the boss, it will not damage you.

Conversely, if you are the youngest/least experienced/lowest-ranked writer on a staff and have an objection to the work of a more senior writer (and I am giving this advice here because it behooves showrunners to teach this behavior), and have an idea as to how you might fix it, then run your criticism/idea by the next person from you in the hierarchy... and maybe then go with that person to the next person up. You build consensus, insure that the ground under your feet is solid, and then make your move.

These last two points do bring up one, frequently very difficult managerial issue: what do you do when your writers room truly includes a bad apple? Does that fall under the rubric of "expecting writers to behave at different levels of competence?"

Sometimes, yes: bad behavior is often the result of lack of experience and education, That doesn't mean you have to tolerate it, and there are a lot of very useful strategies to mitigate the damage done by negative actors in your staff.

These are the three most common kinds of bad apples that show up in writers rooms:

1. The "Doctor No" - A writer who responds to most ideas that are not theirs with "that sucks" and then lets everyone know how and why, usually without providing ideas about how to fix the problem.
2. The "Hostage Taker" - Sometimes, Doctor Noes cross the line into Hostage Taker, refusing the let the room move on until their objections have been addressed. In younger and less experience staffers, this behavior is career-destroying. Another brand of hostage-taking comes from the writer who mistakes the open environment of the ideal room - to which its

participants should be able to bring their personal business, within the parameters of it being germane to the story - for their personal psychotherapy session/PhD thesis defense.

3. The Politician/Manipulator/Insulter - This refers to those who, through either tone-deafness, a desire to be heard and appreciated, or just plain malice, use information divulged in the open forum of the writers room to publicly or privately hurt, undermine, or make a punchline out of the other writers. This can be especially cancerous: the room runs on a certain amount of trust and sensitivity, and repairing that trust is an exponential investment of time from the speed with which it can be broken.

The strategies you need to correct these problems are simple and straightforward. Oftentimes the people doing these things do not realize that they are negative actors. Showrunners are often conflict-averse: many staffers will go through entire careers without ever being told they are behaving badly.

Here are the simplest ways of clearing the barrels of Bad Apples:

1. Throw the problem back at Doctor No - Doctor No tells you that they disapprove of something, you reply "You break it, you bought it." If you can pitch an objection, but not a solution, you have not earned the right to speak. As showrunner, you get to express that, first politely, then in escalating levels of exasperation until it sticks. More importantly, expressing this is an important part of your job as a teacher: the critical faculty develops earlier than the more craft-focused, patience-requiring, spade-and-trowel discipline of story generation and repair. If you don't correct Doctor No-ism early and often, you are causing yourself and other showrunners more trouble down the line.
2. Confront problems early, head on, and earnestly - If someone is chronically hijacking the room, tell them firmly, but politely (and preferably privately) that "You have a tendency to overshare, it's not always useful, and it undermines the times when what you have to say helps move the story forward," or "You need to watch the jokes about people's personal lives, they come across as hurtful," or (this was once said to me, and to this day, I thank the bearer of the bad news) "Your graphic descriptions of your self-loathing and body image issues are making the other writers uncomfortable, you may want to take your hand off the throttle." You don't have to be artful - or artfully impolite and cruel - to tell people what you need from them. If they push back, don't engage or become

defensive, hear them out, and let them know that they have been heard but that - their defense notwithstanding - you have identified a problem and want it worked on. This is often a crucial aspect of problem-solving: many people need to know they are on the record, even if it doesn't change the outcome. Remember, you're not anyone's best friend: you're the boss.

3. Discuss the problem with your closest subordinate, have them deal with it in one of the ways described above, and save your intervention as a court of final appeal - The reason a twenty-five year veteran is being paid to be your right hand is because they bring the experience and weight to deal with problems like this. Use them: let them deal with the problem, have their back, and if the recalcitrant writer insists on not changing, use the power of your office to reinforce the message at a later time. If, in spite of all this, the pushback continues, then there's always the nuclear options:
4. Exile - Some are so incorrigible that it eventually necessary to figure out a better use for their talent. Writers who perform well on the page but badly in the room can be used in draft writing and rewriting, and kept out of the room altogether. I have often seen Hostage Takers sent to perform producorial services on the set. So much of what happens on the set is about clarifying - especially for the actors - the context of the work at hand, that the sort of fine tooth-combed discussion that can turn into hostage-taking in the room can serve a useful purpose. This is not an optimal solution: writers are paid to write, but some writers are so incompatible with the collaborative process that you may find yourself cornered into finding an alternate use for them.
5. Firing - Sometimes, there's just no two ways about it. The merciful way (once you have dotted all your i's and crossed all your t's with the studio's HR) is to rip off the Band-Aid and be done with it, then everyone can move on.

Nothing above is easy or comfortable. The seduction of the "writing-staffs-as-democracies" fallacy - the desire to believe that you can abdicate your teaching responsibilities because everyone in the staff is "equal" - is aided by how tangential and time consuming these interactions feel. It is far easier to believe that everyone should have one voice and one vote. It is also very damaging.

A writer gains mastery over the form and function of television in the same way that chess players master their game: by studying old games, internalizing the patterns, and practicing, practicing, practicing. Lay-people mistake both chess and writing as explosions of genius-level creativity: but where does the black powder for that explosion come from? Pattern recognition. That's why the twenty-five year veteran is usually so good at the job of breaking story, even if the younger writers demonstrate a greater flair for dialogue, or can render the rhythms of the current popular culture with greater fidelity. Veterans don't have to reinvent the wheel every time out. The veteran looks at the board and recognizes the ten different ways the game can go from that point to a win, or a draw, or a defeat.

There are only so many variations in chess and story telling - the reason you rely on the veteran is that they don't have to play every variation in order to predict how to reach the outcome you want. The art of writing is in how you disguise the mechanics of this assembly, just as the art of chess comes from fooling your opponent into not seeing your endgame thirty moves ahead.

You may be tempted by the idea of a cabinet of equals - with yourself as the first among them, of course - but your job is to lead and teach. You earn love by recognizing that everyone's gifts are different and giving your employees an environment in which is it safe to try, and both succeed and fail. Every member of a writing staff is on the hook for the education of the next person below them; recognizing that everyone is working at a different level is your first step toward building camaraderie.

Hierarchy is neither a dirty word, nor the sign of a hidebound mind that resists change and innovation. Hierarchy is not proof that you're a square and sell-out. Properly enacted, and thoughtfully maintained, hierarchy is the flak jacket that allows each member of your staff to reach their highest potential without being shredded by gunfire.

THE TENTH LAW OF SHOWRUNNING
DELIVER GOOD AND BAD NEWS EARLY AND OFTEN

TV shows are natural incubators for the sort of dramas that come along when your force a hundred or more temperamental people into close communion under the pressure of intense work performed under great stress. Invariably, drama comes from secrets. In my experience, secrets are poison - especially when you are exposed as their bearer. Sunlight is the best disinfectant.

The Tenth Law of showrunning is a close dependent of the Second. As the source of the show's vision and the one best qualified to say What It Is and What It Is not, make truth-telling your business, rumor control your secondary vocation, and complete transparency your ultimate goal. Save the drama for the screen.

The reasons for this are of the essence of the First and Second Laws. You want and need to be the source of all that is true about your show - even if that truth is unpleasant. The worst position for a leader is as the bearer of bad news everyone already knows.

Any information that aids the speed and efficiency of creation - even if it temporarily hurts feelings - is worth exposing early, tactfully, and often... and if that information exposes you as the cause of a blunder, you are better off putting your pride aside and owning up than expecting everyone who works for you become the unwilling accomplices in - and hostages of - the protection of your own self-concept. Whenever a rumor, a lie, or a truth that you have not sanctioned takes on a life of its own, it undermines your own ability to set the tone, define the parameters, and describe a path to success.

Transparency is not just a moral imperative to the life of a showrunner; it's a necessary lifeline. If you need to devote one iota of your energy to deception tracking and maintenance, that's an iota that's not going to the work you need to accomplish in the writers room. Transparency streamlines your life. Being transparent before anyone can be transparent for you means you control the narrative. Giving bad news before they crash land means no one can claim surprise at a bad break.

Being transparent also helps to break down a commonplace fallacy in television: the idea that network and studio are your adversaries. In fact, these are your production partners and your financial backers - as invested in the success of the series as you are - and they deserve to have a clear picture of the process.

In short, when everyone knows the truth, no one can be surprised by its arrival. When it comes from you, no one can say that you lost control.

THE ELEVENTH LAW OF SHOWRUNNING
SHARE CREDIT FOR SUCCESS TO A FAULT

The Eleventh Law of showrunning is the tail of the snake in the mouth of the First... never miss an opportunity to point out how another person's work has made you look good. It’s your name on the show and it’s all about you anyway, so you lose nothing by sharing credit.

It sounds counter-intuitive. Most showrunners feel embattled in a job that is manifestly greater than any one person's ability to perform, and feel that - because of their daily marshaling of the resources necessary to commit to that level of intensity - they deserve to be recognized as the sole author of the production.

In truth, that recognition is already there. I'm not just talking about the First Law: the validation of your primacy comes weekly in the form of the largest check on the payroll, the biggest office in the suite, the parking spot closest to the front door, and the Executive Producer credit in the main titles of every episode of the show... along with your production company card after the end titles.

Everyone knows who and what you are. Everyone is hanging on your words.

The wonderful thing about credit is that it's not a finite resource. The more credit you give, the more credit you get - for being a genius and hiring a great staff, for being a good boss and a nice person (finally!) who can acknowledge the contributions of others, for fostering a positive work environment, and - most crucially - for being the kind of showrunner who protects their writers from the kinds of short term judgments that you have the liberty rethink in the long term.

By that I mean this: because of your feelings of embattlement, you will often be tempted to tell the studio or network about which writers are not performing to your expectations in order to explain a temporary stop in the script pipeline, or a missed deadline, or to assuage your own temporary feelings of annoyance. There are few things a showrunner can do that are less becoming of their station than to throw a staff member under the bus.

The first reason is that the road is long and you may find yourself discovering - as this writer does further work for you - that you actually quite like their writing. You have the liberty to change your mind, but a single bad remark (like a yawn from the emperor in *Amadeus*) can paint a writer's career at network or studio for far longer than you imagine. The second reason is that - when you impugn your own staff - it makes your own stewardship of the show, your ability to communicate to your staff effectively, and your own hiring decisions appear suspect.

And yet there will be times when the studio or network will ask for a draft that you are not prepared to hand over because you need to do a lot of work on it because the writers didn't nail it. You know what you say? You say: "There's still work to be done." That's it - be honest but be fair to the writers and their process, even if it frustrates you.

If there is pushback from the studio or network, take the responsibility yourself: own it and revel in the truth that a blow that would cripple the career of someone of lesser rank is but a ding on your door.

The reason this is the final Law of Showrunning is not just that it feeds right back into the First Law, but also that it is the biggest test of character before you as someone who has just been handed something close to absolute power in the business.

How you deal with praise - and success, and all the concomitant slings and arrows thrown at you for your position - and whether you recognize that you have within you the strength to be that aforementioned flak jacket to your staff, is as true a test of your self-esteem and worth as a person as anything you will ever face.

EPILOGUE

It may be a gross generalization to say that leadership is not a defining characteristic of most writers, but in my experience, it is where we most often fall short. And when we fall - or see something brewing we do not want to face - the natural thing to do is seek refuge. The place where most of us find it is a vast and impregnable fortress called "my creativity." Surrounded by a crocodile-infested moat known as "my process," it is in this fortress that all other concerns are banished in the name of you doing "what I have to do" to be "brilliant on the page."

As a showrunner, this is about as far from a safe space as can exist. The symptoms addressed by the Eleven Laws swirl around this delusion like debris around that scientifically inaccurate black hole in the eponymous Disney sci-fi disaster from the late 70s. It is in this fortress that you think it's OK to excuse yourself your managerial shortcomings under the mistaken impression that - because you have gone there to find your muse - you are entitled to any accommodation, deferral of difficult responsibility, or abdication of a human obligation, that you deem necessary.

All writers indulge this kind of magical thinking to some level: we cling to our depressions, darknesses, and deceptions thinking they are the source of our genius. We mistakenly believe that our creativity is a karmic recompense for whatever traumas we suffered in the past, and use the excuse of "my process" for any number of toxic activities that we believe service the creativity, but which only prolong misery.

For a showrunner, this clinging is toxic not just for the obvious reasons, but because it provides place to run away from all of the very real responsibilities of your position.

The price you pay to play to an audience of millions on the word stage is that you have to make concessions between the tempestuous *artiste* you idealized for yourself when your pain was something that pushed you toward self-expression. The cost of admission to the Majors is that you have people who depend on you: not just for their living, but also their creative, emotional - and, occasionally, physical - well-being... and, oh yes, you also have an audience that's waiting to be entertained.

As a showrunner, your reality is that you are a senior-level professional: someone who earns more for producing a single episode of television than most Americans do in a year, and has earned the power to either indulge their worst side, or aspire to their best.

Whether you choose to embrace this truth, you owe it to the people who have signed up to work for you to not visit upon them the traumas of your past because that is the only way you think you can perform on the page. You also owe it to them to come to reckoning with the truth that you creativity and your pain are not one and the same, and that the need to believe that in order to get the work done is incompatible with your current lot.

Facing this may be the hardest and most painful truth for any writer. While one certainly informs the other, your darkness and your writing come from different places... losing the former - or at least dispelling it long enough to be a fair leader to your employees - will not affect the latter. Your creativity is a renewable resource - just like praise, and credit, and is fed by everything around you - especially the great people you hired to facilitate this difficult undertaking. Your creativity is not some finite thing that must be hoarded and protected with arcane devices and traps, but rather a gift that you should bestow on every one of your charges if you want them to succeed to the best of their ability.

And, if you don't have the time or energy to lay down your affectations, you can at least shield others from your insanity by building a scaffold of professionalism around yourself. Suffer for your art if you must - but make the effort to prevent others from becoming participants in your daily reenactment of your trauma. It will make your show a better workplace place for you and every member of your staff.

Of course, you don't have to take my word for this.

As I said previously, even the worst - and most abusive - of managers are generally propped up into functionality, not just by their writers, but by everyone who depends on their ability to perform for their profit. These may, then, be the only Laws that are not only completely optional, but - in all honesty - tangential to the most commonly accepted definition of success in this field.

Nothing I have described above will guarantee profit, fame, awards show recognition, and cultural currency and influence: but I can guarantee that, if you make a habit of practicing any number of these Laws, they will make your life, and your relationships - both in and out of the job - at least a little bit better.

So I will just leave them here - as they say in the business of show - "For Your Consideration."

What happens next is up to you.

COMPLETED STAFF WORK

"During the war, I left an operating squadron in the field and after a short schooling at the Staff School in Leavenworth, found myself thrown into a very large headquarters. The attached article called "Completed Staff Work" was circulated in the Pentagon during World War II. It was a considerable help to me and other officers in attempting to learn to do our jobs with Headquarters, Army Air Forces."

It seemed to me that some of the recommendations had quite a bearing on the operations of a business and I am passing this memo along so that all of you will have an opportunity of looking it over. You will have to overlook the military terminology, and it isn't our intention to start organizing HQ on a military basis, but I still thought the article worthwhile."

TJW, JR.

"Completed Staff 'Work" is the study of a problem, and presentation of a solution, by a staff officer, in such form that all that remains to be done on the part of the head of the staff division, or the commander, is to indicate his approval or disapproval of the completed action. The words "completed action" are emphasized because the more difficult the problem is, the more the tendency is to present the problem to the chief in piecemeal fashion. It is *your duty as a staff officer* to work out the details. You should not consult your chief in the determination of those details, no matter how perplexing they may be. You may and should consult other staff officers. The product, whether it involves the pronouncement of a new policy or affects an established one, should, when presented to the chief for approval or disapproval, be worked out in finished form.

The impulse which often comes to the inexperienced staff officer to ask the chief what to do, recurs more often when the problem is difficult. It is accompanied by a feeling of mental frustration. It is so easy to ask the chief what to do, and it appears so easy for him to answer. Resist that impulse! You will succumb to it only if you do not know your job. It is your job to advise your chief what he ought to do, not ask him what you ought to do. He needs answers, not questions. Your job is to study, write, restudy and rewrite until you have evolved a single proposed action -- the best one of all you have considered. Your chief merely approves and disapproves.

Do not worry your chief with long explanations and memoranda. Writing a memorandum to your chief does not constitute completed staff work, but writing a memorandum for your chief to send to someone else does. Your views should be placed before him in finished form so that he can make them his views simply by signing his name. In most instances, completed staff work results in a single document prepared for the signature of the chief without accompanying comment. If the proper result is reached, the chief will usually recognize it at once. If he wants comment or explanation, he will ask for it.

The theory of completed staff work does not preclude a "rough draft", but the rough draft must not be a half-baked idea. It must be completed in every respect except that it lacks the requisite number of copies and need not be neat. But a rough draft must not be used as an excuse for shifting to the chief the burden of formulating the action.

The completed staff work theory may result in more work for the staff officer, but it results in more freedom for the chief. This is as it should be. Further, it accomplishes two things:

1. The chief is protected from half-baked ideas, voluminous memoranda, and immature oral presentations.

2. The staff officer who has a real idea to sell is enabled more readily to find a market.

When you have finished your "completed staff work" the final test is this:

1. If you were the chief, would you be willing to sign the paper you have presented, and stake your professional reputation on its being right?

2. If the answer is in the negative, take it back and work it over, because it is not yet "completed staff work".

Win Word

Microsoft Memo

TO: Bill Gates, Mike Maples, Jeff Raikes, Chris Mason

FROM: Peter Jackson

DATE: December 17, 1989

RE: Opus Development Postmortem

CC: Adrian Wyard, Bill Bader, Laurie Boehme, David Bourne, Chi-Chuen Chan, Brad Christian, Greg Cox, Judy Crichton, Phil Fawcett, Chase Franklin, Jodi Green, Sylvia Hayashi, Anne Hayes, Doug Klunder, Tony Krueger, Laurel Lammers, Jurgen Leschner, Bryan Loofbourrow, David Luebbert, Brian MacDonald, Ford Martin, Kornel Marton, Bob Matthews, David McKinnis, Dave Moore, Krishna Mukherjee, Jeff Muzzy, Chuck O'Leary, Len Oorthuys, John Parkey, Rosie Perera, Chris Peters, Diana Peterson, Glen Poor, Tom Reeves, Darren Remington, Rick Saada, Jeff Sanderson, Tom Saxton, Doug Scott, Mark Seaman, Jeanne Sheldon, Greg Slyngstad, Marshal Smith, Brandy Thorp, Doug Timpe, Brad Verheiden, Paul West (file), Greg Whitten, Bob Zawalich

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1. Attached is the Development Postmortem for the Opus project.

Microsoft

Opus Development Postmortem

Peter Jackson
December 15, 1989

Table of Contents

I. Introduction and Summary

The Opus Development Postmortem was held Tuesday 12 December at the Bellevue Red Lion Inn. In attendance were:

David Bourne	Doug Klunder	David McKinnis	Mark Seaman
Chi-Chuen Chan	Tony Krueger	Krishna Mukherjee	Brandy Thorp
Brad Christian	Jurgen Leschner	Rosie Perera	Doug Timpe
Sylvia Hayashi	David Luebbert	Tom Saxton	Brad Verheiden
Peter Jackson	Chris Mason	Doug Scott	Bob Zawalich

After Word for Windows was released to manufacturing a questionnaire was distributed to all developers and some other parties to collect opinions and issues for discussion at the postmortem. The responses to these questions were distributed to all of the attendees in advance and served as the agenda for the meeting[1]. This document is primarily based on those responses and on the discussions during the meeting.

The Opus project has been a long one. Many things went wrong and many things went right, but the final product that was produced is one that we can all be proud of. This document focuses on the things that went wrong—hopefully we can learn from these.

II. Project and Schedule History

The Opus project started in August 1984 as the Cashmere project. The project started out being the end-all Windows office, but eventually became a Windows word processor based on Mac Word. Prototyping work started in August 1985 and real development in November 1985 with seven developers. Code complete was declared in October 1988. The product went to manufacturing on November 30, 1989. A more complete outline of the project's history is included as Appendix I.

The Development Team

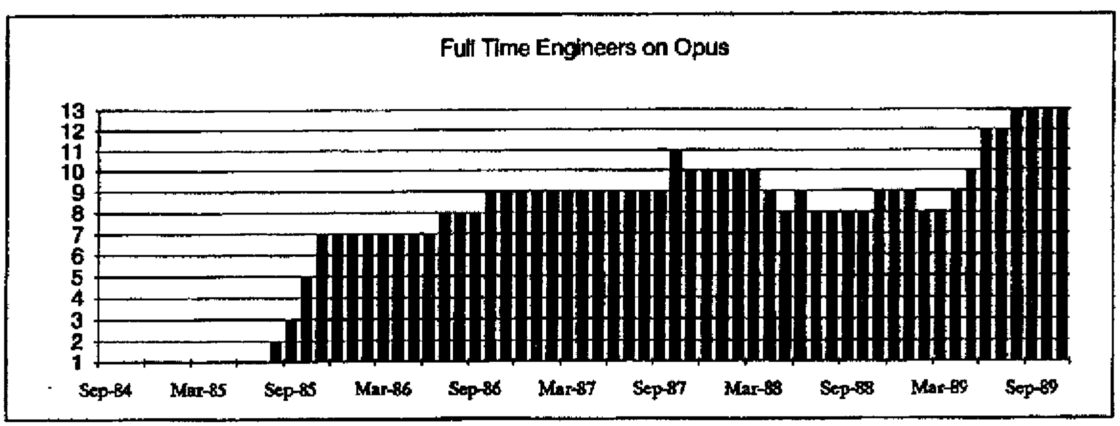
The following table lists the people assigned to the Opus project, the times they were assigned and the major areas they worked on. I have included here only people working on the Opus (Cashmere) core, I have not included people or periods spent working on Write or the Cashmere/email project (which was scrapped in 1986).

Name	Period Position	Areas
Bourne, David	09/85-11/89 SDE	printing, layout, styles, renumbering, print-preview, insert file, postscript support, compare versions, revision marking, importing spreadsheet formats, run clipboard/control panel, undo, document types
Brodie, Richard	08/84-07/86 Project Manager	initial research and design concepts, RTF, and much more
Chan, Chi-Chuen	08/86-11/89 SDE	multi window support, style name area, selection/cursor movement, footnotes and annotations, headers and footers, file find (document mgmt), pageview, PA coordinator
Christian, Brad	09/85-11/89 SDE	macros, key maps, menus, formulas, dialogs
Cockburn, Anthony	05/88-09/88 SDE	performance
Cox, Greg	09/86-05/88 SDE	native coding, speller, file conversions, dnatfile
Ezekiel, Alan	06/88-09/88 Intern	help & CBT hooks, error reporting
Geyser, Eric	07/87-08/87 SDE	show all
Hayashi, Sylvia	05/89-11/89 PA	testing, debugging aids, code searches, demo version
Hopstad, Mike	01/88-07/89 PA	printer bugs, testing, RAID administration
Jackson, Peter	06/86-04/88 SDE 04/88-02/89 Technical Lead 02/89-11/89 Project Ld./Tech. Ld.	bookmarks, glossaries, fields, save, open, file primitives, coversions, graphic filters, ruler, icon bars, auto numbering, print merge, goto, performance, DDE, memory management, PA coordinator
Klopfenstein, Herb	08/87-01/88 PA	testing, RAID administration, net administration
Krueger, Tony	06/88-09/88 Intern 07/89-11/89 SDE	macros, macro record
Lammers, Laurel	09/88-11/89 PA	sampler, macros, benchmarks, testing, techref reviews

[1] The original responses to this questioneer as well as the document distributed and some additional email discussions about the history of the project are on file for anyone who wishes to review them.

Loofbourrow, Bryan	11/85-07/86 SDE 07/86-04/88 Technical Lead 07/88-02/89 Project Lead 02/89-11/89 SDE	display & scrolling, speller, thesaurus, hyphenation, expressions, file system, "word technology", out-of-memory handling, fonts, draft view, clipboard display, performance
Luebbert, David	04/89-11/89 SDE	outlining, styles, scrolling, cursor movement, save
Martin, Ford	07/86-06/88 Project Lead	thesaurus, scheduling, specification
Mason, Chris	05/89-11/89 SDE/Dev. Mgr.	layout, postscript support
Matthews, Bob	01/85-11/85 Project Lead	
McKinnis, David	04/89-11/89 SDE	printing, printer drivers, PRDDRV, tables, revision marking, renumber
Mukherjee, Krishna	10/88-11/89 SDE	macros, glossaries, menu customization, formulas, field translation
Perera, Rosie	08/85-11/89 SDE	status line, search, replace, CBT, help, tables, window splits, view preferences, word deletion, index & TOC generation, cursor movement, debug menu, go back, PA coordinator
Porter, Dan	11/87-03/89 PA	network administration, testing, benchmarks
Rutenbeck, Jeff	10/87-05/89 PA (part time)	testing
Saxton, Tom	04/89-11/89 SDE	table display & caching, table native code, display
Scott, Doug	05/89-11/89 PA	macro tests, SDM verification, testing
Singer, Marc	05/85-12/85 Intern	dialogs and product specific controls
Thorp, Brandy	05/89-11/89 PA	librarian, disk images, macro tests
Timpe, Doug	01/88-11/89 PA	network administrator, macro tests
Verheiden, Brad	10/87-11/89 SDE	native code, performance, search, file preload, large table support
Wine, Bruce	06/87-08/87 Intern	PRDDRV
Yamane, Yoshito	07/85-07/88 SDE	dialog controls, hyphenation, expressions, outlining, insert field, summary info, customize, file dialogs, sort, date, time & number formats, autosave, kanji Write
Zawalich, Bob	08/85-11/89 SDE	dialogs, RTF, pictures, TIFF, dyadic opts, macro specification, ribbon, ruler, clipboard opts, sort, foreign file conversions, formatting commands

The following shows the allocation of full-time equivalent SDEs to the Opus project through time. An FTE is an attempt to measure the real strength of the team by counting SDEs who are working full time on development. Interns are not counted. New hires do not count during their first month. The number may also be adjusted according to the actual amount of development someone is doing.



Management of the development team, from within and from above has been one of the major failures of this project.

Bob Matthews, the original Project Lead and one of the only experienced developers on the project, was siphoned off very early to work on Windows. That left the development team working directly for Richard Brodie who was then the Word Processing Manager (also responsible for PC Word). While Richard did much research and contributed to the design of the product, he did not manage the team well and he never created a specification. When he resigned in July 1986, most of the work he had done during the preceding two years was lost. Richard's mismanagement set the tone for the next three years.

After Richard left the responsibilities were split between Ford Martin as Project Lead and Bryan Loofbourrow as Technical Lead. This would have worked out quite well had it not been for the excessive demands of the then Director of Applications Development, Jeff Harbers. Jeff continually hounded Ford for better schedules and more results. He treated the development schedule as a contract between the development team and himself and he really let us know when we did not live up to our end of the bargin. To make the situation worse, he questioned every estimate made on the schedule, resulting in a tighter schedule that could not be meet. (This is discussed further in the section on schedule analysis on page 9).

In early 1988 things were looking bad. Development was way behind schedule and Bryan was getting sick. During a development team meeting in early March Jeff made perhaps his biggest mistake when he got up and told us that the Opus team was the worst team in Applications Development. This, combined with the long project duration, the continual pressure of being behind schedule, and the upsets in leadership, contributed to destroy the team's spirit. This lack of spirit or team synergy is evident right up through the time when we finally did ship. The team became apathetic and burnt out.

In April 1988 Bryan went on a medical leave of absence and, feeling that he had no other recourse, Jeff made Peter Jackson, a junior member on the team, the Technical Lead. About this time Jeff considered disbanding the Opus team completely and starting over; in hindsight that might not have been a bad idea, though it probably should have been done when Richard resigned.

In June, possibly because he could no longer stand the continual pressure from his boss, Ford chose to take a leave of absence. Bryan, who was better but not well, came back and took over for Ford as the Project Lead. The next few months things were looking better and better. Opus made feature complete then code complete and it was looking like we were getting the bug list under control. Unfortunately this did not last. Within a couple of months it become obvious that Bryan's condition made it impossible for him to lead the team, he was not here nearly full time and he was not at his best when he was here.

Finally, in February 1989, Chris acted by making Peter both Technical Lead and acting Project Lead. Not only did this again disrupt the team, but it also gave one inexperienced person the responsibilities that should have been shared by at least two experienced ones. During the next ten months, Peter continually experimented with strategies to improve morale and to get the product done. Some of these worked well, others did not, but the amount of administrative overhead generated by these strategies and at the disruptions of going from one to the next probably did more damage than good.

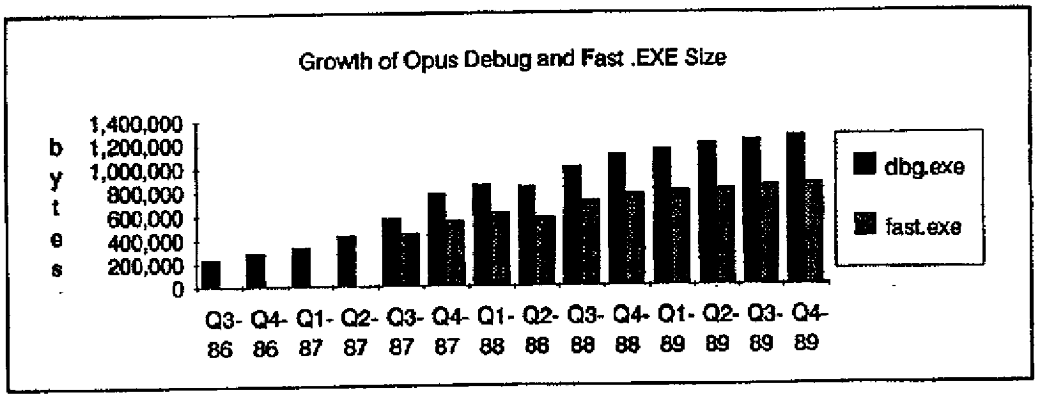
Not having a Technical Lead who could concentrate on technical issues definitely cost us. The size, speed and memory usage of Opus could have been made better than it was if the Technical Lead had not spent the last 18 months as Project Lead or covering for sick and burned out Project Leads.

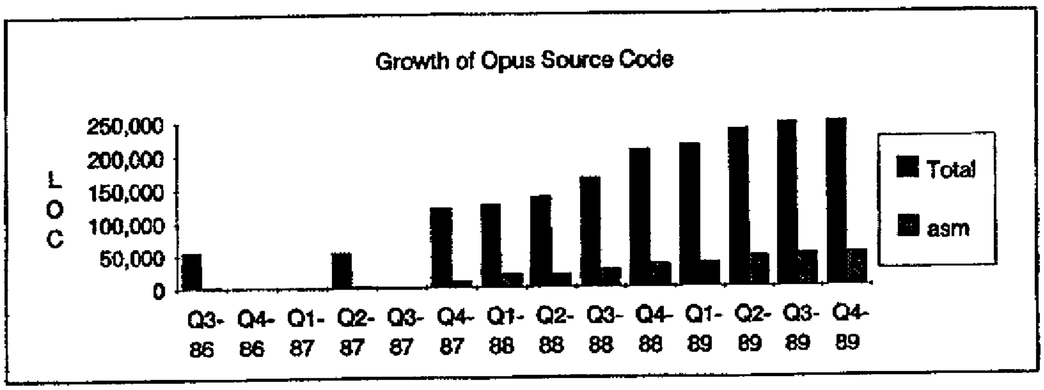
At its height, during the summer of 1989, the Opus team had fifteen developers, six programmer assistants and seven interns. Twenty eight people on a single team is *way* too many both because no one lead could possibly keep tabs on what each person was working on, but also because no team member had any idea what any of the other team members were doing. In the future teams should not be allowed to get this big. Smaller groups, possibly sub groups with leads and well defined tasks, would function much more efficiently.

The management of Programmer Assistants on this project has not been very good. PAs have not been given any consideration for career development and suffer from having too many people telling them what to do. PAs on the Opus team were organized under a PA Coordinator (first Peter, then Rosie and finally Chi-Chuen). The PA Coordinator was supposed to be responsible for assuring that tasks were well distributed among the PAs. This arrangement was subverted because the PAs would continually be getting requests from other people, including people in other groups..

Project Statistics

The following charts show the growth of the debug and non-debug Opus executables and of the number of lines of code in Opus[2].





Code complete was declared in October 1988. Subsequent to that more than twelve months of bug fixing and additional development work were done. The following table shows how much of the final executable was present at code complete.

Milestone	KLOCS	DBG EXE Size	FAST EXE Size
Code Complete (10/88)	208	1097	775
Shipped (11/89)	249	1260	853
% at Code Complete	84%	87%	91%

In comparison, Mac Word 4.0's Code Complete executable was 78% of the size of the shipping executable. PC Word 5.0 has been calculated to have 76% final code at Code Complete.

Of course, this does not measure how much of that 91% was rewritten. We are working on a method of using the SLM DIFF files to get a measure of how much really changed after code complete, but we do not have that information available yet.

[2] As measured by the utility CLOCS.EXE. This utility tends to count 50-60% of the lines in any given C source file. Thus a 1000 line file (as shown by WC.EXE or your favorite editor) would probably be counted as having 500-600 lines, depending on the density of the code.

In the summer of 1989, at a point where it seemed we might never converge, a program emphasizing quality of changes instead of quantity of changes was instituted. This program included code reviews and code ownership as well as a series of reminders and discussions to encourage people to think about and to be careful with the changes they made. This program was an attempt to instill some of the methods of zero-defects into a project that had gone a long time using an infinite-defects methodology and was too far in its development to consider starting from scratch.

It is really hard to draw any conclusions about the effectiveness of this program. It is true that the bug count dropped dramatically, regression rate decreased and we did finally ship four months later (we did not remeasure the injection rate to determine if it changed), but that probably would have happened anyway, if you believe that the product was ready to converge. The only real metrics we have are from the statistics gathered during the code reviews. The following table shows the areas reviewed[3], the time spent on the review (includes preparation, review and documentation), the amount of time making corrections and the number of "items" the review found (bugs and other items).

Reviewed Topic	Hours Review	Hours Correction	Bugs	Other
Tables: Formatting	67.3	26	14	55
Macro Execution	62.5	3	3	37
Print Preview (w/o Layout)	120.5	40	36	146
Table Primitives	111.25	30	26	203
Core Edit Routines	88	8	11	39
Table Display	87.5	18	10	85
Macro Tokenization/Detok.	68.5	25	12	61
Outlining	55	12	19	73
Total	660.55	162	131	699
Average	83	20	16	87

In addition to the 131 bugs and their solutions (or at least their causes) that these code reviews found, they provided a great educational benefit. The developers who participated in the reviews learned more about how Opus works and about better coding practices. The testers who attended gained a better appreciation for the complexities of the product and ideas on the kinds of things that can go wrong.

Most of the non-bug findings were performance related. If code reviews had been used all along on the Opus project, it is entirely possible that our final product's speed could have been significantly better.

The following table lists some statistics about the Opus project for comparison with other projects.

Size of shipped executable	852,576 bytes
Hand-native code as percent of executable	7 %
Total development time spent (including interns and PAs)	55 man years
Full-Time-Equivalent SDE time spent	38 man years
KLOCS of code in debug version (using CLOCS.EXE)	249 KLOCS
Thousands of lines of code (excludes tools & SDM)	347 K lines
KLOCS per FTE-year	7 KLOCS/FTE-yr
Fast bytes per FTE year	22 Kb/FTE-yr
Number of bugs reported	12,511 bugs
Fixable bugs reported	9377 bugs
Percent of reported bugs that are fixable	75 %
Total bugs postponed	1197 bugs
Percent of fixable bugs postponed	13 %

[3] Five other code reviews were held or started, but no data is available for them.

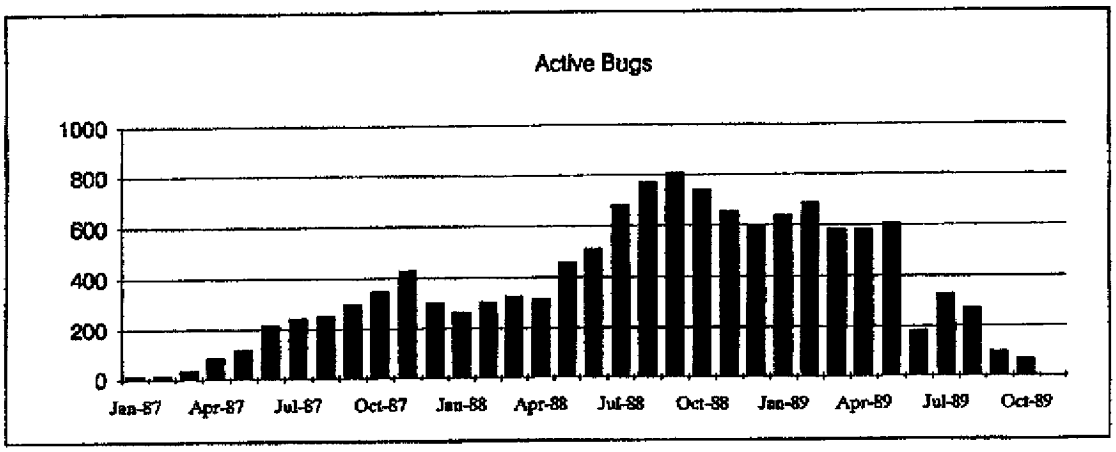
Fixable bugs per FTE-year	247 bugs/FTE-yr
Fixable bugs per KLOC	38 bugs/KLOC
Percent of FTE time expended after Code Complete	30 %
Percent of fixable bugs reported after Code Complete	62 %
Percent complete at Code Complete (by fast EXE size)	91 %
Percent complete at Code Complete (by KLOCS)	84 %
Percent of fixable bugs reported after ZBR	9 %
Total bugs fixed after ZBR	508 bugs

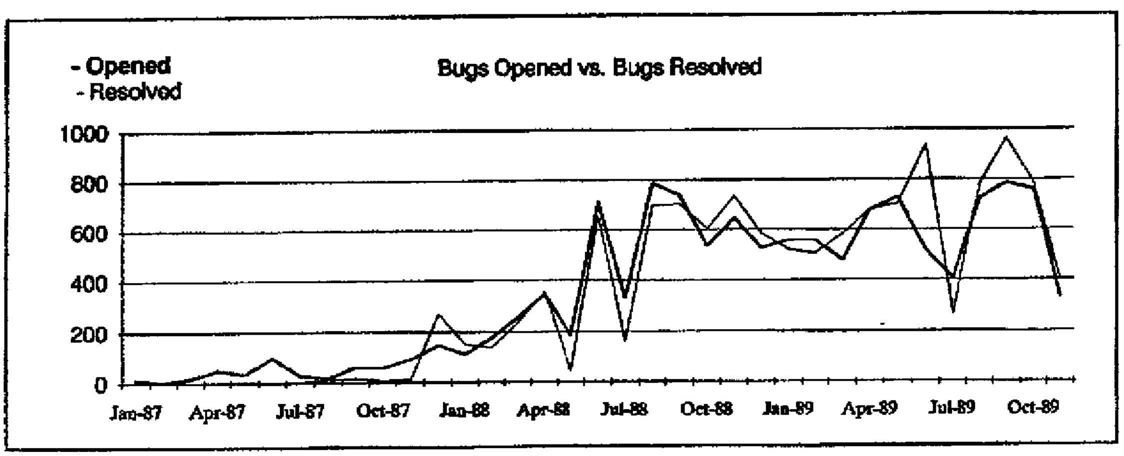
Raw data for many of these statistics can be found in Appendix II.

Bug Statistics

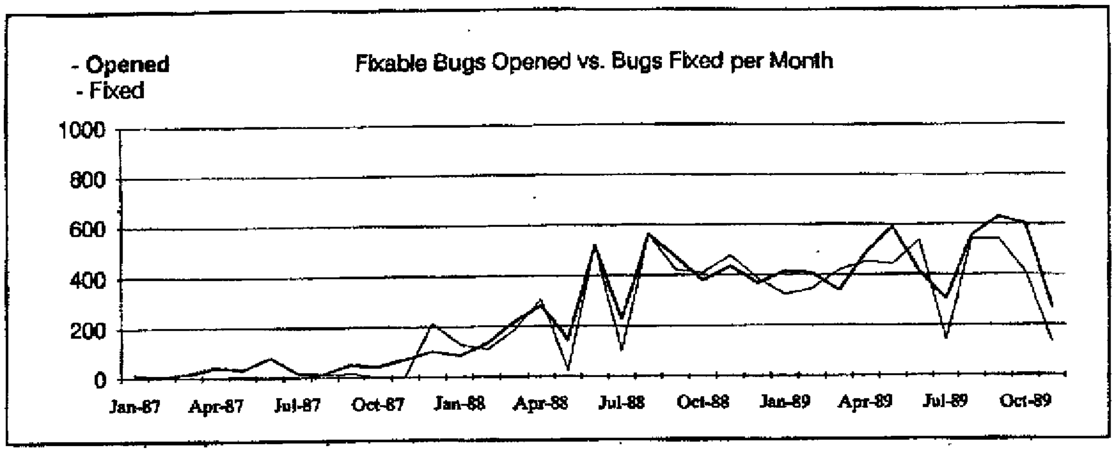
The Opus bug database was not started until January 1987, yet nearly thirteen thousand bugs were reported during the subsequent thirty-five months (about 370 bugs per month).

The following charts show the active bug list and the rate of bugs being reported and resolved (all bugs and fixable[4] bugs).



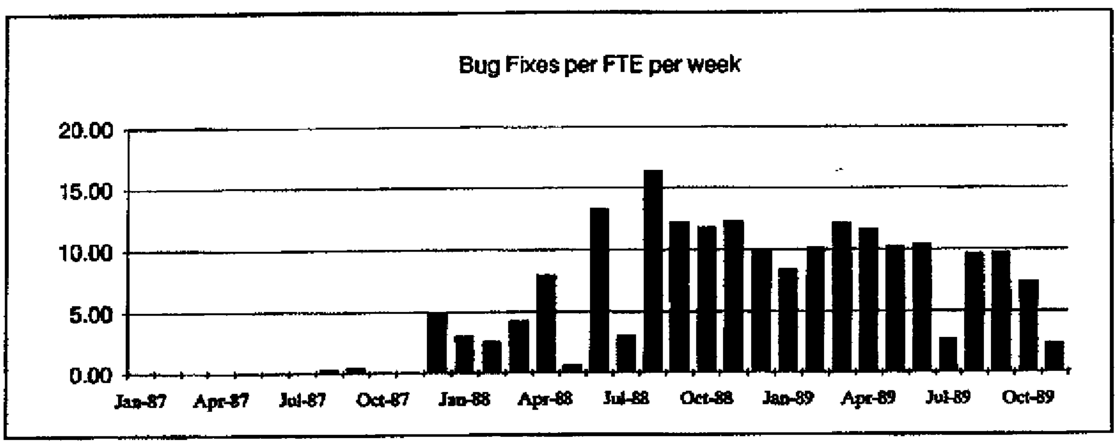


[4] A "fixable" bug is a bug which is eventually resolved FIXED or POSTPONED.



The interesting thing shown by these charts is that at no time did testing find significantly more bugs then development was fixing. Yet the small difference in the find rate and the fix rate caused the bug list to skyrocket, especially during the period from April 1988 to September 1988 (this was the period of the final code merge and completion of features). During the period before April 1988, relatively little was happening on the bug list, development was busy working on features (and introducing bugs) and testing had not yet geared up. During September 1988 a cross-over occurred and from there on, for the most part, development kept up with or exceeded the find rate. The turnover of bugs during this period was very high (about 600 bugs per month found and fixed). In June and July things tapered off as development turned it's attention to code reviews. Then in August, with the announcement of the Cancun incentive, things took off again. Finally both the find and the fix rates bottomed out in October and November as everyone decided it was time to ship.

The following graph shows the average number of bugs fixed[5] per FTE per week by month. These numbers are somewhat lower than the same figures for Mac Word 4.0, which ranged as high as 25 and seemed to average between ten and fifteen. I don't have any explanation for why Opus is so much lower.



The following table shows the distribution of bugs by area during the life of the project. This data cannot be considered too reliable because of the difficulty in assigning a bug to an area. This is difficult because the areas are assigned by the tester when the bug is opened and the area in which the bug seems to manifest itself may not be related to the underlying problem. Further more, the nature of areas makes it very difficult to pigeon hole bugs which are

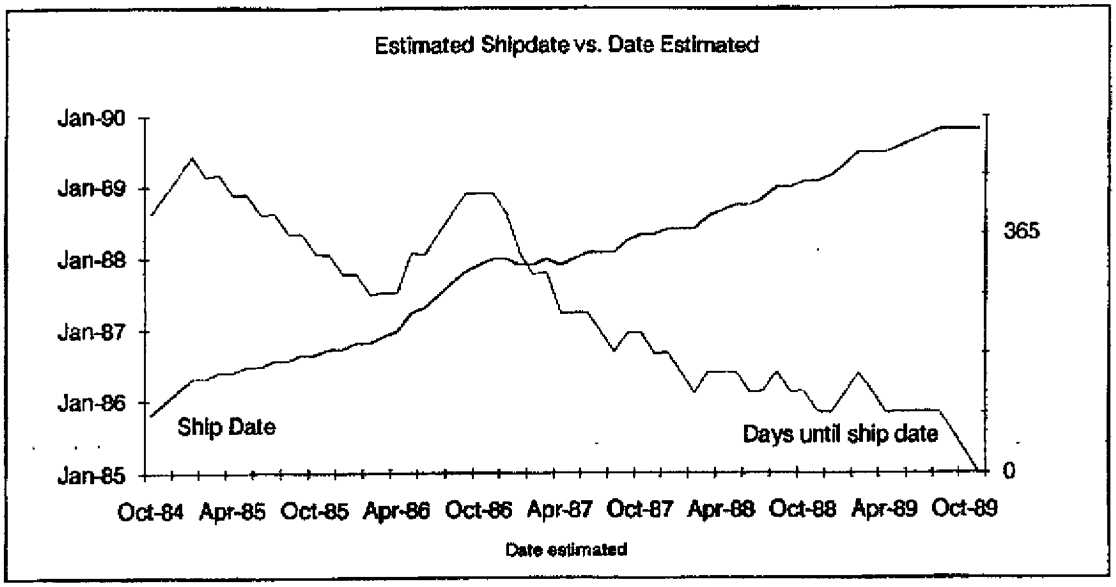
[5] Includes only bugs resolved FIXED.

caused by interactions between multiple features (such as tables and fields). A good percentage of our bugs, especially later in the project, are caused by such interactions.

Area	1	2	3	4	Total	% of Total
ANNOTATION	36	16	26	8	86	0.7
BOOKMARK	14	15	17	2	48	0.4
CONFIG	34	21	29	21	105	0.9
CONVERSION	145	589	174	22	930	7.5
DDE	53	25	27	7	112	0.9
DEBUG	27	9	5	5	46	0.4
EDITING	424	267	311	68	1070	8.7
FIELDS	99	119	123	37	378	3.1
FILE	374	226	208	35	843	6.8
FOOTNOTES	51	29	45	14	139	1.1
FORMATTING	150	270	197	39	656	5.3
GLOSSARIES	33	22	22	1	78	0.6
HEADER/FTR	52	48	33	7	140	1.1
HELP	87	89	63	20	259	2.1
INDEX/TOC	34	31	20	4	89	0.7
INIT-BOOT	51	19	24	6	100	0.8
INTERFACE	129	193	287	86	695	5.6
MACROS	584	778	467	117	1946	15.8
OUTLINING	15	13	34	14	76	0.6
PICTURES	36	56	48	13	153	1.2
PRINT	308	578	403	98	1387	11.3
SEARCH	88	77	62	11	238	1.9
SETUP	34	40	37	22	133	1.1
STYLES	79	108	82	12	281	2.3
TABLES	312	206	161	36	715	5.8
UTILITIES	212	274	245	37	768	6.2
VIEW	192	247	216	39	694	5.6
WINDOWING	43	54	51	14	162	1.3
TOTAL	**3696**	**4419**	**3417**	**795**	**12327**	

Scheduling Analysis

Opus was arguably one of the worst scheduled projects in Microsoft's history. The following chart shows the estimated ship date as a function of the date estimated. Notice that only during two periods out of the five years of the development cycle did we admit that we were more than a year from shipment. During the entire period from December 1987 until September 1989 we estimated that we were between three and six months of shipping.



During the early phase of the project (until mid 1986) there was no formal schedule, instead just a list of tasks that had to be completed[6]. The "Excel Model" scheduling was started about August of 1986. Many of the Opus status reports between mid 86 and early 88 are simply diffs of these schedules with justification for the changes. Several of these schedules are attached as Appendix III (8/25/86, 3/16/87 and 3/21/88). After April 1988, development switched to the "Block Model" schedule. One of these is also included in the appendix.

The methods of scheduling used were fatally flawed. A schedule should be considered a tool used to predict a ship date, it should not be considered a contract by development. Because there was so much pressure to meet the schedule, development got into a mode which Chris Mason refers to as "infinite defects." Developers get credit every time they can check a feature off, so they are more inclined to mark off their current feature and go on even tough it really is not done. There was a prevailing attitude of "the testers will find it" when thinking about potential bugs in code being developed. In many cases they did find it, and that is what caused our stabilization phase to grow from the expected three months (which is a pretty random number anyway) to thirteen months. Because every task was cut to the bare minimum, performance work that should have been done was neglected until the very end of the project, reducing what we could do in a reasonable amount of time.

The situation becomes worse since no one wants to see the schedule that would be accurate. Every estimate made by a developer was challenged, first by their manager then by his manager then by Program Management. This caused the initial estimates to always be far short of what would be realistic.

An interesting case in point was the great schedule review held by Jeff Harbers in August 1987. The purpose of the review was to generate a schedule which we could believe in. To do this we spent several weeks investigating all facets of the project looking for additional tasks that would have to be done. In the end we all sat down and explained (justified) our estimates to Jeff. The net effect was a negligible change in the schedule. The long term effect was a team that got burned out because they were busting their butts to meet a schedule that was too ambitious anyway and introducing a whole bunch of bugs in the process which made the stabilization phase longer which then caused everyone to be even more burned out!

The estimates used for our schedules were further compromised because each task was considered independently and consideration was not given for the ways in which features may interact. The most striking example of this is the interaction of Tables and Fields, discussed further in the section on Technical Issues (page 12). Tables were developed by the Mac Word team and were supposed to be nearly free for Opus. That proved to be completely wrong.

[6] The ship dates during this period are based on various sources such as notes from staff meetings, after late 1986 period they are based on ADL reports.

Our schedules also did not realistically allow for the inevitable changes in the specification, both small changes made as a feature is developed and major changes such as the addition of a new feature. These changes are inevitable and become all the more so as the project drags on.

Summary

The biggest question everyone will ask about Opus is why did it take so long? In the section above why we did so poorly at estimating how long development would take is discussed, but obviously this project took a lot longer than it should have. The following points summarize the main reasons as we see them.

Lack of an early, clear direction and specification. Early on the product was to be the end-all windows office. Later it was toned down to a word processor. Changes in direction like this caused us to waste a lot of effort in the wrong directions. The ideas for Cashmere that Richard had never got written down. It was not until mid 1987 that there was anything approaching a spec. Even then many areas of the product were wide open. The macro language was not well speced until mid 1988. I'm not suggesting that a project's spec be frozen early on, since that would severely limit our flexibility to respond to new information and market changes, but from the time development work begins the major features should be down.

Inexperienced team, lack of leadership. Very few members of the early development team had much experience. With a project of this magnitude and apparent importance, one would expect it to be better staffed. As discussed in the section on the development team above, the constant changes and other problems with the leadership on the Opus project cost us a lot in efficiency and morale.

Infinite defects. The principles of infinite defects were instilled in the project from the beginning. We started out by building a prototype and on top of that prototype we tried to build a product. This started us out on a very unstable foundation. If you are going to build a prototype (which is written quickly as throw away code) then throw it away before you start working on your real product. We then proceeded to add features as quickly as we could (because of our scheduling methods) which contributed more bugs than it did stability.

Redesigned, reimplemented, re-ported code, over and over. There are very few areas of Opus that were implemented only once. Almost all features were written then rewritten or re-ported from Mac Word. The continual Mac Word code merges (there were at least five full scale ones[7]) caused us more delays than any other factor. When the merges were complete and we were actually sharing code (through the WORDTECH SLM project) the pain was more spread out, but was still there. The Opus project would have been much better off if it had not done those merges (beyond the first one) and if it had never tried to share code. Another reason for the continual redesign work were the constantly changing platforms (especially Windows 1, 2 then 3). This is in part a result of our being so late but it did have it's own impact on our schedule. Having to rewrite features (such as the sort tables) to satisfy International also cost us—they should have been written right the first time.

SDM. The Standard Dialog Manager is another example of a reimplementation, but it was a problem even beyond that. We had a perfectly good dialog manager in Opus which, we believed, could have fulfilled all our needs. But in the summer of 1987 Jeff Harbers dictated that we take a new dialog manager to be provided by the tools group. The installation, bug fixing and performance work required on SDM was probably the second biggest cause of delays for this project. Even today we are not convinced that SDM meets our needs or that it is possible for an shared library on the scale of SDM to ever be successful.

Too much schedule pressure. The idea that a schedule is God leads to infinite defects, as explained above. Also the principle that a schedule must be ambitious so that the development team will work hard is severely misguided. By working the development team so hard for so long, we burned out the team and lost more in the long run. The total losses from this mismanagement are not even known yet since this will affect the productivity of the team members for years to come, as well as affecting who they choose to work for in the future.

Dependencies on other teams. When we are dependent on another team for some component, any changes in their schedule or the quality of their product similarly affects us. Opus was dependent on too many teams for too many components. The tools group supplied us with SDM and the interpreter. In both cases we could have done much better

[7] November 1985, January 1987, October 1987, April 1988, June 1988.

developing them ourselves. We were dependent on Mac Word for tables, APOs, pageview and other technology. When they slipped, so did we.

Ancient tools. Discussed below, but our tools are out dated and not up to the task of developing an application like Opus.

III. Tools

The tools we have today are way out of date with the platforms we are working on and the products we hope to build. Many times during the Opus project we out grew our tools and we had to work around them or try to get them upgraded. Ilink was mostly inoperable for about a year. We exceeded the defined symbol space and had to get many tools patched or had to strip symbols out of our map files. Special versions of the debugger had to be developed to allow us to even run, since there was not enough room in memory to fit our application, the debugger and our symbols. On a pretty regular basis one or more machines would not be able to compile one or more modules because of insufficient memory, we would have to try to increase the available memory or strip down some header files. Moving to OS/2 for builds will help that situation.

After much debate, all of our developers finally got second machines. Everyone who has them feels that having two machines helps their productivity. It is unfortunate it took so long and so much begging to get them.

Our debugger and the problems of mixing PCODE and native code are a big handicap. Most developers debug using a version of Opus which does not have CS Native. That combined with the ability to dynamically turn off the hand native code (replacing it with PCODE) made debugging much easier since you could stay in the PCODE debugger almost all the time. Several people have complained about the failure of the PCODE debugger to show proper stack traces when there is mixed PCODE and native on the stack. Future tools should make using mixed PCODE and native easier.

We need a tool that will generate directly useable native structure declarations from C header files. The CS compiler has an option that tries to do this, but what it generates for bit fields is not useable. We would have avoided several hard to track down bugs if our .INC files had been generated automatically with such a tool.

The compiler should be more stringent (or have the option to be) about implicit casts and other type problems. A utility like LINT or a compiler option of that sort would have saved us some pain, especially during the many Mac Word ports.

There have also been many requests for a true source level debugger or a debugger with the capabilities and/or interface of Codeview.

IV. Technical Issues

With a project of this size, there are going to be things done well and things done poorly. The general consensus seems to be that more was done poorly than well on Opus.

Successes

Selectable Native, Pcode, Verify versions. One of the biggest time savers were the *Use C Versions* dialogs which allowed the user, at runtime, to select whether to use the C (PCODE) version of a routine, the hand-native version of the routine or to run both and have the results compared. This made it almost trivial for any tester or developer to narrow down bugs as to whether they exist in just the hand-native code or if they also exist in the original C version. (Most routines which were hand coded in Opus were maintained in their original C version also; both versions were linked into the debug EXE).

Forcing allocation failures. This idea was stolen from Excel and worked out extremely well. The user could choose to have *n* allocation processed normally then *m* subsequent allocations forced to fail. Windows and memory allocations were separated out (not clear that they needed to be) and controlled independently. A set of dumps to the user's COM port would tell them how many allocations of each type had actually been processed. To make debugging bugs reported using AllocFail easier, a DebugBreak() could be optionally forced (based on a user's debug preference) every time an allocation was forced to fail. By using AllocFail the testing team has gotten Opus' out-of-memory recovery code into pretty shape (better than Mac Word).

Memory/swap area usage. Later I will say that Opus uses too much memory, but here I want to say that the methods that Opus uses to allocate memory are very good. We take the best advantage of EMM that we possibly can, but we are a "good app." in that we leave some memory behind for other applications. We play a lot of games with Windows' swap fence, but this has succeeded in making our performance reasonable in a very unreasonable environment. We make intelligent choices about how much memory to allocate for swapping, for the Opus file cache, for other structures and how much to leave free.

Failures

Effective loss of BryanL. Having Bryan sick or not in the office most of the time through the last two years of the project really hurt us. Bryan understands the code we are working on and the reasons for the designs better than anyone else. Nothing could have been done about this, but it is important to acknowledge how this affected the quality of this product.

Infinite defects. This has been discussed elsewhere. It is difficult to stress all the ways our development and scheduling methods cost us because of sloppy and inefficient workmanship. In the future every line of code should under go a code review at least once and every new major data structure should under go a design review.

Code sharing. Merging code with Mac Word and later sharing some code with Mac Word was a clear disaster for Opus. Only about 20% of our code was shared (slightly higher for Mac Word since they were a smaller project) and even that code was full of #ifdefs. The code that was shared was not really the "core" of either product, merely a collection of modules that at one point had seemed shareable. The assumptions and feature sets in the two products were different enough that any change they made was likely to break us, and any change we made was likely to break them. At least once a week, our builds would be completely hosed (or theirs would) because some change they (or we) made would not even compile or link in the other project. Lack of communication between the teams that are sharing was one of the major problems. A number of bugs that we tracked down in Opus while we were sharing were found to have already been fixed in Mac Word, sometimes the fix was in shared code but had been placed under #ifdef MAC. If the code that was shared had a well defined interface (like a library) then the process might have worked better. *It is strongly recommend that we not try to share ill defined project subsets in the future.*

Unnecessary deviations from Mac Word. Made worse because we were trying to share code, the minor differences between Opus and Mac Word (headers implemented differently, CRLF pairs, rulers working differently, etc.) caused a lot of pain. Code that worked fine for them would not work in Opus. Further these differences are going to cause problems in the future since we will have to resolve them in the user interface for Pyramid.

Interactions of features. The biggest source of bugs was not any one feature of Opus but the interactions of two or more features. Tables and fields, discussed below, is a prime example. Not enough thought went into the designs of these features to assure that they would work well with each other. Design reviews in the future will attempt to address this.

Over specialization of developers. The developers on this project were too compartmentalized. We each had a set of features we really knew (generally because we wrote it or ported it) or that we at least knew better than anyone else. This might have been an unavoidable outgrowth of the size of this team and the duration of the project, but it certainly contributed to the problems with feature interactions and the duration of our stabilization phase.

Memory consumption. Opus is a hog. Low memory messages are going to be one of the things users run into the most and they are not going to understand[8]. We have too much that needs to grow that we keep in the near heap (like list box entries) and EMM has us too constrained by it's 16K limit. Getting away from Real mode will help this situation some, but work needs to be done in the future to understand where and why we use memory and to determine if there are ways that usage can be reduced.

[8] For more information on how Opus does use memory, you may want to refer to the Opus Memory Management document of 19 September 1989.

Speed. Opus, despite all of our efforts, is still much slower than we would like. Our code reviews showed that we can get minor speed improvements out of just about any section of the code, we just need to review more of it to realize those improvements. We wrote a lot of hand native code, which helps our speed, but algorithmic improvements are much better leveraged.

Tables, fields, tables & fields. Tables work by overloading paragraph properties. A bit indicates whether a paragraph is within a table. Another bit indicates the trailer paragraph (where the row properties are held). End of cell is determined by a special character as end of paragraph.

Problems: Cell markers and trailer properties must agree or you die. This changes some very basic assumptions at low levels in Word (you can't just delete anything). It's slow to determine the boundaries of a table and its cells: you have to find paragraph bounds forward and backward and you have to fetch the end-of-paragraph character looking for the cell marker. You can overflow the row width which is stored as an integer in the trailer. All these properties are tacked onto the end of the paragraph properties structure, making it bigger (doesn't affect file size, but it does increase the largest possible PAP, which forced Mac Word to change the file format).

Fields usually consist of two text sections (codes and results) punctuated by three separators. A field may consist of just one text section and the outer separators. Each separator has a PLC entry.

Opus had many problems because of the stream nature of fields (they will jump and allow the visible text stream to appear to start at a latter point) and the paragraph nature of tables. If a field wanted to skip into a table or out of a table from within, the display code would choke.

Selection and cursor keys. Pageup then pagedown: you're not guaranteed to be where you started. Cursoring through a document gives unpredictable results. Some operations can only be performed on some selection types (e.g. you can't operate on discontiguous text). Arbitrary operations performed by Word in response to user commands can result in illegal selection states. Highlighting selections in the macro pane has innumerable bugs. Mac and Win disagree on the best model for ensuring that the selection is visible.

Page view display model. Currently all text in page view is drawn on the same layer, even if it overlaps. Where overlaps do occur, the drawing order can be random, resulting in garbage. We try to avoid overlaps in obvious cases by restricting the rectangles of the header/footer and near APOs, resulting in clipped text. This is overly restrictive.

CRLF. In Opus paragraph marks are represented by two characters (carriage return-line feed) except for section marks which are only one character (chSect) and possibly other format files (Unix files with only line feeds and Mac files with only carriage returns). In Mac code all paragraphs end with a single character. Our model caused many problems and complicated code on top of the complications arising from being different from Mac Word.

Macros. The macro language became functional very late in the project. This caused problems for development since the necessary hooks had to be retrofitted into every command (a very error prone process). It caused problems for testing since they could not use the macro language to automate tests until the last year or so. The interpreter we have now was originally written by the tools group, but was turned over to us to maintain because no one else wanted to use it. Both tokenization and the interpreter could benefit from an overhaul.

Outlining. Outlining and renumbering require an entry in the PLCPAD for each paragraph. For outlining at least, it's clear that this is not necessary: you only need entries for the paragraphs that are being displayed or possibly just the transitions between levels. For numbering, the answer is not so clear. This use of memory restricts the size of a document that you can go into outline view with or have autonumbers in (about 800 paragraphs).

Format & display. These need to be made reentrant. Very late in this project (one of the last two bugs fixed) we discovered that we could crash because of our failure to be reentrant. Apparently Write had the same problem (so why didn't we know about it?).

Screen vs. printer units. On the Mac a screen unit equals one printer unit. This makes layout, display and printing all nicely interchangeable. Under windows they are not the same unit and you have to determine at run time what each unit is (the printer unit may even change during a session). This difference caused many bugs and difficulties in sharing code.

V. Interaction With Other Groups

In the following sections I try to discuss both the ups and down of our interactions with these groups and ways in which it seems these groups could improve. This is not meant to be a bashing or an attempt to focus blame for Opus' problems on others, we all have some problems and have room for improvement.

Program Management

Relations with Program Management have generally been very good. Adrian was always available and willing to discuss features and implementations. His method of polling when he wanted something was effective.

The Opus specification really never was. We should have had a real spec sooner and it should have been more complete and better maintained. The addition of features and the modification of existing features is inevitable considering our market and the need to do usability testing. However, when adding things or making changes it is important that we consider whether the change is worth the delay it will cause and we need to be realistic about what that delay is going to be.

The attitude that "program managers do no work" is a bit dangerous. There were often problems arising from program management dictating tasks, especially to the PAs in development. If Program Management has a lot of non-development tasks that need to get done (benchmarks, disk images, etc.), perhaps they should hire their own people to do them. Development has hired PAs to do development related tasks.

In order to keep the entire product team better informed, it was suggested that it would be great if Program Management would keep and distribute weekly minutes from the leads meetings, instead of relying on the individual leads to pass that information on to their people.

It was also suggested that developers should spend more time using other Microsoft products (with which we need to be consistent) and with our competitors products. To keep this from being a time sink, it was suggested that more product presentations (like the one done for WordPerfect 5.0 several years ago) be done and even video taped. A possibility would be to have different people (both developers and Program Managers) become experts on different products then present those products to a group. This is something that Program Management should coordinate.

Finally, it is very important that Program Management continue to talk to the individual developers about features. It is important to remember who is going to be writing the code; they are the ones who really own this product. Through the course of the Opus project, I think Program Management did very well in this regard.

Testing

Overall the testing team did an excellent job testing Opus, sometime under very trying circumstances. The developers who came over from Mac Word felt that the environment that the Opus testers had to work in was much harsher than it was on Mac Word. There seemed to be more attention on politics and rivalry then on working together to create an awesome product.

Communication could have been better between the teams, especially earlier on in the project. Forums such as the code reviews and testing strategy meetings really helped improve communication and get people talking about areas of the product. These forums should be continued in future projects. It is felt that it would help if development supplied testing with a list of developers and their areas of specialization (especially on a project like Opus where everyone was very specialized). It would also be good if testing provided a similar list to development.

Development needs to take more responsibility for the testing of the product. A prevailing attitude by development was that somehow the testers would learn all about the features and all the necessary test cases but there was no mechanism in place to do get this information to them. To help with communication and to assure that all areas of the product are being covered, it was suggested that developers be required to supply some information every time they check something in. That information could be TRD entries, test plans or completed macro tests for the test suite that would exercise the area changed. The main point is to force the developer to think about how the feature needs to be tested and what the test cases are.

Another suggestion to improve tester-developer relations would be to team testers and developers up 1-1 or 2-2 to work on features (possibly with one or more PAs also working on the teams). This would enhance communication, team spirit and help test important features.

Testing of the peripheral parts of the product was lacking. Setup was not really tested until the last minute and then by only one tester who was not available at some crucial times. The sampler was mostly ignored by testing despite pleas to have it tested. Despite it's being in a TRD, the DEMO version did not get any attention until after we shipped (which was really too late if anything had to be changed). Testing should think more about these items and schedule time for them.

There was also some concern about the testing effort at the end of the project. It seemed like everyone (testing and development both) had decided it was time to ship the product. This didn't appear to be a conscious decision or an attempt to ship by a date, it just seemed that everyone felt it was ready (and perhaps it was).

International

Overall relations between international and development went well, though there are some things left to be desired.

Ideally an international engineer would be put on a project like Opus from the beginning. They should have a hand in the spec, which should identify exactly what is going to have to be localized. It was very unfortunate that by the time Jurgen started looking at Opus, everything had basically been done. It was also unfortunate that very few people on Opus development team had any feeling for what international would need. In the many areas that Jurgen found deficient from his point of view (both for the Z version and for localized versions), we either had to stop and redo something (as discussed under technical failures) or we had to say "NO," making the product less international-friendly. Considering the amount of sales we can expect from international sources, this is a crying shame.

Having Jurgen working in the same building with us has been a great help. This has both made us more aware that international is there, so we are more likely to do things in ways that make their life easier, and it is more convenient to just drop in with questions about how they would like things done or other issues.

The size of the international build kit for Opus (our entire source tree and tools) and the amount of time required to build a localized version (3-4 hours) is a major problem for international. This makes it impractical to have any localization done off site (i.e., Ireland) and the marginal expense of adding an additional language is far too high. Development, international and the tools group need to work together to make this more reasonable for future products.

Our dealings with other facets of international were not entirely rewarding. Sometimes those working on the sampler and on the international disk images relied too heavily on our resources (especially Laurel and Brandy) and seemed to make no attempt to solve problems for themselves. This has caused some hard feelings. International should look at the technical knowledge of their people, especially as our products become more and more complex, and should take the time to try to solve problems themselves before falling back on us.

User Education

Print Based

The biggest problem with user-ed was our schedule. They were continually trying to meet a schedule which turned out to be way to early. The user's reference was sent to the printer over a year ago, naturally the product changed enough during that year that it is now way out of date.

Having Russ working directly with the development group was great. It seems likely that he knows this product better than anyone in user-ed has ever known a new product before it shipped. Once Russ left to go to Press, the relations between development and user-ed changed a lot. Most of the interaction now became between program management and user-ed, and there is some feeling that program management could have done a better job at keeping them abreast of changes.

Development should schedule more time to conduct technical reviews of documentation. A pretty good review was done on an early draft of the user's reference by all of development, but individual developers did not have any subsequent chance to review it nor did they have the opportunity to review any of the other documentation.

The technical reference was a big disappointment. It took many, many revisions before anything resembling an accurate document was produced, and that was after Brad Christian and Adrian practically wrote it themselves. User-ed definitely needs to have writers who are more technical.

On-Line

In general, communication between the on-line user-ed groups and Opus development went very well. There were times when user-ed seemed to lean too heavily on development. They would assume problems they were encountering were our problems without fully investigating them (and often they proved to be problems on their side) and they would often ask for changes in Opus without really thinking about their cost and benefit. Along the same line, many members of the CBT group were not good about using the prescribed communication path (funnelling everything through David Innes) and would instead go directly to Rosie. This was very disruptive of Rosie's work, especially since David could have resolved a good portion of the issues without ever involving development.

It would have helped a lot to have understood the hooks required for CBT much earlier in Opus' development and for those hooks not to have had to change so much. Changes of this type were more complicated since they would often require changes by four different groups: Opus development, CBT authoring, DOT development and SDM. Coordinating these changes and making them work didn't go too smoothly.

A RAID database was set up to track CBT and Help problems, but they were not really used until the end of the project. Making better use of these standards would have kept problem reports from getting lost and simplified communication between the groups.

The biggest problem with the on-line products was the lack of testing support. CBT needed a lot more testing than it ever received and a lot of what it did receive was done by one of our developers. This is a big area that needs a lot of testing. The code involved might be small and well tested (which, in fact it, was not) but the authoring also needs a lot of testing. User-ed should either arrange with testing to have a lot more testing done for future products or they should provide the man-power themselves to do it.

Windows Development

Our interactions with the Windows development team were very mixed.

Direct interactions with developers (especially David Weise and Bob Gunderson) were fantastic. David was very responsive to our pleas for help when we were running into bugs that seemed to be Windows related that we could not track down. He spent some late nights and long hours tracking back in forth between our code and his. The result of this attention was fixed bugs in Windows and in Opus, and not a lot of finger pointing and saying "it's not my bug."

Our experience trying to report bugs against Windows 3 has been quite the opposite. Our developers try to determine if a bug is in our code or in Windows code before they ever consider assigning a bug to Windows (though we are wrong sometimes). The Windows group was not very cooperative at all about those bugs that we sent them. A very high percentage came back WONT FIX saying that it "obviously" was not their problem, but with no explanation about what was going on or any advice about what we could do. Another large portion of the bugs came back NOT REPRO, but in no case did they contact anyone who had reported or investigated the bug to see how to reproduce it. Our development team has a rule: you can never resolve a bug NOT REPRO without getting the consent of the person who reported the bug. It is, after all, often the case that some condition needs to be satisfied to reproduce the bug that may not be listed in the actual report. After seeing how they treated our bugs, I am worried about the quality of the product they will produce.

We had a lot of problems with printer drivers with Opus. We designed out printing around the HPPCL driver and the features it supports. We were surprised to discover, late in the project, that many drivers do not support many things that the HPPCL supports or, worse, supports them in different ways. When we reported bugs against these inconsistencies we were usually told that they were by design or that they were not interested in fixing them. I think it is important that a platform like Windows try very hard to make all of the drivers present a uniform appearance to the applications (isn't that supposed to be one of the great advantages of Windows?).

Development Support

Overall development support has tried to be very responsive to our needs, though it has seemed like we often had to escalate the problems before we could get that response. This is probably attributable to the many clients the different groups have to serve.

One general comment about DS: the quality of the product often leaves much to be desired. Frequently what we would get from them would be very buggy and it would take several passes before we would get anything usable. DS should look hard at the principles of zero-defects and try to determine how they can be applied to their products.

Scott Randell was always a great help. He is an excellent resource for simple information and to assist in debugging hard problems (like the AT&T bugs that he tracked down for us).

The SDM team was pretty good about responding to our needs, though it did take quite a while to eek out the performance we needed. We were also very cautious about accepting any releases since, for most of the time we used SDM, every new release would break several things. It was not until the last several months that we started getting reliable releases. It also seems like it was a poor idea that SDM, which is supposed to be shared by all of our applications, was originally written by new hires.

DOT development seemed way under staffed but despite that they were very responsive.

Help development, by contrast, was not at all responsive. We found that we had to do a lot of their debugging for them and even when we pointed out their bugs they didn't fix them. We finally had to go through Jeff Raikes to get them to fix a number of problems that were holding us up.

Product Marketing

The development team did not deal much with Marketing. Maybe that is itself a problem. There is an impression that Marketing does not really understand Opus very well (it's capabilities and how to use them) and may misrepresent it. Development as a whole also didn't get to hear too much about the great progress that was being made on corporate accounts, advertising, etc.

Product Support

Having Michel Girard working with us went very well. Michel learned Opus quickly and now is quite an expert. He also shared his concerns with us, helping us make a better product.

The PSS Bug Party that was held was a great success. The developers went away from that feeling good about Product Support and about Opus. It also helped forge relations between the development team and the people who will actually be supporting the product (what a novel idea). We hope that there will be more opportunities in the future for development to interact directly with Product Support.

There has been some concern about how effective Product Support has been in getting feedback to us. There seemed to be very few beta350 bugs that actually made it onto the Opus bugs list. There have also been reports that our customers might not be too happy with some of the support that they have been receiving. The specific example of our lack of presence on the forums on Compuserve was mentioned.

Appendix I
A Brief History of the Opus/Cashmere Project

Month	Current Events	Facts
AUG 84	Memo written describing a demonstration version of "WinWord" to be developed to demo at COMDEX in November 84. Pat Tharp and Chi-Chuen Chan start work on Write. Dan Lipkie is Write project lead.	
SEP 84	Bill Gates asks Russ Borland to join the Cashmere team. Cashmere is supposed to ship within a year. Cashmere is organized as a special business unit under Richard Brodie. Jonathan Prusky is working on initial concepts.	shipdate: sep 85 SDEs: 0 FTEs: 0 (Write: 2)
OCT 84		
NOV 84	Russ moves his office to adjoin the rest of the team. Russ spends time working on documentation strategy and reviewing design concepts developed by Richard and Jonathan. Bryan Loofbourrow joins Opus team, soon moves on to Write (as "training" for Cashmere).	shipdate: sep 85 SDEs: 0 FTEs: 0 (Write: 3)
DEC 84	Many meetings held with Bill and Charles Simonyi (both of whom were in the same hallway as development) to discuss strategies and specifics (on going through next several months).	
JAN 85	Bob Matthews joins as Project Lead, heads up Write effort. Development work proceeds on Write. No development being done yet for Cashmere.	shipdate: may 86 SDEs: 0 FTEs: 0 (Write: 4)
FEB 85	Design meetings held discuss many features: ruler, ribbon, short menus, tab stops, hanging indentation, interface to mail and flat file manager (last two eventually scrapped) (ongoing).	
MAR 85		
APR 85		
MAY 85	Marc Singer starts work on special Windows controls. Bob Zawalich joins the Write team.	SDEs: 0 FTEs: 0 Interns: 1 (Write: 5)
JUN 85	Bill Aloof joins the Cashmere team to work on email.	SDEs: 0 FTEs: 0 Interns: 1 (email: 1) (Write: 5)
JUL 85	Yoshito Yamane joins the Cashmere team Prototyping work begins based on a forked set of Write sources.	SDEs: 1 FTEs: 0 Interns: 1 (email: 1) (Write: 5)
AUG 85	Rosie Perera joins the Cashmere team. Bob Zawalich comes from Write to work on Cashmere.	SDEs: 3 FTEs: 2 Interns: 1 (email: 1) (Write: 5)

SEP 85	Prototype A demoed to Bill (includes ribbon, print preview and split windows). David Bourne and Brad Christian join the Cashmere team. Bob Zawalich makes a checkin that reduced cashmere.exe from 243K to 222K! Upgraded make process to use CMerge version 3.00.16. Have code under #ifdef MOCKUP (for prototype), #ifdef SAND (for Mac only - Sand was the old codename for the Macintosh), #ifdef MEMO (Memo was the code name for Windows Write).	shipdate: sep 86 SDEs: 5 FTEs: 3 Interns: 1 (email: 1) (Write: 5)
OCT 85	Work proceeds toward Prototype B. Compare Versions written — basically never changed.	SDEs: 5 FTEs: 5 Interns: 1 (email: 1) (Write: 5)
NOV 85	Windows 1.0 ships! "Real" development work begins. Bryan rejoins Cashmere team. Chi-Chuen and Pat join the Cashmere project after Write ships to work on email. Bob Matthews leaves to work on Windows; Richard Brodie assumes management of Cashmere. SLM 1.0 is used for the first time. Bryan starts the first MacWord merge.	SDEs: 7 FTEs: 7 Interns: 1 (email: 3)
DEC 85	Marc returns to school. Bryan ports MacWord 1.05 internals to Cashmere. Converted to the CS compiler.	SDEs: 7 FTEs: 7 (email: 3)
JAN 86	Bryan checks in conversion from Write data structures to MacWord data structures.	
FEB 86	Project not fully recovered from first merge until late February.	
MAR 86	Bryan reports that it takes 2 hours and 38 minutes to do a mass make (but remember that was on an AT!!). Moved from having a one-directory development environment to having subdirectories. CSHARE (which later became wordtech) was introduced. Added passwords to our mickey shares. \\mickey\slm's password was mori (Yoshi's mother's maiden name) and for \\mickey\private it was failte (Bob's contribution, it means "welcome" in Gaelic).	
APR 86	Pat Tharp moves to Systems. Bob works on customizing the "standard" dialog manager. Kanji Write is proposed — a two week task. PC Word 3 ships. Greg Slyngstad joins the Cashmere effort.	shipdate: jan 87 SDEs: 7 FTEs: 7 (email: 2)
MAY 86	Bill Aloof leaves. Jonathan Prusky asks development to start thinking of a real name for Cashmere. He said that it may end up being called Windows Word unless we think of something more significant. Bryan eliminates the MOCKUP flag once and for all. Ilink is used for the first time; Bryan reports "breath taking performance increases." CMAKE.EXE is written to perform builds. Brad Christian works on Formulas (one thing that was never *completely* rewritten).	shipdate: apr 87 SDEs: 7 FTEs: 7 (email: 1)
JUN 86	Peter Jackson joins Cashmere. Code review held on (first) implementation of tables. Richard starts work on RFT (later RTF).	SDEs: 8 FTEs: 7 (email: 1)

JUL 86	Richard Brodie resigns, Ford Martin joins the team and becomes Project Lead, Bryan becomes Technical Lead. Code name changed to Opus. Opus is reorganized as a normal application instead of its own business unit. No spec exists yet, only an "overview" which describes general features & interface. Text files are used to implement a bug list. Bookmarks are implemented.	SDEs: 9 FTEs: 8
AUG 86	Email project is dissolved, Chi-Chuen joins Opus effort. Brad Christian is writing macros and running them with his version of the interpreter. "That's ok, it can be a macro" is heard for the first time. All references to Cashmere are changed to Opus except project name.	
SEP 86	Version 0100 (A) released. Greg Cox joins Opus to work on hand native coding. Bryan starts work on the "unified field theory." CSCONST feature is implemented in the CSL compiler.	SDEs: 10 FTEs: 8
OCT 86	Opus shown with "come back next year" sign at Company Meeting. Berke, our first '386, is provided; people are asked if it would be useful to have more.	SDEs: 10 FTEs: 9
NOV 86	Recently functional features: styles, glossaries, ruler, mac-in-the-box Considering cutting features in order to ship in nov 87 Yoshi finishes Kanji Write after many more than two weeks.	shipdate: jan 88 SDEs: 10 FTEs: 9
DEC 86	Version 0200 (B) released. Switched over to Windows 1.5 (overlapping windows). Filenames and line numbers appear in asserts for the first time.	
JAN 87	Version 0300 (B1) released. Shipdate pulled in by eliminating buffer tasks. Testing effort begins. Decision made to allow editing in Preview using Charles' Mac Word technology. Core code for fields functional. MacWord 3.00 ships! Bryan sets aside his work on tables and starts another MacWord merge.	shipdate: dec 87 SDEs: 10 FTEs: 9
FEB 87	Phil Fawcett reports the first bug in the Opus database.	
MAR 87	FormatLine hand-native coded (first native code for performance) in 4.5 *long* days. OPEL spec completed. External conversion hooks defined. Opus dialogs changed to be consistent with Excel. Drop-down listboxes implemented. Background pagination working and "looks impressive." Macro record/playback "nearly working." Yoshi coins "crushes." Search & Replace functional. Opus prints a one line document.	shipdate: jan 88 SDEs: 10 FTEs: 9

APR 87	Version 0400 (C) released. All tables tasks moved to MacWord tasklist. Headers/Footers working. Looking for features to cut to give high confidence in Jan 88 ship date. Date slipped because more time than estimated was spent fixing bugs for Release C. Non-debug make implemented. Glossaries can now be saved. Annotations feature speced. Spec meeting with Bill, need to consider Draw functionality. New Windows with dramatic performance improvements unveiled. RTF functional, being extended for Opus specific features. Contest to name Opus proposed. Paul McKee provides the Opus icon. Double underlining hooked up for the first time.	shipdate: dec 87 SDEs: 10 FTEs: 9
MAY 87	OPEL edit/debug environment almost complete. Changes made to take advantage of ExtTextOut. Search/Replace formatting completed. Version 0500 (D) released. Bug fixing for testing release took longer than anticipated.	shipdate: jan 88 SDEs: 10 FTEs: 9 114 bugs total
JUN 87	Bruce Wine starts on PRDDRV. 300 entries so far for Opus naming contest. Revised spec distributed. Reviewing spec and schedule for remaining open issues in preparation for schedule review. Merging styles and fonts for cut/paste implemented. Field expression (=) implementation complete.	shipdate: feb 88 SDEs: 10 FTEs: 9 Interns: 1
JUL 87	"New SDM" agreed to. Fields format switches implemented. New OPEL spec. Pictures supported in clipboard and file format. Footnote insertion and editing implemented. MacWord 3.01 ships! Stephen Arrants starts on the Technical Reference. Eric Geyser joins Opus team.	shipdate: none SDEs: 11 FTEs: 9 Interns: 1
AUG 87	Version 0600 (E) released. Schedule Review conducted with Jeff Harbers; resulted in negligible change in end date. Adrian Wyard joins Program Management on Opus. Herb Klopfenstein joins Opus team. Eric Geyser leaves Opus to work with ADC. Keyboard Accelerators shown on menus. Opus naming choices narrowed down to "Maxxam" vs. variant of Word. "final spec" distributed.	shipdate: feb 88 SDEs: 11 FTEs: 9 PAs: 1
SEP 87	Draw functionality dropped. Annotations implemented. DDE server/client functional. Iconbars put in split panes. Thesaurus work started. Indexing and outlining features implemented/ported. Usability testing done.	shipdate: apr 88 SDEs: 10 FTEs: 9 PAs: 1

OCT 87	Versions 0700 (F) and 0800 (F1) released. PC Word 4 ships! Spec Addendum distributed Jeff Ruttenbeck joins Opus team. Brad Verheiden is "loaned" from Word Technology. Rick Saada assists in porting Document Management from PC Word. New EL interpreter installed. Bryan begins MacWord Code merge. Ford works on Write bugs. Formulas are converted into fields. InsertFile and InsertField are implemented. First draft of User's Reference reviewed. Opus not even mentioned at Company Meeting.	shipdate: may 88 SDEs: 11 FTEs: 11 PAs: 2
NOV 87	Version 0900 (I) released. WinExcel ships! Windows 2.0 ships! Dan Porter joins Opus team. Schedule padded to reflect past trends (with no net effect). Discussions begin with MasterSoft regarding conversions. PC Word 4 and Pageview are demoed at COMDEX. TOC generation and repeat implemented. New SDM installation begins. David Bourne coins "poc voon" (made popular by Bob). MacWord code merge continues.	shipdate: may 88 SDEs: 11 FTEs: 10 PAs: 3
DEC 87	Opus Visual Freeze version released. MacWord code merge and New SDM installation continue. Slippage due to code merge being reestimated and more time added for PageView and Tables. Program Management working on Macro Language, Tables and PageView specs.	shipdate: jun 88 SDEs: 11 FTEs: 10 PAs: 3
JAN 88	Versions 1000 (J) and1100 (K) released. Herb leaves for active duty in the Air Force. Performance campaign is conducted. Attempt made to fix all known bugs in order to stabilize. Doug Timpe and Mike Hopstad join the Opus team. InfoWord gets hold of a confidential overview from one of the corporate emphasis participants, writes a front page article. Marketing goes silent to prevent repeats.	shipdate: jun 88 SDEs: 11 FTEs: 10 PAs: 2
FEB 88	Version 1200 (L) released. MacWord has APOs, Tables and PageView working "to various degrees." John Parkey joins marketing effort. Specing the details of the macro language continues. Conversion of dialogs to new SDM continues. Double clicking becomes a big issue with Bill; many hot spots added.	shipdate: jun 88 SDEs: 11 FTEs: 10 PAs: 4
MAR 88	Version 1300 (M) released. schedule slip because of MacWord slip, additional time added to final merge estimate and time spent on performance work. Sample templates and files to include with the package are specified. Spec addendum 3 released. All dialogs converted to new SDM (not yet fully functional); old SDM removed. Preliminary spec for SETUP completed. Jeff Harbers tells development, "you are the worst team in applications development."	shipdate: aug 88 SDEs: 11 FTEs: 10 PAs: 4

APR 88	Versions 1400 (N) and 1500 released. Bryan takes a medical leave of absence (CFS); Peter becomes Technical Lead. Opus presented to Air Force for Desktop III. Greg Slyngstad married. PAs lose their "t-" prefixes and become real people. Final code merge conducted; checked in state hosed for two weeks. Peter starts buying dinners.	shipdate: sep 88 SDEs: 10 FTEs: 9 PAs: 4
MAY 88	Print Preview and Thesaurus demoed to FAA. Spec addendum 4 released; includes TIFF and color and user interface changes. Anthony Cockburn joins Opus to work on performance. Final set of featues now working "to some degree." Greg Cox leaves Opus to form conversions group. George Hu starts work on SETUP. Macro Language spec revised.	shipdate: oct 88 SDEs: 10 FTEs: 8 PAs: 4
JUN 88	Version 1600 released. Another Visual Freeze version released. MacWord merges our changes back; "true" sharing of wordtech begins. Ford goes on a leave of absence; Bryan returns from medical leave and becomes Project Lead. Tony Krueger and Alan Ezekiel join the Opus team for the summer. Almost all features in place; development attention turns to bug list. WinWord demoed to OEMs; Jeff Raikes describes it as "Word processing technology." Publishing character support gets speced. Trevor Zawalich born. Jurgen Leschner starts looking at Opus for localization.	shipdate: oct 88 SDEs: 10 FTEs: 9 PAs: 4 Interns: 2
JUL 88	Version 1700 released. Slip occurs due to release prep time, new tasks, instability after the merge and the time taken on the macro language. Jeff Sanderson takes WinWord on a Press Tour. Final review of User's Reference completed. Macro spec updated. Yoshi leaves to return to school. Bryan implements "rational scroll bars" so that we can be consistent with Excel. Out-Of-Memory handling is reformed. Majority SPRM is implemented. TIFF support added. Mergeformat changed to merge table and picture formatting. caCharBlock concept implemented.	shipdate: nov 88 SDEs: 9 FTEs: 8 PAs: 4 Interns: 2
AUG 88	Version 1800 released. Feature Complete! Apps Reorg takes place. Interfaces to draw app and to file converters implemented. First discussion held on how to translate fields through RTF for INTL, no good ideas. Word SIG Summit held, everyone enjoys a day on the lake. Program Review held with Bill.	shipdate: jan 89 SDEs: 9 FTEs: 8 PAs: 4 Interns: 2

SEP 88	Version 1900 released. Anthony leaves Opus to work on Windows Works. Laurel Brown joins the Opus team. Macro language code reviewed. TIFF grey scale support implemented (was not included in Feature Complete). Scaling and cropping of TIFF images added. REVIEW comments assigned to individuals. Changes made to move more structures from NEAR to FAR/EMM memory. User's Reference goes to the printer. "Final SDM" incorporated (new list-box and dropdown look). Tony and Alan return to school. Bifurcated Replace/ReplaceCps implemented. Macro test suite set up. Added AllocFail test abilities.	shipdate: jan 89 SDEs: 8 FTEs: 8 PAs: 5
OCT 88	Versions 2000, 2100 and 2200 released. Code Complete! Opus demoed at Company meeting (election demo). Krishna Mukherjee joins Opus team. International sensitive sort and string compares implemented. Failure to do revision marking in tables discovered.	shipdate: feb 89 SDEs: 9 FTEs: 8 PAs: 5
NOV 88	Versions 2300 and 2400 (Beta I) released. Opus demoed in a back room at COMDEX. Serious performance work starts.	shipdate: feb 89 SDEs: 9 FTEs: 9 PAs: 5
DEC 88	Version 2500 released. Slip due to high bug find rate relative to bug fix rate. Hooks for graphic filters implemented. Development exceeds net bug fix goal (50/week) by factor of two for two weeks. Attention turns to SDM speed.	shipdate: mar 89 SDEs: 9 FTEs: 9 PAs: 5
JAN 89	Versions 2700 and 2800 released (2600 never existed). MacWord decouples wordtech sources from Opus. Performance Review meeting held with BillG. Adrian switches his month and year resulting in an ADL date of Sep 5. OBU moves to building 5.	shipdate: may 89 SDEs: 9 FTEs: 9 PAs: 5
FEB 89	Version 2900 released. Again, slip due to low net fix rate; new date called "atypically unaggressive." Testers loaned to MacWord. Peter assumes Project Lead responsibilities. Latest SDM implements more windows controls itself; performance gains disappointing.	shipdate: jul 89 SDEs: 9 FTEs: 8 PAs: 5
MAR 89	Versions 3000, 3100 and 3200 released. Dan Porter leaves to work for Summation. Dennis Andersen joins Opus team; will be working with Mike on printer driver problems. First complete benchmark document produced. Krishna gets 4x performance improvement in Macro Detokenization. Stephen Maguire assumes responsibility for SDM performance. Charles investigates "RCODE" at Bill's request. Automatic installation of document converters implemented. Performance work declared complete.	shipdate: jul 89 SDEs: 10 FTEs: 8 PAs: 4
APR 89	Version 3300 released. MacWord 4.0 ships! PC Word 5.0 ships! Bug Campaign I reduces active bug count below 150 with 600 bugs resolved in 3 weeks. David Luebbert, DavidMcKinnis and Tom Saxton start working on Opus part time.	shipdate: jul 89 SDEs: 13 FTEs: 9 PAs: 4

MAY 89	Versions 3400, 3500 and 3600 released. Most of MacWord team join the Opus effort.. Dennis removed from our roster. Jeff Rutenbeck leaves to take a job in Colorado. Chris Mason, Sylvia Hayashi and Doug Scott come over from MacWord. DavidLu, DavidMck and TomSax go to full time. Brandy Thorp joins the Opus team. Simon and Chip start as summer interns. ADL report shows -0/+13 week range on the ship date. Decision made to hand-code some of the table display routines.	shipdate: aug 89 SDEs: 13 FTEs: 10 PAs: 6 interns: 2
JUN 89	Version 3700 released. All automated macro tests pass for the first time. Amid continuing slips, development shifts focus from quantity to quality. Laura and Danny start as interns. Kodak and American Airlines distribute 3300 to their users. SDM 2.21 installed, realizes a 10-25% improvement. All native coding to be done is completed. REVIEW count down to 28.	shipdate: sep 89 SDEs: 13 FTEs: 12 PAs: 6 interns: 4
JUL 89	Versions 3800, 3900 and 4000 released. Jack, Clay and John join as interns. Concept of code ownership implemented. WinWord 1.1 plans discussed. Mike Hopstad leaves. Tony Krueger joins the Opus team, again. Attempts made to install the RCODE compiler.	shipdate: oct 89 SDEs: 14 FTEs: 12 PAs: 5 interns: 7
AUG 89	Versions 4100 and 4200 released. Cancun incentive announced. Code reviews wind down, focus shifts back to the bug list. Bug Campaign II reduces the active bug count below 100. RCODE canned. Macros run under Windows 3.0 for the first time. Display speed slows down for two releases then picks back up; never explained. Testing concentrates on automation. Laurel Brown marries and becomes Laurel Lammers.	shipdate: nov 89 SDEs: 14 FTEs: 13 PAs: 5
SEP 89	Versions 4300, 4400, 4500, 4600, 4700, 4800 and 4900 (ZBR) released. Novell net problems brought up. Development conducts bug find campaign; finds 168 bugs, half of those reported.	shipdate: nov 89 SDEs: 14 FTEs: 13 PAs: 5
OCT 89	Versions 5000, 5100, 5200 and 5300 released. Final swaptuning done. Testing does a regression on entire bug list. WinWord announced.	shipdate: nov 89 SDEs: 14 FTEs: 13 PAs: 5
NOV 89	Versions 5400 (RC1), 5500, 5600, 5700, 5800 and 5900 released. WinWord publicly demoed at COMDEX. Disks released to manufacturing 30 November.	shipdate: nov 89 SDEs: 14 FTEs: 13 PAs: 5

Appendix II
Project Statistics

Date	Ship Date	Days to Shp dte	SDEs	PAs	Int.	FTEs	KLOC	ASM KLOC	DBG KB	FAST KB	Bugs Opnd	Fxabl Opnd	A.Bug Count	T.Bug Count	Bugs Rslvd	Rslvd Fixed	Fixed/ FTE
Sep-84	Sep-85	365	0	0	0	0											
Oct-84	Nov-85	396	0	0	0	0											
Nov-84	Jan-86	426	0	0	0	0											
Dec-84	Mar-86	455	0	0	0	0											
Jan-85	May-86	485	0	0	0	0											
Feb-85	May-86	454	0	0	0	0											
Mar-85	Jun-86	457	0	0	0	0											
Apr-85	Jun-86	426	0	0	0	0											
May-85	Jul-86	426	0	0	1	0											
Jun-85	Jul-86	395	0	0	1	0											
Jul-85	Aug-86	396	1	0	1	0											
Aug-85	Aug-86	365	3	0	1	2											
Sep-85	Sep-86	365	5	0	1	3											
Oct-85	Sep-86	335	5	0	1	5											
Nov-85	Oct-86	334	7	0	1	7											
Dec-85	Oct-86	304	7	0	0	7											
Jan-86	Nov-86	304	7	0	0	7											
Feb-86	Nov-86	273	7	0	0	7											
Mar-86	Dec-86	275	7	0	0	7											
Apr-86	Jan-87	275	7	0	0	7											
May-86	Apr-87	335	7	0	0	7											
Jun-86	May-87	334	8	0	0	7											
Jul-86	Jul-87	365	9	0	0	8											
Aug-86	Sep-87	396	9	0	0	8											
Sep-86	Nov-87	426	10	0	0	8	56	3	241								
Oct-86	Dec-87	426	10	0	0	9											
Nov-86	Jan-88	426	10	0	0	9											
Dec-86	Jan-88	396	10	0	0	9			292								
Jan-87	Dec-87	334	10	0	0	9			339		14	14	14	14	2	0	0.00
Feb-87	Dec-87	303	10	0	0	9					4	4	18	18	0	0	0.00
Mar-87	Jan-88	306	10	0	0	9					18	18	36	36	0	0	0.00
Apr-87	Dec-87	244	10	0	0	9	56	3	437		50	42	86	86	0	0	0.00
May-87	Jan-88	245	10	0	0	9					37	34	120	123	3	2	0.05
Jun-87	Feb-88	245	10	0	1	9					99	81	218	222	1	1	0.03
Jul-87	Feb-88	215	11	0	1	9					29	21	244	251	3	3	0.08
Aug-87	Feb-88	184	10	1	0	9			580	447	18	16	250	269	12	12	0.31
Sep-87	Apr-88	213	10	1	0	9	121	11	789	553	64	54	297	333	17	16	0.41
Oct-87	May-88	213	11	2	0	11					60	44	349	393	8	3	0.06
Nov-87	May-88	182	11	3	0	10					92	73	429	485	12	3	0.07
Dec-87	Jun-88	183	11	3	0	10					146	103	304	631	269	213	4.95
Jan-88	Jun-88	152	11	2	0	10					112	87	266	743	150	131	3.05
Feb-88	Jun-88	121	11	4	0	10	126	20	854	615	176	136	307	919	135	110	2.56
Mar-88	Aug-88	153	11	4	0	10					255	219	327	1174	235	184	4.28

Apr-88	Sep-88	153	10	4	0	9	138	20	837	577	346	285	317	1520	357	308	7.96
May-88	Oct-88	153	10	4	0	8					185	145	460	1705	42	22	0.64
Jun-88	Oct-88	122	10	4	2	9					713	521	513	2418	659	516	13.33
Jul-88	Nov-88	123	9	4	2	8					330	228	682	2748	161	103	2.99
Aug-88	Jan-89	153	9	4	2	8		28	1002	713	787	566	772	3535	697	564	16.40
Sep-88	Jan-89	122	8	5	0	8	166	27	1003	714	739	475	809	4274	702	423	12.30
Oct-88	Feb-89	123	9	5	0	8					536	380	741	4810	604	408	11.86
Nov-88	Feb-89	92	9	5	0	9	208	36	1097	775	648	436	658	5458	734	478	12.35
Dec-88	Mar-89	90	9	5	0	9					529	369	601	5987	584	388	10.03
Jan-89	May-89	120	9	5	0	9					558	416	638	6545	520	325	8.40
Feb-89	Jul-89	150	9	5	0	8	215	37	1139	799	558	408	689	7103	507	348	10.12
Mar-89	Jul-89	122	10	4	0	8					478	342	584	7581	583	420	12.21
Apr-89	Jul-89	91	13	4	0	9					678	490	583	8259	680	452	11.68
May-89	Aug-89	92	13	6	2	10	238	47	1197	817	730	592	610	8969	703	441	10.26
Jun-89	Sep-89	92	13	6	4	12					518	415	186	9507	941	540	10.47
Jul-89	Oct-89	92	14	5	7	12					404	306	330	9911	260	141	2.73
Aug-89	Nov-89	92	14	5	3	13	247	50	1228	844	724	558	272	10635	782	540	9.66
Sep-89	Nov-89	61	14	5	1	13					787	631	99	11422	964	542	9.70
Oct-89	Nov-89	31	14	5	1	13					759	600	70	12181	785	410	7.33
Nov-89	Nov-89	0	14	5	1	13	249	52	1260	853	330	268	0	12511	399	133	2.38

	SDE	PA	Int.	FTE
Man Months:	506	115	34	455
Man Years:	42.2	9.6	2.8	38
% post c.c.:	31%	57%	56%	30%

Pre c.c.:	4810	3546
% of total:	38%	38%
Post c.c.:	7701	5831
% of total:	62%	62%
Total:	12511	9377
% of bugs fixable:		75%

	total	post c.c.
Bugs fixed:	8180	5158
Postponed:	1197	673
% pstpnd:	13%	12%

Appendix III
Selected Schedules

Opus Task List

Task	Pri	Cost	Who
Locks Helper	1.0	120	bobz
Font enumeration	2.0	40	bobz
Symbol font	4.0	160	bobz
Font mapper dialog	4.1	80	bobz
Clipboard/DDE: design & estimate	5.0	40	bobz
Copy to clipboard	5.0	160	bobz
Paste from clipboard	5.0	160	bobz
Paste Link (DDE)	8.0	160	bobz
Refresh DDE links	8.1	80	bobz
RTF Enhancements	8.2	160	bobz
Performance tuning	40.0	160	bobz
Native coding	50.0	320	bobz
Code reviews	75.0	80	bobz
September Testing Release	80.0	16	bobz
October Testing Release	81.0	16	bobz
November Testing Release	82.0	16	bobz
December Testing Release	83.0	16	bobz
January Testing Release	84.0	16	bobz
February Testing Release	85.0	16	bobz
March Testing Release	86.0	16	bobz
April Testing Release	87.0	16	bobz
Final Release	90.0	500	bobz
Labor Day	100.0	8	bobz
Company Meeting	100.0	8	bobz
Thanksgiving	100.0	16	bobz
Christmas	100.0	16	bobz
New Year's Day	100.0	8	bobz
President's Day	100.0	8	bobz
Sick pool	100.0	24	bobz
Vacation pool	100.0	80	bobz
Macro Basic: Spec	1.0	40	bradch
Macro Basic: Compiler Interface	2.0	80	bradch
Macro Basic: Opus functions	3.0	160	bradch
Macro Basic: Runtime Interface	4.0	80	bradch
Macro Basic: Child window management	5.0	80	bradch
Macro Basic: Name Macro	6.0	24	bradch
Macro Basic: Edit Macro	7.0	40	bradch
Macro Basic: Playback	8.0	40	bradch
Macro Basic: Playback/debug mode	8.5	80	bradch
Macro Basic: Menu function recorder	9.0	80	bradch
Macro Basic: Keystroke function recorder	10.0	40	bradch
Macro Basic: Assign to key	11.0	24	bradch
Macro Basic: Add to menu	12.0	24	bradch
Sort	15.0	120	bradch
Sort: tables	15.1	80	bradch
Document Summary sheet	20.0	160	bradch

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Opus Task List

Task	Pri	Cost	Who
Performance tuning	40.0	160	bradch
Code reviews	75.0	80	bradch
September Testing Release	80.0	16	bradch
October Testing Release	81.0	16	bradch
November Testing Release	82.0	16	bradch
December Testing Release	83.0	16	bradch
January Testing Release	84.0	16	bradch
February Testing Release	85.0	16	bradch
March Testing Release	86.0	16	bradch
April Testing Release	87.0	16	bradch
Final Release	90.0	500	bradch
Labor Day	100.0	8	bradch
Company Meeting	100.0	8	bradch
Thanksgiving	100.0	16	bradch
Christmas	100.0	16	bradch
New Year's Day	100.0	8	bradch
President's Day	100.0	8	bradch
Sick pool	100.0	24	bradch
Vacation pool	100.0	80	bradch
Travel/selection cleanup	1.0	40	bryanl
Delete forward/back word	2.0	24	bryanl
Error recovery techniques	3.0	80	bryanl
Table enhancements: design & estimate	5.0	24	bryanl
Table enhancements	5.1	160	bryanl
Overtype mode	10.0	40	bryanl
Fast Insert/Delete/Overtype	12.0	160	bryanl
Autosave/crash recovery	20.0	60	bryanl
Project management tasks	40.0	200	bryanl
Performance tuning	40.0	160	bryanl
Native coding	50.0	240	bryanl
Swap tuning	50.0	80	bryanl
People performance reviews	75.0	80	bryanl
Spec reviews	75.0	160	bryanl
Code reviews	75.0	160	bryanl
September Testing Release	80.0	16	bryanl
October Testing Release	81.0	16	bryanl
November Testing Release	82.0	16	bryanl
December Testing Release	83.0	16	bryanl
January Testing Release	84.0	16	bryanl
February Testing Release	85.0	16	bryanl
March Testing Release	86.0	16	bryanl
April Testing Release	87.0	16	bryanl
Final Release	90.0	500	bryanl
Labor Day	100.0	8	bryanl
Company Meeting	100.0	8	bryanl
Thanksgiving	100.0	16	bryanl
Christmas	100.0	16	bryanl

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Opus Task List

Task	Pri	Cost	Who
New Year's Day	100.0	8	bryanl
President's Day	100.0	8	bryanl
Sick pool	100.0	24	bryanl
Vacation pool	100.0	80	bryanl
Mac-in-the-box preliminary	1.0	80	chic
Mac-in-the-box	2.0	240	chic
Block selection in text	4.0	80	chic
Forms mode editing: design & estimate	6.0	40	chic
Forms mode editing: design & estimate	6.0	40	chic
Document management design & estimate	10.0	80	chic
Document management	10.1	240	chic
Long filenames/Directory	11.0	160	chic
Performance tuning	40.0	160	chic
Code reviews	75.0	80	chic
September Testing Release	80.0	16	chic
October Testing Release	81.0	16	chic
November Testing Release	82.0	16	chic
December Testing Release	83.0	16	chic
January Testing Release	84.0	16	chic
February Testing Release	85.0	16	chic
March Testing Release	86.0	16	chic
April Testing Release	87.0	16	chic
Final Release	90.0	500	chic
Labor Day	100.0	8	chic
Company Meeting	100.0	8	chic
Thanksgiving	100.0	16	chic
Christmas	100.0	16	chic
New Year's Day	100.0	8	chic
President's Day	100.0	8	chic
Sick pool	100.0	24	chic
Vacation pool	100.0	80	chic
Document types	1.0	24	davidbo
File New	2.0	16	davidbo
Menu cleanup	3.0	16	davidbo
Mark revisions	4.0	16	davidbo
Define Style	5.0	60	davidbo
Apply Style	5.1	40	davidbo
Merge Styles	5.2	24	davidbo
Document types: save glossaries, macros, styles	6.0	40	davidbo
Insert Header/Footer	8.0	40	davidbo
Insert Footnotes	8.1	40	davidbo
Insert Picture: fixed/floating	8.2	120	davidbo
Sideheads	8.3	60	davidbo
Column break: Insert/display	8.4	40	davidbo
Print pagination	8.5	320	davidbo
Background repaginate	9.0	160	davidbo
Print	10.0	160	davidbo

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Opus Task List

Task	Pri	Cost	Who
Print Preview	11.0	320	davidbo
Version compare enhancement	20.0	60	davidbo
Performance tuning	40.0	160	davidbo
Native coding	70.0	160	davidbo
Code reviews	75.0	80	davidbo
September Testing Release	80.0	16	davidbo
October Testing Release	81.0	16	davidbo
November Testing Release	82.0	16	davidbo
December Testing Release	83.0	16	davidbo
January Testing Release	84.0	16	davidbo
February Testing Release	85.0	16	davidbo
March Testing Release	86.0	16	davidbo
April Testing Release	87.0	16	davidbo
Final Release	90.0	500	davidbo
Labor Day	100.0	8	davidbo
Company Meeting	100.0	8	davidbo
Thanksgiving	100.0	16	davidbo
Christmas	100.0	16	davidbo
New Year's Day	100.0	8	davidbo
President's Day	100.0	8	davidbo
Sick pool	100.0	24	davidbo
Vacation pool	100.0	24	davidbo
Orientation	1.0	60	gregc
Procedure testers	2.0	160	gregc
Read Word files / convert tables	4.0	320	gregc
Convert Word STY to DOT	4.5	60	gregc
Write Word files	5.0	80	gregc
Speller adaptation	6.0	400	gregc
Thesaurus adaptation	7.0	240	gregc
Performance tuning	40.0	160	gregc
Native coding	70.0	160	gregc
Code reviews	75.0	80	gregc
September Testing Release	80.0	16	gregc
October Testing Release	81.0	16	gregc
November Testing Release	82.0	16	gregc
December Testing Release	83.0	16	gregc
January Testing Release	84.0	16	gregc
February Testing Release	85.0	16	gregc
March Testing Release	86.0	16	gregc
April Testing Release	87.0	16	gregc
Final Release	90.0	500	gregc
Labor Day	100.0	8	gregc
Company Meeting	100.0	8	gregc
Thanksgiving	100.0	16	gregc
Christmas	100.0	16	gregc
New Year's Day	100.0	8	gregc

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Opus Task List

Task	Pri	Cost	Who
President's Day	100.0	8	gregp
Sick pool	100.0	24	gregp
Vacation pool	100.0	80	gregp
Ruler	1.0	80	peterl
Ruler Icon Bar	1.5	80	peterl
Create Glossary	2.0	24	peterl
Edit Glossary	3.0	16	peterl
Outline adaptation	5.0	40	peterl
Outline Icon Bar	5.1	80	peterl
Outline mode: tables & pictures	5.2	40	peterl
Fields: design & estimate	6.0	80	peterl
Fields: data structures	6.1	40	peterl
Fields: Insert Field	6.2	40	peterl
Fields: Edit Field	6.3	16	peterl
Fields: Immediate	6.4	8	peterl
Fields: Fill-in	6.5	160	peterl
Fields: Formula parsing	6.6	80	peterl
Fields: Expression evaluator	6.7	80	peterl
Fields: Refresh (recalc formulas)	6.8	80	peterl
Fields: Time/Date/Number formats	6.9	160	peterl
Print Merge	10.0	160	peterl
Performance tuning	40.0	160	peterl
Code reviews	75.0	80	peterl
September Testing Release	80.0	16	peterl
October Testing Release	81.0	16	peterl
November Testing Release	82.0	16	peterl
December Testing Release	83.0	16	peterl
January Testing Release	84.0	16	peterl
February Testing Release	85.0	16	peterl
March Testing Release	86.0	16	peterl
April Testing Release	87.0	16	peterl
Final Release	90.0	500	peterl
Labor Day	100.0	8	peterl
Company Meeting	100.0	8	peterl
Thanksgiving	100.0	16	peterl
Christmas	100.0	16	peterl
New Year's Day	100.0	8	peterl
President's Day	100.0	8	peterl
Sick pool	100.0	24	peterl
Vacation pool	100.0	40	peterl
Macro Basic: interpreter changes	1.0	40	pstools
Macro Basic: compiler	2.0	480	pstools
Macro Basic: runtime	3.0	160	pstools
Thanksgiving	100.0	16	pstools
Christmas	100.0	16	pstools
New Year's Day	100.0	8	pstools
President's Day	100.0	8	pstools

Opus Task List

Task	Pri	Cost	Who
Sick pool	100.0	24	pstools
View preferences scope	1.0	24	roslep
Misc key assignments	2.0	24	roslep
Move/Copy	3.0	80	roslep
Status area	4.0	40	roslep
View Preferences: display	5.0	80	roslep
View Field Instructions	5.1	24	roslep
View Plain Characters	5.2	80	roslep
Style area	5.3	80	roslep
View Header/Footer	6.0	80	roslep
View Footnotes	6.1	80	roslep
Move Picture	7.0	24	roslep
Size Picture	7.1	40	roslep
Search	8.0	80	roslep
Replace	8.1	80	roslep
Replace formatting	8.2	80	roslep
Index adaptation	10.0	80	roslep
Table of Contents adaptation	11.0	80	roslep
Hooks for Help/CBT	12.0	240	roslep
Installation/Configuration options	30.0	160	roslep
Performance tuning	40.0	160	roslep
Code reviews	75.0	80	roslep
September Testing Release	80.0	16	roslep
October Testing Release	81.0	16	roslep
November Testing Release	82.0	16	roslep
December Testing Release	83.0	16	roslep
January Testing Release	84.0	16	roslep
February Testing Release	85.0	16	roslep
March Testing Release	86.0	16	roslep
April Testing Release	87.0	16	roslep
Final Release	90.0	500	roslep
Labor Day	100.0	8	roslep
Company Meeting	100.0	8	roslep
Thanksgiving	100.0	16	roslep
Christmas	100.0	16	roslep
New Year's Day	100.0	8	roslep
President's Day	100.0	8	roslep
Sick pool	100.0	24	roslep
Vacation pool	100.0	40	roslep
Forward delete	1.0	16	yoshitc
New dialogs	2.0	80	yoshitc
Dialog accelerators design	3.0	40	yoshitc
Dialog accelerators for each dialog	3.5	24	yoshitc
Insert file	4.0	16	yoshitc
Redo: design & estimate	5.0	40	yoshitc
Redo	5.1	160	yoshitc
Hyphenation: integrate	8.0	60	yoshitc

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Opus Task List

Task	Pri	Cost	Who
Hyphenation; automatic	9.0	120	yoshitc
Background spelling	10.0	120	yoshitc
Background word count	11.0	40	yoshitc
Read RTF (enhancements)	12.0	80	yoshitc
Write RTF (enhancements)	13.0	40	yoshitc
Letterspacing	14.0	80	yoshitc
Kerning/ligatures	15.0	160	yoshitc
Hooks for third party developers	30.0	320	yoshitc
Performance tuning	40.0	160	yoshitc
Code reviews	75.0	60	yoshitc
September Testing Release	80.0	16	yoshitc
October Testing Release	81.0	16	yoshitc
November Testing Release	82.0	16	yoshitc
December Testing Release	83.0	16	yoshitc
January Testing Release	84.0	16	yoshitc
February Testing Release	85.0	16	yoshitc
March Testing Release	86.0	16	yoshitc
April Testing Release	87.0	16	yoshitc
Final Release	90.0	500	yoshitc
Labor Day	100.0	8	yoshitc
Company Meeting	100.0	8	yoshitc
Thanksgiving	100.0	16	yoshitc
Christmas	100.0	16	yoshitc
New Year's Day	100.0	8	yoshitc
President's Day	100.0	8	yoshitc
Sick pool	100.0	24	yoshitc
Vacation pool	100.0	80	yoshitc
Tasks should be inserted before the end	0.0	0	
	Total Hours		
	Total Hours Remaini		
	Tasks Completed		
	Tasks Remaining		
	Group Completion Da		
	Maximum Completio		

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Task	Pri	Cost	Who	Date	Done
Looks Helper: new bitmaps	1.0	16	bobz	5-Sep	16
Looks Helper: change to popup windows	1.1	4	bobz	5-Sep	4
Document window parser / update SDM doc	1.2	8	bobz	5-Sep	8
Convert to new key map scheme	1.3	16	bobz	5-Sep	16
Combo boxes: fill only on first dropdown	1.4	8	bobz	17-Sep	8
Looks Helper: debug updating code	1.5	24	bobz	28-Oct	24
Interruptable GetCharState/GetParaState	1.6	2	bobz	26-Oct	16
Looks Helper: code review	1.7	16	bobz	17-Sep	16
LH cleanup & bug fixes	1.9	0	bobz	26-Oct	24
Edit control focus flag for dialog accelerators	2.0	2	bobz	26-Oct	2
Static data in CS segment	2.1	16	bobz	26-Oct	40
Vacation	2.2	56	bobz	26-Oct	56
Combo box/LH repairs	3.0	0	bobz	31-Oct	7
Spec review & comments	3.0	16	bobz	31-Oct	16
Write bug investigation	3.0	0	bobz	31-Oct	2
Basic design issues & schedule	3.0	0	bobz	31-Oct	7
Clipboard/DDE: design & estimate	4.0	3	bobz	31-Oct	3
Clipboard/DDE: design & estimate	4.0	2	bobz	7-Nov	2
Clipboard/DDE: design & estimate	4.0	7	bobz	21-Nov	7
Macro language specifications	4.0	0	bobz	7-Nov	20
Macro language specifications	4.0	6	bobz	14-Nov	6
Macro language specifications	4.0	6	bobz	21-Nov	24
Font display fixes	4.0	0	bobz	7-Nov	6
Font display fixes	4.0	2	bobz	14-Nov	3
Hardware troubles	4.0	0	bobz	7-Nov	2
Meetings/code reviews	4.0	0	bobz	7-Nov	10
Comdex attendance & trip report	4.0	0	bobz	14-Nov	20
Meetings & misc	4.0	0	bobz	14-Nov	11
Hardware troubles	4.0	0	bobz	14-Nov	2
RTF enhancements: Opus additions	4.5	80	bobz	30-Mar	
RTF enhancements: fields	4.5	80	bobz	13-Apr	
Popup list box fixes	5.0	75	bobz	23-Jan	75
DS usage cleanup	5.0	10	bobz	23-Jan	10
File conversion design/document	5.0	8	bobz	15-Apr	
Embedded language design/review	5.0	86	bobz	21-Apr	
Clipboard: port	6.0	18	bobz	24-Apr	
Clipboard: cut/paste intra-Opus	6.0	24	bobz	16-Mar	11
Clipboard: RTF support	6.0	64	bobz	5-May	
Clipboard: picture support	6.0	40	bobz	12-May	
Paste Link (insert DDE field)	7.0	80	bobz	26-May	
Refresh DDE links	7.0	80	bobz	9-Jun	
Merge MacWord block.c/undo/select/edit	7.0	24	bobz	16-Mar	24
Short dialogs	7.5	40	bobz	16-Jun	
Third-party hooks: design/document	8.0	40	bobz	23-Jun	
Third-party hooks: language extensions	8.0	40	bobz	30-Jun	
Fonts: handle advanced devices	9.0	80	bobz	14-Jul	
*Font manager dialog	9.1	160	bobz	11-Aug	
*Symbol font	10.0	160	bobz	8-Sep	
Looks Helper: bitmap updates	12.0	8	bobz	10-Sep	
Font/point size enumeration	12.0	40	bobz	17-Sep	
Performance tuning pool	60.0	160	bobz	15-Oct	
Native coding pool	70.0	80	bobz	29-Oct	

Task	Pri	Cost	Who	Date	Done
Code review pool	75.0	54	bobz	7-Nov	
Documentation review pool	80.0	16	bobz	10-Nov	
September Testing Release	81.0	16	bobz	17-Sep	16
December Testing Release	81.0	16	bobz	5-Dec	16
March Testing Release	81.0	16	bobz	13-Nov	
April Testing Release	81.0	16	bobz	15-Nov	
May Testing Release	81.0	16	bobz	18-Nov	
June Testing Release	81.0	16	bobz	21-Nov	
July Testing Release	81.0	16	bobz	24-Nov	
August Testing Release	81.0	16	bobz	27-Nov	
Labor Day	98.0	8	bobz	5-Sep	8
Company Meeting	98.0	8	bobz	5-Sep	8
Thanksgiving	98.0	16	bobz	5-Dec	16
Christmas	98.0	16	bobz	2-Jan	16
New Year's Day	98.0	8	bobz	2-Jan	8
Presidents Day	98.0	8	bobz	20-Feb	8
Memorial Day	98.0	8	bobz	28-Nov	
Independence Day	98.0	8	bobz	29-Nov	
Labor Day 87	98.0	8	bobz	1-Dec	
Company Meeting 87	98.0	8	bobz	2-Dec	
Thanksgiving 87	98.0	8	bobz	4-Dec	
Floating Holiday	99.0	8	bobz	6-Dec	
Sick Pool	99.0	40	bobz	12-Dec	
Vacation Pool	100.0	120	bobz	2-Jan	

Opus Task List

Task	Pri.	Cost	Who	Date	Done
Macro Basic: Key mapper	2.0	40	bradch	5-Sep	40
Code review: Looks Helper	2.1	4	bradch	17-Sep	4
Macro Basic: edit/compiler debug inteface	3.0	24	bradch	17-Sep	24
Command table rewrite	3.0	8	bradch	28-Oct	8
Command compiler v0	3.0	22	bradch	28-Oct	22
Command processor cleanup	3.0	2	bradch	31-Oct	2
Command processor cleanup	3.0	2	bradch	7-Nov	6
Add menus to compiler	3.0	24	bradch	31-Oct	24
Macro language specifications	3.0	0	bradch	31-Oct	5
Sick	3.0	8	bradch	31-Oct	8
Dialog enhancements	3.0	0	bradch	7-Nov	2
Macro language specifications	3.0	0	bradch	7-Nov	3
Macro recorder	3.0	0	bradch	7-Nov	8
Documentation: MKCMD & Edit Macro	3.0	0	bradch	7-Nov	6
Meetings	3.0	0	bradch	7-Nov	4
Formula tuning for MacWord	3.0	0	bradch	14-Nov	4
Keymap	3.0	0	bradch	14-Nov	2
Macro language specifications	3.0	0	bradch	14-Nov	2
Documentation	3.0	0	bradch	14-Nov	8
Macro recorder: inserted text	3.0	16	bradch	14-Nov	13
Macro recorder: cursor movement	3.0	20	bradch	14-Nov	16
Macro recorder: view preferences	3.0	4	bradch	17-Mar	
Macro recorder: formatting	3.0	40	bradch	24-Mar	
Macro recorder: other	3.0	64	bradch	4-Apr	
Macro language: mini-interpreter	3.0	16	bradch	21-Nov	32
Macro language: design & estimate remaining work	4.0	17	bradch	20-Feb	40
Macro language: key dialog	4.0	43	bradch	9-Jan	43
Menu customization design	4.0	3	bradch	9-Jan	3
Menu customization	4.0	2	bradch	6-Feb	2
Doc type menu&key map	4.0	10	bradch	6-Feb	28
Modal keymaps	4.0	6	bradch	23-Jan	6
Short menus	5.0	16	bradch	9-Mar	4
OPEL: Opus command statements	6.0	22	bradch	8-Apr	
OPEL: Standard BASIC statements/functions	6.0	148	bradch	4-May	
OPEL: Command table reform	6.0	20	bradch	7-May	
OPEL: Other statements/functions	6.0	160	bradch	4-Jun	
OPEL: Standard Window statements/functions	6.0	40	bradch	11-Jun	
OPEL: Edit/Debug environment	6.0	80	bradch	25-Jun	
OPEL: RTF statements/functions	6.0	60	bradch	8-Jul	
Formulas: convert to field processor	10.0	80	bradch	20-Jul	
Formulas: tune for hi-res fonts	10.0	80	bradch	3-Aug	
*Document Summary sheet	20.0	160	bradch	31-Aug	
Performance tuning pool	60.0	320	bradch	28-Oct	
Code review pool	78.0	72	bradch	7-Nov	
Documentation review pool	80.0	40	bradch	14-Nov	
September Testing Release	81.0	16	bradch	17-Sep	16
December Testing Release	81.0	16	bradch	5-Dec	16
March Testing Release	81.0	16	bradch	17-Nov	
April Testing Release	81.0	16	bradch	20-Nov	
May Testing Release	81.0	16	bradch	23-Nov	
June Testing Release	81.0	16	bradch	26-Nov	
July Testing Release	81.0	16	bradch	28-Nov	

Opus Task List

Task	Pri.	Cost	Who	Date	Done
August Testing Release	81.0	16	bradch	1-Dec	
Labor Day	98.0	8	bradch	5-Sep	8
Company Meeting	98.0	8	bradch	5-Sep	8
Thanksgiving	98.0	16	bradch	6-Dec	16
Christmas	98.0	16	bradch	2-Jan	16
New Year's Day	98.0	8	bradch	2-Jan	8
Presidents Day	98.0	8	bradch	20-Feb	8
Memorial Day	98.0	8	bradch	3-Dec	
Independence Day	98.0	8	bradch	4-Dec	
Labor Day 87	98.0	8	bradch	5-Dec	
Company Meeting 87	99.0	8	bradch	7-Dec	
Thanksgiving 87	98.0	8	bradch	8-Dec	
Floating Holiday	99.0	8	bradch	10-Dec	
Sick Pool	99.0	40	bradch	17-Dec	
Vacation Pool	100.0	80	bradch	31-Dec	

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Opus Task List

Task	Pri	Cost	Who	Date	Done
Travel/selection cleanup	1.0	40	bryant	27-Aug	16
MacWord update	1.5	24	bryant	4-Sep	24
Fields specification	2.0	24	bryant	17-Sep	24
Code review: Looks Helper	2.1	4	bryant	17-Sep	6
Code review: Mac-in-the-Box	2.2	5	bryant	26-Oct	5
People reviews	2.5	24	bryant	26-Oct	24
Performance review	2.5	6	bryant	31-Oct	5
Microsoft KK consultation	2.8	0	bryant	31-Oct	8
Bug fixes and tuning: FLI caching and SCC	2.8	0	bryant	31-Oct	12
Project management:	2.8	8	bryant	31-Oct	7
Meetings: Group, Spec, Opus positioning	2.8	5	bryant	31-Oct	5
Interview & followup	2.8	2	bryant	31-Oct	2
Page layout coding / fields metacoding	3.0	12	bryant	26-Oct	12
Page layout / absolute positioning	3.0	40	bryant	31-Oct	25
Page layout / absolute positioning	3.0	20	bryant	7-Nov	20
Page layout / absolute positioning (test & debug)	3.0	7	bryant	14-Nov	7
Page layout / absolute positioning (test & debug)	3.0	40	bryant	21-Nov	20
Redesign Insert Picture/Format Picture	3.0	0	bryant	7-Nov	8
CS native code investigation	3.0	0	bryant	7-Nov	4
Project management: prepare & give sqrm talk	3.0	6	bryant	7-Nov	5
Project management: meetings	3.0	10	bryant	7-Nov	10
Code review: status line	3.0	4	bryant	7-Nov	4
Sick	3.0	6	bryant	14-Nov	5
Hardware trouble: hard disks	3.0	0	bryant	14-Nov	4
Project management: Comdex attendance	3.0	24	bryant	14-Nov	24
Vacation	3.0	8	bryant	21-Nov	6
Fields design	4.0	20	bryant	21-Nov	3
Code review: style name area	4.0	3	bryant	21-Nov	3
Running under Win 1.5	4.0	6	bryant	23-Jan	6
DS usage cleanup	4.0	6	bryant	23-Jan	5
Background pagination	5.0	30	bryant	21-Mar	
Table enhancements: design & estimate	6.0	21	bryant	25-Mar	
Table enhancements: metacode	6.0	10	bryant	27-Mar	
Tables: complete field syntax	6.0	11	bryant	29-Mar	
Tables: design/metacode display hook	6.0	20	bryant	1-Apr	
Tables: design/metacode selection, typing	6.0	12	bryant	3-Apr	
Tables: refinement & optimization	6.0	11	bryant	5-Apr	
Fully implement DEBUG/NONDEBUG Make	7.0	8	bryant	7-Apr	
Error recovery techniques	8.0	80	bryant	21-Apr	
File system review: error report/recovery	9.0	40	bryant	28-Apr	
File system review: network support	9.1	40	bryant	6-May	
Review error messages/resource file	9.2	40	bryant	12-May	
Windows update: extended TextOut	10.0	40	bryant	19-May	
Windows update: other changes	10.0	70	bryant	31-May	
Page layout / absolute positioning (test & debug)	11.0	20	bryant	3-Jun	
MacWord port: Feb	20.0	66	bryant	13-Feb	80
Project management task pool	50.0	45	bryant	11-Jun	
Performance tuning pool	60.0	292	bryant	1-Aug	
Native coding pool	70.0	120	bryant	22-Aug	
Swap tuning pool	72.0	80	bryant	5-Sep	
People performance review pool	75.0	40	bryant	12-Sep	
Spec review pool	75.0	140	bryant	7-Oct	

Opus Task List

Task	Pri	Cost	Who	Date	Done
Code review pool	76.0	110	bryant	26-Oct	
Documentation review pool	80.0	38	bryant	2-Nov	
September Testing Release	81.0	16	bryant	17-Sep	24
December Testing Release	81.0	16	bryant	5-Dec	16
March Testing Release	81.0	16	bryant	5-Nov	
April Testing Release	81.0	16	bryant	7-Nov	
May Testing Release	81.0	16	bryant	10-Nov	
June Testing Release	81.0	16	bryant	13-Nov	
July Testing Release	81.0	16	bryant	16-Nov	
August Testing Release	81.0	16	bryant	19-Nov	
Labor Day	98.0	8	bryant	5-Sep	8
Company Meeting	98.0	8	bryant	5-Sep	8
Thanksgiving	98.0	16	bryant	5-Dec	16
Christmas	98.0	16	bryant	2-Jan	16
New Year's Day	98.0	8	bryant	2-Jan	8
Presidents Day	98.0	8	bryant	20-Feb	8
Memorial Day	98.0	8	bryant	20-Nov	
Independence Day	98.0	8	bryant	21-Nov	
Labor Day 87	98.0	8	bryant	23-Nov	
Company Meeting 87	98.0	8	bryant	24-Nov	
Thanksgiving 87	98.0	8	bryant	26-Nov	
Floating Holiday	99.0	8	bryant	27-Nov	
Sick Pool	99.0	24	bryant	1-Dec	
Vacation Pool	100.0	80	bryant	15-Dec	

Opus Task List

Task	Pri	Cost	Who	Date	Done
Windows update: extended TextOut	1.0	40	bryanl	11-May	40
Windows update: other changes	2.0	30	bryanl	18-May	30
Make screen cache bitmaps discardable	2.5	16	bryanl	24-Aug	16
Performance: ribbon response	3.0	40	bryanl	31-Aug	40
Draft view	4.0	8	bryanl	7-Sep	4
Update to new FEDT	5.0	16	bryanl	7-Sep	16
Printer DC: usage optimization	6.0	24	bryanl	7-Sep	24
Go Back enhancement	6.5	7	bryanl	7-Sep	4
OPUS.INI enhancements	6.5	20	bryanl	7-Sep	16
Clipbrd.exe display rich text	6.5	64	bryanl	7-Sep	16
String/DS space usage review	6.6	24	bryanl	14-Sep	32
Symbol key	7.0	40	bryanl	21-Sep	16
Write bugs	7.1	16	bryanl	9-Nov	16
Code merge bug fixes	7.2	24	bryanl	14-Dec	24
Code merge bug fixes - II	7.2	40	bryanl	21-Dec	40
Code merge bug fixes - III	7.2	24	bryanl	28-Dec	24
Code merge bug fixes - IV	7.2	40	bryanl	18-Jan	40
Code merge bug fixes - V	7.2	40	bryanl	25-Jan	40
Store font widths in far mem / use static table for current	8.0	16	bryanl	15-Feb	16
Performance: startup - save font widths in OPUS.INI instead of v	8.0	16	bryanl	22-Feb	16
Fast file preload	8.0	16	bryanl	22-Feb	16
Fonts - drop 'Default' name	9.0	8	bryanl	14-Mar	8
Spec add: File Delete function	9.0	24	bryanl	14-Mar	24
Performance: scrolling - combine adjacent identical text runs	10.0	8	bryanl	23-Mar	
*GUESS*Out of memory emergencies: new scheme	12.0	88	bryanl	6-Apr	
*GUESS*Performance: dialogs	13.0	0	bryanl	6-Apr	
People performance review pool	75.0	0	bryanl	6-Apr	
People performance review time charged to date	75.0	26	bryanl	16-Nov	26
MacWord code unification pool	76.0	0	bryanl	6-Apr	
MacWord code unification time charged to date	76.0	174	bryanl	14-Dec	174
*GUESS*New Wordtech code merge pool	77.0	200	bryanl	11-May	
New Wordtech code time charged to date	77.0		bryanl	11-May	
May Testing Release	82.0	16	bryanl	25-May	40
August Testing Release	81.0	40	bryanl	10-Aug	40
September Testing Release	81.0	40	bryanl	28-Sep	40
Test Release P++	81.0	24	bryanl	9-Nov	24
January Testing Release	81.0	40	bryanl	11-Jan	40
Performance campaign	82.0	40	bryanl	1-Feb	40
Test Releases K, L	81.0	40	bryanl	8-Feb	40
February Testing Release (M)	81.0	40	bryanl	29-Feb	20
March Testing Release (N)	81.0	40	bryanl	18-May	
Memorial Day	98.0	8	bryanl	1-Jun	8
Independence Day	98.0	8	bryanl	6-Jul	8
Labor Day 87	98.0	8	bryanl	7-Sep	8
Thanksgiving 87	98.0	16	bryanl	30-Nov	16

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Opus Task List

Task	Pri	Cost	Who	Date	Done
Christmas 87	98.0	16	bryanl	28-Dec	16
New Year 88	98.0	8	bryanl	4-Jan	8
President's Day 88	98.0	8	bryanl	22-Feb	8
Floating Holiday	99.0	8	bryanl	4-Jan	8
Sick Pool	99.0	0	bryanl	18-May	
Sick time charged to date	99.0	80	bryanl	7-Mar	120
Vacation Pool	100.0	5	bryanl	18-May	
Vacation time charged to date	100.0	112	bryanl	14-Mar	112

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Opus Task List

Task	Pri	Cost	Who	Date	Done
Print	1.0	40	davidbo	25-May	79
Print: vertical alignment	1.1	32	davidbo	8-Jun	48
Print: MacWord update	1.4	40	davidbo	15-Jun	40
Print I:	2.0		davidbo	2-Nov	---
Finish Glossary print (test)	2.0	2	davidbo	10-Aug	5
Footnote placement (add "Endnote here")	2.0	4	davidbo	10-Aug	5
Column break layout bugs	2.0	4	davidbo	10-Aug	4
Styles - new dialogs, bug fixes	3.0	24	davidbo	17-Aug	28
Resolve #ifdef REVIEWs	4.0	8	davidbo	17-Aug	12
Revision Marking - finish new features	5.0	40	davidbo	31-Aug	71
Print revision bars	5.0	8	davidbo	7-Sep	11
Change foot enumeration in styles dialog	5.5	24	davidbo	7-Sep	11
Print II:	6.0		davidbo	2-Nov	—
Summary Info	6.0	16	davidbo	14-Sep	27
Printer literal field	6.0	24	davidbo	21-Sep	17
Get environment info from windows	6.0	16	davidbo	5-Oct	16
Bin selection - 1	6.0	8	davidbo	9-Nov	12
Bin selection - 2	6.0	4	davidbo	16-Nov	4
Intelligent banding	6.0	24	davidbo	12-Oct	16
Printing offset stuff	6.0	8	davidbo	14-Sep	2
Annotations	6.0	24	davidbo	14-Sep	6
Postscript support - I	6.0	20	davidbo	7-Dec	20
Postscript support - II	6.0	4	davidbo	14-Dec	16
New Print dialog	6.0	4	davidbo	9-Nov	8
Annotations page range	6.0	4	davidbo	9-Nov	8
Adapt code for use by doc mgmt	6.0	12	davidbo	2-Nov	12
Styles: bug fixes	6.5	0	davidbo	5-Oct	24
Insert File:	7.0		davidbo	9-Nov	---
Field - support range arguments	7.0	8	davidbo	23-Nov	1
Open file for reading (includes password-protected files)	7.0	16	davidbo	12-Oct	16
Read file (port of PC Word code)	7.0	64	davidbo	26-Oct	72
Adapt file reader memory handler	7.0	24	davidbo	2-Nov	24
Test/debug 1	7.0	24	davidbo	9-Nov	25
Test/debug 2	7.0	32	davidbo	16-Nov	32
Test/debug 3	7.0	8	davidbo	23-Nov	12
Port layout.h & printsub.c	7.5	12	davidbo	23-Nov	12
Port layout.c	7.5	16	davidbo	30-Nov	25
Port stymbol.c	7.5	8	davidbo	30-Nov	1
Spec change - Edit Styles dialog	7.5	6	davidbo	30-Nov	6
New layout code	7.5	4	davidbo	30-Nov	4
Fields vs layout	7.5	4	davidbo	30-Nov	4
Layout/fields bug	7.5	14	davidbo	7-Dec	18
Wordtech merge (print, printsub)	7.5	3	davidbo	7-Dec	3
Code merge bug fixes	7.5	24	davidbo	14-Dec	24
Code merge bug fixes - II	7.5	16	davidbo	21-Dec	16
Code merge bug fixes - III	7.5	40	davidbo	28-Dec	38
Code merge bug fixes - IV	7.5	16	davidbo	11-Jan	16

Opus Task List

Task	Pri	Cost	Who	Date	Done
Code merge bug fixes - V	7.5	32	davidbo	18-Jan	32
Spec add: redefine Style by Example	8.0	16	davidbo	7-Mar	16
Spec add: Show All in Style dialogs	8.0	4	davidbo	29-Feb	16
Spec add: Add to Template checkbox	8.0	2	davidbo	29-Feb	2
Spec add: heading styles	8.0	4	davidbo	7-Mar	7
Spec add: Revision marking dialog mods	9.0	16	davidbo	7-Mar	12
Revision marks: undo	9.0	26	davidbo	14-Mar	26
Revision marks: undo - II	9.0	6	davidbo	21-Mar	8
Spec add: About dialog info, launch dialog	10.0	10	davidbo	21-Mar	10
Spec add: underlining in Draft View	11.0	16	davidbo	24-Mar	
*GUESS*Print Preview user interface	11.0	120	davidbo	14-Apr	
*GUESS*New Wordtech code merge pool	76.0	153	davidbo	11-May	
New Wordtech code merge time charged to date	76.0	47	davidbo	21-Mar	47
May Testing Release	81.0	16	davidbo	25-May	4
August Testing Release	81.0	40	davidbo	10-Aug	32
September Testing Release	81.0	40	davidbo	28-Sep	40
January Testing Release	81.0	24	davidbo	21-Dec	24
January Testing Release - II	81.0	16	davidbo	4-Jan	16
January Testing Release - III	81.0	24	davidbo	11-Jan	24
Performance campaign	81.0	40	davidbo	1-Feb	45
Test Releases K, L	81.0	40	davidbo	15-Feb	125
February Testing Release (M)	81.0	40	davidbo	29-Feb	40
March Testing Release (N)	81.0	40	davidbo	18-May	
Memorial Day	98.0	8	davidbo	1-Jun	8
Independence Day	98.0	8	davidbo	6-Jul	8
Labor Day 87	98.0	8	davidbo	7-Sep	8
Company Meeting 87	98.0	8	davidbo	12-Oct	8
Thanksgiving 87	98.0	16	davidbo	30-Nov	16
Christmas 87	98.0	16	davidbo	28-Dec	16
New Year 88	98.0	8	davidbo	4-Jan	8
President's Day 88	98.0	8	davidbo	22-Feb	8
Floating Holiday	99.0	8	davidbo	18-Jan	8
Sick Pool	99.0	40	davidbo	25-May	
Sick time charged to date	99.0		davidbo	25-May	
Vacation Pool	100.0	63	davidbo	5-Jun	
Vacation time charged to date	100.0	12	davidbo	21-Sep	12

Opus Task List

Task	Pri	Cost	Who	Date	Done
Write 2.0 debug 1	1.0	20	fordm	10-Aug	20
Write 2.0 debug 2	1.0	20	fordm	17-Aug	15
Write 2.0 debug 3	1.0	20	fordm	7-Sep	54
Write 2.0 debug 4	1.0	12	fordm	5-Oct	12
Write 2.0 debug 5	1.0	18	fordm	26-Oct	18
Visual freeze changes - I	2.0	16	fordm	23-Nov	16
Visual freeze changes - II	2.0	16	fordm	23-Nov	16
Write 2.0 debug 6	2.0	8	fordm	7-Dec	8
Spec change - revision bar placement	2.0	4	fordm	7-Dec	4
Thesaurus:	3.0		fordm	5-Nov	---
dialog layout	3.0	8	fordm	21-Sep	9
dialog defaults	3.0	8	fordm	23-Mar	
dialog proc	3.0	24	fordm	27-Mar	
adjust/replace doc selection	3.0	16	fordm	30-Mar	
compile/link HM code under CS	3.0	16	fordm	21-Sep	12
verify HM memory/disk procs	3.0	16	fordm	1-Apr	
HM interface procs	3.0	24	fordm	6-Apr	
Compile dictionary	3.0	16	fordm	21-Sep	2
Testing/debug	3.0	24	fordm	10-Apr	
Performance	3.0	24	fordm	14-Apr	
Spec review pool	20.0	6	fordm	15-Apr	
Spec review time charged to date	20.0	34	fordm	21-Mar	34
Schedule creation/maintenance pool	30.0	32	fordm	21-Apr	
Schedule creation/maintenance time charged to date	30.0	162	fordm	21-Mar	162
Project management task pool	40.0	2	fordm	21-Apr	
Project management task time charged to date	40.0	228	fordm	21-Mar	228
People performance review pool	50.0	0	fordm	21-Apr	
People performance review time charged to date	50.0	70	fordm	16-Nov	70
*GUESS*New Wordtech code merge pool	78.0	38	fordm	5-May	
New Wordtech code merge time charged to date	78.0		fordm	5-May	
Documentation review pool	80.0	20	fordm	8-May	
Documentation review time charged to date	80.0	20	fordm	21-Mar	20
May Testing Release	81.0	16	fordm	1-Jun	60
August Testing Release	81.0	40	fordm	10-Aug	40
September Testing Release	81.0	40	fordm	28-Sep	32
January Testing Release - I	81.0	12	fordm	14-Dec	12
January Testing Release - II	81.0	16	fordm	21-Dec	16
January Testing Release - III	81.0	12	fordm	11-Jan	20
Test Releases K, L	81.0	40	fordm	15-Feb	120
February Testing Release (M)	81.0	40	fordm	29-Feb	20
March Testing Release (N)	81.0	8	fordm	21-Mar	8
March Testing Release (N) II	81.0	12	fordm	11-May	
Memorial Day	98.0	8	fordm	1-Jun	8
Independence Day	98.0	8	fordm	6-Jul	8
Labor Day 87	98.0	8	fordm	7-Sep	8

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Opus Task List

Task	Pri	Cost	Who	Date	Done
Company Meeting 87	98.0	8	fordm	12-Oct	8
Thanksgiving 87	98.0	16	fordm	30-Nov	16
Christmas 87	98.0	16	fordm	28-Dec	16
New Year 88	98.0	8	fordm	4-Jan	8
President's Day 88	98.0	8	fordm	22-Feb	8
Floating Holiday	99.0	8	fordm	22-Feb	8
Sick Pool	99.0	0	fordm	11-May	
Sick time charged to date	99.0	84	fordm	19-Oct	84
Vacation Pool	100.0	12	fordm	13-May	
Vacation time charged to date	100.0	68	fordm	4-Jan	68

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Opus Task List

Task	Pri	Cost	Who	Date	Done
Read/Write RTF: port from MacWord	1.0	13	gregc	27-Apr	38
Strip non-RTF conversions from rtf.c	2.0	24	gregc	27-Apr	24
Map file strip utility	2.5	8	gregc	8-Jun	8
Stack trace dump on assert I	2.5	38	gregc	15-Jun	38
Vacation	2.9	40	gregc	10-Aug	40
Spell: compile into library, setup make	3.0	10	gregc	14-Sep	12
Spell: design and write Opus interface	3.0	10	gregc	5-Oct	7
Spell: compile dictionary, setup make	3.0	10	gregc	24-Aug	6
Spell: main dialog and command handler	3.0	20	gregc	7-Sep	29
Spell: mismatched word dialog and command handler	3.0	20	gregc	7-Sep	16
Spell: initialize	3.0	10	gregc	5-Oct	4
Spell: insert alternates into list box	3.0	5	gregc	14-Sep	8
Spell: manage dictionaries:	3.0		gregc	2-Nov	—
Add a word to an aux dictionary	3.0	20	gregc	28-Sep	5
Delete a word from an aux dictionary	3.0	20	gregc	28-Sep	6
Select a dictionary	3.0	5	gregc	5-Oct	11
Search aux dictionaries	3.0	10	gregc	28-Sep	16
Find filenames of available aux dictionaries	3.0	10	gregc	5-Oct	13
Spell: document scan	3.0		gregc	2-Nov	—
Get next word from doc	3.0	5	gregc	21-Sep	7
Handle ignore all caps words	3.0	5	gregc	21-Sep	2
Delete word in doc	3.0	5	gregc	21-Sep	10
Insert word in doc	3.0	5	gregc	21-Sep	10
Handle continue at beginning of doc dialog	3.0	10	gregc	21-Sep	8
Display word context in doc window	3.0	20	gregc	21-Sep	4
Spell: manage aux cache	3.0		gregc	2-Nov	—
Initialize	3.0	5	gregc	14-Sep	5
Add a word to cache	3.0	5	gregc	14-Sep	8
Delete a word from cache	3.0	5	gregc	28-Sep	4
Binary search cache for a word	3.0	5	gregc	14-Sep	7
Spell: error management	3.0	10	gregc	9-Nov	14
Spell: cleanup	3.0	10	gregc	9-Nov	12
Spell: simulate C mem mgmt for SoftArt code	3.0	10	gregc	31-Aug	6
Spell: new dialog/changeable language	3.0	16	gregc	16-Nov	20
Spell: additional spec changes	3.0	16	gregc	7-Dec	17
Native code: finish fetch.c procedures	4.0	80	gregc	19-Oct	40
Native code: loadfont.c procedures - I	4.0	44	gregc	26-Oct	44
Native code: loadfont.c procedures - II	4.0	40	gregc	2-Nov	40
Native code: loadfont.c procedures - III	4.0	8	gregc	9-Nov	10
Investigate/improve Opus make process - I	4.5	24	gregc	16-Nov	24
Investigate/improve Opus make process - II	4.5	24	gregc	7-Dec	24
Heap debug procedures	4.5	32	gregc	15-Feb	28
Code merge bug fixes	5.0	24	gregc	28-Dec	24
Code merge bug fixes II	5.0	40	gregc	11-Jan	40
File conversion hooks I	7.0	28	gregc	15-Feb	28
File conversion hooks II	7.0	32	gregc	22-Feb	32
File conversion hooks III	7.0	16	gregc	24-Mar	

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Opus Task List

Task	Pri	Cost	Who	Date	Done
Spec add: Speller changes	8.0	16	gregc	7-Mar	24
Spec add: hot spots for double-click	9.0	24	gregc	7-Mar	16
Spec add: hot spots for double-click - II	9.0	40	gregc	14-Mar	4
Spec add: Catalog build search list automatically	10.0	40	gregc	14-Mar	28
Use Excel trick to bring clipboard/control panel to top	11.0	4	gregc	25-Mar	
*GUESS*Tweak PC Word convertor for Write	12.0	80	gregc	8-Apr	
New SDM dialog conversion pool	75.0	0	gregc	8-Apr	
New SDM dialog conversion time charged to date	75.0	40	gregc	21-Mar	40
*GUESS*New Wordtech code merge pool	76.0	200	gregc	13-May	
New Wordtech code merge time charged to date	76.0		gregc	13-May	
May Testing Release	81.0	16	gregc	1-Jun	32
September Testing Release	81.0	40	gregc	28-Sep	16
January Testing Release	81.0	40	gregc	21-Dec	40
January Testing Release - II	81.0	32	gregc	4-Jan	32
Performance campaign	81.0	40	gregc	1-Feb	64
Test Releases K, L	81.0	40	gregc	8-Feb	64
February Testing Release (M)	81.0	40	gregc	29-Feb	40
March Testing Release (N)	81.0	40	gregc	20-May	
Memorial Day	98.0	8	gregc	1-Jun	8
Independence Day	98.0	8	gregc	6-Jul	8
Labor Day 87	98.0	8	gregc	7-Sep	8
Company Meeting 87	98.0	8	gregc	12-Oct	8
Thanksgiving 87	98.0	16	gregc	30-Nov	16
Christmas 87	98.0	16	gregc	28-Dec	16
New Year 88	98.0	8	gregc	4-Jan	8
President's Day 88	98.0	8	gregc	22-Feb	8
Floating Holiday	99.0	8	gregc	18-Jan	8
Sick Pool	99.0	0	gregc	20-May	
Sick time charged to date	99.0	64	gregc	30-Nov	64
Vacation Pool	100.0	40	gregc	27-May	
Vacation time charged to date	100.0	40	gregc	14-Dec	40

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Opus Task List

Task	Pri	Cost	Who	Date	Done
Glossary saving	1.0	33	peterj	27-Apr	100
DDE: design & estimate	2.0	25	peterj	11-May	25
DDE: foundation	2.0	5	peterj	18-May	5
DDE: server functionality	2.0	28	peterj	18-May	33
Prompt update	3.0	24	peterj	18-May	8
Fields Reform	4.0	40	peterj	7-Jun	52
Add Pica unit	4.5	8	peterj	3-Aug	2
Print Merge	5.0	80	peterj	3-Aug	46
Unify file conversion hooks	5.5	8	peterj	24-Aug	10
Read-only functionality for Open dialog	5.5	16	peterj	24-Aug	5
DDE: Client Functionality:	6.0		peterj	2-Nov	—
Paste Link	6.0	8	peterj	31-Aug	10
Insert Mode Abort	6.0	16	peterj	31-Aug	5
Links	6.0	64	peterj	7-Sep	36
Launch App	6.0	8	peterj	7-Sep	3
Auto-start	6.0	16	peterj	7-Sep	2
Debugging/Unforseen	6.0	24	peterj	14-Sep	13
DDE: Advanced Functionality:	7.0		peterj	2-Nov	—
DDEHOT	7.0	8	peterj	7-Sep	5
Poke	7.0	8	peterj	7-Sep	5
Execute	7.0	16	peterj	16-Nov	16
Macro support	7.0	32	peterj	30-Nov	32
System Topic	7.0	8	peterj	7-Sep	4
Debugging/Unforseen	7.0	24	peterj	30-Nov	12
DDE Extended Testing I (Excel)	7.0	18	peterj	2-Nov	18
Update Source function	8.0	16	peterj	21-Sep	13
Goto Annotation	9.0	24	peterj	14-Sep	3
Dead field misbehavior - investigate	10.0	8	peterj	14-Sep	6
Release F: unexpected bug followup	10.5	13	peterj	5-Oct	13
Mathematical formulas:	11.0		peterj	18-Nov	—
Resources / fieldify	11.0	60	peterj	19-Oct	60
Debugging/Native coding	11.0	30	peterj	26-Oct	29
Outline: Auto Renumbering:	12.0		peterj	18-Nov	—
Determine numbers (includes levels as seqs)	12.0	16	peterj	2-Nov	16
Display numbers in FormatLine	12.0	40	peterj	9-Nov	36
File Close function	12.1	3	peterj	26-Oct	3
Ruler mode: mouse terminate	12.1	24	peterj	9-Nov	10
Ruler: vary movement units	12.1	8	peterj	9-Nov	4
Wordtech Code Merge I	12.2	32	peterj	23-Nov	32
Wordtech Code Merge II	12.2	8	peterj	30-Nov	9
Prompt performance	12.5	32	peterj	15-Feb	64
Core performance	12.5	24	peterj	22-Feb	44
Code merge bug fixes	13.0	20	peterj	14-Dec	20
Code merge bug fixes - II	13.0	36	peterj	21-Dec	36
Code merge bug fixes - III	13.0	18	peterj	28-Dec	18
Code merge bug fixes - IV	13.0	22	peterj	4-Jan	32
Code merge bug fixes - V	13.0	31	peterj	11-Jan	31

Opus Task List

Task	Pri	Cost	Who	Date	Done
Global Memory/GDI object usage: investigate	13.5	16	peterj	7-Dec	20
LMEM install / Macword port: PLC's in far memory	14.0	24	peterj	7-Mar	24
LMEM install / Macword port: PLC's in far memory II	14.0	24	peterj	14-Mar	24
LMEM install / Macword port: PLC's in far memory III	14.0	8	peterj	21-Mar	8
Fields: Internationalization	15.0	28	peterj	21-Sep	18
Spec add:Untitled Doc I	16.0	4	peterj	7-Mar	4
Spec add:Untitled Doc II	16.0	12	peterj	21-Mar	17
Spec add: iconbar mode - click outside = OK	16.0	3	peterj	7-Mar	3
Spec add: read-only message in status bar	16.0	1	peterj	7-Mar	1
Spec add: path scenarios	16.0	12	peterj	21-Mar	17
Spec add: ruler changes (+, X)	16.0	4	peterj	22-Mar	
Spec add: Doc Dialog Template I	16.0	4	peterj	7-Mar	4
Spec add: Doc Dialog Template II	16.0	4	peterj	23-Mar	
Spec add: save functionality change I	16.0	4	peterj	21-Mar	6
Spec add: save functionality change II	16.0	12	peterj	25-Mar	
Wordtech Code Merge: formula.c	16.5	20	peterj	28-Mar	
Hidden selection spec change	17.0	8	peterj	30-Mar	
Ruler layout changes	17.0	8	peterj	31-Mar	
Fields Cleanup/Testing/Performance	18.0	40	peterj	7-Apr	
DDE Extended Testing II	19.0	22	peterj	11-Apr	
PA Management pool	75.0	26	peterj	15-Apr	
PA Management time charged to date	75.0	74	peterj	14-Mar	74
*GUESS*New Wordtech code merge pool	76.0	200	peterj	20-May	
New Wordtech code merge time charged to date	76.0		peterj	20-May	
May Testing Release	81.0	16	peterj	25-May	40
August Testing Release	81.0	40	peterj	10-Aug	55
September Testing Release	81.0	40	peterj	28-Sep	72
January Testing Release I	81.0	37	peterj	21-Dec	37
January Testing Release II	81.0	3	peterj	18-Jan	32
Performance campaign	81.0	40	peterj	8-Feb	50
Test Releases K, L	81.0	40	peterj	25-Jan	19
February Testing Release (M)	81.0	40	peterj	29-Feb	41
March Testing Release (N)	81.0	4	peterj	21-Mar	6
March Testing Release (N) II	81.0	36	peterj	27-May	
Memorial Day	98.0	8	peterj	1-Jun	8
Independence Day	98.0	8	peterj	6-Jul	8
Labor Day 87	98.0	8	peterj	7-Sep	8
Company Meeting 87	98.0	8	peterj	13-Oct	8
Thanksgiving 87	98.0	16	peterj	30-Nov	16
Christmas 87	98.0	16	peterj	28-Dec	16
New Year 88	98.0	8	peterj	4-Jan	8
President's Day 88	98.0	8	peterj	22-Feb	8
Floating Holiday	99.0	8	peterj	22-Feb	8
Sick Pool	99.0	25	peterj	31-May	
Sick time charged to date	99.0	15	peterj	18-Jan	15

Opus Task List

Task	Pri	Cost	Who	Date	Done
Vacation Pool	100.0	23	peterj	4-Jun	
Vacation time charged to date	100.0	32	peterj	19-Oct	32

Opus Task List

Task	Pri	Cost	Who	Date	Done
Search/Replace formatting	1.0	40	rosiep	11-May	64
Search enhancements: ^m, ^c	1.0	12	rosiep	11-May	8
Help: initial	2.0	56	rosiep	18-May	45
Help: initial context-sensitive	2.0	18	rosiep	2-Nov	18
Selection react on travel	2.5	24	rosiep	31-Aug	24
Collapse selection like PC&Mac Word	2.5	6	rosiep	17-Aug	1
Cursor/selection bugs	2.5	17	rosiep	24-Aug	7
PAPS needs PAPH?	2.5	2	rosiep	17-Aug	2
Iconbars in split pane:	3.0		rosiep	2-Nov	---
Data structures	3.0	4	rosiep	7-Sep	4
Windowing code adaptation	3.0	32	rosiep	7-Sep	31
Miscellaneous	3.0	4	rosiep	7-Sep	30
Resolve #ifdef REVIEWs	4.0	14	rosiep	7-Sep	10
Splitter tuning	5.0	17	rosiep	7-Sep	14
Index:	6.0		rosiep	22-Dec	---
Index entry dialog	6.0	16	rosiep	21-Sep	8
Index dialog	6.0	6	rosiep	21-Sep	6
New Index dialog	6.0	4	rosiep	26-Oct	4
Port index code from MacWord	6.0	24	rosiep	21-Sep	18
Mods for huge pointers: Stage I	6.0	18	rosiep	21-Sep	12
Mods for huge pointers: Stage II	6.0	43	rosiep	21-Sep	9
Field interface	6.0	34	rosiep	12-Oct	36
Mods to support field switches	6.0	28	rosiep	26-Oct	28
Deal with bookmarks	6.0	22	rosiep	12-Oct	20
Investigate memory usage	6.0	20	rosiep	26-Oct	15
Miscellaneous	6.0	35	rosiep	26-Oct	35
Extra debug/test	6.0	32	rosiep	2-Nov	46
New SB allocation	6.0	8	rosiep	14-Dec	8
Changes based on code review	6.0	12	rosiep	23-Nov	12
Table of Contents:	7.0		rosiep	23-Dec	---
Dialog	7.0	12	rosiep	2-Nov	11
Port code from MacWord	7.0	24	rosiep	9-Nov	24
Field interface	7.0	16	rosiep	9-Nov	16
Mods to support field switches	7.0	16	rosiep	16-Nov	16
Miscellaneous	7.0	24	rosiep	16-Nov	24
Insert Field: XE, INDEX, TC, TOC	8.0	16	rosiep	23-Nov	8
Visual freeze dialog changes	8.0	2	rosiep	30-Nov	2
Replace use dialog instead of prompt - I	8.5	24	rosiep	30-Nov	24
Replace use dialog instead of prompt - II	8.5	16	rosiep	7-Dec	32
Replace dialog - spec changes	8.5	8	rosiep	7-Dec	8
Code merge bug fixes	8.6	22	rosiep	14-Dec	22
Code merge bug fixes - II	8.6	40	rosiep	21-Dec	40
Code merge bug fixes - III	8.6	16	rosiep	28-Dec	16
Help:	10.0		rosiep	18-Nov	---
Remaining help context work	10.0	4	rosiep	21-Mar	4
Remaining help context work II	10.0	12	rosiep	23-Mar	
Finish context-sensitive help	10.0	7	rosiep	24-Mar	

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Opus Task List

Task	Pri	Cost	Who	Date	Done
Hook up help keyboard	10.0	2	rosiep	25-Mar	
Remappable keys	10.0	4	rosiep	21-Mar	4
Remappable keys II	10.0	2	rosiep	25-Mar	
Miscellaneous	10.0	2	rosiep	7-Mar	2
Miscellaneous II	10.0	6	rosiep	26-Mar	
Debugging pool	10.0	19	rosiep	30-Mar	
Debugging time charged to date	10.0	0	rosiep	30-Mar	
Help: new tasks	10.2		rosiep		—
Screen area contents	10.2	16	rosiep	1-Apr	
Grey menu items and main menu contents	10.2	8	rosiep	3-Apr	
Resolve changing bcm effect on user ed - I	10.5	6	rosiep	2-Nov	6
Resolve changing bcm effect on user ed - II	10.5	12	rosiep	5-Apr	
Document debug flags for testing	10.5	6	rosiep	2-Nov	6
CBT:	11.0		rosiep	30-Nov	—
Save/Restore state & init Opus for CBT - I	11.0	44	rosiep	21-Mar	44
Save/Restore state & init Opus for CBT - II	11.0	36	rosiep	11-Apr	
Resurrect CBT boot from Opus	11.0	24	rosiep	8-Feb	27
Semantic event for selection	11.0	2	rosiep	14-Mar	2
Miscellaneous	11.0	6	rosiep	12-Apr	
CBT: new tasks	11.5		rosiep		—
semantic events for mouse actions in ruler	11.5	8	rosiep	14-Apr	
subdirectory manipulation	11.5	13	rosiep	7-Mar	13
subdirectory manipulation - II	11.5	3	rosiep	14-Mar	3
Debugging pool	11.5	16	rosiep	16-Apr	
Debugging time charged to date	11.5	8	rosiep	14-Mar	8
Spec add: /TUTORIAL command line switch	12.0	6	rosiep	14-Mar	6
Spec add: search changes	12.0	8	rosiep	21-Mar	8
Help review pool	75.0	32	rosiep	22-Apr	
Help review time charged to date	75.0	8	rosiep	14-Mar	8
Code size tracking pool	75.0	0	rosiep	22-Apr	
Code size tracking time charged to date	75.0	16	rosiep	14-Dec	16
User Ed online consultation pool	75.0	10	rosiep	24-Apr	
User Ed online consultation time charged to date	75.0	6	rosiep	7-Mar	6
*GUESS*New Wordtech code merge pool	76.0	160	rosiep	22-May	
New Wordtech code merge time charged to date	76.0		rosiep	22-May	
May Testing Release	81.0	16	rosiep	25-May	61
August Testing Release	81.0	40	rosiep	10-Aug	48
September Testing Release	81.0	40	rosiep	28-Sep	83
January Testing Release - I	81.0	8	rosiep	14-Dec	8
January Testing Release - II	81.0	32	rosiep	11-Jan	32
Performance campaign	81.0	40	rosiep	15-Feb	79
Test Releases K, L	81.0	40	rosiep	15-Feb	162
February Testing Release (M)	81.0	40	rosiep	29-Feb	92
March Testing Release (N)	81.0	16	rosiep	21-Mar	16
March Testing Release (N) II	81.0	24	rosiep	26-May	

Opus Task List

Task	Pri	Cost	Who	Date	Done
Memorial Day	98.0	8	rosiep	1-Jun	8
Independence Day	98.0	8	rosiep	6-Jul	8
Labor Day 87	98.0	8	rosiep	7-Sep	8
Company Meeting 87	98.0	8	rosiep	12-Oct	8
Thanksgiving 87	98.0	16	rosiep	30-Nov	16
Christmas 87	98.0	16	rosiep	28-Dec	16
New Year 88	98.0	8	rosiep	4-Jan	8
President's Day 88	98.0	8	rosiep	22-Feb	8
Floating Holiday	99.0	8	rosiep	31-May	8
Floating Holiday 88	99.0	8	rosiep	27-May	
Sick Pool	99.0	32	rosiep	2-Jun	
Sick time charged to date	99.0	8	rosiep	23-Nov	8
Vacation Pool	100.0	24	rosiep	6-Jun	
Vacation time charged to date	100.0	64	rosiep	11-Jan	64

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Opus Task List

Task	Pri	Cost	Who	Date	Done
Numeric expression field: design	1.0	24	yoshitoy	11-May	43
Field expression: implementation	1.0	16	yoshitoy	8-Jun	22
Utilities calculate	1.0	8	yoshitoy	15-Jun	7
Field expression: get format data	1.0	4	yoshitoy	15-Jun	4
Field expression: test/debug	1.0	16	yoshitoy	15-Jun	25
Set default to Format Doc dialog	2.0	4	yoshitoy	27-Jul	3
Utilities Customize dialog:	3.0		yoshitoy	2-Nov	—
Layout & Basic hookup	3.0	8	yoshitoy	3-Aug	8
User Name & Init, Files unit	3.0	4	yoshitoy	3-Aug	4
Outline port:	4.0		yoshitoy	2-Nov	—
Merge in diff & compile	4.0	4	yoshitoy	3-Aug	4
Disable prohibited commands	4.0	4	yoshitoy	3-Aug	2
Layout bitmap & creation of icon bar	4.0	8	yoshitoy	3-Aug	14
Hook up commands to keys & icon bar	4.0	8	yoshitoy	3-Aug	13
Debugging	4.0	15	yoshitoy	21-Sep	15
Character dialog changes	4.1	8	yoshitoy	17-Aug	6
Dialogs for File commands:	4.2		yoshitoy	2-Nov	—
File New	4.2	16	yoshitoy	31-Aug	26
File Open	4.2	8	yoshitoy	31-Aug	6.
File Save As	4.2	8	yoshitoy	31-Aug	2
Merge Styles	4.2	8	yoshitoy	31-Aug	2
Compare Versions / Filename	4.2	8	yoshitoy	7-Sep	9
Insert File	4.2	8	yoshitoy	7-Sep	10
Summary Info dialog:	4.3		yoshitoy	2-Nov	—
Info dialog	4.3	8	yoshitoy	7-Sep	8
Compute necessary info	4.3	16	yoshitoy	14-Sep	15
Statistics dialog	4.3	8	yoshitoy	7-Sep	6
Custom format in Save As:	4.4		yoshitoy	2-Nov	—
Hook to add conversion DLB filling	4.4	12	yoshitoy	14-Sep	12
Debugging	4.4	4	yoshitoy	14-Sep	4
Autosave:	5.0		yoshitoy	2-Nov	—
Setup for autosave	5.0	4	yoshitoy	14-Sep	5
Predicate & autosave invocation	5.0	4	yoshitoy	14-Sep	3
Autosave algorithm	5.0	16	yoshitoy	14-Sep	3
Outline enhancements:	6.0		yoshitoy	2-Nov	—
Display current level	6.0	8	yoshitoy	21-Sep	8
Change Expand All	6.0	4	yoshitoy	21-Sep	4
Show char formatting	6.0	4	yoshitoy	21-Sep	4
Toggle char formatting	6.0	4	yoshitoy	21-Sep	4
Mouse expand/collapse	6.0	16	yoshitoy	5-Oct	8
Dragging of heading	6.0	16	yoshitoy	5-Oct	19
Cursor travel	6.0	16	yoshitoy	12-Oct	35
Maintain selection visible	6.0	16	yoshitoy	19-Oct	4
Pane-wise Ruler/icon bar	6.0	8	yoshitoy	19-Oct	8
Debugging	6.0	20	yoshitoy	19-Oct	25
Insert Field dialog:	7.0		yoshitoy	6-Nov	—
Layout & basic Dlg Function	7.0	8	yoshitoy	19-Oct	9

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Opus Task List

Task	Pri	Cost	Who	Date	Done
Item relations	7.0	8	yoshitoy	26-Oct	4
String synthesis & Insertion	7.0	8	yoshitoy	26-Oct	18
Debugging	7.0	4	yoshitoy	26-Oct	8
New Section, Paragraph dialogs	7.5	5	yoshitoy	26-Oct	5
Format para: allow negative line spacing	7.5	4	yoshitoy	2-Nov	4
Summary info / File Save changes	7.5	8	yoshitoy	2-Nov	15
System menu on all caption dialogs	7.5	4	yoshitoy	2-Nov	2
Expression field: math pack:	8.0		yoshitoy	14-Nov	---
Localize Picture string	8.0	8	yoshitoy	2-Nov	17
Fix UNRFNC(NUM), postfix currency - I	8.0	8	yoshitoy	2-Nov	13
Fix UNRFNC(NUM), postfix currency - II	8.0	6	yoshitoy	9-Nov	6
Adapt numeric & functions evaluators	8.0	24	yoshitoy	9-Nov	25
Adapt formatting function	8.0	8	yoshitoy	9-Nov	9
Debugging	8.0	16	yoshitoy	16-Nov	30
Repeat function (remaining tasks):	9.0		yoshitoy	6-Nov	—
Implement CmdGotoNext	9.0	8	yoshitoy	16-Nov	6
Record Formatting thru Ruler	9.0	16	yoshitoy	23-Nov	11
Record Formatting thru Ribbon	9.0	16	yoshitoy	23-Nov	12
Debugging	9.0	8	yoshitoy	23-Nov	13
Tweak dialogs for visual freeze	9.5	3	yoshitoy	16-Nov	3
Tweak dialogs for visual freeze - II	9.5	2	yoshitoy	23-Nov	2
Sort:	10.0		yoshitoy	21-Nov	—
Build SOD's for new sort types	10.0	32	yoshitoy	7-Dec	32
Layout and rewrite basic prim's	10.0	8	yoshitoy	23-Nov	5
Debugging	10.0	8	yoshitoy	7-Dec	8
Spec changes - file dialogs	10.5	4	yoshitoy	7-Dec	4
Code merge bug fixes	10.6	20	yoshitoy	14-Dec	20
Code merge bug fixes - II	10.6	40	yoshitoy	21-Dec	40
Code merge bug fixes - III	10.6	40	yoshitoy	4-Jan	40
Code merge bug fixes - IV	10.6	20	yoshitoy	11-Jan	20
Code merge bug fixes - V	10.6	40	yoshitoy	18-Jan	40
Performance: accelerated scroll for up/dn in scroll bar	10.8	8	yoshitoy	15-Feb	8
*GUESS*Outline Cursor Travel wrt hidden para marks	11.0	20	yoshitoy	25-Mar	
Expression field: table ref	12.0		yoshitoy	5-Dec	—
Design and estimate	12.0	4	yoshitoy	25-Mar	
*GUESS*Implement	12.0	80	yoshitoy	8-Apr	
Spec add: file-related dialog modifications	14.0	16	yoshitoy	7-Mar	20
Spec add: outline view changes	14.0	8	yoshitoy	7-Mar	15
Spec add: Statistic dialog Update button I	14.0	4	yoshitoy	7-Mar	4
Spec add: Statistic dialog Update button II	14.0	4	yoshitoy	14-Mar	9
New SDM dialog conversion pool	75.0	41	yoshitoy	21-Mar	40
New SDM dialog conversion time charged to date	75.0	29	yoshitoy	14-Mar	29
*GUESS*New Wordtech code merge pool	76.0	160	yoshitoy	6-May	
New Wordtech code merge time charged to date	76.0		yoshitoy	6-May	
May Testing Release	81.0	16	yoshitoy	25-May	40
August Testing Release	81.0	40	yoshitoy	10-Aug	42

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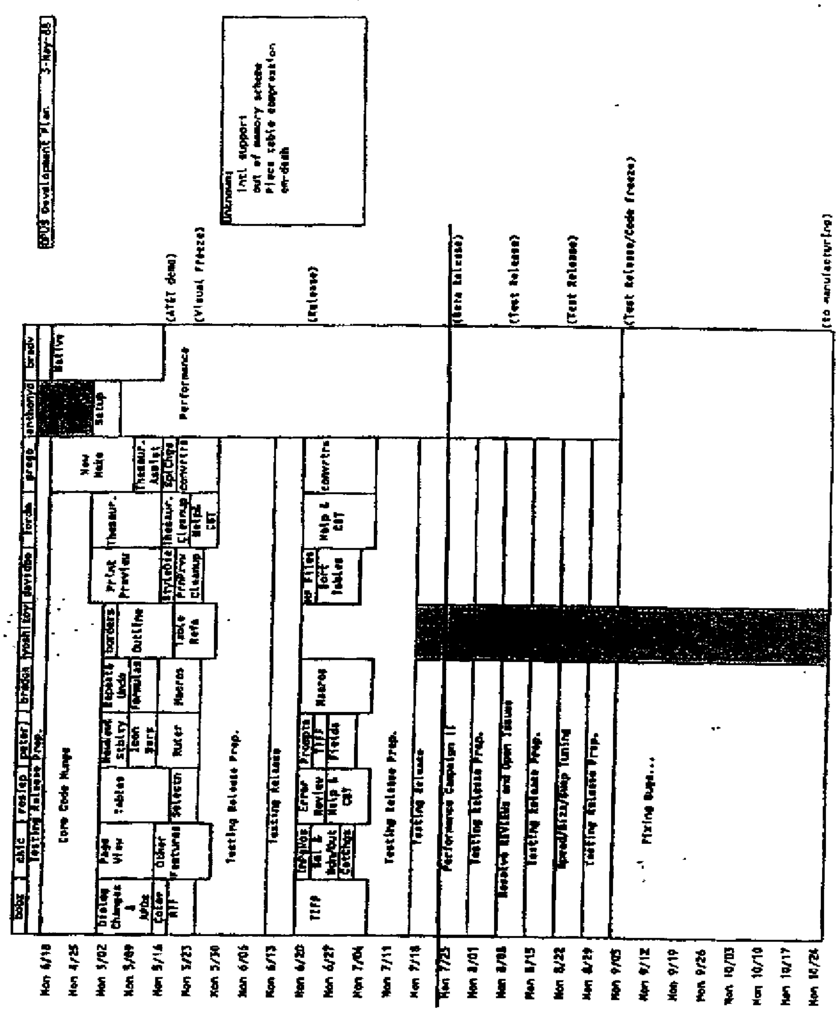
Opus Task List

Task	PH	Cost	Who	Date	Done
September Testing Release	81.0	40	yoshitoy	28-Sep	54
January Testing Release - I	81.0	20	yoshitoy	14-Dec	20
January Testing Release - II	81.0	20	yoshitoy	11-Jan	20
Performance campaign	81.0	40	yoshitoy	22-Feb	104
Test Releases K, L	81.0	40	yoshitoy	22-Feb	64
February Testing Release (M)	81.0	40	yoshitoy	29-Feb	32
March Testing Release (N)	81.0	40	yoshitoy	13-May	
Memorial Day	98.0	8	yoshitoy	1-Jun	8
Independence Day	98.0	8	yoshitoy	6-Jul	8
Labor Day 87	98.0	8	yoshitoy	7-Sep	8
Company Meeting 87	98.0	8	yoshitoy	12-Oct	8
Thanksgiving 87	98.0	16	yoshitoy	30-Nov	16
Christmas 87	98.0	16	yoshitoy	28-Dec	16
New Year 88	98.0	8	yoshitoy	4-Jan	8
President's Day 88	98.0	8	yoshitoy	22-Feb	8
Floating Holiday	99.0	8	yoshitoy	15-May	
Sick Pool	99.0	32	yoshitoy	20-May	
Sick time charged to date	99.0		yoshitoy	20-May	
Vacation Pool	100.0	44	yoshitoy	28-May	
Vacation time charged to date	100.0	16	yoshitoy	4-Jan	16



Microsoft Memo

To: Applications developers and testers
From: Chris Mason
Date: 6/20/89
Subject: Zero-defects code
Cc: Mike Maples, Steve Ballmer, Applications Business Unit managers and department heads

Zero defects

On May 12th and 13th, the applications development managers held a retreat with some of their project leads, Mike Maples, and other representatives of Applications and Languages. My discussion group[1] investigated techniques for writing code with no defects. This memo describes the conclusions which we reached.

Zero-defects code is the Holy Grail of programming. We are not suggesting that this phantasm is attainable on the first try, but we think we know how to get there. There is a crucial need to do this. In OBU, for example, Mac and PC Word were very late, and Win Word continues to be late, in each case because we had many more bugs than we anticipated. Large numbers of bugs at the end of a project make scheduling impossible for project leads and life unbearable for programmers and testers.

Zero defects has actually been achieved on software projects; it is not an impossible goal. Zero defects must be the new performance standard for development. A "defect" occurs when something that is labeled "done" does not conform to the requirements. We need to understand our methods, and strive to improve them in order to prevent defects from happening, or recover from them if they do happen. You'll be able to measure your success by the reduced time from code complete to shipping.

You *can* improve the quality[2] of your code, and if you do, the rewards for yourself and for Microsoft will be immense. *The hardest part is to decide that you want to write perfect code.*

The problem

There are a lot of reasons why our products seem to get buggier and buggier. It's a fact that they're getting more complex, but we haven't changed our methods to respond to that complexity.

The problems listed below are not an indictment. Some programmers write perfect code today, and the rest of us have good, honest reasons for coding the way we do. The point of enumerating our problems is to realize that our current methods, not our people, cause their own failure.

[1] Brian Arbogast, Dennis Canady, Jon DeVaan, Ed Johns, Doug Klunder, Brian MacDonald, Tom Reeve, Charles Simonyi.

[2] Dave Moore's definition of quality: "Conforms to the requirements." This means a feature works the way it was specified, at a given level of performance. Quality doesn't mean the code is perfect or infinitely fast. Oftentimes exceeding the requirements is not worth the cost.

Minimal success

Our scheduling methods and Microsoft's culture encourage doing the minimum work necessary on a feature. When it works well enough to demonstrate, we consider it done, everyone else considers it done, and the feature is checked off the schedule. The inevitable bugs months later are seen as unrelated. By investing the minimum effort, we guarantee the minimum return.

We slip things because it's easier to postpone bad news than to face up to it when it happens. This is "mentally lazy and morally weak."

Schedules and other high winds

We forget that the schedule is not a product, it's a tool. Its purpose is to predict when we will finish, so that other people can schedule their own work accordingly. The schedule has nothing (directly) to do with the quality of the product.

When the schedule is jeopardized, we start cutting corners. We worry about getting features implemented quickly. We ignore warning signs that serious problems exist, or we cut "non-critical" items like size and speed tuning.

Missing the point

The reason that complexity breeds bugs is that we don't understand how the pieces will work together. This is true for new products as well as for changes to existing products.

I don't believe that any of our products are so complex that our programmers can't understand them. Code that is too complex to understand should probably be rewritten; complex code can still be straightforward. The real problem has two facets: we don't want to spend the time to understand exactly how a new feature will affect or be affected by the rest of the program, and too often we think we understand this but do not.

The wrong people write too much code

Imagine a well-intentioned programmer who gets a feature done very quickly, as requested, with minimal unit testing and almost no system testing, marks it off on the schedule, then starts on a new feature. Now imagine another programmer who also works quickly, but very carefully checks his assumptions, handles boundary cases, writes good test suites, verifies all the cases, and then checks it off on the schedule.

The first programmer gets to write more features than the second. The first programmer also gets to spend a lot of time, six months from now, working the bugs out of code he dimly remembers, while the second programmer will have little to do.

This is exactly the reverse of the ideal.

No commitment to completeness

No one is charged with the responsibility for ensuring the completeness of code. Development is too often concerned with *appearing* to make progress (my opinion of this should be clear by now), and with having a clean product *at ship time.* Testing can only verify that the product works as specified; this is a poor test of completeness. Program management, marketing, and user education concentrate on the schedule and a minimum usability level.

Development is at fault here. No one can know if the code is complete but the author or his peers. We have not been charged with this responsibility in the past, so we have not shouldered the burden.

"We'll do that later" doesn't work, because "later" you're going to be up to your neck in alligators trying to figure out how you got there.

Lack of ownership

Under pressure, we tend to hunker down and just try to get our part of the job done. But part of the job is to stand up and look around. Each developer should take the responsibility to consider the entire product, use common sense, and not just take the spec as gospel.

Over-confidence

This is perfectly natural, but wrong. Every programmer I know writes good code, looks at it in satisfaction, and declares that it should work. I have rarely seen new code that does so. (The occasions are easy to spot: people dancing and hooting in the halls.) What piece of code has withstood six months of testing with no bugs reported? Or been reviewed in the next version without a shudder?

"Bugs are inevitable"

This is an insidious idea. The fact that we must rid ourselves of this idea seems to contradict the implications I've been making, namely that we should anticipate bugs in our code and winnow them out early. There is no contradiction: when everyone feels that bugs will happen no matter what we do, we stop taking action to prevent *any* bugs from appearing.

In fact, bugs *are* inevitable. But if we act that way, we make it more horribly true.

The solution

First, I have to admit that there is no single solution. Every project team must evaluate itself and its product and determine what will help to achieve zero defects. It doesn't matter whether we can actually achieve zero on the first attempt, but we should start *right now* and get closer on every project.

This section gives a broad overview of the solution. The following sections describe how to change your attitudes and work habits to reach that goal. A few of the ideas *must* be done or the whole thing will collapse, but for the most part each project should pick and choose what works best for them.

Zero bugs every day

I mean this literally: your goal should be to have a working, nearly-shippable product every day.

This doesn't mean that when you go home every night you have removed all the bugs from work in progress. It simply means that when a programmer says a feature is complete, it is totally complete: all error and boundary cases work, all interactions with the rest of the product have been dealt with, test documentation or code to exercise the feature are checked in.

Your project should have a state or directory from which anyone can create a current "clean" copy of the product. One way to handle this is to stage the checkin. Modules can be checked in to a "working" directory for history and as insurance against hard disk failure, then checked in to the "clean" directory when the feature is complete.

Fix it now

Since human beings themselves are not fully debugged yet, there will be bugs in your code no matter what you do. When this happens, you must evaluate the problem and resolve it immediately. Remember that the goal is to have a perfect "clean" copy at all times.

Testers shall not

Bob Matthews often says, "We should write quality into our products, not test it in." Perhaps testing is a bad name for what our testing department should do. If our programmers ensure the quality of their work by the time testing sees it, then testing's function is quality assurance, not finding bugs.

This doesn't necessarily change the methods that testing uses, although testing's function may evolve if we truly succeed in giving them high quality code. But it's an important attitude shift, and in solving the problem of code quality, attitude is almost everything.

A new attitude

Zero defects is a strategy that can't have results unless we decide to make it work. This section gives ideas for aligning yourself with the new attitude.

Think twice before you code

You make hundreds of assumptions when you write a new routine, from the mundane (parameters of called subroutines) to the grandiose (how the user will perceive the feature). Experience has shown that many of these are wrong.

Minor changes are even worse, because the investment in time to fully understand the context of the change seems to outweigh the magnitude of the change. When we make assumptions, we must explicitly state them (with asserts or checking code).

A related problem is not taking the time to think about various situations at all. Incomplete understanding is a huge source of bugs, and has a simple fix: investments in understanding and thinking about the context of a change *always* pay off.

Take the time

Programming speed is highly overrated. Speed with quality is a worthy goal, but quality usually suffers. Evidence suggests that you can spend your time thinking about side-effects and planning up front, or you can spend it patching fixes to bugs later on. These options take about the same amount of time, but the latter results in an inferior product and burnt-out programmers, and you can't predict how long it will take.

Take the heat

Once you have committed yourself to zero-defects code, you're going to encounter pressures to drop back to the old methods. Some of this will be temporary until other groups (user education and program management, for example) learn that the new method results in better products whose progress can be measured and predicted.

Don't give in. Your first schedules will look infinitely padded, when in fact they will simply be true (a new thing in the world). Mike Maples has agreed to stand behind any schedule that can be defended as realistic.

If problems do occur, slip the schedule. Your goal should be to keep the schedule realistic (descriptive as well as prescriptive). It's better to take the little heat now than the nova later on.

Be ashamed of bugs

If you think that there will be bugs in your code no matter what you do, and someone actually finds one (or a hundred), there's no cause for alarm: "I knew it." If you think that there won't be any bugs in your code, but someone finds them anyway, you probably react with resignation: "I guess I was wrong."

Both of these are counter-productive strategies for dealing with bugs. Plan carefully so they don't happen. If they happen anyway, you *should* be embarrassed, and find out why your plans failed. Then take action to prevent the same failures in the future.

Coding is the major way we spend our time. Writing bugs means we're failing in our major activity. Hundreds of thousands of individuals and companies rely on our products; bugs can cause a *lot* of lost time and money. We could conceivably put a company out of business with a bug in a spreadsheet, database, or word processor. We have to start taking this more seriously.

Reward quality

It's difficult to say what it is we're rewarding now. What we should be rewarding are people who do the job right the first time. If we can't find anyone like that, we should reward whoever comes closest. One means of reward is simply to let them do more of the fun stuff. The way you do that is to enforce the rule that if something is broken, it must be fixed right away.

Another means of reward is a better performance review, which in turn leads to monetary reward.

"Fat and slow" is a bug

Users measure our products by their speed (a major part of usability) as much as by their features. Our methods do not reveal this. We often let hand native, swap tuning, and other important optimizations slip until there's no time to do them.

Hand native should be done in parallel with the C from the start. This may seem to "waste" time, but you'll always know if the program is fast enough, and have time to correct it if it's not. Algorithmic optimization should *never* be postponed. Swap tuning is a difficult issue, especially under Windows and with the state of our current tools; each project lead should decide how to schedule it.

The intent is not to do unnecessary optimizations, but to schedule, *and never postpone*, known optimizations.

Code quality measures programmer performance

If we value quality, then quality should be a criterion in performance reviews: not the only criterion, but as important as any other.

A new way to work

All of the concrete suggestions in this section came from a few hours' discussion by nine people who had changed their attitude. These are ideas for how to implement a zero-defects strategy in your project. If you have others, please let everyone know.

Stop guessing

Here are ideas for making sure you do it right. Not all of these techniques will work for everyone, so pick and choose.

Cleanroom

This technique has been described by Harlan Mills[3], and was once used unintentionally by Charles Simonyi. Both report good results in small- to medium-sized projects. One aspect of this approach is to do things in a more mathematical manner, leading to informal proofs of correctness.

To use the cleanroom technique, imagine that your hardware has not been delivered yet, so you can't debug your program. After designing and writing your code, you and your colleagues review it carefully and in detail, over and over if necessary until you're absolutely sure that it will run the first time. Mills' and Simonyi's experience is that it nearly will run the first time.

Code review

No group of more than two programmers can agree on the best format for code reviews, so we won't make a claim for a "best" format. We do think code reviews are critical. Here are some ideas.

The old-style presentation code review, in which the author walks through his code with his peers, does not catch any but the most superficial bugs. It is an excellent teaching tool, however, and we encourage its use for that purpose.

A more rigorous method is for the author to prepare an introduction to the code, including written documentation, and give a high-level walk-through of the code to one or more of his peers. The reviewers then use the author's materials to actually step through and test the code. A variation is for the reviewers to simply read the code thoroughly until they understand it. In both cases, the reviewers should be looking for missing logic, for how exception cases are handled, and for bad assumptions. Then the reviewers report their results to the author.

Another variation is for the reviewers to review the code privately and report whether or not they found problems, without saying what the problems were. The author must try to find the problems independently.

Don't trust anyone

Since so many problems are caused by misunderstandings, assume nothing without verification. This can take the form of asserts and state verification code that runs on demand or at idle time.

Debugging tools never find their way into the schedule—this has to change. Every development postmortem[4] promises that more time will be spent on essential debug tools next time. Stop postponing it. PAs that can write code are a great way to get these done; almost all of the debugging tools in Mac Word 4 were done by a PA.

We all claim to use asserts, but almost all code could use more of them. Spend the time to identify what your assumptions are, then make the code prove that the assumptions are correct.

Document your design and interface

Each project should determine what level of documentation is adequate. Only one thing is certain: your current level of documentation is probably *in*adequate.

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3 In "Cleanroom Software Engineering." Dave Moore can provide copies of the article.

4 OBU now calls these Project Epilogues.

Improvements may require nothing more than enforcing meaningful header comments on all routines. It would probably help to have at least a high-level document describing the basic logic and data structures for every major part of the product. Don't forget to schedule time to write these, and don't wait until after the product ships: by then it's too late to help anyone.

If you don't do this, people will continue to make bad assumptions about your code. The resulting bugs will be your fault.

Part of the documentation effort must be to simply talk to each other. Too often there is not enough communication even *within* a team. This turns you into a bug factory.

Training sessions

New people on the project (or on a feature) are a great source of bugs. You can avoid this by teaching them what they need to know. An orientation document is a great help; the Mac Word Fundamentals document has really helped.

Have regular meetings where someone presents the ideas behind part of the product. If you have a weekly development meeting, do it then. Discuss the basic logic of the code and how it interferes with the rest of the product. You may want to videotape the presentations so you can show them to new people later on.

Encourage everyone on the project to know the entire product well.

Write tests before debugging

This is critical. *Before* you start debugging, determine what you'll be looking for and *write it down*. If you can automate the tests, better yet. As you find cases you missed, add them to the script.

We don't want you to waste time managing unwieldy scripts, so keep them as brief as possible. But if you write down what you'll be testing, you get these benefits:

- You can give the script to testing when you check in the code. They'll have a better chance of verifying your code, or finding problems.
- You'll know for sure what you tested.
- You'll think of things you missed before anyone else even sees it.

Competing designs and implementations

This is a dark horse. One way to be sure you have the best design is to have two different teams develop a solution to the same problem independently, then accept the better design. You may want to take parts of each design for the final product. You can use the same technique for implementation: have two teams write the same feature.

Ths sounds expensive, and it is. But by simply doubling your cost, you guarantee a better product.

There is another problem: how do you tell which is better? Nathan Myrhvold suggests examples in which competing designs couldn't be distinguished until they were implemented. So, if you're thinking of trying this, you should plan on carrying the competition through the coding phase.

Self-validation

Before you call something done, you should convince yourself it is correct. Mathematical proofs suffer from Groucho's disease: they can only prove algorithms that are so simple we don't care. So try the techniques below.

Step in it

As in, "You don't know it until you_"

A common technique for verifying the "correctness" of new code is to run it and see if it crashes. If it doesn't crash, and it seems to produce the correct result, then it "works".

Step in it means step through every line of code with a debugger. Stop at crucial points and examine important variables. Watch closely at important logic points.

In Mac Word 4, we stepped through code for two reasons: to verify the correctness of hand native, and because the profiler wasn't giving us the right kind of information[5]. The result was extremely clean hand native, and a lot of insight into how the program *really* worked, which allowed us to improve its speed dramatically.

The only way to be sure code works is to watch it.

Code review

This must be said again. The educational benefits alone make code reviews worthwhile. But their real value is to get more than one person thinking about the code, and verifying it. Use whatever format works best for you, but schedule code reviews and then *do* them.

Glass box testing

Sometimes called white box testing. PAs would make great glass box testers. This is an interactive code review: having someone other than the author test the code with a listing open, looking again for missed cases, bad assumptions, or simple mistakes.

Presumed guilty

The U.S. judicial system is a terrible model for testing software. Assume that your code does not work (a good bet), and make it prove itself. This is where your scripts come in. Figure out before debugging how your code could be broken, then prove that it's not.

This is a crucial change in attitude. We must stop writing code and then testing it to find the bugs. Instead, we need to write the code and convince ourselves that it works. Not finding bugs is not a proof of correctness.

Self-correction

When you've expended your best efforts, and you still find bugs in your code, don't give up and don't accept the situation. Do these instead.

Do not pass Go

Fix it right now.

Your commitment to zero bugs every day has broken down. Stop working on that jazzy new feature, forget about the schedule, and fix the problem.

Reassess and scream

Simply fixing the bug isn't enough. Take a moment to figure out why the bug happened. Why didn't your test scripts or asserts catch it earlier? What assumptions were wrong, what rules did you break?

5 The profiler can tell you how long was spent in the code that ran. It can't tell you if the right code was run, for example if a cache eliminated unnecessary work.

If you find something, look hard for other instances—bugs travel in swarms. Then let everyone else on the project know. It's likely that someone else made the same wrong assumptions. Bring these up at the weekly development meetings.

Three strikes

When a lot of bugs have been found in the same area, there's something seriously wrong. Find out what it is. Perhaps someone isn't spending enough time to verify the code before checking it in. Perhaps there are serious design problems.

When design problems do occur, be ready to throw it out and start again. You can easily spend as much time trying to patch a bad design as you can fixing it right. Take the heat: adjust the schedule if necessary, but don't force users and your team to live with mistakes that could be corrected and will compound if they're not.

Reassign bugs

A possible extension of code reviews is to have someone other than the author fix some of the bugs in an area, especially problem areas. There are many variations: assign the bug to someone who has reviewed the code in question, or assign it to someone at random. You may find that getting a new perspective on the area will help to identify the larger problem.

Fix one, find one

Consider using a quota system: for every bug found in your area, you must find another bug and fix it. (This is not recursive: you're free after the second fix.)

The second bug doesn't have to be in the same area, or even in your code at all. This technique will motivate you to not create bugs, and it will also force you to examine the product more closely.

Projects in progress

Projects that are already well advanced can still use some of the concepts of zero defects.

- Do code reviews. Even if you're in crunch mode to fix bugs, *good* code reviews can find more problems and are worth the time.
- Step through new code, even small bug fixes.
- Add asserts and state verification code.
- Be very careful when fixing bugs. Examine assumptions and verify them. Stop and think about what else you're affecting.
- When an area is showing severe problems, consider throwing it out and doing it over.
- Update function header comments; stop and document areas that everyone uses but which are not well understood.
- Have training and discussion sessions.
- Have your PAs do glass box testing.
- Implement the fix one, find one scheme.

Benefits

Zero defects is a lofty goal, but it can have tangible results.

Predictability

The stabilization phase of the project is the hardest to schedule. The smaller that phase becomes, the better we can predict the entire project. If we always check in high-quality code, then we have a good idea how much time the remaining tasks will take, and everyone benefits.

Spread out the fun

Imagine that, late in the project, you're not fixing bugs for twelve hours a day! Instead, you're writing quality code that you're not going to have to come back to later and patch incessantly.

Put your time into thinking up front, and the fun stuff will last all through the project.

Less conflict

Between programmers and between groups.

Pride and productivity

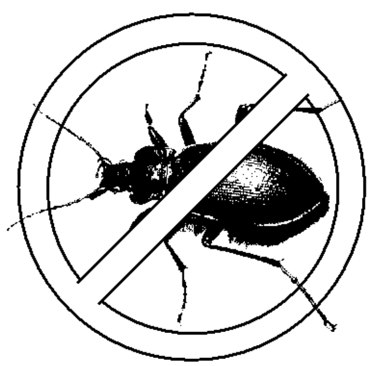
When the quality of your code goes up, you'll feel a sense of pride and accomplishment *throughout* the project, not just when the good reviews come in. Also, Dave Moore has studies that show that when you think consciously about quality, and work to improve it, your productivity also increases. That's rewarding both for you and for the company.

Self-leveling

When projects follow zero-defects strategies, the people who write the best code will get to write more of it. This rewards the best coders and gives everyone a way to measure and improve themselves.

Learning together

This isn't the final word. If you find techniques that help you produce better-quality code, please tell Dave Moore, Doug Klunder, or myself so we can make everyone aware of them.



Nathan - Roadkill

InterOffice Memo

To: List

From: Nathan P. Myhrvold

Date: September 8, 1993

Subject: **Road Kill on the Information Highway**

Technological changes often have enormous consequences. Microsoft has been the beneficiary of this effect for the last 17 years, and a variety of other companies in the computer industry have either had their day in the sun, or have fallen past the crest of the wave and have suffered as a result. Although the shifting fortunes of companies within the computer industry are naturally quite important to those of us who are participants, the effect on the world at large has actually been rather modest. The confluence of wide area digital communications and ever cheaper computing is going to be a *lot* more traumatic and far ranging than PCs have been. This memo is about some of those changes and how they will effect a number of industries.

Many of the ideas described here spring from numerous conversations with people at Microsoft and elsewhere. I'd thank everybody individually, but alas since my life isn't yet on line its hard to enumerate them all. I would like to thank Cindy Wilson for confirming a number of facts for me and providing terrific library support.

A Computer On Every Desk

Personal computers have become incredibly useful tools - whether for individuals or organizations. The world *writes* with PCs - whether composing a simple letter, writing a novel, laying out *Time* magazine or drafting the blueprints for new building. We make *decisions* with personal computers - analyzing an investment or creating a budget and asking "what if?". These are all very valuable tasks, but it is also important to keep some perspective on the scope of the changes. Word processing has replaced the typewriter - but outside of the typewriter business one could ask "so what?". Spreadsheets, one of the strongest applications categories have replaced the *columnar pad* and the adding machine. The spreadsheet implementation of a columnar pad is a lot more convenient and has broadened the user base to some people who weren't big columnar pad users, but this is the basic functionality. I remember seeing those funny pads with all the columns in the back of stationary stores years ago. I recently checked, and found that they, along with all those delightfully bizarre forms of K+E graph paper, are still carried in a good stationary store (albeit at reduced volumes). Despite the enormity of the personal computer "revolution" within the parochial confines of the computer industry, it really hasn't been that much of a revolution in society as a whole. How radical can a revolution be if its rallying cry (at least implicitly) is "Death To Columnar Pads!" ?

Another way to see this is to look at our own mission statement - *A computer in every home and on every desk*. This was a highly unconventional vision in the context of water cooled mainframes humming in the machine room, but it's really rather modest in the larger context of society as a whole. In actual practice, the mission that we and the rest of the industry have actually delivered is somewhat shorter than way we normally phrase it, it's really - *A computer on every desk*. We have been pretty good about getting computers onto desks whether they are in the office, or in the den at home, but desks are still our primary strength. We've done a bit better in some areas than others. Laptops (like the Omnibook I'm using right now on United 871 to JFK) have allowed people to take their desk activities with them. This is balanced by the fact that there are many real desks, such as those in the school classroom, that haven't been populated with computers.

The metaphor of the desk top which inspired researchers at Xerox PARC has largely been realized - personal computers and the software they run are primarily dedicated to service the activities that people do at a desk. Most of the product development done at Microsoft is focused on making incremental improvements to this basic mission, or in integrating the last remaining desk top activities. Our Microsoft AtWork campaign will unify PCs with the telephone, FAX and copier, closing on the last big gaps. However challenging (and profitable) this may be, we must not forget that our industry has grown up in a rather restricted environment. It is if we lived in a world where the only furniture was a desk, and columnar pads were on every bestseller list.

The Importance of Being Exponential

I was recently interviewed by a guy doing an article to commemorate the 40th anniversary of *Playboy* magazine. He wanted to know what computing would be like 40 years hence, in the year 2033. This kind of extrapolation is clearly fraught with difficulty, but that doesn't mean that we can't try our best. In the last 20 years the overall improvement in the price/performance ratio of computing has been about a factor of one million. There is *every* reason to believe that this will continue for the next 20 years; in fact, the technological road map appears reasonably clear. This will yield another factor of one million by 2013. It is hard to predict what technology will be promising then, but I'm optimistic enough to believe that the trend will continue.

Laboratories are already operating "ballistic" transistors which have switching times on the order of a femtosecond. That is 10^{-15} of a second, or about 10 million times faster than the transistors in this year's fastest microprocessor. The trick is simple enough in principle - reduce the size of the semiconductor component and the current flow so that the electrons don't bump into each other or the semiconductor atoms. In addition to being much faster, this dramatically reduces power drain and heat dissipation. The next stage is more of the same - people are currently experimenting with the "single electron transistor", in which a single bit is represented by a lone electron. This is not only *very* fast, it is also the ultimate in low power computing!

This raises a couple of other amusing points. Every advance in speed makes computers physically smaller. Switching speed in semiconductors is directly related to their size, and at another scale, the delay or latency caused by time for a signal to travel from one part of the computer to the next is limited by transit time at the speed of light. At the speed contemplated above this is extremely significant. If you have a computer with a femtosecond cycle time, then it takes about 1 million CPU cycles for a signal to travel one foot. As a point of comparison, a hot processor of 1993 with a 100 MHz clock rate (10 nanosecond cycle time) will would have a similar relative wait time in terms of clock cycles if it was sending a signal about 1860 miles. The latency associated with going across the country today will be occur in moving across your desk in the future. The amazingly fast computers of 2033 will of necessity be *amazingly small* because you can't build them any other way. They are also likely to be very cheap because most any method for manufacturing things this small is to replicate them like crazy and make many at the same time.

Optical computing offers an interesting and orthogonal set of tricks and techniques. Note that in the cases I am describing here the invention that must be done is primarily engineering rather than scientific in nature. The basic phenomena exist in the lab today, so mother nature has, in effect, *already signed off on the designs*. The remaining steps are just to learn how to manufacture these devices in quantity, integrate them at a large scale and bring them to market. People are pretty good at doing this sort of thing, so I think that there is as much reason to believe that breakthroughs will accelerate the pace of development as there is to doubt that the trend will continue.

Assuming that the price/performance trend in computing *does* continue, the computers of 20 years from now will be a million times faster, and 40 years hence a trillion times faster than the fastest computers available today. In order to put this into perspective, a factor of one million reduces a year of computing time to just 30 seconds. A factor of a trillion takes *one million years* into the same 30 seconds. Attempting to extrapolate what we could do with a CPU year of 1993 level computing is hard, and a million CPU years is nearly impossible to imagine.

Note that this is only the estimate for a single CPU and the standard serial "von Neuman" architecture. Multiprocessors will become increasingly common, and give us a huge range of performance above and beyond this. The figures above were meant to be a comparison at fixed cost - say for a typical desktop computer. There will always be specialized problem areas in science, engineering and elsewhere that will justify machines that are 1000 times to 10,000 times more expensive than a desktop user of today can afford. The supercomputer of 2033 could easily be 4 quadrillion times faster than a computer of 1993 - which means that it could do in 30 seconds what the fastest PCs of today could accomplish in 4 billion years - the age of the earth.

Storage capacity is also increasing at an exponential rate. There are a whole host of interesting storage technologies on the horizon. Current hard disk technology will continue to drop in price - earlier this year we priced hard disks at about $1 per megabyte. This fall a new series of disks will come in at about 30 cents per meg, and I believe that this trend will continue for a while. We have talked to people at disk companies who are planning to make gigabyte capacity drives down to the 1.8 inch form factor, and then surface mount hundreds of them to cards, as if they were chip modules, to increase the density. The total bandwidth will be very high because the disks will be configured as an array. Various forms of optical storage will also appear to challenge this standard magnetic based technology. The most exotic of these is holographic memories which appear to be able to store up to 10^{12} bytes - a terabyte - *per cubic centimeter*. This isn't even close to the theoretical limit, which is far higher.

These forms of secondary storage will face some interesting competition - semiconductor RAM has increased in density (and decreased in cost) by 4X every 18 months for the last twenty years. The various technologies discussed above for CPUs will also effect mass storage - RAM based on single electron transistors will be *very* dense. Various random factors (such as the recent explosion at a Japanese epoxy plant) can perturb the pricing, but in the long run I expect these pricing curves to be maintained. This is far faster than the price of mechanical mass storage is dropping, and suggests that by the year 2000, RAM will cost about $1-$2 per gigabyte.

I expect that the typical desktop PC around the turn of the century will be over 100 gigabytes - whether RAM or a mixture of RAM and some other sort of mass storage., and a typical LAN server here at Microsoft will have a few terabytes. To put this in perspective, the American Airlines SABRE reservation system is a little over 2 terabytes, so it would fit on only 20 PCs worth of storage. If you bought that capacity today with PC industry components the cost would be just under $700,000 , a tiny fraction of what it cost to built SABRE out of 112 IBM 3390 disk drives. By the year 2000, I expect that amount of disk space to cost a few thousand dollars. In fact, it might cost even less because video on demand systems used to replace Blockbuster and other video rental stores will dramatically increase the market for storage and should dramatically drive the price learning curve.

The computational load used by SABRE is even less of a problem than the storage requirement. The existing reservation system uses processors (IBM 3090 architecture) rated at 423 million instructions per second. This is equivalent to four MIPS R4400s, or six to eight Pentiums. Another way to look at this is the traffic load. The peak ever recorded on SABRE was 3595 transactions per second. A dual processor MIPS R4400 machine over in the NT group recently benchmarked at about 300 transactions per second[1] with NT and SQL Server, so you'd need a dozen of these machines to do the whole thing. The reason for the factor of six difference between this and the raw number of compute cycles is that SABRE uses specialized transaction processing operating system (IBM Transaction Processing Facility) rather than a general purpose system like NT and SQL Server which is far less efficient (but more flexible) than TPF.

In fact, with a new generation of transaction and database software based on direct use of 64 bit addressing and massive RAM memory, a single microprocessor such as the MIPS T5, Intel P7 or next generation Alpha or PowerPC should be able to the entire SABRE load. Although SABRE represents one of the most challenging real time data processing tasks of 1993, hardware technology will pass it by in the next couple years. There is still a major task in creating the *software* which will enable this, but my assumption is that we and/or others will recognize this opportunity and rise this to challenge.

One way to consume these resources is to switch to ever richer data types. We have seen how the move to GUI consumed many more CPU cycles, RAM and disk space than character mode, so it is relatively safe to suggest that more of the same will occur with rich multimedia data types. Audio is already within our grasp, because it is fairly low bandwidth. Film and video represent a major step upwards. A feature film compressed with MPEG or similar technology will be about 4 gigabytes. Advances in compression will probably take this down to about 600 megabytes and increase the quality but this is still a major step up from text. If we compare the size of a novel or movie script to the film itself, we'll see roughly a factor of 1000 increase.

A factor of 1000 is quite a bit by normal standards, and much of the work that the PC industry will be doing in the next several years is gearing up to this challenge. It is quite clear that video and other multimedia data types will become as commonplace as text is today. This will cause major shifts in usage and will have all sorts of other consequences, some of which are treated elsewhere in this memo. Nevertheless, this isn't a very full answer to the question of what we'll do with all of those computing cycles.

Remember that a factor of 1000 improvement takes only *ten years*, so at best the transition to video will only be a temporary pause in the onslaught of computing. Other media types won't really help much because there is a more fundamental limitation, which may be somewhat surprising - human sensory organs aren't all that complex!

Audio and video are already well understood, but we can make some estimates for the other senses. Taste and smell are actually variations of the same sense (you can't "taste" many things when your nose is plugged) which maps a set chemical sensors in the nose and mouth to a signal. Clinical tests similar to the "Pepsi Challenge" show that the taste/smell resolution is not very complex - at least in humans.   The sometimes hilarious vocabulary used by oenophiles to describe the taste of a wine is another example. Without understanding the output device it is hard to say in detail, but I doubt that the combined bandwidth would be more than audio.

Touch is more interesting. Apart from our fingertips, lips and a few other regions, our sense of touch is actually not very good. The basic unit of visual displays is the pixel, short for picture element, and in a similar vein we can talk about the touch element or "touchel". Even parts of our anatomy which we think of as being quite sensitive often have poor spatial resolution and thus require few touchels to achieve the full effect. Poke yourself with various shapes of the same basic size and you'll find that most places you can't tell the difference - sensitivity as we normally think of is actually about resolution in *amplitude*, which effects the number of bits per touchel rather than their density. Even the highest resolution parts of your body don't need more than 100 touchels per linear inch, and the total surface area which requires that much is pretty small.   An estimate of the total touchel bandwidth is probably something like one million touchels with 8 bits of amplitude per touchel, updated between 30 and 100 times a second. The total bandwidth is therefore equal to, or possibly a bit less than, that for video.

There are clearly some *major* engineering problems to be solved before we all have touchel based body suits and taste output devices in our mouths. Better yet we could have a direct connection to our nervous system so we can "jack in" to our PCs in the manner that William Gibson and others have described in cyberpunk science fiction. Since this is primarily a biological and mechanical engineering problem it is *not* subject to the same exponential technology rules which govern computing. There are reasons to be optimistic, but it is *not* clear to me whether we'll have the full range of human senses as output devices in twenty years, or even in forty. Regardless of the I/O issues, it *is* clear that computing resources will not be the bottleneck in solving this ultimate human interface problem. In fact, the estimates above suggest that the total bandwidth that can be absorbed by a human is only a modest constant factor larger than video, and thus will only take a few more years for the price/performance curve to surmount it.

Given the amazing growth of computing, there are always a foolish few who contend that we will run out of demand, so we'll never need more powerful machines. The counterexample is that there are many simple problems which would require more computing than a 1993, or even a 2033, level supercomputer could do between now and the recollapse or heat death of our the universe[2]. Computer scientists classify problems of this sort as "NP hard", and there are many examples.   In actual practice some NP hard problems can be efficiently approximated, but many cannot, and this will lead to a never ending stream of problems for computers of the future, no matter how fast.

Here is the simplest example of why NP hard problems are hard. Consider trying to enumerate all possible combinations or orderings of N unique objects (characters or whatever).   The number of combinations is N factorial, usually written as N!. 3! is only six, so I can list all of the combinations here 123, 132, 213, 231, 312, 321.   10! is about 3 million, which is relatively small, but 59! is about 10^{80} and 100! is just under 10^{157}. These are *really* big numbers! For reference sake, cosmologists usually estimate that there are about 10^{80} elementary particles (protons, neutrons etc.), and about

10^{160} photons in the entire universe, so even with extreme cleverness about how we stored the resulting list, we'd need to use *all* of the matter and most of the energy in the universe just to write down 59!, much less 100. As output problems go, touchel suits seem mundane by comparison! This particular example isn't very interesting, but there are plenty of NP hard problems, such as the traveling salesman problem and many others which are just as easy to state and just as hard to solve.

Many open problems in computing - including some classified as "artificial intelligence" fall into a grey area - they are likely to be NP hard in principle, but there may efficient approximations which allow us to get arbitrarily good results with bounded computing resources. Other problems, such as simulation, recognition based input (speech, handwriting...), virtual reality and most scientific programs are clearly *not* NP hard so they will fall to computing.

The key issue behind this point is that computing is on a very fast exponential growth curve. *Anything* which isn't exponential in growth, or which is exponential but with a slower growth rate, will quickly and inexorably be overwhelmed. NP hard problems are an example that can easily scale beyond any computer. Mainframe and minicomputers did have exponential growth, but at a slower rate than microprocessors so they succumbed. Human interface only scales up to the point where our nervous system is saturated, which as discussed above will be reached within the next decade or so.

The SABRE airline reservation system mentioned above is one which *doesn't* scale. The size of SABRE depends on the number of travelers, flights, travel agents and how fast they type. None of these factors is growing anywhere near as fast as computing itself. Even a constant factor of 1000 by using video, or of perhaps 10,000 to have a full virtual reality (thus obviating the flight altogether!) does not matter because *any* constant factor is rapidly absorbed by exponential growth.

This is a fundamental lesson for us. It is extraordinarily difficult for people to really grasp the power of exponential growth. No experience in our every day life prepares us for it. The numbers become so astronomically large[3] so quickly, as the projections above show, that it easy to either dismiss them outright, or mentally glaze over and become numb to their meaning. It is incredibly easy to fool oneself into thinking that you do understand it, but usually this just means that you've mentally done a linear extrapolation from the recent past. This works for a little while, but then rapidly becomes out of date.

The trick for the next decade of the computing industry will hinge on being very smart about recognizing which things scale with or faster than computing and what things do not. This will *not* be obvious in the early stages, but *that is where the value lies* so this is the challenge to which we must rise. The "MIPS to the moon" vision speech is very easy to make - *the hard part is to really believe it*. Fortunately, much of the competition will be a bunch of entrenched linear extrapolators that won't know what hit them.

At its essence, *this* is the secret of Microsoft and the personal computer industry. Despite the incredible advances that had occurred in mainframes and minicomputers, the people involved - many of them quite brilliant - could not grasp the fact that the advances would continue and that this would stretch their business models to the breaking point. If the mainframe folks had stopped to make the exponential extrapolation - *and acted upon it* - then it naturally follows that microprocessor based systems would deliver computing to the masses, that they would ultimately surpass mainframes and minis, that hardware should be decoupled from software because the driving forces are different, and finally that software would be a central locus of value.

The last point is quite interesting. If you are in the hardware business you must be very agile indeed to keep your footing. The implementation technologies change so fast that you are always at an incredible risk of becoming obsolete. It is very hard to change a manufacturing business fast enough because of the large investment in tooling up for what will soon become yesterday's technology. The only hardware companies that have ever made significant money are those that managed to create an asset - the hardware architecture - which was above the fray of individual implementations and thus could enjoy a longer life span. Software is able to do the same trick in an even better fashion. Like a hardware architecture it lives for a long time - more than a dozen years so far for MS DOS - but the tooling cost is far lower. The software business is still quite tricky but it is fundamentally better suited to long term growth in an exponential market than hardware is.

The growth curve of Microsoft is unprecidented in the annals of business, and seems quite miraculous until you realize that what we have done is ride the exponential growth curve of computer price/performance. *That* is the true driving force behind our success. As long as computing hardware increases its price performance there is a proportionate opportunity for software to harness that power to do things for end users. This occurs because the machines get cheaper, user interface techniques like GUI allow us to make computing more appealing to a wider audience, raw power enables new application categories, old customers can upgrade and get substantially better features... All of these factors combine to increase the opportunity for software. I made a chart a couple of years ago plotting the number of lines of code in several of our products over time. These also followed an exponential curve with approximately the same growth rate.

Our feat, and believe me I do *not* mean to belittle it, has been to ride this wave of technology and maintain or increase our relative position. The correct way to measure this position, and thus our market share, is as a fraction of worldwide CPU cycles consumed by our products. (As an aside, the evolution of the information highway will cause this market share metric to evolve as well. Rather than measuring the fraction of the worlds computing cycles executed by our software, we will have to look at share of both CPU cycles as well as total data transmitted.)

Maintaining CPU cycle share is very hard to do, because the right mix of products and technology to do this at various points in time changes a *lot*. Companies that have point products or which only extrapolate linearly will fail. So far, we have often been the beneficiary because we have been able to reinvent the company at each point along the line.

The bad news about this is that we will have to continue to do so, and at a rate which continues to increase. It will impossible for us to maintain our historical growth curves unless we maintain our CPU cycle share and that means that we must do two things: continue to bring new technology to our existing products, and at the same time create new product lines to track the emergence of computing in new mass markets.

One aspect of the price/performance trend discussed above is that a PC class machine will get amazingly powerful, but an equal consequence is that extremely cheap consumer computing devices will emerge with the same or higher computing power than today's PCs, but with *far* higher volume. The bulk of the worlds' computing cycles come near the low end, high volume part of the market. Any software company that wants to maintain its relative share of total CPU cycles *must* have products that are relevant to the high volume segment of the market. If you don't, then you are vulnerable to a software company that does establishes a position there and then rides the technology curve up to the mainstream. This is what the PC industry did to mainframes and minicomputers, and if we in the PC industry are not careful this fate will befall us as well.

The basic dynamics of this situation comes from the relative lifetimes of software and hardware. An operating system architecture can easily last 15 to 20 years or possibly even more, as MS DOS and UNIX both demonstrate. Over that period of time the computing hardware that the OS runs on will increase in price/performance by a factor of 30,000 to a million, taking the combined platform into new realms and application areas. If each segment of the computing industry scaled at the same rate, then the relative standings would be safe, but this isn't the way it usually works. Technology trends will favor some segments over others. Microprocessors beat out discrete components, and more recently RISC based microprocessors have been increasing their price/performance at a faster rate than their CISC based rivals. Business trends also matter - a high volume platform will have more ISVs, and probably a more competitive hardware market.

Microsoft started out as the Basic company - well, as it so happens we *still* are the leading supplier of Basic, but that is hardly the way to characterize us at this point. Growth, profitability and the focus of the company have historically shifted from one area to another, and this will continue past our current product lines. The day will come when people will say "hey, didn't Microsoft used be the company that made office software?" and the answer will be "yes, and as a matter of fact they still do, but that isn't what they're known for these days".

Your Life On Line

Consider spoken conversation. Although we may quote each other when we say something memorable, that is the exception rather than the rule. People tend to treat speech as an ephemeral medium - if we want to count on being able to revisit it in the future we go to special effort to take notes or record it. In the near future we will have the capability to record and index it all.

It's pretty easy to compress human voice down to about 4800 bits/second today, and this will almost certainly improve to 2400 bits/second in the near future, which works out to about 1 megabyte per hour. The DAT drive that I use for backing up my hard disk stores 5 gigabytes on a single tape which works out to 5000 hours. If you assume 8 hours of sleep a day, there are 5824 hours you're awake per year. Of course there is no reason to record the periods of silence, only periods where you are speaking or somebody is speaking to you. Thus my single DAT tape can probably hold many years worth of audio. It's actually an older unit - the next generation of digital VCRs coming out in 1994 will hold 100 gigabytes per tape, which means that a single piece of media with a cost of about $10 should be able to hold all of the conversations an individual has for their entire lifetime.

Video takes considerably more room than audio. If you assume that this sort of archival video can be a bit lower quality than standard VHS, it will take about 1.5 megabits per second with off the shelf compression methods. This means that recording video onto digital would cost about *eight cents per hour* using digital video tape, or a couple hundred dollars per year. Note that this is a 1994 cost - within a few years it will be far cheaper.

Location is another important attribute. This can be obtained with a small GPS receiver, or a variety of other small wireless devices. Recording the precise location (within a couple of feet) and the precise time of every movement a person or vehicle makes is far smaller amount of storage than voice. While we are at it, we could record temperature (ambient as well as body temperature), barometric pressure, blood pressure and a variety of other data about you or your surroundings.

Those of us who work with computer will also create files, receive email and so forth. A really fast typist can do about 100 words per minute with a 5 character word length, or about 30K bytes per hour. Lossless compression can typically reduce this to about a third, so this is about 100 times smaller than voice. Mouse motions and application commands are tiny on top of this, so we certainly have the capability to spool all keystrokes, commands and files that an individual creates over their lifetime at a fraction of the cost of voice.

The result is that it is easily possible to create general digital recorders which will spool audio, video and other data very cheaply. Cryptographic techniques can be used to time stamp or location stamp these records with digital signatures so that they cannot be forged or tampered with. The entire input and output of an individual's life can be spooled and recorded onto digital media. From there it is a small matter to index it for retrieval based upon time, location and content (via off line speech recognition).

The first application of this will come in the various individual systems. Given the increase in storage on PCs, why not record every version of every file? High speed networks and new software will make this quite cheap. Typing and other input mechanisms don't scale with the growth of computing, so why not spool every keystroke and mouse move. The notion of losing work should go away, because it is trivial to record *everything* that a user does. Caller ID telephones have started to do this with a list of every caller (answered or not) - why not record the content as well?

The Rodney King case showed the power of video tape in recording a situation. How long will it be before every police car, or individual policeman, is equipped with a digital video camera, with non forgeable time and location stamps? Commercial airliners have long had a "black box" or flight recorder, but why not extend this for buses, cars - even for individual people? In some cases this would be limited to time, location, speed and in others it would record full video and audio.

In fact, while we are at it, a unit like that is cheap enough to be deployed even more widely. Banks and some stores have cameras which can record in the event of a crime, but given the low cost why not have them nearly everywhere? Every city street light represents an investment by the community toward public safety, yet these lights are far more expensive to install and operate than a digital video black box will be in a few years. I could easily imagine such automatic recorders positioned in literally millions of places; connected to storage and analysis facilities by the information highway.

A couple more years of price/performance improvement and we could carry a device like that with us. The digital storage capacity would be enough to record every thing we say and do - for our entire lives. Such a device could carry your entire life on it - the ultimate diary and autobiography.

At this stage you may wonder why do this? Indeed, the notion of never being outside the range of digital recorders operated by Big Brother can sound pretty sinister. It would be very easy to regard this as the ultimate threat to privacy and personal freedom. At another level it may be pretty stupid. Everybody has, at some point or another, told a lie or done something that in retrospect they aren't proud of - why should we record ourselves and make this obvious? Richard Nixon's decision to record conversations in the White House for future historians clearly backfired and he was hoist on his on petard.

The social, legal and moral implications are quite interesting because our existing traditions are not prepared to cope with the incredible potential to record and analyze information on this scale. There will be many arguments about how to extend the principles we have today to this new world. In fact, we have already started to see the first skirmishes in this battle in the FBI proposal to make encryption illegal. Their proposals are chilling to a technologist, but their argument is disarmingly simple. They just want to preserve the abilities that they have today. Sounds reasonable, right?

Regardless as to whether putting your life on line is good or bad, it is *very* clear that it will be both feasible and quite cheap. Given this I believe that it will be widely used in at least some circumstances. Here are some scenarios as to how and why we may find our lives on line in the future.

The first is that there are many contexts in which it would be very useful to have a personal record of what you've done. This is clearly true for computer files, where returning to an old version is already done quite often. Researchers at EuroPARC (the Cambridge branch of Xerox PARC) have created a system that uses wireless electronic badges to record all of the motions of people inside a building, then create a "biography" which says where you were at any point and who you were with talked to (they do not record voice yet).

Unfortunately there are other reasons besides simply utility to the end user. Insurance companies would love to have the black box recorders on your car - both to trace it if stolen (there are several systems, such as Lojack that do this today), and to provide information in accidents. It isn't hard to imagine having half price car insurance if you have a car with a recorder in it. This can quickly extend to other circumstances. Medical malpractice insurance might be cheaper (or only available) to doctors who record surgical procedures or even office visits.

Many employers will want to use these recorders as a management tool. Bus and trucking companies have an obvious interest in whether their drivers stay within the law and are on time. The public at large may insist that the police record themselves in the course of their work. This guards against claims of brutality or abuse on one hand, and gathering better evidence on the other. Other circumstances will be more invasive and harder to justify, but it is virtually certain that people will try.

Personal safety will be a big issue as well. There are plenty of situations where you'd rather have Big Brother watching than be left to the mercy of street crime. David Brin's science fiction novel *Earth*, suggested that digital video cameras with wireless links to the police would revolutionize police work and the judicial system. In addition to putting them in street lamps, Brin has them toted by senior citizens, because retired baby boomers will make up a large fraction of society. Since they will also dominate the voting population, the laws of his imagined society are oriented toward widespread use of digital surveillance to protect senior citizens against crime.

One of the biggest reasons will be defensive, using the digital record to protect against litigation and other claims. People who record are open to the possibility of the recording being used against them, but at the same time will be able to protect themselves against spurious claims. If you have a business deal with another party, and they have selectively recorded things (not every meeting etc.) then the best defense is to have a more complete recording yourself. One side effect of cheap computing is that it will be possible to forge essentially any kind of photograph, video or audio. The only such data that will be admissible in court will be those taken with tamper proof hardware that digitally signs it.

If these trends continue it will be gradually become more and more accepted to have these records - both at a corporate and personal level. What today seems like the digital jackboot of Big Brother will one day become the norm. Every year the executive staff at Microsoft have to sign a "boy scout pledge" of business practices which says (in essence) that we see no evil, hear no evil and do no evil. I'm not trying to make fun of this - it is true that our policy is to be good guys - but it doesn't really change from one year to the next. The ritual of signing this annually small testimony to the societal pressure to redundantly reaffirm our values. Twenty years hence the pendulum of public opinion may have swung to the point that people say "What do you mean, you don't record everything? Do you have something to hide?".

Gutenberg Reprised

If you grant that the world writes and makes decisions with PCs, what is next? The real answer is long and complex, but three of the key components are to *read, communicate* and be *entertained*.

An even simpler way to describe this is to say that computing technology will become central to *distributing* information.

As a rule, distribution has much more pervasive effects than authoring. Improving life for the author of a document does not materially effect the size or nature of the audience that she can address, but changes in distribution have a dramatic effect. The clearest precedent is the invention of the printing press. Great works of science and literature - Euclid's geometry, Plato and Horace, the Bhagavad-Gita, the Iliad and Icelandic Sagas, all- existed long before the printing press, so humans clearly were able to conceive them, but they had a very limited customer base. Monks and scribes spent lifetimes copying books by hand, while bards and minstrels memorized and orally repeated tales to spread and preserve them. No matter how cheaply one values their time, it was still a very expensive proposition which was the primary limiting factor in broadening the number of customers. If we could use a time machine to supply all those monks with PCs and Word for Windows, but limited the rate at which they could print to the same level of time and expense, it would make little difference - except perhaps for letting the monks channel their energies toward other fields[4].

When Gutenberg did change the economics of distribution, the world changed in a fundamental way. It is estimated that Europe had on the order of ten thousand books just prior to Johan's invention - within fifty years it would have over eight million. Literacy became a key skill. The advent of mass media - through printed handbills - revolutionized politics, religion, science and literature and most other factes of intellectual life.

I believe that we are on the brink of a revolution of similar magnitude. This will be driven by two technologies - computing and digital networking. We've already discussed the change in computing technology, and that is certainly dramatic, but it is communications which really enables distribution.

The technological factors which will drive communication are very simple. The first is that wide area communication will be digital and will therefore be driven by the *same* price/performance curve of computing as a whole. Switches and other parts of the new digital communications systems will be computers. Today this is partially true, but most of the world's telephone system is still analog, and the digital components that are in place are constrained by the old analog architecture (circuit switching etc.). If you made a relative comparison to the computer industry, you'd find that a "state of the art" central office switch of today, like the SS7, is comparable to a mainframe or minicomputer of the 1970s. In fact, the SS7 is built out of a couple of AT&T 3B2 minicomputers! As the microprocessor revolution sweeps this industry we'll see computer style similar changes in the price/performance of the switches and related equipment.

That covers the cost for the boxes at the ends of the line, but what about the stuff in the middle? Fiber optics driven by semiconductor lasers will be the primary connection in between the switches and terminal equipment. Fortunately, this technology is cheap, powerful and scalable. The basic fiber itself is just drawn glass which is able to channel a beam of light. The magic comes in when you can efficiently modulate the light with a signal, demodulate it on the other end, and then replicate the whole thing on as many strands of fiber as you like.

The result of these two technologies will drive the cost of bandwidth per customer down by enormous factors - in fact by about the same amount as the amazing numbers discussed above for computing. This is the key to changing the economics of distribution, and it is central to the entire notion of the "information highway". I'll use this general term to mean wide area digital consumer networks. In most cases I'll be talking about high speed networks which can transmit high quality video or other digital data. In the long run (actually not all that long!) all wired communication will be broadband. Nonetheless, we should not forget low to medium speed networks (the existing phone system or ISDN) because many of the essential features of the information highway are already exhibited by these systems and for some data and services they are quite suitable.

The Tyranny of Geography

One of the most general and dramatic aspects of the information highway is to virtualize space and time. Put another way, the highway will break the *tyranny of geography* - the stranglehold of location, access and transportation that has governed human societies from their inception.

An old maxim in the real estate business is that the three top factors that determine a properties value are *location*, *location* and *location*. The reason is obvious - physical location and access is an incredibly important thing to a commercial building or home. It determines how many people come in the door of your business, how far people have to commute, who your neighbors are and a myriad of other attributes.

Similar factors govern much of society. Transportation systems have been incredibly influential to the development of cities, towns and suburbs. Every major change in transportation has caused enormous changes in our lives, and in the business community at large. Access to people is the primary differentior between city and suburb. Most of the differences between a street in New York City and one in Redmond can be traced to the traffic flow and access potential- how many people can a business on that street draw its customers from and how far must they travel? How many jobs are within commuting distance of a home on that street?

Any activity which can be transacted over the information highway is freed from these constraints. Assuming that the network is there, a person in Redmond or Manhattan or nearly anywhere else will have *equal* access to goods and services presented on the network. Geography doesn't matter any more - if you are on the net you in a virtual world which is not bound by these conventions or constraints.

The implications are enormous - so much so that it is hard to overstate them without sounding silly. *Any information based business or activity will cease to be geographically bound*, which means that the local operators of these activities will die. Nationwide services which are based on the information highway will dominate them every time.

This will occur in various stages over the next couple of decades. The first examples will be pure information businesses, which can simply transfer digital data directly over the network. Software (and therefore Egghead and others) will certainly go this way, as will the local video rental store. The next step up is information used to purchase or deal with physical products - mail order and retailing. This will have a huge effect on local retailing, although it will not eliminate it.

Much of the focus on information business is placed on mass market retail information, but there is another category that is ultimately even more important - wholesale point to point information - in other words, the work product of most people employed in offices. Telecommunting will allow these people to go to work over the information highway rather than the physical one, and thus be bound only by its constraints. There is still a speed limit on the information highway - but it's 186,000 miles per second[5]. Long distance bandwidth will drop in price until there is very little reason for people working "together" to be nearly anywhere on earth which has network access.

Initially this will just effect a fairly small number of people, but over time this could become an enormously important phenomenon. An industrial economy needs to have its workers near their factories, but our increasingly service and information oriented economy can let its people disperse to wherever the information highway can reach them. This will lead to de-urbanization of the developed world. Most of the folks who work in large office buildings in Manhattan and commute in from Connecticut or Long Island would be a lot better off telecommuting - at least part of the time. Ultimately, "suburbs" will not be constrained to be near urban areas - any area with decent network access will do.

This will take both time and technology to occur. People's customs do not shift overnight, and we will need to come up with lots of tools and support. Video conferencing applications, clever user interfaces and a variety of other things must come into play before people work via the highway on a wide scale basis. Even though the pace of change may be slow, the total effect will be very large.

Perhaps the ultimate expression of geographical tyranny is found in politics. My vote is aggregated with those of my neighbors - first to vote for local government, then state offices, the House and Senate and ultimately the President of the United States. At every level, geography plays a huge role - it determines who I can vote for and whether my vote will be heard amid the din of the others who are aggregated with me. In fact, political control of the aggregation process - known as "gerrymandering" - is widely used as a mechanism to manipulate the outcome of elections.

The tacit assumption in a geographically based representative democracy is that I have something in common with my neighbors. Since we have this common interest, we should pull together to elect representatives to carry our message - either to the state house or the nation's capital. This may have been relevant years ago, but it is certainly fallacious today. I don't have anything in common with my neighbors on most issues that are important to me. There are some legitimate things that are truly based on local geography, like whether to widen our street, but on the really important topics I probably have far more in common with a computer industry person in Massachusetts or Silicon Valley than I do with the retired couple that lives next door to me in Bellevue.

This trend has already become moderately important in politics. Causes like environmentalism (e.g. the Green parties in Europe), gender or sex (gay rights, feminism...), moral issues (abortion) and others are strong enough to polarize people and create movements that cross geographical boundaries. The limiting factor is that it requires a lot of work to form and manage these grass roots organizations and get the word out.

The information highway will greatly accelerate this trend because it enables virtual communities and new forms of communication. It is very expensive for one person to communicate with more than one other person - the telephone network is fundamentally a point to point service, while radio and TV go to the other extreme and force broadcast communication to everybody. Bulletin boards - initially text and later video and multimedia - are an effective and inexpensive way for groups large and small to engage in multicast communication. Every interest group will have its bulletin boards (text, video...) its video productions and its ability to conduct polls and plebiscites on the network. The information highway will become a powerful conduit for grass roots political organizations which will eventually exceed the power of the traditional media.

Once the populace is thoroughly ensconced in its BBS forums and interest groups, there is still the problem that aggregation is done in the archaic geographical districts. As the power of the highway in reaching and influencing people grows, there will be a clamor to redress this situation. Television changed politics from the cloistered world of the smoke filled room where party officials made all the key decisions to the world of the sound bite and the infomercials, because it is TV that gets out the vote these days rather than ward heelers and party bosses. New politicians[6] and causes will emerge to exploit the information highway's ability to reach and motivate people, and it will become the most leveraged way to get out the vote.

The tension between the old geographically based politics and the new highway based approach will ultimately have to be resolved. One solution might be will be to elect representatives from interest group constituencies rather than districts. The simplest way to do this is to implement Lani Gunier's ill fated proposal to use cumulative voting to empower minority groups[7]. This was originally intended with ethnic minority groups in mind, but in practice it could reach beyond this. The true minority groups are not those based purely on race or ethnicity but rather on the specific issues and values that smaller groups of like minded people share, regardless of race or creed. If each American got 535 votes to cast any way they like against a national slate of representatives for Congress there would be a *very* different set of people in the House, and a very different set of political dynamics.

The next logical step is to make government itself use the ability to communicate and vote on issues. The information highway can conduct votes at nearly zero cost and with far greater assurance against miscounting or fraud. Representative democracy is based on the notion that the people cannot feasibly be consulted on every issue, but the information highway fundamentally enables us to do exactly that.

Note that I'm *not* claiming that any of these changes will be better than the current system (although it is hard to imagine that it could be any worse!) The point in politics is rarely about objective good versus bad - it is about what is popular. Ross Perot made "electronic town halls" part of his platform, and it is entirely possible that he or someone else will impose these changes in a top down fashion. A more likely scenario is that the information highway will become a vehicle for traditional political discourse first, and then slowly change the system itself as people become increasingly frustrated with the tyranny of geography.

Sam Walton On Steroids

WalMart is one of the great success stories in retailing. The basic strategy behind it was very simple - move business away from specialty stores, particularly in small towns, and towards large warehouses which can have lower overhead and therefore lower prices. It was a great idea for everybody except small town merchants, who have in effect become kindly old Sam's personal road kill.

Dell Computer, Gateway 2000, Circuit City, CompUSA and their ilk have done something roughly similar to old style computer stores, and a good portion of direct sales force activities. Whether you are a mail order firm or a superstore warehouse is only a small distinction - the key issue is maximizing efficiency in physical distribution.

The interesting things about these trends is that they will both become far stronger as the information highway develops - mail order is made easier, and the warehouse store doesn't have to be open to customers because they can browse it on the highway. The effect on retailing will be very large, as discussed in a section below, but there is another more general point that I think is worth making - many of the most powerful effects of the information highway, especially in the early days, will come by *accelerating trends that are already well under way*.

The reason for this is pretty obvious - if a trend is already developing and it is compatible with the highway then it will be happen faster. Human inertia is difficult to overcome and that will be a big barrier to things that are truly novel and require major changes in behavior. A change which is already in the works and has the groundwork underway, or which has already been proven to be an easy adjustment for people, has much less of an inertia barrier than things which are totally new.

This point may seem so obvious that it hardly bears repeating, but it does not appear to be well understood. Time and time again I run into people who make statements about what will or will not happen on the information highway which are totally ludicrous when you consider that the same logic would contradict things which are already important in society. The converse is that reasoning by analogy with current trends is one of the most important analytical tools for recognizing road kill in the making.

I Brake For Couch Potatoes

Do people want to interact with their TV sets? Aren't we really a nation of couch potatoes who'd rather vegetate than explore the information highway? How much change to people really want? Is the couch potato going to become road kill?

These are fascinating questions because it is hard to accurately judge the amount of inertia in human behavior patterns. It is certainly within the realm of possibility that people will be unable or unwilling to accept the changes that come with the information highway, materially slowing its growth.

The couch potato versus interactive debate is usually portrayed as a black and white issue - either people vegetate in front of their sets, or they are dynamically interacting hitting a button a minute. This charactature serves the purposes of the various zealots and luddites who pontificate on this topic. Regardless of whether you are for or against interactivity, it is easier to make your case if you assume a polarized either-or situation.

In actual fact, I think that it is far more likely that we'll find a very inhomogeneous distribution of interactively - both demographically and by application or service. Some people are confirmed couch potatoes today and they may remain that way indefinitely in some modes of operation, but I find it hard to believe that there will be a large number of people who love the status quo so much that they won't take advantage of interactively in at least some way. Even the most sedentary couch potato uses the telephone, pours through classified ads, sends greeting cards, looks things up in the yellow pages, calls in to order take out pizza, purchases things advertised on TV and other activities which will be available as interactive services on the information highway. You'd have to be in an intensive care ward to not be interactive in some aspects of your life.

Those who claim that most people are couch potatoes are usually taking a far too narrow definition of what the information highway is about. Even if movies and TV series - primary fodder for the couch potato - do not become interactive there will still be many other things that are. The real question is not whether we all start blasting away interactively whenever we sit in front of a terminal for the information highway, but rather whether enough services exist to fund the continued deployment of the highway. This doesn't take a great deal of interactivity in the early days.

The couch potato debate is really a very narrow issue about the nature of entertainment - will large numbers of grown people use entertainment formats which are active or passive? The answer in the short term will depend a lot on the details - will creative people come up with compelling interactive titles and services? It is hard to predict whether this will be terrific games, or daytime soap operas with interactive plot control or a million other possibilities. There will be both ample potential and incentive for people to try and come up with these new forms and formats.

In the long term I think that they will succeed in this quest for two reasons. The first is that people will have time to experiment and refine the medium. *The Milton Berle Show* is pretty odd by current television standards, and *MTV* would seem pretty strange if you could take it back in time to early television audiences. It may take 10 or 20 years before the information highway really hits its stride (television certainly did) as a mechanism for entertainment, but in the grand scheme of things that is a perfectly acceptable solution.

The second reason is a demographic one. We already know the power of Nintendo and other video games for children. One out of three American homes has one of these devices and their children spend a lot of time with them. We are raising a generation of people who have grown up with interactivity and *love it*. The information highway will be a far smaller change for these people than for those of us who only experienced computing as adults and are already set in our ways. As the Nintendo generation grows up and enters the economy the information highway will have a powerful set of advocates.

The Virtual Proletariat

The gaps between rich and poor, whether at an individual level within our society, or at a global level between rich and poor nations have up to this point been based on a broad set of factors, both social and economic. The advent of the information highway poses a new kind of gap - that between those who are "wired" and have access to the highway and those who do not.

The new "haves" who are connected to the highway will, over time, will command an enormously greater range of opportunity than the have nots who aren't on line. In the early stages there really isn't much of a social issues because the very first systems will be dominated by video on demand and other forms of entertainment which hardly count as a serious difference. As commerce, education and broad scale communication move onto the highway the difference will become quite material to an individuals ability to be part of mainstream society. This isn't something sinister - it is merely a reflection of the fact that the information highway will be an incredibly powerful thing, and directly in proportion to its power it will disenfranchise those who do not have access.

On the other side of the coin is an equally powerful phenomenon - once you are on the highway there is fully egalitarian access to on line resources. All users are created equally - both geographically and socioeconomically. There is no technical or business reason why a person in Beverly Hills or Medina should have different access than somebody in Boise, Bozeman or the South Bronx. Some services may cost more than others, but fundamental access to communications, reference materials and other important aspects of the information highway can be available to essentially anybody. Virtual equity is far easier to achieve than physical equity, because it is driven by the exponentially exploding capabilities of computing and communication. The information highway will not by itself eliminate the barriers of prejudice or inequity, but in the long it has the potential to be a powerful force in that direction.

Markets Meet Their Makers

The market place is one of the central concepts in both commerce and economics, and occupies a central place in any human civilization. The modern incarnations of the open market place are usually quite specialized, but at essence there is not that much separating the New York Stock Exchange, the Chicago Board of Trade, Sotheby's, a North African bazaar in Tangiers or the Tsukiji fish market in Tokyo where sushi chefs go to buy the day's catch. In each case buyers and sellers gather in a location, shout and argue about price, and ultimately exchange goods.

The existence of a viable marketplace is an enormous boon to commerce and trade. Without stock markets it would be very difficult for companies to raise capital, and without produce markets it would be impossible for farmers to sell fresh fruit and vegtables. The overhead associated with making sure up front that there was a buyer for each tomato would be an enormous burden. An open market generally means competitive pricing and a reasonable degree of efficiency - goods move from buyer to seller with a fairly modest "friction" due to the people who operate the market - the "market makers".

In the case of Sotheby's or a similar establishment, this is the auctioneer. In the case of the NYSE, it is a rather bizarre chain of people starting with your stock broker, moving down to traders who have "seats" on the exchange and then finally to a "specialist" who manages the market of one or more specific stocks and matches buyers with sellers. That is for one side of the transaction - a similar set exists for the other party in the transaction. All of these middlemen take a piece of the action. Gambling with a bookmaker is actually quite similar - the bookie is the equivalent of the specialist in that he matches bets on both sides of horse race or sporting event, with just enough difference between the two to take a piece of the action, known as the vigorish or "vig".

Despite the tremendous success of markets such as the NYSE in raising capital for corporations, the entire system seems quite quaint when compared to what the information highway can offer. Why are a lot of humans in the middle taking a vig? Why do they have to congregate in one physical location in one city? Why is the vig so large?

The information highway will become the ultimate market maker for goods and services - posting a buy or sell order is a far more direct way to mediate a market than any of the existing markets. Distributed databases can post offers, resolve offers into completed transactions, handle authentication and security and handle all aspects of the marketplace. No humans need be involved except for the buyer and seller. Specific markets on the highway may still charge a vig, but in general it will be smaller than anything charged today.

There is already substantial precedent for this. NASDAQ already operates as a distributed system, albeit a rather crude one, where various brokers distribute the market making function. A network of institutional investors with PCs and modems forms the basis for the Wunsch Auction System (recently renamed the Arizona Stock Exchange) which bypasses existing security markets for a smaller vig. As systems like this catch on and use the facilities of the highway to provide better services, the existing market makers will be unable to compete. Some of their services will still be needed - for example advice on which stocks to buy or when to buy them, or expert appraisals of art works, but these will be decoupled from the mechanism of the market.

The really dramatic step comes when brand new markets are created on the highway, so that goods or services which never had the benefit of widespread trading can be efficiently exchanged. Used cars are auctioned today, but to used car dealers rather than the public. There is no reason to make this restriction on the highway. Many classified ads attempt to establish an auction for a specific item when they say "best offer" for the price, yet the ability to really attract the best offer is limited.

In other cases, new "trading vehicles" will be created in order to turn a non-tradable item into something which can be bought and sold over the network. In the 1980s this occurred in a number of financial markets. A portfolio of many home mortgages was bound together, then shares in the aggregated pool were sold as mortgage bonds. This allowed banks and financial institutions to trade home mortgages, but without having to deal with them one a time. Futures options were created on a variety of synthetic securities - such as interest rate futures, or stock market index futures. In a very different domain, time share condominiums created a trading vehicle whereby people could purchase a resort home at a different level of granularity - by the week rather than forever. Each time this occurred it generated massive amounts of volume and dramatically changed the businesses involved. The information highway will provide such a strong foundation for creating marketplaces that it motivate the creating of many new trading vehicles.

Within 10 years, the information highway will host the most efficient markets ever created for a wide variety of items, ranging from sophisticated new securities to household commodities.   A wide range of today's market makers and middlemen will be left looking for something else to do.

Species of Road Kill

The remainder of this memo will offer some vignettes on how the highway will effect - or flatten - a number of existing businesses and customs. This analysis has the usual caveats that pertain to any such extrapolation. I could be very wrong, but it is interesting food for thought nonetheless.

One very important thing to keep in mind is that when I talk about companies or industries becomming "road kill" it doesn't mean that they will go out of business tomorrow. The actual process by which the information highway will displace current businesses will be far more like the start of an ice age rather than an instant calamity. In the long run the changes will be massive, and in retrospect it may seem to have happened overnight, but from this vantage point it will be slow transition. The only dramatic part is that the window of opportunity for a company getting on another strategy and avoiding extinction may come and go many years before it becomes obvious that they are doomed.

Communications Equipment

The market for communications equipment has been very lucrative for the last couple of decades, but the hardware trends discussed above will make it extremely difficult for this to continue. The hardware components that comprise switches, line cards, terminal equipment and forth will be driven down the price/performance curve by the trends in computing. In fact, the communications equipment industry is in a very similar position to that of the computer industry in 1981 when the IBM PC was introduced. The PC design became a public standard (quite unintentionally on IBM's part) which allowed lots of new entrants to build a machine which was compatible with an industry standards. The ATM standard for packet switching is the equivalent standard for communications equipment.

ATM switches, interface cards and cabling will fuel the growth of lots of start ups as well as new product introductions by major manufacturers. ATM will become the key standard at every level of the industry, replacing the LAN and PBX as well as the WAN and central office.

It is certainly possible that the major suppliers of PBXs and central office equipment could downsize their current projects and simultaneously ramp up agile organizations to make cheap ATM equipment; all the while learning to live on dramatically lower margins. Yes it is *possible*, but it is an enormously difficult task, and I expect that very few will manage to pull it off. Wang, Unisys, IBM, and DEC didn't manage to do this smoothly, and although one or two of them may rally they have all gone through enormously painful travails in the process.

This covers the hardware, but there is also a strong software component to communications equipment at both the PBX and central office level. During an interview last fall a reporter for the *Wall Street Journal* pointed out to me that AT&T had almost 10 times the number of software developers that Microsoft does. Despite this resource inequity I don't believe that the major equipment companies are in *any* better position to write the software for the new generation of ATM based communications systems than the hordes of IBM mainframe software developers were in writing PC software.

The individuals involved are probably smart and their experience may be useful - but only if they are taken out of the old environment and have their goals and philosophy reset. Many *people* made the transition from working on big computers to working on small ones, but in my experience no organization ever did.

In fact, software will be the area in which these new communications systems are hardest hit. Today's systems - whether for a PBX or central office, are notoriously hard to modify and are all proprietary - much like minicomputer or mainframe operating systems. There are few if any third party software developers for them, and direct programming by end users (or their MIS organizations) is impossible. As a result there are few applications and little flexibility.

The trend for the future will be towards third party applications which write to industry standard APIs - just like on PCs. Many of these apps will promote *end user programmability and customization* - both at simple levels like call forwarding, out of office and related features to advanced systems for use in vertical markets. The TAPI spec is the beginning of this trend because it allows Windows apps to interface to a PBX but many more opportunities exist. I believe that one of the next "killer apps" in the office (and later the home) will be communications control. Today the most that we get to do is set a few speed dial numbers, and record our answering machine or voicemail greeting. Programming your communications - including voice, video and conference versions of both as well as email and FAX, will become important to both organizations and individuals. As this occurs, the old style PBX and central office switches will be unable to compete.

The software architecture for supporting this new flexible approach to communications is likely to move to software companies rather than be written by hardware vendors. The hardware itself will be priced on the quality of the implementation and many different hardware manufacturers will support the same software. In other words, the situation will be a lot like the PC market. This is going to kill most of the current set of communications companies, and i expect that within five to ten years most of the important players will be new entrants similar to Compaq, Dell and Gateway, with few if any of the current leaders left as real contenders.

Novell ???

People who make local area network equipment aren't gong to fare much better as a rule than the folks in the communications business. The one saving grace is that most of these people already live (or already suffer) in a very low margin, fast paced market so the effects will not be anywhere near as traumatic.

There is a persistent hope on the part of many people involved with LANs that ATM and fiber networks will basically be a transparent change to their current business. This theory holds that ATM will primarily be used as a high speed version of Ethernet - probably for network backbones and other places where the throughput is required. There is no change needed, they say, because this is just a better version of what we already have.

I believe that this is ridiculous. The argument is tantamount to saying that PCs wouldn't effect the mainframe market because they'd be used as terminal emulators. While it is true that some PCs were used this way, particularly in the early days, the really dramatic and important aspects of the personal computing revolution were about *totally new applications* which fueled customer demand and opened vistas that were never part of the mainframe world. The same will be true for fast ATM based LANs - they will allow video and voice telephony, communication of rich multimedia documents in real time and seamless integration with high speed wide area networks in ways which current LANs are wholly incapable of providing. In doing so, they will create a new set of users and applications.

The biggest casualty in this transition will be existing network software architectures, because they too are wholly incapable of serving the new world.   There are a couple of fundamental reasons for this - first off, they have no ability to deal with real time, yet this is an essential aspect of delivering video and other multimedia streams.

The second reason is bandwidth - the basic protocols and APIs involved will dramatically limit the network performance to a tiny fraction of the network hardware potential. Remember that these new networks will be *faster than the local bus* on current PCs! It is no more appropriate to use NETBEUI or the Novell equivalent to access these networks than it would be to use them to access the video display or between the processor and RAM.   The whole role of network protocols shifts because for the most part the protocols must *get out of the way* and let the data flow directly. This requires a very different architectural approach to networking.

The third and final reason is that for the most part the current LAN software architectures do not address the key problems that will arise in ATM based LANs that are interconnected with ATM based wide area networks - a lot of new functionality will be required. The basic things that people use Netware for today are really pretty boring - file and print service and email.   These needs will continue, and can be hosted on top of an ATM network, but I doubt that they will be the primary driving force. Instead, the key asset will be a new generation of operating system and network software specifically designed for both LAN and WAN use.

This is an asset that we must try to secure for ourselves. Novell is also in a position to move in this direction, but in doing so they don't have any advantage over us because the departure from their current world is so great. With luck, they won't figure this out (we certainly should not tell them!). There is some evidence of that they have at least an inkling because they bought Fluent, a multimedia networking company, and they appear to be sniffing around the cable industry.

Even if they do move in this direction (and they already be) there is every chance that we can beat them because we have a variety of projects (our cable deal, our narrowband platform, AtWork...) that have far more synergy with the radical approach than they do. If we are successful at this, then Netware could become passé, and Novell could wind up as the biggest piece of road kill on the information highway.

Of course, if we allow them to win, then they will have renewed and extended their franchise in a very dramatic manner, and our hopes of unseating them will be just as dead.

Communications Carriers

People who provide communications services face a somewhat similar problem to that of the vendors who supply them with equipment - the dramatic price/performance changes that come with computing equipment.

The direct cost of equipment isn't the only factor in pricing communications as a service - there is a lot of infrastructure cost which depends on things like the cost of having guys with hard hats and a backhoe dig up the street and lay a fiber optics cable. Regulatory issues also change the costs and create barriers to entry that are independent of the technology. Nevertheless, the advent of new technology will cause huge problems for existing carriers, because despite the cost and regulatory barriers, it is *still* true that any existing communications infrastructure will be at a huge disadvantage compared to a new one based on the latest technology.

The clearest example is the race for the "full service network". Cable TV and phone companies each realize that their current business could be subsumed by the other when equipped with a new digital infrastructure. With approximately equal cost, each of them can create a network which serves both voice and video as well as new advanced services.

Initially these networks will be moderately expensive (although still fungible). Over time, the absolute cost and the price/performance ratio - i.e. the dollars per megabyte per second will plummet. Physical installation costs and regulatory barriers will be roughly constant (or may change somewhat) but ever higher bandwidths will keep the price/performance ratio dropping even after the absolute cost flattens out. As long as customers have a use for the bandwidth this means that new network will enjoy a big advantage over older ones.

This poses an interesting problem for a carrier - do you install systems aggressively, even though they will be far more costly and less capable that what is just around the bend, or do you wait until they are cheap? If do you wait, a competitor may have staked out a strong position before you do and own the market. If you rush in, you find that a later competitor can undercut you with newer, cheaper systems. In the past, government monopolies have allowed people to have a certain amount of faith in investing in network infrastructure, but that is far from certain.

In the long run the increase in price/performance still poses a dilemma - how can you keep finding services which will utilize the bandwidth? The situation is similar to that discussed above with CPU cycles and storage. The first answer is richer data types, with high quality video being the key example. Notice however that this poses a big problem with respect to existing services - the fundamental cost of a voice call is tiny on a network built for video. The first generation interactive TV networks will carry switched data at 4 megabits/second, or about 1000 times faster than a comparably compressed voice call. The cost of the video must also be lower; about 50 cents an hour at the most in order to allow a movie to be priced competitively with video rental stores. Voice calls which are tarriffed (for long distance and business calls) are more like $6.00 to $18.00 an hour within the US and far more outside. Future generation systems - both local area and long distance will only widen this gap. An OC-3 ATM network is about 40,000 times faster, and an OC-12 network is 160,000 times faster than voice. As a result, voice costs can't help but trend toward zero as these performance levels become cheaper and cheaper.

Price is not the same as cost of course, but unless regulatory agencies explicitly permit voice to have a different billing structure, all voice calls will be essentially be free. Given any sort of competition at all, existing levels of service will become a lost leader offered to build share for other services. The current telephony world does this with residential voice service in the local area which is given away free in order to create terminals which can be used for long distance. One can easily imagine a situation where all voice services, including long distance, are free if you are willing to sign up to rent a high bandwidth smart video phone.

The long term strategy of every sophisticated communications company that we have talked to is to supplement their fundamental network business with higher level contributions to the overall "food chain". In the case of cable companies the natural move is into programming. TCI, as a case in point, has used its position and cash to buy its way into minority investments in a number of programming assets - *The Discovery Channel, CNN, Black Entertainment Network, QVC, Carelco* (the movie studio that made *Terminator 2* and *Cliffhanger*) and others. This just covers the current world - they have even more ambitious plans for gaining a piece of the new world created by the information highway. Time Warner is already the world's largest media company and plans to seek synergy with its cable business. The smarter RBOCs have similar ambitions. All of them are interested in using their role in the network business as a point of leverage to build empires which participate in the businesses enabled by the full service network. Their bet is to become information highway companies in the broadest sense of the term, *not* just communications carriers.

It would be misleading to characterize this as a retreat or flight from the communications business itself. These companies will make enormous investments in creating the full service broadband network. This will be a profitable business - at least in the medium term - but a major component of its value will be to put them at the center of the new digital world. Companies that fail to take advantage of the strategic opportunities afforded by this position are likely to be in a very hard spot indeed, caught between the downward spiral of communications cost on one side and diversified highway companies on the other.

Retail Banking & Financial Services

Banking may seem like an unusual industry to pick on, but it illustrates one of the important themes of the information highway. There are 14,000 banks in the United States which cater to retail customers. Their business is based on offering a variety of services - savings accounts, checking accounts, credit cards, loans and so forth.

What is the unique value proposition that these banks offer their customers? The historical answer is geography - most people bank with a firm which has a branch office near their home or commuting path. There are some minor differences in interest rates and other retail banking products which might shift people between two local banks, but hardly anybody is going to find these features sufficiently compelling to make them pick a bank that is 10 miles out of their way as long as their are closer alternatives.

The information highway makes geography obsolete, especially in the case of banking or other financial services which are really just information businesses. The only physical transaction that needs to be done is receiving cash (which itself will one day go away), but automatic teller machines have became the primary way to deal with this. Automatic teller machine networks (note that this use of "ATM" and "ATM network" is quite different from Asynchronous Transfer Mode discussed above) are already threatening the banks. After all, if I have a card issued by a nationwide ATM network, and direct deposit of my paycheck into my account, why do I need a physical bank at all?

In the long term, the notion of depositing money "in" an account is pretty silly. A single transaction clearing service should be able to contract with both me and my employer so that my salary automatically flows out to fixed expenses (mortgage, utilities), or into various short or long term investment accounts. Most purchases would be handled with a card (or digital wallet) which was able to combine the features of a credit card ATM card and digital checkbook.

This will be a huge challenge to existing retail banks. If you take an efficiency perspective is that they should simply close - there is no reason to have human tellers, the "vice president" of the branch and so forth for most transactions. The successful financial service networks will be nationwide in scope, since you can't be otherwise on the highway, and will be highly competitive as a result. The last vestige of local banking will be the ATMs, which will continue to proliferate. Everything you can do with an ATM except actual cash delivery will also be possible with your PC, your interactive TV and your digital wallet; all equipped with wired or wireless connections to the highway.

Small local banks are not the only ones who will be put to the test. The ability of the highway to host efficient markets will change other aspects as well. Most retail financial services exploit the fact that consumers cannot access the same markets they can, giving them an opportunity to make an arbitrage profit or vig. They also use time access to a consumer's money, know as the "float", to profit from it while the consumer doesn't notice - this is in effect a vig of 100% of the interest they get for a short period of time. The whole notion of savings accounts (which typically have a large interest vig) and checking accounts which don't pay interest (and thus are an opportunity for float) are designed to give consumers a raw deal, and force them to cope with the artificial distinctions and incur overdraft penalties etc.

Money market accounts which issue checks and credit cards show that there is already an effort to cut a better deal for the consumer. The information highway will greatly accelerate this by creating opportunities for far more efficient access to financial markets, eliminating most opportunities for companies to vig the float on their retail customers.

The highway will be the center for financial markets offering of all sorts of new trading vehicles. Even an individual consumer's banking transaction could be traded. A deposit into a savings account is really a case of the consumer making a bid for a specific short term investment with standardized terms. Depositing $100 into the highway would simply put a bid out to buy $100 worth of this trading vehicle or security at maket prices. One could imagine a variety of firms in a never ending on line auction for your business, so that no two deposits were ever serviced by the same firm. This is already the case with buying and selling stock. As long as the transaction cost is low, why not take this approach on a wide variety of different services?

Services that try to float your money will have to compete with those that rebate a portion of the float income back to the consumer. Aggregation services will exist to bundle small transactions into larger ones which can be directly entered on the open market. Fees will be generated for all of this, but the fundamental fee structure will be based on fairly efficient open competition rather than the closed, inefficient world of today's banking and financial services.

Note that this does not mean that financial services companies will go broke. The basic economics will change dramatically, but the total volume of transactions will go up. The basic opportunity will be very large and some players will make a lot of money in the absolute - although at smaller margins than today. Despite this, many of the current leaders will not survive this transition.

Wall Street

Retail stock market services will fundamentally go the same direction as retail banking. The notion of trading at a single physical location is a historical anachronism that will not survive the transition to the information highway. As various equity and capital markets become decentralized, they will also become more efficient and the various market makers in place today will seem more and more like useless parasites. There is simply no reason for any human stock and bond brokers to be involved in making a market or the process of transferring ownership financial trading.

Once you eliminate the exchange and notion of buying or selling through a broker, most of the other Wall Street jobs that remain will still be in high demand. In fact, the information highway will renaissance in speculation and investment because it will become so easy to create new trading vehicles and markets. Mutual funds and other aggregated securities will sprout up overnight and huge new markets will be developed.

Analysts will find a zillion new markets and trading vehicles to study and pontificate upon. It would be nice if I could predict that market analysts would actually know what they are doing, and be subject to proof of competence, but alas I doubt this will be the case. Unless there is a breakthrough in economics, market analysts are likely to remain at a level just beneath chiropractors and new age faith healers in terms of their efficacy.

Print Based Media

One of the groups most concerned about becoming roadkill are the people involved in wide spread analog information distribution - newspapers, magazines and books. Each of these will suffer a somewhat different fate.

Books are actually the best off of the bunch. I believe that print based books will continue to be published for the next 50 years, and possibly longer although by the end of this period the volume will be far smaller than today. Books have a number of things in their favor versus the information highway alternatives which other forms of print media do not have.

Customers *pay* for books. This may sound like a silly distinction, but in most other print media *advertisers* pay for a great deal of the cost. Advertising revenue is far more fickle than direct consumer demand, and information highway has many features which will be very tempting for advertisers. Inroads that the highway makes in these areas will hurt other media, as discussed below, but this will leave books unscathed.

Another advantage to a book is that they are long and, with a couple of exceptions, they are not suitable for random access. People tend to read them all the way through, rather than browsing selectively, or starting in the middle. This has two consequences for competition with the highway. The first is that the quality of the display is very important. You might put up with a computer display to check stock prices, or see the latest news, but choosing to read the next Tom Clancy thriller on line will mean signing up to reading several hundred pages on the computer, PDA or television. Current display technology is *not* good enough for people to do this because of limitations in resolution, contrast, weight and power consumption. Ultimately this will be solved, but it will give books five to ten years longer than other more casually consumed print material will have.

The second advantage to length and uniformity is that most books do not benefit as much from indexing, retrieval and filtering. On line newspapers or magazine articles can be browsed, filtered and indexed on a computer in ways which are far superior to print. This is also true of some kinds of books, particularly reference books such as dictionaries or encyclopedias which will rapidly move to the highway. Novels and most non fiction books do not benefit as much from this technology. It might help you find the book, but once you have found it you will read for a long time before searching again - the ratio of retrieval to reading is low.

Newspapers are in probably the worst situation of any form of print media. I expect newspapers to be published for very long time, they will *not* disappear overnight. They will face some huge challenges however. In fact, many newspapers are already experiencing problems because of the long term effects of competition from television.

The biggest problem with newspapers is their reliance on advertising revenue. The current budget for newspaper advertising is (in adjusted dollars) half what it was in 1950. The obvious reason is that during the same time television has become a far more important venue for national advertisers. This trend will continue because the highway will continue to suck advertising dollars at both the high end and low end of the market - more effective and extensive coverage for national advertisers, and at the same time more cost effective ads for small business. Newspaper ads from businesses tend to be from local companies, at a scale which cannot be addressed by television. This will change as the information highway allows local ads to be cheaply created on advanced personal computers and delivered inexpensively on the highway. As local firms shift their advertising dollars to the highway newspapers will feel the pinch.

The long term decline in business advertisement has already shifted the burden to classified ads, because they were immune to competition from television. Classifieds are the largest single source of income to most newspapers, comprising between 50% to 80% of revenue. Unfortunately for them, the information highway will have *many* alternative ways for people to sell small volumes of merchandise, find jobs and other classified ad functions. In some cases, such as used cars, the highway gives a mechanism for people to create an on line auction - not only attracting customers, but also offering better pricing. More generally, classified ads are inherently a database problem - they aren't about great graphic design, or catching the eye of a casual reader; in fact they are *not* very user friendly. They exist because enough people are sufficiently motivated to laboriously wade through the fine print in search of the car, home or job that they want. People *that* interested would be a lot better off registering a filter query or browsing the highway from their PC, interactive TV, smart phone, or perhaps an interactive kiosk.

A decline in classified revenue and accelerated loss of business advertisement would put newspapers under large financial burdens, even if the core editorial side of business did not have much direct competition from the highway. The inevitable result will be higher prices for the customer - up to *five times higher* if they are going to foot the bill entirely. This kind of increase will hurt circulation. Fixed costs, like maintaining the editorial staff and foreign bureaus will have be born by a smaller clientele, increasing prices further. The big problem with newspapers isn't the news itself - it the way it is paid for.

This isn't to say that there will be no competition for news however. There will be lot of it on the highway. Today's major newspapers, like the *New York Times* or *Washington Post* maintain international bureaus and put a large premium on having better in depth coverage than can fit in a 30 second *CNN* spot, and they staff accordingly - an editorial staff of about 1000 for the *Times* alone. The forest of microphones and video cameras thrust in the face of newsmakers around the world is a testimony to incredible redundancy in the way news is currently gathered - major newspapers, weekly news magazines, TV and radio news all have created redundant news gathering organizations. As the information highway coalesces the various media, this redundancy is likely to decrease substantially.

There will always be a market for both depth and breadth, and the information highway provides an ideal way to distribute news. There will be a number of ways this will happen. One natural direction is to make digital editions of existing newspapers. Initially this will be done with repurposed content taken from the print edition, but in order to really take advantage of the new properties of the highway, subtle but important differences will be necessary. Newspapers must cater to a very broad set of customers, but on the highway that is not necessary. Each user could in principle get a different edition, by turning their specific interests into criteria for selecting articles - both by posting filter queries and by giving the human editorial staff more input. The queries can include high level interests (skip the sports page for me), down to more specific items such as news on your company, or home town.

Text based news has the advantage that it can be sent to existing PCs, AtWork FAX machines and smart phones and over narrowband wireless links to PDAs. The disadvantage is that the more text oriented a service is, the less well adapted it will be for interactive television. This brings up the other natural direction for news is to do a similarly extend the depth of video news - breaking it into segments which can be queried, filtered and assembled into custom editions in a similar manner to text based newspaper articles. Text and graphics can be also be used as annotations to add depth to what is fundamentally a video based service. It will be interesting to see what mix of text and video, and what mix of existing text and video companies, will eventually win out as the primary form of news on the information highway.

The fate of magazines is somewhere between that of books and newspapers. The business side is intermediate - they typically get half of their income from advertisers, so losing them would not be a lot of fun, but the nature of the advertisements is usually tied to the special editorial focus of the magazine and thus is less vulnerable.

The editorial side is more interesting. Magazines have a key characteristics which will also be found in special interest group publications on the information highway - tight editorial focus on a particular topic. A subscriber to *Skin Diver*, *Rolling Stone*, *Communications of the ACM* or *Food Arts* has, in effect, already posted a filter query on a range of interesting topics. Common topics like "cars" have already been subdivided into smaller domains - *Road and Track*, *Hot Rod*, *4WD*, *Hemmings Motor News* and at least a dozen other magazines have fine tuned natural boundaries in people's interest into their own editorial niches.

As a result, many on line publications on the information highway will be modeled on magazines to one degree or another. This will not spell instant doom for print magazines, because many of them will be able to leverage their brand name and customer base over to the new medium. Print and on line versions could coexist for a very long time and it wouldn't be surprising if the word "magazine" was coopted by the information highway to apply to the new format and a couple decades hence people will have to explain to their wide eyed grandchildren that, once upon a time, magazines were delivered once a month on *paper*.

Broadcast Television Networks

Television broadcasters are some of the most likely fodder for roadkill of any of the current media companies. Some form of broadcast TV will continue on for the next 20 to 30 years, but its pivotal role as the leading form of mass media is already declining due to competition from cable and other factors. Their decline will be long and slow and may take the next two decades, so this isn't an overnight phenomenon, but by the time that they realize it the window of oportunity for changing anything will have long since passed. The role of TV networks in the world will be tremendously effected by the information highway, yet they are doing very little about it - like a dazed rabbit caught in the headlights of an oncoming car.

As in other areas discussed in this memo, the trend is already well under way. Cable TV relived the pressure on channel space, and thus enabled special purpose television. Prior to this the opportunity cost of time on one of the three major broadcast networks was so high that the networks were forced to cater to the same set of customers. It made more economic sense to pander to the lowest common denominator and pull in the most viewers, even if that wound up making the networks quite similar and the shows quite moronic. Each had a similar line of up shows and none of the stood for a particular set of viewers or values. Each of them wound up having specific areas where they would happen to create a long term asset which would run for twenty years or more - NBC with the *Tonight Show* and *Saturday Night Live*, CBS with *60 Minutes* and ABC to a lesser extent with leadership in *ABC Sports*. Apart from those few long term successes which were basically unique to them, they had a very comparable crop of cartoons on Saturday morning, soap operas and old movies during the day, network news at around 7PM, sitcoms and dramas in prime time and so forth. These programs would only last for a few years before going into syndication because they were created and owned by third parties (via the recently repealed "Fin-Syn" regulations).

This situation was possible because they had a triopoly with very limited resources. There are only 21 hours of prime time per week and only three sources of new programs at any one point. Nobody else commanded enough market share to host new programming on a broad scale. Independent TV stations wound up showing syndicated reruns that was about it. Although the individual companies would have their ups and downs (witness NBC in recent times) being in a three way race meant that you would always win, place or show, and thus would always be in the money to at least some degree.

Critics might complain that there was never anything on TV that they wanted to see, but the job of the networks was to try ensure that, statistically speaking, this proposition was false for the largest possible number of customers. A major newspaper must do the same thing - attract lots of customers under the constraint that they have only one product and only so many pages to go around. This is not the way that the book business works of course, because there is no artificial constraint on the number of publishers, or the number of books equivalent to the three networks and 21 hours of prime time. There are very few barriers to entry in publishing when compared to network TV. Many books are written and a number become successful, but those are not the same ones that would have been picked up front to succeed.

My favorite example of this is *A Brief History of Time* by Stephen Hawking. It has sold 5.5 million copies worldwide and was on the *New York Times* Bestseller List for months. If publishers had to pick their "fall line up" the way a TV network does, and made a huge opportunity cost bet on selecting one book versus another, who would have picked a physics book? This isn't an isolated example, *The Bridges of Madison County* is the first novel by an English professor. It received essentially no advertising budget and was not expected to sell beyond the initial run. Word of mouth, particularly through book stores, put it at the head of the bestseller list where it has stayed for ages. Meanwhile many highly vaunted and hyped books fail.

Cable broke this triopoly by allowing many more channels. This pushed the economics past a critical point where channels were forced to emulate each other; instead they had to differentiate and have a unifying theme. Specialized networks like *CNN*, *ESPN*, *MTV*, *Nickelodeon, The Discovery Channel* and others have fractured the uniformity of the TV audience. The information highway will take this step much further because it will break the constraint of a fixed schedule - any show or content can be watched at any time. This furthers the fragmentation of viewership to the point that it looks very much like books or magazines - thousands of potential choices, with little or no opportunity cost in making them available.

In addition, the highway will break the traditional "follow on" effect that comes with fixed channels. It is a well established principle in the TV industry that if people watch one show they are likely to just keep watching into the next one on the same channel. The people who create the schedules try to line up shows to encourage this and "build a strong Thursday night" and use a few hits to prop up a mediocre set of offerings. Video on demand breaks this cycle - you can watch anything you like at any time. Personal agents might recommend shows to you in any sequence. The whole notion of a channel simply disappears.

Another troubling issue with the information highway is that it may suck advertising revenue away from the networks. Advertisers on broadcast TV (networks plus independents, but not cable) currently pay the equivalent of $21 per month per TV household. That is really a lot of money considering that TV is such an indirect means to achieve a sale. Ads on the information highway will merge with shopping services in that they will give the viewer the ability to order directly, switch to an in depth infomercial or other avenues which are not available in standard broadcast TV. In the next five years this will not constitute a real threat to the networks as a major market for advertising, but in the long run it will have a significant effect.

The TV networks do *not* know how to respond to this threat. I have discussed the trend at length with senior network executives and independent TV producers. Some see the threat, and others shrug it off. The fragmentation of the TV audience is viewed as a major disaster, akin to an epidemic. Some claim that the public won't accept changes from the established model of TV, despite the rather clear evidence from cable TV, video rental, books and magazines that once given a choice people tend to take you up on it. Others admit that it is happening, but don't know what to do about it. As the sit wide eyed and dazed, the wheels are almost upon them.

Hollywood

The motion picture industry has developed a very predictable reaction to technology. In the past 50 years there have been a number of technological innovations - talkies, color films, television, VCRs and cable TV. In each case the initial reaction was the same - the new breakthrough was the work of the devil, an evil force which would destroy the industry. These fears have never proved out, and in fact just the opposite has happened. Each change caused a large expansion of the market for feature films and greatly increased revenues.

This rosy picture may well happen once again. Movies are likely to be popular for at least the next 20 years, and probably far longer. The information highway is a great way to deliver films - in fact a far better one than the current schemes. Hollywood's fortunes will continue to improve as the highway takes a larger share of film distribution.

Movie theater attendance is continuing to drop, to the point that theater revenue is no longer the largest source of revenue for most films. The good thing about theaters for Hollywood is that the price is relatively high, and the margin is good - typically about 50%. Despite this, the current trend is likely to continue and theaters will become a smaller and smaller phenomenon, although they are unlikely to become completely extinct. In fact stage plays are a good model - they are still around despite movies, television and other art forms. Plays no longer hold the same relative position as a medium of mass entertainment, and one day the same thing will be true of movie theaters. They will be expensive places where people purists, aficinados and those with nostalgia go for a special night out.

Blockbuster and other video rental stores are currently the largest source of revenue in absolute terms. Their business is almost certain to go away as the information highway provides large libraries of films on line. However unfortunate this is for video store owners, it is a boon to Hollywood because the current video rental business is based on selling the tapes to the stores rather than directly participating in the rental income. Video on demand on the highway will be done as a share of revenue which is far more lucritive for the film's owners. The death of the video store will greatly increase the bottom line to Hollywood.

This covers existing movies, but what about the new media? The role of Hollwood in the new business is much more uncertain than the distribution question. It is far from clear what role the major studios will play, if any, since in any direct sense they don't really make the movies - they finance them and arrange distribution deals and perhaps rent them some production facilities. The actual creative work is done by a collection of individuals - actors, directors and employees at small companies like Industrial Light and Magic, which come together for an individual project. Financing and distribution will still have to occur, but they are as likely to be done by integrated highway companies as they are by decendents of today's studios.

As the information highway and the growth in computing price/performance progress, new narrative and entertainment formats will develop. Computer games will increase in production values until you won't be able to tell the difference between the game and a movie - they will be equally realistic. High bandwidth communications over the highway will enable multiple people to come together and share the same experience - real or simulated. Who will create the new media formats and entertainment for the information highway? Many of the creative people will come from the community that currently makes movies, but I suspect that the majority of current Hollywood talent will not make the transition.

The most dramatic shift for Hollywood will be the change in production costs and equipment. Over the course of the last 10 years publishing has moved from having an incredibly expensive analog production process - up to thousands of dollars per page - to one where a PC and software are sufficient for both professionals and amateurs alike. The same thing will happen to video editing, post production and special effects, as the growth in computing capabilities continues. The amazing dinosaurs in *Jurassic Park* will cost 1000 times less in ten years, making this sort of effect available to nearly anyone. A few years after that and effects of this capability will be in children's toys - the ultimate extrapolation of the Etch-a-Sketch.

Personal Computers

I've saved the best for last. Our own industry is also doomed, and will be one of the more significant carcasses by the side of the information highway. The basic tasks that PCs are used for today will continue for a long as it makes sense to predict, so it isn't a question of the category disappearing. The question is one of *who* will continue to satisfy these needs and how?

As a case in point, consider that the fundamental category needs for mainframes and minicomputers *also still exists* and will continue to do so for a very long time. Despite this, the companies involved are dying and the entire genre is likely to disappear. The reason is that a new breed of machine - the PC - came along which out flanked them. In the early years PCs were not particularly good at what minis and mainframes did, but they were terrific at a whole new set of problems that the traditional computing infrastructure had basically ignored.

Personal productivity applications drove PCs onto millions of desks and created a very vital industry which grew faster - both in business terms and price/performance - than the mainframe and minicomputer markets. The power conferred by this growth made PCs the tail which wagged the dog; free to ignore the standards which existed for mainframes and minis and move off on their own. Over time the exponential growth in computing has finally (after 17 years) given the PC industry the technical ability to beat minis and mainframes in their own domain. Although the early software platforms for PCs had to be extended to fully realize this potential (Dos to Windows to NT to Cairo), it turned out to be far easier to do this than to make mainframe or minicomputer systems address the new needs and applications. Even within the heart of minicomputer and mainframe's domain - giant transaction processing applications etc., the old standards will not be used.

I believe that the same thing will happen again with PCs playing the role of mainframes and minis, and the computing platforms of the information highway taking over the role of the challenger.

The technical needs of computers on the information highway, or IHCs are quite different than for PCs. The killer applications for IHCs in the early years will include video on demand, games, video telephony and other distributed computing tasks on the highway. It is hard to classify this as either higher tech or lower tech than the software for PCs, because the two are quite different. Most IHCs will certainly need to be cheaper than PCs by an order of magnitude and this will inevitably cause them to be less capable in many ways, but some of their requirements are far more advanced.

Another way to say this is that the rich environment of software for PCs is largely *irrelevant* for IHCs. Windows, NT, System 7 and Cairo do *not* solve the really important technical problems required for IHC applications, and it is equally likely that the early generations of IHC software won't be great platforms for PC style apps. This isn't surprising because they are driven by an orthogonal set of requirements.

The IHC world will almost certainly grow faster than PCs, both in business terms and in price/performance. The PC industry is already reaching saturation from a business perspective. Technically speaking, the industry is mired in hardware standards (Intel and Motorola CISC processors) with growth rates that are flattening out relative to the state of the art - just as the 360/3090 and VAX architectures did. The Macintosh and Windows computing environments may be able to survive the painful transition to new RISC architectures, but they will lose time and momentum in doing so.

PCs will remain paramount within their domain for many years (we'll still have a computer on every desk) but IHCs will start to penetrate a larger and larger customer base on the strength of its new and unique applications. The power of having the worlds information - and people - on line at any time is too compelling to resist. For a long time people will still have a traditional PC to handle traditional PC tasks - in precisely the same way that they have kept their mainframes and minis for the last 17 years. One day however people will realize that their little IHCs are more powerful and cheaper than PCs - just as we have finally done with mainframes. There will be a challenge for the IHC software folks to write the new systems and applications software necessary to obviate PCs, just as we had to work pretty hard to come up with NT, but this battle will clearly go to the companies who own the software standards on IHCs. The PC world won't have any more say about how this is done than the companies who created MVS or VMS did about our world. Of course, some of the VMS *people* were involved, but as discussed above it is very hard for *organizations* to make the transition.

This may sound like a rather dire prediction, but I think that for the most part it is inevitable. The challenge for Microsoft is to be sufficiently involved with the software for the IHC world that we can be a strong player in that market. If we do this then we will be able to exploit a certain degree of synergy between IHCs and PCs - there are some natural areas where there is benefit in having the two in sync. The point made above is that those benefits are not sufficiently strong that they alone will give us a position in the new world. We'll live or die on the strength of the technology and role that we carve out for ourselves in the brave new world of the information highway.

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[1]Obviously, these benchmarks are not fully equivalent and "your mileage may vary", but the trend is still correct within a factor of two one way or the other.

[2]Depending on whether the universe is open or closed. These are the same alternatives that T.S. Elliot presented - either a bang or a whimper.

[3]This may seem self serving, but its a good time to point out that I used to be a cosmologist myself!

[4]After all, Dom Perignon invented champagne, and colleagues of his gave the world brandy, Roquefort and the science of genetics!

[5]It's not just a good idea, it the *law*!

[6]The science fiction novel *Ender's Game* by Orson Scott Card explores this notion.

[7]Well, there goes any hope of *me* every getting a cabinet seat!

The Internet Services Disruption

To:	Executive Staff and direct reports
Date:	October 28, 2005
From:	Ray Ozzie
Subject:	The Internet Services Disruption

It is an exciting time, as we're at the beginning of the biggest product cycle in the company's history. In a week we ship new versions of Visual Studio, SQL Server and BizTalk Server. Later this month we ship Xbox 360. Next year we have a double barreled release of our two largest products with Windows Vista and Office "12". It's a great time for customers, our partners, and for those at Microsoft who have put so much of themselves into these products.

But we bring these innovations to market at a time of great turbulence and potential change in the industry. This isn't the first time of such great change: we've needed to reflect upon our core strategy and direction just about every five years. Such changes are inevitable because of the progressive and dramatic evolution of computing and communications technology, because of resultant changes in how our customers use and apply that technology, and because of the continuous emergence of competitors with new approaches and perspectives.

In 1990, there was actually a question about whether the graphical user interface had merit. Apple amongst others valiantly tried to convince the market of the GUI's broad benefits, but the non-GUI Lotus 1-2-3 and WordPerfect had significant momentum. But Microsoft recognized the GUI's transformative potential, and committed the organization to pursuit of the dream – through investment in applications, platform and tools – based on a belief that the GUI would dramatically expand and democratize computing.

When we reflected upon our dreams just five years later in 1995, the impetus for our new center of gravity came from the then-nascent web. With a clear view upon the challenges and opportunities it presented, the entire company pivoted to focus on the internet to pursue that ‘fully connected’ dream with support for internet standards throughout our product line: a web browser, server and development tools, and a service in MSN that was transformed into a web portal. Many things we developed in that era continue to fuel the growth of today’s internet: the technologies of AJAX – DHTML and XMLHTTP – were created in 1998 and used in products such as OWA.

In 2000, in the waning days of the dot com bubble, we yet again reflected on our strategy and refined our direction. After taking a more deliberative look at the internet and its implications for software, we came to the conclusion that the internet would go beyond browsing and should support programmability on a global scale. We observed that certain aspects of our most fundamental platform – the tools and services that developers use when building their software – would not likely satisfy the emerging security and interoperability requirements of the internet. So we embarked upon .NET, a transformative new generation of the platform and tools built around managed code, the XML format and web services programming model. At the time, it was a risky bet to build natively around XML, but this bet paid off handsomely and .NET has become the most popular development environment in the world.

It is now 2005, and the environment has changed yet again – this time around *services*. Computing and communications technologies have dramatically and progressively improved to enable the viability of a services-based model. The ubiquity of broadband and wireless networking has changed the nature of how people interact, and they’re increasingly drawn toward the simplicity of services and service-enabled software that ‘just works’. Businesses are increasingly considering what services-based economics of scale might do to help them reduce infrastructure costs or deploy solutions as-needed and on subscription basis.

Most challenging *and promising* to our business, though, is that a new business model has emerged in the form of advertising-supported services and software. This model has the potential to fundamentally impact how we and other developers build, deliver, and monetize innovations. No one yet knows what kind of software and in which markets this model will be embraced, and there is tremendous revenue potential in those where it ultimately is.

Just as in the past, we must reflect upon what's going on around us, and reflect upon our strengths, weaknesses and industry leadership responsibilities, and respond. As much as ever, it's clear that if we fail to do so, our business as we know it is at risk. We must respond quickly and decisively.

The Landscape

Since 1995, inexpensive computing and communications technologies have advanced at a rapid rate that even exceeded our expectations. It's so very difficult now for us to imagine a world without the PC, the web and the cell phone. In the US, there are more than 100MM broadband users, 190MM mobile phone subscribers, and WiFi networks blanket the urban landscape. This pattern is mirrored in much of the developed world. Computing has become linked to the communications network; when a PC is purchased, it's assumed that the PC will have high-speed internet connectivity. At work, at home, in a hotel, at school or in a coffee shop, the networked laptop has become our 'virtual office' where we file our information and interact with others. The broad accessibility and rapid pace of innovation in hardware, networks, software and services has catalyzed a virtuous cycle whose pace isn't slowing. There has never been a more exciting time to be a developer or a user of technology.

Our products have embraced the internet in many amazing ways. We've transformed the desktop into a rich platform for interactive internet browsing, media and communications-centric applications. We've transformed Windows into best-of-breed infrastructure for internet applications and services. We've created, in .NET, the most popular development platform in the world. We've got amazing products in Office and our other IW offerings, having fully embraced standards such as XML, HTML, RSS and SIP. Our MSN team has demonstrated great innovation and has held its own in a highly competitive and rapidly changing environment – particularly with Spaces and in growing a base of 180M active Messenger users worldwide. The Xbox team has also built a huge user community and has demonstrated that internet-based "Live" interaction is a high-value, strong differentiator.

But for all our great progress, our efforts have not always led to the degree that perhaps they could have. We should've been leaders with all our web properties in harnessing the potential of AJAX, following our pioneering work in OWA. We knew search would be important, but through Google's focus they've gained a tremendously strong position. RSS is the internet's answer to the notification scenarios we've discussed and worked on for some time, and is filling a role as 'the UNIX pipe of the internet' as people use it to connect data and systems in unanticipated ways. For all its tremendous innovation and its embracing of HTML and XML, Office is not yet the source of key web data formats – surely not to the level of PDF. While we've led with great capabilities in Messenger & Communicator, it was Skype, not us, who made VoIP broadly popular and created a new category. We have long understood the importance of mobile messaging scenarios and have made significant investment in device software, yet only now are we surpassing the Blackberry.

And while we continue to make good progress on these many fronts, a set of very strong and determined competitors is laser-focused on internet services and service-enabled software. Google is obviously the most visible here, although given the hype level it is difficult to ascertain which of their myriad initiatives are simply adjuncts intended to drive scale for their advertising business, or which might ultimately grow to substantively challenge our offerings. Although Yahoo also has significant communications assets that combine software and services, they are more of a media company and – with the notable exception of their advertising platform – they seem to be utilizing their platform capabilities largely as an internal asset. The same is true of Apple, which has done an enviable job integrating hardware, software and services into a seamless experience with dotMac, iPod and iTunes, but seems less focused on enabling developers to build substantial products and businesses.

Even beyond our large competitors, tremendous software-and-services activity is occurring within startups and at the grassroots level. Only a few years ago I'd have pointed to the Weblog and the Wiki as significant emerging trends; by now they're mainstream and have moved into the enterprise. Flickr and others have done innovative work around community sharing and tagging based on simple data formats and metadata. GoToMyPC and GoToMeeting are very popular low-end solutions to remote PC access and online meetings. A number of startups have built interesting solutions for cross-device file and remote media access. VoIP seems on the verge of exploding – not just in Skype, but also as indicated by things such as the Asterisk soft-PBX. Innovations abound from small developers – from RAD frameworks to lightweight project management services and solutions.

Many startups treat the 'raw' internet as their platform. At the grassroots level, such projects actively use standards such as vCards and iCal for sharing contacts and calendars. Most all use RSS in one way or another for data sharing. Remixing and mashing of multiple web applications using XML, REST and WS is common; interesting mash-ups range from combining maps with apartment listings, to others that place RSS feeds on top of systems and data not originally intended for remixing. Developers needing tools and libraries to do their work just search the internet, download, develop & integrate, deploy, refine. Speed, simplicity and loose coupling are paramount.

And the work of these startups could be improved with a 'services platform'. Ironically, the same things that enable and catalyze rapid innovation can also be constraints to their success. Many hard problems are often ignored – the most significant of which is achieving scale. Some scale issues are technological and result from the fact that they are generally built on application server platforms rather than high-scale service platforms. But new services also need to build user communities from scratch – generally by word of mouth. Many fund their sites using syndicated ads, but have a difficult time transforming their services into higher levels of commerce. Some seek to incorporate client software into their user experience, but then need to reinvent software deployment, update, communications and synchronization mechanisms. User identity and cross-service interoperability mechanisms are still needlessly fragmented. Intuitively there seems to be a platform opportunity in providing such capabilities to developers in a form that retains the speed, simplicity and loose coupling that is so very important for rapid innovation.

Key Tenets

Today there are three key tenets that are driving fundamental shifts in the landscape – all of which are related in some way to services. It's key to embrace these tenets within the context of our products and services.

1. The power of the advertising-supported economic model.

Online advertising has emerged as a significant new means by which to directly and indirectly fund the creation and delivery of software and services. In some cases, it may be possible for one to obtain more revenue through the advertising model than through a traditional licensing model. Only in its earliest stages, no one yet knows the limits of what categories of hardware, software and services, in what markets, will ultimately be funded through this model. And no one yet knows how much of the world's online advertising revenues should or will flow to large software and service providers, medium sized or tail providers, or even users themselves.

2. The effectiveness of a new delivery and adoption model.

A grassroots technology adoption pattern has emerged on the internet largely in parallel to the classic methods of selling software to the enterprise. Products are now discovered through a combination of blogs, search keyword-based advertising, online product marketing and word-of-mouth. It's now expected that anything discovered can be sampled and experienced through self-service exploration and download. This is true not just for consumer products: even enterprise products now more often than not enter an organization through the internet-based research and trial of a business unit that understands a product's value.

Limited trial use, ad-monetized or free reduced-function use, subscription-based use, on-line activation, digital license management, automatic update, and other such concepts are now entering the vocabulary of any developer building products that wish to successfully utilize the web as a channel. Products must now embrace a "discover, learn, try, buy, recommend" cycle – sometimes with one of those phases being free, another ad-supported, and yet another being subscription-based. Grassroots adoption requires an end-to-end perspective related to product design. Products must be easily understood by the user upon trial, and useful out-of-the-box with little or no configuration or administrative intervention.

But enabling grassroots adoption is not just a product design issue. Today's web is fundamentally a self-service environment, and it is critical to design websites and product ‘landing pages’ with sophisticated closed-loop measurement and feedback systems. Even startups use such techniques in conjunction with pay-per-click advertisements. This ensures that the most effective website designs will be selected to attract discovery of products and services, help in research and learning, facilitate download, trial and purchase, and to enable individuals’ self-help and making recommendations to others. Such systems can recognize and take advantage of opportunities to up-sell and cross-sell products to individuals, workgroups and businesses, and also act as a lead generation front-end for our sales force and for our partners.

3. The demand for compelling, integrated user experiences that “just work”.

The PC has morphed into new form factors and new roles, and we increasingly have more than one in our lives – at work, at home, laptops, tablets, even in the living room. Cell phones have become ubiquitous. There are a myriad of handheld devices. Set-top boxes, PVRs and game consoles are changing what and how we watch television. Photos, music and voice communications are all rapidly going digital and being driven by software. Automobiles are on a path to become smart and connected. The emergence of the digital lifestyle that utilizes all these technologies is changing how we learn, play games, watch TV, communicate with friends and family, listen to music and share memories.

But the power of technology also brings with it a cost. For all the success of individual technologies, the array of technology in a person’s life can be daunting. Increasingly, individuals choose products and services that are highly-personalized, focused on the end-to-end experience delivered by that technology. Products must deliver a seamless experience, one in which all the technology in your life ‘just works’ and can work together, on your behalf, under your control. This means designs centered on an intentional fusion of internet-based services with software, and sometimes even hardware, to deliver meaningful experiences and solutions with a level of seamless design and use that couldn't be achieved without such a holistic approach.

The Opportunities

These three tenets are causing a shift in the software landscape that started with consumers and is progressively working its way toward the enterprise – changing how software is monetized, how software is delivered, and what kind of software is ultimately embraced. With our presence in so many markets serving so many audiences, and with such a broad variety of products and solutions, we are well positioned to deliver *seamless experiences* to customers, enabled by services and *service-enhanced software*, including:

SEAMLESS OS – The operating system as it would be designed for today's multi-PC, multi-device, work anywhere, web-based world. Enabling you to login using any of your service-based or enterprise identities. Deploying software automatically and as appropriate to all your devices, and roaming application data and settings. Permitting seamless access to storage across all your PCs, devices, servers and the web.

SEAMLESS COMMUNICATIONS – Communications and notifications – from voice to typing to shared screen; from PC to service-based agent to phone. Maintaining continuous co-presence with intimate friends and family; improving the coordination amongst individuals who need to work together by reducing latency and adding clarity through shared context.

SEAMLESS PRODUCTIVITY – Enabling you to create, find and organize documents and data among all the desktops, devices, servers and services to which you have access, and with all the others with whom you need to work, through 'shared space' products that are internet service-based, enterprise server-based and directly peer-to-peer. Working within and across homes, small businesses, virtual workgroups and enterprises.

SEAMLESS ENTERTAINMENT – Enabling you to create, store, organize, present, consume and interact with media of all kinds; accessing, caching and viewing it anywhere you like regardless of where the media resides. Gaming experiences that bring two or two million people together across PCs, devices and the web.

SEAMLESS MARKETPLACE – Enabling you to research, find, buy and sell whatever you want through a seamlessly integrated purchase, billing & payment & points, advertising & lead generation & sales management system designed to satisfy the needs of both buyers and sellers.

SEAMLESS SOLUTIONS – Enabling workgroups and businesses to rapidly create and customize any of a broad class of template-driven, semi-structured data-based applications and solutions that "just work" and provide instant value – whether using them from the web, from enterprise servers, or from mobile client PCs.

SEAMLESS IT – Enabling enterprises to seamlessly and cost-effectively manage many of the things they've classically done within their data centers – e.g. PCs, messaging, content and applications. The management experience might be wholly within the cloud, or with the cloud seamlessly integrating enterprise server assist.

Moving Forward

In order to adapt to the requirements underlying these key tenets, groups must reflect upon their existing plans, and assess their designs in the context of the end-to-end experiences they need deliver in order to understand how services might make a substantive impact. Groups should consider how new delivery and adoption models might impact plans, and whether embracing new advertising-supported revenue models might be market-relevant.

In assessing where we are and where we need to be, some new efforts will surely require incubation. But in many areas we have 80% of the product and technical infrastructure already built – we just need to close the 20% gap. Following are but a few thoughts for each division intended to catalyze a “services-enhanced software” mindset.

Platform Products & Services Division

a. BASE vs. ADDITIVE EXPERIENCES

In MSN, and in Windows Update and software deployed by it, we have quite a bit of experience with methods and practices for getting innovations to market on a rapid cycle. In the form of a newly combined division, we should consider many options as to how we might bring *user experience* innovations and enhancements to users worldwide. Specifically, we should consider the achievability, desirability, and methods of increasing the tempo for both ‘base’ OS experiences as well as ‘additive’ experiences that might be delivered on a more rapid tempo. In doing so, we would better serve a broad range of highly-influential early adopters.

b. SERVICES PLATFORM

Through years of experience, the MSN team understands the methods and practices of building ‘internet scale’ services. The Platform team understands developers and has deep experience in communications and storage architectures. These teams must work together, benefiting from each others’ strengths, to develop a next generation internet services platform – a platform for both internal and external innovation. A platform with capabilities and an operations infrastructure that takes those services to a scale never yet seen on the internet – to our benefit, and to the benefit of our partners and customers.

c. SERVICE/SERVER SYNERGY

A tension has emerged between our products designed for the enterprise and those for the internet. Exchange/Hotmail, AD/Passport, and Messenger/Communicator are but three examples. All our enterprise clients and servers must interoperate with and complement our internet services. Our functional aspirations are generally "server/service symmetry", but architectural considerations dictate that different implementations may be required to economically reach internet scale. We must quickly find the best path to achieve seamless user, developer, and administration experiences involving servers and services.

d. LIGHTWEIGHT DEVELOPMENT

The rapid growth of application assembly using things such as REST, JavaScript and PHP suggests that many developers gravitate toward very rapid, lightweight ways to create and compose solutions. We have always appreciated the need for lightweight development by power users in the form of products such as Access and SharePoint. We should revisit whether we're adequately serving the lightweight model of development and solution composition for all classes of development.

e. RESPONSIBLE COMPETITION

We will compete energetically but also responsibly and with recognition of our high legal responsibilities. We will design and license Windows and our internet-based services as separate products, so customers can choose Windows with or without Microsoft's services. We'll design and license Windows and our services on terms that provide third parties with the same ability to benefit from the Windows platform that Microsoft's services enjoy. Our services innovations will include tight integration with the Windows client via documented interfaces, so that competing services can plug into Windows in the same manner as Microsoft's services. We will compete hard and responsibly in services on the basis of software innovation and price – and on that basis we will offer consumers and businesses the best value in the market.

Business Division

a. CONNECTED OFFICE

How would we extend or re-conceptualize Office modules to fit in this seamless model of connectedness to others, and to other applications? Should PowerPoint directly 'broadcast to the web', or let the audience take notes and respond? How should we increase the role of Office Online as the portal for productivity? What should we do to bring Office's classic COM-based publish-and-subscribe capabilities to a world where RSS and XML have become the de facto publish-and-subscribe mechanisms?

b. TELECOM TRANSFORMATION

How should our investments in RTC evolve to serve not just the enterprise, but also fully embrace the concept of grassroots adoption? How can RTC begin as an individual phenomenon, growing into a small business offering with a level of function that they'd never imagine possible, growing into the enterprise? How should we utilize service-based federation and hosting to ensure a 'just works' experience for all users, whether or not an administrator was ever involved?

c. RAPID SOLUTIONS

How can we utilize our extant products and our knowledge of the broad historical adoption of forms-based applications to jump-start an effort that could dramatically surpass offerings from Quickbase to Salesforce.com? How could we build it to scale to hundreds of millions of users at an unimaginably low cost that would change the game? How could we re-shape our client-side software offerings such as Access and Groove, and our server offerings such as SharePoint, to grow and thrive in the presence of such a service? Could these rapid solutions encourage a new ISV ecosystem and business model?

Entertainment & Devices Division

a. CONNECTED ENTERTAINMENT

How can XBox Live benefit from interconnection with other services assets, such as PC-based and mobile-based IM and VoIP? How might both the PC and XBox mutually benefit from a common marketplace? Might PC users act as spectators/participants in XBox games, and vice-versa?

b. GRASSROOTS MOBILE SERVICES

How might the Windows Mobile device experience be transformed by for consumers by connection to a services infrastructure – in particular one enabled by RTC-based unified communications? How might unmediated connection to a rich services infrastructure transform mobile phones into a mass market messaging, media and commerce phenomenon?

c. DEVICE/SERVICE FUSION

What new devices might emerge if we envision hardware/software/service fusion? What new kinds of devices might be enabled by the presence of a service?

What's Different?

One perspective on this memo might be to say "This is in many ways is pretty close to what we're already working on. What's the big deal?" Or "We tried something similar years ago; why will we succeed this time?" These are understandable reactions. Many visions of the future going all the way back to "Information at Your Fingertips" contain elements of what has been laid out here.

That said, I have a number of reasons for optimism that we can deliver well on this vision. First, I know that Bill, Steve and the senior leadership team understand that Microsoft's execution effectiveness will be improved by eliminating obstacles to developing and shipping products. The recent reorganization into three divisions is a significant step, and the division presidents are committed to changes to improve our agility.

Second, we are just now completing a wave of innovation that has never been seen in this company. 2006 is going to be an amazing year for shipping products, and many across the company will be ready to take on a new mission.

Third, regardless of past aspirations, this is the right time to be focusing on services for two specific reasons: the increasing ubiquity of broadband has made it viable, and the proven economics of the advertising model has made it profitable. It can be argued, for example, whether or not Hailstorm was the 'right' undertaking. But regardless, the effort would certainly have benefited from having a known-viable services business model for which to design.

Finally, I believe at this juncture it's generally very clear to each of us why we need to transform – the competitors, the challenges, and the opportunities. As an outsider, I was repeatedly impressed and awed over the years by how this company's talent has swarmed to effectively respond to huge business challenges and transitions.

That said, even when we've been solidly in pursuit of a common vision, our end-to-end execution of key scenarios has often been uneven – in large part because of the complexity of doing such substantial undertakings. In any large project, the sheer number of moving parts sometimes naturally causes compartmentalization of decisions and execution. Some groups might lose sight of how their piece fits in, or worse, might develop features without a clear understanding of how they'll be used. In some cases by the time the vision is delivered, the pieces might not quite fit into the originally-envisioned coherent whole. We cannot allow the seams in our organization, or our methods of making decisions, show through in our products, or result in the failure to deliver on key end-to-end experiences.

Complexity kills. It sucks the life out of developers, it makes products difficult to plan, build and test, it introduces security challenges, and it causes end-user and administrator frustration. Moving forward, within all parts of the organization, each of us should ask "What's different?", and explore and embrace techniques to reduce complexity.

Some problems are inherently complex; there is surely no silver bullet to reducing complexity in extant systems. But when tackling new problems, I've found it useful to dip into a toolbox of simplification approaches and methods. One such tool is the use of extensive end-to-end *scenario-based design* and implementation. Another is that of utilizing loosely-coupled design of systems by introducing constraints at key junctures – using standards as a tool to force quick agreement on interfaces. Many such tools are not rocket science: for example, by forcing a change in practices to increase the frequency of release cycles, scope and complexity of any given release by necessity is greatly reduced. Another simple tool I've used involves attracting developers to use common physical workspaces to naturally catalyze ad hoc face-time between those who need to coordinate, rather than relying solely upon meetings and streams of email and document reviews for such interaction. Embracing change at a local level through such tools can make a real difference – one project at a time.

Next Steps

We're off to a great start with many initiatives already under way – from efforts occurring now within MSN, to the IW services being launched imminently. We're in a tremendous position to succeed, but doing so will require your belief, creativity, support, leadership, follower-ship and action.

This memo was intended to get all of us roughly on the same page, and to get you thinking. The next steps are:

1) I am working with the division presidents to assign, by December 15th, "scenario owners" – a role intended to improve our execution of key services-based initiatives through leadership. These leaders will provide an outside-in perspective in mapping out and communicating specific market objectives, while at the same time working with developers and others at the detail level to ensure expedient decision making and continuity. These individuals will be responsible for driving critical decisions such as feature re-prioritization and cuts while appreciating the business tradeoffs and impact of such decisions. They'll listen. They'll rapidly effect changes in plans to ensure execution and improve agility, even for scenarios that span divisions. Initial scenarios to be assigned ownership will include the seven seamless experiences described earlier.

2) Beginning in January these individuals will work with me and with product groups to concretely map out scenarios and pragmatically assess changes needed in product and go-to-market plans related to services and service-based scenarios. For some groups this will impact short-term plans; for many others on path to shipping soon, it will factor significantly into planning for future releases.

3) All Business Groups have been asked to develop their plans to embrace this mission and create new service offerings that deliver value to customers and utilize the platform capabilities that we have today and are building for the future. We expect both technical and non-technical communities to be increasingly engaged on the topic of services and service-enhanced software. As we begin planning the next waves of innovation –

such as those beyond Vista and Office “12” – we will mobilize execution around those plans.

4) I have created an internal blog that will be used to notify you of further plans as they emerge. There, I’ll point you to libraries of documents that you will find interesting to read, and I’ll be experimenting with ways that you can directly engage in the conversation.
http://blogs/live

These steps are important and necessary, but not sufficient, for us to deliver on our aspirations. The most important step is for each of us to internalize the transformative and disruptive potential of services. We must then focus on the need for agility in execution, and take actions as appropriate where each of us can.

The opportunities to deliver greater value to our customers, to our developer and partner communities, and to our shareholders are significant. I very much look forward to embarking on this journey with all of you.

— Ray

From: Andrew Bosworth </O=THEFACEBOOK/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=ABOSWORTH>
Sent: Thursday, December 20, 2012 1:39 AM
To: John Hegeman; Sheryl Sandberg; Antonio Garcia-Martinez; Brian Boland; Gokul Rajaram; Greg Badros; Sam Lessin; Scott Shapiro; John Ciancutti; Kelly MacLean; Nipun Mathur; Mike Vernal
Cc: Mark Rabkin; Jason Sobel; Will Cathcart; Mike Schroepfer
Subject: Re: FBX discussion
Attachments: photo.png

+Vernal. It is worth noting it might be reasonable to staff this as a joint effort between ads, platform, and possibly even mobile.

Seriously leaving now,
boz

From: Andrew Bosworth <boz@fb.com>
Date: Wednesday, December 19, 2012 11:14 PM
To: John Hegeman <jhegeman@fb.com>, Sheryl Sandberg <sheryl@fb.com>, Antonio Garcia-Martinez <antoniofgm@fb.com>, Brian Boland <btboland@fb.com>, Gokul Rajaram <Gokul@fb.com>, Greg Badros <badros@fb.com>, Sam Lessin <sl@fb.com>, Scott Shapiro <scott.shapiro@fb.com>, John Ciancutti <jciancutti@fb.com>, Kelly MacLean <kellymaclean@fb.com>, Nipun Mathur <nipunmathur@fb.com>
Cc: Mark Rabkin <mrabkin@fb.com>, Jason Sobel <jsobel@fb.com>, Will Cathcart <wcathcart@fb.com>, Mike Schroepfer <schrep@fb.com>
Subject: FBX discussion

Hey all

After our discussion on Tuesday, Sobel, Rabkin, Cathcart and I circled up to share our thoughts on FBX and I think we made some pretty good progress towards a decision framework. This is high level by design; it is easy to get caught up in the many details of these complex system. As much as possible I'd like any ensuing discussion to follow suit.

Fundamentally, we think the heart of the gamble revolves around how much Facebook believes it can shape the marketplace within which it operates. We have two options: Go For Broke, or Take The Money. I will detail those later.

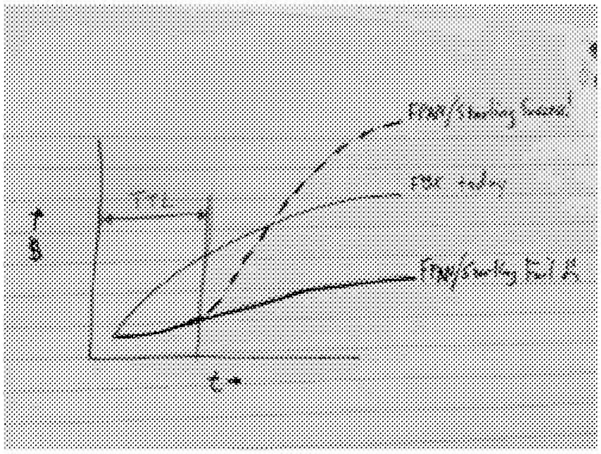
We have a few advantages (in order):
1/ Inventory advantage. We possess a lot of inventory that we believe is very effective across every platform. This advantage is relatively unassailable barring product disasters.
2/ Data advantage. Our advantage with identity is strong as our results from Starling demonstrate. At the same time, our competitors are certainly working to close the gap here and we remain at a disadvantage around "closed loop" data such as purchases.
3/ Platform advantage. Our developer ecosystem could be leveraged to fortify both inventory (with an ad network) and data (with Neko or equivalent install focused product). While we have an advantage today it is relatively latent as those products aren't real or being developed.

We have a few threats (in order):
1/ Consolidation. This will reduce our data advantage and also create network effects which will reduce our ability to compete as time goes on.
2/ Disintermediation. If we aren't shaping this marketplace then others will do it instead and when we enter we will be constrained by them. In the worst case, we won't be able to unseat them and we lose margins to them.
3/ Friction. If people get very comfortable working with DSPs it will be hard to move budgets later even if we have a superior product.

Our decision to deprioritize FPAN/Starling/Neko was essentially a decision not to press our advantages but instead hope that they are big enough that even though they will decay over time (and our threats will grow) when we are finally able to staff those teams and enter the market we will still be able to compete and win.

One fundamental point of debate we saw yesterday revolved around this; people have different beliefs about the magnitude of each advantage or threat and consequently feel differently about how likely we are to win this space. Indeed, some feel that even if we had a full investment today we would not win, others feel that we can wait quite a while and still be competitive if we retain enough value for ourselves.

That led us to create this chart:



The black path is the Go For Broke path where we wait and withhold premium features from FBX. Until we actually launch our products (interfaces, fpan, starling, etc…) we all agree we will make less money than if we had released news feed and custom audiences to FBX. That Time To Launch (TTL) is the red line and it is a critical variable we will return to later. From the launch point, one of two paths emerge:
- the dotted line. In this world the features we withheld create sufficient value for us to substantially shape the marketplace and retain a higher percentage of ultimate revenue, not to mention having a simpler product in the marketplace.
- the solid line. In this world the marketplace has consolidated around us and is intractable by the time we arrive. We have forfeited the money we would have gotten by integrating with FBX sooner and have less mindshare.

The blue path is the Take The Money path where we follow the lead of Antonio and his team and integrate with FBX. We will certainly make more money in the short term and hopefully continue to be able to grow along with it. There is also a chance that this line will trend upwards if budgets are more elastic than we are assuming.

Which path you prefer will depend primarily on your sensitivity to the variables as well as your risk tolerance.

As for the opinion of our group, we have been imagining a future where we have a premium channel in News Feed to capture brand and high end DR dollars at high prices and then another channel with FPAN replacing RHC for everything else. The dotted black line appeals to us and we believe we can get to it but only if the TTL is very short. Given that we don't have enough engineers or (especially) designers right now to staff it, that is in serious jeopardy.

Consequently, we propose to reframe this choice in the following way: Are we willing to commit to fully staff Starling, FPAN, and Neko in the 3-6 month time frame?

If so, that would make TTL sufficiently small that we, as an engineering leadership team, would feel it a worthwhile risk to take the Go For Broke path. It is worth noting, however, that whether we buy a company to get this team or build it from scratch, it can't be entirely bootcampers. This path is not a small tweak, it is a substantial investment.

If not, then the risk is just too great and we should just Take The Money we can get, when we can get it, by opening up more features to FBX.

The one thing we should most likely not do is take neither path, which means making a decision relatively quickly is important. I'm going to be on a plane to Antarctica in 12 hours, but I'm sure this group can figure it out!

boz

Zuck on buying Unity

From: Mark Zuckerberg
Date: June 22, 2015 10:54 AM
Subject: VR / AR strategy and One

With our recent discussions about accelerating our work in VR / AR, I thought it would be useful to articulate what goals I hope we accomplish with our investment.

Our vision is that VR / AR will be the next major computing platform after mobile in about 10 years. It can be even more ubiquitous than mobile – especially once we reach AR – since you can always have it on. It's more natural than mobile since it uses our normal human visual and gestural systems. It can even be more economical, because once you have a good VR / AR system, you no longer need to buy phones or TV's or many other physical objects – they can just become apps in a digital store.

Beyond the sheer value we can deliver to humanity by accelerating and shaping the development of this technology, we have three primary business goals: strategic, brand and financial.

The strategic goal is clearest. We are vulnerable on mobile to Google and Apple because they make major mobile platforms. We would like a stronger strategic position in the next wave of computing. We can achieve this only by building both a major platform as well as key apps.

I will discuss the main elements of the platform and key apps further below, but for now keep in mind that we need to succeed in building both a major platform and key apps to improve our strategic position on the next platform. If we only build key apps but not the platform, we will remain in our current position. If we only build the platform but not the key apps, we may be in a worse position. We need to build both.

From a timing perspective, we are better off the sooner the next platform becomes ubiquitous and the shorter the time we exist in a primarily mobile world dominated by Google and Apple. The shorter this time, the less our community is vulnerable to the actions of others. Therefore, our goal is not only to win in VR / AR, but also to accelerate its arrival. This is part of my rationale for acquiring companies and increasing investment in them sooner rather than waiting until later to derisk them further. By accelerating this space, we are derisking our vulnerability on mobile.

The brand goal is also simple. The weakest element of our brand is innovation, which is a vulnerable position for us as a technology company dependent on recruiting the best engineers to build the future. Having an innovative brand will pay dividends not only in recruiting but therefore across all of our products and other efforts as well.

An innovative brand comes from building tangible new products. Our work in VR / AR is the best example we have. Our core social networking work is no longer new, Internet.org is extending something rather than inventing it, and AI is not yet tangible. We can do more to tell our story in each of these areas, but succeeding in VR / AR has the most innovation potential in the next 5-10 years. Of course we need to succeed in VR / AR to gain any of these brand benefits, but if we do, this will be very valuable.

The financial goal is the most specific and this is where I'll discuss which aspects of the VR / AR ecosystem we want to open up and which aspects we expect to profit from.

I think you can divide the ecosystem into three major parts: apps / experiences, platform services and hardware / systems. In my vision of ubiquitous VR / AR, these are listed in order of importance (although it's worth noting that Apple has built the world's most valuable company with a high-end vision by reversing that order).

The key apps are what you'd expect: social communication and media consumption, especially immersive video. Gaming is critical but is more hits driven and ephemeral, so owning the key games seems less important than simply making sure they exist on our platform. I expect everyone will use social communication and media consumption tools, and that we'll build a large business if we are successful in these spaces. We will need a large investment and dedicated strategy to build the best services in these spaces. For now though, I'll just assert that building social services is our core competence, so I'll save elaborating further on that for another day.

The platform vision is around key services that many apps use: identity, content and avatar marketplace, app distribution store, ads, payments and other social functionality. These services share the common properties of network effects, scarcity and therefore monetization potential. The more developers who use our content marketplace or app store or payments system, the better they become and the more effectively we can make money.

It's worth noting a few things. First, these platform services should be cross platform. Most of the services can be offered on iOS, Android, on desktop, etc. On Android, we can bother offer an app store and offer many of these services to apps distributed through Play – if we app switch to our preloaded marketplace for purchases, we won't even have to pay Google's 30% rev share. Second, this platform definition is not actually an OS in the technical sense. In modern OSes, however, most of the value comes from advantaging the OS provider's own platform services on the devices where its OS is installed. I think our primary platform strategy should not be focusing on building a fully independent OS, but owning these core platform services across all systems. This will be challenging as OS providers will try to push us out, but if we build superior services and provide things OSes need (eg Unity support), then we have a good shot at success.

The last part of the ecosystem is hardware / systems. This category includes all of the core technology required to make VR / AR work but that has little sustainable business value independently: the headsets, controllers, vision tracking, low-level linux and graphics APIs. These pieces all need to be very good for the overall ecosystem to be viable. For example, smartphones needed good touch screens, battery management, radio technology, etc. But aside from brand, patent enforcement and building teams that are consistently far ahead of everyone else, this is the most difficult part of the ecosystem to build into a large business. Even when companies do succeed, no single hardware company gains ubiquity like our vision requires us to do with apps.

Developing hardware and low-level systems is very important for a few reasons. It helps us accelerate and influence the development of VR / AR. It gives us a significant opportunity to integer our platform services across all systems (not just ours). And if we do consistently great work, it could potentially become an important revenue driver like it has for Apple.

Our overall vision for the space is that we will be completely ubiquitous in killer apps, have very strong coverage in platform services (like Google has with Android) and will be strong enough in hardware and systems to at a minimum support our platform services goals, and at best be a business itself.

In order to achieve this vision, there are many different investments we'll need to make. In key apps, we have no social app effort yet and our video effort is weak. We're going to need to jumpstart both. In platform services, we've started building an identity, app store and payments with Oculus, but we're years behind Valve and Google, and we haven't even started on the avatar and content marketplace. In hardware and systems, we are leading in headsets, controllers and low level SDK for VR, but we don't have a real development / graphics system and we're far behind on AR.

Over the next few years, we're going to need to make major new investments in apps, platform services, development / graphics and AR. Some of these will be acquisitions and some can be built in house. If we try to build them all in house from scratch, then we risk that several will take too long or fail and put our overall strategy at serious risk. To derisk this, we should acquire some of these pieces from leading companies.

Given our own strengths, we will probably be best served building most apps and platform services internally while using acquisitions opportunistically, and then acquiring most of the core VR / AR and 3D tech where we have little experience. This is why I am supportive of acquiring Unity, expecting we will acquire an AR company in the next few years and opportunistically acquiring VR app teams, while also consistently encouraging us to ramp up our internal investment on our platform services ourselves.

One important question is that if our strategy is to win key apps and platform services, then why do we need to make such a big investment in hardware and systems? This is an especially important question when we're considering investing billions of dollars into Unity over the next decade. To illustrate the value of owning this core technology, I'll outline the advantages of owning Unity.

First, Unity will help us build world class VR / AR experiences required to deliver on this overall mission…

Over time someone will need to tightly integrate al of the software and hardware components of this ecosystem – headset, controllers and tracking on the hardware side; avatars, content and identity on the software side – and Unity is at the right level of the stack to do this for most developers.

If we own Unity, we can ensure this always happens well, happens quickly and happens with our systems. If we do this integration with Unity, the Unreal and others will prioritize delivering great experiences with us as well and we will push the entire market forward. If we don't own Unity, then at best we can incentivize them to prioritize doing this for us and everything will just move more slowly, but at worst someone may acquire them and block this from happening at all or with us.

At some level, it's important to own the core technology you depend on to achieve your mission. Even if there is potentially a path forward with it, owning it increases integration opportunities and decreases risk.

Second, Unity will increase the adoption of key platform services like avatar / content marketplace and app distribution store. We will achieve this be integrating these services with Unity to make them both superior and easier to use.

As an example of superiority, if we want to make sure our avatars or identity systems work really well in Unity, well easily be able to do that. No one else building a competing avatar system will be able to modify the Unity engine that everyone uses to support their services in a first class way. We will continue Unity's promise of supporting every development environment, but there will undoubtedly be efficiencies in owning Unity that will help us be the best in building key services.

As an example of ease of use, because we own Unity, our key services will always work well and work fast. We can also make our key services the defaults that developers use. We can make it so compiling from Unity is directly compatible with and ships to our app

We can make it so compiling from Unity is directly compatible with and ships to our app store, and so the default avatars and content are using our marketplace format. This does not guarantee our services succeed if they're not great, but if they are great then it guarantees all developers will have easy access to them.

Further, since our key services will be integrated so well and so prominently into Unity, that will put pressure on other engines like Unreal to do close integrations with our key services as well as to make sure their developers have the same access. This will help achieve our goal of spreading the important platform services – even to platforms we don't control.

Increasing our developer surface area will give us more opportunities to integrate and upsell our key platform services over time. Just like developers who deeply rely on Google's Play Services are more likely to use the next Play Service API that comes out, developers who use more of our systems to build their VR / AR experiences will also be likely to use additional services as we build them as well.

Third, Unity increases our ability to ensure other platform companies support our platform services.

If we own Unity, then Android, Windows and iOS will all need us to support them on larger portions of their ecosystems won't work. While we wouldn't reject them outright, we will have options for how deeply we support them.

For open platforms like Android and Windows, this helps level the playing field and helps to ensure we can continue offering our app stores and other key services. For iOS, this will not influence Apple to let us offer an app store, but it could give us other important bargaining chips as part of our VR / AR strategy or otherwise.

On the flip side, if someone else buys Unity or the leader in any core technology component of this new ecosystem, we risk being taken out of the market completely if that acquirer is hostile and decides not to support us. Again, this likely wouldn't be a sudden proclamation that Unity no longer supports Oculus, but Google or someone else would just never prioritize improving our integrations.

To some degree, this downside is such a vulnerability that it is likely worth the cost just to mitigate this risk, even if this deal didn't come with all of the upsides for which we originally contemplated it.

Going back to the question of whether it is worth investing billions of dollars into Unity and other core technology over the next decade, the most difficult aspect to evaluate is that we cannot definitively say that if we do X, we will succeed. There are many major pieces of this ecosystem to assemble and many different ways we could be hobbled. All we know is that this improves our chances to build something great.

Given the overall opportunity of strengthening our position in the next major wave of computing, I think it's a clear call to do everything we can to increase our chances. A few billion dollars is expensive, but we can afford it. We've built our business so we can build even greater things for the world, and this is one of the greatest things I can imagine us building for the future…

The Bitter Lesson

Rich Sutton

March 13, 2019

The biggest lesson that can be read from 70 years of AI research is that general methods that leverage computation are ultimately the most effective, and by a large margin. The ultimate reason for this is Moore's law, or rather its generalization of continued exponentially falling cost per unit of computation. Most AI research has been conducted as if the computation available to the agent were constant (in which case leveraging human knowledge would be one of the only ways to improve performance) but, over a slightly longer time than a typical research project, massively more computation inevitably becomes available. Seeking an improvement that makes a difference in the shorter term, researchers seek to leverage their human knowledge of the domain, but the only thing that matters in the long run is the leveraging of computation. These two need not run counter to each other, but in practice they tend to. Time spent on one is time not spent on the other. There are psychological commitments to investment in one approach or the other. And the human-knowledge approach tends to complicate methods in ways that make them less suited to taking advantage of general methods leveraging computation. There were many examples of AI researchers' belated learning of this bitter lesson, and it is instructive to review some of the most prominent.

In computer chess, the methods that defeated the world champion, Kasparov, in 1997, were based on massive, deep search. At the time, this was looked upon with dismay by the majority of computer-chess researchers who had pursued methods that leveraged human understanding of the special structure of chess. When a simpler, search-based approach with special hardware and software proved vastly more effective, these human-knowledge-based chess researchers were not good losers. They said that ``brute force'' search may have won this time, but it was not a general strategy, and anyway it was not how people played chess. These researchers wanted methods based on human input to win and were disappointed when they did not.

A similar pattern of research progress was seen in computer Go, only delayed by a further 20 years. Enormous initial efforts went into avoiding search by taking advantage of human knowledge, or of the special features of the game, but all those efforts proved irrelevant, or worse, once search was applied effectively at scale. Also important was the use of learning by self play to learn a value function (as it was in many other games and even in chess, although learning did not play a big role in the 1997 program that first beat a world champion). Learning by self play, and learning in general, is like search in that it enables massive computation to be brought to bear. Search and learning are the two most important classes of techniques for utilizing massive amounts of computation in AI research. In computer Go, as in computer chess, researchers' initial effort was directed towards utilizing human understanding (so that less search was needed) and only much later was much greater success had by embracing search and learning.

In speech recognition, there was an early competition, sponsored by DARPA, in the 1970s. Entrants included a host of special methods that took advantage of human knowledge---knowledge of words, of phonemes, of the human vocal tract, etc. On the other side were newer methods that were more statistical in nature and did much more computation, based on hidden Markov models (HMMs). Again, the statistical methods won out over the human-knowledge-based methods. This led to a major change in all of natural language processing, gradually over decades, where statistics and computation came to dominate the field. The recent rise of deep learning in speech recognition is the most recent step in this consistent direction. Deep learning methods rely even less on human knowledge, and use even more computation, together with learning on huge training sets, to produce dramatically better speech recognition systems. As in the games, researchers always tried to make systems that worked the way the researchers thought their own minds worked---they tried to put that knowledge in their systems---but it proved ultimately counterproductive, and a colossal waste of researcher's time, when, through Moore's law, massive computation became available and a means was found to put it to good use.

In computer vision, there has been a similar pattern. Early methods conceived of vision as searching for edges, or generalized cylinders, or in terms of SIFT features. But today all this is discarded. Modern deep-learning neural networks use only the notions of convolution and certain kinds of invariances, and perform much better.

This is a big lesson. As a field, we still have not thoroughly learned it, as we are continuing to make the same kind of mistakes. To see this, and to effectively resist it, we have to understand the appeal of these mistakes. We have to learn the bitter lesson that building in how we think we think does not work in the long run. The bitter lesson is based on the historical observations that 1) AI researchers have often tried to build knowledge into their agents, 2) this always helps in the short term, and is personally satisfying to the researcher, but 3) in the long run it plateaus and even inhibits further progress, and 4) breakthrough progress eventually arrives by an opposing approach based on scaling computation by search and learning. The eventual success is tinged with bitterness, and often incompletely digested, because it is success over a favored, human-centric approach.

One thing that should be learned from the bitter lesson is the great power of general purpose methods, of methods that continue to scale with increased computation even as the available computation becomes very great. The two methods that seem to scale arbitrarily in this way are *search* and *learning*.

The second general point to be learned from the bitter lesson is that the actual contents of minds are tremendously, irredeemably complex; we should stop trying to find simple ways to think about the contents of minds, such as simple ways to think about space, objects, multiple agents, or symmetries. All these are part of the arbitrary, intrinsically-complex, outside world. They are not what should be built in, as their complexity is endless; instead we should build in only the meta-methods that can find and capture this arbitrary complexity. Essential to these methods is that they can find good approximations, but the search for them should be by our methods, not by us. We want AI agents that can discover like we can, not which contain what we have discovered. Building in our discoveries only makes it harder to see how the discovering process can be done.

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i e e

May 29th, 1969

To My Partners:

About eighteen months ago I wrote to you regarding changed environmental and personal factors causing me to modify our future performance objectives.

The investing environment I discussed at that time (and on which I have commented in various other letters) has generally become more negative and frustrating as time has passed. Maybe I am merely suffering from a lack of mental flexibility. (One observer commenting on security analysts over forty stated: "They know too many things that are no longer true.")

However, it seems to me that: (1) opportunities for investment that are open to the analyst who stresses quantitative factors have virtually disappeared, after rather steadily drying up over the past twenty years; (2) our $100 million of assets further eliminates a large portion of this seemingly barren investment world, since commitments of less than about $3 million cannot have a real impact on our overall performance, and this virtually rules out companies with less than about $100 million of common stock at market value; and (3) a swelling interest in investment performance has created an increasingly short-term oriented and (in my opinion) more speculative market.

The October 9th, 1967 letter stated that personal considerations were the most important factor among those causing me to modify our objectives. I expressed a desire to be relieved of the (self-imposed) necessity of focusing 100% on BPL. I have flunked this test completely during the last eighteen months. The letter said: "I hope limited objectives will make for more limited effort." It hasn't worked out that way. As long as I am "on stage", publishing a regular record and assuming responsibility for management of what amounts to virtually 100% of the net worth of many partners, I will never be able to put sustained effort into any non-BPL activity. If I am going to participate publicly, I can't help being competitive. I know I don't want to be totally occupied with out-pacing an investment rabbit all my life. The only way to slow down is to stop.

Therefore, before yearend, I intend to give all limited partners the required formal notice of my intention to retire. There are, of course, a number of tax and legal problems in connection with liquidating the Partnership, but overall, I am concerned with working out a plan that attains the following objectives:

1. The most important item is that I have an alternative regarding money management to suggest to the many partners who do not want to handle this themselves. Some partners, of course, have alternatives of their own in which they have confidence and find quite acceptable. To the others, however, I will not hand over their money with a "good luck". I intend to suggest an alternative money manager to whom I will entrust funds of my relatives and others for whom I have lifetime financial responsibility. This manager has integrity and ability, and will probably perform as well or better than I would in the future (although nowhere close to what he or I have achieved in the past). He will be available to any partner, so that no minimum size for accounts will cause any of you a problem. I intend, in the future, to keep in general touch with what he is doing, but only on an infrequent basis, with any advice on my part largely limited to a negative type.

2. I want all partners to have the option of receiving cash and possibly readily marketable securities (there will probably be only one where this will apply) where I like both the prospects and price but which partners will be able to freely convert to cash if they wish.

3. However, I also want all partners to have the option of maintaining their proportional interests in our two controlled companies (Diversified Retailing Company, Inc. and Berkshire Hathaway, Inc.) and one other small "restricted" holding. Because these securities will be valued unilaterally by me at fair value, I feel it is essential that, if you wish, you can maintain your proportionate interest at such valuation.

However, these securities are not freely marketable (various SEC restrictions apply to "control" stock and non-registered stock) and ~~they~~ will probably be both non-transferable and non-income-producing for a considerable period of time. Therefore, I want you to be able to, go either way in our liquidation - either stick with the restricted securities or take cash equivalent. I strongly like all of the people running our controlled businesses (joined now by the Illinois National Bank and Trust Company of Rockford, Illinois, a $100 million plus, extremely well-run bank, purchased by Berkshire Hathaway earlier this year), and want the relationship to be life-long. I certainly have no desire to sell a good controlled business run by people I like and admire, merely to obtain a fancy price. However, specific conditions may cause the sale of one operating unit at some point.

I believe we will have a liquidation program which will accomplish the above objectives. Our activities in this regard should cause no change in your tax planning for 1969.

One final objective I would like very much to achieve (but which just isn't going to happen) is to go out with a bang. I hate to end with a poor year, but we are going to have one in 1969. My best guess is that at yearend, allowing for a substantial increase in value of controlled companies (against which all partners except me will have the option of taking cash), we will show a break even result for 1969 before any monthly payments to partners. This will be true even if the market should advance substantially between now and yearend, since we will not be in any important position which will expose us to much upside potential.

Our experience in workouts this year has been atrocious - during this period I have felt like the bird that inadvertently flew into the middle of a badminton game. We are not alone in such experience, but it came at a time when we were toward the upper limit of what has been our historical range of percentage commitment in this category.

Documenting one's boners is unpleasant business. I find "selective reporting" even more distasteful. Our poor experience this year is 100% my fault. It did not reflect bad luck, but rather an improper assessment of a very fast-developing governmental trend. Paradoxically, I have long believed the government should have been doing (in terms of the problem attacked - not necessarily the means utilized) what it finally did - in other words, on an overall basis, I believe the general goal of the activity which has cost us substantial money is socially desirable and have so preached for some time. Nevertheless, I didn't think it would happen. I never believe in mixing what I think should happen (socially) with what I think will happen in making decisions - in this case, we would be some millions better off if I had.

Quite frankly, in spite of any factors set forth on the earlier pages, I would continue to operate the Partnership in 1970, or even 1971, if I had some really first class ideas. Not because I want to, but simply because I would so much rather end with a good year than a poor one. However, I just don't see anything available that gives any reasonable hope of delivering such a good year and I have no desire to grope around, hoping to "get lucky" with other people's money. I am not attuned to this market environment, and I don't want to spoil a decent record by trying to play a game I don't understand just so I can go out a hero.

Therefore, we will be liquidating holdings throughout the year, working toward a residual of the controlled companies, the one "investment letter" security, the one marketable security with favorable long-term prospects, and the miscellaneous "stubs", etc. of small total value which will take several years to clean up in the Workout category.

I have written this letter a little early in lieu of the mid-year letter. Once I made a decision, I wanted you to know. I also wanted to be available in Omaha for a period after you received this letter to clear up anything that may be confusing in it. In July, I expect to be in California.

Some of you are going to ask, "What do you plan to do?" I don't have an answer to that question. I do know that when I am 60, I should be attempting to achieve different personal goals than those which had priority at age 20. Therefore, unless I now divorce myself from the activity that has consumed virtually all of my time and energies during the first eighteen years of my adult life, I am unlikely to develop activities that will be appropriate to new circumstances in subsequent years.

We will have a letter out in the Fall, probably October, elaborating on the liquidation procedure, the investment advisor suggestion, etc.

Cordially,

Warren E. Buffett

WEB/glk

PENSIONS

There are two aspects of the pension cost problem upon which management can have a significant impact: (1) maintaining rational control over pension plan promises to employees and (2) increasing investment returns on pension plan assets.

The Irreversible Nature of Pension Promises

To control promises rationally, it is necessary to understand the basic arithmetic and practical rules governing pension plans.

The first thing to recognize, with every pension benefit decision, is that you almost certainly are playing for keeps and won't be able to reverse your decision subsequently if it produces subnormal profitability.

As a practical matter, it is next to impossible to decrease pension benefits in a large profitable company - or even a large marginal one. The plan may embody language unequivocally declaring the company's right to terminate at any time and providing that contributions shall be solely at the option of the company. But the law has eroded much of the significance such "out" clauses were presumed to have, and operating practicalities render any residual rights to terminate moot.

So, rule number one regarding pension costs has to be to know what you are getting into before signing up. Look before you leap. There probably is more managerial ignorance on pension costs than any other cost item of remotely similar magnitude. And, as will become so expensively clear to citizens in future decades, there has been even greater electorate ignorance of governmental pension costs. Actuarial thinking simply is not intuitive to most minds. The lexicon is arcane, the numbers seem unreal, and making promises never quite triggers the visceral response evoked by writing a check.

In no other managerial area can such huge aggregate liabilities - which will be reflected in progressively increasing annual costs and cash requirements - be created so quickly and with so little immediate financial pain. Like pressroom labor practices, small errors will compound. Care and caution are in order.

Deceptive Arithmetic of "Promise Now - Pay Later"

If you promise to pay me $500 per month for life, you have just expended - actuarially but, nevertheless, in a totally tangible sense - about $65,000. If you are financially good for such a lifetime promise, you would be better off (if I have an average expectancy regarding longevity for one my age) handing me a check for $50,000. But it wouldn't feel the same.

And, if you promise to pay me 1,000 hamburgers a month for life which, superficially, may sound equivalent to the previous proposition (assuming a present hamburger price of 50¢), you have created an obligation which, in an inflationary world, becomes most difficult to evaluate. This creates a risk we talk of later as an "earthquake risk". One thing is certain. You won't find an insurance company willing to take the 1,000-hamburgers-a-month obligation off your hands for $65,000 - or even $130,000. While hamburgers equate to 50¢ now, the promise to pay hamburgers in the future does not equate to the promise to pay fifty-cent pieces in the future.

So, before plans are introduced or amended, the financial consequences (particularly in a world of significant inflation which I believe to be close to a certainty)* should be clearly understood by you. Consulting actuaries are very good at making calculations. They are frequently terrible at making the assumptions upon which the calculations are based. In fact, they well may be peculiarly ill-equipped to make the most important assumptions if the world is one of economic discontinuities. They are trained to be conventional. Their self-interest in obtaining and retaining business would be ill-served if they were to become more than mildly unconventional. And being conventional on the crucial assumptions basically means accepting historical experience adjusted by a moderate nudge from current events. This works fine in forecasting such factors as mortality and morbidity, works reasonably well on items such as employee turnover, and can be a disaster in estimating the two most important elements of the pension cost equation, which are fund earnings and salary escalation.

Illustrated Elemental Actuarial Principles

To illustrate a few actuarial principles worth understanding, but without employing the technical jargon and the asterisks, let's use the example of your household. Assume that you, personally, make irrevocable promises to pay pensions of $300 per month for life after they reach 65 to, say, four household employees. To make it easy, let's say that they each are 55 years of age at present. If you make that promise today, you have reduced your net worth today by about

* My views regarding inflationary possibilities are more extreme than those of most respected observers. It is difficult to substantiate a dogmatic view, since conclusions rest more upon social and political judgments than upon economic training and analysis. You should recognize the subjective nature of the reasoning leading to my pessimistic conclusions regarding inflation over the longer term - and not be reluctant to correct accordingly.

$70,000. (For simplicity's sake, I am ignoring some variables such as sex of employees - women live longer and therefore cost more - death before 65, etc. In calculating such factors the actuaries shine.)

Why are you immediately $70,000 poorer? Well, if you set aside a $70,000 fund now and invest it at 7% interest - and let all such interest remain in the fund to be compounded - the principal value of the fund will grow to about $140,000 in ten years when your employees reach 65. And to buy them a lifetime annuity of $3,600 per year will then cost about $35,000 each, utilizing the entire accumulated capital of the fund. So if you make the promise and it is binding - legally or morally - figure you have spent today $70,000, even though you don't have to pay out a dime of cash for ten years.

Now take it one step further and assume that your employees each are earning $600 per month but, instead of promising them $300 per month upon retirement, you promise them 50% of their salary at the time they retire. If their increases run 7.2% per year - and they probably will in the world I foresee - they will be earning $1,200 per month by the time they reach 65. And it will now cost you $70,000 each to purchase annuities for them to fulfill your promise. The actual cost, today, of modifying your promise from 50% of present pay to 50% of terminal pay was to exactly double the fund that needed to be set aside now from $70,000 to $140,000.

Many pension plans use final average pay (usually the average of the last five years, or the highest consecutive five years in the last ten years employed) and some use career average pay. I am not arguing here which should be used, but am illustrating the dramatic difference in costs that can occur because of rather minor-appearing changes in wording.

Pension costs in a labor intensive business clearly can be of major size and an important variable in the cost picture, particularly in a world characterized by high rates of inflation. I emphasize the latter factor to the point of redundancy because most managements I know - and virtually all elected officials in the case of governmental plans - simply never fully grasp the magnitude of liabilities they are incurring by relatively painless current promises. In many cases in the public area the bill in large part will be handed to the next generation, to be paid by increased taxes or by accelerated use of the printing press. But in a corporation the bill will have to be paid out of current and future revenues - with interest - and frequently with what is, in effect, a cost-of-living escalator.

<u>The "Earthquake Risk"</u>

In Germany, in the great inflation of the early 1920s, the entire Daimler Benz (Mercedes) Automobile Company was selling in the market for the price of 300 motor cars. Almost all past investments were nearly worthless, and current salary levels were astronomical in relation to past history. Under such conditions, or conditions far short of such an extreme, the burden of any pension benefits owed by a business, which are based on current salary levels though related to much earlier service in employment, must be backed almost exclusively by the current value (earning power) of the business. Advance funding simply evaporates.

For example, assume that salaries (and the cost of living) are moving upward at 25% per year and the pension fund is earning 10% per year - a set of assumptions not ridiculously different from what exists in England at the moment. Under such conditions, funds put aside for retirement immediately begin to shrink in relation to promised benefits. Every month fewer hamburgers can be purchased from the funds contributed to the pension plan - even after accumulating dividends and interest on the funds.

Almost no one chooses to think about this sort of "earthquake risk" in dealing with pension plans, any more than people choose to spend much time thinking about nuclear war. It may be my earlier-mentioned bias, or my mathematical bent, but I believe some "unthinkable" inflation-related calculations should be made - and even considered - before any company assumes open-ended pension obligations guaranteeing a large number of persons absolute protection against inflation by gearing benefits without limit to final pay or escalating benefits to persons already retired, based on changes in the cost of living.

Thus, the really devastating possibility regarding private pension plans is sustained double-digit inflation. When salaries move ahead at a substantially higher rate than investment returns and benefits are tied to final salaries (or, even more expensively, cost-of-living increases <u>after</u> retirement as in recent rubber and aluminum contracts), it is virtually impossible to pre-fund obligations. Like it or not, you become much like the Social Security Fund, absent the power to tax. Should that occur, future purchasers of the products of the company must be willing to do so at prices that reflect not only the wages of current workers, but the promises to past workers. Some businesses will have economic characteristics allowing them to pass along these costs, but others will have major troubles. On balance, I believe we are in relatively favorable businesses under such circumstances. I do not believe this problem can be solved by the investment process. I mention it for completeness, not because I have answers - and to urge caution in making pension benefit promises subject to dramatic escalation through substantial attrition in the purchasing power of money.

Now let's look at funding and investment behavior appropriate to an economic world at least reasonably similar to the past, recognizing that such a world is far from a certainty.

The Investment Management Problem Inherent in All Pension Plans

Once having committed to provide pensions, how do we pay? The law and prudent business practice mandate that we start putting aside funds on a fairly orderly and consistent basis from which we can fulfill our promises. In this manner we pay the employee currently while he is being productive for the company, and we simultaneously set up a savings account (collectively, not individually) which will accumulate at interest so as to purchase an annuity (not actually "purchased" in most plans, of course, just assured by the pension fund) for him at retirement which will discharge our promise to pay him throughout his non-productive years. Thus, our current cost and current cash requirements (if our estimates are accurate as to what we will earn on the savings account as well as other estimates regarding turnover, salary escalation, longevity, etc.) will reflect his total lifetime employment costs to us spread rather evenly over his productive years.

(This advance funding treatment, matching full current costs against current production, contrasts with the Social Security Plan's program which essentially taxes current producers to pay current non-producers. This simply means moving a portion of current national output of goods and services over from those who produced it to those who are non-producing, and to whom promises have been made. If such a system had been in effect for a very long time, the demographic profile remained fairly constant, the promises remained fairly constant, and there was no inflation, the net effect from such a pay-as-you-go approach would not substantially differ from an advance funding basis. However, these conditions do not exist which may make for various problems - including some that exacerbate inflation and thus have negative fall-out for the economics of private plans.)

Because a business corporation, unlike the Federal government, has to create a "savings account" - an investment accumulating and investment management operation of some sort - to properly fund its pension plan, it must make investment management decisions with respect to pension plan assets.

The History of Corporate Pension Plan Management
Act One - The Awakening

A few decades ago pensions were a relatively new thing at most companies, so that the "savings accounts" were in their formative stages and therefore much smaller. Furthermore, promises were fractions of those presently made, so that the amount eventually required in the savings account to purchase the required annuity at retirement was correspondingly smaller.

Thus the amounts paid into pension funds ("savings accounts") were largely forgotten so far as managerial responsibility was concerned until the great awakening of the 1960s. At that time managements noticed:

(1) The funds had grown to the point where they sometimes were 25% to 50% of the net worth of the company - often making the assets employed in the savings account larger than those employed in the company's largest division. Here are a few figures which I have handy from year-end 1972:

	(In Millions)	
Company	Corporate Net Worth	Pension Fund Assets
A & P	$ 599	$ 236
DuPont	3,268	1,817
Firestone	1,251	423
IBM	7,565	1,023
U. S. Steel	3,577	2,239

So, while U. S. Steel had a visible $3.6 billion in net operating assets which management probably spent 99% plus of their business hours thinking about, they had $2.2 billion in the "bank", whose economic results would impact future values for the shareholders, dollar for dollar, with the economic results of the steel assets. There literally were years when the savings account earned more than was earned out of all operating assets of the steel business. (In fairness to U. S. Steel, it should be mentioned that they were one of the pioneers in recognizing the importance of pension assets - and have done a better-than-average job through in-house management.)

(2) The returns actually realized on the "savings account" had an enormous impact on costs. A sustained 1% change in earning rate could easily swing the annual cost to the contributing company by 15%.

(3) During a period when equities had produced fabulous returns, many of the plans had been invested largely in bonds - which not only bore low fixed rates of 3% to 5% in the earlier periods, but also had suffered significant shrinkages in market values as interest rates increased secularly. (If interest rates go up, bond prices must go down - and if the bonds are long-term and the rates rise sharply, prices go into a power dive.)

(4) Many managements thus saw their largest division earning dismal rates of return with substantial market value shrinkage in the bond component, while all around them high returns were being realized from stocks with little apparent effort or talent. If a company had $100 million invested in its engine division earning 12% by managerial zeal and ingenuity, why tolerate $100 million in its pension fund "division" poking along at only 4% because of inattention - particularly when increasing the $4 million to some larger figure would have the same impact in future earnings for owners as raising margins on engines. Intensive effort on production, research and sales might only produce an increase from 12% to 13% in the engine area, since decisions already had been so near to optimal, but it was easy to imagine 4% becoming 10% in the pension fund area if just average results were attained in equity investment. And, of course, who would settle for being just average?

<u>The History of Corporate Pension Plan Management</u>
<u>Act Two - The Great Leap</u>

And so the hunt was on. Wall Street abhors a commercial vacuum. If the will to believe stirs within the customer, the merchandise will be supplied - without warranty. When franchise companies are wanted by investors, franchise companies will be found - and recommended by the underwriters. If there are none to be found, they will be created. Similarly, if above-average investment performance is sought, it will be promised in abundance - and at least the illusion will be produced.

Initially those who know better will resist promising the impossible. As the clientele first begins to drain away, advisors will argue the unsoundness of the new trend and the strengths of the old methods. But when the trickle gives signs of turning into a flood, business Darwinism will prevail and most organizations will adapt. This is what happened in the money management field.

The banks had traditionally been the major money managers (leaving aside insured plans) and, by and large, their investing as well as their communication had been lackluster. They felt obliged to seek improvement, or at least the appearance of improvement, as corporate managers searched for yardsticks by which to make their decisions as to whom care of this newly discovered giant "division" should be granted. The corporate managers naturally looked for groups with impressive organizational charts, lots of young talent, hungry but appropriately conscious of responsibility, (heavy on MBAs from good schools), a capacity for speed in decision making and action - in short, organizations that looked something like they perceived themselves. And they looked for a record of recent performance.

Unfortunately, they found both.

A little thought, of course, would convince anyone that the composite area of professionally managed money can't perform above average. It simply is too large a portion of the entire investment universe. Estimates are that now about 70% of stock market trading is accounted for by professionally managed money. Any thought that 70% of the environment is going to substantially out-perform the total environment is analagous to the fellow sitting down with his friends at the poker table and announcing: "Well, fellows, if we all play carefully tonight, we all should be able to win a little."*

So, clearly the almost universal expectations of above-average performance in pension fund management were doomed to disappointment. These disappointments were certain to be amplified by a corollary affliction that frequently accompanies pressure for investment performance - higher turnover rates. It is difficult to measure turnover

* An interesting example of this line of thinking (sub-species: wishful) occurs in the April, 1975, Conference Board "Trends in Pension Fund Administration" article which Marty sent me the other day. In a carefully written "Investment Guidelines" statement by a manufacturing company, it is announced: "We believe it is reasonable to expect long-term results superior to the usual market indexes, and the S & P 500 in particular. Specifically, we look for performance better than this index in all types of market environments." And yes, Virginia, maybe every football team can have a winning season this year.

costs with precision, but they certainly must run at least 2% on average when applied to the round trip of purchase and sale. If an investment manager, striving for not only acceptable quarterly performance but also for the appearance of behaving as other highly-thought-of managers are known to be behaving,* moves aggressively to keep his portfolio in the "right" stocks, he easily can average turnover rates of 25% per year. When the performance rage peaked, drastically higher turnover figures were recorded with some managers.

In any event, a 25% turnover rate among professionals as a group, with 2% costs attached to such turnover, reduces group performance by 1/2 of 1% per annum ($1½ billion per year on $300 billion of assets). This means that, instead of chance dispersal of results causing half of all managers to fall above the unmanaged performance level (which has no transaction costs) and half to be below, the frictional drag of turnover costs causes well over half to perform worse than what "average" might be assumed to be.

For the reasons set forth above, almost all recent investment management performance by pension funds of large corporations has been fair to poor. Specifically, the Becker study (most comprehensive of all pension investment measuring services) reports the following:

	Overall Annual Return	
	S & P 500	Becker Median Result*
Last 3 market cycles, (6/30/62 to 12/31/74)	5.3%	4.1%
Last 2 market cycles, (9/30/66 to 12/31/74)	2.1%	0.4%
Last single market cycle, (6/30/70 to 12/31/74)	2.2%	(0.3%)

*Excludes bond segment of portfolios so that equity management only is measured against the equity yardstick.

* In the short term, it frequently is better to look smart than to be smart, particularly if your employment is to be decided by a rather brief interview. If the fans are going to decide your hiring status based on only a few swings, it is prudent to develop a batting style that will remind them of Joe DiMaggio or Ted Williams, even if long-range your percentage of solid hits with that style is small and you know you obtain better results batting cross-handed.

Is There Hope? Can a Wise Corporation Assure Superior Investment Performance for its Pension Plan?

If above-average performance is to be their yardstick, the vast majority of investment managers must fail. Will a few succeed - due either to chance or skill? Of course. For some intermediate period of years a few are bound to look better than average due to chance - just as would be the case if 1,000 "coin managers" engaged in a coin-flipping contest. There would be some "winners" over a 5 or 10-flip measurement cycle. (After five flips, you would expect to have 31 with uniformly "successful" records - who, with their oracular abilities confirmed in the crucible of the marketplace, would author pedantic essays on subjects such as pensions.)

In addition to the ones benefitting from short-term luck, I believe it possible that a few will succeed - in a modest way - because of skill. I do not believe they can be identified solely by a study of their past record. They may be operating with a coin that they know favors heads, and be calling heads each time, but their bare statistical record will not be distinguishable from the larger group who have been calling flips indiscriminately and have been lucky - so far.

It may be possible, if you know a good deal about investments as well as human personality, to talk with a manager who has a decent record and find that he is using methods which really give an advantage over other investors, and which appear to be likely to provide continued superiority in the future. This requires a very wise and informed client - and even then is not free from pitfalls.

For openers, there is one huge, obvious pitfall. I am virtually certain that above-average performance cannot be maintained with large sums of managed money. It is nice to think that $20 billion managed under one roof will produce financial resources which can hire some of the world's most effective investment talent. After all, doesn't the big money at Las Vegas attract the most effective entertainers to its stages? Surely $50 million annually of fees on $20 billion of managed assets will allow (a) an array of industry specialists covering minute-by-minute developments affecting companies within their purview; (b) top-flight economists to study the movement of the tides; and (c) nimble, decisive portfolio managers to translate this wealth of information into appropriate market action.

It just doesn't work that way.

Down the street there is another $20 billion getting the same input. Each such organization has its own group of bridge experts cooperating on identical hands - and they all have read the same book and consulted the same computers. Furthermore, you just don't move $20 billion or any significant fraction around easily or inexpensively - particularly not when all eyes tend to be focused on the same current investment problems and opportunities. An increase in funds managed dramatically reduces the number of investment opportunities, since only companies of very large size can be of any real use in filling portfolios. More money means fewer choices - and the restriction of those choices to exactly the same bill of fare offered to others with ravenous financial appetites.

In short, the rational expectation of assuring above average pension fund management is very close to nil.

Illustrations of Reality in Pension Fund Investment Management

I recently received some interesting figures from a pension fund involving about $250 million of assets. The 9-1/2 year record through June 30, 1975 of the three major banks involved (managing $20 - $50 million per bank) follows, compared to "average" as defined in two ways, the S & P 500 and the D-J Industrials:

	Annual Compounded Rate of Return (including Dividends)
Dow-Jones Industrials	+2.8%
S & P 500	+3.8%
Continental Illinois	+1.8%
First National City	+1.0%
Morgan Guaranty	+3.4%

Until recently, Chase had managed a comparable segment of the funds but was terminated because of poor performance - probably worse than the other banks shown above. Each percentage point plus or minus affected this fund by about $2 to $4 million over the time period measured.

A further interesting calculation was made. On June 30, of the portfolio held by Continental, 64% of the securities held, measured by market value, also were in the Morgan portfolio and 44% were duplicated in the First National City portfolio. Similar overlap was demonstrated in other ways.

I am familiar enough with the record of this fund to state that no unusual constraints have been placed on the managers, and no special factors have to be recognized to interpret the numbers. I believe that Morgan's above-average record here, compared to that of other large banks, is typical of its relative performance at other pension funds. I also feel the predictive value of that relative standing to be low.

Pensions & Investments magazine recently rated the 35 largest banks for which five-year performance records of commingled equity funds were available. Ten did as well as or better than the S & P, consistent with what might be expected according to probability theory if everyone were operating solely according to chance and there was a modest drag on performance caused by transaction costs. More importantly, I know of no set of statistics which would demonstrate any opposite view relating to managers handling large amounts of money.

The evidence all seems to confirm that it is unwise to expect above-average investment results from a corporate pension plan, conventionally managed.

Major Options in Pension Fund Management

With respect to pension fund investments in securities, several paths can be followed, singly or in combination:

(1) One or more large conventional money managers may be retained, with the expectation that performance will be slightly poorer than "average" because of costs involved. If the manager is very large and conventional - any major bank will do - directors of the corporation should run no risk of imprudent behavior as fiduciaries under the new ERISA statute. Conventional behavior is safe - even when the potential litigants have the benefit of hindsight. If we should go this route, I see no reason to change from Morgan.

(2) Management in security selection can be, in essence, abandoned by simply creating a portfolio which is equivalent to "average". This minimizes turnover and management costs, and probably accomplishes about the same result as (1) - perhaps with just a touch more potential liability for results, since a tacit admission has been made that no effort is being expended to "manage". Several funds have been established fairly recently to duplicate the averages, quite explicitly embodying

the principle that no management is cheaper, and slightly better than average paid management after transaction costs. This policy could be implemented by participating in such funds, or on a do-it-yourself basis.

(3) A manager can be found handling smaller amounts whose record has been good for the right reasons.

Then hope that no one else finds him.

Good records of any type usually have attracted massive money flows - whether the record was based on unusual skill, luck, or even, occasionally, semi-fraudulent activity which has "manufactured" the record. Even those records which I believe to have been based at least partially on skill have wilted when subjected to torrents of money.

A further problem is that in no case were the superior records I have observed based upon institutional skills which could be maintained despite changes in the faces. Rather, the good results have been accomplished by a single individual or, at most, a few, working in fairly specialized areas in which the great bulk of investment money simply had no interest. It has been very difficult to out-think the pack on General Motors, IBM, Sears, etc. Rather, the unusual records - and there have been few that have been maintained - have been achieved by those who have worked relatively neglected fields in which competition was light.*

Many pension funds, including the fund to which I referred earlier, have attempted to find superior but relatively unknown managers still working with small sums. This often involves dozens of interviews and usually comes down to the past record,

* Your win-loss percentage in tennis will not be determined by the absolute level of ability that you possess. Rather, it will be determined by your ability to select inferior opponents. If you select with care it will be quite easy to attain a winning percentage higher than, say, Cliff Richey while he is playing on the tour. Application of this principle is the key element in bridge, poker, or investments. (Harder to apply in the latter, however - it is easier to identify a couple of palookas at the bridge table.)

particularly the recent past, plus an articulate practitioner who "looks" reasonable and respectable. In my opinion, based only on impressions, the overall record from this selection process has been poor and very likely worse than the mildly below-average record of the major money manager.

The reason isn't too hard to see (particularly with a rear view mirror). Much of Wall Street is a succession of fashions. Obviously some individuals will have hit the most recent fashion, and their record will look correspondingly good - maybe sensationally good if they have a reckless streak and have played a particular trend very hard. But fashion-hitting never has been successfully maintained, to my knowledge. And the manager primarily selected for recent hot performance knows what he is expected to do. He is to perform - and quickly. So the new small manager's decisions frequently are characterized by high turnover, major mistakes, even more furious activity to catch up, etc. It has not happened every time, but my hunch is that the sum total performance of the relatively unknown go-go managers for pension funds has been worse than the lumbering, stiff-legged minuet performed by the major banks.

(4) A fixed income (bonds) investment strategy can be followed, which presently allows returns of about 9% per annum that can be locked in for some time. This option currently is becoming somewhat more popular, should be quite defensible under ERISA, and will look good or bad, depending upon what returns from equity holdings develop over the next decade or two. This essentially is the same decision that was made by default several decades ago by many companies, except the rates then were 4% instead of 9%. I do not recommend an attempt by us to go back and forth from bonds to stocks. This is a skill possessed by few, if any - and certainly not by a group. If we could master this particular form of alchemy, there would be little reason to do anything else.

The comfort level produced by this option is likely to be high under any conditions except high rates of inflation - which will produce distress under all of the options discussed herein.

(5) My final option - and the one to which I lean, although not at anything like a 45-degree angle - is mildly unconventional, thereby causing somewhat more legal risk for directors.* It may differ from other common stock programs, more in attitude than in appearance, or even results. It involves treating portfolio management decisions much like business acquisition decisions by corporate managers.

The directors and officers of the company consider themselves to be quite capable of making business decisions, including decisions regarding the long-term attractiveness of specific business operations purchased at specific prices. We have made decisions to purchase several television businesses, a newspaper business, etc. And in other relationships we have made such judgments covering a much wider spectrum of business operations.

Negotiated prices for such purchases of entire businesses often are dramatically higher than stock market valuations attributable to well-managed similar operations. Longer term, rewards to owners in both cases will flow from such investments proportional to the economic results of the business. By buying small pieces of businesses through the stock market rather than entire businesses through negotiation, several disadvantages occur: (a) the right to manage, or select managers, is forfeited; (b) the right to determine dividend policy or direct the areas of internal reinvestment is absent; (c) ability to borrow long-term against the business assets (versus against the stock position) is greatly reduced; and (d) the opportunity to sell the business on a full-value, private-owner basis is forfeited.

These are important negative factors but, if a group of investments are carefully chosen at a bargain price, it can minimize the impact of a single bad experience in, say, the management area, which cannot be corrected. And occasionally there is an

* I am leaving most of the legal discussion out of this memo - partly due to space considerations and partly because it is not my field. In general, the safest course is to behave as most others are behaving - and to trust in the expertise of large, well-regarded conventional organizations. I also believe it is defensible - although not as automatically defensible - to diversify among a group of well-financed entrenched businesses purchased at reasonable valuations of earnings and assets.

offsetting advantage which can be of very substantial value - but for which nothing should be paid at the time of purchase. That relates to the periodic tendency of stock markets to experience excesses which cause businesses - when changing hands in small pieces through stock transactions - to sell at prices significantly above privately-determined negotiated values. At such times, holdings may be liquidated at better prices than if the whole business were owned - and, due to the impersonal nature of securities markets, no moral stigma need be attached to dealing with such unwitting buyers.

Stock market prices may bounce wildly and irrationally but, if decisions regarding internal rates of return of the business are reasonably correct - and a small portion of the business is bought at a fraction of its private-owner value - a good return for the fund should be assured over the time span against which pension fund results should be measured.

It might be asked what the difference is between this approach and simply picking stocks a la Morgan, Scudder, Stevens, etc. It is, in large part, a matter of attitude, whereby the results of the business become the standard against which measurements are made rather than quarterly stock prices. It embodies a long time span for judgment confirmation, just as does an investment by a corporation in a major new division, plant or product. It treats stock ownership as business ownership with the corresponding adjustment in mental set. And it demands an excess of value over price paid, not merely a favorable short-term earnings or stock market outlook. General stock market considerations simply don't enter into the purchase decision.

Finally, it rests on a belief, which both seems logical and which has been borne out historically in securities markets, that intrinsic business value is the eventual prime determinant of stock prices. In the words of my former boss: "In the short run the market is a voting machine, but in the long run it is a weighing machine."

Specifically, it probably is possible to invest the $12 million in our pension fund in a dozen businesses (maybe more; ERISA emphasizes diversification) with current intrinsic value (measured by private-owner valuations and transactions) attributable to our investment of, say, $20 million and current earnings of at least $1.5 million. The portion of such earnings paid out to us clearly is worth 100 cents on the dollar, and a reasonable batting average by the managements of companies in which we invest should result in the portion reinvested having similar value. If this is the case, such a "pension division" operation will produce better returns than bond investment at current rates.

The main long-term risk would be that future returns on capital obtained by our "division managers" would turn sour. In some individual case that undoubtedly would prove true. It might well be that there also would be a favorable surprise or two. That is true of any acquisition program. The one substantial advantage that this "division" would have would be attractive purchase prices - far below those available for purchasers of entire businesses. If purchases could not be made on such a "bargain" basis, we simply would wait until they could. A second advantage would be the flexibility provided by a public stock market, allowing portions of business operations to be acquired or divested much more easily than entire operating businesses.

It must be emphasized that measurement of this program would have to be based on the progress in our share of earnings and assets of the constituent companies - not short-term market movements. We would expect substantial increases in earnings, dividends and asset values over, say, a decade just as we expect with our operating divisions at Washington Post. We would, in mental approach, have created a new diversified division, currently capitalized at about $12 million, which is expected to earn a better-than-bond rate with which to eventually pay retired employees. In a sense, this is what was done in the profit-sharing fund when it accumulated Washington Post stock throughout earlier years - basically a wise decision because the business earned very well internally and thereby grew in value at a substantial rate. It was an attractive partially-owned business, acquired at an attractive price. Until market prices were introduced, which complicated things, the funds built up through this self-owning division were significantly larger than would have been achieved by buying bonds or the general run of common stocks.

If it should be decided to implement such a policy, recommendations should be obtained from qualified analysts who clearly understand our rather unusual selection criteria. This could be handled on a quite infrequent basis.

As mentioned earlier, a policy also could be followed combining more than one option. Most combinations have been (1) and (3), or (1) and (4), but (4) and (5) could well be more logical.

Pension Asset Management in the Scale of Business Priorities

Of course, the desirability of even considering something non-conventional (not to be equated with more risk; the exclusive benefit provision of ERISA requires fiduciaries to discharge their duties "solely in the interests of the participants and beneficiaries") relates to the relative impact pension results can have on overall earnings. One of my friends always reminds me: "If a thing's not worth doing at all, it's not worth doing well." If our pension assets were $1 million and likely to grow only a few hundred thousand dollars a year, it would be ridiculous to think of any activity that might incur even unwarranted criticism, let alone litigation. On the other hand, if we had U. S. Steel's pension situation, we might want to make a truly top priority project out of pension asset management (as they have), even if we might slightly increase personal risks to directors by so doing.

We fall in between although, if you look through to the plans to which we contribute but don't manage (Guild, mechanical, etc.)* we are moving more in the direction of U. S. Steel. It is likely that within ten years we will have $40 million in our direct pension "division" and further substantial sums in other plans presently on an indirect basis. Earnings of businesses purchased through this "division" should run at least $5 million per year.

* In prior years it was felt that by limiting contributions to union plans to so much per shift, or per hour, management was relieved of responsibility for any specific level of benefits, as well as pension fund administration. The shield of this "hands off" position is eroding and we should recognize that we may well have responsibility at some future date for benefits promised under these plans, which we originally thought involved only defined contributions. With this in prospect, we may wish to gain at least partial command over fund investments in this area.

Summing up:

(1) If the economic world turns out to be one of sustained double-digit inflation - probably still unlikely but not unthinkable - among the carnage will be private pension plans. The investment process can do little to modify that disaster. Hope lies mainly in the care with which past promises have been made, and the ownership of a business whose economic characteristics allow pass-through pricing which includes a large part of past labor costs, as well as full current costs.

(2) In a more orderly world, the care with which promises have been worded remains important, but on a scale that diminishes as inflation moderates. Conventional approaches to money management should not be expected to produce above average results. But average will be perfectly acceptable at low inflation rates.

(3) A mildly non-conventional investment approach, emphasizing a business approach to security selection, gives some opportunity for long-term results slightly above average without corresponding increase in investment risk.

Warren E. Buffett

October 14, 1975

July 22nd, 1976

Mr. George D. Young,
National Indemnity Company,
3024 Harney Street,
Omaha, Nebraska. 68131.

Dear George:

Thanks very much for your memo of July 19th regarding GEICO which I believe summarizes well the problems attendant to the specific property treaty we are discussing, as well as the general problems associated with reinsurance of any type at GEICO. I still am willing to explore further the GEICO property treaty - if they subsequently decide that it fits their needs - and today committed to Jack Byrne that we would take a 1% quota share of their entire book. This increase from .8 of 1% was pursuant to his request in order to help him attain the 25% mark by the shareholders meeting tomorrow.

I consider the overall quota share to be an acceptable - but not exciting - piece of business. Under normal conditions we would take nothing like 1%, obviously, since that makes it by far the largest reinsurance treaty on our books, and involves substantial risks along with a limited prospect of profit. I also do not like the feature that provides for a credit to GEICO for interest earnings on funds held by us. In effect, we are making this contract number one in size for the reinsurance department, whereas the contractual terms make it less attractive than most of our other contracts.

However, I have three reasons for taking this unusually large portion of the quota share arrangement, and these same reasons also apply to my interest in the property treaty.

1. I hope it is not a governing factor in any way, but I do have some sentimental reasons for wishing GEICO to survive. GEICO has enumerated all of the hard headed reasons, such as the State Financial Guaranty funds, etc. I just have

pulled out of the bottom drawer of my desk a statement of my net worth at the end of 1951 when I was 21 years old. I showed net assets of $19,737, of which $13,125 was in GEICO stock. That was the year when I first started selling securities, and I told everyone who would listen to me that they should put every cent they could scrape together into GEICO. A number of friends and relatives did so, and enjoyed a significant change in their financial fortunes because of this. It provided the first big boost to my own small savings, as well as an even more important boost to my reputation in the Omaha investment community.

During those early years, when I followed the company, the people involved couldn't have been nicer. Leo Goodwin was running things then and was helpful. Even moreso was L. A. Davidson. He was personally encouraging and forthcoming with information regarding the business, which enabled me to develop a depth of conviction which I have felt few times since about any security.

2. At that time I felt that GEICO possessed an extraordinary business advantage in a very large industry that was going to continue to grow. Since that time they never have lost that advantage - the ability to give the policyholder back in losses a greater percentage of the premium dollar than any other auto insurance company in the country, while still providing a profit to the company. I always have been attracted to the low cost operator in any business and, when you can find a combination of (i) an extremely large business, (ii) a more or less homogenous product, and (iii) a very large gap in operating costs between the low cost operator and all of the other companies in the industry, you have a really attractive investment situation. That situation prevailed twenty-five years ago when I first became interested in the company, and it still prevails.

The company managed to nullify this advantage - and even more than nullify it - by inadequate recognition of loss costs through poor techniques of loss reserving. This led to improper pricing of product, with the result that a product which <u>could</u> have been sold at a profit <u>was</u> sold at a loss. But the important point to note is that the company had not lost its position as a low cost operator; they merely had mismanaged their loss information which caused the product to be priced inadequately. I believe the advantages of a 13% acquisition cost ratio are as important as ever. I also believe that practically no other companies are going to achieve costs near that figure in the future. Therefore, GEICO, properly managed, should prosper if they can pull themselves back from the financial precipice.

I like very much what Jack Byrne says about reducing policies in force. It seems to me that such an approach - rather than an obsession with growth - is very likely to reconstruct the situation whereby they can give the policyholder an unusually high percentage of the dollar back in losses and still make good profits for themselves

3. The crucial factor, then, becomes whether they can get past their present financial difficulties. Much of the press - witness Time last week - assumes that they can't. Until recently, I was unclear myself as to their possibilities in this regard. If they had been at all wishy-washy in obtaining rate increases or biting the bullet generally, I don't think they would have made it. However, the size of the rate increases they have instituted, along with the underwriting results they have published for April and May, have convinced me that their combined ratio will come down to tolerable limits within a fairly short time.

Even this would not have been enough if Mr. Wallach were inclined to put them into receivership because of the unwillingness of the industry to accept his 40% plan. When he did not move to do so after the June 23rd deadline, it convinced me that he was not going to act precipitously to terminate a business that fundamental economic logic still dictated had a bright future ahead of it. When he did not bow his back over the non-subscription to his 40% plan, I believe the company's future became assured. I decided then to buy stock, which is the most tangible evidence I can give you as to my assessment of the Company's chances for survival.

Therefore, George, I will take the responsibility for making the decision that GEICO survives as a business entity. You should make any underwriting judgments that you wish, with this as the premise - if I am wrong about their survival, it will be my fault and not yours. I do not want to go overboard because of sentiment, but I certainly want us to make every effort to come up with proposals that make business sense to us and are useful to them. I do not want more of the overall quota share because I consider the terms too disadvantageous to the reinsurer, all things considered. But, if a property treaty can be put together with a prospect of gain that more than balances the risk of loss, let's proceed.

Sincerely,

Warren E. Buffett

WEB/glk

December 13th, 1972

~~Mr.~~ ~~Charles N.~~ Huggins, President,
See's Candy Shops, Inc.,
~~3423 LaCienega~~ Boulevard,
Los Angeles, California. 90016.

Dear Chuck:

I was out at Brandeis a couple of days ago, and have a few strong impressions to pass along:

1. People are going to be affected not only by how our candy tastes but, obviously, by what they hear about it from others as well as the "retailing environment" in which it appears. The latter includes the class of store, the method of packaging, the condition in which it appears, and the surrounding merchandise. Just as the New Yorker creates a different "editorial environment" for a Lord & Taylor ad than does the Village Voice, so do the surroundings in which our candy is offered affect potential customers' mental - and even gastronomical - impression of our quality. You, of course, know this far better than I.

2. To date, we have always maintained an incredibly pure approach to distribution which undoubtedly contributes substantially to the public's image of our product.

3. At Brandeis, our product suffers in every comparative way against Stover's. They have an extremely well organized, well displayed and attractive area featuring nothing but their candy. Brandeis has taken a number of our boxes and placed them on a counter with 25 other offerings of cheap bulk candy, and other run-of-the-mill products. They have taken a standard card sign out of their own display department and put a few descriptive lines on it, which is not much different than the card next to it which might say "Jelly Beans, 99¢ a lb.". The one open package displaying the contents of our box has pieces out of place, empty wrappers, and generally presents a jumbled appearance.

4. In the case of the average customer at Brandeis, we are not maintaining an image but developing an image. It seems obvious to me that if we push further with department store distribution, we are going to

have to have very tight controls regarding merchandising conditions. They will have to be offered in a way that establishes them as something very special - and this probably means adequate display area insulated from inferior products, appropriate signs relating to the See's legend, and attractive open display boxes which are packaged so as to insure a first-class presentation.

All of this, of course, reflects the benefit of a first small scale test. If we decide to go ahead, we will have ample time to prepare for next year so that we can be sure we are represented only in quality stores in an absolutely quality manner.

When we get outside of our own territory, we may well want to have some descriptive material. Perhaps we could have a little booklet called "The Most Famous Kitchen in the World", or something of that sort. Coor's gets a lot of mileage out of the fact that all of their beer comes from one brewery, and I do think there is a certain mystique attached to products with a geographical uniqueness. Maybe grapes from one little eighty-acre vineyard in France are really the best in the whole world, but I have always had a suspicion that about 99% of it is in the telling and about 1% is in the drinking.

We might be able to tell quite a story about the little kitchen in California that has become the kitchen known 'round the world. If we prepare something along this line, it ought to be extremely well done and should form the basis of the legend that we eventually want to have permeate the country. Such a booklet, along with really classy display and appropriate advertising by Marshall Field's, Rich's, Jordan Marsh, etc., could well enhance our image rather than diminish it - which would be the case if we merchandised in the Brandeis manner. Incidentally, I also think we should put territorial limitations on the franchise. Younker's should not be allowed to come over to Omaha, nor Brandeis to go to Des Moines and sell the candy. It should be very hard to get, available only periodically, and then (to the consumer) apparently only in limited quantities.

With best personal regards,

Sincerely,

Warren E. Buffett

WEB/glk

c c: Mr. J. P. Guerin
Mr. C. T. Munger

Resignation of Mutual Savings from US League of Savings Institutions

May 30, 1989

Gentlemen:

This letter is the formal resignation of Mutual Savings and Loan Association from the United States League of Saving Institutions.

Mutual Savings is a subsiduary of Wesco Financial Corporation, listed ASE, and Berkshire Hathaway Inc., listed NYSE, which are no longer willing to be associated with the league.

Mutual Savings does not lightly resign after belonging to the League for many years. But we believe that the League's current lobbying operations are so flawed, indeed disgraceful, that we are not willing to maintain membership.

Our savings and loan industry has now created the largest mess in the history of U.S. financial institutions. While the mess has many causes, which we tried to summarize fairly in our last annual report to stockholders, it was made much worse by (1) constant and successful inhibition over many years, through League lobbying, of proper regulartory response to operations of a minoritry of insured institutions dominated by crooks and fools, (2) Mickey Mouse accounting which made many insured institutions look sounder than they really were, and (3) inadequate levels of real equity capital underlying insured institutions' promises to holders of savings accounts.

It is not unfair to liken the situation now facing Congress to cancer and to liken the League to a significant carcinogenic agent. And, like cancer, our present troubles will recur if Congress lacks the wisdom and courage to excise elements which helped cause the troubles.

Moreover, despite the obvious need to a real legislative reform, involving painful readjustment, the League's recent lobbying efforts regularly resist minimal reform. For instance, the League supports (1) extension of accounting conventions allowing 'goodwill' (in the financial institutions' context translate 'air') to count as capital in relations with regulators and (2) minimization of the amount of real equity capital required as a condition of maintenance of full scale operations relying on federal deposit insurance.

In the face of a national disaster which League lobbying plainly helped cause, the League obdurately persists in prescribing continuation of loose accounting principles, inadequate capital, and, in effect, inadequate management at many insured institutions. The League responds to the savings and loan mess as Exxon would have responded to the oil spill from the Valdez if it had insisted thereafter on liberal use of whiskey by tanker captains.

It would be much better if the League followed the wise example, in another era, of the manufacturer which made a public apology to Congress. Because the League has clearly misled its government for a long time, to the taxpayers' great detriment, a public apology is in order, not redoubled efforts to mislead further.

We know that there is a school of thought that trade associations are to be held to no high standard, that they are supposed to act as the league is acting. In this view, each industry creates a trade association not to proffer truth or reason or normal human courtesy following egregious fault, but merely to furnish self-serving nonsense and political contributions to counterbalance, in the legislative meilieu, the self-serving nonsense and political contributions of other industries' trade associations. But the evidence is now before us that the type of trade association conduct, when backed as in the League's case by vocal and affluent constituents in every congressional district, has an immense capacity to do harm to the country. Therefore, the League's public duty is to behave in an entirely different way, much as major-league baseball reformed after the "Black Sox" scandal. Moreover, just as client savings institutions are now worse off because of the increased mess caused by League short-sightedness in the past, client institutions will later prove ill-served by the present short-sightedness of the League.

Believing this, Mr. Warren E. Buffett and I are not only causing Mutual Savings to resign from the U.S. League of Savings Institutions; we are also, as one small measure of protest, releasing to the media, for such attention as may ensue, copies of this letter of resignation.

Truly yours,
Charles T. Munger

husky m: Jeff Raikes >
> To: Warren Buffett, Berkshire < >
> Subject: Go Huskers!
> Date: Sunday, August 17, 1997 9:37 PM
>
> Warren, I apologize in advance for this being a long note. I do hope
> you find it interesting, and be certain I don't expect a long reply (or
> any reply at all for that matter). Perhaps sometime we'll get a few
> minutes where I can get your reaction to the thoughts on business below.
>
> Go Huskers!
>
> We're looking forward to seeing you in a few weeks for the Husker game.
> Please let me know if there is anything I can do to make your stay in
> Washington more enjoyable (and a little more Husker-oriented!), and I
> will also check with BillG on the plans and how I might help.
>
> I'm sad to say I'm very pessimistic about our prospects. You've
> probably noted that Washington is very highly ranked this year. They
> have Huard, arguably one of the top 2or 3 pro-style quarterbacks in the
> country - and only a sophomore. And they have an outstanding defense.
> In the meantime, the Huskers are replacing eight starters on defense,
> and the spring game showed that Frost still can't throw the ball well
> enough. Without a balanced attack on offense, we'll have difficulty
> against their speed. And Huard has the potential to pick apart our
> secondary - we'll need an outstanding plan on pass rush, equivalent to
> the "Philadelphia Blitz" employed at the Nebraska vs. Florida Fiesta
> Bowl championship game.
>
> I hope you're hearing better news from fall practice. People here know
> I'm a huge Husker fan -- I can't tell you how painful it would be for me
> to go through two more losses to the Huskies.
>
> The Making of An American Capitalist...
>
> Tricia and I took the kids to Disney World, followed by a short vacation
> to Nantucket and Cuttyhunk (a small island off Martha's Vineyard). I
> spent part of the vacation reading Lowenstein's book (The Making of an
> American Capitalist) - and really enjoyed it! On the way from Cuttyhunk
> to Boston/Logan airport, we drove down Cove Road in New Bedford trying
> to find the Berkshire-Hathaway mill. While I saw a few old mills, I'm
> not really sure which might have been the one - I was looking for the
> clock tower. Or perhaps it has been torn down.
>
> The book got me thinking about your golf tournament, the after-dinner
> "Talk with Warren", and the inevitable question - why don't you invest
> in Microsoft or high technology? The Lowenstein book provided some
> stimulus to ponder the question, and I thought it would be fun to share
> some thoughts with you on the subject. But I should emphasize my intent
> in doing so is not to try to change your viewpoint (though I hope it
> doesn't reinforce your view!). I just view this as a fun discussion or
> intellectual exercise. While many people would see our business as
> complicated or hard to understand, I am absolutely convinced an astute
> investor can learn our business in only 3 to 4 hours (and probably less
> than two hours if BillG explained it!).
>
> In some respects I see the business characteristics of Coca Cola or
> See's Candy as being very similar to Microsoft. I think you would love
> the simplicity of the operating system business. E.g. in FY96 there
> were 50 million PC's sold in the world, and about 80% of them were
> licensed for a Microsoft operating system. Although I would never write
> down the analogy of a "toll bridge", people outside our company might
> describe this business in that way. Those 40 million licenses averaged
> about $45 per, for a total of about $1.8B in revenue. By the way, the
> remaining 10M PC's were largely running Microsoft operating systems - we
> just didn't get paid for them. This problem - piracy - if reduced, is
> one of the key upsides to our business.
>
> In FY2000, there will be about 100M PC's sold. We think we can reduce
> piracy to 10% and license 90% or 90M of the PC's. But we also have
> "pricing discretion" -- I think I heard this term used in conjunction
> with your pricing decisions on See's Candy. We will be transitioning
> the world to a new version of our operating system, Windows NT. Today,
> we get more than $100 per system for NT, but only on a small percentage
> of the PC's. But NT will be on closer to 70% of the PC's sold in
> FY2000. We can achieve average license revenue of $80. So 90M licenses
> at $80 per license totals about $7.2B, up from just under $2B in 3 to 4
> years. And since there are effectively no COGs and a WW sales force of
> only 100-150 people this is a 90%+ margin business. There is an R&D
> charge to the business, but I'm sure the profits are probably as good as
> the syrup business!
>
> There is actually upside in the number of PC's sold. Similar to your
> analysis of Coca Cola, the penetration of PC's in International markets
> leaves a lot of room for growth. In the US, the number of PC's per 1000
> people is around 400 or so, but the number drops off rapidly to 100 or
> less in most countries, even in some of the European countries.
> (Unfortunately, I'm not in Seattle now so I don't have these numbers at

> my fingertips, but Steve Ballmer can recite them from memory.)
>
> The business described above is what we call the OEM (Original Equipment
> Manufacturer) business, meaning our revenue comes from the manufacturers
> of the PC's. The majority of the rest of the business is called the
> "finished goods" business. It consists of businesses or individuals
> buying office productivity software, educational or entertainment
> software, etc. Again the structure is very simple. A PC is just a
> razor that needs blades, and we measure our revenue on the basis of $
> per PC. In FY96, nearly 50M PC's were purchased and Microsoft averaged
> about $140 in software revenue per PC or $7B. This amount is in
> addition to the OEM royalty business I described above. (Steve Ballmer
> can recite the number of PCs and $ per PC to you off the top of his head
> for just about any country in the world; BillG can probably do the same
> though he doesn't spend as much time on that as Steve.)
>
> So in some sense that is it. There are a certain number of PC's that
> get sold, a growing amount of Microsoft software per PC, the power to
> use the brand to sell even more software, some pricing discretion,
> international market growth, and the opportunity to grow revenue by
> further reduction in piracy. Obviously I'm not going through all the
> details we'd discuss in a couple hour session, but that is the heart of
> the business. Of course there is the R&D invested to build the
> software, but that is similar to Disney continuing to produce new
> content, or Nebraska Furniture Mart continuing to keep their format
> fresh, and an investment that BillG manages very closely.
>
> Even some of the new "media" businesses are really not that new or
> different. Take our WebTV acquisition or the Comcast deal. I see
> articles covering those investments and describing Microsoft as becoming
> a media company. The real goal is to figure out a way to get an
> "operating system" royalty per TV. 10's of millions of TV's per year at
> $10-$20 per TV is a nice little "operating system" business.
>
> There is a tremendous strategic synergy between the "finished goods
> business" and the OEM operating system business. E.g. we have about 90%
> share of office productivity software with Microsoft Office, and that is
> a great business (about $5B, also 85%+ operating margin). But also
> important is the fact that this software is heavily valued by the actual
> users (operating systems are a bit more invisible to the user), and they
> resist shifting brands. If we own the key "franchises" built on top of
> the operating system, we dramatically widen the "moat" that protects the
> operating system business. I.e. if I owned the most successful daily
> newspaper in Buffalo, I wouldn't want to leave it to my competitor to
> own the Sunday edition.
>
> Let's build on this analogy and the strategic synergy between the
> operating system and the software that runs on it. It helps explain the
> investments we are making in Pete Higgins business (Interactive Media,
> like MSN, MSNBC, Expedia, Sidewalk, etc.). Again, some newspaper and
> magazine articles would say that Microsoft is trying to become a media
> company. But I prefer to view it as investing in the potential "user
> franchises" that will help protect our operating systems businesses in
> the future. We hope to make a lot of money off these franchises, but
> even more important is that they should protect our Windows royalty per
> PC, and hopefully our royalty per TV. And success in those businesses
> will help increase the opportunity for future pricing discretion.
>
> So I really don't see our business as being significantly more difficult
> to understand than the other great businesses you've invested in. But
> there is one potential difference that worries me, and it is a key part
> of the reason I spent the time to share these thoughts with you. The
> difference I worry about is the "width of the moat." With Coca Cola,
> you can feel pretty confident that there won't be a fast shift in user
> preferences away from drinking sodas, and in particular Coke. In
> technology, we may more frequently see "paradigm shifts" where old
> leaders are displaced by new. Graphical user interface replaces
> character user interface, the Internet explodes, etc.
>
> In the absence of a paradigm shift in technology, market shares seldom
> change by more than a few points. With a paradigm shift, the shares can
> rapidly change by dozens of points. I spent my first ten years at

> Microsoft building Microsoft Office. We were way behind in share most
> of that time (less than 10%), but the shift to graphical user interface
> was the paradigm shift that allowed us to displace the old leaders
> (Lotus 1-2-3 and WordPerfect) and now be at 90% share. Of course key to
> this shift in share, was their failure to identify the computing
> paradigm shift and properly invest in it. They were the leaders and
> they could have chosen to cannibalize themselves. But they didn't act
> fast enough and were scared that investing in the new paradigm would
> open the door for us - ironically it was their slow pace that opened the
> door.
>
> I remember one of our very first conversations in 1991. You asked me my
> view on what happened to IBM. I don't remember exactly what I said. I
> think their addiction to the power they had in the previous generations
> of computing, really blindsided them from the paradigm shift of the PC
> and client-server computing.
>
> In technology, the moats may be narrower. It is amazing how fast the
> Internet exploded. Or how quickly Java gained notoriety. We have some
> great moats, but even so, 18 months ago analyst were questioning whether
> we could move quickly enough. (Obviously, that turned out to be a great
> time to buy Microsoft!)
>
> I am very confident about our business for the next 5 to 10 years. But
> I will admit it is easier to be confident about Coke's business for the
> next 10 years. In short, I've long had this sneaking suspicion that it
> is not that you don't understand this business. (In fact, BillG has
> probably already explained all of the above to you and I apologize for
> boring you with this, but it was fun and good for me to write it down.)
> My theory is that you don't invest in technology or Microsoft because
> you see the moats as narrower; too much risk and the potential for a
> fast paradigm shift that would too quickly undermine your equity
> position.
>
> Since Microsoft is the business I understand (i.e. I have a narrow
> circle of competence!) and I subscribe to your views on investments,
> well over 90% of my net worth is tied up there. (Thanks to BillG, I'm
> well into the nine digit range.) I feel fine about having 90%+ tied up
> in Microsoft. We have a "safety net" of tax free municipal bonds so I
> know the family will be OK if something happens. And we don't intend to
> leave much to the kids, so I'm simply building a huge pile of chits to
> someday turn back to society. I do wonder about the time period ten or
> twenty or more years down the road. If at some point then the outlook
> for Microsoft has changed, I hope I will have learned enough from your
> approach such that I will have the ability to identify new areas of
> intrinsic value and continue to grow the pile of chits at a high rate.
> But for now, I'm heads down selling more software...
>
> I'm curious as to what you think about the Lowenstein book. I'm sure it
> is difficult to have so much of your life spread across the pages, on
> the other hand, there are so many things for you to be proud of. It was
> great to gain an understanding of Graham's approach, and more
> importantly your significant advancement of the approach. I found the
> arguments of the EMT (efficient market theoreticians) just laughable.
> They should spend a few days at Disney World so they can observe crowd
> theory in action. Believe me, the longest lines don't necessarily
> translate into the best value! But the best part of the book was to
> learn more about your values, and in particular the discipline of
> character that leads to your success in investing. I wish there were a
> magic formula for teaching this to our children!
>
> This leaves me one final task for this note. I've done a very poor job
> of adequately thanking you for all the great things you've done for me -
> golf at Augusta, Seminole, the Buffett Classic, and in particular, the
> opportunity to listen in on great conversations and learn from you. I
> want you to know I've really appreciated your kindness, and if there is
> ever anything I might do to reciprocate, please let me know.
>
> Thanks. Jeff Raikes
>
>

From: Warren Buffett [ ]
Sent: Thursday, August 21, 1997 3:13 PM
To: Jeff Raikes
Subject: Re: Go Huskers!

hi, jeff;
i have so few friends who use e-mail that I only look for it once a week or so (and usually find nothing) so excsue the slowness in responding. I am also reasonably fast at typing but poor in the accuracy department and fine it easier just to plow ahead rather than correct, knowing i am always writing to those who will find a little deciphering an interesting but easy challenge.

I am afraid you have the Husker-Husky situation correctly handicapped. We need a miracle and it's unlikely to happen in a sstadium in which Frost will not be able to hear a word he shouts. I hope Osborne has had him working on hand signals all summer.

Your analysis of Microsoft, why i should invesdt in it, and why I dont could not be more on the money. In effect the company has a royalty on a communication stream that can do nothing but grow.It's as if you were getting paid for every gallon of water starting in a small stream but with added amounts received as tributaries turned the stream into an Amazon. The toughest question is how hard to push prices and I wrote a note to Bill on that after our December meeting last year. Bell should have anticipated Bill and let someone else put in the phone infrastructure while he collected by the minute and distance (and even importance of the call if he could have figured a wait to monitor it) in perpetuity.

Coke is now getting a royalty on swallows; probably 7.2 billion a day if these average gulp is one ounce. I feel 100% sure (perhaps mistakenly) that I know the odds of this continuing-again 100% as long as cola doesnt cause cancer. Bill has an even better royalty-one which I would never bet against but i dont feel i am capable of assessing probabilities about, except to the extent that with a gun to my head and forced to make a guess, i would go with it rather than against. But to calibratre whether my certainty is 80% or 55%, say, for a 20-year run would be folly. If I had to make such decisions, i would do my best but I prefer to structure investing as a no-called-strikes game and just wait for the fat one/

I watched Ted Williams on cable the other day and he referred to a book called the science of hitting which i then ran down. It has a drawing of the batters box in it that he had referred to on the show with lots of little squares in it, all parts of the strike zone. In his favorite spot, the box showed .400 reflecting what he felt he would hit if he only swung at pitches in that area. Low and outsided, but still in the strike zone, he got down to .260. Of course, if he had two strikes on him, he was going to swing at that .260 pitch but otherwise he waited for one in the "happy zone" as he put it. I think the same approach makes sense in investing. Your happy zone, because of the business experience you have had, what you see every day, your natural talents, etc. is going to be different than mine. I am sure, moreover that you can hit balls better in my happy zone than I can in yours just because they are fatter pitches in general.

Lets talk more about this when we get together. Aas a beginner I always feel that when i send off any e-mail, it is going to vanish into the ether and i would hate to have that happen with everything I know. GO HUSKERS----warren

* DID HE PITCH THIS CASE TO WASHINGTON?
* WHY NOT GO DIRECTLY TO NERO?

The World's Largest Hedge Fund is a Fraud

EQUITY TRADE FUNDING?

November 7, 2005 Submission to the SEC
Madoff Investment Securities, LLC
www.madoff.com

Opening Remarks:

I am the original source for the information presented herein having first presented my rationale, both verbally and in writing, to the SEC's Boston office in May, 1999 before any public information doubting Madoff Investment Securities, LLC appeared in the press. There was no whistleblower or insider involved in compiling this report. I used the Mosaic Theory to assemble my set of observations. My observations were collected first-hand by listening to fund of fund investors talk about their investments in a hedge fund run by Madoff Investment ~~Securities, LLC, a SEC registered firm. I~~ have also spoken to the heads of various Wall Street equity derivative trading desks and every single one of the senior managers I spoke with told me that Bernie Madoff was a fraud. Of course, no one wants to take undue career risk by sticking their head up and saying the emperor isn't wearing any clothes but....

→ NAMES

→ NAME

I am a derivatives expert and have traded or assisted in the trading of several billion $US in options strategies for hedge funds and institutional clients. I have experience managing split-strike conversion products both using index options and using individual stock options, both with and without index puts. Very few people in the world have the mathematical background needed to manage these types of products but I am one of them. I have outlined a detailed set of Red Flags that make me very suspicious that Bernie Madoff's returns aren't real and, if they are real, then they would almost certainly have to be generated by front-running customer order flow from the broker-dealer arm of Madoff Investment Securities. LLC.

Due to the sensitive nature of the case I detail below, its dissemination within the SEC must be limited to those with a need to know. The firm involved is located in the New York Region.

As a result of this case, several careers on Wall Street and in Europe will be ruined. Therefore, I have not signed nor put my name on this report. I request that my name not be released to anyone other than the Branch Chief and Team Leader in the New York Region who are assigned to the case, without my express written permission. The fewer people who know who wrote this report the better. I am worried about the personal safety of myself and my family. Under no circumstances is this report or its contents to be shared with any other regulatory body without my express permission. This report has been written solely for the SEC's internal use.

As far as I know, none of the hedge fund, fund of funds (FOF's) mentioned in my report are engaged in a conspiracy to commit fraud. I believe they are naïve men and women with a notable lack of derivatives expertise and possessing little or no quantitative finance ability. → MULTIBILLION DOLLAR FUND. DO NOT OWN DERIVATIVES?

There are 2 possible scenarios that involve fraud by Madoff Securities:

1. Scenario # 1 **(Unlikely):** I am submitting this case under Section 21A(e) of the 1934 Act in the event that the broker-dealer and ECN depicted is actually providing the stated

returns to investors but is earning those returns by front-running customer order flow. Front-running qualifies as insider-trading since it relies upon material, non-public information that is acted upon for the benefit of one party to the detriment of another party. Section 21A(e) of the 1934 Act allows the SEC to pay up to 10% of the total fines levied for insider-trading. We have obtained approval from the SEC's Office of General Counsel, the Chairman's Office, and the bounty program administrator that the SEC is able and willing to pay Section 21A(e) rewards. This case should qualify if insider-trading is involved.

2. Scenario # 2 **(Highly likely)** Madoff Securities is the world's largest Ponzi Scheme. In this case there is no SEC reward payment due the whistle-blower so basically I'm turning this case in because it's the right thing to do. Far better that the SEC is proactive in shutting down a Ponzi Scheme of this size rather than reactive.

What Does This Mean?

Who: The politically powerful Madoff family owns and operates a New York City based broker-dealer, ECN, and what is effectively the world's largest hedge fund. Bernard "Bernie" Madoff, the family patriarch started the firm.

According to the www.madoff.com website, *"Bernard L. Madoff was one of the five broker-dealers most closely involved in developing the NASDAQ Stock Market. He has been chairman of the board of directors of the NASDAQ Stock Market as well as a member of the board of governors of the NASD and a member of numerous NASD committees. Bernard Madoff was also a founding member of the International Securities Clearing Corporation in London.*
His brother, Peter B. Madoff *has served as vice chairman of the NASD, a member of its board of governors, and chairman of its New York region. He also has been actively involved in the NASDAQ Stock Market as a member of its board of governors and its executive committee and as chairman of its trading committee. He also has been a member of the board of directors of the Security Traders Association of New York. He is a member of the board of directors of the Depository Trust Corporation.*

What:

Wrong →

1. The family runs what is effectively the world's largest hedge fund with estimated assets under management of at least $20 billion to perhaps $50 billion, but no one knows exactly how much money BM is managing. That we have what is effectively the world's largest hedge fund operating underground is plainly put shocking. But then again, we don't even know the size of the hedge fund industry so none of this should be surprising. A super-sized fraud of this magnitude was bound to happen given the lack of regulation of these off-shore entities. My best guess is that approximately $30 billion is involved.
2. However the hedge fund isn't organized as a hedge fund by Bernard Madoff (BM) yet it acts and trades exactly like one. BM allows third party Fund of Funds (FOF's) to private label hedge funds that provide his firm, Madoff Securities, with equity tranch funding. In return for equity tranch funding, BM runs a trading strategy, **as agent**, whose returns flow to the third party FOF hedge funds and their investors who put up equity capital to

FoF Responsibility ?

fund BM's broker-dealer and ECN operations. *BM tells investors it earns its fees by charging commissions on all of the trades done in their accounts.*

104/share Around no ~ 1's of Assets -> the B probably ok with his his Action

Red Flag # 1: *Why would a US broker-dealer organize and fund itself in such an unusual manner? Doesn't this seem to be an unseemly way of operating under the regulator's radar screens? Why aren't the commissions charged fully disclosed to investors? Can a SEC Registered Investment Advisor charge* ***both*** *commissions and charge a principle fee for trades?* ***MOST IMPORTANTLY,*** *why would BM settle for charging only undisclosed commissions when he could earn standard hedge fund fees of 1% management fee + 20% of the profits? Doing some simple math on BM's 12% average annual return stream to investors, the hedge fund, before fees, would have to be earning average annual returns of 16%. Subtract out the 1% management fee and investors are down to 15%. 20% of the profits would amount to 3% (.20 x 15% = 3% profit participation) so investors would be left with the stated 12% annual returns listed in Attachment 1 (Fairfield Sentry Ltd. Performance Data). Total fees to the third party FOF's would amount to 4% annually. Now why would BM leave 4% in average annual fee revenue on the table unless he were a Ponzi Scheme? Or, is he charging a whole lot more than 4% in undisclosed commissions?*

Does not care the basis of SEC or a fund - no term authority

3. The third parties organize the hedge funds and obtain investors but 100% of the money raised is actually managed by Madoff Investment Securities, LLC in a purported hedge fund strategy. The investors that pony up the money don't know that BM is managing their money. That Madoff is managing the money is purposely kept secret from the investors. Some prominent US based hedge fund, fund of funds, that "invest" in BM in this manner include:

5.2 is incorrect According to our Documents from June only 2.8 ? ?

   A. Fairfield Sentry Limited (Arden Asset Management) which had $5.2 billion invested in BM as of May 2005; 11th Floor, 919 Third Avenue; ~~New York~~, NY 10022; Telephone 212.319.606; The Fairfield Greenwich Group is a global family of companies with offices in New York, London and Bermuda, and representative offices in the U.S., Europe and Latin America. Local operating entities are authorized or regulated by a variety of government agencies, including Fairfield Greenwich Advisors LLC, a U.S. SEC registered investment adviser, Fairfield Heathcliff Capital LLC, a U.S. NASD member broker-dealer, and Fairfield Greenwich (UK) Limited, authorized and regulated by the Financial Services Authority in the United Kingdom.
   B. Access International Advisors; www.aiagroup.com; a SEC registered investment advisor, telephone # 212.223.7167; Suite 2206; 509 Madison Avenue, New York, NY 10022 which had over $450 million invested with BM as of mid-2002. The majority of this FOF's investors are European, even though the firm is US registered.
   C. Broyhill All-Weather Fund, L.P. had $350 million invested with BM as of March 2000.
   D. Tremont Capital Management, Inc. Corporate Headquarters is located at 555 Theodore Fremd Avenue; Rye, New York 10580; T: (914) 925-1140 F: (914) 921-3499. Tremont oversees on an advisory and fully discretionary basis over $10.5 billion in assets. Clients include institutional investors, public and private pension plans, ERISA plans, university endowments, foundations, and financial institutions, as well as high net worth individuals. Tremont is owned by Oppenhiemer Funds Inc. which is owned by Mass Mutual Insurance Company so they should have sufficient reserves to make investors whole. Mass Mutual is currently under investigation by the Massachusetts Attorney General, the Department of Justice, and the SEC.

Names ?

E. During a 2002 marketing trip to Europe every hedge fund FOF I met with in Paris and Geneva had investments with BM. They all said he was their best manager! A partial list of money managers and Private Banks that invest in BM is included at the end of this report in Attachment 3.

4. Here's what smells bad about the idea of providing equity tranch funding to a US registered broker-dealer:

   A. The investment returns passed along to the third party hedge funds are equivalent to BM borrowing money. These 12 month returns from 1990 – May 2005 ranged from a low of 6.23% to a high of 19.98%, with an average 12 month return during that time period of 12.00%. Add in the 4% in average annual management & participation fees and BM would have to be delivering average annual returns of 16% in order for the investors to receive 12%. No Broker-Dealer that I've ever heard of finances its operations at that high of an implied borrowing rate (source: Attachment 1; Fairfield Sentry Limited return data from December 1990 – May 2005). Ask around and I'm sure you'll find that BM is the only firm on Wall Street that pays an average of 16% to fund its operations.

   B. BD's typically fund in the short-term credit markets and benchmark a significant part of their overnight funding to LIBOR plus or minus some spread. LIBOR + 40 basis points would seem a more realistic borrowing rate for a broker-dealer of BM's size.

   C. **Red Flag # 2**: *why would a BD choose to fund at such a high implied interest rate when cheaper money is available in the short-term credit markets? One reason that comes to mind is that BM couldn't stand the due diligence scrutiny of the short-term credit markets. If Charles Ponzi had issued bank notes promising 50% interest on 3 month time deposits instead of issuing unregulated Ponzi Notes to his investors, the State Banking Commission would have quickly shut him down. The key to a successful Ponzi Scheme is to promise lucrative returns but to do so in an unregulated area of the capital markets. Hedge funds are not due to fall under the SEC's umbrella until February 2006.*

5. The third party hedge funds and fund of funds that market this hedge fund strategy that invests in BM don't name and aren't allowed to name Bernie Madoff as the actual manager in their performance summaries or marketing literature. Look closely at Attachment 1, Fairfield Sentry Ltd.'s performance summary and you won't see BM's name anywhere on the document, yet BM is the actual hedge fund manager with discretionary trading authority over all funds, as agent.
   Red Flag # 3: ***Why the need for such secrecy?*** *If I was the world's largest hedge fund and had great returns, I'd want all the publicity I could garner and would want to appear as the world's largest hedge fund in all of the industry rankings. Name one mutual fund company, Venture Capital firm, or LBO firm which doesn't brag about the size of their largest funds' assets under management. Then ask yourself, why would the world's largest hedge fund manager be so secretive that he didn't even want his investors to know he was managing their money? Or is it that BM doesn't want the SEC and FSA to know that he exists?*

6. The third party FOF's never tell investors who is actually managing their money and describe the investment strategy as: This hedge fund's objective is long term growth on

invests in U.S. Equity

a consistent basis with low volatility. The investment advisor invests exclusively in the U.S. and utilizes a strategy often referred to as a "split-strike conversion." Generally this style involves purchasing a basket of 30 – 35 large-capitalization stocks with a high degree of correlation to the general market (e.g. American Express, Boeing, Citigroup, Coca-Cola, Dupont, Exxon, General Motors, IBM, Merck, McDonalds). To provide the desired hedge, the manager then sells out-of-the-money OEX index call options and buys out-of-the-money OEX index put options. The amount of calls that are sold and puts that are bought represent a dollar amount equal to the basket of shares purchases.

7. I personally have run split-strike conversion strategies and know that BM's approach is far riskier than stated in 6 above. His strategy is wholly inferior to an all index approach and is wholly incapable of generating returns in the range of 6.23% to 19.98%. BM's strategy should not be able beat the return on US Treasury Bills Due to the glaring weakness of the strategy:

   A. Income Part of the strategy is to buy 30 – 35 large-cap stocks, sell out-of-the-money index call options against the value of the stock basket, There are three possible sources of income in this strategy.

      1) We earn income from the stock's dividends. Let's attribute a 2% average return to this source of funds for the 14 ½ year time period. This explains 2% of the 16% average gross annual returns before fees and leaves 14% of the returns unexplained.

      2) We earn income from the sale of OTC OEX index call options. Let's also assume that we can generate an additional 2% annual return via the sale of OTC out-of-the-money OEX index call options which leaves 12% of the 16% gross returns unexplained. On Friday, October 14, 2005 the OEX (S&P 100) index closed at 550.49 and there were only 163,809 OEX index call option contracts outstanding (termed the "open interest"). 163,809 call option calls outstanding x $100 contact multiplier x 550.49 index closing price = $9,017, 521,641 in stock equivalents hedged.

      3) We can earn income from capital gains by selling the stocks that go up in price. This portion of the return stream would have to earn the lion's share of the hedge fund strategy's returns. We have 12% of the return stream unexplained so far. However, the OTC OEX index puts that we buy will cost AT LEAST <8%> per year (a lot more in most years but I'm giving BM the benefit of every doubt here). Therefore, BM's stock selection would have to be earning an average of 20% per year. That would mean that he's been the world's best stock-picker since 1990 beating out such luminaries as Warren Buffet and Bill Miller. Yet no one's ever heard of BM as being a stock-picker, much less the world's best stock-picker. Why isn't he famous if he was able to earn 20% average annual returns?

   Red Flag # 4: *$9.017 billion in total OEX listed call options outstanding is not nearly enough to generate income on BM's total amount of assets under management which I estimate to range between $20 - $50 billion. Fairfield Sentry Ltd. alone has $5.1 billion with BM. And, while BM may say he only uses Over-the-Counter(OTC) index options, there is no way that this is* *possible. The OTC market should never be several times larger than the exchange listed market for this type of plain vanilla derivative.*

B. Protection Part of the strategy is to buy out-of-the-money OEX index put options. This costs you money each and every month. This hurts your returns and is the main reason why BM's strategy would have trouble earning 0% average annual returns much less the 12% net returns stated in Fairfield Sentry Ltd.'s performance summary. Even if BM earns a 4% return from the combination of 2% stock dividends and 2% from the sale of call options, the cost of the puts would put this strategy in the red year in and year out. No way he can possibly be delivering 12% net to investors. The math just doesn't support this strategy if he's really buying index put options.

Red Flag # 5: *BM would need to be purchasing at-the-money put options because he has only 7 small monthly losses in the past 14 ½ years. His largest monthly loss is only <0.55%>, so his puts would have to be at-the-money. At-the-money put options are very, very expensive. A one-year at-the-money put option would cost you <8%> or more, depending upon the market's volatility. And <8%> would be a cheap price to pay in many of the past 14 ½ years for put protection!! Assuming BM only paid< 8%> per year in put protection, and assuming he can earn +2% from stock dividends plus another +2% from call option sales, he's still under-water <4%> performance wise. <8%> put cost + 2% stock dividends + 2% income from call sales = <4%>. And, I've proven that BM would need to be earning at least 16% annually to deliver 12% after fees to investors. That means the rest of his returns would have to be coming from stock selection where he picked and sold winning stocks to include in his 35-stock basket of large-cap names. Lots of luck doing that during the past stock market crises like 1997's Asian Currency Crises, the 1998 Russian Debt / LTCM crises, and the 2000-2002 killer bear market. And index put option protection was a lot more expensive during these crises periods than 8%. Mathematically none of BM's returns listed in Attachment 1 make much sense. They are just too unbelievably good to be true.*

C. The OEX index (S&P 100) closed at 550.49 on Friday, October 14, 2005 meaning that each put option hedged $55,049 dollars worth of stock ($100 contract multiplier x 550.49 OEX closing index price = $55,049 in stock hedged). As of that same date, the total open interest for OEX index put options was 307,176 contracts meaning that a total of $16,909,731,624 in stock was being hedged by the use of OEX index puts (307,176 total put contracts in existence as of Oct 14th x $55,049 hedge value of 1 OEX index put = $16,909,731,624 in stock hedged). Note: I excluded a few thousand OEX LEAP index put options from my calculations because these are long-term options and not relevant for a split-strike conversion strategy such as BM's.

Red Flag # 6: *At my best guess level of BM's assets under management of $30 billion, or even at my low end estimate of $20 billion in assets under management, BM would have to be over 100% of the total OEX put option contract open interest in order to hedge his stock holdings as depicted in the third party hedge funds marketing literature. In other words, there are not enough index option put contracts in existence to hedge the way BM says he is hedging! And there is no* *way the OTC market is bigger than the exchange listed market for plain vanilla S&P 100 index put options.*

D. Mathematically I have proven that BM cannot be hedging using listed index put and call options. One hedge fund FOF has told me that BM uses only Over-the-Counter options and trades exclusively thru UBS and Merrill Lynch. I have not called those two firms to check on this because it seems implausible that a BD would trade $20 - $50 billion worth of index put options per month over-the-counter thru only 2 firms. That plus the fact that if BM was really buying OTC index put options, then there is no way his average annual returns could be positive!! At a minimum, using the cheapest way to buy puts would cost a fund <8%> per year. To get the put cost down to <8%>, BM would have to buy a one-year at-the-money put option and hold it for one-year. No way his call sales could ever hope to come even fractionally close to covering the cost of the puts.

Red Flag # 7: *The counter-party credit exposures for UBS and Merrill would be too large for these firms credit departments to approve. The SEC should ask BM for trade tickets showing he has traded OTC options thru these two firms. Then the SEC should visit the firms' OTC derivatives desks, talk the to heads of trading and ask to see BM's trade tickets. Then ask the director of operations to verify the tickets and ask to see the inventory of all of the stock and listed options hedging the OTC puts and calls. If these firms can't show you the off-setting hedged positions then they are assisting BM as part of a conspiracy to commit fraud. If any other brokerage firms equity derivatives desk is engaged in a conspiracy to cover for BM, then this scandal will be a doozy when it hits the financial press but at least investors would have firms with deep pockets to sue.*

Red Flag # 8: *OTC options are more expensive to trade than listed options. You have to pay extra for the customization features and secrecy offered by OTC options. Trading in the size of $20 - $50 billion per month would be impossible and the bid-ask spreads would be so wide as to preclude earning any profit whatsoever. These Broker/Dealers would need to offset their short OTC index put option exposure to a falling stock market by hedging out their short put option risk by either buying listed put options or selling short index futures and the derivatives markets are not deep and liquid enough to accomplish this without paying a penalty in prohibitively expensive transaction costs.*

Red Flag # 9: *Extensive and voluminous paperwork would be required to keep track of and clear each OTC trade. Plus, why aren't Goldman, Sachs and Citigroup involved in handling BM's order flow? Both Goldman and Citigroup are a lot larger in the OTC derivatives markets than UBS or Merrill Lynch.*

E. My experience with split-strike conversion trades is that the best a good manager is likely to obtain using the strategy marketed by the third-party FOF's is T-bills less management fees. And, if the stock market is down by more than 2%, the return from this strategy will range from a high of zero return to a low of a few percent depending upon your put's cost and how far out-of-the-money it is.

F. In 2000 I ran a regression of BM's hedge fund returns using the performance data from Fairfield Sentry Limited. BM had a .06 correlation to the equity market's return which confirms the .06 Beta that Fairfield Sentry Limited lists in its return numbers.

Red Flag # 10: *It is mathematically impossible for a strategy using index call options and index put options to have such a low correlation to the market where its returns are supposedly being generated from. This makes no sense! The strategy depicted retains 100% of the single-stock downside risk since they own only index put options and not single stock put options. Therefore if one or more stocks in their portfolio were to tank on bad news, BM's index put would offer little protection and their portfolio should feel the pain. However, BM's performance numbers show only 7 extremely small losses during 14 ½ years and these numbers are too good to be true. The largest one month loss was only -55 basis points (-0.55%) or just over one-half of one percent! And BM never had more than a one month losing streak! Either BM is the world's best stock and options manager that the SEC and the investing public has never heard of or he's a fraud. You would have to figure that at some point BM owned a WorldCom, Enron, GM or HealthSouth in their portfolio when bad or really bad news came out and caused these stocks to drop like a rock.*

8. **Red Flag # 11** *Two press articles, which came to print well after my initial May 1999 presentation to the SEC, do doubt Bernie Madoff's returns and they are:*
   A. The May 7, 2001 edition of Barron's, in an article entitled, ***"Don't Ask, Don't Tell; Bernie Madoff is so secretetive, he even asks his investors to keep mum,"*** written by Erin Arvedlund, published an expose about Bernie Madoff a few years ago with no resulting investigation by any regulators. Ms. Arvedlund has since left Barron's. I have attached a copy of the Barrons' article which lists numerous red flags.
   B. Michael Ocrant, formerly a reporter for MAR Hedge visited Bernie Madoff's offices and wrote a very negative article that doubted the source of BM's returns. He reported to a colleague that he saw some very unusual things while at Madoff's offices. The SEC should contact him. Michael Ocrant is currently serving as the Director of Alternative Investments; Institutional Investor; New York, NY 10001; Telephone # 212-224-3821 or 212-213-6202; Email: mocrant@iiconferences.com

9. Fund of funds with whom I have spoken to that have BM in their stable of funds continually brag about their returns and how they are generated thanks to BM's access to his broker-dealer's access to order flow. They believe that BM has perfect knowledge of the market's direction due to his access to customer order flow into his broker-dealer. **Red Flag # 12:** *Yes, BM has access to his customer's order flow thru his broker-dealer but he is only one broker out of many, so it is impossible for him to know the market's direction to such a degree as to only post monthly losses once every couple of years. All of Wall Street's big wire houses experience trading losses on a more regular frequency that BM. Ask yourself how BM's trading experience could be so much better than all of the other firms on Wall Street. Either he's the best trading firm on the street and rarely ever has large losing months unlike other firms or he's a fraud.*
10. **Red Flag # 13:** *I believe that BM's returns can be real ONLY if they are generated from front-running his customer's order flow. In other words, yes, if he's buying at a penny above his customer's buy orders, he can only lose one penny if the stock drops but can*

make several pennies if the stock goes up. For example, if a customer has an order to buy 100,000 shares of IBM at $100, BM can put in his own order to buy 100,000 share of IBM at $100.01. This is what's known as a right-tail distribution and is very similar to the payoff distribution of a call option. Doing this could easily generate returns of 30% - 60% or more per anum. He could be doing the same thing by front-running customer sell orders. However, if BM's returns are real but he's generating them from front-running there are two problems with this:

A. Problem # 1: front-running is one form of insider-trading and is illegal

B. Problem # 2: generating real returns from front-running but telling hedge fund investors that you are generating the returns via a complex (but unworkable) stock and options strategy is securities fraud.

Some time ago, during different market conditions, I ran a study using the Black-Scholes Option Pricing Model to analyze the value of front-running with the goal of putting a monetary value on front-running where the insider knew the customer's order and traded ahead of it. When I ran the study the model inputs were valued at: OEX component stocks annualized volatility on a cap-weighted basis was 50% (during a bear market period), the T-bill rate was 5.80%, and the average stock price was $46. I then calculated the value of an at-the-money call options over time intervals of 1 minute, 5 minutes, 10 minutes, and 15 minutes. I used a 253 trading day year. The SEC should be able to duplicate these results:

1 minute option = 3 cents worth of trade information value
5 minute option = 7 cents worth of trade information value
10 minute option = 10 cents worth of trade information value
15 minute option = 12 cents worth of trade information value

Conclusion: Bernie Madoff used to advertise in industry trade publications that he would pay 1 cent per share for other broker's order flow. If he was paying 1 cent per share for order flow and front-running these broker's customers, then he could easily be earning returns in the 30% - 60% or higher annually. In all time intervals ranging from 1 minute to 15 minutes, having access to order flow is the monetary equivalent of owning a valuable call option on that order. The value of these implicit call options ranges between 3 – 12 times the one penny per share paid for access to order flow. If this is what he's doing, then the returns are real but the stated investment strategy is illegal and based solely on insider-trading.

NOTE: I am pretty confident that BM is a Ponzi Scheme, but in the off chance he is front-running customer orders and his returns are real, then this case qualifies as insider-trading under the SEC's bounty program as outlined in Section 21A(e) of the 1934 Act. However, if BM was front-running, a highly profitable activity, then he wouldn't need to borrow funds from investors at 16% implied interest. Therefore it is far more likely that BM is a Ponzi Scheme. Front-running is a very simple fraud to commit and requires only access to inside information. The elaborateness of BM's fund-raising, his need for secrecy, his high 16% average cost of funds, and reliance on a derivatives investment scheme that few investors (or regulators) would be capable of comprehending lead to a weight of the evidence conclusion that this is a Ponzi Scheme.

11. **Red Flag # 14:** *Madoff subsidizes down months! Hard to believe (and I don't believe this) but I've heard two FOF's tell me that they don't believe Madoff can make money in big down months either. They tell me that Madoff "subsidizes" their investors in down months, so that they will be able to show a low volatility of returns. These types of stories are commonly found around Ponzi Schemes. These investors tell me that Madoff only books winning tickets in their accounts and "eats the losses" during months when the market sells off hard. The problem with this is that it's securities fraud to misstate either returns or the volatility of those returns. These FOF professionals who heard BM tell them that he subsidizes losses were professionally negligent in not turning BM into the SEC, FSA and other regulators for securities fraud.*

    Red Flag # 15: *Why would a fund of funds investor believe any broker-dealer that commits fraud in a few important areas – such as misstating returns and misstating volatility of returns – yet believe him in other areas? I'd really like to believe in the tooth fairy, but I don't after catching my mother putting a quarter underneath my pillow one night.*

12. **Red Flag # 16**: *Madoff has perfect market-timing ability. One investor told me, with a straight face, that Madoff went to 100% cash in July 1998 and December 1999, ahead of market declines. He said he knows this because Madoff faxes his trade tickets to his firm and the custodial bank. However, since Madoff owns a broker-dealer, he can generate whatever trade tickets he wants. And, I'll bet very few FOF's ask BM to fax them trade tickets. And if these trade tickets are faxed, have the FOF's then matched them to the time and sales of the exchanges? For example, if BM says he bot 1 million shares of GM, sold $1 million worth of OTC OEX calls and bot $1 million worth of OTC OEX puts, we should see prints somewhere. The GM share prints would show on either the NYSE or some other exchange while the broker-dealers he traded OTC options thru would show prints of the hedges they traded to be able to provide BM with the OTC options at the prices listed on BM's trade tickets.*

Could mod

13. **Red Flag # 17**: *Madoff does not allow outside performance audits. One London based hedge fund, fund of funds, representing Arab money, asked to send in a team of Big 4 accountants to conduct a performance audit during their planned due diligence. They were told "No, only Madoff's brother-in-law who owns his own accounting firm is allowed to audit performance for reasons of secrecy in order to keep Madoff's proprietary trading strategy secret so that nobody can copy it. Amazingly, this fund of funds then agreed to invest $200 million of their client's money anyway, because the low volatility of returns was so attractive!! Let's see, how many hedge funds have faked an audited performance history?? Wood River is the latest that comes to mind as does the Manhattan Fund but the number of bogus hedge funds that have relied upon fake audits has got to number in the dozens.*

a more audit, the fund - No,

14. **Red Flag # 18**: *Madoff's returns are not consistent with the one publicly traded option income fund with a history as long as Madoff's. In 2000, I analyzed the returns of Madoff and measured them against the returns of the Gateway Option Income Fund (Ticker GATEX). During the 87 month span analyzed, Madoff was down only 3 months versus GATEX being down 26 months. GATEX earned an annualized return of 10.27% during the period studied vs. 15.62% for Bernie Madoff and 19.58% for the S&P 500. GATEX has a more flexible investment strategy than BM, so GATEX's returns should be*

superior to BM's but instead they are inferior. This makes no sense. How could BM be better using an inferior strategy?

15. **Red Flag # 19**: *There have been several option income funds that went IPO since August 2004. None of them have the high returns that Bernie Madoff has. How can this be? They use similar strategies only they should be making more than BM in up months because most of these option income funds don't buy expensive index put options to protect their portfolios. Thus the publicly traded option income funds should make more money in up markets and lose more than Madoff in down markets. Hmm....that Madoff's returns are so high yet he buys expensive put options is just another reason to believe he is running the world's largest Ponzi Scheme. A good study for the SEC would be to compare 2005 performance of the new option income funds to Bernie Madoff while accounting for the cost of Bernie's index put option protection. There's no way Bernie can have positive returns in 2005 given what the market's done and where volatility is.*
16. **Red Flag # 20**: *Madoff is suspected of being a fraud by some of the world's largest and most sophisticated financial services firms. Without naming names, here's an abbreviated tally:*

    A. A managing director at Goldman, Sachs prime brokerage operation told me that his firm doubts Bernie Madoff is legitimate so they don't deal with him.

    B. From an Email I received this past June 2005 I now suspect that the end is near for BM. All Ponzi Schemes eventually topple of their own weight once they become too large and it now appears that BM is having trouble meeting redemptions and is attempting to borrow sizeable funds in Europe.

Ask RBC
or BSK

ABCDEFGH and I had dinner with a savvy European investor that studies the HFOF market. He stated that both RBC and Socgen have removed Madoff some time ago from approved lists of individual managers used by investors to build their own tailored HFOFs.

More importantly, Madoff was turned down, according to this source, for a borrowing line from a Euro bank, I believe he said Paribas. Now why would Madoff need to borrow more funds? This Euro Investor said that Madoff was in fact running "way over" our suggested $12-14 billion (Fairfield Sentry is running $5.3 BB by themselves!) . Madoff's 12 month returns is about 7% net of the feeder fund's fees. Looks like he is stepping down the pay out.

    C. An official from a Top 5 money center bank's FOF told me that his firm wouldn't touch Bernie Madoff with a ten foot pole and that there's no way he's for real.

17. **Red Flag # 21:** *ECN's didn't exist prior to 1998. Madoff makes verbal claims to his third party hedge FOF's that he has private access to ECN's internal order flow, which Madoff pays for, and that this is a substantial part of the return generating process. If this is true, then where did the returns come from in the years 1991 – 1997, prior to the ascendance of the ECN's? Presumably, prior to 1998, Madoff only had access to order flow on the NASDAQ for which he paid 1 cent per share for. He would have no such advantage pre-1998 on the large-cap, NYSE listed stocks the marketing literature says he buys (Exxon, McDonalds, American Express, IBM, Merck, etc...).*

18. **Red Flag # 22:** *The Fairfield Sentry Limited Performance Chart (Attachment 1) depicted for Bernie Madoff's investment strategy are misleading. The S&P 500 return line is accurate because it is moving up and down, reflecting positive and negative returns. Fairfield Sentry's performance chart is misleading, it is almost a straight line rising at a 45 degree angle. This chart cannot be cumulative in the common usage of the term for reporting purposes, which means "geometric returns." The chart must be some sort of arithmetic average sum, since a true*

cumulative return line, given the listed monthly returns would be exponentially rising (i.e. curving upward at an increasing rate). My rule of thumb is that if the manager misstates his performance, you can't trust him. Yet somehow Madoff is now running the world's largest, most clandestine hedge fund so clearly investors aren't doing their due diligence. And why does he provide the S&P 500 as his benchmark when he is actually managing using a S&P 100 strategy? Shouldn't the performance line presented be the S&P 100's (OEX) performance?

19. **Red Flag # 23:** *Why is Bernie Madoff borrowing money at an average rate of 16.00% per anum and allowing these third party hedge fund, fund of funds to pocket their 1% and 20% fees bases upon Bernie Madoff's hard work and brains? Does this make any sense at all? Typically FOF's charge only 1% and 10%, yet BM allows them the extra 10%. Why? And why do these third parties fail to mention Bernie Madoff in their marketing literature? After all he's the manager, don't investors have a right to know who's managing their money?*

20. **Red Flag # 24:** *Only Madoff family members are privy to the investment strategy. Name one other prominent multi-billion dollar hedge fund that doesn't have outside, non-family professionals involved in the investment process. You can't because there aren't any. Michael Ocrant, the former MAR Hedge Reporter listed above saw some highly suspicious red flags during his visit to Madoff's offices and should be interviewed by the SEC as soon as possible.*

21. **Red Flag # 25:** *The Madoff family has held important leadership positions with the NASD, NASDAQ, SIA, DTC, and other prominent industry bodies therefore these organizations would not be inclined to doubt or investigate Madoff Investment Securities, LLC. The NASD and NASDAQ do not exactly have a glorious reputation as vigorous regulators untainted by politics or money.*

22. **Red Flag # 26:** *BM goes to 100% cash for every December 31st year-end according to one FOF invested with BM. This allows for "cleaner financial statements" according to this source. Any unusual transfers or activity near a quarter-end or year-end is a red flag for fraud. Recently, the BD REFCO Securities engaged in "fake borrowing" with Liberty, a hedge fund, that made it appear that Liberty owed REFCO over $400 million in receivables. This allowed REFCO to mask its true debt position and made all of their equity ratios look better than they actually were. And of course, Grant Thorton, REFCO's external auditor missed this $400 million entry. As did the two lead underwriters who were also tasked with due-diligence on the IPO - CSFB and Goldman Sachs. BM uses his brother-in-law as his external auditor, so in this case there isn't even the façade of having an independent and vigilant auditor verifying the accounting entries.*

23. **Red Flag # 27:** *Several equity derivatives professionals will all tell you that the split-strike conversion strategy that BM runs is an outright fraud and cannot possibly achieve 12% average annual returns with only 7 down months during a 14 ½ year time period. Some derivatives experts that the SEC should call to hear their opinions of how and why BM is a fraud and for some insights into the mathematical reasons behind their belief, the SEC should call:*

   a. Leon Gross, Managing Director of Citigroup's world-wide equity derivatives research unit; 3rd Floor, 390 Greenwich Street; New York, NY 10013: Tel# 800.492.9833 or 212.723.7873 or leon.j.gross@citigroup.com [Leon can't believe that the SEC hasn't shut down Bernie Madoff yet. He's also amazed that FOF's actually believe this stupid options strategy is capable of earning a positive return much less a 12% net average annual return. He thinks the strategy would have trouble earning 1% net much less 12% net. Leon is a free spirit, so if you ask him he'll tell you but you'd understand it better if you met him at his workplace in a private conference room and tell him he won't need to have Citigroup lawyers present, you're just there for some friendly opinions. He talks derivatives at a high level, so ask simple "yes or no" type questions to start off the interview then drill down.]

b. Walter "Bud"Haslett, CFA; Write Capital Management, LLC; Suite 455; 900 Briggs Road; Mount Laurel, NJ 08065; Tel#: 856.727.1700 or bud.haslett@writecapital.com www.writecapital.com [Bud's firm runs $ hundreds of millions in options related strategies and he knows all of the math.]

c. Joanne Hill, Ph.D.; Vice-President and global head of equity derivatives research, Goldman Sachs (NY), 46th Floor; One New York Plaza, New York, NY 10004; Tel# 212.902.2908 [Again, make sure she doesn't lawyer up or this conversation will be useless to you. Tell her you want her opinion and no one will hold her to it or ever tell she gave the SEC an opinion without legal counsel present.]

24. **Red Flag # 28:** *BM's Sharpe Ratio of 2.55 (Attachment 1: Fairfield Sentry Ltd. Performance Data) is UNBELIEVABLY HIGH compared to the Sharpe Ratios experienced by the rest of the hedge fund industry. The SEC should obtain industry hedge fund rankings and see exactly how outstanding Fairfield Sentry Ltd.'s Sharpe Ratio is. Look at the hedge fund rankings for Fairfield Sentry Ltd. and see how their performance numbers compare to the rest of the industry. Then ask yourself how this is possible and why hasn't the world come to acknowledge BM as the world's best hedge fund manager?*

25. **Red Flag # 29:** *BM tells the third party FOF's that he has so much money under management that he's going to close his strategy to new investments. However, I have met several FOF's who brag about their "special access" to BM's capacity. This would be humorous except that too many European FOF's have told me this same seductive story about their being so close to BM that he'll waive the fact that he's closed his funds to other investors but let them in because they're special. It seems like every single one of these third party FOF's has a "special relationship" with BM.*

Conclusions:

1. I have presented 174 months (14 ½ years) of Fairfield Sentry's return numbers dating back to December 1990. Only 7 months or 4% of the months saw negative returns. Classify this as "definitely too good to be true!" No major league baseball hitter bats .960, no NFL team has ever gone 96 wins and only 4 losses over a 100 game span, and you can bet everything you own that no money manager is up 96% of the months either. It is inconceivable that BM's largest monthly loss could only be -0.55% and that his longest losing streaks could consist of 1 slightly down month every couple of years. Nobody on earth is that good of a money manager unless they're front-running.

2. There are too many red flags to ignore. REFCO, Wood River, the Manhattan Fund, Princeton Economics, and other hedge fund blow ups all had a lot fewer red flags than Madoff and look what happened at those places.

3. Bernie Madoff is running the world's largest unregistered hedge fund. He's organized this business as "hedge fund of funds private labeling their own hedge funds which Bernie Madoff **secretly** runs for them using a split-strike conversion strategy getting paid only trading commissions which are not disclosed." If this isn't a regulatory dodge, I don't know what is. This is back-door marketing and financing scheme that is opaque and rife with hidden fees (he charges only commissions on the trades). If this product isn't marketed correctly, what is the chance that it is managed correctly? In my financial industry experience, I've found that wherever there's one cockroach in plain sight, many more are lurking behind the corner out of plain view.

4. Mathematically this type of split-strike conversion fund should never be able to beat US Treasury Bills much less provide 12.00% average annual returns to investors net of fees. I and other derivatives professionals on Wall Street will swear up and down that a split-strike conversion strategy cannot earn an average annual return anywhere near the 16% gross returns necessary to be able to deliver 12% net returns to investors.

5. BM would have to be trading more than 100% of the open interest of OEX index put options every month. And if BM is using only OTC OEX index options, it is guaranteed that the Wall Street firms on the other side of those trades would have to be laying off a significant portion of that risk in the exchange listed index options markets. Every large derivatives dealer on Wall Street will tell you that Bernie Madoff is a fraud. Go ask the heads of equity derivatives trading at Morgan Stanley, Goldman Sachs, JP Morgan and Citigroup their opinions about Bernie Madoff. They'll all tell the SEC that they can't believe that BM hasn't been caught yet.

6. The SEC is slated to start overseeing hedge funds in February 2006, yet since Bernie Madoff is not registered as a hedge fund but acting as one but via third party shields, the chances of Madoff escaping SEC scrutiny are very high. If I hadn't written this report, there's no way the SEC would have known to check the facts behind all of these third party hedge funds.

Potential Fall Out if Bernie Madoff turns out to be a Ponzi Scheme:

1. If the average hedge fund is assumed to be levered 4:1, it doesn't take a rocket scientist to realize that there might be anywhere from a few hundred billion on up in selling pressure in the wake of a $20 - $50 billion hedge fund fraud. With the hedge fund market estimated to be $1 trillion, having one hedge fund with 2% - 5% of the industry's assets under management suddenly blow up, it is hard to predict the severity of the resulting shock wave. You just know it'll be unpleasant for anywhere from a few days to a few weeks but the fall out shouldn't be anywhere near as great as that from the Long Term Capital Management Crises. Using the hurricane scale with which we've all become quite familiar with this year, I'd rate BM turning out to be a Ponzi Scheme as a Category 2 or 3 hurricane where the 1998 LTCM Crises was a Category 5.

2. Hedge fund, fund of funds with greater than a 10% exposure to Bernie Madoff will likely be faced with forced redemptions. This will lead to a cascade of panic selling in all of the various hedge fund sectors whether equity related or not. Long –short and market neutral managers will take losses as their shorts rise and their longs fall. Convertible arbitrage managers will lose as the long positions in underlying bonds are sold and the short equity call options are bought to close. Fixed income arbitrage managers will also face losses as credit spreads widen. Basically, most hedge funds categories with two exceptions will have at least one big down month thanks to the unwinding caused by forced redemptions. Dedicated Short Funds and Long Volatility Funds are the two hedge fund categories that will do well.

[illegible]

3. The French and Swiss Private Banks are the largest investors in Bernie Madoff. This will have a huge negative impact on the European capital markets as several large fund of funds implode. I figure one-half to three-quarters of Bernie Madoff's funds come from overseas. The unwinding trade will hurt all markets across the globe but it is the Private European Banks that will fare the worst.

4. European regulators will be seen as not being up to the task of dealing with hedge fund fraud. Hopefully this scandal will serve as a long overdue wake-up call for them and result in increased funding and staffing levels for European Financial Regulators.

5. In the US Fairfield Sentry, Broyhill, Access International Advisors, Tremont and several other hedge fund, fund of funds will all implode. There will be a call for increased hedge fund regulation by scared and battered high net worth investors.

6. The Wall Street wire house FOF's are not invested in Madoff's strategy. As far as I know the wire house's internal FOF's all think he's a fraud and have avoided him like the plague. But these very same wire houses often own highly profitable hedge fund prime brokerage operations and these operations will suffer contained, but painful nonetheless, losses from loans to some hedge funds that go bust during the panic selling. As a result, I predict that some investment banks will pull out of the prime brokerage business deeming it too volatile from an earnings standpoint. Damage to Wall Street will be unpleasant in that hedge funds and FOF's are a big source of trading revenues. If the

hedge fund industry fades, Wall Street will need to find another revenue source to replace them.

7. US Mutual fund investors and other long-term investors in main stream investment products will only feel a month or two's worth of pain from the selling cascade in the hedge fund arena but their markets should recover afterwards.

8. Congress will be up in arms and there will be Senate and House hearings just like there were for Long Term Capital Management.

9. The SEC's critics who say the SEC shouldn't be regulating private partnerships will be forever silenced. Hopefully this leads to expanded powers and increased funding for the SEC. Parties that opposed SEC entry into hedge fund regulation will fall silent. The SEC will gain political strength in Washington from this episode but only if the SEC is proactive and launches an immediate, full scale investigation into all of the Red Flags surrounding Madoff Investment Securities, LLC. Otherwise, it is almost certain that NYAG Elliot Spitzer will launch his investigation first and once again beat the SEC to the punch causing the SEC further public embarrassment.

10. Hedge funds will face increased due diligence from regulators, investors, prime brokers and counter-parties which is a good thing and long overdue.

Potential Fall Out if Bernie Madoff is found out to be front-running customer order flow:

1. This would be just one more black eye among many for the brokerage industry and the NYSE and NASDAQ. At this point the reputations of both the NYSE and NASDAQ are already at rock bottom, so there's likely little downside left for these two troubled organizations.

2. The industry wouldn't miss a beat other than for the liquidation of Madoff Investment Securities, LLC. Figure it will be similar to REFCO's demise only there won't be a buyer of the firm given that they cheated customers who would all be embarrassed to remain customers once the news they've been ripped off is on the front-pages. These former customers are more likely to sue for damages than remain customers. Unsecured lenders would face losses but other than that the industry would be better off.

3. At least the returns are real, in which case determining restitution could keep the courts busy for years. The Class Action Bar would be thrilled. A lot of the FOF's are registered offshore in places where the long arm of the law might not reach. My guess is that the fight for the money off-shore would keep dozens of lawyers happily employed for many years.

4. The FOF's would suffer little in the way of damage. All could be counted on to say "*We didn't know the manager was generating returns illegally. We relied upon the NYSE and NASDAQ to regulate their markets and prevent front-running therefore we see no reason to return any funds.*"

Attachments:

1. 2 page Summary of Fairfield Sentry Ltd with performance data from December 1990 – May 2005

2. Copy of the May 7, 2001 Barrons' article, ***"Don't Ask, Don't Tell; Bernie Madoff is so secretetive, he even asks his investors to keep mum,"*** written by Erin E. Arvedlund.

3. Partial list of French and Swiss money-managers and private banks with investments in Bernie Madoff's hedge fund. Undoubtedly there are dozens more European FOF's and Private Banks that are invested with BM.

4. 2 page offering memorandum, faxed March 29, 2001, for an investment in what I believe is Fairfield Sentry Ltd., one of several investment programs run by Madoff Investment Securities, LLC for third party hedge fund, fund of funds. I do not know who the source was who faxed this document since the fax heading is blank. The document number listed at the bottom of the page appears to read I:\Data\WPDOCS|AG_\94021597

ATTACHMENT 1: Fairfield Sentry Performance Data

Fairfield Sentry Ltd

Fund Category(s):
Long/Short Equity

Strategy Description:
The Fund seeks to obtain capital appreciation of its assets principally through the utilization of a nontraditional options trading strategy described as "split strike conversion", to which the Fund allocates the predominant portion of its assets. This strategy has defined risk and profit parameters, which may be ascertained when a particular position is established. Set forth below is a description of the "split strike conversion" strategies ("SSC Investments"). The establishment of a typical position entails (i) the purchase of a group or basket of equity securities that are intended to highly correlate to the S&P 100 Index , (ii) the sale of out-of-the-money S&P 100 Index call options in an equivalent contract value dollar amount to the basket of equity securities, and (iii) the purchase of an equivalent number of out-of-the-money S&P 100 Index put options. An index call option is out-of-the-money when its strike price is greater than the current price of the index; an index put option is out-of-the-money when the strike price is lower than the current price of the index. The basket typically consists of approximately 35 to 45 stocks in the S&P 100. The logic of this strategy is that once a long stock position has been established, selling a call against such long position will increase the standstill rate of return, while allowing upward movement to the short call strike price. The purchase of an out-of-the-money put, funded with part or all of the call premium, protects the equity position from downside risk. A bullish or bearish bias of the positions can be achieved by adjustment of the strike prices in the S&P 100 puts and calls. The further away the strike prices are from the price of the S&P 100, the more bullish the strategy. However, the dollar value underlying the put options always approximates the value of the basket of stocks.

Contact Info		Fees & Structure	
Fund:	Fairfield Sentry Ltd	Fund Assets:	$5100.00million
General Partner:	Arden Asset Management	Strategy Assets:	$5300.00million
Address:	919 Third Avenue 11th th Floor New York NY 10022 USA	Firm Assets:	$8300million
		Min. Investment:	$ 0.10million
		Management Fee:	1.00%
		Incentive Fee:	20.00%
Tel:	212-319-6060	Hurdle Rate:	
Fax:		High Water Mark:	Yes
Email:	fairfieldfunds@fggus.com	Additions:	Monthly
Contact Person:	Fairfield Funds	Redemptions:	Monthly
Portfolio Manager:		Lockup:	
		Inception Date:	Dec-1990
		Money Invested In:	United States
		Open to New Investments:	Yes

Annual Returns

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
2.83%	18.58%	14.67%	11.68%	11.49%	12.95%	12.99%	14.00%	13.40%	14.18%	11.55%	10.68%	9.33%	8.21%	7.07%	2.52%

Year To Date:	2.52%
Highest 12 Month Return:	19.98%
Lowest 12 Month Return:	6.23%
[redacted]	[redacted]
Average Monthly Return:	0.96%
Highest Monthly Return:	3.36%
[redacted]	[redacted]
Average Gain:	1.01%
Average Loss:	-0.24%
[redacted]	[redacted]
Compounded Monthly Return:	0.96%
[redacted]	[redacted]
Maximum Drawdown:	-0.55%

Sharpe Ratio (Rolling 12):	2.56
[redacted]	[redacted]
Std. Dev. (Monthly):	0.75%
Std. Dev. (Rolling 12):	2.74%
Beta:	**0.06**
Alpha:	0.91
R:	0.30
R Squared:	0.09

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1990	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.83% E
1991	3.08% E	1.46% E	0.59% E	1.39% E	1.88% E	0.37% E	2.04% E	1.07% E	0.80% E	2.82% E	0.08% E	1.63% E
1992	0.49% E	2.79% E	1.01% E	2.86% E	[redacted]	1.29% E	0.00% E	0.92% E	0.40% E	1.40% E	1.42% E	1.43% E
1993	0.00% E	1.93% E	1.86% E	0.06% E	1.72% E	0.86% E	0.09% E	1.78% E	0.35% E	1.77% E	0.26% E	0.45% E
1994	2.18% E	[redacted]	1.52% E	1.82% E	0.51% E	0.29% E	1.78% E	0.42% E	0.82% E	1.88% E	[redacted]	0.66% E
1995	0.92% E	0.76% E	0.84% E	1.69% E	1.72% E	0.50% E	1.08% E	[redacted]	1.70% E	1.60% E	0.51% E	1.10% E
1996	1.49% E	0.73% E	1.23% E	0.64% E	1.41% E	0.22% E	1.92% E	0.27% E	1.22% E	1.10% E	1.58% E	0.48% E
1997	2.45% E	0.73% E	0.86% E	1.17% E	0.63% E	1.34% E	0.75% E	0.35% E	2.39% E	0.55% E	1.56% E	0.42% E
1998	0.91% E	1.29% E	1.75% E	0.42% E	1.76% E	1.28% E	0.83% E	0.28% E	1.04% E	1.93% E	0.84% E	0.33% E
1999	2.06% E	0.17% E	2.29% E	0.36% E	1.51% E	1.76% E	0.43% E	0.94% E	0.73% E	1.11% E	1.61% E	0.39% E
2000	2.20% E	0.20% E	1.84% E	0.34% E	1.37% E	0.80% E	0.65% E	1.32% E	0.25% E	0.92% E	0.68% E	0.43% E
2001	2.21% E	0.14% E	1.13% E	1.32% E	0.32% E	0.23% E	0.44% E	1.01% E	0.73% E	1.28% E	1.21% E	0.19% E
2002	0.03% E	0.60% E	0.46% E	1.16% E	2.12% E	0.26% E	3.36% E	[redacted]	0.13% E	0.73% E	0.16% E	0.06% E
2003	[redacted]	0.04% E	1.97% E	0.10% E	0.95% E	1.00% E	1.44% E	0.22% E	0.93% E	1.32% E	[redacted]	0.32% E
2004	0.94% E	0.50% E	0.05% C	0.43% C	0.66% C	1.28% C	0.08% C	1.33% E	0.53% E	0.03% E	0.79% E	0.24% E
2005	0.51% E	0.37% E	0.85% C	0.14% C	0.63% C	N/A	N/A	N/A	N/A	N/A	N/A	N/A

[redacted]

Attachment 2: Barron's Article dated May 7, 2001

"Don't Ask, Don't Tell"

Bernie Madoff is so secretive, he even asks investors to keep mum

By ERIN E. ARVEDLUND
Barron's | Monday, May 7, 2001

Two years ago, at a hedge-fund conference in New York, attendees were asked to name some of their favorite and most-respected hedge-fund managers. Neither George Soros nor Julian Robertson merited a single mention. But one manager received lavish praise: Bernard Madoff.

Folks on Wall Street know Bernie Madoff well. His brokerage firm, Madoff Securities, helped kick-start the Nasdaq Stock Market in the early 1970s and is now one of the top three market makers in Nasdaq stocks. Madoff Securities is also the third-largest firm matching buyers and sellers of New York Stock Exchange-listed securities. Charles Schwab, Fidelity Investments and a slew of discount brokerages all send trades through Madoff.

Some folks on Wall Street think there's more to how Madoff (above) generates his enviable stream of investment returns than meets the eye. Madoff calls these claims "ridiculous."

But what few on the Street know is that Bernie Madoff also manages $6 billion-to-$7 billion for wealthy individuals. That's enough to rank Madoff's operation among the world's three largest hedge funds, according to a May 2001 report in MAR Hedge, a trade publication.

What's more, these private accounts, have produced compound average annual returns of 15% for more than a decade. Remarkably, some of the larger, billion-dollar Madoff-run funds have never had a down year.

When Barron's asked Madoff Friday how he accomplishes this, he said, "It's a proprietary strategy. I can't go into it in great detail."

Nor were the firms that market Madoff's funds forthcoming when contacted earlier. "It's a private fund. And so our inclination has been not to discuss its returns," says Jeffrey Tucker, partner and co-founder of Fairfield Greenwich, a New York City-based hedge-fund marketer. "Why Barron's would have any interest in this fund I don't know." One of Fairfield Greenwich's most sought-after funds is Fairfield Sentry Limited. Managed by Bernie Madoff, Fairfield Sentry has assets of $3.3 billion.

A Madoff hedge-fund offering memorandums describes his strategy this way: "Typically, a position will consist of the ownership of 30-35 S&P 100 stocks, most correlated to that index, the sale of out-of-the-money calls on the index and the purchase of out-of-the-money puts on the index. The sale of the calls is designed to increase the rate of return, while allowing upward movement of the stock portfolio to the strike price of the calls. The puts, funded in large part by the sale of the calls, limit the portfolio's downside."

Among options traders, that's known as the "split-strike conversion" strategy. In layman's terms, it means Madoff invests primarily in the largest stocks in the S&P 100 index -- names like General Electric, Intel and Coca-Cola. At the same time, he buys and sells options against those stocks. For example, Madoff might purchase shares of GE and sell a call option on a comparable number of shares -- that is, an option to buy the shares at a fixed price at a future date. At the same time, he would buy a put option on the stock, which gives him the right to sell shares at a fixed price at a future date.

The strategy, in effect, creates a boundary on a stock, limiting its upside while at the same time protecting against a sharp decline in the share price. When done correctly, this so-called market-neutral strategy produces positive returns no matter which way the market goes.

Using this split-strike conversion strategy, Fairfield Sentry Limited has had only four down months since inception in 1989. In 1990, Fairfield Sentry was up 27%. In the ensuing decade, it returned no less than 11% in any year, and sometimes as high as 18%. Last year, Fairfield Sentry returned 11.55% and so far in 2001, the fund is up 3.52%.

Those returns have been so consistent that some on the Street have begun speculating that Madoff's market-making operation subsidizes and smooths his hedge-fund returns.

How might Madoff Securities do this? Access to such a huge capital base could allow Madoff to make much larger bets -- with very little risk -- than it could otherwise. It would work like this: Madoff Securities stands in the middle of a tremendous river of orders, which means that its traders have advance knowledge, if only by a few seconds, of what big customers are buying and selling. By hopping on the bandwagon, the market maker could effectively lock in profits. In such a case, throwing a little cash back to the hedge funds would be no big deal.

When Barron's ran that scenario by Madoff, he dismissed it as "ridiculous."

Still, some on Wall Street remain skeptical about how Madoff achieves such stunning double-digit returns using options alone. The recent MAR Hedge report, for example, cited more than a dozen hedge fund professionals, including current and former Madoff traders, who questioned why no one had been able to duplicate Madoff's returns using this strategy. Likewise, three option strategists at major investment banks told Barron's they couldn't understand how Madoff churns out such numbers. Adds a former Madoff investor: "Anybody who's a seasoned hedge-fund investor knows the split-strike conversion is not the whole story. To take it at face value is a bit naïve."

Madoff dismisses such skepticism. "Whoever tried to reverse-engineer \, he didn't do a good job. If he did, these numbers would not be unusual." Curiously, he charges no fees for his money-management services. Nor does he take a cut of the 1.5% fees marketers like Fairfield

Greenwich charge investors each year. Why not? "We're perfectly happy to just earn commissions on the trades," he says.

Perhaps so. But consider the sheer scope of the money Madoff would appear to be leaving on the table. A typical hedge fund charges 1% of assets annually, plus 20% of profits. On a $6 billion fund generating 15% annual returns, that adds up to $240 million a year.

The lessons of Long-Term Capital Management's collapse are that investors need, or should want, transparency in their money manager's investment strategy. But Madoff's investors rave about his performance -- even though they don't understand how he does it. "Even knowledgeable people can't really tell you what he's doing," one very satisfied investor told Barron's. "People who have all the trade confirmations and statements still can't define it very well. The only thing I know is that he's often in cash" when volatility levels get extreme. This investor declined to be quoted by name. Why? Because Madoff politely requests that his investors not reveal that he runs their money.

"What Madoff told us was, 'If you invest with me, you must never tell anyone that you're invested with me. It's no one's business what goes on here,'" says an investment manager who took over a pool of assets that included an investment in a Madoff fund. "When he couldn't explain \ how they were up or down in a particular month," he added, "I pulled the money out."

For investors who aren't put off by such secrecy, it should be noted that Fairfield and Kingate Management both market funds managed by Madoff, as does Tremont Advisers, a publicly traded hedge-fund advisory firm.

URL for this article:
http://online.barrons.com/article/SB989019667829349012.html

END ATTACHMENT #2 BARRON'S ARTICLE

Attachment 3

Partial List of French & Swiss money-managers / Private Banks invested with Bernie Madoff who are likely to become insolvent if this is a Ponzi Scheme. More are out there.

Paris & Paris suburbs

1. AGF Asset Management; Mr. Jean Francois Bert; 14 Rue Havely 75009
2. Alterinvest; Mr. Etienne Bernier; 42 Avenue Montaigne; Tel # 33 1 53 67 53 27
3. Altigest; Mr. Lescoat; 23 Rue d'Antin 75002; Tel # 33 1 42 66 15 43
4. GT Finances; Mr. Moreau; 16 Place De La Madeleine; Tel # 33 1 53 43 20 41
5. John Locke Investments; Mr. Bertrand Savatier; Cyrille Finances; 2 Rue des Italiens
6. Oddo Asset Management; Mr. Philippe Oddo; 12 Boulevard De La Madeline 75009; Tel # 33 1 44 51 83 83
7. SV International; Mr. Voisin; 64 Bd Pereire 75017; Tel # 33 1 40 54 80 00
8. Tethys; Mr. Jean Paul Delattre; 5 Rue Du 8 Mai 1945; Clichy; Tel # 33 1 47 56 87 46

Geneva, Switzerland

1. Aforge; Mr. Henrvieux Causse; 7 Rue Francois Versonnex; 41 22 7078240
2. Banque Piguet; Mr. Tosi; 5 Place De L'universite; Tel # 41 22 3112700
3. Dexia Asset Management; Mr. Jean Sebastien Debusschere; 2 Rue Jargommant 1207 Tel # 41 22 7079011
4. Fund Invest; Mr. Roer Galor; 22 Rue de Villereuse; Tel # 41 592912
5. Fix Family Office; Mademoiselle Ayca Pars; 7-9 Rue De La Croix D'or; Tel # 41 22 3178866
6. SCS Alliance; Mr. Saba; 11 Roue de Florissant; Tel # 41 22 8390100

Notes:

1. French and Swiss money-managers and Private Banks are Bernie Madoff's largest investors because they lack quantitative finance skills.
2. I estimate that between 50% - 75% of Bernie Madoff's assets are European based.

ATTACHMENT 4

Copy of a Fax dated March, 21, 2001 3:57 p.m. from an unknown sender (I forgot who sent it) that explains the Use of Proceeds and Investment Program offered by Fairfield Sentry Ltd but managed by Bernie Madoff. The fax machine header reads NO.880______P.1______ so it is impossible for me to identify the source at this time. This looks to be pages 6 and 7 of an offering memorandum. I would be happy to turn over my original fax copy to the SEC. The document number listed on both pages is a bit blurry but appears to read I:\DATA\WPDOCS|AG_\94021597

USE OF PROCEEDS

The entire net proceeds from the sale of the interests will be available to the Partnership. The Partnership incurred approximately $5,000 in connection with the initial offering of Interests for the admission of Limited Partners (such costs consisting primarily of legal fees and blue sky filing fees. The General Partners do no intent to pay any commissions or fees to broker-dealers in connection with the offering. However, in the event any fees or commissions are paid, they will be paid by the General Partners rather than the Partnership. The General Partners have not established any maximum amounts for such fees and commissions, none of which have been paid or earned to date.

The Partnership's funds are allocated to an account at Bernard L. Madoff Investment Securities (see "INVESTMENT PROGRAM"). Funds not so allocated will be maintained in cash. Bernard L. Madoff Securities is employed solely as an agent of the Partnership. It has no ownership interest in the Partnership and no role in the overall management of the Partnership.

The Partnership will not make any loans to affiliated entities nor will it invest in any foreign government securities.

INVESTMENT PROGRAM

The Partnership seeks to obtain capital appreciation of its assets through the utilization of nontraditional options trading strategies. The General Partners have established a discretionary account for the Partnership at Bernard L. Madoff Investment Securities ("BLM"), a registered broker-dealer in New York, New York, which utilizes a strategy described as a "split strike conversion". This strategy has defined risk and profit parameters which may be ascertained when a particular position is established. All investment decisions in the account at BLM are effected by persons associated with BLM. The firm, which employs approximately 150 people, acts primarily as a market maker in stocks and convertible securities. Most of the stocks for which it acts as a market maker are also listed on the New York Stock Exchange. Set forth below is a description of the "split strike conversion strategies.

The establishment of a typical position entails (i) the purchase of equity shares, (ii) the sale of a related out of the money call option representing an amount of underlying shares equal to the number of equity shares purchased, and (iii) the purchase of a related put option which is at or out of the money. A call option is sold out of the money when its strike price is greater than the current price of the stock; a put option is out of the money when the strike price is lower than the current price of the stock.

The logic of this strategy is that once a long stock position has been established, selling a call against such along position will increase the standstill rate of return, while allowing upward movement to the short call strike price. The purchase of an at or out of the money put, funded with part or all of the call premium, protects the equity position from downside risk.

Equity index options are also utilized in this trading methodology. Such a strategy involves buying a group of equity securities that together will highly correlate to the S&P 100 Index ("the OEX"). Equivalent contract value dollar amounts of out of the money OEX call options are sold, and out of the money OEX put options are purchased, against the basket of stocks. The basket typically consists of approximately 35 stocks in the S&P 100 Index.

A bullish or bearish bias of the positions can be achieved by adjustment of the strike prices in the OEX puts and calls. The further away the strike prices are from the price of the S&P 100 Index, the more bullish the strategy. However, the dollar value underlying the put options always approximates the value of the basket of stocks.

The Partnership bears the cost of all brokerage fees and commissions charged in connection with the account at BLM. All interest earned on credit balances is credited to the Partnership.

BLM acts as principal in connection with its sale of securities to the Partnership, and the purchase of securities from the Partnership. BLM acts as a market-maker in the stocks purchased and sold by the Partnership. These market making activities enable BLM to trade with the Partnership as principal. See "CERTAIN RISK FACTORS".

The options transactions executed [redacted] are effected, primarily, in the over-the-counter, not on a registered options exchange.

There can be no assurance that the investment objectives of the Partnership will be achieved. THE PARTNERSHIP'S INVESMENT PROGRAM IS SPECULATIVE AND ENTAILS SUBSTANTIAL RISKS. MARKET RISKS ARE INHERENT IN ALL SECURITIES TO VARYING DEGREES. NO ASSURANCE CAN BE GIVEN THAT THE PARTNERSHIP'S INVESTMENT OBJECTIVE WILL BE REALIZED. (SEE "CERTAIN RISK FACTORS".)

UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

VIACOM INTERNATIONAL INC., COMEDY PARTNERS, COUNTRY MUSIC TELEVISION, INC., PARAMOUNT PICTURES CORPORATION, and BLACK ENTERTAINMENT TELEVISION LLC, Plaintiffs,	ECF Case
v.	Case No. 1:07-cv-02103 (LLS)
YOUTUBE, INC., YOUTUBE, LLC, and GOOGLE INC., Defendants.	**DECLARATION OF ROELOF BOTHA**

I, Roelof Botha, declare, I am a partner with the venture-capital firm Sequoia Capital in Menlo Park, California. The following facts are true of my own personal knowledge and if called and sworn as a witness I could and would testify competently to them.

1. Sequoia is one of the best known and most successful venture capital firms in the world, with offices today in the United States, China, India, and Israel. Over the course of almost forty years of investing, the firm has provided capital to hundreds of companies, primarily in the technology sector. Some of the well-known companies in which Sequoia has been an early investor include Cisco Systems, Apple Computer, Oracle, Yahoo, and Atari. Sequoia was an early investor in Google Inc. and separately in YouTube, LLC. Sequoia was also a significant

investor in Atom Entertainment, now owned by Viacom, and it invested together with Viacom in an online service called Joost.

2. I was the Sequoia representative principally responsible for the firm's investment in YouTube, LLC. I learned of the YouTube service from a friend in roughly July 2005 and shortly thereafter began uploading personal videos that I had created to the service so that members of my family could view them. I also used the service to view personal videos uploaded by my own friends and family and on occasion by others as well.

3. Based on my initial experiences with the YouTube service and the way that the service described itself to users, it was my understanding that the service was designed and intended for this sort of sharing of "user-generated content." At the time, services that facilitated the sharing of other forms of user-generated content were already well known and successful. For example, services like Flickr, Shutterfly and Webshots and a host of others allowed users to easily share photographs with one another. Services like Blogger allowed ordinary users to express their views in writing on any topic and publish those thoughts to the world. I saw YouTube as a next step in the evolution of user-generated content services, one that would allow ordinary users to express themselves to the world through the medium of video. I felt that the growth potential for such a platform was enormous given the rapid spread of personal video cameras and the growing availability of broadband Internet connectivity to ordinary consumers.

4. Because of my personal experience as a user of the YouTube service and what I saw as its potential, I reached out to the company's founders, Chad

Hurley, Steve Chen and Jawed Karim in August 2005 to investigate whether there was an opportunity for Sequoia to invest in YouTube.

5. In at least two separate meetings in or about August or September 2005, the YouTube founders described their vision of the service to me and certain Sequoia partners. In those meetings, the founders emphasized that their aim was to develop a platform to be used for the sharing of user-generated content online. Attached hereto as Exhibit 1 is a true and correct copy of the presentation that the YouTube founders presented to me and certain partners at Sequoia regarding their vision for the service in September 2005. In describing the company's purpose, the founders stated: "The company's goal is to become the primary outlet of user generated video content on the Internet, and to allow anyone to upload, share, and browse this content." Their presentation to us went on to explain the reasons why they believed a service like YouTube was then poised for significant growth:

> "Digital video recording technology is for the first time cheap enough to mass-produce and integrate into existing consumer products, such as digital photo cameras and cell phones, giving anyone the ability to create video content anytime, anywhere. As a result, user-generated video content will explode."

6. At no time during our pre-investment meetings with the YouTube founders did any of the founders express any interest in profiting from the sharing of unauthorized copyrighted material through the service or in having the service grow by virtue of the presence of such content. Indeed, the founders did not merely say that user-generated content was their focus, they offered that focus as the rationale for Sequoia to expect the company to grow, and as a means of differentiating YouTube from other online video services in existence at the time.

7. Following our meetings with the YouTube founders, I prepared an investment memorandum for the Sequoia partnership summarizing what the founders had communicated to us in our meetings and providing a recommendation that Sequoia invest in YouTube. A true and correct copy of the investment memorandum I prepared is attached hereto as Exhibit 2. I led off my memorandum by recounting the company's objective of becoming the "primary outlet of user generated video content on the Internet" and throughout the memorandum I highlighted statements from the founders about how such original user content was the engine that would drive the service.

8. Following my recommendation, Sequoia offered and YouTube accepted an investment in the company in the fourth quarter of 2005. Attached hereto as Exhibit 3 is a true and correct copy of the press release YouTube subsequently issued announcing Sequoia's investment. In that release, on behalf of Sequoia, I reiterated our vision of the YouTube service which mirrored that expressed to me repeatedly by the company's founders:

> "We are very excited to be involved with YouTube at a time when consumers are poised to benefit from all the consumer electronics available. The demand for user-generated content continues to grow exponentially."
>
> "We've already seen user-generated content blossom in text through blogging, in photographs through services like Flickr and Shutterfly, and in audio through podcasting. YouTube is pioneering the next wave to become Internet's premier video service."

9. In connection with Sequoia's investment, I became a member of YouTube's board of directors, and held that position until the company was acquired by Google in November 2006. Consistent with Sequoia's philosophy regarding

companies in which it invests, as a board member I discussed with management the company's strategic and policy decisions.

10. After Sequoia's initial investment, YouTube experienced extraordinary and rapid growth. As I had witnessed firsthand, the service made it simple for the average person to upload a video they wanted others to see. The service was just as intuitive and accessible for potential audiences. Within just a few months, as online video consumption soared, YouTube became the online destination of choice for anyone looking to share their videos, and correspondingly, the online destination of choice for those interested in watching those videos.

11. Very early on, professional content creators began to use YouTube as a promotional outlet. I know, for example, that in October 2005, the shoe company Nike uploaded an amateurish-looking, but professionally created video featuring Brazilian soccer star Ronaldinho engaged in a pre-game warm-up routine wearing Nike shoes (a version of the video is accessible at http://www.youtube.com/watch?v=KNwLn85I75Y). The video (including various versions of it) has been watched millions of times on the YouTube service. Such promotional use of YouTube is far too substantial and far too varied for anyone even to recognize a small fraction of it, let alone catalog it all.

12. I also have personal experience with the widespread use of the YouTube service by major media companies for promotional purposes. While companies regularly uploaded clips of their content to the service for such purposes, they also often chose simply to leave on the service clips of their content that ordinary users had uploaded. This phenomenon was powerfully illustrated for me

by our experience with the clip known as "Lazy Sunday", a roughly three minute video that aired on the NBC television show Saturday Night Live in late 2005. That clip went "viral" on YouTube after someone uploaded it to the service – meaning that those who saw it often shared it with multiple others, growing the total audience at an extremely accelerated rate – and generated enormous press attention for the clip, for Saturday Night Live and for YouTube.

13. YouTube did not know who held the copyright in the Lazy Sunday clip, who had uploaded it to YouTube, whether that person had advance approval from the copyright holder to upload it, whether the copyright holder subsequently approved of the presence of the clip on YouTube even if the copyright holder had not done so in advance, or even whether such approval was required. But in light of the attention the clip had garnered, the company's CEO, Chad Hurley, wrote to NBC Universal asking whether NBC was aware of the clip and whether NBC wanted it to remain on the service or wanted YouTube to immediately remove it. For five weeks, YouTube heard nothing at all from NBC, and with NBC's knowledge, the Lazy Sunday video remained accessible on the YouTube service, continuing to generate large numbers of user views as well as national press attention.

14. The Nike and Lazy Sunday experiences and many others like them helped shape my thinking about how YouTube should handle the presence on the service of potentially unauthorized copyrighted materials. Throughout my tenure on YouTube's board, this was one of the principal issues the company grappled with. From the start, YouTube recognized that in an environment in which users could upload content of their choosing to the service, some users would disregard the

company's prohibitions and desires and upload material to the service that they did not have the right to share. The company recognized, however, that it had no practical ability to make determinations regarding whether each of the tens of thousands of clips being uploaded to the service every day had been uploaded or approved by the copyright holder or was otherwise authorized by law. Accordingly, the company discussed and supported a host of innovations and policy measures aimed at reducing the incidence of unauthorized copyrighted material on the service. These included, among many others: (1) the institution of a ten minute time limit for the length of videos that could be uploaded to the service to prevent users from uploading full-length television episodes or films; (2) development of an easy-to-use interface through which content owners could identify what they claimed to be their content on the service and request that YouTube remove it at the touch of a button; and (3) fingerprinting technology that would block any user from uploading to the service a file that had previously been removed from the service based on allegations of copyright infringement. Later, the company selected and implemented a more robust, audio fingerprinting technology to assist content owners in locating videos on the service and allow them to determine whether they wanted those videos to remain.

15. During my association with the company, management and the board worked hard to strike the appropriate balance between preserving the ability of users to express themselves freely through the YouTube service while at the same time enabling content owners to detect and address what they perceived to be the unauthorized use of their material. At no time, however, based on my observations

and participation in the strategic and policy decisions the company made, did the company desire to profit from unauthorized copyrighted material on the service or to have the service used as a platform for the sharing of unauthorized copyrighted content.

16. I felt very strongly as a member of YouTube's board of directors that, legal issues aside, the company should not encourage, and that it should explicitly discourage, the sharing of unauthorized copyrighted material. I believed that the presence of such content on the service undermined YouTube's business objectives by alienating copyright holders, including major media companies, with whom YouTube had reached or wanted to reach advertising and content syndication deals. Moreover, from my perspective as a major investor in the company, I believed that if the company did not demonstrate its respect for copyright law, the service would be unattractive as an acquisition target and/or unable to sell its stock to the public. For these and related reasons, throughout my association with YouTube, the company actively cooperated with copyright holders to reduce the incidence of unauthorized copyrighted material on the service.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed this 26th day of February, 2010 in Menlo Park, CA

R Botha

Roelof Botha

Botha Exhibit 1

YouTube

Company Purpose:

To become the primary outlet of user-generated video content on the Internet, and to allow anyone to upload, share, and browse this content.

Problem:

Video content is currently difficult to share:

- Video files are too large to e-mail (E-mails with video attachments bounce).
- Video files are too large to host (viewing just fifty videos at 20 MB each means serving 1 GB of bandwidth – exceeding most website quotas).
- No standardization of video file formats. To view many video file formats means having to install many different video players and video codecs.
- Videos exist as isolated files. There is no interaction between viewers. There is no interrelation between videos.

Solution:

Consumers upload their videos to YouTube. YouTube takes care of serving the content to millions of viewers.

YouTube's video encoding backend converts uploaded videos to Flash Video, which works in any web browser supporting Flash. (Flash penetration is 97.6% of Web users according to Macromedia.com.) Flash Video is a highly compressed streaming format that begins to play instantly. Unlike other delivery methods, it does not require the viewer to download the entire video file before viewing.

YouTube provides a community that connects users to videos, users to users, and videos to videos. Through these integrating features, videos receive more views, and users spend more time on YouTube. Because these features are similar to Flickr, YouTube is often referred to as "the Flickr of Video".

Market Size:

YouTube's growth will come as a result of these recent developments:

- Digital video recording technology is for the first time cheap enough to mass-produce and integrate into existing consumer products, such as digital photo cameras and cell phones, giving anyone the ability to create video content anytime, anywhere. As a result, user-generated video content will explode.

- Broadband Internet in the home has finally reached critical mass, making the Internet a viable alternative delivery mechanism for videos. Viewers are flocking to the Internet because it offers more variety of content and allows people to choose when and how to see it. Traditional media want to enter this space because they want to follow the audience, and because content there is cheaper and easier to distribute. Early examples of video content that has reached more viewers on the Internet than on television: Indian Ocean Tsunami videos, Jon Stewart's Crossfire appearance, Janet Jackson's Superbowl wardrobe malfunction.

Initially, YouTube will target home-grown (user-generated) video content, because in the short term that represent the fastest-growing type of video content, possessing the fastest-growing audience. This phase will enable YouTube to establish itself as the dominant player for Internet video content. Once YouTube's audience reach rivals that of traditional media networks, it will then be positioned to syndicate traditional media content (news, entertainment, MTV, etc) as well.

Competition:

Big players:
- Google Video – going after Hollywood, not personal videos
- 24 hour laundry – going after pure video hosting technology, not community

Small players:
- dailymotion – good technology, no exposure
- vimeo – bad technology, has potential for exposure (owned by CollegeHumor)
- PutFile – focuses on file hosting, lacks community, bad revenue model

Product Development:

Demo basic functionality.

- Community
  - Connects users to videos. Users find videos through:
    - Search
    - Related videos
    - Related tags
    - Top rated, top viewed, most discussed
    - User videos,
    - User favorites

  - Connects users to users:
    - Video discussion groups
    - Video comments
    - Private messages
    - Private/public video sharing

            - Social networking (Friends)
            - User videos
            - User favorites

        - Connects videos to videos:
            - Related videos
            - Related tags

- Open architecture
    - Developer XML APIs
    - RSS feeds
    - Externally embeddable video player ("YouTube off YouTube.com"). By letting people embed YouTube videos right into their own web sites, YouTube's audience reaches even beyond YouTube.com

- Target vertical markets with a need for video content:
    - Auction videos for eBay items (perfect for eBay Motors)
    - Real estate videos for houses/apartments for sale/rent ("Do-It-Yourself MTV Cribs")
    - Become the video platform for special interest websites: Car sites, Sports, Politics, etc

- Features currently in development:
    - Community features: groups, sharing, better ways to find videos
    - Driving external reach: external player, developer APIs

Sales & Distribution:

Revenue-generating options:

- Ads:
    - "Google Adwords" approach for YouTube: Allow advertisers to upload ad videos to YouTube. Thumbnails of these ad videos will be shown alongside other videos in video search results, and as "related videos". As with Google Adwords, ad videos will only be shown when relevant, and will be clearly marked as ad videos.
    - Display interactive ads within the Flash video player, superimposed over the playing video.
    - Play a short video ad at the beginning of the actual video.
    - Display an ad image at the beginning of the actual video.

- Act as a for-pay distribution channel for promotional videos:
    - Events, conferences, concerts

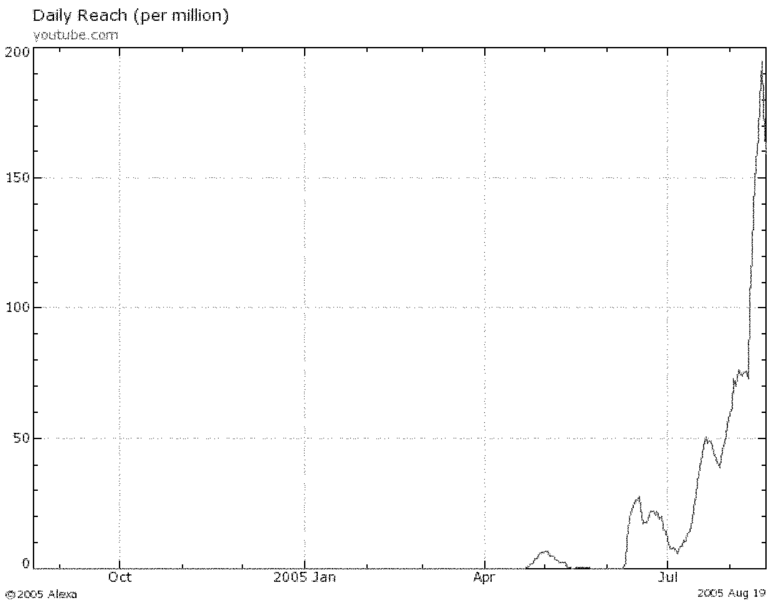
- Charge members for premium features:
    - Ability to download original videos / view high resolution videos

- o Video editing features (within the browser, using Flash): video effects, transitions, titles, etc
- o Advanced features for the externally embeddable video player
  - ▪ Offer specialized features for embedded auction/real estate videos (see **Product Development**)

- Charge viewers for premium content:
  - o Allow members to sell their video content to YouTube viewers, with YouTube taking a cut of the proceeds.

Metrics:

Launched June 11th. Has already overtaken all previously existing competitors and is now the dominant player in this space.



Team:

Founders:

- Steve Chen:
  - o Recruited by Max Levchin as one of PayPal's first engineers
  - o University of Illinois, Computer Science

- Chad Hurley:
  - o PayPal's first designer, responsible for PayPal site design, logo

- Jawed Karim:
  - o Graduate student in Computer Science, Stanford University

- Recruited by Max Levchin as one of PayPal's first engineers
- University of Illinois, Computer Science

Botha Exhibit 2

To: Investors **From: RFB** **September 2, 2005**
Re: YouTube

Introduction

YouTube represents an interesting seed-stage investment opportunity. The company's goal is to become the primary outlet of *user-generated video content* on the Internet, and to allow anyone to upload, share, and browse this content.

The three entrepreneurs are scrappy and smart. They have built a very easy-to-use, fast growing service that taps several strong veins: user-generated content, online advertising, wide proliferation of inexpensive digital video capture devices, and continued broadband adoption.

The company has also developed code snippets that allow users to embed YouTube videos directly into other sites. In this way, the company is building a wide content distribution network, in addition to its direct-to-site traffic.

Deal

Our proposal is to invest $1m in the seed stage, followed by a $4m Series A once specific milestones are met. Sequoia would own ~30% post Series A, with a pool of ~17%.

Competition

There are several direct and potential competitors to YouTube. These include:

- direct competitors (dailymotion, vimeo)
- community photo sites (flickr, webshots)
- online photo sharing sites (ofoto, shutterly, snapfish)
- large internet players (Google & Yahoo video search)
- entertainment sites (big-boys, ebaumsworld)
- file sharing services (ourmedia.org, putfile)
- IPTV companies (Open Media Network, Brightcove)

YouTube appears to have a clear lead over its two direct start-up competitors. The other categories of potential competitors are not necessarily focused on video content, or are not focused on user-generated content within the context of a community-based site. Nevertheless, the company will need to stay very focused over the next 3-6 months to ensure that it builds a rich set of features and content depth to increase its defensibility.

Hiring plan

We need to help the company quickly hire a CEO and VP BD/Sales. The founding team is enthusiastic about bringing on an experience CEO to help lead the company. However, I'm not sure whether we can land a CEO before the Series A. I would appreciate any ideas on potential candidates for either role. My preference would be to launch a search immediately and to have a CEO in place within 90 days.

Two additional former PayPal engineers are set to join in the next week. Both are exceptional.

The plan is to house the company in our incubation area for the near term. That will help us frequently interact with the team until we can surround the company with an experienced management team.

Key risks

- Competition/defensibility

  As outlined above, YouTube faces significant potential competition. The company needs to remain laser focused on improving the user experience to ensure that it continues its early growth trajectory.

- Revenue model

  I believe that YouTube has a clear advertising revenue opportunity. However, we don't yet know what form of advertising would work best. Specifically, can the company develop attractive ad products that are not intrusive to the consumer experience? We can model revenue as follows: # unique videos streamed per day x % of videos monetized x CPM x 365 = estimated annual revenue. Several of the parameters are unknown:

  i. We don't know what CPM rates YouTube could command. Video ad CPMs could range from a low of $5 to over $30.
  ii. We don't know what percentage of inventory (videos served) could be monetized
  iii. We are not sure how much YouTube could grow from its current level of 100,000 videos served per day.

  Below are different scenarios and their associated revenue potential:

	Videos served/day	**CPM**	**% of videos monetized**	**Implied annual revenue**
Scenario 1	10 million	$10	15%	$6m
Scenario 2	20 million	$15	20%	$22m
Scenario 3	30 million	$20	25%	$55m

  We will need to test these assumptions carefully over the next few months to get an accurate handle on the company's revenue potential. We also need to test the success of the company's content distribution network, and whether we can generate advertising revenue from this network. (Google earns ~55% of its revenue from Google-owned sites, and 45% from Network websites.)

  Serving 10-30 million videos may appear daunting, as it represents >100x increase over the company's current activity levels. But the company has achieved its current scale in only two months, and only has 15,000 videos today. (For point of comparison, Flickr and Webshots, two comparable photo community sites, serve 200-500x as many pageviews per day as YouTube.)

- Scalability

  As the table above indicates, YouTube will need to scale significantly from its current level for the company to achieve meaningful revenue. We need ensure that YouTube can inexpensively scale orders of magnitude from current levels.

- Balancing growth

  YouTube has already drawn the attention of larger media companies (e.g., Turner, Transcosmos) that see the potential of distributing YouTube content. As with any marketplace, we need to ensure that we balance demand and supply. It would be inadvisable to grow the viewer base significantly without a substantial increase in the number of videos available on the site. The company cannot afford to disappoint large numbers of customers due to inadequate depth of content.

- Exit

  We cannot point to many high comparable exit valuations.

  A few comparable companies include Webshots, flickr, Ofoto, Shutterfly, and Snapfish. While these companies deal only with still images, there are some similarities with YouTube. None of these companies have had exceptional exits. CNET bought Webshots for ~$70m, Yahoo! bought flickr for <$50m. Apparently Shutterfly is preparing to file its IPO. Ofoto and Snapfish were acquired by Kodak and HP, respectively, although financial terms were not disclosed.

  Another comparable is Blogger, acquired by Google in 2002 for an undisclosed amount.

  There are some other examples of businesses that built successful models leveraging user-generated content, including Tripadvisor, acquired by IAC in 2004 years ago for over $100m (to the best of my knowledge).

Recommendation

I first met with the company three weeks ago, and we are in pole position for the financing. Several VCs have been cold calling the company, and a few media companies have also approached YouTube. I'd like to give the company our decision on Monday.

I recommend that we proceed with the financing as proposed.

YouTube has a great founding team that has hit on several promising themes. The company follows a trend of user-generated content that started with text (blogs), images (flickr, webshots, ofoto), and audio (podcasting). Video is a natural next step, and YouTube is well positioned to capture the lead. The company has not yet enabled advertising revenue streams. But our checks with Yahoo! and Adbrite indicated very strong advertiser demand for online video advertising. We will rapidly need to surround the company with management talent, specifically a CEO.

Contents

Investment summary

Founded by three early PayPal employees. Two engineers, one designer. Seed-stage investment opportunity. Top 10,000 internet site within two months of launch.

- **Business**
  - YouTube's goal is to become the primary outlet for *user-generated video content* on the internet. The company provides a very easy-to-use interface for users to upload, share, and browse their content.
  - Every digital camera now ships with digital video recording capability. But consumers have no easy way to share their personal video content – files are too large, hosting and bandwidth is expensive, and there are no standardized video file formats.
  - Users upload videos to YouTube. The encoding backend converts uploaded videos to Flash Video, which works on ~98% of web browsers. The streaming format means that no file downloading is required.
- **Market**
  - YouTube provides a platform and community for video self-publishing. We've seen similar self-publishing emerge for text (blogs), photos (flickr, webshots, hotornot), and audio (podcasting). This presents interesting advertising revenue opportunities.
  - There are also interesting vertical market opportunities: eBay auction videos (e.g., autos), real estate videos, etc.
- **Financials – TBD**
  - The company currently serves 100,000 videos per day, at an all-in hosting cost of $4,000 per month.
  - The team has developed a software abstraction layer that enables it to use very inexpensive hardware and bandwidth to deliver videos.
- **Competition**
  - Big players: Google Video Search, Ourmedia.org, Open Media Network
  - Small players: DailyMotion, Vimeo, Putfile
- **Team**
  - Steve Chen. UIUC, CS. Recruited as one of PayPal's earliest engineers
  - Chad Hurley. PayPal's first designer, responsible for site design and logo
  - Jawed Karim. UIUC, CS. Graduate CS student at Stanford. Also one of PayPal's earliest engineers
- **Proposed terms**
  - Two-stage, milestone-based financing: $1m seed stage, $4m Series A.
  - SC to own ~30% after Series A.
  - Proposed Series A milestones:
    - Develop comprehensive business plan, including financial plan
    - Develop self-serve advertising product
    - Sign up at least five (5) advertisers who place $5,000 or greater advertising orders
    - Ensure platform scalability to handle at least one million video views per day
    - Recruit a VP of Business Development

\

Competition

There are several potential and direct competitors to YouTube.

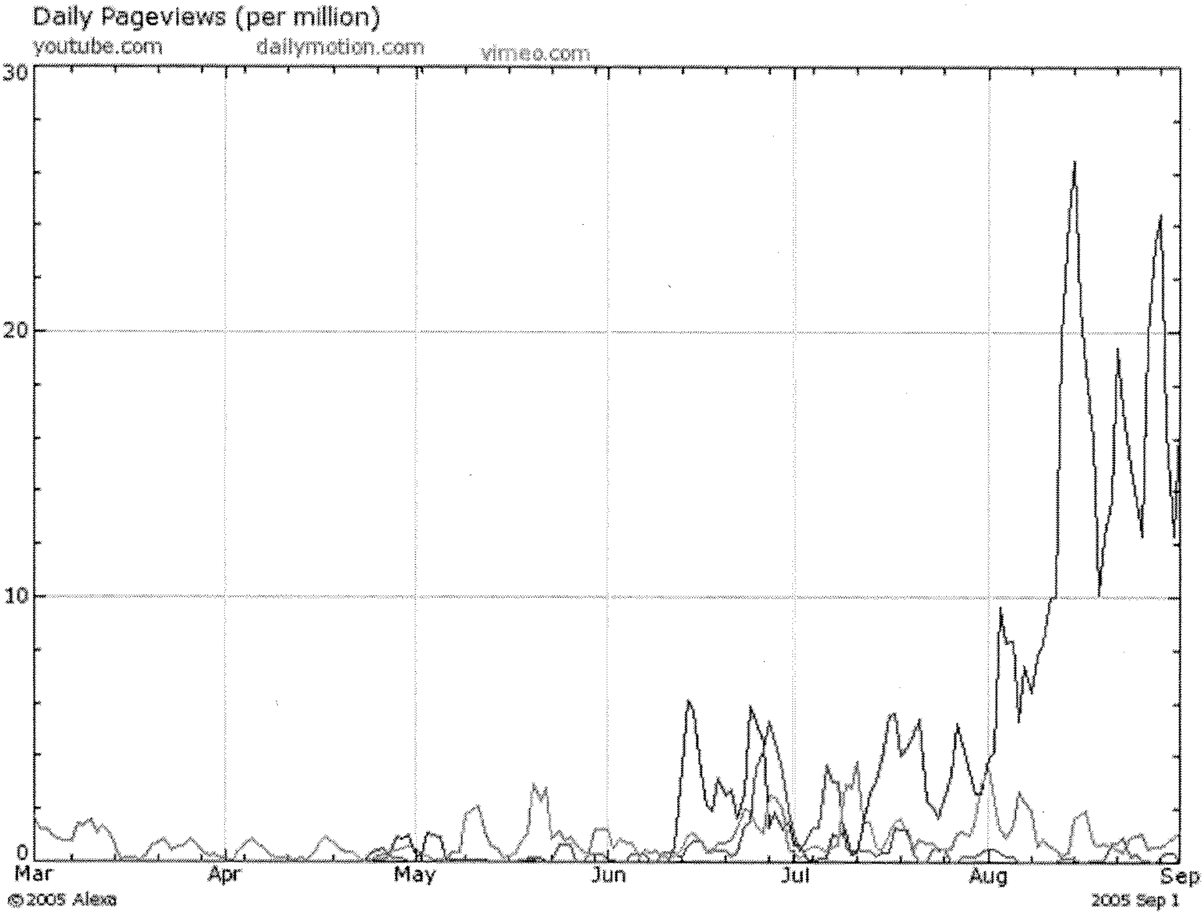
1. Direct competition

The two direct start-up competitors are Dailymotion and Vimeo.

- Dailymotion is based in France. It positions itself as a site to 'watch, publish, share.' The site has pretty good UI, but its navigation and layout is not as intuitive as for YouTube. All videos are encoded and rendered in Quicktime. Quicktime has lower penetration than Flash, so users may be faced with needing to download the player to experience the site.

- "Vimeo is for sharing your video clips." Vimeo was started by Connected Ventures in New York. Their mission is to "develop and manage good websites." They also run a popular site called CollegeHumor. The also claim to draw inspiration from flickr, and launched in February 2005. Vimeo also uses Quicktime. Their site layout is not very intuitive, and makes it hard to find content (e.g., there is no search capability).

The graph below shows the comparative daily pageviews for YouTube, Dailymotion and Vimeo. YouTube's traffic has rapidly overtaken that of these two competitors.



2. Community photo sites

Community photo sites share many features with YouTube: tagging, social networking, discussion groups, ease-of-use. However, they seem focused on still images rather than video.

YouTube admits that it drew inspiration from the popular site Flickr. Flickr has ~200-300x the number of daily pageviews of YouTube. Yahoo! acquired Flickr earlier this year for an undisclosed sum, believed to be ~$30m. Reid Hoffman was in investor in Flickr, and assures the YouTube team that they have no plans to launch a video product in the next 1-2 years.

Webshots is another potential competitor. CNET acquired the company in 2004 for ~$70m at a time that they forecast $15-17m annual revenue. The founding team all just left the company, and it unclear how much new product innovation there is. Webshots seems very focused on photos for now.

3. Online photo sharing sites

The main online photo sharing services, Ofoto, Shutterfly, and Snapfish, are also potential competitors. They do not have community-like features. They also earn revenue primarily from printing. As a result, I think they will remain focused on photos.

4. Entertainment sites

There are several popular online entertainment sites that have significant traffic: Big-boys, ebaumsworld, ifilm.

According to YouTube: "Big-boys and ebaumsworld get a lot of traffic but that's to be expected for the type of content they host. You are guaranteed to have something interesting, something shocking to watch when you visit these sites. However, the disadvantage is that they can never transition their sites into an actual product. Due to the content on the site, they're forever stuck in that segment of the market. If I were to categorize the content on YouTube today, I would break it down into two large categories: personal videos and viral videos. The viral videos, due to copyrights and obscene content, I admit, big-boys and ebaumsworld may beat us there. Although, we have seen our share of viral videos on YouTube. The bigger draw for YouTube is all the personal videos, the ones of your pet, your kid, your family, your vacation, so on. Big-boys and ebaumsworld, due to their origins, can never transition their product into something that hosts these other types of files."

Big-boys and ebaumsworld also position themselves as much broader entertainment sites, offering "Jokes, Pictures, Office Humor, Flash Animation, Soundboards, Prank Calls, Audio, Video, Games, Illusions, Magic."

"IFILM is one of the leading video-entertainment destinations on the Web, offering channels of movies, short films, TV clips, video-game trailers, music videos, action sports and its celebrated Viral Videos collection. IFILM.com delivers more than 30 million streams per month, making it one of the top ten streaming media sites in the world." IFILM is a clear potential competitor, although they don't have the same focus on user-generated content, nor YouTube's community features.

5. Larger competitors

Google and Yahoo are building video search products. Google requires the user to download a new "Google Video Viewer" while Yahoo plays videos in the native file format. In neither case are they providing the simple consumer upload and share experience, nor the community features.

6. File storage services

Putfile and Ourmedia.org are examples of file storage providers that essentially provide a free, web interface to FTP. None of them seem to have a compelling product, and do not focus solely on user-generated video content.

7. IPTV

Finally, there are companies such as the Open Media Network and Brigthcove that are focused on the delivery of mainstream video over the Internet. I do not believe that this competes directly with YouTube's proposition.

The table below attempts to summarize the competitive matrix:

	YouTube	Direct competition	Community photo sites	Photo sharing services	Entertainment sites	Large Internet players	File storage	IPTV
Ease of submitting video/degree of automation	Easy	Easy	N/A	N/A	Not easy or auto-mated	N/A	Easy	N/A
Focus	Video	Video	Photos	Photos	Varied	Varied	Varied	Video
Community features	Yes	Yes	Yes	No	No	Yahoo working on it	No	No
Rendering format	Flash	Quick-time	N/A	N/A	Quick-time	Varied	Varied	Varied

The Technology Infrastructure (company supplied)
====================================

As mentioned previously, in order to keep costs down, our video distribution technology is built on clusters with multiple machines in each cluster for redundancy and higher throughput. When a video is uploaded to the site, it is sent to a single machine within a single cluster. This is chosen based on space and, in the future, cpu/bandwidth utilization on the machine and cluster. Newly uploaded videos are picked up by two services running on each of the machines, 1) convert and 2) replicate.

The converter will analyze the video and look at things like framerates, aspect ratios (16:9 vs 4:3), audio encoding (sampling rates, audio codec), and the video codec used on the original video. It uses these heuristics to best convert the video to play on YouTube with adjustments to things inserting the black bands on top/bottom of a 16:9 video, altering the sampling rate to best conform to the incoming sound, guess at frames per second of the incoming video, etc. As part of this process, video stills of each video are also generated.

At the end of this process, the video server communicates back to the central database changing the status from "Uploaded" to "Awaiting Replication".

While all this is going on, the replication service is standing by looking for videos that need to be replicated. When a video enters this queue, it's picked up by the replication service and the video is replicated to every machine within the video cluster. After the replication is finished, it talks to the database and marks the video as "Processed".

A newly uploaded video will go from a "Uploaded" -> "Awaiting Replication" -> "Processed" state in about 1-2 minutes.

The best part about this technology is that it really is infinitely scalable. We can add more capacity directly at the video conversion/transport layer at will.

The math for this comes out to:
By bandwidth --
$239 / 1 machine / 1 month
1 machine has 2000 GB transfer / month
2000 GB * 1000 MB / GB = 2,000,000 MB transfer / machine / month
7 MB average size of video
2,000,000 / 7 = 285,714 videos served from each machine / month
$239.0 / 285,714 = $0.00083 cost per video served.

By storage --
$239 / 1 machine / 1 month
1 machine has 2x160 GB HD for 320 GB
320 GB * 1000 MB / GB = 320,000 MB / machine
7 MB average size of video
320,000 / 7 = 45,714 videos / video cluster
$239/45,714 = $0.005228 cost per video stored.
$0.005228 * 2 machines / cluster = $0.010456 / video replicated.

The video serving technology provides a substantial barrier to entry. The video clustering solution sounds obvious and straight-forward post implementation but it certainly wasn't when we were faced with the question of -- "how do we keep costs down while having access to massive storage/bandwidth?" There's also the encoding technology. We're constantly improving this side of the product by incorporating the latest codecs.

Team bios

Chad Hurley is a co-founder of YouTube. Chad has an experienced background in web development and graphic design. He was the first member of the PayPal design team, where he lead efforts to develop the interface for the original Palm-based program that enabled secure wireless money transfers between handhelds. As the product evolved, he effectively designed auction features which solidified PayPal's long term success and is a credited member of two critical auction patents. Chad looks forward to building an empowering video service for the world.

Jawed Karim is a co-founder of YouTube. He was previously a computer science student at the University of Illinois, where he was recruited by Max Levchin to become one of the earliest engineers at PayPal. There hepled the implementation of PayPal's first real-time anti-fraud models for credit card and bank payments, working closely with Roelof Botha. As part of PayPal's Architecture Team (a group of five out of a total of over 100 engineers), he later worked on challenging scalability problems to ensure PayPal's ability to scale to 80 million users and beyond. He is currently a graduate student in computer science at Stanford.

Steve Chen is a co-founder of YouTube. As the Chief Technology Officer for YouTube, he is responsible for leading the engineering efforts in distributed video clusters and meeting the high-availability demands of video. Before YouTube, Steve spent 6 years at PayPal on the technology team. At PayPal, he led the engineering teams behind products such as PayPal China, PayPal Developer XML APIs, and PayPal Shopping Cart.

YouTube

Company Purpose:

To become the primary outlet of user-generated video content on the Internet, and to allow anyone to upload, share, and browse this content.

Problem:

Video content is currently difficult to share:

- Video files are too large to e-mail (E-mails with video attachments bounce).
- Video files are too large to host (viewing just fifty videos at 20 MB each means serving 1 GB of bandwidth – exceeding most website quotas).
- No standardization of video file formats. To view many video file formats means having to install many different video players and video codecs.
- Videos exist as isolated files. There is no interaction between viewers. There is no interrelation between videos.

Solution:

Consumers upload their videos to YouTube. YouTube takes care of serving the content to millions of viewers.

YouTube's video encoding backend converts uploaded videos to Flash Video, which works in any web browser supporting Flash. (Flash penetration is 97.6% of Web users according to Macromedia.com.) Flash Video is a highly compressed streaming format that begins to play instantly. Unlike other delivery methods, it does not require the viewer to download the entire video file before viewing.

YouTube provides a community that connects users to videos, users to users, and videos to videos. Through these integrating features, videos receive more views, and users spend more time on YouTube. Because these features are similar to Flickr, YouTube is often referred to as "the Flickr of Video".

Market Size:

YouTube's growth will come as a result of these recent developments:

- Digital video recording technology is for the first time cheap enough to mass-produce and integrate into existing consumer products, such as digital photo cameras and cell phones, giving anyone the ability to create video content anytime, anywhere. As a result, user-generated video content will explode.

- Broadband Internet in the home has finally reached critical mass, making the Internet a viable alternative delivery mechanism for videos. Viewers are flocking to the Internet because it offers more variety of content and allows people to choose when and how to see it. Traditional media want to enter this space because they want to follow the audience, and because content there is cheaper and easier to distribute. Early examples of video content that has reached more viewers on the Internet than on television: Indian Ocean Tsunami videos, Jon Stewart's Crossfire appearance, Janet Jackson's Superbowl wardrobe malfunction.

Initially, YouTube will target home-grown (user-generated) video content, because in the short term that represent the fastest-growing type of video content, possessing the fastest-growing audience. This phase will enable YouTube to establish itself as the dominant player for Internet video content. Once YouTube's audience reach rivals that of traditional media networks, it will then be positioned to syndicate traditional media content (news, entertainment, MTV, etc) as well.

Competition:

Big players:
- OurMedia.org – Very technical and complicated for the average user
- Open Media Network – windows/IE only software, no community
- Google Video – going after Hollywood, not personal videos

Small players:
- dailymotion – good technology, no exposure
- vimeo – bad technology, has potential for exposure (owned by CollegeHumor)
- PutFile – focuses on file hosting, lacks community, bad revenue model

Product Development:

Demo basic functionality.

- Community
  - Connects users to videos. Users find videos through:
    - Search
    - Related videos
    - Related tags
    - Top rated, top viewed, most discussed
    - User videos,
    - User favorites

  - Connects users to users:
    - Video discussion groups
    - Video comments
    - Private messages

        - Private/public video sharing
        - Social networking (Friends)
        - User videos
        - User favorites

    - Connects videos to videos:
        - Related videos
        - Related tags

- Open architecture
    - Developer XML APIs
    - RSS feeds
    - Externally embeddable video player ("YouTube off YouTube.com"). By letting people embed YouTube videos right into their own web sites, YouTube's audience reaches even beyond YouTube.com

- Target vertical markets with a need for video content:
    - Auction videos for eBay items (perfect for eBay Motors)
    - Real estate videos for houses/apartments for sale/rent ("Do-It-Yourself MTV Cribs")
    - Become the video platform for special interest websites: Car sites, Sports, Politics, etc

- Features currently in development:
    - Community features: groups, sharing, better ways to find videos
    - Driving external reach: external player, developer APIs

Sales & Distribution:

Revenue-generating options:

- Ads:
    - "Google Adwords" approach for YouTube: Allow advertisers to upload ad videos to YouTube. Thumbnails of these ad videos will be shown alongside other videos in video search results, and as "related videos". As with Google Adwords, ad videos will only be shown when relevant, and will be clearly marked as ad videos.
    - Display interactive ads within the Flash video player, superimposed over the playing video.
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- Act as a for-pay distribution channel for promotional videos:
    - Events, conferences, concerts

- Charge members for premium features:

  - Ability to download original videos / view high resolution videos
  - Video editing features (within the browser, using Flash): video effects, transitions, titles, etc
  - Advanced features for the externally embeddable video player
    - Offer specialized features for embedded auction/real estate videos (see **Product Development**)

- Charge viewers for premium content:
  - Allow members to sell their video content to YouTube viewers, with YouTube taking a cut of the proceeds.

Metrics:

Launched June 11th. Has already overtaken all previously existing competitors and is now the dominant player in this space.

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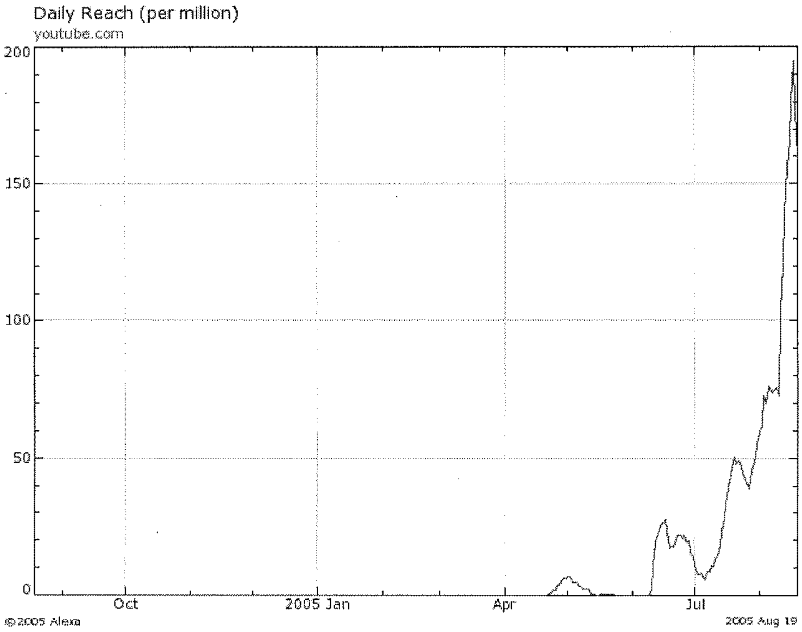
7 MB average size of video
320,000 / 7 = 45,714 videos / machine
2 machines / cluster
(2 * $239) / 45,714 = $0.01 cost per video stored redundantly on a cluster.



Team:

Founders:

- Steve Chen:
    - Recruited by Max Levchin as one of PayPal's first engineers
    - University of Illinois, Computer Science

- Chad Hurley:
    - PayPal's first designer, responsible for PayPal site design and feature development

- Jawed Karim:
    - Graduate student in Computer Science, Stanford University
    - Recruited by Max Levchin as one of PayPal's first engineers
    - University of Illinois, Computer Science

YouTube

Broadcast Yourself.

Company Purpose

To become the primary outlet of user-generated video content on the Internet, and to allow anyone to upload, share, and browse this content.

Problem

- Video files are too large to e-mail.
- Video files are too large to host.
- No standardization of video file formats.
- Videos exist as isolated files.

Solution

- Consumers upload their videos to YouTube. YouTube takes care of serving the content to millions of viewers.
- YouTube's video encoding back-end converts uploaded videos to Flash Video.
- YouTube provides a community that connects users to videos, users to users, and videos to videos.

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Market Size

- Digital video recording technology is for the first time cheap enough to mass-produce and integrate into existing consumer products.
- Broadband Internet in the home has finally reached critical mass, making the Internet a viable alternative delivery mechanism for videos.

Competition

- OurMedia.org, Open Media Network, Google Video
- PutFile, DailyMotion, Vimeo

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Product Development

- Community
- Open architecture
- Target vertical markets with a need for video content
- Features currently in development

Sales & Distribution

- Advertising
- Act as a for-pay distribution channel for promotional videos
- Charge members for premium features
- Charge viewers for premium content

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Team

- Steve Chen: Recruited by Max Levchin as one of PayPal's first engineers; University of Illinois, Computer Science
- Chad Hurley: PayPal's first designer, responsible for PayPal logo, main features, and design
- Jawed Karim: CS Graduate student at Stanford University; Recruited by Max Levchin as one of PayPal's first engineers; University of Illinois, Computer Science

Metrics

- Launched June 11th. Has already overtaken all previously existing competitors and is now the dominant player in this space.

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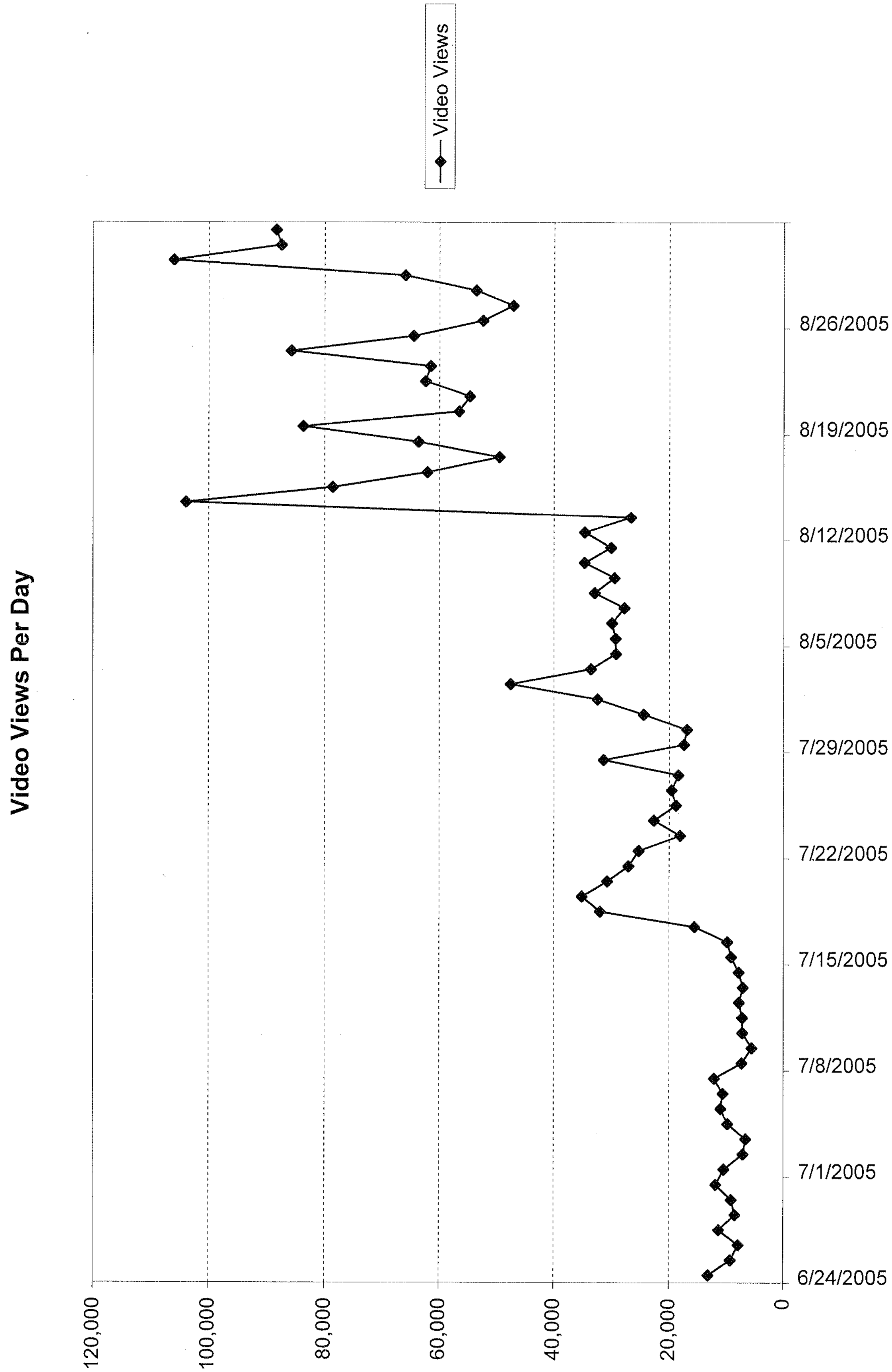
Company metrics

The attached three charts show three key metrics for YouTube since it launched about two months ago: videos served per day, registered users, and cumulative videos submitted.

The graphs show a healthy increase in all the key metrics so far.


Video Views Per Day
Video Views
120,000
100,000
80,000
60,000
40,000
20,000
0
6/24/2005
7/1/2005
7/8/2005
7/15/2005
7/22/2005
7/29/2005
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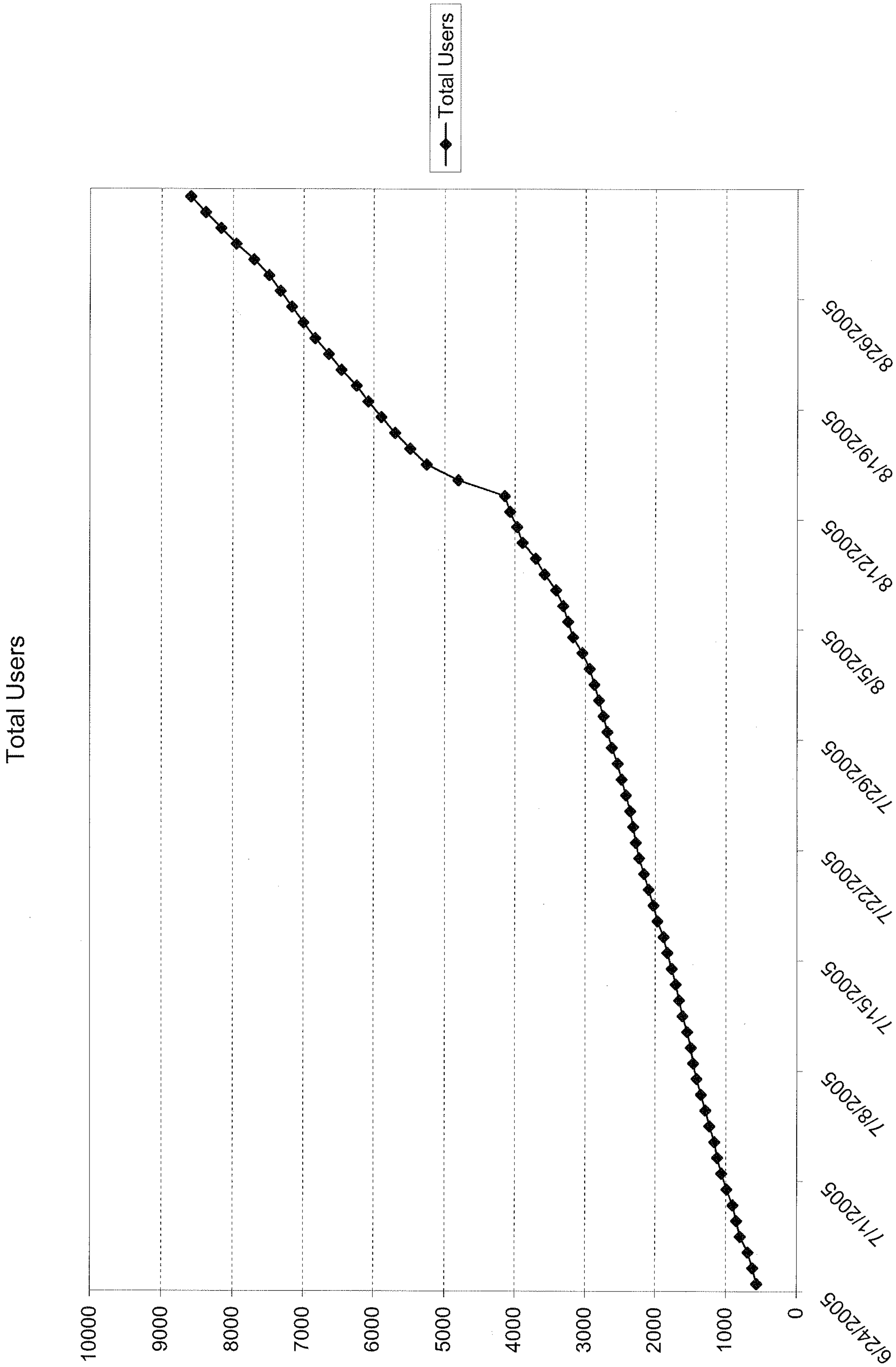
8/12/2005
8/19/2005
8/26/2005


Total Users
Total Users
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
6/24/2005
7/1/2005
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8/26/2005

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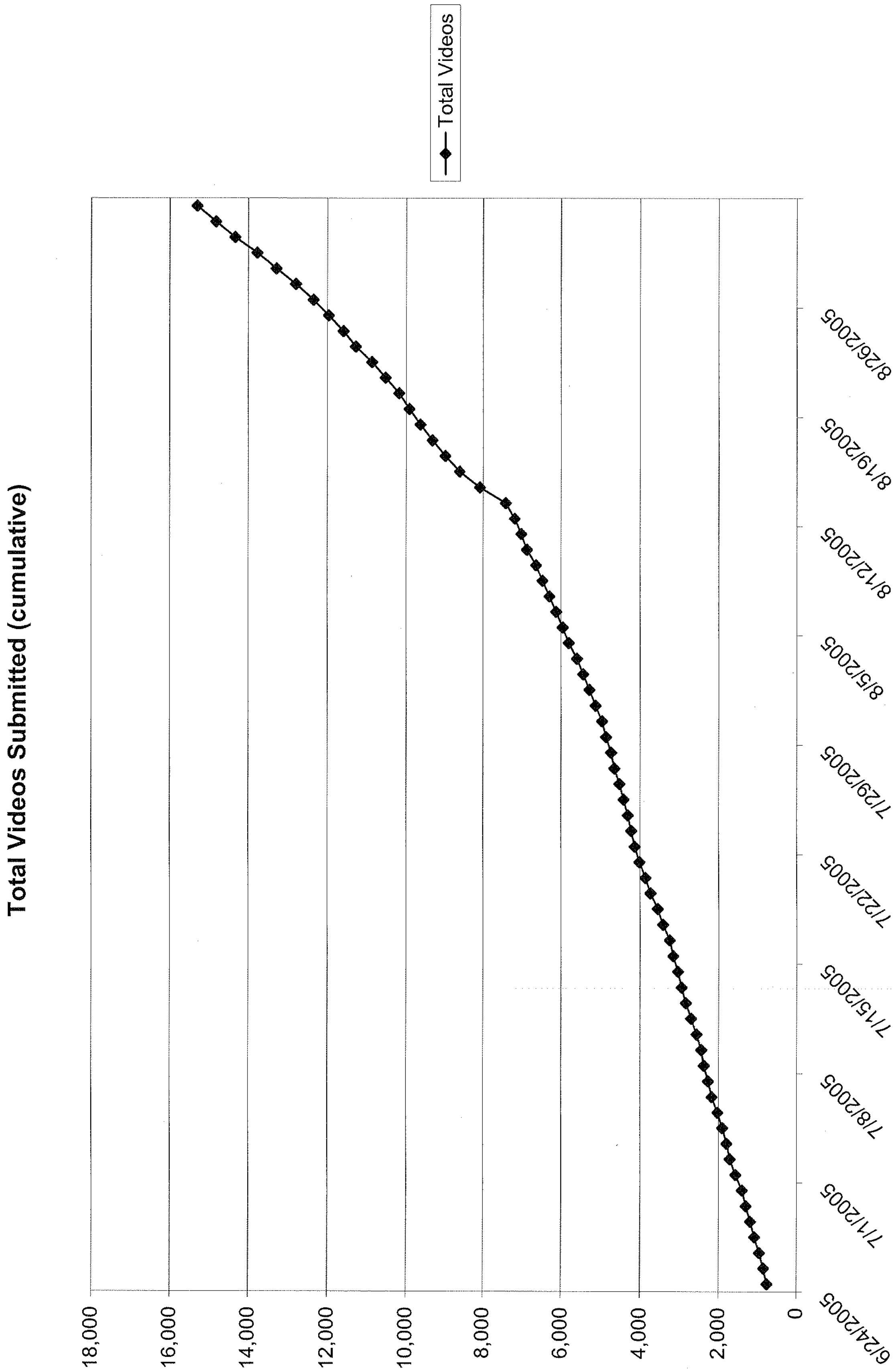
Total Videos Submitted (cumulative)
Total Videos
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
6/24/2005
7/1/2005
7/8/2005
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8/12/2005
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Botha Exhibit 3

FOR IMMEDIATE RELEASE

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YOUTUBE RECEIVES $3.5M IN FUNDING FROM SEQUOIA CAPITAL

Internet Commerce Pioneers from PayPal Reunite to Make Videos Fast, Fun and Easy for Consumers to Create Their Own Personal Video Network

MENLO PARK, Calif. – November 7, 2005 – YouTube, a consumer media company for people to watch and share original videos through a Web experience, today announced it has completed a $3.5M round of private equity funding from Sequoia Capital. YouTube, founded by Internet commerce pioneers from PayPal, has developed a new service that allows people to easily upload, tag, and share personal video clips through www.YouTube.com and across the Internet on other sites, blogs and through e-mail. The service also allows users to create their own personal video network.

This investment will be used to accelerate the company's rapid growth, enhance product development and expand sales and marketing efforts.

"With more and more people carrying around devices that capture video—from digital cameras to cell phones—YouTube is set to become an essential destination for watching and sharing these experiences," said Chad Hurley, CEO and co-founder of YouTube. "We are very pleased by the support of Sequoia Capital. Since our public preview, we are already moving 8 terabytes of data per day through the YouTube community – the equivalent of moving one Blockbuster store a day over the Internet."

Prior to YouTube, it was not easy for people to make video available on the Web. The burden was on the user to support all the media players and the 100s of multimedia formats. YouTube is using its advanced technology infrastructure so consumers can broadcast their videos globally in a fast, fun and easy way.

"We are very excited to be involved with YouTube at a time when consumers are poised to benefit from all the consumer electronics available. The demand for user-generated content continues to grow exponentially," said Roelof Botha, Sequoia Capital partner and former CFO of PayPal. "We've already seen user-generated content blossom in text through blogging, in photographs through services like Flickr and Shutterfly, and in audio through podcasting. YouTube is pioneering the next wave to become Internet's premier video service."

About YouTube
Founded in February 2005, YouTube is a consumer media company for people to watch and share original videos worldwide through a Web experience. Founded by early commerce pioneers of PayPal, YouTube allows people to easily upload, tag, and share personal video clips through www.YouTube.com and across the Internet on other sites, blogs and through e-mail, as well as to create their own personal video network. With investment support from Sequoia Capital, YouTube is set to become the Internet's premier video service.

About Sequoia Capital
Since 1972, Sequoia Capital has provided startup venture capital for very smart people who want to turn ideas into companies. As the "Entrepreneurs Behind the Entrepreneurs", Sequoia Capital's Partners have worked with innovators such as Sandy Lerner and Len Bozack of Cisco Systems, Jerry Yang and David Filo of Yahoo!, Gaurav Garg of Redback Networks, Larry Page and Sergey Brin of Google, Dan Warmenhoven of Network Appliance, T.J. Rodgers of Cypress Semiconductor, Lou Tomasetta of Vitesse Semiconductor, Steve Jobs of Apple Computer and Larry Ellison of Oracle. The companies organized by Sequoia Capital now account for about 10% of the value of NASDAQ. To learn more about Sequoia Capital visit www.sequoiacap.com.

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Yelp

To: BVP Group
From: Jeremy Levine
Date: October 3, 2005
Re: Yelp

Summary

Yelp is a San Francisco-based early stage "Web 2.0" yellow pages company. The business was launched about a year ago and raised $1 million of angel financing from Max Levchin, the founding CTO of Paypal. The founders are both early Paypal entrepreneurs who worked for Max. They have spent less than half the capital they raised but have managed to accumulate what I believe is the most compelling (though far from complete) local merchant content on the web with a very loyal user base. We have an opportunity to lead the company's first venture financing with a $5 million one-handed investment at a $13 million pre-money valuation (there was a $1 million angel round).

I have been tracking the company for several months and was planning to propose an investment and bring them in for a presentation next week. However, Business Week named Yelp the top services company on the Internet (ahead of Craigslist) in their latest issue which hit newsstands on Friday 9/23 (see article). Therefore, I tried to pre-empt Yelp's financing plans with a term sheet last week and agreed to terms with the company over the weekend.

Market

Yelp is targeting local advertising markets across the globe starting with San Francisco, Boston and a few other US cities. Consumers conduct 80% of their commerce within 50 miles of home. Local advertising is a $94 billion market in the US and $150 billion globally. That market is led by yellow pages publishers which collect about $25 billion of annual listing fees, mostly from small- and medium-sized companies. Approximately 65% of all small and medium local businesses purchase ad space in local yellow page directories. Very little of this market has moved online (yet).

Over the last ten years, Internet advertising grew from nothing into a $10 billion industry in the US, and its defining characteristic is probably its performance-oriented, direct marketing nature. For the most part, however, local merchants (restaurants, salons, dentists, doctors, plumbers, etc) cannot partake in the most prevalent online ad marketplaces like Google and Yahoo, because a) a lot of the traffic represents out-of-town customers that physically cannot buy their services and b) they generally don't drive transactions through web sites, so the pay-per-click model that dominates Internet advertising does not work well.

Yelp and a number of online local services competitors are building solutions to improve the local search and discovery offerings for consumers and to shift local merchant ad spending to the Internet.

Product

Yelp is self explanatory. Try it at www.yelp.com. It offers consumers a way to discover and share their thoughts on local merchants while building a feeling of local community.

There are two ways for a consumer to use Yelp:

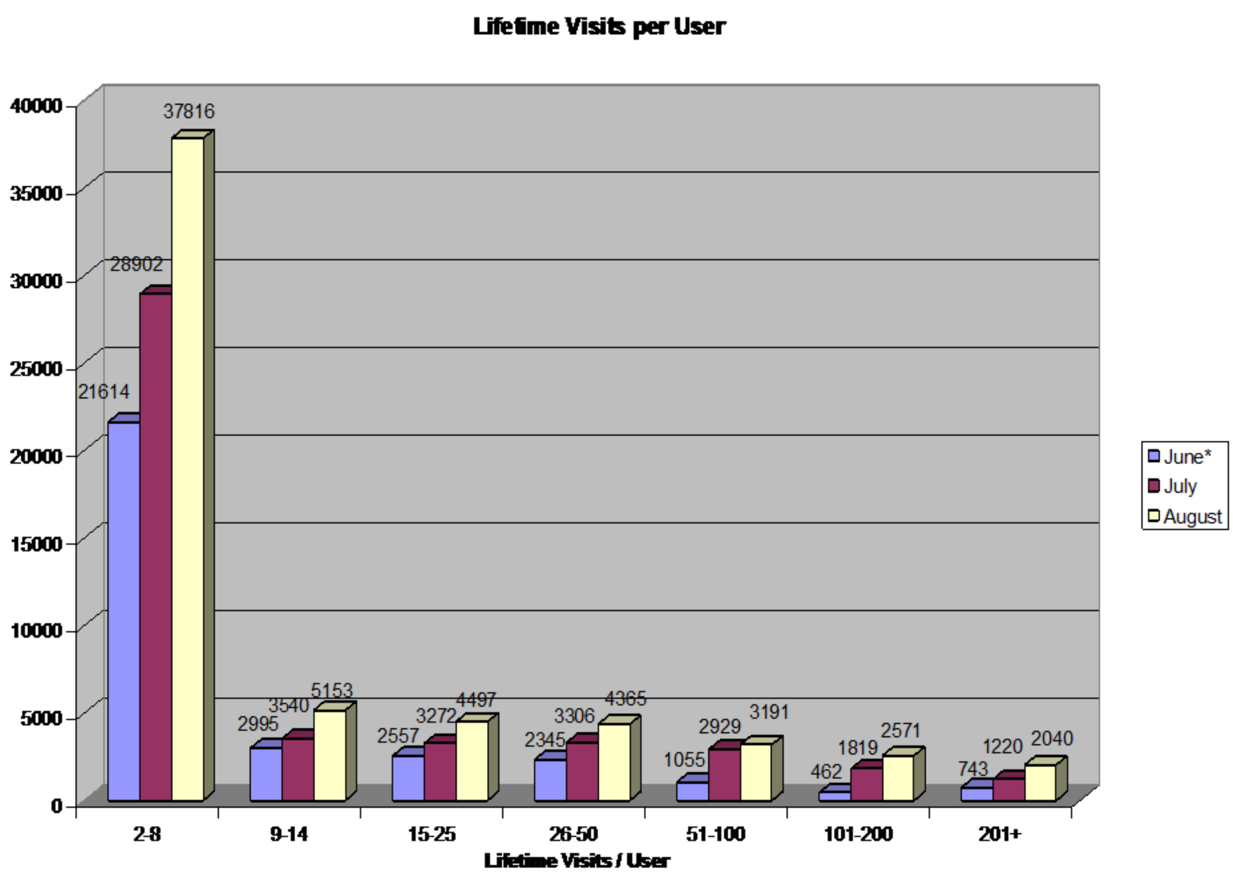
Strangers – anyone can use the site to learn about a specific merchant (e.g., is Oxenrose a good place to get my hair styled and what is the phone number) or discover a certain type of merchant (e.g., what are some good French restaurants in Soho?)

Members – members can customize the site (a la MyYahoo) to store their preferences, write their own reviews, and bookmark merchants and reviews of interest. (For example, visit my yelp profile at http://jeremyl.yelp.com) Users can also build a network of friends within the site to get "trusted" advice/reviews from people they know.

Since the current version of the site was launched in April, it has become apparent that a small segment of Yelp users (generally females aged 25-35) are rabid, viral users who invite dozens or even hundreds of friends to the service and write lots of reviews (Malcolm Gladwell "connectors"). These rabid users are responsible for the community feeling of the site and have driven part of Yelp's zero-cost growth. In addition, the Yelp tech team designed the site to leverage search engine optimization, and so Google searches for many top Yelp merchants (e.g., Oxenrose) return Yelp at or near the top of the result set despite the fact that Yelp's overall traffic numbers still pale in comparison to most large Internet sites.

A chart of Yelp's monthly visit count is below. The original service (pre April re-launch) required users to ask their friends about local attractions, and the growth did not accelerate until the current site went live in April. (Note that even with the little bit of marketing they recently initiated, the entire company cash burn is under $45k per month).

It is still early, but it also appears that Yelp's user base is quite loyal. The graph below shows an increasing number of consumers are frequenting the site more often each month.



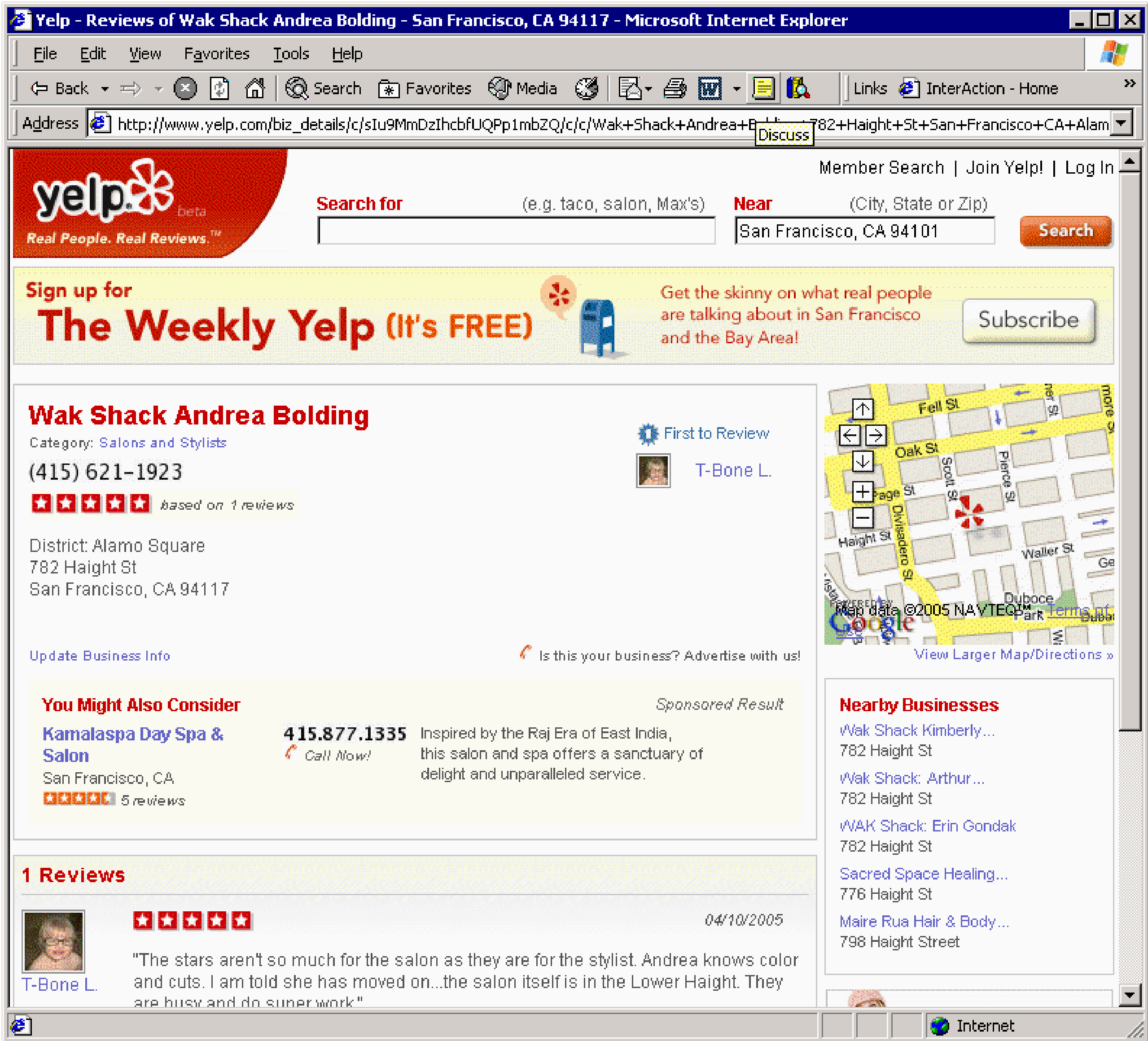
Business Model

Like most Web 2.0 businesses, all content on Yelp is free – in every sense. Consumers graciously generate the content at no cost to Yelp and then access it all for free. So how does Yelp make money?

Because doctors, restaurants, salons and the like generally don't have web-enabled appointment or reservation systems, business is still conducted over the phone. Yelp is an early pioneer of the pay-per-call advertising model emerging online for these local merchants. A merchant wishing to advertise on Yelp agrees to pay for every call it receives from consumers who find it on Yelp. The per-call fees currently range from $5 (typical low-end restaurant) to $30 (typical dentist or salon thinking about customer lifetime value). To track the calls, Yelp replaces an advertising merchant's phone number with a unique Yelp-controlled local phone number. Calls to the number get switched through Yelp to the local merchant (with a short message from Yelp).

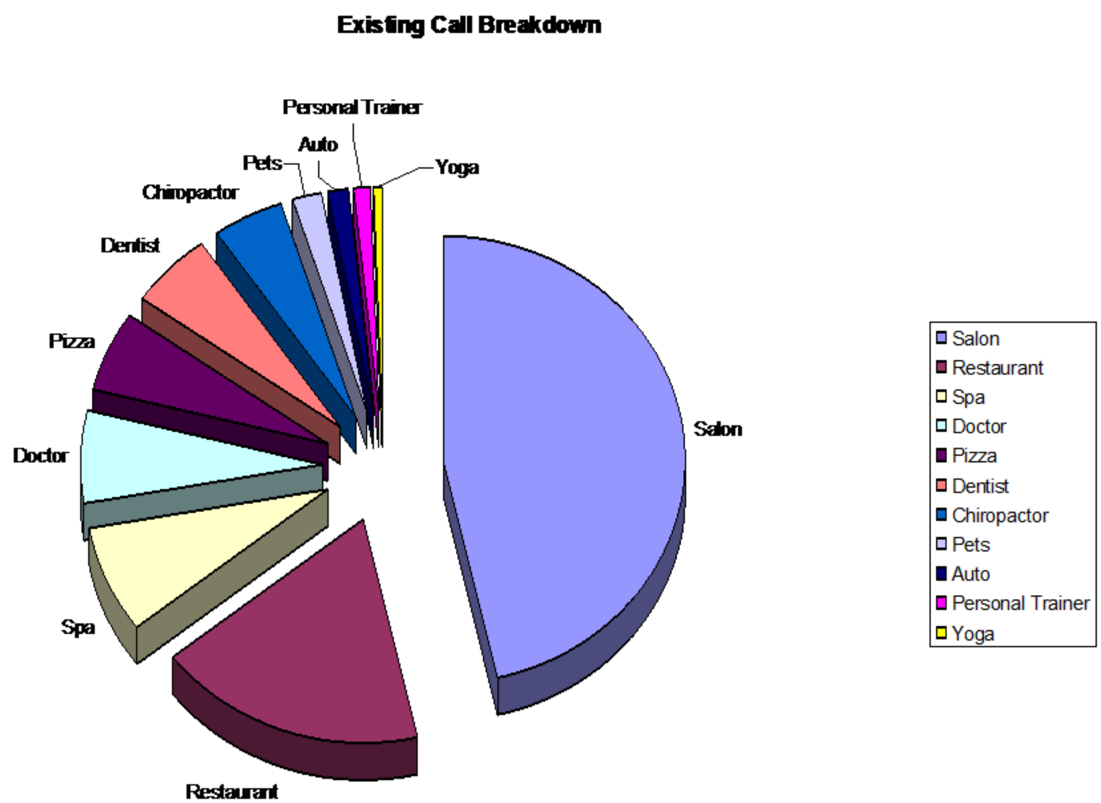
Potential advertisers currently have two reasons to participate in Yelp's pay-per-call program. The first reason is "**the carrot**," which is to get priority placement on the site. For example, if a consumer is searching for a salon in San Francisco, the salons participating in Yelp's pay-per-call program appear at the top of the result set. Eventually, the result set itself will be ordered according to the amount each merchant is willing to pay per call, but neither the volume nor the auction system required for such a feature is in place yet.

The second reason, which is driving a lot of the early sales, is "**the stick**." Yelp places competitor links on the pages of merchants that are not participating in Yelp's pay-per-call program. In the example below, note the "You Might Also Consider" section just below Wak Shack's location information and just above its review:



Since launching the pay-per-call program in the San Francisco market less than 2 months ago, Yelp has generated revenues from about 1,000 calls and is on a run-rate of 20-30 calls per day. It has done a small amount of outbound calling to sign up about 2/3 of its advertisers (average cost to acquire of about $38), and the remaining 1/3 have signed up after calling Yelp to inquire about how to remove the You Might Also Consider listing(s) from their Yelp page.

Although the call volume is still quite low, one promising element of the pay-per-call program is that it appears to work effectively across many different types of merchants. While salons account for almost half the calls (probably because of the demographics of Yelp's early user base), Yelp has demonstrated that restaurants, doctors, dentists and auto repair shops are all willing to advertise with pay-per-call.



Coming Soon

Yelp has a never-ending list of new consumer and advertiser features in the works, and one of the uses of capital is to triple the current team of two developers to accelerate progress. Among the more promising new capabilities are:

Endeca-like guided navigation to help consumers discover new merchants using Google maps. The idea is to let the user drill into and out of categories and geographies. This is already in private alpha testing and looks very impressive.

Content and pay-per-call network syndication. Many local newspaper sites are incapable of building Yelp-like community functionality on their own and so are discussing potential partnerships with Yelp to cobrand the content. This is akin to Google's early deals with Yahoo and AOL. We set up initial conversations for Yelp at Boston.com and the New York Times. In addition to driving more user volume to Yelp, links from these "trusted sources" will also improve Yelp's pagerank and move it higher up in Google's search results, further accelerating the virtuous cycle to generate free traffic.

Self-service pay-per-call signups (and auctions) for advertising merchants

Competition

Because the potential market opportunity is so large, competition in this sector is intense. It falls into four categories:

Direct competitors – these are other startups with products very similar to Yelp. The two leaders are **Insiderpages** and **Judysbook**. Insiderpages is an IdeaLab/Sequoia company (~$10M raised), and Judysbook is an Ignition Partners company ($2.5M raised). Though both companies have spent considerably more than Yelp, neither generates more traffic. Yelp's site is more impressive, but more importantly, the quality of Yelp's reviews is higher. Yelp has been able to leverage word-of-mouth marketing to attract users and maintain a strong Craigslist-style "community." Insiderpages and Judysbook have both stooped to cheap marketing tactics (e.g., write 10 reviews and get a $10 gas or coffee coupon). As a result, both sites have a lot of useless reviews, which are rarely found on Yelp.

Search engines – Google and Yahoo are both trying to tackle local search. **Google** has a Froogle-style offering which aggregates content from other sites but doesn't offer any content itself. It also lacks the community element found at all three startups in the space. It monetizes Google Local by charging other sites (like Insiderpages) to put links to their reviews near the top of Google's meta review pages. Yelp has declined to participate in this program (it's expensive), but may need to reconsider in an effort to maintain market share. **Yahoo** has a stronger offering than Google and is the company Yelp worries about the most. Its interface and functionality are not as compelling as Yelp's, and it lacks the community/network element, but Yahoo has more user generated content and is able to leverage its search engine traffic. However, local.yahoo.com still accounts for less than 1% of Yahoo's traffic.

Offline yellow pages – **Superpages.com** (Verizon), **Yellowpages.com** (SBC+Bell South) and **Zip2** (Infospace) are examples of companies who have taken offline Yellowpages content and put it on the web. The consumer experience of these sites is awful as they have simply "cut and pasted" yellow pages directory databases (merchant name, category, address and phone number) and put them on the web.

Citysearch – **Citysearch** is the leader in local search products today. Most of its content is editorial (composed by employees as opposed to generated by consumers), though it has started to collect consumer reviews as well. Because historically it charged advertisers for listings, it is impossible to find a merchant rated lower than 7 out of 10 by Citysearch's editorial staff (no poorly rated merchant wanted to advertise), and most merchants are 8 or higher. However, Citysearch is still the 250th most visited site on the web according to Alexa.

Management

The more I interact with Jeremy and Russ, the more I like them as early stage entrepreneurs. Their references are consistently excellent, and several members of the senior team from PayPal (Peter Thiel, CEO; Max Levchin, CTO; Keith Rabois, EVP Biz Dev) demonstrated their views through angel investments in Yelp. However, it is important to acknowledge that they are very young (~27 years old), and key challenges will be recruiting experienced sales and business development-oriented managers to the team and adding general management support as the number of people at the company grows.

CEO – Jeremy Stoppleman – Jeremy studied computer science at the University of Illinois and then was recruited as a developer at X.com. He continued at Paypal after its 50/50 merger with X.com and remained the VP of Engineering through eBay's acquisition by PayPal. He went to Harvard Business School for one year and then left the MBA program in the summer of 2004 to start Yelp as part of Max Levchin's incubator.

CTO – Russ Simmons – Russ was also a University of Illinois cs student recruited as the first non-founder to Paypal. He became Chief Architect under Jeremy and Max at Paypal. He left Paypal to co-found Yelp last year.

There is a lot of team building required here, but with their product and technology strength, Jeremy and Russ form a strong foundation. Max Levchin and Keith Rabois (another former Paypal EVP and current LinkedIn executive) are currently on the Board.

Deal

I wish this deal would be cheaper, but the Yelp founders anchored their expectations around the recent Sequoia investment in Insiderpages (Mike Moritz led an $8M Series B at ~$12M pre this past summer). Given the likely level of VC interest in Yelp and the fact that its product is better than the Insiderpages site, I believe a $13M pre-money price inclusive of a 20% post-money option pool represents an attractive set of terms. We will own 27.8% of the company for our $5M investment.

Risks

Monetization. The early progress of Yelp's pay per call program is promising, but this is an unproven business model. For the model to work, tens of thousands of local merchants must be willing to pay for customers on a per-call basis.

Consumer adoption. Yelp is currently delivering about a million page views per month but needs to grow 100x to 1,000x to become a truly significant player.

Competition. A lot of well-capitalized competitors are focused on the local search problem, and Yelp could find itself in a spending war as sites fight for market share. While Yelp is already at critical mass with a self-sustaining community in San Francisco, market share battles could seriously hinder Yelp's ability to establish thriving communities in other markets, which are critical to Yelp's growth plans.

Team. Jeremy (CEO) and Russ (CTO) are talented early stage entrepreneurs with the right mix of consumer product vision and technical execution capabilities. They are relatively inexperienced business managers, however, and so sales, business development and marketing talent needs to be added to this team.

Scenario Analysis

Scenario Description	Probability	Enterprise exit value	to BVP	Multiple	Value
Consumer adoption stagnates; business fails	25.0%	$0	$0.0	0.0x	$0.00
Builds strong communities in a few important cities; gets acquired by larger local portal	38.0%	$20	$5.6	0.8x	$2.11
Business scales to a dozen cities across the US and pay-per-call model works well. Achieves $30M revenues with 33% operating margins. Acquired.	22.0%	$80	$22.2	3.1x	$4.89
Yelp becomes one of two or three leading US local search companies and is acquired by web search major portal	12.0%	$200	$55.6	7.7x	$6.67
Yelp expands internationally and becomes standalone public company focused on local search	3.0%	$500	$139.0	19.2x	$4.17
check	100.0%				

Expected Value to BVP		$17.85
Expected Multiple		2.5x
	years	irr
Implied 3 yr IRR	3	35.2%
Implied 4 yr IRR	4	25.4%
Implied 5 yr IRR	5	19.8%

(IRRs calculated as if future financing closes immediately)

Conclusion

Yelp is a high-risk early stage consumer investment opportunity targeting a very large market. Though it would be preferable to invest after the business model risk is fully mitigated, I believe there are sufficiently promising signs of success here to justify an early stage investment. The winner of local Internet search will be an extremely large and valuable business. Therefore, I am recommending this early stage investment and look forward to the group's feedback.

LinkedIn

To: BVP Group
From: Jeremy Levine
Date: December 11, 2006
Re: Investment Recommendation: LinkedIn

Summary

LinkedIn's business networking Internet site is a frequent pit stop for many of us at BVP, and we have been tracking the company's progress for many months now. More than 8 million white collar professionals have registered on the site since its launch in 2003, and the pace of growth has increased substantially driven by the network effects inherent in the model. On just over $10 million of invested capital, the company has reached breakeven on about $1.5 million of monthly revenues. We have an opportunity to lead a Series C round in which BVP would invest $12.5 million to purchase 5% of the fully diluted equity ($237.5 million pre-money valuation) inclusive of a new 10% unallocated option pool. While this is a fully-priced deal, I believe its risk/reward attributes are quite attractive. The potential upside associated with becoming the global namespace for business people coupled with limited downside given the nearly profitable existing business model and minimal invested capital make this a compelling opportunity.

Core Product

LinkedIn's core product offering is free. Anyone can sign up online and enter his business profile, which is effectively one's resume. Users are then encouraged to invite their business contacts to the network. Much like most social networking sites, LinkedIn derives all of its new user sign ups through referrals from its members. As a result, growth of the user base increases with its size:

```
Millionth user:     477 days after launch
2 millionth:        181 days later
3 millionth:        129 days later
4 millionth:        130 days later
5 millionth:        114 days later
6 millionth:        102 days later
7 millionth:        93 days later
8 millionth:        77 days later (on Nov 29, 2006)
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LinkedIn is far and away the most popular business networking site on the Internet and could be described as Facebook or MySpace for business users. The primary difference between LinkedIn and other social networks is its focus on business people, and so the site is currently devoid of photos and other personalization elements that typically blanket social networks. A second important difference is that few users truly "live on the site" the way college students live on Facebook or teenagers live on MySpace.

For many users, LinkedIn is primarily an online resume. There are a few segments of users, however, which are, in fact, starting to "live" on the site. The primary group is executive recruiters. Because of the breadth and quality of LinkedIn's member base, recruiters are using it to identify, contact and check references on passive job seekers – i.e., individuals who are happily employed but potentially willing to entertain a new career opportunity. Secondary groups of heavy users include sales people (who use LinkedIn to find contacts at companies they are targeting for a sale) and those in networking-oriented professions like business development or venture capital.

As of last week, 58% of LinkedIn's 8.15M users had been on the site within the last 6 months. When excluding users who signed up within the last 6 months, 42% of LinkedIn's 6M users who are at least 6 months old have been on the site within the last 6 months. Clearly, there is room for improvement with regard to site usage. Most of the repeat visitors fall into the categories described above.

Although the mainstream business professional does not yet have a compelling reason to spend time on LinkedIn daily, a big focus of the company is to add features to motivate broader regular usage. Recent new feature examples include finding and endorsing service providers such as lawyers and accountants, re-connecting with former colleagues and classmates, and searching among available job postings. While none of these features has driven a step-function increase in usage, each has contributed to improvements. The fundamental idea underlying LinkedIn's strategy is to continue adding more functionality until there are several useful features for virtually every white collar professional.

Market and Paying Customers

LinkedIn generates revenues in a few large existing markets. The following is an overview of LinkedIn's 2006 (almost actual) and projected 2007 revenue breakdown, and below is a brief description of each product and market.

	projected FY 2007	estimates FY 2006	% Change
Advertising	4,313,724	2,083,826	107%
Jobs (site)	5,510,646	2,153,992	156%
Corporate Sales (phone)	5,387,582	1,389,633	288%
InMails (site)	105,582	145,540	-27%
Subscriptions (site)	11,026,646	5,346,927	106%
Data Licensing (other)	-	700,753	-100%
	26,344,180	11,820,671	123%

Advertising *($2.1M, 18% 0f 06 revenues)* – According to Alexa, LinkedIn is the ~150th most popular site on the Internet. More important to advertisers, the site skews toward affluent professionals, which comprise an attractive demographic. Through a traditional ad sales force, the company has signed deals with about 25 advertisers including the likes of E*Trade, Microsoft, Vonage, Jeep, and VmWare. The ad deals tend to last 2 to 4 months and cover about $20,000 of inventory. The most notable deal is an $800,000 deal with Google to place a video ad on all user profile pages. In addition to the ads it sells directly, LinkedIn also monetizes pages with third party, self-service ad networks like Google AdSense and AdBrite.

Jobs on the site *($2.1M, 18% of 06 revenues)* – Any LinkedIn member can post a job listing on the site for promotion to the user base at a cost of $100 to $150 per job (depending on posting volume). This revenue stream is particularly attractive because it's entirely a self-serve process, and therefore the associated gross profit falls straight to the bottom line.

Corporate sales *($1.4M, 12% of 06 revenues)* – The internal telesales team sells packages of job listings and subscription accounts (see below) to companies such as Expedia, Google, Dell and Lockheed Martin. These are annual deals ranging from $10,000 to $150,000 each. The telesales effort is brand new but growing quite quickly, and the sales reps I spoke with were ecstatic with the ease of the sale driven by the strength of LinkedIn's brand, particularly in the technology industry, where recruiters are clamoring for better ways to recruit engineers.

With regard to market size, the jobs and corporate sales products fit into the $2 billion annual online jobs market currently led by Monster (50% share) with Yahoo Hotjobs and Career Builder filling in the top three. There are dozens of smaller private companies experimenting with the online jobs model, so this is a dynamic market. The market is also influenced heavily by macro economic conditions, though given LinkedIn's tiny current share, it will likely grow through any near-term recession.

InMails *($0.1M, 1% of 06 revenues)* – Any member can buy an a la carte package of InMails which enable a user to send an email to another LinkedIn member with whom he is not connected. InMails cost $10 each. This product makes economic sense to only a few users because most prefer the subscription packages described below.

Subscriptions *($5.4M, 45.8% of revenues)* – Members can buy monthly subscription packages to access three premium features on the site:

> Intros – these let you find a network path of more than one step to someone you want to contact and then let you pass a message through the path to request an introduction.
>
> InMails – described above
>
> Search results – at no charge, you can search your 'extended network' which is defined as everyone within 3 degrees. At no charge, you can also see 20 search results from outside your extended network. With paid searching capabilities, you can increase the number of results you see from outside your 3-degree network. To put these numbers in context, on LinkedIn I have 165 direct connections, 34,600 second degree connections and 1,126,000 third degree connections. To access more than 20 of the remaining 7 million LinkedIn members, I would need to pay for additional search results.

The subscriptions come in three flavors:

> Business level = $19.95/month for 15 Intros, 3 InMails, and 100 search results
>
> Business + level = $50/month for 25 Intros, 10 InMails, and 150 search results
>
> Pro level = $200/month for 40 Intros, 50 InMails, and 200 search results

Subscriptions can be purchased monthly or annually. The company was selling about $50k of subscriptions per week in January and sales grew steadily to about $200k during the last week of November. As with jobs sold on the site, there are no incremental costs associated with each dollar of subscription revenues, which makes for a very attractive business model.

Though there is no well defined existing market relevant to subscriptions, there are a few large target customer segments: headhunters are the most important and faithful customers, job seekers tend to subscribe for a period of time (until they find a job), and business development professionals often represent low-end, but steady customers.

Data licensing *($0.7M, 6% of revenues)* – This year, LinkedIn sold aggregate data to a hedge fund attempting to identify attractive short opportunities. The idea was to monitor when a sudden influx of employees from a public company signed up at LinkedIn or updated profiles. This influx was thought to represent brewing fear about layoffs or negative events at a company. The initial mock trading results looked quite promising, but after three quarters of less favorable results, the company no longer believes this is likely to be a viable offering. Nonetheless, it is a useful demonstration of the team's creativity and of the potential option value in the business.

Future products

In addition to the existing revenue sources, the company has a broad range of future opportunities to tap. The following are examples:

- A tailored InMail or Intro product for sales people to generate warm leads (i.e., compete with D&B or Hoovers)
- The ability to promote one's services or capabilities within the LinkedIn network for professional service providers like lawyers, accountants, web designers, etc.
- Functionality similar to Yahoo Answers to help professionals ask questions of people within or beyond their extended network

Intellectual Property

There are dozens of social networks on the internet, and they may all be infringing on a 1996 "six degrees" patent. When Reid Hoffman started thinking about launching LinkedIn, he and Mark Pincus did enough IP research to uncover this broad social networking patent and purchased it for about $500,000. Today, Reid personally owns half the company that holds the patent, and Tribe, Mark Pincus' startup, owns the other half. LinkedIn has a perpetual royalty-free license to the patent and an option to buy Reid's interest in the holding company at cost.

With LinkedIn (or, more likely, an affiliated holding company) owning the patent, there may be some offensive upside given the popularity and profitability of potential infringers like MySpace and Facebook, but I do not consider this a core element to our investment rationale.

Competition

The only true competitor is ***Xing*** (formerly known as ***Open Business Club***). Xing dominates the German and Austrian markets but has little traction elsewhere despite joint ventures in China and India. Xing announced 1.5 million members at the end of September, which means LinkedIn has more members in Europe than Xing has globally despite the fact that LinkedIn is available only in English while Xing operates in 16 languages. In fact, only half of LinkedIn's eight million members are based in the US.

Nonetheless, Xing is a serious competitor and recently raised 35 million euros through an IPO in Germany. Existing shareholders and management also sold just under 30 million euros of stock in the offering. Xing's market cap is now 167 million euros ($225 million), and the stock has traded up about 8% since the IPO 10 days ago.

It's also important to note that Xing offers a slightly different business model from LinkedIn. On Xing, free functionality is extremely limited, and the site is geared to compel users to sign up for the 6 euros per month premium access to get any real benefits. About 13% of its members are paying, and so its monthly revenue run-rate is about equal to LinkedIn's at just under $1.5M. Xing posted 2.8 million euros of revenues for the quarter ended September.

Beyond Xing, the only other comparable business of note is ***Viaduc***, which is a French language copycat. The company has 650,000 members in France and operates at breakeven with 40 employees. It raised 5 million euros in June from two French VC investors. By comparison, LinkedIn's member base includes 287,000 users in France.

In the recruiting / job posting segment, competitors include ***Zoominfo*** (Venrock-backed), ***Jobster*** (Ignition-backed) and ***Doostang*** (not yet backed)

In the sales lead segment, the leading competitor is ***Hoovers***. Hoovers announced a joint venture with Visible Path to create a LinkedIn copycat called Hoovers Connect, but it has not yet launched.

Management

Reid Hoffman – Founder/CEO

Reid is a brilliant strategist and product visionary. He's not a strong, detail-oriented manager. He is self-aware and amenable to bringing on a CEO, and a search process is currently underway. The initial set of candidates is quite attractive, though of course this type of change poses risk for the business. Before LinkedIn, Reid was a senior executive at Paypal. He spent his early career in product roles at Apple and Fujitsu. He is currently involved with about half a dozen startups as an active angel investor including our portfolio company Wikia. He is a Stanford grad with a masters from Oxford.

Sarah Imbach – Chief of Staff

Sarah is a talented nuts and bolts general manager. At Paypal, she ran Customer Service and Fraud, by far its largest division as measured by headcount. She seems like a strong general manager and everyone effectively reports to her at LinkedIn. She spent her early career in project management roles for large non-profit healthcare companies. She is a Penn/Wharton grad.

Keith Rabois – VP Business Development

Keith is a strong business development executive and spends a lot of time on product as well. He played a similar role at Paypal. He is a Harvard Law graduate and has a B.S. from Stanford.

Jean-Luc Vailant – VP Engineering, co-founder

On the management team, Jean-Luc is thought of as a perfectionist, which means the product back end is solid, but feature development and the pace of hiring are not as rapid as they could be. He has done an adequate job by all measures, and given that he has been in the role since day one of the company, there is a lot of important technical information about the service in his head.

There are capable director-level employees running sales and product (both reporting to Sarah) who are also talented but relatively inexperienced. One of the most important challenges in 2007 will be filling out the team.

Board

The current board consists of Mark Kvamme (Sequoia), David Sze (Greylock) and Reid. Bessemer will have typical observation rights, and the company will add one or two independent outside directors as interesting candidates emerge.

Financials

Below are the complete 2006 financials based on estimates from late November. The company is on a $17M run-rate ($1.4M per month) and operates at about breakeven. The 2007 projection is very preliminary, and there is some current debate about how aggressively to add staff next year. Reid's initial proposal is to be very aggressive and focus a lot of resources on product improvement by operating at break-even on $26M of revenues.

	2005 actual	2006 current forcast	2006 original plan	yr/yr change	plan variance	2006 current forcast	2007 prelim plan(1)	yr/yr change
Revenues								
Corp. Sales (telesales)	115	1,390	999	1109%	39%	1,390	5,388	288%
Subscriptions & Inmails (online)	716	5,492	4,364	667%	26%	5,492	11,131	103%
Jobs (online)	443	2,154	1,919	386%	12%	2,154	5,511	156%
Advertising (online and direct)	175	2,084	3,220	1091%	-35%	2,084	4,314	107%
Other	181	848	116	369%	631%	848	0	-100%
Total Revenues	**1,630**	**11,968**	**10,618**	634%	13%	**11,968**	**26,344**	120%
Operating Expenses								
Employee	4,779	7,474	7,339	56%	2%	7,474		
Operations	1,000	2,277	1,280	128%	78%	2,277		
Technology	775	1,567	570	102%	175%	1,567		
Total Operating Expenses	**6,554**	**11,318**	**9,189**	73%	23%	**11,318**	**25,000**	121%
Operating Income	**(4,924)**	**650**	**1,429**	n/a	-55%	**650**	**1,344**	n/a
Capital Expenditures (cash)	670	1012	780	51%	30%	1012	1000	-1%
Cashflow	**(5,594)**	**(362)**	**649**	n/a	-156%	**(362)**	**344**	n/a
Headcount	43	70	70	63%	0%	70	145	107%

(1) Topline projection for 2007 is the preliminary budget, but expense side still under review. The company could be quite profitable in 2007, but tentative plan is to grow the technology team and continue investing heavily in product.

Deal

At $237.5M pre, it feels fully-priced. We will be the only Series C investor as the existing investors are refusing to participate, so for $12.5 million we will own 5% of the fully diluted equity including a new 10% unallocated option pool. I expect the entire pool will get issued over the next couple of years to recruit a CEO a few new VPs.

Although other investors also own a healthy chunk of the company, we have sufficient voting provisions and downside protections to be confident in at least getting our capital back in all but the rarest of disaster scenarios given that the company is already breakeven and there will be less than $30 million of preferences on the balance sheet. For example, in any IPO, we have the right to sell enough shares to get all of our capital back at the greater of cost or the IPO price. The upside-related provisions are clean and simple (i.e., no participation).

Risks

Most of the typical early stage risks have been mitigated as the company is already nearing cash flow profitability, but here are the important things to worry about:

> Team – the team is full of very talented Silicon Valley entrepreneurs, but the senior management team is still thin. As we recruit a CEO and a couple of new VPs, the goal would be to have a positive influence on the culture and dynamics of the company, but these transitions go poorly almost as often as they go well.
>
> Usage – for LinkedIn to become a very large business, repeat usage by the average white collar professional must increase substantially. Though the company has an enviably long list of features in queue, if most fall flat and fail to motivate more usage, LinkedIn may get trapped in the jobs and executive search categories, which would limit the upside of our investment to very moderate returns.
>
> Industry expansion – though there are VPs from all but one Fortune 500 company on LinkedIn, there is a heavy concentration of technology professionals on the site. (In excess of 80% of Google's entire workforce, for example, has a LinkedIn account!) To become the truly dominant business network, LinkedIn has to achieve much more significant penetration outside the technology industry especially in areas where it is presently weak such as healthcare.

Though some of the key risks could lead to potential disaster scenarios, most relate to tapping upside potential, which drives my thinking in the scenario analysis in the next section.

Scenario Analysis

Given the deal pricing, the expected multiple is lower than what we see in many of the investments we evaluate. The limited downside risk helps to compensate by constraining the volatility. Therefore, on a risk adjusted basis it feels compelling. Put another way, I estimate the chance of capital loss is less than 1%, but the chance of at least a 2x gain is 35%. Here's the full outcomes table:

Exit Value	Scenario Description	to BVP	BVP Multiple	Probability	Value	Timing	IRR
$0M	Complete disaster. Everything falls apart. Fold up shop and go home.	$0.0	0.0x	0.5%	$0.0	2 yrs.	-100.0%
$30M	A dominating competitor emerges; LinkedIn stalls. Small strategic sale.	$12.5	1.0x	5.0%	$0.6	2 yrs.	0.0%
$75M	Falls short projections, growth stalls and usage slips. Sale to competitor or business publisher.	$12.5	1.0x	10.0%	$1.3	2 yrs.	0.0%
$150M	Strong 07 ($25M+ revenues with small profits), but growth slows to 30% range thereafter for a few years. Reaches $30-40M revenues with $10M profits but prospects of big win dissipate. Sold for 15x ebit.	$12.5	1.0x	25.0%	$3.1	2 yrs.	0.0%
$300M	Reaches $50M revenues with $20M profits by 2009. Sale in late 09 at 15x ebit.	$15.0	1.2x	25.0%	$3.8	3 yrs.	6.3%
$500M	Beats plan for 100% growth in 07-09 to reach $100M revenues in 2009 with $30M of ebit. Trade sale.	$25.0	2.0x	15.0%	$3.8	3 yrs.	26.0%
$750M	End of 2009 IPO based on 2010 projections of $150M revenues with $50M ebit (15x forward ebit).	$37.5	3.0x	13.5%	$5.1	3 yrs.	44.2%
$1250M	Becomes dominant business directory in US with leading recruiting and information network service. Major strategic acquisition.	$62.5	5.0x	5.0%	$3.1	4 yrs.	49.5%
$2100M	Becomes dominant business social network in US, most of Europe and many Asian markets. Reaches $300M of revenues with 30% profitability and goes public at 7x revenues at the end of 2011.	$105.0	8.4x	1.0%	$1.1	5 yrs.	53.1%

check 100.0%

Weighted average duration	2.7 yrs.
Weighted average IRR:	23%
Expected Value to BVP:	$21.7
Expected Multiple:	1.7x

Conclusion

LinkedIn is one of few consumer internet companies with the momentum and market potential to be a billion-dollar business. Though I'd certainly prefer to recommend this deal at a lower price, given the relatively attractive risk/reward profile of the opportunity available to BVP, I strongly support the investment.

Bessemer Venture Partners

The Memos

LifeLock

To: BVP Group
From: David Cowan, James Cham and Brian Neider
Date: September 25, 2006
Re: Life Lock, Inc.

We recommend that BVP invest $4.5m to lead the Series A round in LifeLock, an Arizona-based identity theft protection company. We have considered investments in this market for the last year as part of a consumer security roadmap. We believe that the company's marketing-led strategy and early lead in consumer adoption will establish Lifelock as the industry leader.

We signed a term sheet with the company last week to invest $4.5m at a $17.85m pre-money valuation but we received 35% warrant coverage (pushing the EEV down to $13.8m), a fat option pool, and no cap on participation. In addition, the company expects to raise another $2m shortly after we close our deal at twice our effective price with junior preferences. This should both fund the advertising budget and comfort strategic partners inquiring about the balance sheet. And if the company doesn't raise such a 2X junior round within 6 months, BVP will have the unilateral option to expand our investment by $1.5m (on our original terms).

When we introduced this company to BVP last month, we highlighted serious concerns with regulatory agencies and with the company's founder, Robert Maynard. Since then, we have had positive signs regarding potential regulatory issues and we believe we understand Maynard well enough to recommend this investment.

Identity Theft

Surveys suggest that the annual cost of identity theft to consumers has remained steady for the last few years, but due to California laws requiring disclosure of data breaches, recent high-profile losses of personal information have focused attention on the issue. The Federal Trade Commission receives about 700,000 complaints a year regarding identity theft and credit fraud, but according to a Better Business Bureau study, there were 9 million victims of identity theft in the US last year (down from 10 million in 2003) costing $54 billion (steady from 2003). But in the last 16 months, there has been extensive reporting on the loss of 4 million Citibank customers' information, the exposure of 40 million credit card accounts, and the theft of personal information for 26 million veterans from a computer a contractor left at home. (In fact, that recent theft of veterans' information drove 30% of Life Lock's new customers last month.)

In the current regulatory climate, consumers have three means of defense against credit application fraud.

In some states, consumers can request a credit freeze that prevents a Credit Rating Agency (CRA) from sharing your information with creditors even if they have your name and social security number. But then in order to apply for credit, you'd need to manually unfreeze your account information with a CRA. This service is not available in all states, it is cumbersome to suspend when you do wish to share your credit profile, and the current draft of new federal credit legislation will restrict credit freezes to documented victims of identity theft.

Thanks to the Fair and Accurate Credit Transaction Act of 2003 (FACTA), consumers can also demand credit fraud alerts by contacting a CRA in writing or over the phone, without charge. When a fraud alert is activated for a consumer, creditors are told that they must contact the consumer by telephone before extending credit, at the peril of being penalized with heavy federal fines. The fraud alert also entitles the consumer to a free credit report and, at the consumer's option, bans pre-approved credit offers. But CRAs and creditors dislike fraud alerts. The CRAs convinced legislators that the fraud alerts need to be renewed every 90 days, and they have not made activation of fraud alerts across different CRAs a reliable process. Because it has not become a widespread practice, some creditors are unsure what a fraud alert actually means. In practice, about 80% of creditors confirm a consumer's identity before extending credit.

Credit monitoring and fraud resolution products are currently sold to mitigate damages from identity theft. But these fail to prevent fraud—they only help you deal with it after it has occurred.

Life Lock Approach

Life Lock's product features manage fraud alerts for the consumer by handling interactions with the CRAs every 90 days. They also take the consumer off of most junk mailing lists. In addition, they provide telephone customer support if the consumer needs help explaining credit fraud alerts to confused creditors.

The CEO Todd Davis gives good interview, and he has been very effective at generating PR for the service. Provocatively, he is always quick to share his social security number on the air, drilling home the concept that our credentials are already public information. But with Life Lock, goes the pitch, thieves may know your SSN but they can't do anything with the information.

Cleverly, Life Lock's message to consumers doesn't dwell on the mechanics of the fraud alert, but instead conveys confidence that Life Lock can protect consumers from identity theft. Specifically, if a client becomes a victim of identity theft, Life Lock guarantees it will spend up to $1 million to fix the problem. To back up its claim, Life Lock has bought $500,000 of insurance coverage from Lloyd's of London.

*Sales and Marketing**

Life Lock has spent the last year experimenting with many different forms of advertising. We believe that their emphasis on communicating a clear value proposition is an important part of their success.

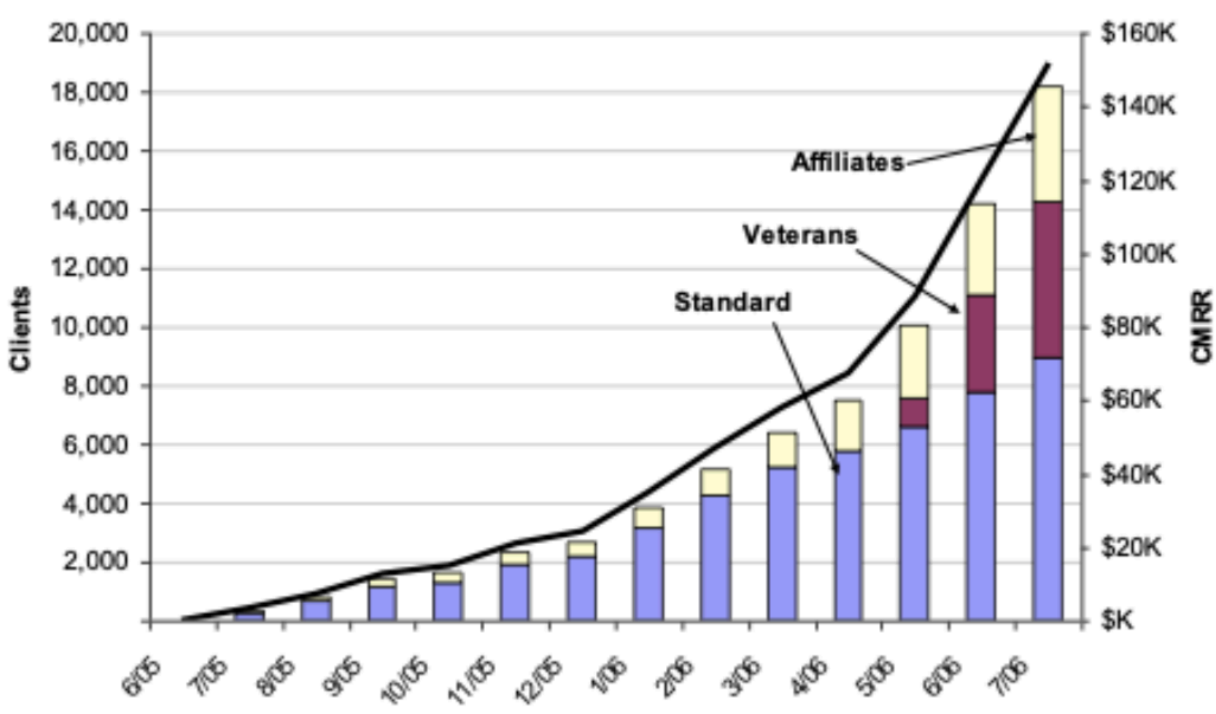
To drive prospects to their website and call center, Life Lock initially focused on PR with local television, radio and print—Davis has completed over 150 media appearances. Life Lock has a PR person on staff to find new venues, which continues to drive most new traffic. As these appearances are basically free, this has been their most cost effective means of reaching customers.

The company has also experimented with radio advertising and plans a push before Christmas. They tried a number of smaller radio celebrities before finding some success with the conservative talk show host Sean Hannity. Life Lock would advertise with Hannity in three cities for a few months before moving on to another set of cities. While effective, these radio ads are not cheap and have average cost per order of $60. But Life Lock believes that these radio ads offer important brand promotion in addition to straightforward customer acquisition. In the next month, Life Lock plans to expand its radio advertising and move from Hannity to the more prominent Rush Limbaugh. The deal is expensive--$1.2m for 6 months worth of endorsements but Life Lock's research into Limbaugh's relative effectiveness over Hannity suggest it will be worthwhile.

More serendipitously, Life Lock bought editorial space on military.com after it was announced that potentially 26m veterans' identities were exposed. That has yielded the same number of customers but at an average CPO of $10. Life Lock plans to continue testing a mix of broad media advertisements along with contributions to targeted communities. They will stop in October and then ramp up their advertising in January 2007.

Once the prospect calls or visits the web site, Life Lock has remarkable conversion ratios—12% on the web site, and 75% of people who call 1-877-LIFELOCK. While this is remarkable, TrustedID claimed a similarly high web conversion rate of 7%. It is too early to make too much of their other numbers, but churn is around 1%. Life Lock charges $10 per month for each adult in a subscribing household plus $10 per year for each minor, with a 10% discount for a one year prepayment. About 80% of customers choose the annual payment and they average 1.5 adults per order.

Since their launch in June 2005, they have had consistent double digit growth month to month. Even without their significant boost as a result of the veterans' identity theft, they have double digit month-over-month growth. They expect that growth will slow in October as consumers focus on the Holidays but then plan to launch more marketing in the beginning of the new year.



Life Lock does not believe that selling direct to consumers will scale quickly enough. Instead, they want to leverage indirect channels through affiliate sales and partnerships with large institutions. Right now, 20% of their sales come from online and offline affiliates. They plan to raise that to 80% by expanding their number of affiliates. To date, about 10 affiliates have sold more than 50 customers. Recently, they signed up with Commission Junction to expand their affiliate base, and added another 400 affiliates. Life Lock lets affiliates price up to 10% less than direct rates. Affiliates get 30% of the first year's revenue and then 10% of years two and three. They have had limited success in working with online affiliates and this exposed some weaknesses in their marketing team. We believe that Chini Krishnan, who will likely join the board, will be highly valuable here.

The company is also chasing larger affiliates. They have identified 8 types of large partnerships and have about 20 deals in their pipeline. These potential partnerships range from including a Life Lock flier in a Quicken Loans letter to automatically including Life Lock in the bill of a college student at Arizona State. They had a pilot deal with Home Depot to promote Life Lock and a deal with a paper shredder company. The Home Depot deal is on hold after Citibank, a more important Home Depot partner, objected to Life Lock promotion because they saw it as competitive to the fraud protection features of their credit card. They are also close to signing a promotional deal with Barclays Card. After AT&T exposed consumer data, we introduced Life Lock to their Chief Security Officer (thank you, Byron) and Life Lock is meeting with AT&T to discuss opportunities.

Even better, though, would be deals in which Life Lock was bundled with existing products with large consumer bases. They are currently working with Washington Mutual on a program to give Life Lock to up to half of its current 10 million credit card holders. This is attractive to WaMu because consumers view it as a value add and Wamu sees it as a legal way to keep competitors from offering consumers new, pre-approved credit cards. A deal like that would bring in 50X Life Lock's projected subscriber growth for 2007, but at a price of only $12 per customer per year. As the company reaches scale, they expect this to be profitable. Currently, Life Lock is set to start a pilot of the program at $40 per customer. A member of Life Lock's advisory board, Luke Helms, is a former executive at Bank of America and he plans to introduce Life Lock to Bank of America.

Technology/Operations

Life Lock has built a highly leveraged, scalable, fairly secure system that interfaces with credit rating agencies in a clever manner and with surprising capital efficiency. We initially thought it would be trivial to write interfaces with CRAs to manage fraud alerts but CRAs are uninterested in making the process easy. In 2005, CRAs made 20% of their profit from marketing consumer information to companies interested in extending credit. Fraud alerts prevent consumers from receiving pre-approved credit, thus reducing the number of consumers that CRAs can market and damaging a key revenue stream.

So Life Lock developed a scalable system to manage fraud alerts with CRAs. They built an IVR system to interface with a CRA's IVR systems. That is, an automated telephone system talks to the CRAs' automated telephone systems. Life Lock maps out each of the options that a CRA's IVR system offers and uses the length of the CRA's responses to determine status. Rather than using the internet and XML for machine to machine communications, Life Lock uses phone lines and touch tone. This allows them to use a CRA's system without the CRA's explicit consent. The interfaces are brittle and imperfect so they are constantly being tweaked, but LifeLock is usually able to achieve a 75% success rate with each CRA. Since they only need to successfully activate a credit fraud alert with one CRA (which must by law inform the others), Life Lock need manually intervene ~5% of the time. Life Lock believes that its approach is not patentable but considers it a trade secret.

Life Lock developed the IVR interface but they rely on an outside agency to run the process. In fact, their entire system is highly reliant on SaaS products. They use salesforce.com to manage partners and affiliates; RightNow to manage sensitive customer information; Prosodie to manage their IVR interface; a local service to handle secure mailings; and PayPal's PayFlow to manage payment. This architecture should allow them to scale up quickly, although it also makes them much more dependent on outside vendors.

Life Lock is upgrading their system and processes to satisfy potential large partners. While individual components may be secure, they are still a startup and sensitive customer information is not quite as secure as it should be. Consumers can't see the systems and feel comfort from the $1 million guarantee, but large partners are more sensitive to the PR implications of losing customer data. Barclays Card is planning to offer its customer Life Lock but Life Lock failed their first security audit. As a result, Life Lock is getting certified as compliant with ISO 27001—the relatively new Information Security Management System standards—and plans to move to a more secure location this October. Barclays has committed to proceed if Life Lock passes their next audit.

Currently, variable costs per adult are $12 per year (almost completely from support calls) but the company believes they can cut that in half as they reach scale.

*Team**

Life Lock has 26 employees. 15 are work at home sales and customer service representatives, and the software development team currently works remotely. Due to concerns that came up during our initial diligence process, we retained an investigation company and an ex-FTC Commissioner to give us more information. Our diligence process also raised a potentially serious issue with the company.

CEO Todd Davis was an early Dell employee and has had sales and business development roles in a number of Arizona-based technology startups. Immediately before starting Life Lock, he ran a sports marketing company. We like Davis because he is an honest, clear communicator, a natural leader, and a good salesman. He is the public face of Life Lock and acts as head of sales. He travels around the country pitching the company to consumers through TV, radio and print while also pitching the company to potential partners and affiliates. As Davis will tell you himself, he expects that at some point the company will recruit a more experienced CEO.

COO and Founder Robert Maynard is a former US Marine and a serial entrepreneur with a mixed background. Based on Maynard's disclosures about his own history and press accounts about his past, we were concerned enough to engage an investigation firm to run a background check on him.

In the early 1990's Maynard founded National Credit Foundation, a credit repair company that grew to a $30 million potential revenue run-rate in its first few months. In the mid-90's he was founder and CEO of Internet America, a Dallas-based ISP that went public in 1998. He then founded Dotsafe in 1998, a family friendly ISP, before its shutdown due to the burst of the dot com bubble in 2002.

Between the shutdown of Dotsafe in 2002 and the founding of LifeLock, Maynard was mostly incapacitated due to health problems but also started a precursor to LifeLock. He partnered with Paul Dvorscak, an Arizona entrepreneur, to found IDLock. Maynard and the IDLock team later left to start Life Lock.

References for Maynard emphasized his intelligence, energy, loyalty and occasional bad judgment. Press accounts describe Maynard bringing a gun to the office when laying off staff at NCF and friends talk about how he arrogantly blew off Mark Cuban and Sky Dayton when they approached him about merging with Internet America and his unwillingness to slow down his expansion plans for Dotsafe even in the face of a slowdown. These old friends also made vague inquiries into his health.

When we asked Maynard about this, he explained that he was unable to work steadily between 2001 and 2004 because he was bipolar and it took some time to diagnose and properly treat. He says that it is now under control with medical treatment, although he does have occasional bouts of depression. We share Maynard's view that his mental health history should not in itself disqualify him from entrepreneurship. Maynard has found a way to be productive within the limitations of his health, and we wish all entrepreneurs shared his self-awareness and growth mindset.

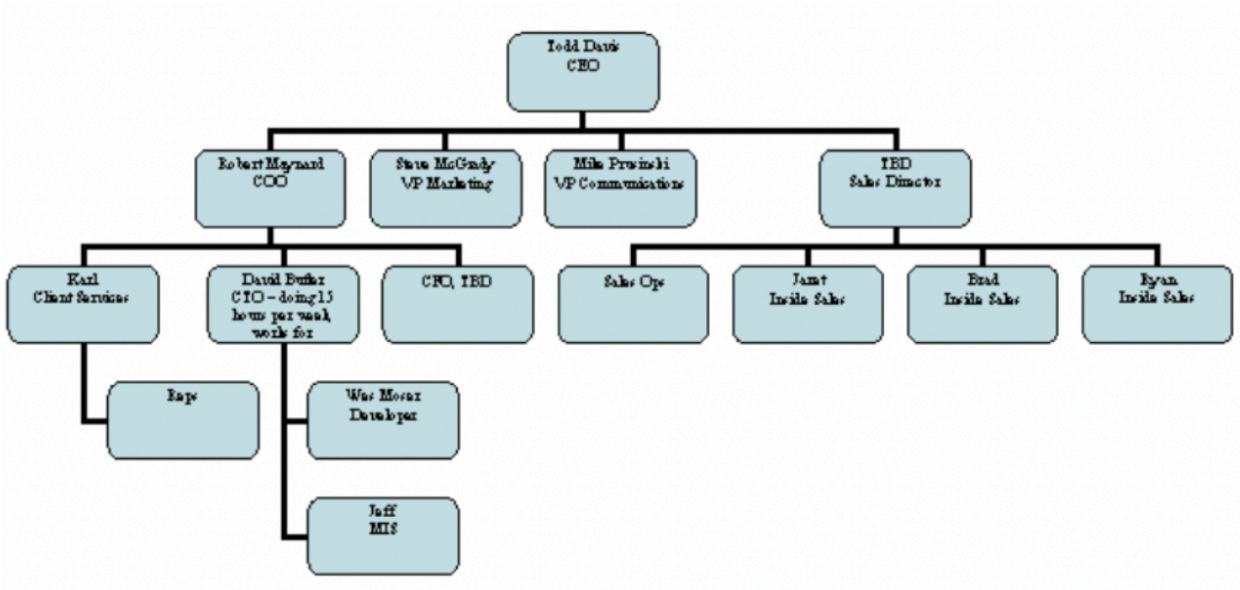
Our background check mostly corroborated the timeline and incidents that Maynard described to us. He filed for bankruptcy in 1990 and 2004. He had a number of legal disputes with past employees and, famously, filed a criminal complaint against an "Internet stalker" who then sued him for libel. In addition, the Arizona Attorney General and the FTC sanctioned him at NCF in the early 90s for making it difficult for people to cancel their service. The FTC did not fine Maynard but did prohibit him from working in the "credit improvement" industry. We were obviously concerned that Maynard's relationship with the FTC might affect LifeLock but the company should be fine as long it focuses on credit fraud prevention.

Maynard has continuously impressed us with his intellect and creativity. He clearly has the strengths and weaknesses of someone who is bipolar. He has asserted the same expectation that Davis did in terms of role flexibility, and has agreed not to serve on the board of directors.

VP Marketing Steve McGrady worked with Todd Davis in the past. He has experience in marketing and sales positions in technology and sports marketing companies.

CTO David Butler worked for Robert Maynard at Internet America and dotsafe. He is currently employed at Countrywide as an enterprise architect but he has been helping Life Lock 20 hours a week for the last few years out of loyalty to Maynard. He will soon join the company to work full time—although he will commute from Dallas as he is unable to move for personal reasons. The rather small development team is already distributed (one in Arizona and another in Indianapolis).

Although we also found Butler to be eccentric, he had the right mix of pragmatism and foresight to be a good technical architect. He is responsible for many of the clever, low-cost ways that they have built the system. He plans to add a middleware product to the system to ease the management of partner applications.



Competitors

There are many competitors that offer credit fraud protection. Credit monitoring solutions only help after an identity has been stolen and credit reports are not always updated in a timely fashion. Still, Intersections (NASDAQ: INTX) was able to go public based on this product. They sell monthly subscriptions for a credit monitoring service and had $165m in revenue last year. That was flat from the previous year and the company suffers from high churn so their market cap is $152m. We believe the churn is because they bundle their product in with new credit cards so consumers are often surprised to find it in their credit card bill.

Credit fraud resolution solutions are another alternative solution but suffer from a few business model problems. For example, Identity Theft 911 helps financial institutions resolve actual instances of identity theft. They are able to charge financial institutions recurring fees in order to help with resolving credit fraud after it happens. However, they are only able to charge a few dollars per year rather than $10 per month because the banks see it as a risk mitigation service, not a selling point to consumers.

There are a number of companies that offer credit fraud alerts. Most of them lack traction or good team. Last year, David and Justin looked at two companies that looked like they had potential. At the time, David even proposed that they should merge but one of the companies declined.

One of them was Trusted ID, a Redwood City startup. Compared to LifeLock, they have a more impressive team, a more elaborate technical architecture and a thoughtful approach to the market. They were initially focused on credit freezes, a more effective approach to fraud protection but one with many regulatory problems. Since then, Trusted ID received $5 million from DFJ and recently released a product called IDFreeze that drops the credit freeze feature and is almost identical to Life Lock (except with a $25,000 rather than a $1 million guarantee). In June, they had a website conversion ratio of 7% and about 2,000 customers paying $8 a month. We believe that Life Lock has benefited from releasing their product almost a year earlier and then spending their time refining their marketing position and PR.

The other startup, Debix, was even more impressive and had a better team. Last month, they launched iLock Credit, a very similar offering to LifeLock with a few key differences. They charge $10 a month for credit fraud alert service. They have built a telephone system ("the world's first telephone-based Identity Protection Network") that enables consumers to allow credit approvals with the press of a button rather than through a telephone conversation with a potential creditor. This is part of an elaborate technical infrastructure that Debix has built to work with consumers and credit rating agencies. Unfortunately, Debix's entire marketing message revolves around this feature. We believe that consumers are not interested in specific details of how identity fraud protection might work. Instead, they are looking for a simple value proposition with a strong proof point.

It is possible that Debix's strategy is actually to sell to financial institutions and their emphasis on their technical architecture is meant to market to potential partners rather than end consumers. It is also possible that Debix will extend the telephone network into other applications. However, we have not seen any evidence of that strategy succeeding yet.

Both Debix and Trusted ID are currently fundraising. Trusted ID is now raising an $8 million Series B based around a $20 million pre-money valuation. NEA is considering an investment in Debix. We believe that their emphasis on features and later entry put them at a disadvantage compared to Life Lock.

Risks

Market Risks

Initially, we believed that Life Lock's credit fraud protection service would be too easy to duplicate and financial institutions would decide to build it themselves. Having seen the system, we now believe it is complicated enough that it is a reasonable suggestion to buy rather than build. In addition, the ability to keep other firms from offering your customers new credit applications is valuable and it is a service that financial institutions could not offer by themselves.

We are also less concerned about how Life Lock threatens a substantial portion of the CRAs' revenue stream. As it is, Life Lock has been successful because they have found a clever way to interface with credit rating agencies without their direct consent. While clever, the automated phone interfaces are also quite brittle. If the credit rating agencies wanted to disrupt Life Lock, perhaps they can adjust their systems to make it difficult for Life Lock to use their phone APIs. But this issue is longer term and, if successful, Life Lock can leverage its consumer base and strike a deal with Transunion, the smallest of the major CRAs.

However, we remain concerned about pricing pressure. While the company believes that nobody else has discovered their low cost way of installing credit fraud protection through automated IVRs, Trusted ID charges 20% less and Debix hints that they have a similar interface. At scale, Life Lock expects annual costs per customer to drop below $7.

Regulatory Risks

Consumer credit is highly regulated and Life Lock faces three regulatory risks.

First, a state insurance agency may rule that the Company is illegally offering insurance. While Life Lock believes that their $1 million guarantee should be viewed as a warranty rather than insurance, three state insurance agencies have made inquiries. If they were judged to be insurance, then they would need to work with the 50 state insurance agencies and face potential fines. Life Lock would likely then eliminate the guarantee, losing one of their more successful marketing messages. When we first talked to Life Lock, Oklahoma, Florida and New York all made inquiries. Since then, Oklahoma has dropped its inquiry and Florida has concluded that the $1m guarantee is a warranty not insurance.

Second, Congress is currently rewriting consumer credit regulations. It seems that the credit rating agencies will be successful in making it more difficult for consumers to learn about identity theft or to apply for credit freezes. For such a small company, Life Lock has aggressively monitored the process and lobbied against changes that would hurt them. They believe that consumers will continue to be able to apply for fraud alerts under the same conditions. Davis has the latest draft of the bill and it does not include language unfavorable to Life Lock. However, when this regulation was first introduced in 2003, the credit rating agencies lobbied very hard to make it more difficult for consumers to ask for fraud alerts. It would be surprising if they were not trying to do this again. This remains an issue.

Third, the Federal Trade Commission pays close attention to claims revolving around consumer credit. In the past, as Maynard knows, the FTC has cracked down on companies that made what the FTC considered deceptive promises around consumer credit. When we asked an ex-FTC Commissioner, she initially thought that Life Lock's promises might be overblown and attract undue attention. Upon closer reading, she found that, with a few modifications, Life Lock's claims were legitimate and even compelling. We will ask Life Lock to make those changes but no longer consider this a major risk.

*Team Risks**

Maynard has said many times that he does not imagine being COO long term and has explicitly tried to keep a low profile.

Now that we understand he is bipolar, we believe that it is a risk that we will be able to manage. David has had a number of candid discussions with Maynard about his condition and ways to make him most effective.

*Legal Risks**

As mentioned in our diligence on Maynard, Paul Dvorscak has made vague references to "possible pending legal matters." Dvorscak, who funded a similar startup that Maynard founded, has said that he will not say more but we will clearly want to understand this situation before we close the deal.

*Security Risk**

The risk of data breach is very low, but the outcome would be disastrous for Life Lock. It's hard to imagine anyone would expose personal credentials to an anti-fraud service that had to disclose its own compromise of consumer data.

The Deal

The warrant coverage on our investment means that we are effectively buying about a quarter of the company for $4.5m. Our security participates without a cap. In addition, we have an option to invest $1.5m on the same terms unless the company raises $1.5m within six months at a 2X step-up, with junior, non-participating preferences.

Although we have been impressed by the team's scrappiness, they have been somewhat sloppy with their records (a lot has to be cleaned up prior to Closing). We have full anti-dilution protection if it turns out that the company has more liabilities, or outstanding shares, than it has represented to us.

Scenario Analysis*

Assumes Series B financing of $2M but no additional financing.	
BVP ownership (w/ warrants)	24%
BVP investment ($M)	$4.5
BVP warrants ($M)	$1.58

Scenario	Likelihood	Value ($M)	To BVP ($M)	Years to exit
Disaster: FTC decides that credit fraud alerts will not be broadly granted; or Congress repeals FACTA; or company implodes and is unable to execute	30%	0	$0.0	0
Fizzle at current state as marketing and distribution deals turn out not to be successful. Redeem our shares at 1.5x	25%	n/a	$9.0	4
Middling success: Stalls with under a million customers, faces pricing pressure from competitors. Bought as a feature by a financial institution (low margins; low PE)	30%	$75.0	$16.4	4
Strong acquisition candidate: Blows past a million customers and gets acquired as a strategic engine for growth (high PE)	10%	$140.0	$32.0	4
IPO comparable to Intersections	5%	$200.0	$46.4	4
	100%	Expected:	$12.70	
		IRR:	30%	

Conclusion*

Life Lock is executing very well on a business plan we have been trying to fund in consumer security. The company has a strong, publicly traded business role model in Intersections. With scrappy IT systems and field tested marketing campaigns, Life Lock has leaped well ahead of the pack in this emerging market. We recommend an investment.

Bessemer Venture Partners

The memos

Wix

To: BVP Group
From: Adam Fisher
Date: October 19, 2007
Re: Wix Seed Investment Recommendation

We recommend BVP invest $2mm in the second seed round of Wixpress Ltd., a Tel Aviv-based consumer software company that has developed an easy-to-use, rich media authoring environment for mass market users building web content such as websites and widgets. Wix addresses an acute need of consumers who wish to create professional grade rich media easily and quickly. Aimed to be as powerful as Flash, yet as easy as PowerPoint, their mission is to become the default destination and application for consumer-created rich media content. The company was incorporated in September 2006, has been working on the product for two years, and is poised to launch its product by the end of the year.

The Deal

The fully diluted pre-money valuation of the company is $7mm. The $4.1mm seed round is divided into an initial investment of $2.9mm and a warrant of $1.2mm. BVP will invest $2mm in the first tranche, and has the option of purchasing $1mm in warrants at the same price per share anytime prior to the next financing round. A group of angel investors will fill out the round, investing $900K, with a $200K warrant. BVP will own 20% after the investment and 27% after the exercise of the warrant . The initial investment will provide the company with sufficient cash through the end of 2008, and the warrant would likely provide for an additional quarter of runway. I would anticipate exercising our warrant in conjunction with a round late next year, or as a means of bridging to a round a few months later.

Summary

The Wix composer is a web-based application that allows any user to create eye-grabbing content on the web by simply dragging and dropping content. Their mission is to become the default destination and application for building rich media content on the web including widgets and websites. The product is about to enter a closed beta and we are impressed with the early version we have seen.

This is probably not the ideal time to be funding an early stage Web 2.0 company, given the proliferation of start-ups, but the versatility of the platform along with a strong product team with a marketing/distribution oriented approach is refreshing. The purchase of the three letter URL www.wix.com showed a level of foresight and thinking around search engine optimization that was new to me.

I am very excited about the prospects of the Wix product because it coincides with the rapidly emerging trend of self expression and DIY content creation. After playing with the beta, scouring the Web for hints of a similar concept, and speaking to many of you, I have come to the conclusion that Wix is both compelling and unique as an application. I am still uncertain about the precise business model, and the ability of the team to hire strong business leaders, but have enjoyed brainstorming with the founders and think they will figure it out.

Self-Expression and Personalization on the Web

Self-expression is a very strong underlying trend on the Web that is fueling the growth of many sites, including social network pages, photo sites, blogs and others. Self-expression on the Web takes on many forms, depending on the type of content and the degree of customization. Initially Internet self-expression was about self-publication in the form of blogs and personal websites and is now manifest in the form of self-promotion, as can be seen on MySpace pages. The newer form of self-expression on the Web involves rich media, as evidenced by virtual worlds, dress-up dolls, imaginary pets, and animated human avatars. While self-expression is a core feature across these various sites and communities, it is actually still very limited.

A Website Builder

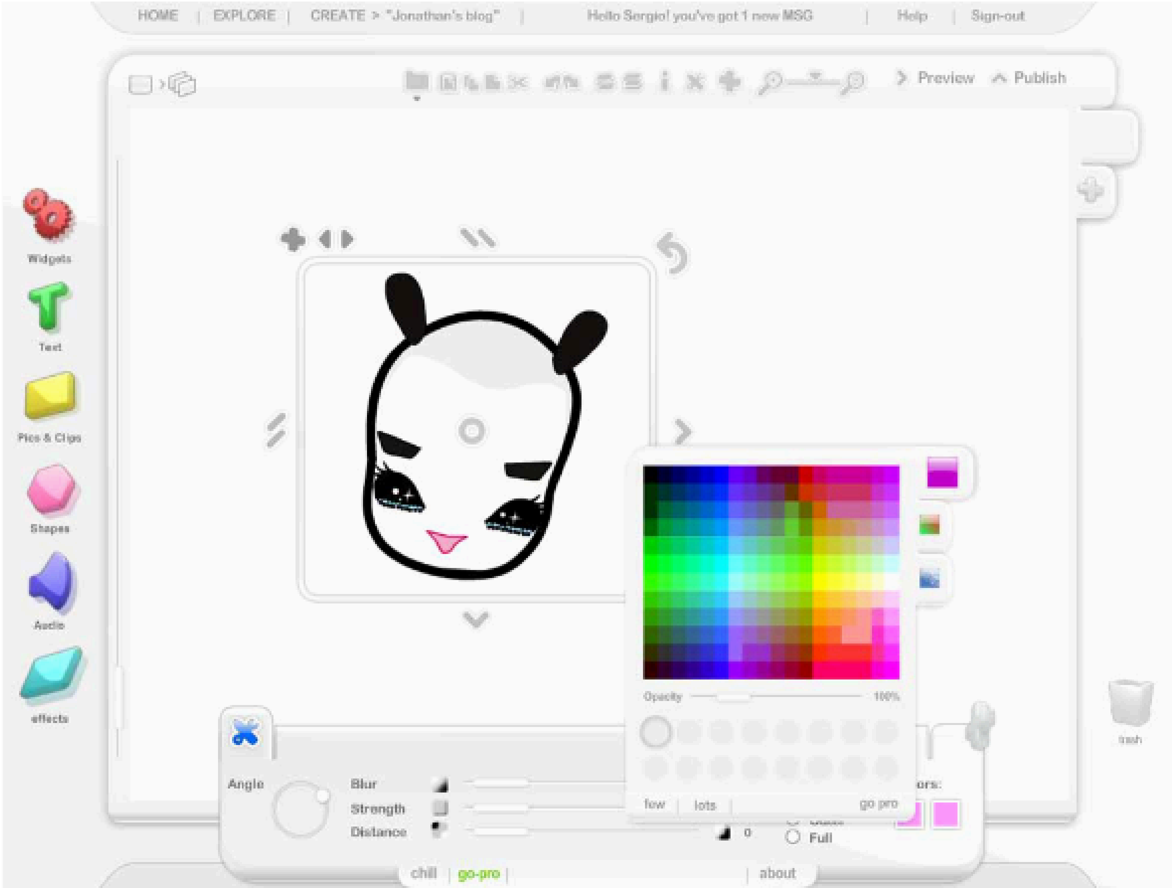
One of the core use cases being discussed is to focus on a website builder for rich media content. There is no way for the average person to build a flash website today, unless you pay a Flash designer to do it or use one of several fixed template website services. Once designed, one must pay a monthly hosting fee which ranges widely from $5.95 to hundreds of dollars a month (when paying through a designer). At the same time, there are plenty of html based website building applications with varying degrees of functionality and hosting fees (including free). The website creation space is a sizeable market, evidenced by the 3.5m websites created every month. The companies in this space are private, but we have anecdotal evidence of the market size from Intuit's acquisition of Homestead. Homestead is the 2nd largest player in terms of traffic, and was acquired by Intuit for $170m in 2007.

The thesis behind Wix is that there is a sizable user base that prefers the slick look, interactivity, and multimedia mash-up capabilities of Flash websites. In a sense, this is a market opportunity created on the one hand by MySpace users graduating to proper websites where they have full editorial and artistic control of content; and on the other hand by small businesses searching for more flexible and stylish web site designs than their uninspiring html-based site. These "small businesses" include artists, musicians, rental agencies, retail stores, design agencies, and every type of freelance of sole proprietorship job. Admittedly, Wix is still addressing MySpace users directly with their various makeover applications of a user's profile page, but the idea is to gradually convert these users to Wix premium. Out of the 26m small businesses in the US, 10m have a MySpace profile, which clearly demonstrated their need for web presence. However, most of them can not afford building, maintaining, and promoting their own website, and Wix is trying to solve that problem.

Wix Offering

From the onset, the founders of Wix had a vision of bringing Flash-like performance and capabilities to the average user. Aside from the technical challenge, this also implied creating a user interface that is easy to start using, but difficult to master. Wix decided to emulate aspects of in the UI found in online gaming, which is also designed to enable anyone to play, but challenging enough that users would spend considerable time in order to become proficient.

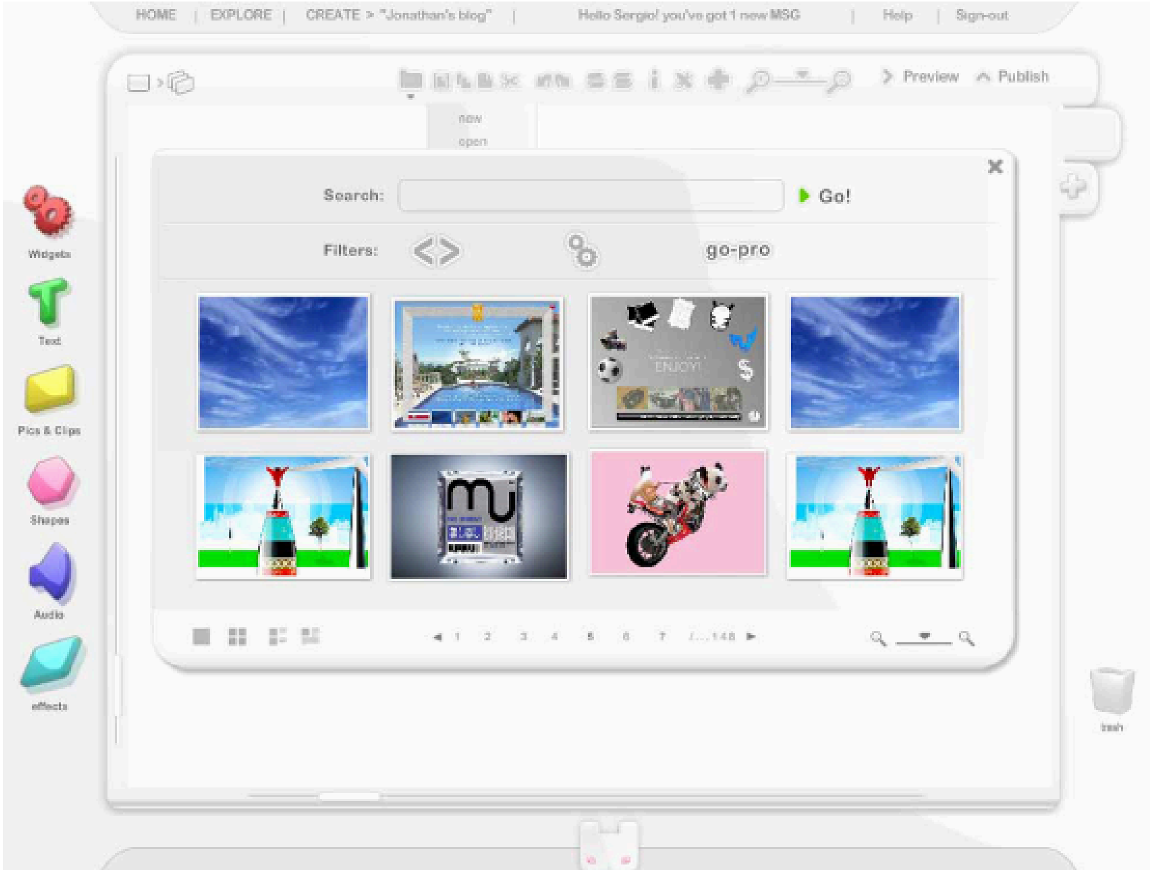
> Now would be the time to look at the demo video or beta site if you haven't already.



Wix Composer

Once someone has played with the Wix composer, many of the diverse use cases will become obvious. Aside from a website, Wix can create a greeting card, a comment on social networks, a party invite, a promotional electronic flier, a product gallery for eBay, desktop wallpaper, a guestbook, a photo album, website, a blog, or a presentation. It is difficult to anticipate the application that will appeal most to which demographic, so Wix will track users carefully in the months after beta launch, constantly testing new formats.

In order to appeal to this mass market, Wix plans to make extensive use of templates and its library of content to guide for user to quickly create exactly what they had in mind. This is still work in progress, but Wix will essentially provide relevant content based on whether the user is creating a birthday greeting card, or wedding photo album, or MySpace layout, which are all fairly different applications. Nevertheless, users will always have the ability to create a Wix in a freestyle mode, which may prove to be the most popular.



When compared with many of the sites and applications mentioned in the previous section, one can see how Wix offers something vastly different. At least for the time being, Wix views many of these sites, as potential partners, rather than competition.

Wix Community - User Generated Components and Content

Wix is more than just an application, because it was designed as an extensible framework that is constantly improved based on user input. As a result, the Wix product has a unique angle with regards to user generated content, which creates not only a barrier to entry for competition, but makes Wix.com the primary destination for rich media content. These users include developers, graphic artists and the general population, each contributing something different, yet valuable to the Wix community.

Developers - Due to the fact that the Wix editor can work with Flash, XML and html code, anyone with basic to advanced the programming skills can upload Web components for use on Wix. This is not about creating a full Flash presentation, but rather breaking down their creations into discrete Flash components that might include animation sequences, 3D images and other rich media objects. Using Wix, developers can share their creations, track their use, and receive credit and prizes for their use and re-use by other Wix consumers. To put this into perspective, Flash developers today have no way of sharing their skill and creativity with the general population.

Wix will have to court this developer community, but since it resembles an open source approach to rich media creation, there is reason to believe it will catch on. With just a few thousand developers uploading their components, Wix will soon host an extensive library of rich media that users can browse and explore when making their Wix creations.

Artists – Similarly, graphic artists on the web number in the millions. These individuals have the artistic and creative ability, but lack the programming skills to realize many of their ideas. These artists are expected to contribute 2D graphics, images and art to the Wix community. Wix has already started several online forums where Web artists congregate and contribute their creations. Wix hopes to use such guerilla marketing tactics to bring an initial base of contributing artists very quickly. Similar to developers, artists will be rewarded for their work initially in the form of recognition and pride in seeing their work used by others (but always receiving credit). A good example of a successful site that leverages the generosity of the artistic community is Threadless.com.

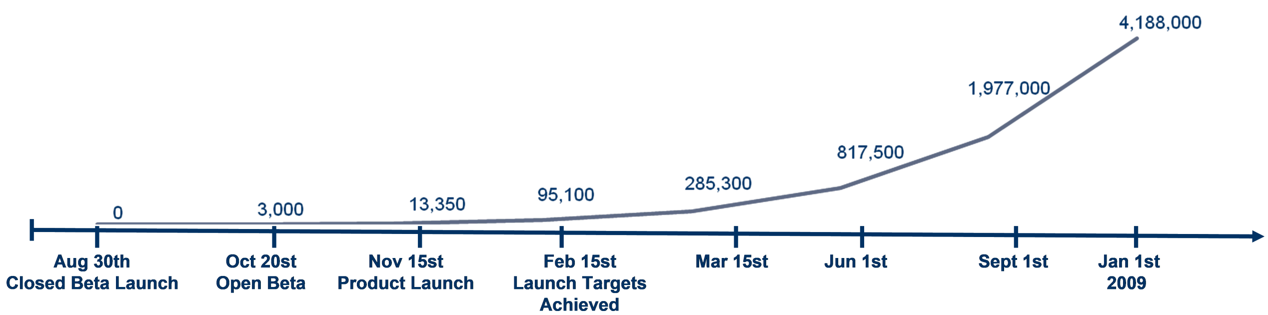
Business and Revenue Model

Although the application is powerful and widely applicable, Wix will not sell or rent its software to consumers. The company feels very strongly that rapid user adoption and contribution will secure a leadership position for Wix in the area of rich media creation.

Revenue models contemplated include:

- subscription based white label Wix composers for other sites
- subscription based hosting of Wix on personal URLs (outside of mainstream sites)
- subscription based use of specialized templates for certain types of small business (the kind found on Yelp)
- subscription for using Wix to create engaging online ads (also Yelp-size clients)

Having said all this, the business and revenue models are clearly the riskiest part of the Wix proposition, and something that I am not entirely comfortable with just yet.



Planned Wix User Acquisition

Technology of Wix

The corner stone of Wix framework technology is its flexibility and extensibility, relying on a new object description language called WixML. Unlike most object description languages WixML describes more than object type and position, but also behaviors, the relationship between objects, and support native object extension. As a result, it is a real framework, where 3rd party developers can use WixML to extend the framework by adding new objects, behaviors and effects. Every Wix creation is written in WixML, which is then parsed, rendered and loaded to the screen by the Wix viewer(also written in WixML). The entire Wix editor or composer is written also in WixML, but rests on a foundation layer written in Flash.

Key attributes:

- Coded in the Flash, so supported nearly any OS browser with a Flash plug-in
- Supports all forms of rich media
- Complete support for positioning, layouts, animations, interactivity and effects
- Seamless meshing of web content
- Complete supports for RSS and web services
- WixML is searchable by all search engines (unlike Flash)
- Skin-able editor (written in WixML)
- Easily extended with an SDK and an API
- Future support for multiple pages on a Wix (like flipping through a PowerPoint)

Founders and Management

The founders are technical and products visionaries, but not yet business leaders. They are very open, engaging and easy to work with. Without going into too much detail, the founders of Wix.com have diverse software backgrounds, starting as teenage computer hackers, serving in army technology units and then working and founding start-ups. For Internet entrepreneurs, they are relatively experienced, and have been involved in numerous start-ups, some of them mildly successful. Their domain expertise spans consumer and educational software, online games, and classic enterprise software. Knowing they will hire several senior people in the US (including a co-CEO, see below), the core team currently does not assign titles to themselves.

Avishai Abrahami

Led successful startups as founder/senior manager incl. AIT, Sphera, ArelCom (sold for $30M)

Released over 15 software products reaching millions of users * Extensive expertise in web hosting as well as technology development, sales and marketing

Giora (Gig) Kaplan

Over 14 yrs of leading successful startups as founder and senior manager (TimeToKnow, Coolvision, Optimedia)

Expert in internet publishing incl. release of dozens of consumer focused publications

Extensive experience in product management and technology invention

Nadav Abrahami (younger brother of Avishai)

Over 10 years as senior programmer and software designer incl. Eric Cohen books, Miraco, Oberon

Developed many consumer facing software products including an adaptive framework for education titles (sold over 1 million copies)

The Wix founders claim to have 10 or so of the best Flash programmers in Israel, and recognize that they need business and marketing talent ASAP. Towards that goal, they have agreed to hire Allon Bloch as President, who will join coincident with the financing. Assuming this works out, the team has discussed him joining as co-CEO alongside Avishai. Allon is a former colleague of mine, who was already in contact with the team when we all broached the idea of him joining. He is likely to relocate to NY soon, which will work well as the company intends on establishing a strong US operation. Allon made multiple successful software investments at JVP and was at McKinsey prior to that.

Risks

Launch Fails to Generate User Growth – The biggest risk by far in investing at this stage is that is prior to the product beta and launch. We could be completely incorrect in assessing users' needs and habits, and may find that Wix is of little interest to the larger Internet community.

Competition – products from numerous Web companies make it difficult for Wix to stand out.

Business Model Stumbles – relying on an advertising model may prove difficult as users and partner sites reject advertising.. Without a revenue model, Wix will prove unviable as a company for the long-term.

Inexperienced Managemen – None of the founders have CEO experience and may end up clashing with one another over product and business direction.

Outcomes Analysis

Date	10/30/2007
Assumptions	
Cost basis	$2.00M
Ownership	20.20%

			Seed			
			BVP cost basis $2.00M			
			Ownership 20.20%			
Outcome scenario	**Exit Value**	**Probability**	**Return to BVP**	**Multiple**	**Year**	**IRR**
BVP cuts its losses after launch failure, flameout	$ 0M	29%	$ 0.0M	0.0x	1	-100%
Company unable to ramp user base or monetize; sold for product/technology	$ 5M	30%	$ 2.0M	1.0x	2	0.0%
Company builds a loyal user base, and has initial revenues through advertising, but is unable to rise above widget noise	$ 25M	20%	$ 5.1M	2.5x	3	31.0%
Sizable user community of several million, and reaches a $1m monthly revenue run rate which can sustain the company and allow for growth; sold to large portal or social network	$ 70M	15%	$ 14.1M	7.1x	3	67.1%
Becomes a leading application on social networks, but not as a destination site	$ 100M	5%	$ 20.2M	10.1x	3	88.2%
Becomes leading destination and application for creating rich media	$ 200M	1%	$ 40.4M	20.2x	4	91.1%
			$ 5.1M	2.6x		33%

BVP Investment (First Tranche)
*assumes Second Tranche
**assumes additional round with BVP investing $1.5M and 20% shareholding
Avg. IRR **33%**

Dropcam

To: BVP Group
From: David Cowan, James Cham, and Ethan Kurzweil
Date: January 30, 2009
Re: Dropcam

We recommend a $200k seed investment in Dropcam, a developer of an Internet camera service for consumers. Dropcam has developed a prototype of software that overwrites the firmware of a typical net camera and streams it live over the Internet via the user's WiFi connection. By overwriting off the shelf net cameras, the company initially will not need to build hardware or take inventory risk. Their goal is to be the iPod of Internet cameras through focusing on streamlining the user experience to make the process of purchasing and setting up an Internet camera extremely simple.

The company is raising a $1-2m seed round, targeting a mix of angels and early-stage VCs. They have soft circled a syndicate of angels who are interested in a $1 million round and would propose that we participate in that syndicate. They are also talking to early-stage VCs about a $2 million Series A investment and are presenting to partnerships this week. We believe they would be better served by a smaller round with an eye towards a higher valued Series A in the future. A smaller round allows them to build the engineering team to develop and test market a working product. We would like to participate in this round as we continue to track their progress – positioning us to lead an eventual Series A if they succeed in developing a complete solution. We have been extremely impressed with the founders' thoughtfulness in thinking through user acquisition and user experience, and feel they have a very good chance of creating a category-defining product that expands the netcam market.

Dropcam Product

Dropcam plans to market a complete solution where users sign up on their website for a camera and associated online DVR package "in just 30 seconds." Users will choose from a limited number of plan choices. All will allow access to live video streams but will vary in terms of how much storage they provide with the basic package storing only the last 24 hours of activity and increasing from there. The company believes they can offer up to a month of storage at a very attractive price-point (initially $10/month). They will also offer choice in terms of camera – with models that pivot, zoom and offer other functionality.

Once the order is complete, Dropcam will have the camera hardware drop-shipped directly from Amazon, thereby never taking any inventory risk themselves.

During the ordering process, users will download and install Dropcam software onto their machine. The software then automatically captures the identity of the user's wireless router and continually scans for the IP camera that has been ordered. Once the user receives the camera, all they do is turn it on and Dropcam's software finds it and connects to it directly, overwriting the camera's firmware and establishing a direct connection between the camera and the user's wireless router. At this point, the camera is directly connected to the Internet and no further intervention by the user (or their computer) is required.

Eventually, they plan to overwrite the camera's firmware prior to shipping so that all the user needs to do is turn the camera on and it automatically connects to their router based on settings established during the ordering process. This technique requires enough volume that the camera manufacturers will work with them to perform this installation prior to shipping. Dropcam has had preliminary conversations with camera manufacturers that indicate this will be possible, although we haven't verified they will be able to do this without taking possession of the device at some point during the process.

Dropcam did a limited test of acquiring users through Google AdWords. Over a 3-day period, they bought several keywords related to wireless cameras and saw a 20% sign up rate. Admittedly, they merely asked each user for their name and email address – rather than taking them through the full ordering process including inputting payment information. However, they were pleased with this level of conversion and believe with additional optimization they can get to a user acquisition cost of less than $30.

Product Extensions

The team has a grand vision beyond live streaming and recording to offer a variety of extra services such as event detection and surveillance solutions that would allow Dropcam to tap into the $33 billion home security market. They also believe they can build pattern recognition technology to detect people's faces that they can use to provide extra functionality for users. For instance, they could email you a picture of everyone that appeared at your front door during a given day. They also believe they can build machine learning systems that will be able to detect anomalies and alert you to them in real-time (e.g., the bookshelf just got shaken).

In addition, the team also believes they can develop a destination site with the more interesting streams that users allow them to broadcast. Once they get to 64,000 users, they will have as much video footage as YouTube. Most of it is unexciting (e.g., the view of your front yard), they think there will be enough interest clips among the general noise to attract an audience.

While we hope they can deliver on some of these more far-fetched plans, they don't put much stock in them at this point and in fact are most excited by the core ability to seamlessly upload and store video on the Web seamlessly.

Competition

WiLife – WiLife, now part of Logitech, offers complete video surveillance solutions for personal and business use, selling through retailers like Amazon, Best Buy and Staples. Although WiLife also claims an easy installation and setup process, it required more manual work by the user. We are investigating the company's results and performance further.

Dropcam will also be competing indirectly with IP camera vendors like Axis, Panasonic, and Trendnet – all of whom may offer live streaming/direct uploading to the Internet as Logitech does with its WiLife offering. These vendors would have an advantage over Dropcam in terms of retail distribution, but would most likely be very poor competitors on the Internet.

And if Dropcam is successful, they may ultimately compete with security companies like ADT and Brinks who offer more robust surveillance systems along with monitoring services for upwards of $60 a month. However, this would require Dropcam to build a 24/7 monitoring team and as such is not something we are counting on.

Team

Greg Duffy, CEO, was formerly Principal Engineer at Xobni where he built Xobni search and the analytics tool. Prior to this he was lead software engineer at NCF Technologies, a telecom startup that built analog to VoIP telecom switches. And he's done short stints at Microsoft and IBM as well. In our limited interactions with Greg, we've found him to be very solid technically and former colleagues of his at Xobni describe him as "brilliant."

Aamir Virani, is Greg's co-founder and the only other team member currently. He previously worked as Lead Software Engineer at Xobni. Prior to this, he was an engineer at PowerReviews and NeuroPace. He started his career at National Instruments as a Hardware Engineer, which may be helpful to Dropcam's goal to work with a variety of IP cameras. He has a Masters in EE from Stanford.

Risks / Additional Questions to Pursue Prior to Series A

We would segment the additional proof points we'd be looking for into five general areas:

Technology: While they have developed an early prototype, it is still an open question as to whether than can build a system that is able to capture, encode, compress, and upload a video stream in real-time without unacceptable latency or degradation in quality. The current prototype leaves much to be desired here – although they have only just begun their work. They claim to have identified a codec that will meet the needs of the system and even allow streaming in HD if enough bandwidth is available.

User Experience: The process of connecting the camera to one's router wirelessly is fraught with potential points of failure. Will they be able to architect an installation process that identifies these proactively and offers a clear flow while at the same time remediating problems as they arise?

Customer Support: Given that they are targeting mainstream consumers, it is likely that many will require customer support, possibly at multiple times. Will they be able to serve their customers effectively while at the same time minimizing the support cost to Dropcam?

Marketing and Sales: The team is currently limited in their marketing beyond acquiring Google AdWords. They realize that mass media may be an effective channel for them but have no experience in mass marketing. They will look to hire this expertise, but there is risk that they may not be able to find and attract the right marketing talent.

Team: The team is made up of two engineers. While they are both very sharp, they have little management experience and no experience building a company around them.

Conclusion

Dropcam is currently pitching a mix of VCs and angel groups on a Series A of up to $2m with the exact amount to be determined based on interest. We are very excited about the concept of out-of-the-box Internet cameras and find this team to be the most thoughtful of any we have seen concerning technology, user experience and design. We'd like to participate in their large angel round in order to buy us access to what will most likely be a very competitive Series A once they build a working product and begin to acquire customers. We recommend this $200k seed investment.

Twilio

To: BVP Group
From: David Cowan, Ethan Kurzweil, James Cham, and Mark Lurie
Date: November 6, 2009
Re: Twilio Seed Investment - $125,000

We recommend that BVP participate along with Mitch Kapor in a $125,000 extension to Twilio's $800,000 seed round led by Founders Fund and Mitch Kapor in Q1 of this year. Twilio has created a simple XML-like web service API for building hosted IVR and PBX telephone applications. While growth has not been explosive (they are currently doing about $20k of MRR 9 months after launch), we've been very impressed with the company's rapid product development pace and think they are on the cusp of landing some very large accounts (Google, Best Buy, Deutsche Bank) that would significantly accelerate their growth. The company is currently seeking a full $3m Series A but we'd like to see market validation of the new features they are rolling out and the sales impact of the large accounts before making this size commitment. This extension to the seed round buys the company more time before they need to raise a Series A.

Product

The Twilio product makes the process of building a voice application extremely simple for web developers without any specialized training or need to deal with telecom companies or specialized integration service providers. Similar to consumer web apps, customers can sign up for an account with Twilio, pick a phone number (or port over an existing one), learn the five simple building blocks that make up the basis of Twilio, and start building voice applications right away. The five core verbs – architected to emulate XML – allow you to do much of the most commonly requested voice features, like gather a number from the caller (e.g., Press 1 to speak in English; 2 for Spanish; etc.), listen for voice input from the user (e.g., record a message), transfer a call, play a message, or disconnect the line. We built all of the functionality inherent in Grand Central (get one central number that transfers to all of your various lines) in about 5 minutes while on the phone with the CEO.

They are in the process of rolling out more advanced functionality, like asynchronous call redirecting (connect you to one party and then once that call has ended, transfer you to another), SMS, and 3-way conferencing as these features were frequently requested by early adopters. We've been extremely impressed with the speed at which they've rolled out new products and can pivot the company's development efforts based on feedback from the developer community. The company has also continued to build more complex functionality without straying from the simple and intuitive core building blocks that make up their markup language.

Sales and Marketing

The company has targeted the web development community in the hopes of getting web developers to build new voice applications using their system. At the same time, they have scored some early wins in getting web developers to rebuild existing voice applications using Twilio as often the original architect of the voice application is long gone when programming changes are needed. One early example of this is Earth911, which runs a national call-in number where you input your zip code and the system provides you with options on the nearest recycling center. The non-profit group needed to change some of the underlying logic of their voice application but didn't have any of the original developers on staff. Rather than paying to get it reprogrammed, their web team rebuilt the entire application in less than a day using Twilio. It's been up now for more than 6 months at 1-800-CLEANUP with positive results.

The company's initial sales and marketing approach has been to use contests, promotions and social marketing targeting the web development community to generate viral buzz and word-of-mouth referrals. They have a part-time contractor on staff that focuses on direct sales but this has not been an active focus for the company. Likewise, they haven't put in place any channel sales efforts – but see many opportunities to build indirect sales channels once they have the time and capital to focus here. As a result, the company's sales ramp has been slow (see appendix 2) but they have grown steadily to $17k in MRR.

The company has just landed Mobile Commons as a customer to build a custom application for the DNC where you can key in your zip code and the system will provide you with an issue to lobby for and then automatically dial all of your elected officials (one after the other). At the end of the call, it asks you to provide your friends' numbers and the system ropes them into the same loop. This is an example of using Twilio's new asynchronous call redirecting capabilities. Most importantly, they are all on the verge of landing three very high profile clients: Google's new lead generation effort (Google picked Twilio over their own internal Google Voice team), Best Buy / Support Space, and Deutsche Bank. We're very encouraged by these high-profile reference customers but haven't yet evaluated if they are just testing the service in a limited fashion or more committed to it.

Unit Economics

At the same time, they've been able to bring down their unit cost significantly to the point now where each minute costs them .6 cents while they can charge close to 3 cents (discounts accrue with volume). This has resulted in a blended gross margin of 56%. See appendix 3 for a historical look at infrastructure costs.

Team

The company's CEO ***Jeff Lawson*** is a serial entrepreneur who started Versity.com in 1999 during the bubble. Versity was a platform where college students uploaded their class notes and other students who missed the class could pay to download that launched at Stanford (no comment as to whether one of the authors of this memo may have used the service). He was then the founding CTO of StubHub before leaving StubHub to join Amazon as a Product Manager. His last entrepreneurial venture was a chain of Skateboarding and Snowboarding shops based in Southern California called Nine Star. He left in January 2008 to begin working on Twilio.

We haven't met the other two members of the founding team at this point but they have similar entrepreneurial backgrounds to Jeff.

Financing

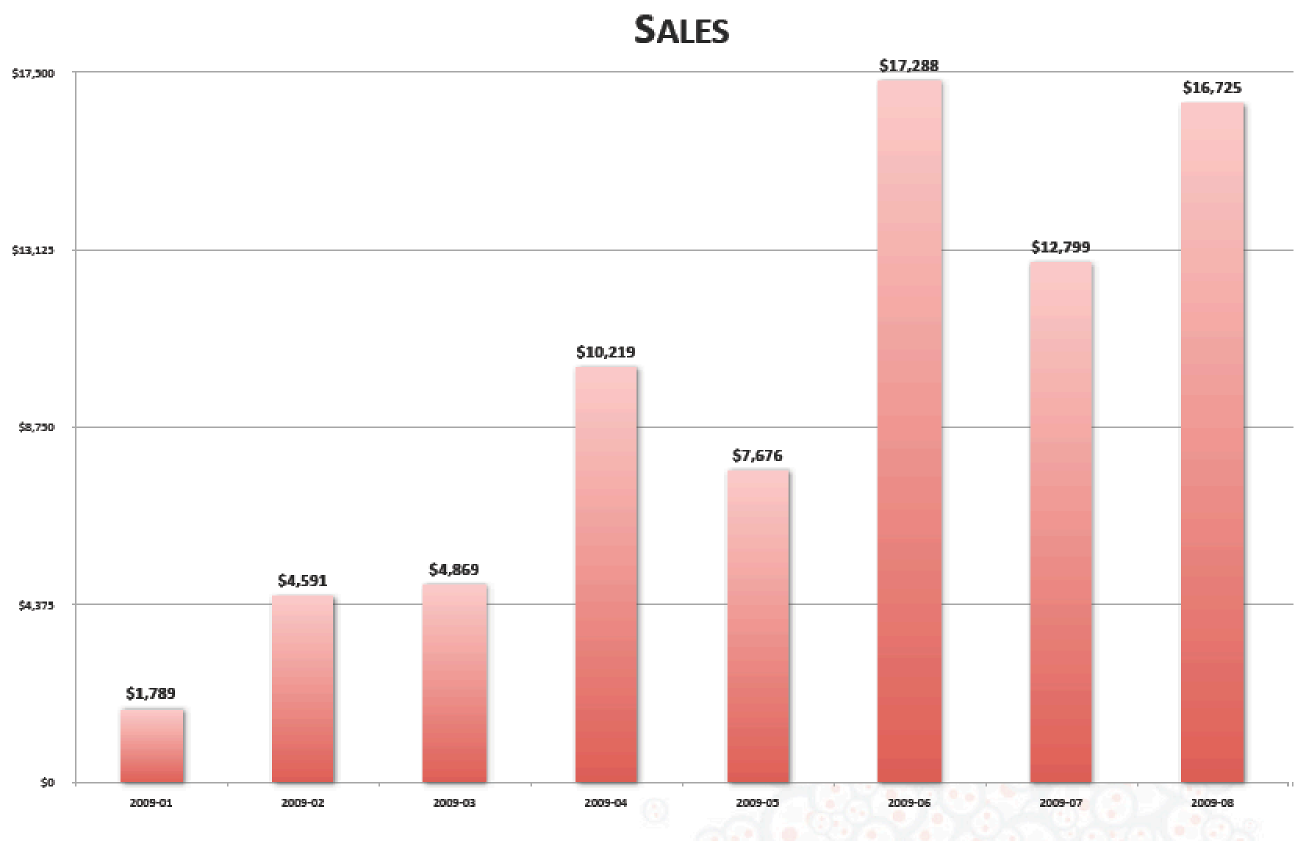
Jeff recently approached us to consider leading a Series A of $2.5-3m. He says he had been planning to raise the round early next year but was approached by another reputable firm about doing it now. Based on our relationship with Jeff (we've been tracking the company since they publicly launched last October), we believe his preference is to work with us over the other firm. He is proposing a convertible note with a 10% discount to the next round and an $8.5m pre-money cap, targeting $300-500k for this extension. This is a modest increase to the original $800k angel round which was a convertible note that converts at a 20% discount and a pre-money valuation cap of $3.5m. We think the increase is justified given the progress the company has made since the original financing and the slow but steady increases in sales over the past 6 months.

During this time, we'll be evaluating the efficacy of the company's direct and channel sales efforts and undertaking a more rigorous evaluation of the total market size. While the voice application telephony market is big enough to support a large profitable business, we haven't dug deep enough into the market dynamics to get comfort around what percentage of the pie will be addressable by Twilio. Most importantly, we'll see the results of their engagements with Google, Best Buy, and Deutsche Bank – companies that we believe to be good leading indicators as to broader adoption of the Twilio platform.

Conclusion

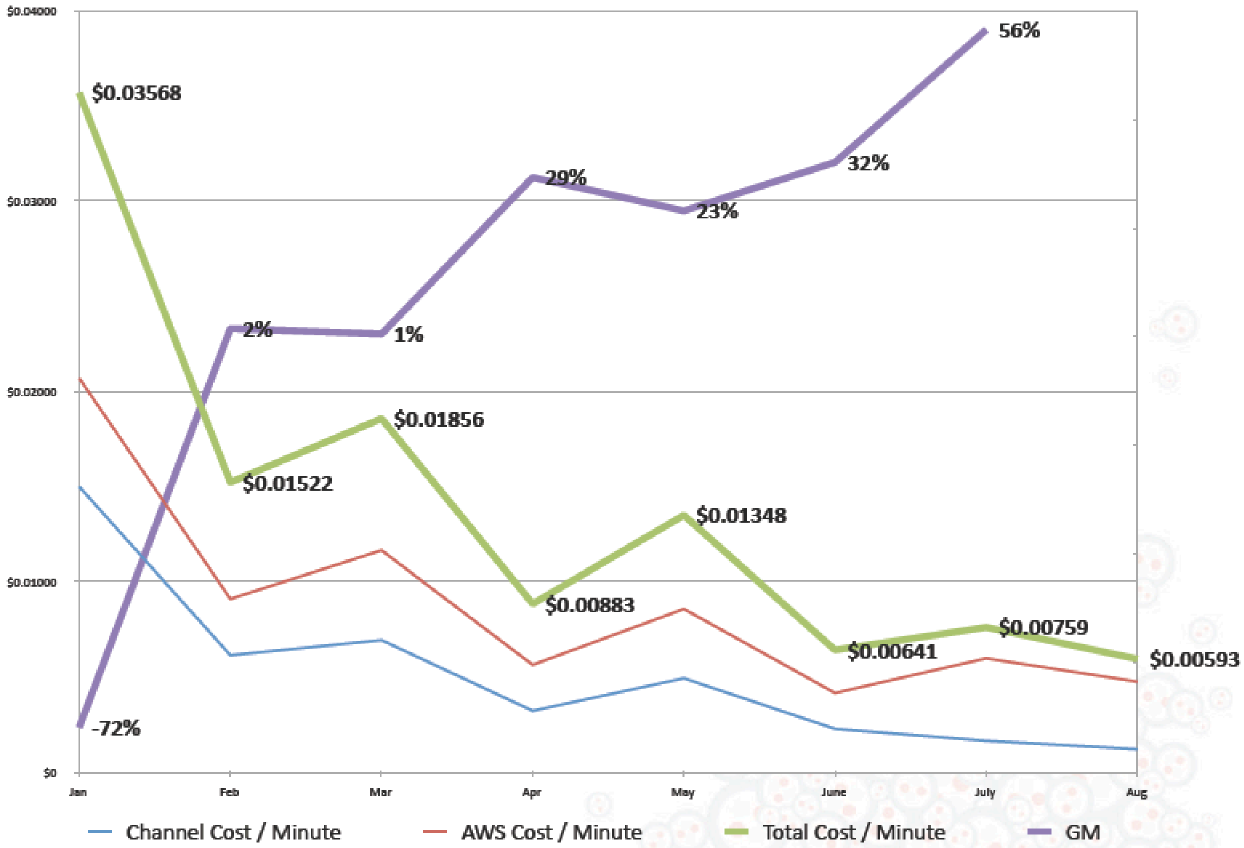
Twilio is a promising young company with a bold vision to make voice applications as easy to set up and maintain as web applications. They've built a clever, intuitive interface that simplifies the extreme complexities involved in building IVR and PBX capabilities and have received many early accolades from prominent Internet influencers. We'd like the opportunity to review more data before making a determination on the full Series A and therefore strongly recommend making this angel investment.

Appendix 2: Sales



Appendix 3: Costs and Gross Margin

INFRASTRUCTURE COSTS / MINUTE



Bessemer Venture Partners

The Memos

Mindbody

To: BVP Group
From: Jeremy Levine, Sarah Tavel, and Brian Feinstein
Date: July 2, 2010
Re: Mindbody Investment Recommendation

Summary

We expect to sign a term sheet to invest in MindBody, a San Luis Obispo, CA based provider of a SaaS appointment scheduling and business management suite for fitness centers, yoga/pilates studios, spas, salons and other similar establishments. We are investing $8m in an $11m preferred round at $42m pre and will own 16.3% of the company after the redemption of some early angel investors.

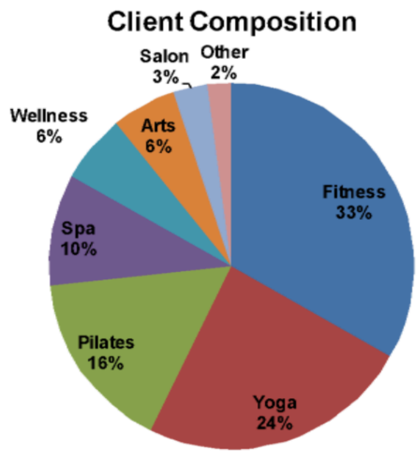
Mindbody launched its SaaS application in 2003 and has become the clear leader in the fitness market with over 8,500 clients, $867k in MRR and $1m in monthly revenues (as of May 31). We are impressed with Mindbody's position as the de facto standard in the yoga and pilates market (with over 30% share in both). It has gradually expanded into other verticals, including fitness centers, martial arts studios, dance studios, spas, and salons. At 4x annualized MRR, we believe $42m pre is a reasonable valuation given the company's growth characteristics, market potential and nominal operating burn ($120-150k per month).

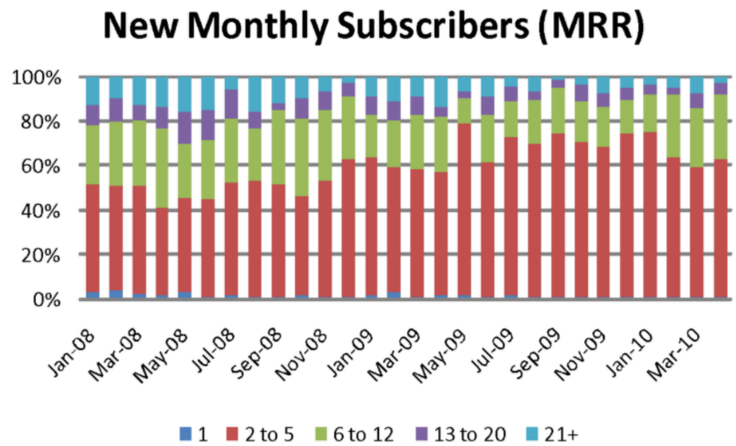
Mindbody has demonstrated strong financial performance to date with a recurring revenue base and low churn. The company has grown from $4.4m in recurring revenue in 2008 to $6.8m in 2009 and is currently growing at a 60% CAGR, on plan to reach $11.4 in 2010. The company has acquired customers through a capital-efficient telesales effort, with a gross profit customer acquisition payback of ~13 months. Annual gross churn is ~11%, which is particularly impressive in light of the relatively short natural lifespan of its customers. Assuming the current metrics hold constant, MindBody has an attractive 3.4x lifetime return on customer acquisition spend, and we believe MindBody will continue to improve those metrics over time by expanding the range of services offered to existing customers.

Market Size Potential (the big issue)

The primary focus of our due diligence (and the main feedback that emerged from the BVP partnership meeting following MindBody's presentation last month) is the company's ability to penetrate the salon and spa markets. The company is clearly winning in yoga and pilates, but with 30% penetration already, there is not as much room for growth. To reach $50m+ in annual revenues, MindBody needs to broaden its target customer verticals.

As shown in the chart below, 40% of Mindbody's customers are yoga and pilates studios. Another 33% of customers are represented by various types of fitness centers. The remaining ~25% consist of newer verticals such as spas, salons, and wellness facilities. Mindbody's customer footprint is concentrated in the US (50% in the Northeast and California), with about 10% of customers from overseas. The customer base is highly fragmented— with no single Mindbody client representing more than 2% of revenues and only four clients accounting for more than 1% revenues.





Today, 70% of Mindbody customer additions are new businesses or existing businesses with no software solution. Mindbody believes that it is acquiring more new customers each month than any of its competitors. Given the inherent switching costs associated with leaving existing on-premise vendors, we expect Mindbody's customer base additions to continue to skew toward greenfield opportunities.

As evident from the table below, reaching $50m in annual recurring revenues will require meaningful penetration of the salon/spa market where MindBody has only begun to add customers.

	Number of Locations	Current Subscribers	%Penetration	%Addressable	Market Size
Yoga Studio	5781	1790	31%	40%	$2,774,880
Pilates Studios	3050	1068	35%	40%	$1,464,000
Health Clubs	45600	83	0%	20%	$10,944,000
Personal Training Studios	23490	648	3%	20%	$5,637,600
Martial Arts	25000	152	1%	20%	$6,000,000
Sport Instruction	8298	152	2%	20%	$1,991,520
Physical Therapy	86500	14	0%	5%	$5,190,000
Total Wellness					$34,002,000
	Number of Locations	**Current Subscribers**	**%Penetration**	**%Addressable**	**Market Size**
Day & Health Spas	21307	660	3%	10%	$2,556,840
Hair Salon	256000	145	0%	10%	$30,720,000
Massage Therapists	33450	64	0%	10%	$4,014,000
Skin Care & Nail Salon	48165	45	0%	10%	$5,779,800
Total Beauty					$43,070,640
	Number of Locations	**Current Subscribers**	**%Penetration**	**%Addressable**	**Market Size**
Dance studios	19265	251	1%	10%	$2,311,800
Music Instruction	2637	23	1%	10%	$316,440
After School	9298	79	1%	10%	$1,115,760
Total Arts					$3,744,000
Total Addressable ARR at $100/mth MRR					$80,816,640

If MindBody can achieve 10% share in salon/spa (compared to its current 30% share in yoga/pilates), we estimate the company can reach ~$80m in ARR over the next ~5 years at its current $100/month average MRR per client. We also believe ARPU and margin per account will grow as Mindbody increases its payment processing penetration and starts to drive traffic from its newly-launched consumer-facing offering.

Our due diligence efforts to better understand the market dynamics in the salon/spa verticals suggest they are ripe for a SaaS solution. We are less confident in Mindbody's ability to penetrate those markets cost effectively, but we believe that after continued investment in product enhancements tailored to spa and salon customers, MindBody has a reasonable chance to win big and steal share from the incumbents which sell on-premise solutions. Through the first five months of the year, MindBody added 367 salon and spa customers, which represents 18% of the company's new customer additions in 2010 and a doubling of its customers in those verticals.

In summary, we are optimistic that MindBody will achieve meaningful traction in the salon and spa markets, which is critical for growth. If we are wrong, however, we expect the business to stall in the $20-30m annual recurring revenue range, at which point we have two options.

The first option would be to encourage management to run the business for dividends. Without the need to invest in customer acquisition beyond churn replacement, the company's monthly marketing expenses would drop by about 80%. Customer acquisition marketing represents more than 50% of total monthly expenses today, so the result of such a drop is a business with 25%+ operating margins. Therefore, we believe the company should generate $6-7m of annual operating profit and with a total preference stack of less than $20m, and we should be able to eke out a moderate 1.5x return.

The second option is to pursue a trade sale. Today, Saas businesses trade at anywhere from 2-6x ARR, and even at the low end of the range, we would expect roughly a 2x return. There is a limited universe of potential buyers with a clear strategic fit, but we would include publicly-traded companies like Opentable and Netsuite among them.

Product Overview

Mindbody is a SaaS suite that allows business owners to handle all aspects of operating a wellness or beauty facility, including yoga/pilates studios, fitness centers, spas, and salons. Pricing ranges from $29/mth for a single professional facility to $155/mth for facilities with 20+ professionals, with an average price of $75/mth per client.

Gyms and spas use Mindbody to host consumer-facing and mobile websites — allowing consumers to register for appointments and make purchases online. The software helps business owners manage internal operations, such as scheduling staff, setting appointments, preparing payroll statements, tracking customers, and monitoring sales activity. In addition, the product offers the ability to handle retail sales and process payments/subscriptions.

Mindbody offers three core advantages over its competitors. First, Mindbody gives a client operating with paper and pencil a way to manage his business more efficiently and increase revenues through online bookings. Second, at an average of $75/mth, Mindbody offers a comprehensive set of features at a competitive price point. Third, as one of the few SaaS vendors in the market, Mindbody's delivery model appeals to clients who want to host a consumer-facing website, eliminate IT issues, and operate their business from home.

The product is comprehensive and functional. It is also admittedly underwhelming and dated in its user experience. Our sense is that Mindbody's product is successful due to weak competition. Most of Mindbody's competitors are on-premise incumbents founded in the mid-1990s that lack the advantages of SaaS. The handful of SaaS competitors are poorly capitalized and sub-scale. For this reason, Mindbody has grown to be the only SaaS offering with 200+ customers in the fitness, salon, and spa markets. Based on our conversations with the team, we believe they understand the usability/interface challenges with their product and are committed to investing to improve them.

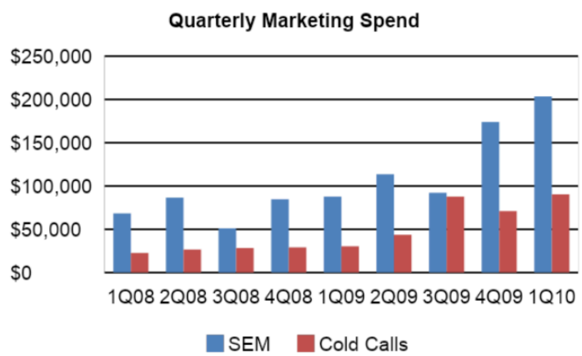
Mindbody's core software accounts for about 70% of total recurring revenues. About 30% of Mindbody subscribers and 70% of new subscribers process payments through Mindbody. This accounts for about 20% of recurring revenues and generates about $25/mth in additional MRR (bringing the total MRR per subscriber to about $100/mth). Mindbody recently became a registered ISO, which should further increase payment processing margins. In addition to software and payment processing, another 10% of recurring revenues come from sale of third-party products (e.g. ConstantContact) and premium support services.

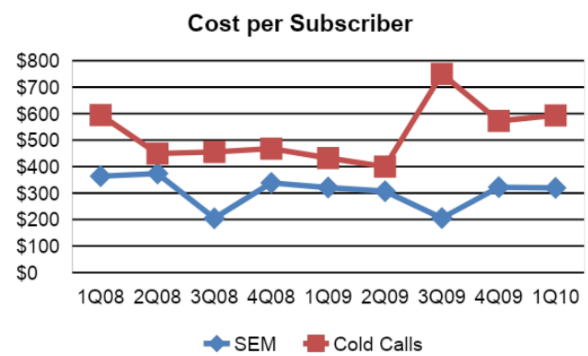
Mindbody's product roadmap is focused on three core initiatives. First, the company is enhancing the core SaaS product with features specifically geared for the salon market. Second, the company plans to introduce Mindbody Finder— an OpenTable-like booking tool that aggregates the available appointment inventory across all MindBody customers in a convenient interface for consumers. Third, the company plans to aggregate and publish benchmarking data for each of its verticals (Mindbody Research) to enhance the value of the product for business owners and drive press interest.

Unit Economics

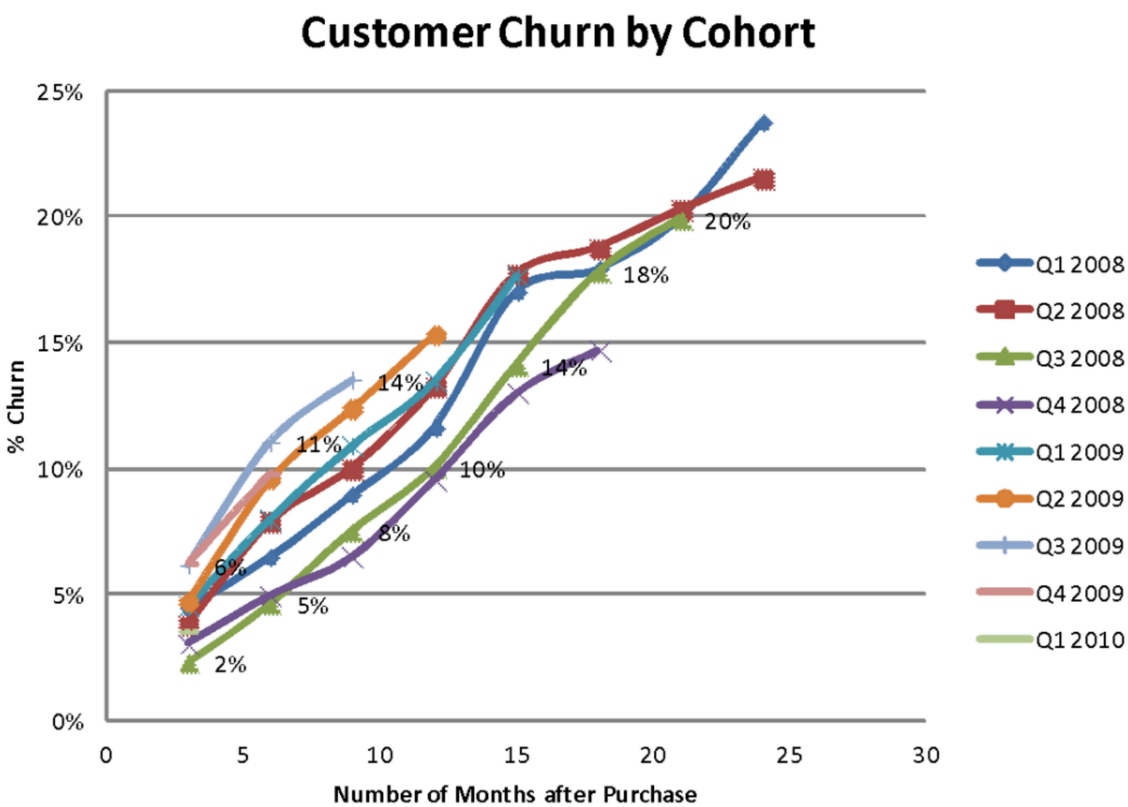
Customer Acquisition - Mindbody employs an efficient marketing-driven telesales model. The company relies heavily on SEM, outbound cold calling, and tradeshows to drive leads. It subsequently converts those leads by phone with an inside sales team. At a blended customer acquisition cost of ~$1,100, Mindbody typically has a 13-15 month gross profit customer payback period. Mindbody relies on a telesales team of 21 reps. As the company has grown its sales team from 14 to 21 in a span of a year, salesforce productivity has remained stable.

SEM and cold calling account for ~75% of total customers acquired, which we believe makes Mindbody's customer acquisition strategy highly scalable. The company's sales and marketing performance has been relatively stable as customer acquisition has grown. Between Q1 2008 and Q1 2010, its SEM and cold calling expenses more than tripled (from $90k to $294k). In this same period, cost per subscriber remained relatively constant at $400-600 per subscriber for cold calling and $200-$400 for SEM.





Churn – Over the past year, Mindbody has experienced 11% annualized churn and 2% net churn (net of upsells). With the exception of 3Q and 4Q 2009, churn by cohort has been relatively consistent. About half of churned customers leave due to problems associated with the product and the remaining half go out of business or have some sort of exogenous problem. In light of this ~5% annual natural attrition, we've been impressed with Mindbody's 11% annual gross churn.



CLTV – At a blended customer acquisition cost of ~$1,100, ARPU of ~$100, 80% gross margins, an estimated 7 year customer lifetime, and simple assumptions surrounding renewals and SG&A, Mindbody is able to generate about a 3.4x return on invested capital (45% IRR), and we expect that to improve as MindBody extracts more revenues from its customers through new services like payment processing.

Mindbody Lifetime Value Analysis

Inputs

Customer Acquisition Cost	$1,109	* Average customer acquisition cost in 2009 and 2010 (includes setup & training expense).
Revenue per Subscriber	$106	* Average revenue per subscriber in 2009 and 2010.
Lifetime	7	* Conservative assumption based on historic churn of ~11%.
Gross Margin	80%	* Average recurring revenue gross margin in 2009 and 2010.
Renewal Cost	$222	* 20% of customer acquisition cost.
R&D and G&A	$254	* 20% of revenue per subscriber.

Output

	1	2	3	4	5	6	7
Revenue	$1,272	$1,272	$1,272	$1,272	$1,272	$1,272	$1,272
Gross Profit	$1,018	$1,018	$1,018	$1,018	$1,018	$1,018	$1,018
Renewal Expense	$222	$222	$222	$222	$222	$222	$222
R&D and G&A	$254	$254	$254	$254	$254	$254	$254
Contribution Margin	$541	$541	$541	$541	$541	$541	$541

LTV of Customer	**$3,790**
Contribution Margin Multiple	**3.4x**
IRR	**45%**

Financial Performance

Since January 2008, Mindbody has grown recurring revenues at a 56% CAGR. Growth slowed in 2009 due to the economic environment and MindBody fought the tough economic environment by waiving new customer set up fees, which dropped total revenue growth to 35% while recurring revenues grew 55%. In the past quarter, the total revenue growth rate has accelerated to a 60% CAGR and the company is on plan to hit its 2010 target of $11.4m in recurring revenues.

	2006A	2007A	2008A	2009A	2010E	2011E
REVENUES						
Recurring Revenues						
Subscription	$758,352	$1,782,561	$3,250,288	$5,173,476	$8,682,590	$14,281,268
Payment Processing	$160,323	$626,644	$1,156,457	$1,652,322	$2,677,900	$4,428,815
Total Recurring	$918,675	$2,409,205	$4,406,745	$6,825,798	$11,360,490	$18,710,083
Non-Recurring Revenues	$792,005	$1,241,513	$1,640,065	$1,351,249	$1,708,622	$2,644,846
Total Revenues	**$1,710,680**	**$3,650,718**	**$6,046,811**	**$8,177,047**	**$13,069,112**	**$21,354,929**
Total Revenue Growth		113%	66%	35%	60%	63%
Recurring Revenue Growth		162%	83%	55%	66%	65%

We view non-recurring revenues as immaterial, consisting mainly of low-margin products like hardware sales (e.g. credit card/membership card reader) and training fees. The non-recurring revenues bring the company's blended gross margin down 69%, while recurring revenue gross margins are about 80%.

The company is currently burning $250k-$300k per month, driven primarily by investment in sales and marketing. Without sales and marketing expense, the company would be operating at 20% EBITDA margins. The company expects to reach CFBE in mid-2011 and we expect this $7.5m contribution to the balance sheet to provide plenty of cushion and allow for tuck-in acquisitions.

We think the company has put together a reasonable bottoms-up plan driven by growth in sales and marketing expense. The plan calls for ~50% annual growth over the next few years, reaching $100m in rev in 2015. Our financial projections call for a more conservative $70m in 2015, although both models are very much dependent on the company's ability to maintain its unit economics as it expands into new verticals.

Competitive Landscape

Mindbody faces a number of competitors in each of its verticals. We believe that there are more than 60 companies, but according to industry surveys, no company has more than 6% share of the market. Moreover, Mindbody is one of the only well-funded companies with a SaaS offering. Given the company's dominance in the fitness market, we've limited this section to the handful of competitors that we believe are best positioned to compete with Mindbody in the spa and salon verticals:

Harms Software (Millenium Software): __Harms Software was founded in 1987 and is estimated to have 12,000 installations. By all accounts, Harms Software is the company to beat in the salon vertical. The company claims to handle over $1B in annual revenue on behalf of its clients. They've won numerous awards including being voted "Favorite Software" by both the American Spa Magazine and American Salon Magazine. Customers include all Paul Mitchell Salons, Aveda salons, Macy's, Nordstrom, Sally Hershberger and others. Mindbody claims that the company is struggling and that executives from Harms have been speaking to Mindbody about executive positions at Mindbody. We're skeptical because despite our best efforts to get in touch with the company, the CEO responded that they were not in need of cash nor interested in an investment.

ShortCuts: ShortCuts is a desktop software suite for the salon and spa verticals. The company is headquartered in Brisbane, Australia and was founded in 1993 and claims to have over 10,000 installations. We hear they have 100 employees. The product has deep functionality that is custom tailored to each vertical.

SpaFinder / SpaBooker: The founder of Autobytel, Pete Ellis started SpaFinder as an online retail destination to buy salon and spa gift cards. The SpaFinder site hit a ceiling at ~$50m in revenue and the team has created a SaaS solution for spas and salons. Though quite early with ~$100k in MRR, the product is a slicker and more usable version of Mindbody's product suite.

Risks

Will MindBody be able to replicate its success in the salon vertical?
Mindbody has had significant success in the yoga and pilates verticals and has seen strong traction in other areas of fitness. However, much of the company's future growth is expected to come from its penetration of new markets— specifically salons. Although Mindbody's early traction in salons is promising, it's too early to tell whether Mindbody will be able to replicate its success in the salon vertical. If Mindbody is not able to penetrate the salon vertical, either organically or by acquiring smaller competitors in the space, its addressable market will be handicapped.

We focused our due diligence efforts on better understanding this key risk and came away with the following conclusions:

> The addressable market in the salon vertical represents a $30m+ ARR opportunity. We learned that the salon market is divided into salons where stylists operate on company payroll and take a percentage of their service fee, and salons where stylists rent a booth from the salon owner but act as a single proprietor. Because booth renters act independently, they have less need for the management capabilities in Mindbody's software solution and lack the budget for IT purchases. That said, Mindbody has a mobile product offering coming out soon that we believe will be a good fit for the scheduling needs of booth renters.
>
> Early data suggests that Mindbody's salon customers have higher than average CAC and churn. However, these metrics are consistent with the sales learning and brand recognition curve associated with Mindbody's historic entry into a new market. Moreover, these figures may be imprecise given the relatively small sample size of ~150 salon customers. Importantly, the metrics have been moving in the right direction.
>
> As discussed in the competition section, we've learned that no incumbent salon software company has a dominant position in the market. This leads us to believe that Mindbody is well positioned to enter with a disruptive SaaS offering.

Will the team be able to scale? We've been impressed by the Mindbody team's focus on SaaS metrics, their historic financial performance, and their level-headed approach to the business. With that in mind, they don't have any prior successes under their belt, so it is difficult to know how they will scale.

Will Mindbody be able to rise above the competitive noise? Mindbody dominates the yoga and pilates verticals, but is a relative newcomer in other verticals. Although Mindbody has one of the few SaaS applications, it does not enjoy the same brand recognition outside its core verticals. As previously noted, the competitive landscape across the other verticals is quite fragmented, though there are a couple notable competitors in salons that enjoy relative brand recognition. When Mindbody first launched in the yoga and pilates verticals, the competitive dynamics were similar, and Mindbody was able to rise above the noise to become the standard in the yoga and pilates space with 30%+ market share. Part of the bet we're making is that Mindbody will be able to repeat their previous success despite the competitive landscape.

Will we be able to exit? Given the specialized nature of this product, there are very few strategic buyers. If we are unable to achieve requisite scale for an IPO, we may be forced to sell to a financial buyer.

Will Mindbody Finder see consumer traction? Mindbody intends to partner with local review sites like Yelp to power a health and beauty bookings engine. Part of our upside case is predicated on consumer adoption of this type of service and Mindbody's ability to manage a consumer-facing business.

Team

We've grown increasingly impressed with Rick and Bob as we've gotten to know them. They've taken a highly analytical approach to managing their business— monitoring the core metrics of their SaaS business on an ongoing basis. They've also proven capable of building a scalable sales and marketing funnel— with SEM, outbound cold calling, and inside sales driving an efficient customer acquisition process.

Rick Stollmeyer (based in San Luis Obispo) – Rick strikes us as a competent CEO and a strong spokesperson for the business. He founded Mindbody as a consulting shop for the yoga industry in 1998 after serving as an officer in the Navy. He launched Mindbody as an independent SaaS solution in 2003 and has led the business in partnership with Bob Murphy since that time.

Bob Murphy (based in East Hampton, NY) – Bob is the current CFO and CSMO (Chief Sales and Marketing Office). He is a metrics-driven and detail oriented leader. He intends to step down from the CFO role to focus on sales and marketing once the current VP of Finance has been fully groomed to take over the role.

We have had limited interactions with other team members and do not believe there are other "VP level" executives in the company. We intend to spend more time with all of the senior managers as part of our final due diligence.

Deal

Mindbody has raised $8.4m to date from individuals and Catalyst Investors, a NY growth equity firm. The company's most recent financing was a $5.6m investment from Catalyst in March 2009. The company also has a $400k LOC from a regional bank and has signed a term sheet with SVB for $2m in venture debt.

The company has historically taken a cautious approach to fundraising and only raised capital on an as-needed basis. When we first approached Rick and Bob, the company was not actively seeking funding but recognized the opportunity to accelerate growth. The early largely friends and family investors have also expressed interest in selling part of their stake, representing 7.7% of the total shares outstanding.

We have an opportunity to lead an $11m round at a $42m valuation (4x current ARR, ~3.6x 2010E ARR and ~3.2x 2010E total revenues). We will invest $8m for 16.3% ownership (after redemption of some current shareholders and a small option refresh) and Catalyst would take the remaining $3m. We expect $3.5m of the round would be used to redeem existing shares at discounts ranging from 10% to 17.5%. The remaining $7.5m would be used to fund company growth, primarily through sales and marketing expansion and small tuck-in acquisitions. There will be a 4.5% unallocated option pool available at closing.

We believe the price and terms are quite reasonable.

Scenario Analysis

Investment	
Investment	$8.00
Pre Money	$42.00
Post Money	$48.95
Ownership	16.3%
Investment Date	Jul-2010

(USD in Millions)

Outcome	Exit Value	Exit Date	Prob.	BVP Proceeds: Gross Proceeds	Mult.	IRR %
Failure. New competitor enters the market with a free solution. Growth stagnates and churn picks up. Company cannot sustain burn and folds.	$0	Jul-2014	15%	$0.0	0.0x	-100%
Growth stagnates. Mindbody fails to achieve meaningful growth outside of its core fitness verticals and plateaus at $15m in revenue. Sold for 2x revenue to a competitor.	$30	Jul-2014	20%	$10.6	1.3x	7%
Market leader in fitness but limited success in salon/spa. The company dominates its core fitness vertical but is unable to capture a meaningful share of the salon or spa market. As it hits a ceiling in fitness, growth flattens at $30m in ARR and company cuts marketing expense to generate $10m in EBITDA. Sold for 6x EBITDA.	$60	Jul-2014	30%	$16.1	2.0x	19%
Market leader in fitness and modest success in salon/spa. The company dominates its core fitness vertical (~$30m in ARR) and becomes a major player in the salon/spa market (with market share comparable to current leaders). Growth slows at $50m in ARR and company cuts marketing expense to generate ~$20m in EBITDA. Sold for 7x EBITDA.	$160	Jul-2014	25%	$26.2	3.3x	34%
Market leader in fitness and salon/spa. The company replicates its success in the salon/spa market and displaces on-premise incumbents with a more functional SaaS solution. The company reaches ~$75m in ARR and reduces marketing expense to generate ~$30m in EBITDA. Sold for 10x EBITDA.	$300	Jul-2015	7%	$49.7	6.2x	43%
Home run. Mindbody dominates the fitness market and captures a meaningful share of the salon market, growing to ~$100m in ARR. Its consumer-facing business is a success and the company trades at OpenTable-like multiples (~10x revenue).	$1,000	Jul-2018	3%	$166.2	20.8x	46%
Weighted Average (to BVP)				$21.9	2.7x	23%

Conclusion

We have been impressed by Mindbody's execution and performance to date, and are excited by the opportunity to invest in a SaaS business that we believe could come to dominate the health and wellness space. The relative maturity of the business, when combined with the agreed deal terms, provides us with attractive mid-range returns, and if Mindbody can replicate its yoga/pilates success in new markets, we could reasonably realize a 5-10x gain.

Appendix: Company Financial Plan

MINDBODY 2007 - 2015 Income and Expense

	2008	2009	2010 Projected Totals	2011 Projected Totals	2012 Projected Totals	2013 Projected Totals	2014 Projected Totals	2015 Projected Totals
REVENUE								
NON-RECURRING	$1,640,065	$1,351,249	$1,708,622	$2,644,846	$3,192,014	$4,525,243	$6,554,939	$8,748,139
BASE RECURRING	$3,255,921	$5,173,476	$8,674,288	$14,281,268	$22,078,938	$31,523,972	$45,947,790	$66,239,253
MAP	$1,156,457	$1,652,322	$2,677,900	$4,428,815	$6,786,745	$9,717,773	$14,208,090	$20,294,401
MB FINDER/RESEARCH		$0	$129,672	$473,373	$870,570	$1,221,781	$1,759,626	$2,490,898
GROSS REVENUE	**$6,052,444**	**$8,177,047**	**$13,190,482**	**$21,828,302**	**$32,928,266**	**$46,988,768**	**$68,470,444**	**$97,772,692**
COGS	$1,500,556	$1,734,524	$2,510,902	$3,851,700	$5,112,770	$7,281,946	$10,575,648	$14,423,974
NET REVENUE	**$4,551,888**	**$6,442,523**	**$10,679,580**	**$17,976,603**	**$27,815,496**	**$39,706,822**	**$57,894,796**	**$83,348,718**
EXPENSES								
Advertising/Marketing (non-labor)	$1,306,716	$1,668,467	$2,853,647	$4,851,475	$6,277,416	$9,770,864	$14,744,537	$18,797,592
Automobile Expense	$26,191	$36,718	$49,909	$60,000	$72,000	$84,000	$96,000	$108,000
Bank and CC Service Charges	$6,759	$3,740	$4,700	$6,000	$6,600	$8,100	$9,000	$9,900
Computer Supplies	$63,866	$123,619	$109,027	$132,000	$171,000	$186,000	$198,000	$210,000
Employee Benefits	$244,953	$438,970	$646,966	$875,676	$1,172,066	$1,571,096	$2,095,959	$2,749,949
Interest & Misc (Income)/Expense	$36,537	$2,586	$37,340	$60,000	$60,000	$60,000	$60,000	$60,000
Insurance	$15,636	$17,770	$25,590	$42,000	$48,000	$51,000	$60,000	$66,000
Internet Service (offices)	$44,951	$62,860	$71,005	$90,000	$96,000	$105,000	$117,000	$126,000
Maintenance	$29,215	$58,501	$66,422	$84,000	$93,000	$105,000	$121,500	$147,000
Office Operating Expenses	$46,910	$192,267	$329,241	$480,497	$733,951	$1,175,494	$1,570,887	$2,164,715
MBO Payroll - Mgt & Admin	$349,712	$975,408	$1,159,892	$1,344,419	$1,530,740	$1,723,527	$2,015,480	$2,391,678
MBO Payroll - Customer Support	$924,778	$528,065	$1,090,076	$1,598,972	$2,376,511	$3,557,712	$5,232,678	$7,484,709
MBO Payroll - R&D	$566,042	$908,335	$1,215,326	$1,780,217	$2,609,661	$3,633,621	$4,653,773	$5,997,626
MBO Payroll - Sales & Marketing	$593,246	$2,079,847	$3,233,850	$4,278,335	$5,240,293	$6,988,499	$9,529,227	$12,226,846
MB MAP ISO Payroll	$242,466	$155,361	$0	$0	$0	$0	$0	$0
Professional Development	$1,680	$27,625	$46,943	$57,000	$72,000	$93,000	$132,000	$174,000
Legal & Professional	$104,255	$261,223	$140,893	$157,000	$258,000	$342,000	$498,000	$585,000
Bad Debt	$32,908	$35,889	-$8,562	$41,311	$44,876	$67,358	$101,032	$129,247
Rent	$256,484	$400,686	$529,762	$635,907	$792,837	$988,182	$1,246,112	$1,528,788
Server Co-Location	$122,535	$122,460	$122,996	$170,000	$260,000	$390,000	$560,000	$810,000
Telephone	$76,636	$122,390	$197,470	$255,000	$342,000	$465,000	$609,000	$810,000
Travel, Meals & Entertainment	$77,344	$106,408	$155,291	$212,000	$324,000	$429,000	$570,000	$753,000
Utilities	$17,677	$25,132	$31,652	$45,000	$59,463	$74,114	$93,458	$114,659
OPERATING EXPENSES	**$5,187,496**	**$8,354,329**	**$12,109,435**	**$17,256,810**	**$22,640,415**	**$31,868,567**	**$44,313,644**	**$57,444,711**
EBITDA	**($635,608)**	**($1,909,220)**	**($1,392,515)**	**$779,793**	**$5,235,081**	**$7,898,255**	**$13,641,152**	**$25,964,007**

The Memos

Shopify

To: BVP Group
From: Alex Ferrara, Trevor Oelschig
Date: October 12, 2010
Re: Shopify

We seek approval for BVP to invest up to $7mm in the Series A financing of Shopify, a provider of e-commerce software to SMBs. Shopify sells a simple SaaS solution that enables a business to quickly setup and run an online retail store. A typical customer signs up using their credit card and is up and running in a few hours with no long-term contract. Shopify targets SMBs and at-home capitalists (e.g., eBay and Etsy sellers) who pay an average of $45 per month, with the goal of servicing these customers as they scale to become larger customers with more sophisticated needs. Shopify has also managed to sign-up a number of large businesses like Pixar, Amnesty International and Tesla Motors (selling Tesla accessories, not the cars) at higher price points.

> Shopify was my first lead investment as a partner, so I was incredibly nervous. It took me three roundtrip flights to Ottawa before I finally decided to present Tobi a term sheet. Why? Very few VCs believed that software businesses targeting SMBs were good investments, let alone ones that could deliver venture returns.

Shopify has grown at an impressive rate. With limited marketing, customers have increased from 5,500 a year ago to nearly 10,000 today (+81% Y/Y). Over the same period, monthly recurring revenue has grown from $164K to $438K (+151% Y/Y). Across all Shopify-powered stores, the annualized gross merchandise value transacted is roughly $132mm. The business is profitable and largely bootstrapped, having raised just $1mm to date and having $1.3m of cash on its balance sheet with no debt.

> Shopify's target focus on SMBs and the potential market size of online retail were seen as key risks, but their organic growth and profitable business was hard to ignore. In 2010, $132mm in GMV would have put Shopify in the top 50 online retailers. That's how small the online retail market was at that time!

Shopify was founded in 2007 by two Ruby on Rails core developers. One of the co-founders left soon after starting the business. The other, Tobi Lütke, stayed on and is serving as CEO. We have been impressed by Tobi. He is a young, first-time CEO who is thoughtful, has good product and management instincts. Shopify's 24 employees are located in Ottawa, Canada. Based on Shopify's reputation in Ottawa as a local internet startup success story, and based upon Tobi's reputation among the developer community, the company has been able to recruit some of the best development and design talent in Ottawa at 60%-70% of the cost of similar talent in Silicon Valley or New York.

> When Tobi came out to Silicon Valley, many VCs told him they'd invest only if he moved to the Bay Area or merged his startup with one of their Bay Area investments. While I admittedly was not a big fan of Ottawa's bone-chilling winters, Shopify's office was located in an energetic area downtown and they didn't seem to have any issues recruiting great talent in the region or from the nearby schools. I was excited to back what was clearly the best cloud startup in Canada's capital.

We are excited by what we see as a great product that has struck a chord with customers. The product is simple enough so that anyone can set up a fully functioning online store in a matter of hours.

> There's so much to love about the simplicity of the Shopify and the way it enabled small merchants to easily sell online. One of our colleagues described it as "minutes to learn, a lifetime to master" because it was both so simple to set up but the app store made ecommerce powerful and robust.

Yet sophisticated features are also available without complicating the overall user experience. Shopify accomplishes this by making available an "App Store". A customer can click and install an "App" that extends the functionality of their online store beyond what Shopify provides. To make the "App Store" possible, Shopify exposes an open API that allows third party software developers to integrate into its platform. This approach is a big competitive differentiator for Shopify. The API's breadth and ease of use has resonated with the development community. For Shopify this is great—it can offer capabilities necessary to support larger customers without having to invest in building out these features itself. Roughly two-thirds of Shopify's customers utilize at least one app from their "App Store".

The round is priced at a $20mm pre-money valuation ($18.7mm EV). We plan to invest $5mm and thereby own 20% on a fully-diluted basis. Shopify is on a ~$5.5mm annualized run rate and has demonstrated strong organic growth. Further, we think that there is an enormous opportunity to accelerate growth by investing in: i) marketing, ii) international expansion and product localization and iii) business development to expand the applications available in the Shopify App Store. In particular, we see marketing as a huge opportunity as the company's growth to date has been largely organic and marketing thus far has been rudimentary. In fact, Shopify employs one paid search marketer and has no VP of Marketing.

Market Opportunity

Shopify plays into two themes:

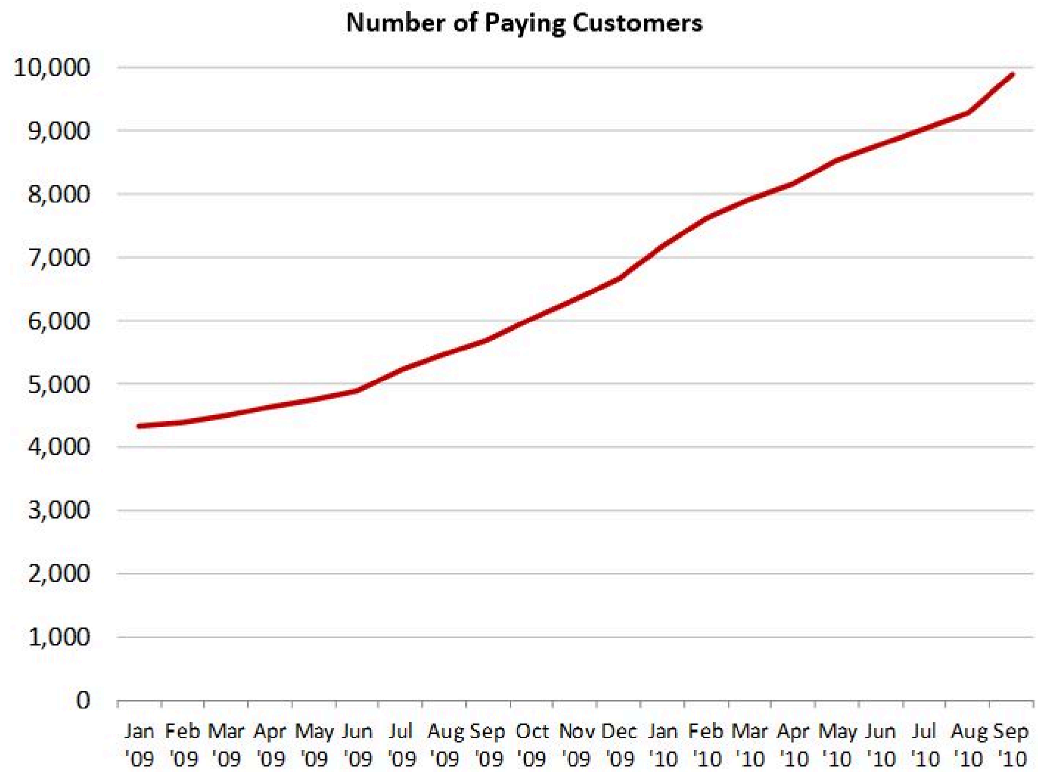
The consumerization of enterprise software. The ability to offer cheap, consumer-like software opens a whole new market of customers (SMBs), who otherwise would find traditional enterprise software too complex and certainly too expensive. This is a roadmap in which we have been actively pursuing for 18 months across a number of categories of enterprise software —from invoicing (Freshbooks) to remote support (TeamViewer) to help desk (Zendesk) to website creation (Wix).

> At Bessemer, Adam Fisher invested in Tel Aviv-based Wix in 2007 based on the platform and community they provided for creative self-expression, a novel idea during the Web 2.0 era. Bob Goodman and I invested in TeamViewer in 2009, a German provider of remote access software and desktop support software.

The continued growth of e-commerce and its reach into SMBs. Just as those smaller businesses have realized the power of the Internet as a channel for marketing (ala Yelp and Yodle), so too are they seeing it as a channel for selling their product. The widespread availability of product that can be drop shipped directly from manufacturers or via wholesale suppliers makes it even easier for the small guy to sell online.

Customers & Pricing

Shopify has grown its customers at an impressive clip.



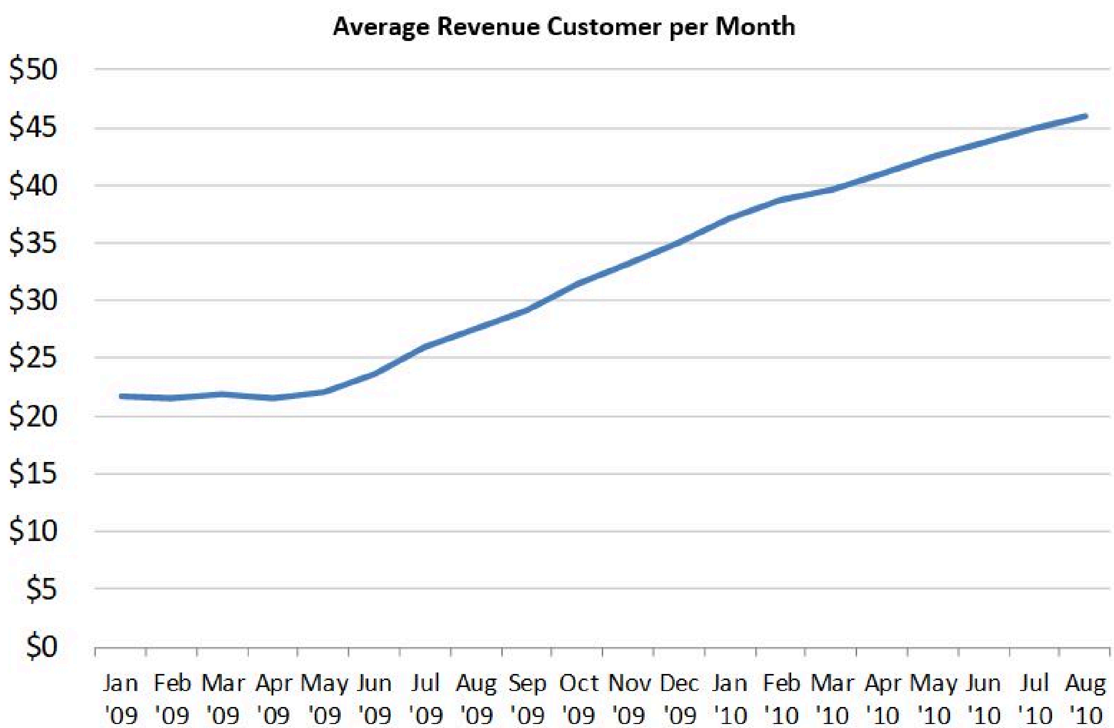
Typical customers are small online-only or brick-and-mortar retail businesses as well as "stay-at-home capitalists" who are looking to supplement the family income with a side business. On average, a Shopify customer is selling $13K of online merchandise a year. This average is very much skewed by customers who are selling just a handful of items a day. Shopify's largest customer is selling $10mm of merchandise annually.

In 2019, the number of merchants on the Shopify platform achieving over $1 million in GMV grew by 44%. Shopify continues to add 10,000 paying customers a week, with over 1,000,000 total customers and growing.

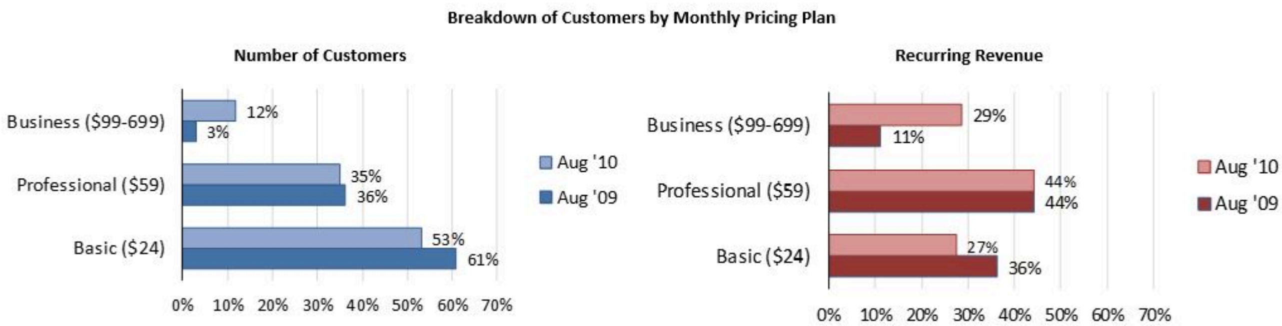
CUSTOMER EXAMPLES:

Customer	Products	URL
Melondipity	*Boutique baby products*	http://www.melondipity.com
Jojo	*Shoes*	http://www.jojoproject.com
DODOcase	*iPad cases*	http://www.dodocase.com
Ark°	*T-Shirts & underwear (U.K.)*	http://www.arkhq.com

Pricing plans are tiered, starting at $24 per month and goes as high as $700 per month with a transaction fee of 0.5–2% of sales. The distribution of customers is skewed towards to low-end. On average, customers are paying $45 per month. Over time, the average revenue per customer has increased.



The increase in ARPU has been driven by increasing transaction fee revenue as Shopify's customers grow their own businesses and the related increase in number of customers opting for higher-priced plans.



Product

Shopify is a SaaS application for setting up and running an online store. In many ways, its strength lies in its simplicity, which is ideally suited to small businesses. A non-techie can start taking orders from a professional-looking online store in a few hours after sign-up.

> Customize storefront's look & feel. Select a design template from their "Theme Store", which includes templates created by their community of 500 web designers. Those who want more flexibility can edit make direct edits to HTML or CSS. A customer can switch out a template and have their site dynamically updated.
>
> Organize and manage products. Add, list, edit and organize products using a streamlined interface. Drag-and-drop to order product images and descriptions.
>
> Perform basic inventory management.
>
> Accept credit card payments through payment gateways.
>
> Track and respond to orders. Track payment and shipping status on orders with detailed reports. Email customers from within Shopify.

The Shopify philosophy is to build only those features into that most customers need most of the time.

> They were one of the first cloud companies to successfully create a third party app ecosystem that enabled customers to get access to functionality without having to rely on Shopify to develop it. However in the early days they didn't have many customers so it was difficult to attract third party developers. They resorted to running contests for the best third party app, taking a page from our portfolio company Twilio which has also had success building an ecosystem of third party apps.

For capabilities that a high-volume retailer might need, Shopify has made available an open API that enables third party software to integrate into its platform. This means that Shopify can keep its product simple, while adding niche or sophisticated features to its platform without needing to build it themselves. From a customer's perspective, they can add a feature by accessing Shopify's "App Store". Customer take-up has been impressive, with roughly two-thirds (66%) of customers using at least one third-party app.

The App Store was launched a year ago and now has over 54 applications.

Apps range from those developed specifically for Shopify and those of vendors like PowerReviews that are integrated into a number of different platforms. Growth has been almost entirely organic. Until just two months ago Shopify had not talked to a single company in the app ecosystem. Some examples:

APP STORE EXAMPLES:

Functionality	Third-Party Provider	Cost
Recommendations	*DirectedEdge*	+$9 per mo.
Community Reviews	*PowerReviews*	+$29 per mo.
Accounting/Bookkeeping	*QuickBooks, Freshbooks, Xero*	+$10 per mo.
Facebook Store	*BeeShopy*	Free
Shipping Labels	*OrderCup*	+9 per mo.
Inventory Tracking	*Inventory Velocity*	+$20 per mo.
Fulfillment Services	*Fulfillment by Amazon*	Amazon per order
Email Marketing	*MailChimp*	Per volume
Live Chat	*Olark Chat*	+$15 per mo.

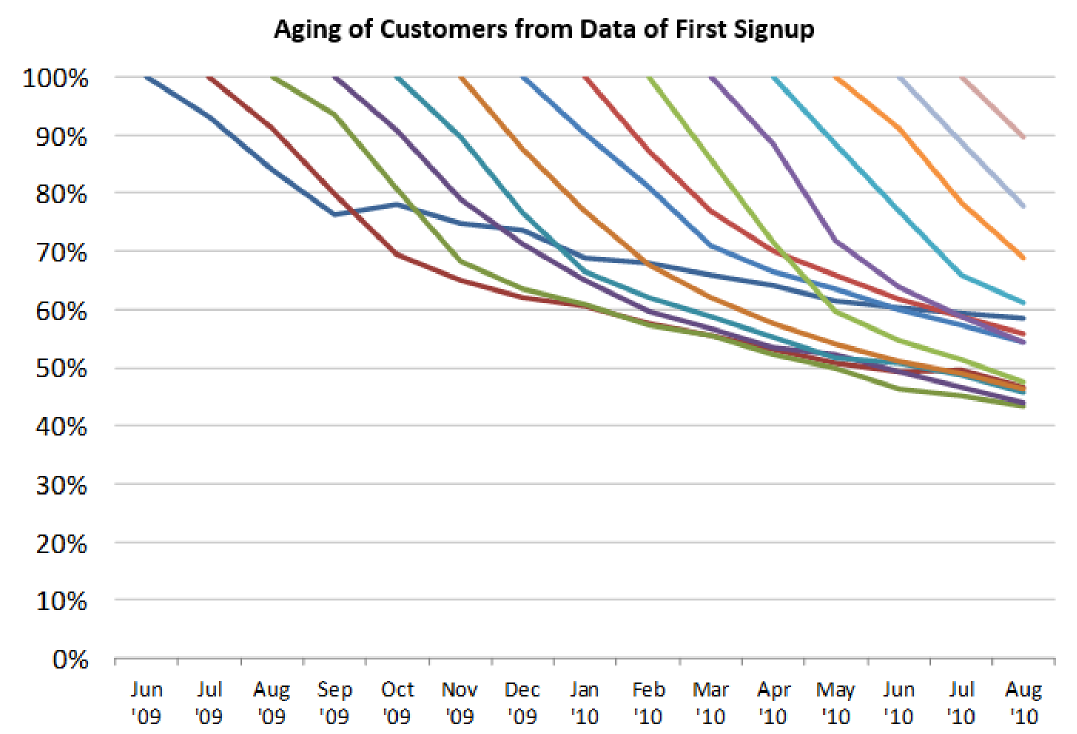
Competing vendors like Volusion, BigCommerce and Magento have also made available an API that enables third party software to integrate into its platform. These have seen limited uptake. Our diligence of customers has validated that the APIs made available by these vendors are extremely difficult to develop against.

Customer Acquisition & Retention

Roughly 65–70% of customers sign-up via word-of-mouth. Roughly 20% of customers sign-up via referrals from web design firms. Until Shopify had setup a data warehouse, they didn't know how crucial their web design firm channel could be for growth (as it has been for Wix and HubSpot). And just recently, the company hired a full-time person to cultivate this channel. Finally, roughly 10–15% of customers sign-up via paid channels, which is largely keyword marketing and the occasional contest program. It is spending $25–70K per month and, as they would admit, the team's marketing sophistication is rudimentary, at best. Despite this, they are able to acquire a customer for between $175–225 and can pay back that spend in 7–9 months on a churn-adjusted basis. We believe that Shopify has under-invested in marketing in a big way and that with a VP of Marketing and a few experienced people in place, the company can accelerate growth.

Like most businesses selling to SMBs, there is a sharp drop-off in the first few months following sign-up. For Shopify, this is no different. By month 3, Shopify retains roughly 75% of its customers. By month 12, 50–60% of customers remain. Once stabilized, monthly churn ranges from 3–5%. Overall, Shopify's retention curve looks quite similar to that of Wix.

> A 5% monthly logo churn likely scared off other investors. We got comfortable investing in SMB companies that have high logo churn so long as 1) the company doesn't have to pay a lot to acquire those customers, and 2) the customers that do stick around end up making up for the ones that churn. We look at cohort retention to figure out the latter. Shopify was strong in both cases.



Market Opportunity

Shopify targets small and mid-sized brick & mortar retailers as well as people looking to start an online-only store to sell physical goods. Estimating the size of this market is difficult. However, the size of similar, but much more legacy and US/Canada-only businesses provide a proxy: Homestead (~85K customers), Yahoo Stores (~55K) and eBay ProStores (~30K). At the lowest end, Shopify targets at-home capitalists—the same audience as Etsy, which has roughly 80,000 active sellers generating $300mm in annualized gross merchandise value.

We are also excited by the potential to expand more aggressively beyond online retail and into brick & mortar businesses which desire an integrated online presence. It is in this area that Shopify is dedicating a large portion of its resources. Based on a flood of requests from existing customers, Shopify is developing a simple retail point-of-sale and inventory management system for use with an iPad/iPhone/smartphone that ties into Shopify's online storefront platform. Shopify will enable its merchants to offer their brick and mortar customers a point-of-sale experience similar to that found in physical Apple Stores at a fraction of the cost of more traditional point-of-sale offerings.

Another capability on the company's product roadmap is support for recurring billing. Shopify is currently designed to meet the needs of customers seeking to sell physical goods online. However there is growing marketplace demand for shopping carts that enable the sale of digital goods and software on a recurring basis. Shopify plans to offer recurring billing capabilities at some point in the next year and the compounding nature of those customer accounts provides the potential for substantial economic upside to this investment.

Competition

The market for traditional ecommerce software is crowded, but the needs of SMBs are growing rapidly to include mobile commerce, web-based inventory management, and innovations around point of sale systems. We believe that Shopify's technology solution is better positioned than competitors to provide these solutions to the growing number of "Main Street" retailers who are coming online.

SMB Ecommerce Platforms & Shopping Cart Software (*eBay ProStores, WebStore by Amazon, BigCommerce & Volusion*)—Volusion is perhaps the most formidable competitor. In 2009, it generated $23mm in revenue. It is priced in the same range as Shopify and has a similar feature set, but is less drag-and-drop than Shopify (customization requires some programming).

Domain Name Registrars (*GoDaddy, Yahoo*)—The large registrars are marketing machines which have millions of customers that they can up-sell at the time of registration or at a later period. Most offer only basic shopping cart capabilities. However, it is certainly conceivable that they can expand with a more full-featured offering.

Mid-Tier Ecommerce Products (*Magento Commerce*)—Magento is the leading open source ecommerce product and is sold on a perpetual licenses basis. The product has a reputation for being powerful but complicated to implement and scale, typically requiring an engineering team for implementation, operation and performance optimization. Magento is growing nicely and plans to compete with Shopify by offering a SaaS version of its product.

While the large, full-feature e-commerce packages (*Escalate, IBM, ATG, Demandware*), offer a superset of Shopify's features, we do not see them as competition. As with players in other categories of enterprise software, we think it will be hard for these companies to compete on the low-end.

> A few months after we invested, Oracle acquired ATG for $500m. I remember emailing with Tobi about how great it would be to someday top that outcome because it seemed aspirational and far-reaching to say the least. At that time, none of the large acquirors and very few public market investors cared much about SMB-focused businesses. Few could have imagined an SMB-focused like Shopify ever going public. But the long-term trend of ecommerce growth ultimately dominated any concerns around selling to SMBs.

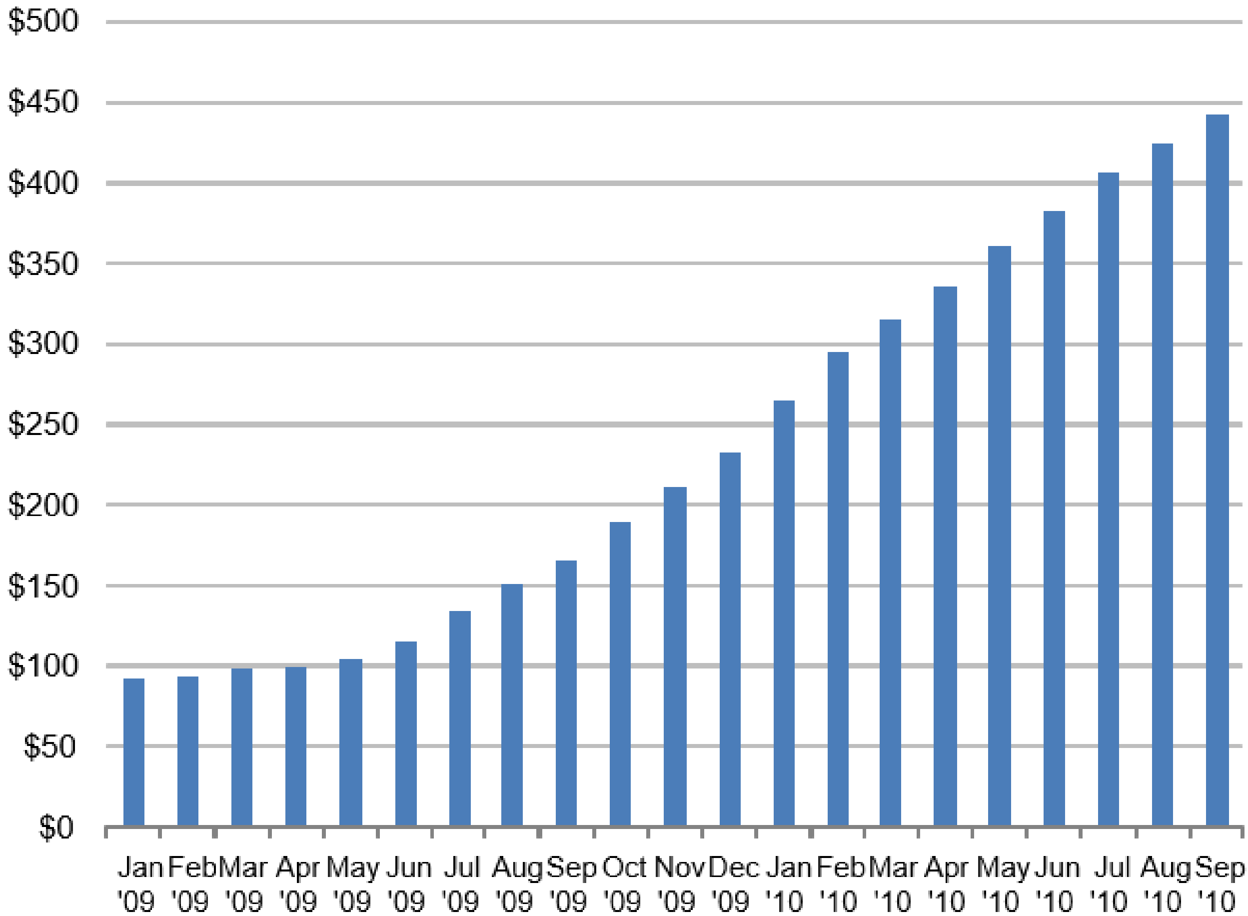
Team

Shopify was founded in 2007 by two young Ruby on Rails core developers. One co-founder is no-longer active. The other, Tobi Lütke, is their CEO. Tobi is a relatively young programmer who was part of the Ruby on Rails core development team. Tobi has largely bootstrapped the business and has done a good job at that. He has a clear vision for building the business and recognizes his own shortcomings. We don't feel like there is any immediate need to replace him as CEO, but will need to ensure that he has more senior talent around him. The business desperately needs a VP of Marketing and to more generally hire marketing talent. We will likely look beyond Ottawa to find marketing talent. Having met other members of the senior team in Ottawa, it is clear that their strength lies in product design and user experience.

> Is this first-time founder capable of recruiting top talent and growing a team that scales with the company? Carrying out their vision while running a business? Tobi has not only done a fantastic job as CEO, but he recruited and built an outstanding team who are still there today. Throughout our due diligence process, Harley Finklestein did all the heavy lifting to our requests and was incredibly responsive. He's still the Chief Operating Officer. And shortly after we invested, Tobi hired Craig Miller, who is now Chief Product Officer at Shopify but played the VPM role for many years.

Summary Financials

Shopify generates an overwhelming majority of its revenue from recurring monthly fees that it charges customers and a small percentage from a transaction fee of 0.5–2% on its customers' merchandise sales.



Unfortunately, the company has not forecasted 2011. Historically, there wasn't much need to do forecasting as a cash-in-the-bank based bootstrapped business. We don't think it unreasonable for Shopify to double revenue next year. At close, Shopify will have roughly $6.3mm in cash ($.3mm existing and $5mm additional).

Summary P&L

Canadian Dollars (1 Cad = 0.99 USD)	Total 2008	Q1 '09	Q2 '09	Q3 '09	Q4 '09	Total 2009	Q1 '10	Q2 '10	Q3E '10	Q4E '10	Total 2010E
Sales Revenue	$1,068,625	$509,827	$542,854	$623,186	$793,387	$2,469,255	$963,891	$1,136,218	$1,407,743	$1,759,679	$5,267,531
Cost of Revenue	$204,693	$91,020	$113,478	$141,100	$166,541	$512,138	$186,652	$212,272	$262,999	$328,749	$990,671
Gross Profit	$863,932	$418,806	$429,377	$482,087	$626,846	$1,957,116	$777,239	$923,946	$1,144,744	$1,430,930	$4,276,860
Gross Margin %	*81%*	*82%*	*79%*	*77%*	*79%*	*79%*	*81%*	*81%*	*81%*	*81%*	*81%*
Operating Expense:											
S&M	202,629	118,730	192,847	310,231	262,228	884,036	366,282	355,252	276,646	387,129	1,385,309
R&D	206,257	91,211	103,591	125,860	133,408	454,070	195,892	234,053	273,001	369,533	1,072,478
G&A	344,949	79,591	134,740	190,119	189,436	593,885	182,886	187,796	236,427	246,355	853,465
Total OpEx	$753,835	$289,532	$431,178	$626,210	$585,072	$1,931,992	$745,059	$777,101	$786,074	$1,003,017	$3,311,252
Operatng Income	$110,096	$129,275	($1,802)	($144,123)	$41,774	$25,124	$32,179	$146,845	$358,670	$427,913	$965,608
D&A	25,350	0	0	52,092	19,927	72,020	22,137	24,995	25,745	26,517	99,394
EBITDA	$135,446	$129,275	($1,802)	($92,031)	$61,702	$97,144	$54,316	$171,840	$384,415	$454,431	$1,065,002
EBITDA Margin %	*13%*	*25%*	*0%*	*-15%*	*8%*	*4%*	*6%*	*15%*	*27%*	*26%*	*20%*
Ending Cash Balance	$460,956	$536,577	$661,407	$545,214	$885,018	$885,018	$976,903	$1,108,955	$1,343,541	$6,695,387	$6,695,387

Deal

This is a deal for BVP to invest $5mm at $25mm pre-money, with a 13.5% option pool built into the pre-money valuation, 4% of which will be re-granted to existing employees. This Series A security is a 1x straight preferred. BVP will receive two of five board seats and will have the right to force a sale after 6 years.

In addition, we anticipate an opportunity to purchase $2mm worth of common shares at a 25% discount from a co-founder who left the company several years ago. The additional $2mm would increase our exposure to $7mm, but also increase our ownership to 31% at an attractive price. We would likely share a portion of the $2m investment with Felicis.

Outcomes Analysis

There weren't any big internet exits in Canada in 2010 and some of Shopify's existing shareholders and advisors thought the biggest possible outcome for the company was ~$50m. In our term sheet negotiations, I initially asked for some structure in the deal (remember, I was nervous as this was my first solo deal as a partner) so that if Tobi decided to sell for $50m we'd make money. Tobi, to his credit, resisted and instead held out for a "clean" deal. We agreed to keep it clean, but before we signed I asked for his word and a handshake agreement that he wouldn't sell Shopify if he got an offer for $50 or $75m. Lucky for us, we were completely wrong in our outcomes analysis; the upside case was off by more than two orders of magnitude!

(Dollars in Millions)	Exit Value	Timing (Years)	Prob.	Est. Future Dilution	Gross Proceeds	Mult.	IRR %
Company over-invests, burns through cash and can't return to profitability.	$0	2	12%	None	$0.0	0.0x	
Marketing is not effective. No organic growth.	$8	2	8%	None	$3.0	0.6x	-20%
Marketing is not effective. Organic growth slows to 20% CAGR. Exits at $10mm annual run rate.	$25	3	15%	None	$5.0	1.0x	0%
Growth slows, but still grows at 30% CAGR. No ARPU increase. Exits at $15 - 20mm annual run rate with 30% EBITDA margins.	$50	3	28%	None	$10.1	2.0x	34%
Growth rate of 45% CAGR. Monthly ARPU increases from $45 to $65. Exits at $30mm annual run rate and 30%+ EBITDA margins.	$100	4	28%	10%	$18.1	3.6x	42%
Marketing maintains organic growth rate of 50-60% CAGR. Exits at $65mm annual run rate. Moderate success attracting "Main Street" local merchant customers.	$250	5	7%	20%	$40.2	8.0x	49%
Becomes a leading commerce platform for both medium, and larger businesses. Market expands as offline, "Main Street" merchants adopt Shopfy for ecommerce, inventory management, and POS. Exits at $100mm+ annual run rate.	$400	6	3%	25%	$60.3	12.1x	49%
					Gross Proceeds	**Mult.**	**IRR %**
				Weighted Average (to BVP)	**$13.4**	**2.67x**	**30%**

Note: Assumes some level of dilution to this investment through subsequent financings.

Conclusion

We are enthusiastic about the potential for Shopify to disrupt existing solutions with a consumer-like product that has resonated with customers and enabled the company to demonstrate strong organic growth. Further, uptake of the App Store—by both third-party developers and customers—provides differentiation and a path to break away from the pack. We recommend this investment.

Appendix

Consumerization of Enterprise Software Roadmap

There are emerging SMB versions for almost all categories of enterprise software—from invoicing to accounting to CRM to IT management. The Internet as a medium for reaching and transacting with customers is also creating whole new software categories—from collaboration to online advertising. Historically installed software has been too complex for SMBs to setup and use. And more often than not, SMBs couldn't afford it anyway. In turn, vendors have struggled with making direct or even channel sales profitable. This is now possible; thanks to Web 2.0 and the SaaS delivery model and the ability to use online marketing to profitably acquire and provision SMB customers.

Incumbent enterprise software vendors have proven themselves unable to compete as they are fundamentally not oriented to sell to or serve SMBs. They would love to move down market. But doing so would disrupt their business models and cannibalize cash cows. Fundamentally, they know how to sell direct and by channel, but don't know how to market online. Just as important, the incumbents aren't strong at building consumer software or creating great Web experiences.

Because barriers-to-entry are low and customer churn can be high, we believe that breakout companies will have the following characteristics:

- Product categories with well-known and well-defined pain points and a natural stickiness
- Companies achieving strong growth with limited marketing spend
- Companies with good customer acquisition economics, even if still early
- Companies beginning to build a brand and scale relative to competitors
- Teams with a strong product design sense and consumer Internet DNA

We believe that Shopify meet these characteristics. And over time, like leaders in other categories, we feel that Shopify and its App Store strategy gives it a path to ultimately disrupt enterprise vendors with a "come from below" offering and move up market.

Medi Assist

To: BVP Group
From: Vishal Gupta and Chitresh Modi
Date: 22 November, 2010
Re: Medi Assist Healthcare Services

Overview

1 USD = 40 INR

We recommend a $16 million investment to finance the management buyout of Medi Assist, a Bangalore based third party administrator (TPA) of health insurance related claims. Medi Assist is the largest player in the growing health insurance administration space in India.

India is one of the most privatized healthcare markets. Total healthcare spending is estimated at $35 billion annually (versus $1 trillion in the US). The healthcare services sector is dominated by private players who contribute 82% of total services provided and the rest is between federal and the state governments. This is an extremely high proportion by international standards. The healthcare spend is predominantly met through out of pocket by the consumer (62%), government and employer spend is 35% and only 3% is met through some form of commercial health insurance cover.

The total private health insurance penetration in India is still very low and covers only 20 million lives (versus a 1.1 billion population). Since deregulation of the insurance sector in 2002, the health insurance premium has been growing at a CAGR of 35% and aggregated to $1.8 billion in premiums for FY10; the market expected to touch $5 - 6 billion by the year 2015. TPAs provide a variety of services such as pre-authorization, claim settlements, customer interfacing, reimbursements, hospital networks and specialized value-added services for corporate customers.

Medi Assist is India's largest TPA with a network of 4,750 hospitals across 20 states and provides services to all health insurers in India. It is a profitable and rapidly growing player with $9.7 million in revenues with 33% EBITDA margins. It has a ~10% share of India's health insurance premium under management in FY10. Over the last three years, revenues have grown at 72% CAGR. Medi Assist services 5 million lives with $176 million in insurance premiums in FY10 and is projected to grow by 42% in FY11. In the first six months of FY11, it has generated $6 million in revenue and $2.5 million in EBITDA. For the full year ending March 2011, Medi Assist should deliver $13.4 million of revenue, $4.7 million in EBITDA. However, due to an accounting deferment, the FY11 Revenue and EBITDA will be $11.8 million and $3.1 million respectively with net income of $1.9 million.

The health insurance industry in India

The insurance industry was opened to the private sector in 2001 and since then the health insurance premium has grown to $1.8 billion from $125 million, representing a CAGR of 35%. However, today, only 10-11% of the population is covered through health financing schemes with 3% covered through commercial health insurance offered by general (non-life) or health insurance companies and the balance covered through state and central government funded plans & corporate plans. The health insurance industry is projected to grow to $5.5 billion by 2015.

Health insurance products can be divided into two segments – corporate/group cover and retail/individuals. Both these segments are growing at 25%+ number of lives covered. Insurers are pushing the retail channel and with growing awareness and affluence retail customers are buying health insurance. Individuals are incentivized through income tax breaks for the insurance premium they pay for their parents, self and other dependents. For companies it's a function of providing incentives to the employees as well as growth in number of employees that is increasing aggregate health insurance cost. The Insurance Regulatory and Development Authority (IRDA) eliminated tariffs on general insurance in 2007; as a result, all the tariff products which were extremely profitable are now being sold at significant discounts. Health insurance rates were not guided by any tariff, hence was cross subsidizing the profitable products. Post de-tariffication, the insurers are focusing on product profitability and are raising the premium rates for health insurance to offset the cross subsidy.

There are currently 20 general (non-life) insurers who offer health insurance in India. About 60% of the health premium is underwritten by the four public sector insurers and another 33% is underwritten by the top five private sector insurers. The health insurance portfolio is causing huge losses for the general insurance industry, especially as it contributes about 23% of the total premium underwritten. The industry average claims to the premium underwritten ratio is about 106% and the public sector insurers are working in the 115-125% range. Last year, three largest private insurers – ICICI Lombard, Bajaj Allianz and Reliance have lost market share in a conscious effort to attain profitability. The health insurers need an efficient claims management system and to reduce the claims cost. The following are some of the items that require immediate attention for running the operations profitable and smoothly.

Fraud Control – Insurers claim that with effective fraud control the claims outgo could reduce by as much as 15-20% from current levels.

Standard rate card for treatment – It has become a standard practice of many hospitals to charge the insured based on the amount of health insurance cover they have. Pre-negotiated standard rate cards for treatments can prevent hospitals from overcharging.

Seamless operations – Claims is a strenuous process today as each segment of the claim settlement process work independently. A seamless operations network will not only remove the hassles of reconciliation but will help deliver services within the desired turnaround time. The Insurers will be able to manage the float for claims payment and the Hospitals will receive the payment more efficiently.

The health claims administration industry

There are currently 27 health insurance Third Party Administrators (TPAs) licensed by the regulator. Nine players command more than 80% of market share. The TPAs are responsible for administration of the policy on behalf of the insurer and currently administer the entire private insurance market of $1.8 billion in premiums. Recently the self, state and federal funded health schemes have also started moving towards third party administrators. These would add another $3-5 billion of potential insurance premium to be administered with more than 60 million new lives covered each year.

Medi Assist recently won a contract under such self-funded schemes, the Yashisvini scheme which covers 3.2 million farmers in Karnataka. There are two other contracts in the bidding stage where the policy covers 200 thousand families of police staff in the state of Maharashtra and another where 1.8 million families below poverty line are covered in a district in Karnataka. These three schemes can earn Medi Assist a guaranteed annual fee of $1 million for the next three years.

Currently the administrator provides claims administration and settlement, cashless hospitalization, reimbursement, identification cards, hospital networks, pre- authorization, pre policy medical checks and other services. The insurers pay the administrator a fee anywhere between 4.5% and 5.5% of the premium serviced. The fee is a negotiated rate between the TPA and the insurer.

As the premium per life is moving up, the TPAs are being asked to charge fee on per life serviced basis. It is expected that individual/retail policies will be given to the TPAs on a per life fee basis while the corporate/group policies on % of premium underwritten. The average fee per life today is $1.76 for the Medi Assist portfolio. Most TPAs will not be able to sustain at this revenue per life and hence we see this as the floor price in the industry. The Premium per life is expected to grow at 8-10% per annum and the TPA fee per life at 5-8% per annum.

Medi Assist history and business overview

Medi Assist was established in 2002 by N S Raghavan (ex-Infosys founder) and was subsequently acquired by Reliance in May 2006. Since then, it has gone on to become the largest player and most profitable player from the fifth largest. It currently manages $176 million of premiums and has 10% of India's Health Insurance premium under its management.

The insurance companies give out business to health administrators regionally based on their provider network capability in that region, past track record in claims administration (claims ratio), customer satisfaction with the TPA and the relationship. The fee for the TPA service is negotiated regionally and ranges from 4.5% to 5.5% of the premium serviced. The retail segment is awarded by regions; however, all corporate entities have the flexibility to pick their administrator and their decision is primarily driven by service levels and relationship. The insurance company at the start of every month based on the expected claims ratio provides a fortnightly float to the administrator for settling claims and then keeps topping it up every week or fortnight.

Medi Assist has traditionally been extremely strong in the corporate sector for administering of their health insurance schemes. It has serviced and managed the top IT service companies in India such as Infosys, TCS, Wipro, HCL and Mphasis and has all the major multinational IT companies such as HP, Intel and IBM as customers. It also services the large conglomerates such as Reliance, Tata, LIC and a whole host of other customers. Most of them have been with Medi Assist for the last three years or more.

Medi Assist today has one of the largest provider networks in India with more than 4,700 empaneled hospitals across 20 states. It also ranks the highest among customer satisfaction because of speedy settlement of claims and fastest turnaround times on pre-authorization.

Reliance Divesture

Reliance is divesting this business as it is no longer of strategic priority. Even in a best-case scenario, the business is likely to generate less than $15 million in revenues inside a multibillion-dollar conglomerate which is far more focused on power and infrastructure projects.

The health insurance eco-system

Along with Medi Assist MBO the consideration for the transaction includes two companies which run disease management and PBM.

Disease and wellness management

This Company will service insured with chronic diseases, ailments contributing significantly to claims for the insurer. This is at an evolving industry with very few players, the insurers are currently not offering cover for chronic diseases except in corporate plans. This company will offer Value Added Services (VAS) to the corporate clients and insurers provided cover for chronic diseases. Today the company has revenue of $1 million and is EBITDA positive.

Pharmacy benefits management (PBM)

Medybiz Pharma is a wholly owned subsidiary of Medi Assist. Medybiz is in the business of home delivery prescription refill, Mail order refill, Disease management, Formulary management. It is currently serving 5,000 customers in 11 cities.

Acquisitions under negotiation

Medi Assist is currently in conversations for two small tuck in acquisitions with a total cost of $2 million which will allow the company to offer seamless payer provider connectivity and have an analytics engine for claims analysis.

Claims Exchange

Healthsprint has built a platform which enables the TPAs to efficiently communicate with the Hospitals. The entire data that resides on the platform enables all users to do analytics on predictive medication and payment schedules. The TPA can offer superior services to both the claimant and the hospitals by streamlining right from the policy coverage verification to the payment process.

Claims Analytics

The biggest grievance of the health insurer is the rising claims cost, the most common request of the Insurer to the TPA is to analyze claims effectively and control fraud and instances of overcharging of treatment cost. Medi Assist has both financial and medical data for the claimants, which could be used for marketing analytics, predictive modeling and forecasting treatment outcomes and cost.

The founder – Dr. Vikram Chhatwal

Dr. Chhatwal comes with a rich 10 years of experience in the healthcare services industry. He is currently the Chief Executive Officer for Reliance Health and in on the board of Medi Assist. Prior to this he held top management positions at the Apollo Hospitals group during the period between 2000 and 2005. Dr. Chhatwal is a trained cancer surgeon and a PhD in Palliative care. He did his doctorate in Medicine form NUS Singapore and his MBA from ENPC – Paris. We have known Vikram for last seven years and he comes across as a scrappy and high integrity entrepreneur with deep domain knowledge. He is very well connected and respected within the healthcare ecosystem in India.

The deal

BVP will work with the management to buyout of Medi Assist and Net Logistics for a consideration of $16 million (INR 72 crore). The company has $4 million of cash as of July 2010, the cash is expected to move up to $5.7 million by March 2011. The company has no debt, and the cash will remain within the company post the transaction. Hence, the effective enterprise value of the company by the time we acquire will be closer to $14.3 million. The company is being valued at 4.6 times FY11 EV/EBITDA and 8 times FY11 PE.

P&L Statement (in US$ million) *

	FY 10A	FY11P
Total PUM	**176**	**250**
Average TPA Fee %	4.60%	4.60%
TPA Fee	**8.1**	**11.5**
TPA Fee Recognized	**8.8**	**9.8**
Other Revenue Streams	**0.9**	**1.9**
Total Revenue	**9.7**	**11.8**
Personnel Cost	3.0	4.3
Admin Expenses	3.5	4.4
EBITDA	**3.2**	**3.1**
EBITDA Margin	33%	26%
Depreciation	0.4	0.3
Interest	0.1	0.1
PBT	**2.7**	**2.7**
Taxes	0.0	0.9
Net Income	**2.7**	**1.8**
Net Income Margin	28%	15%

*As per the accounting rules a TPA can recognize revenues only for the period the policy has been serviced. Hence at the end of the financial year, the revenues for the unexpired period are deferred to next year's P&L statement. In FY 10, the revenue earned from FY09 deferment was higher than the revenue deferred to FY11, hence the Revenue and EBITDA reported was higher than the Cash Revenue and Cash EBITDA. On Cash Basis, the EBITDA has grown from $2.5 million in FY10 to $4.7 million in FY11.

Cash Flow Statement (in US$ million)

PAT	2.7	1.8
Depreciation	0.4	0.3
Change in Working Capital	-1.4	-0.4
Cash Flow from Operations	**1.7**	**1.7**
Cash Flow from Financing	**-**	**-**
Cash Flow from Investments	**-2.5**	**2.1**
Opening Cash	2.7	1.8
Total Cash	**-0.8**	**3.8**
Closing Cash	1.8	5.7

Balance Sheet Statement (in US$ million)

	FY10	FY11
Share Capital	0.9	0.9
Reserves & Surplus	5.4	7.2
Total Sources of Fund	**6.3**	**8.1**
Fixed Asset		
Gross Block	2.0	2.4
Less: Depreciation	1.4	1.8
Net Block	0.6	0.6
Investments	2.5	-
Deferred Tax Asset	0.1	0.1
Sundry Debtors	2.3	5.0
Unbilled Revenue	0.8	-
Cash and Bank Balances	1.8	5.7
Loans and Advances	2.2	1.4
Other Current Assets	0.1	-
Current Assets	7.1	12.1
Current Liabilities	3.7	4.7
Provisions	0.2	-
Net Current Asset	3.2	7.4
Total Uses of Fund	**6.3**	**8.1**

Scenario analysis

Probability	Scenario	PAT $ mn	PE (x)	Valuation $ Mn	Our Investment $ mn	Multiple (x)	IRR
5%	Everything that can go wrong goes wrong. MA does not get any PSU business; the new ventures fail. The large private sector insurers move all business in house, and we have to pay for the tax withholding liability. The company winds up with no assets.	-	-	-	16.0	-	-100.0%
30%	MA loses much of its business to the Common TPA, gets only 10% of the PSU Business. They do only 6% of Private insurance business, as most of them run in-house TPAs. The value-added business does not take off as well as planned.	3.7	8.0	29.8	16.0	1.5	10.4%
35%	MA retains most of the corporate customers as before, even though In-house administration and Common TPA are successfully run. MA retains its 10% market share of Insurance Premium.	9.7	10.0	97.2	16.0	4.9	48.5%
25%	MA retains most of the corporate customers as before; MA is the preferred TPA after the common TPA and does a large portion of the corporate business with private Insurers. MA garners a 15% Insurance Premium. The VAS and PBM Business get traction and run at an EBITDA of $5 million.	16.1	12.0	193.6	16.0	9.7	76.4%
5%	MA retains most of the corporate customers as before. The Common TPA does not take off well. MA is the preferred TPA after the common TPA and does a large portion of the corporate business with private Insurers. MA garners a 18% Insurance Premium. The VAS and PBM Business run at an EBITDA of $10 million.	19.6	15.0	294.0	16.0	14.7	95.8%
100%	Weighted Average	9.5		106.0	16.0	5.3	51.7%

Risks

1) Common TPA: The four public sector insurers are planning to set up a Joint Venture with a healthcare BPO/Indian TPA to migrate a bulk (~50%) of the claims to this JV. This will allow them to negotiate better rates with the provider network. Medi Assist is the only Indian TPA which has been short listed based on the technical criteria and other Indian healthcare BPO's. The timing and probability of this is uncertain given resistance from local TPA's and regulatory approval.

2) In-House Administration: Large private insurers such as ICICI Lombard, Star Health and Bajaj Allianz, which have 80% of the private sector health insurance premium, are servicing most of the policies in-house. In-house administration has a high cost structure especially if the premium under management is low. The insurers are moving the administration in-house for primarily two reasons. 1) Effective claims control through fraud management and standard price list with the hospitals, and 2) For quality service to its customers. Based on our interactions with Insurers, if the TPA can do manage these efficiently for them, they would rather get rid of the hassle of managing the in-house team and the process. Medi Assist has been able to do improvements in this direction and has been able to use claims analytics as an effective tool for claims control.

3) Financing growth: Given the relatively small BVP India fund size, our ability to finance tuck in acquisitions will be quite limited. We may have to concede majority control of the economic interests if there is an opportunity for material acquisitions.

Conclusion

We believe that this is a fast-growing industry with limited risk and have a shot at consolidating market share from smaller players. We are backing the leader in this space and Dr Vikram Chhatwal who we think has the right relationships and capability to build a team in this space. We have an opportunity to invest ~$16 million in Medi Assist and the allied companies. We enthusiastically recommend this investment.

The Memos

Fiverr

To: BVP Group
From: Adam Fisher, Jeremy Levine,
Ophir Reshef
Date: January 10, 2011
Re: Fiverr Investment
Recommendation

Overview

We recommend BVP invest $3.5m in Fiverr, an Israel-based company that has created a new global marketplace for buying and selling five-dollar "micro-services." BVP will invest $2.9m in a $4m round alongside the existing angel investors at a pre-money valuation of $14m. Additionally, BVP will purchase $600k of shares directly from the two founders (such shares will have the same rights as those acquired in the primary purchase). Following both transactions, the resulting ownership for BVP will be 19.4%. The company does not yet have an ESOP, so we expect to end up at ~17.5% ownership after the creation of a 10 percent option pool. The shares in both transactions are ostensibly "common" shares but bear most of the preferred economic rights we typically seek, including a straight preferred liquidation preference along with first refusal, co-sale and pre-emptive rights.

Last Monday, the CEO and co-founder of Fiverr, Micha Kaufman, presented to the partnership from Herzliya. The group was generally enthusiastic about the potential to build a new marketplace for services and impressed with the traction the business has generated thus far. However, many in the group expressed reservations based on the impracticality and eccentricity of many of the micro-services currently offered in the marketplace. Some also expressed concern about the danger of being consigned to a "micro-revenue" model should the company fail to grow beyond $5 transactions. While we acknowledge and share these concerns, we believe the tremendous upside from circumventing these early stage risks justifies an investment.

In summary, we are recommending an investment because Fiverr exhibits most of the attributes we seek in early stage consumer Internet deals including strong momentum, organic growth, capital efficiency and impressive customer satisfaction. We are also attracted to the low burn rate, which will allow the company to experiment with a lot of new ideas without additional capital from BVP.

The Fiverr Service

Fiverr is a marketplace for a category that the company defines as micro-services. These services (referred to as "gigs") are smaller than the projects sourced through marketplaces such as eLance and ODesk, but require more skill and creativity than the tasks performed at Mechanical Turk/CrowdFlower. It is also akin to the myriad service offerings found on Craig's List (note Jeremy's "picking apart Craig's List" thesis), but unique in several respects which we will detail below. Since its launch in late February 2010 Fiverr has grown rapidly to 60K transactions / month (all for $5) in December without any marketing spend and an 8-person team. Fiverr appears to be in a unique position to go after a large untapped opportunity and has many of the favorable characteristics that marketplaces exhibit, including quasi recurring revenue, a strong community of users who promote the site, a scalable model and a natural barrier to entry that grows over time.

The idea for Fiverr started when one of the founders tried to set up a customized Wordpress blog, and had some minor technical issues he couldn't solve. It was obvious that there were many people who knew the solution to his problem, but there was no way he could find them easily and get them to help him for a reasonable fee. The founders realized that there is considerable demand for a wide variety of services, which require some knowledge, experience or skill to provide them, yet which still don't require a true professional or business engagement. Conversely, with a wide enough definition of "services" they realized that everyone knows something or has the talent to do something that is of benefit to someone else. Hence, the founders decided on the first of two key principles of Fiverr marketplace, namely, that any legitimate service can be offered by anyone regardless of their qualifications or background. The idea was to appeal to the supply side of the market place by asking with the question of "what would you do for $5." The aim was to populate the site with gigs, but more importantly to allow and encourage each individual to decide for themselves what they are able to offer, regardless of how silly, mundane, creative or esoteric it may initially seem.

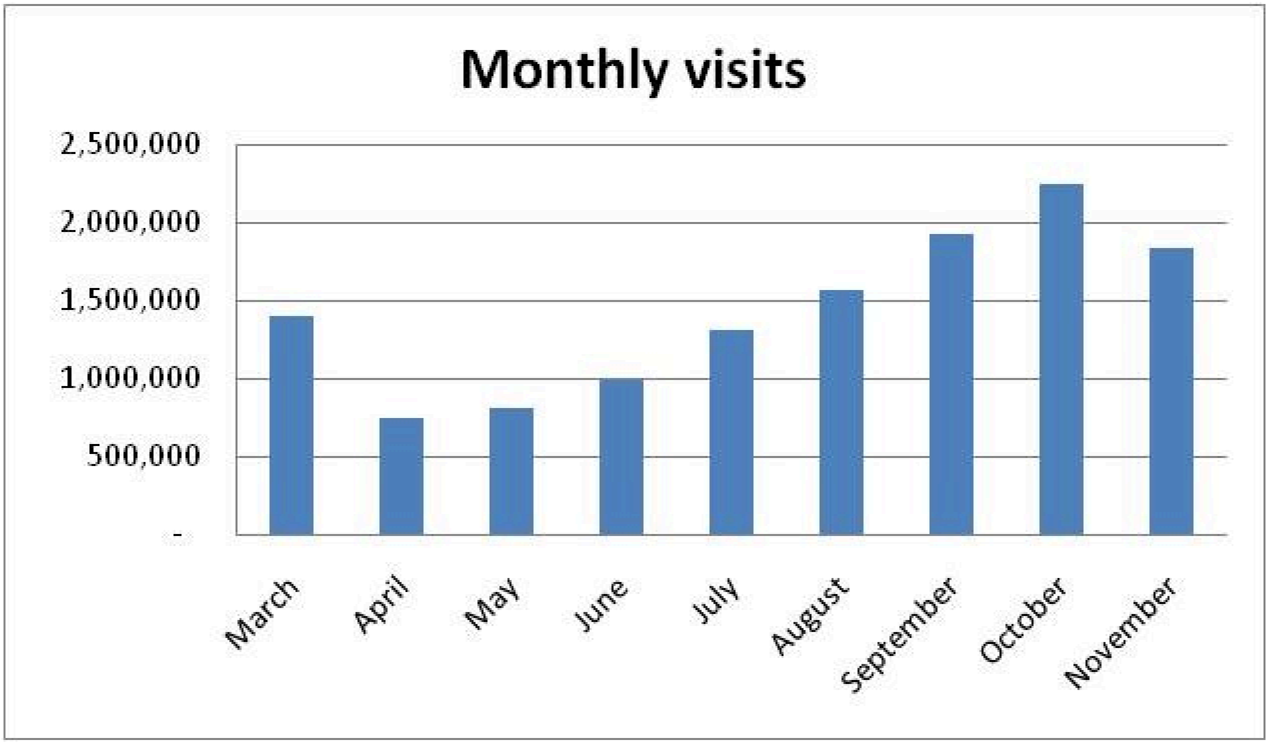
The second key principle of the marketplace is that every service is priced at $5. While this decision may seem odd and limiting, it has proven very clever. Removing pricing from the equation forces sellers to differentiate based on the quality of the service they want to provide and not based on price. Such rigidity also forces sellers to be creative and efficient if they are to make any profit at $5. More importantly, the fixed price component has been a major reason that buyers have been quick to purchase gigs and to do so repeatedly (which is essential for a service that should only take minutes to perform). A "one-price" offering eliminates the negotiation and removes any hesitation on the part of the buyer once there is interest in the gig. Furthermore, the low price point is a "no-brainer" for most buyers, which explains the relatively high conversion and satisfaction metrics. Finally, it is worth noting that $5 is not zero. Even a minor payment such as this facilitates a degree of seriousness from both sides to raise the transaction success rate.

The downside, of course, is that the market is limited to services that can be priced at $5, and Fivver's revenue is always a fraction of that. Surprisingly, this hasn't been as much of a deterrent for quality sellers as one would expect, as many sellers offer services that are clearly worth more than $5 (e.g., produce video or audio), presumably aiming to promote themselves and get fully-priced follow-on jobs outside of the Fiverr marketplace. Interestingly, there are many repeat buyers, including bulk buyers who distribute the same task to multiple sellers to take advantage of the low price. The average buyer made 5 purchases so far, with over 1% of buyers making 50 purchases or more. Also intriguing is the fact that 7% of sellers are also buyers, often using their income from selling to make purchases. From the sellers side, while they don't make a living off of Fiverr, 40% of those who post gigs to the system are able to sell, with an average of 14 gigs. A few sellers were even able to make thousands of Dollars, and the most successful one sold 3,300 gigs.

The variety of services offered and purchased in the system is impressive, and illustrates the size of the micro-services market potential. The most common popular categories are online marketing, graphics / creative ("I'll produce a logo / product video"), content ("I will write a search engine optimized 500 words assay"), tutoring of various kinds ("I will show you how to put new strings on a guitar"), and fun ("I'll make a funny caricature from your photo"). The company has a small moderation team that approves only the legitimate gigs (about 40% of gigs suggested).

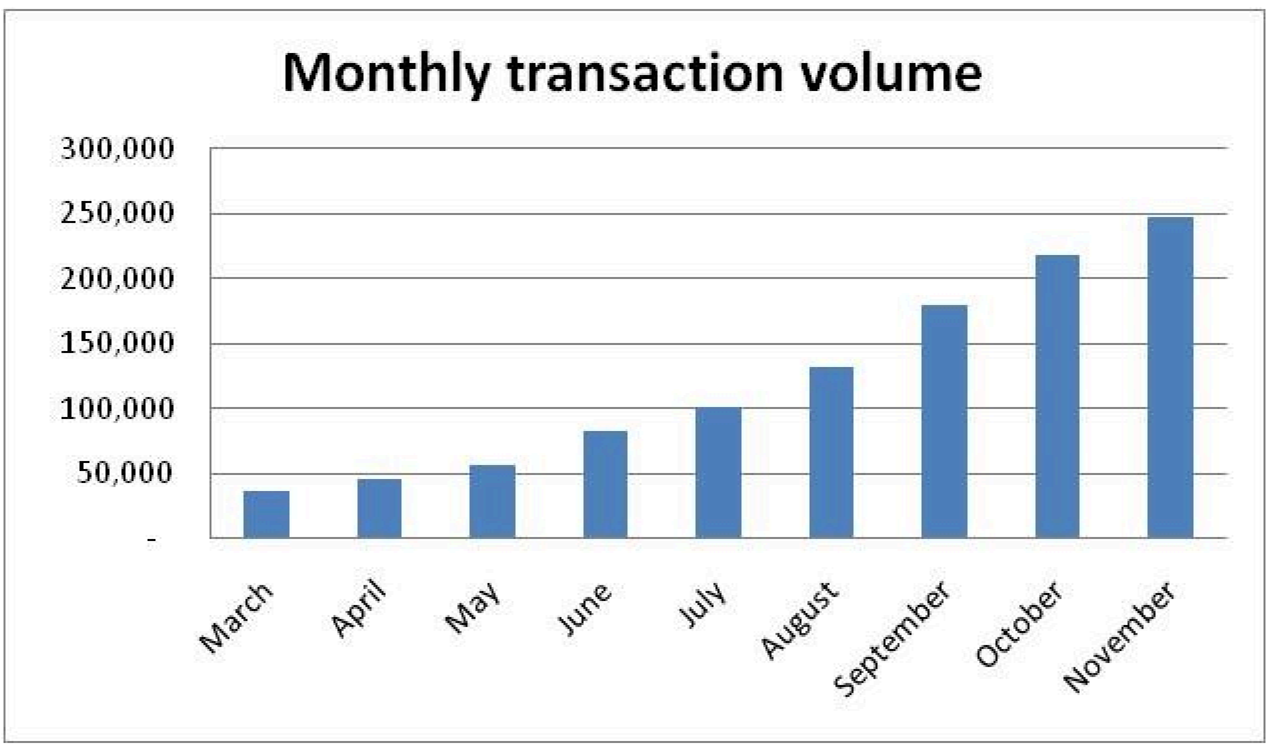
Traction

Shortly after launch, the company was featured on the front page of Yahoo, leading to a huge spike in traffic. Since then traffic has stabilized, and has grown consistently as shown in the chart below:



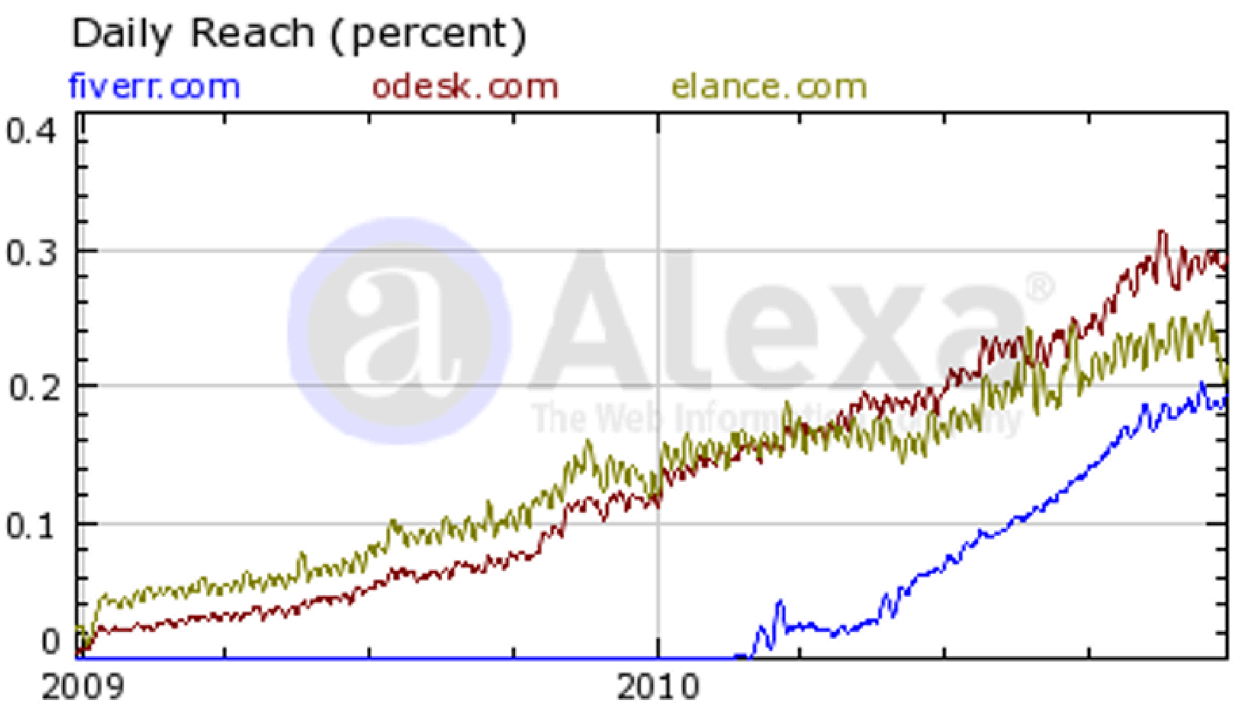
November and December traffic was said to be weaker than October due to seasonality, which seems a reasonable explanation.

Transaction volume has been growing faster than traffic, mostly due to repeat purchases.



Fiverr charges 20% of the transaction value, so net revenue is directly proportionate to the transactions. At $250K gross revenue / month, Fiverr gets $50K. All payments must be done through PayPal, which costs Fiverr 15% of its net revenue. With only 8 employees, Fiverr is a lean operation and unlikely to burn a lot of cash unless the company discovers a profitable way to acquire traffic.

As typically marketplaces take a long time to build, we think the growth rate is quite exceptional so far, especially since 100% of the traffic is organic. A small part (10-15%) is originated with search engines, but most of the growth is driven by strong word of mouth, social media, media coverage, and an ecosystem that has developed around the service. This eco-system includes how-to-sell-on-fiverr guides and videos, fiverr clones (none of which with real traction so far), and even software platforms to create fiverr clones.



We think that Fiverr's retention and satisfaction metrics are also encouraging, especially given the challenge of managing a wide variety of gigs with a short period of seller history to rely on. Out of the gigs ordered in November, 82% were successfully completed, 15% were replaced with another (successful) gig, only 2% were abandoned (not fulfilled or rejected by the buyer without replacing it), and 0.16% were refunded. The buyer cohorts are rather consistent, with about 50% repeat purchase on the month following the first month of purchase, 40% on the 3rd month, and 30% on the 5th. Both satisfaction and retention data are improving over time.

Where Do They Go From Here?

A key component in the company's plans going forward is to leverage the reputation and trust created in the system with the $5 gigs to support higher priced gigs within the system. Micha envisions multiple tiers of services, where each seller has to perform enough gigs in the lower priced tiers to earn the right to sell the higher priced gigs, which may be a way to establish seller reputation in the system with less friction than other marketplaces. This vision is not fully baked yet, but seems essential in order to realize the marketplace's potential. Another important dimension for the company is what they call "geo" services. On the one hand, their geo plans include the localization (language and currency) of the site for traffic from countries other than the US. This is meant to capture the universal interest in Fiverr, but also to stem off the Fiverr clones, which are multiplying by the day. They also plan to provide buyers with a local filtering option, which will encourage more off-line service offerings. Lastly, we think it will be very important to improve the buyer experience by improving discovery of relevant gigs and by expanding the buyer initiated section of the website.

Team

Micha Kaufman (co-founder, CEO): Micha is a serial entrepreneur, though none of his previous companies was a breakthrough success. His last venture, Spotback (content recommendation platform for websites), started when Micha was an EIR at Benchmark, but wound down when unable to raise financing. Prior to that Micha founded Keynesis, a security software company for portable storage devices, that became profitable though not at large scale. Micha is a lawyer with LLB from Haifa University.

Shai Wininger (co-founder, CTO): Shai is also a serial entrepreneur, who started off by founding a web development company in the early 90s. Shai founded 3 more companies: a 3D browser, mobile gaming infrastructure that replaces Flash on feature phones, and a workflow software for the aerospace industry. Two of these were VC backed, but none became a big success. Shai is a designer who graduated from the Neri Bloomfield Academy of Design and Education.

The company has currently 8 employees, who are largely junior hires. Micha acknowledges the need to accelerate hiring and build the management team of the company, but has been careful with hiring so far.

Deal

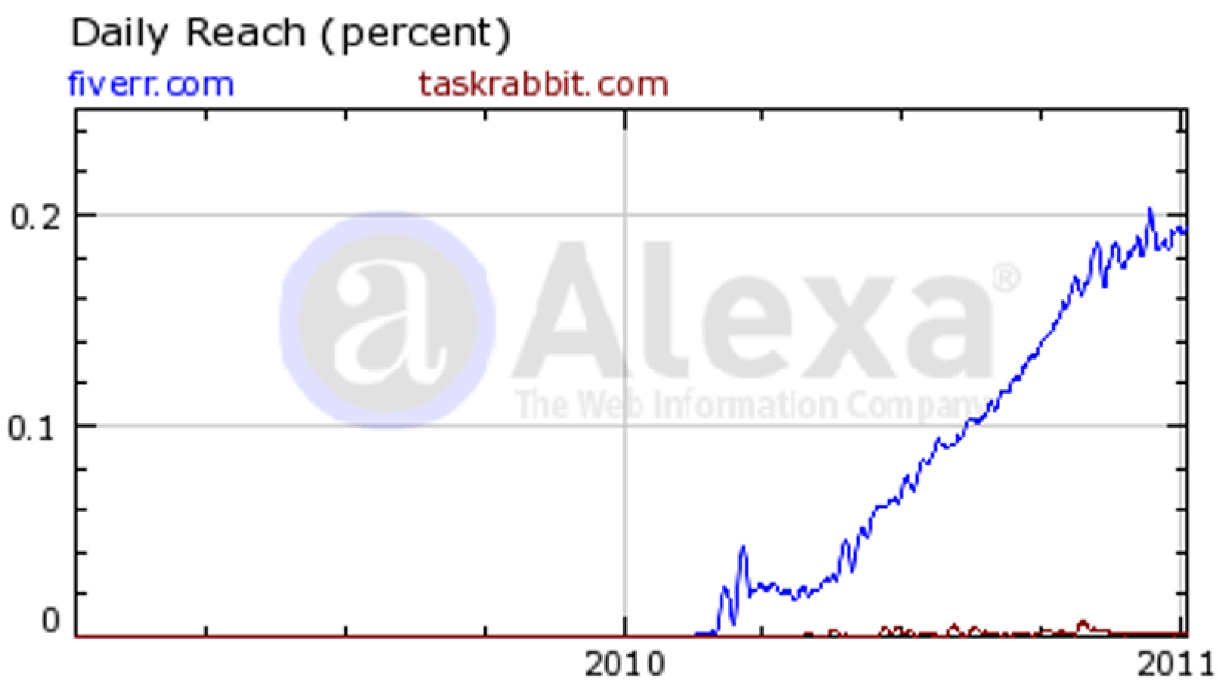
We have been tracking the company closely since we made the first contact in May. The company had raised $1MM from angels in March, and wasn't open to discuss financing (including a rejection of our seed investment top-off offer). We were intending to make a preemptive offer given the company's continued progress only to find out that the company had received exactly such an offer from another US-based fund at a $14m pre-money valuation. At this point, Micha and his angel group prefer to work with us, but the board has been only marginally flexible on the terms.

We believe we have reached an agreement to lead a $4MM round, with BVP investing $2.9MM and the angels investing the remainder. Additionally, BVP would purchase 4% of the company pre-investment directly from the founders to help BVP reach its target shareholding. Post the transaction, BVP will have invested a total of $3.5M for 19.4% (prior to any ESOP). The shares we would buy are technically "common", but carry most of the typical preferred economic rights, such as liquidation preference (straight preferred), right of first refusal, co-sale and pre-emptive. And though BVP will not have any of the approval rights typically secured in our deals, neither will any single party control the board or the shareholder base. Post investment, Adam will join the board, together with the two founders, an angel representative and a yet-to-be appointed independent, industry expert.

Risks

The site feels gimmicky, and may be just a fad: We characterize this as the biggest risk and acknowledge that a consumer-driven marketplace like Fiverr can devolve to become utterly absurd and inconsequential. This risk stems from a concern that some of the services offered on Fiverr do not provide genuine value to the buyers and are unlikely to be sustainable over the long-term (e.g. some of the social marketing offerings). A related concern is that by fixing the gig price to $5, Fiverr is able to pique buyer and seller curiosity, but that price may be insufficient to allow any seller to build a significant, legitimate business. While these concerns are real (though unsubstantiated), we find comfort in the available data, which suggests that buyers are largely happy with the service so far: completion rates are high, refund rates are very low, and the repeat purchase rate is significant, with the average user buying five times. We believe sellers will use Fiverr to generate supplemental income, to gain exposure and to generate leads, rather than to make a living – at least in the short term.

Nonetheless, it is likely that in order to succeed the marketplace will have to evolve from a novelty to a platform for mainstream offerings. The company and its founders are well aware of this challenge and have plans to realize a vision with more gravitas. It also weighs heavily on us that several highly successful Internet platforms such as eBay and YouTube stemmed from primitive beginnings based on pez dispensers and cheesy home videos. In addition, other service companies realized significant success without ever relinquishing their gimmicky nature; notable examples include Zynga and mobile ring-tone companies. With its early traction and buyer/seller community, we believe Fiverr is better positioned to evolve into a more mainstream offering relative to other marketplaces such as TaskRabbit, which have focused service offerings, but minimal traction (see Alexa chart below).



Can the traffic sustainably grow? Growth has been driven by PR and word of mouth, which are hard to control and predict. It is unclear whether the company will find effective traffic acquisition channels, especially due to the company's low revenue per transaction. When Fiverr starts allowing higher-priced services, there is a risk it loses its quirky character, which has driven its word-of-mouth growth. There was also concern that flat November and December traffic may suggest Fiverr has already begun to stagnate. While we can't credibly project the growth rate, there are several reasons why we believe traffic and order volume won't suddenly stagnate or fall. Almost 60 percent of traffic is direct, and it is rather consistent on a daily basis, which suggests it does not rely on any particular mention in the media, but rather mostly on word of mouth. Additionally, as in any marketplace, sellers have an incentive to promote their own profile and services, which, combined with strong recurring visits and high buyer-seller overlap, creates a virtuous growth cycle. Etsy, for example, relies primarily on such organic growth and has been showing strong growth for 5 years. Finally, we are encouraged by the growth of an ecosystem forming around the service (1,480,000 results for "fiverr" in Google, out of which 1,270,000 are *not* on fiverr.com). The plethora of guides on how to make money on Fiverr, the host of Fiverr clones, and the broad range of related user-generated content, will likely sustain interest around the marketplace for a while.

Team building: Micha and Shai have yet to demonstrate an ability to recruit strong people around them at Fiverr, and may not have what it takes to bring in relevant experience. At this stage we feel comfortable with the team's execution capabilities, its scrappiness and its vision. Micha and Shai are both experienced entrepreneurs, and our impression from several meetings with them is that they have a good feel for product and community, and that they are consistently and thoughtfully taking steps to improve the service.

Outcomes Table

Scenario	Description	Exit value	Probability	Future dilution	Value to BVP	Muiltiple
1	The buzz wears off and traffic declines	-	30%	0%	0.0	0.0x
2	Growth slows down, sell for user base	10	30%	0%	3.5	1.0x
3	Continues to grow but remains a niche marketplace for $5 gigs	50	24%	20%	7.0	2.0x
4	Expands beyond $5 gigs and becomes a large marketplace for micro-services	200	10%	25%	26.3	7.5x
5	Becomes the leader in multiple servies cateogories including local services	600	5%	25%	78.8	22.5x
6	Becomes the global leader marketplace for services	1,000	1%	25%	131.3	37.5x
			100%		**10.6**	**3.0x**
					Weighted average	10.6
					Multiple	3.0x
					IRR (4 years)	32%

Conclusion

Fiverr is peculiar, but fascinating. This is a high-risk, early stage investment, but we believe that the opportunity to build a global marketplace for services is compelling and that the company is in a uniquely strong position to succeed given its rapid organic growth with meaningful transaction volume. We think this deal offers a compelling risk-reward ratio driven by the small check size and the opportunity to invest more in the future should the company continue to perform well. We are excited to recommend this investment.

Bessemer Venture Partners

The Memos

Pinterest

To: BVP Group
From: Jeremy Levine and Sarah Tavel
Date: April 3, 2011
Re: Pinterest IR

Pinterest

On Monday, Pinterest's co-founders, Paul Sciarra and Ben Silbermann, will be presenting to the Partnership from our Menlo Park office.

Pinterest is a very early-stage Palo Alto-based company with a social e-Commerce web site that lets users in its community curate catalogs of products and discover products by following tastemakers.

Sarah first met the company in late 2009. At the time, Pinterest's two founders were pursuing a strategy to build product catalog iPhone applications called "Totes" for high-end brands. They launched a limited alpha of the product to some friends and quickly noticed that users were heavily using a small social sharing feature included in the product catalogs. When they asked the users what they liked about the feature, they learned that there wasn't a good way for users to share and curate lists of products elsewhere. They put Tote, their original product, on hold and built Pinterest to take advantage of this insight, and they launched it in Q2 2010. Despite being accessible only through a closed beta, the site's traction has accelerated in the last few months and in February registered 1m unique visitors and 20m page views. The majority of Pinterest's traffic comes from social channels like Twitter, Facebook and Tumblr, and almost all of the 30% that comes from Google is based on search queries that include the Pinterest brand name.

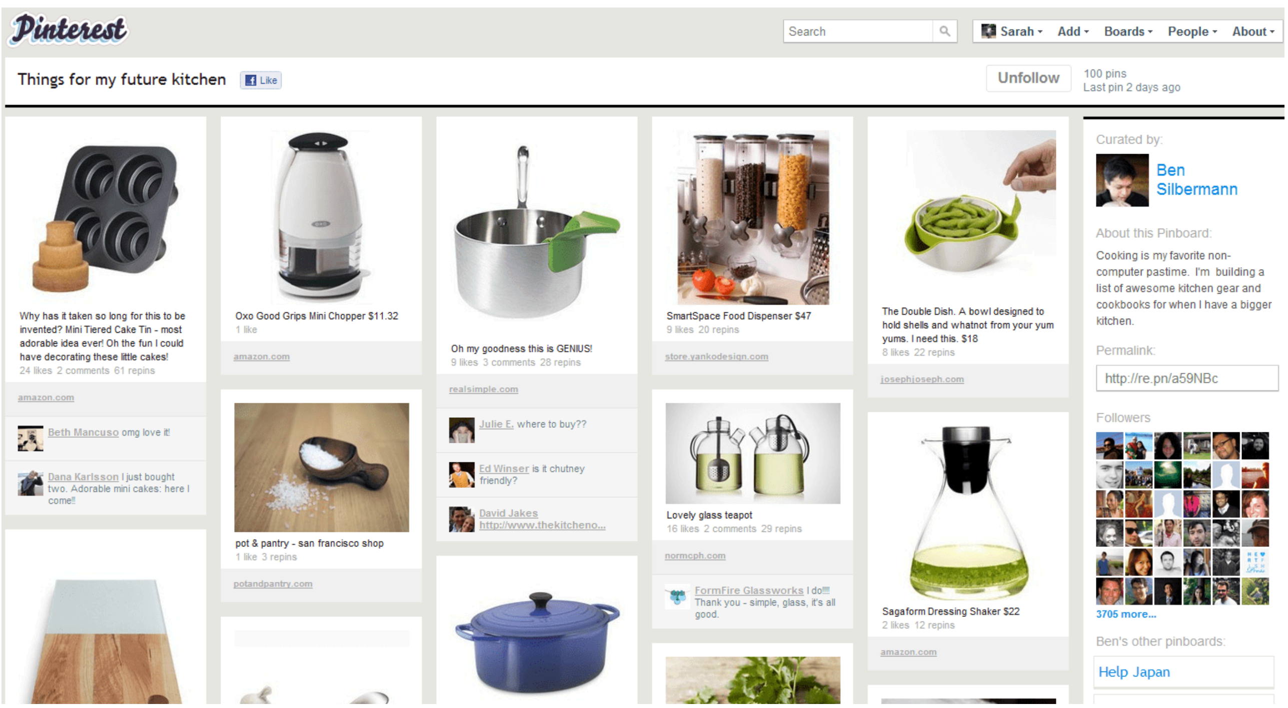
As a firm, we have thoroughly investigated theses relating to user-generated content (Yelp, Wikia, OLX), social (Playdom, Zoosk) and eCommerce (QuidSi, Onestop, Delivery Agent). We have also explored a number of different companies that play at the intersection of these three trends ("social commerce"). Pinterest is the first site we've found that shows demonstrable success in this area.

Thanks to Sarah's dogged tracking of the company, we managed to get into the mix on this opportunity. We leveraged our relationship with Jimmy Wales (one of the founder's "Internet heroes") to grab their attention, but we are unable to mitigate the fact that they have received several term sheets. As a result, this is a very expensive deal, but we think the magnitude of the opportunity justifies the price. We have signed a term sheet to lead a $10m Series A investment at a $40m pre-money valuation inclusive of a 13% unallocated option pool.

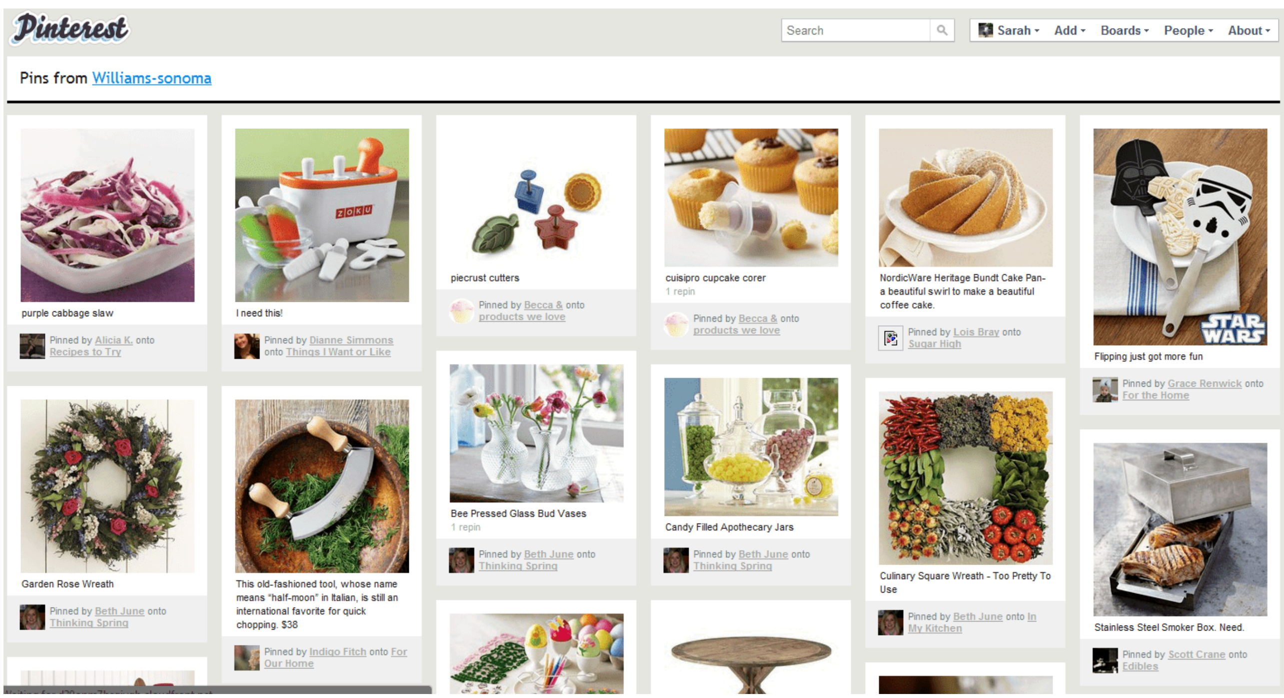
Product

The best way to get a feel for Pinterest's product is to try it or at least browse the site – www.pinterest.com. (If you're interested in an invitation, email either of us.)

The site lets users in the community "pin" products from around the web either by copying URLs or using a browser bookmark in a fashion pioneered by Del.icio.us several years ago. Shortly, consumers will be able to use an iPhone app as well. Once "pinned," products are then curated on "pin boards." Pin boards tend to be themed. For example, Ben Silbermann, one of Pinterest's two co-founders, created a board called "Things for my future kitchen" (http://pinterest.com/ben/things-for-my-future-kitchen), a curated catalog of different kitchen products Ben has found around the web:



If you click on a product, you're taken to a product page that aggregates all comments, "likes", or "repins" (similar to "retweets" on Twitter) that other people in the community have made on that product. Similar to the company's original social sharing functionality, the site also lets users share a product or pin board via Twitter, Facebook, email or with some embeddable javascript. Pinterest has acquired the majority of its traffic thus far from people using this functionality (check out http://twitter.com/#!/search/pinterest to see how people are sharing Pinterest on Twitter). The product page also has a link to the retailer from which the product was originally "pinned," so if a user wants to learn more about the product or buy it, he simply needs to click on the product picture to be directed to the relevant page on a merchant's site. There is also a side bar which features other products from the same merchant which have also been pinned by the Pinterest community. For example, this is the William Sonoma board (http://pinterest.com/source/williams-sonoma.com):



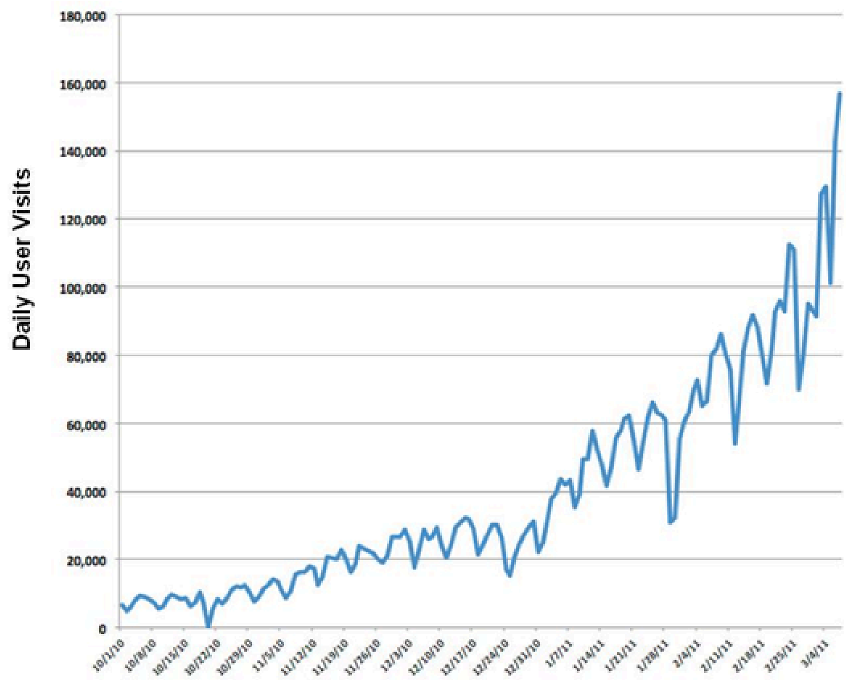
Users can follow each other, much like they do on Twitter. But you can also choose to follow a particular board instead of all the boards a user has created. For example, if a wine critic created a pin board for each of his favorite grape varietals, you could choose to unfollow the Chardonnay board if you're not a Chardonnay fan. Boards that you follow appear on your home screen feed as updates are made.

We are viewing Pinterest through the lens of our user-generated content investment roadmap. With user-generated content sites like Yelp, only about 1% of a site's visitors are "producers" (review writers in Yelp's case) and 99% are merely consumers. We expect a similar ratio to exist for Pinterest as the vast majority of web users, when offered the chance to curate pin boards of products, will simply wonder, "Why on earth would I spend my time doing that?" Those same users don't write many Yelp reviews either. Yelp had about 50 million unique visitors on its site last month, but fewer than 400,000 (0.8%) contributed any sort of content.

That said, the content "producers" are critical, and just as Yelp focused entirely on content producers in its early days, Pinterest is doing the same today. Over time, we expect the experience to improve for the content consumers, who are essentially just browsing/shopping/searching for something to buy. And eventually, Pinterest will begin to engage the merchant and manufacturer communities to monetize all of its commerce-oriented traffic.

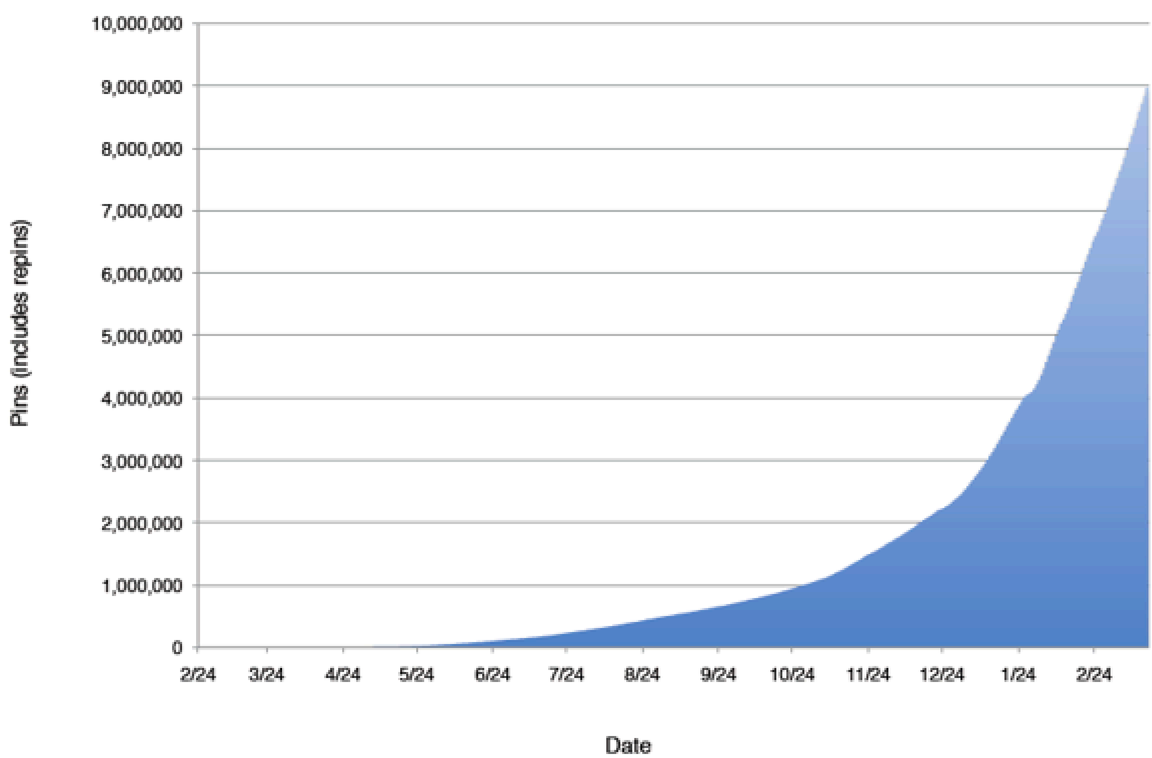
Traction

Pinterest already has promising signs of a burgeoning community. Notably, in the last few months, the company's traction has started to accelerate.

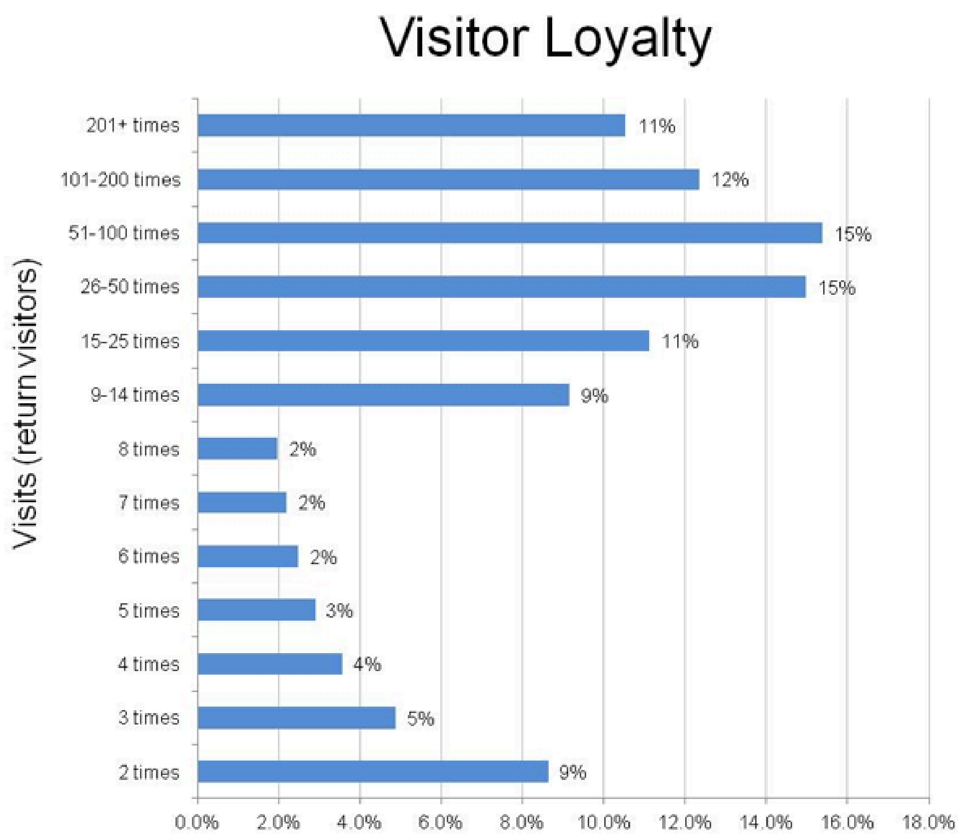


Source: Google Analytics 10/1/11 - present

Cumulative Pins and Repins



As previously mentioned, this growth has come with no spend in marketing. In fact, the founders have held back the community's growth with a limited beta in order to ensure they create a core community on the site before they open the registration process. The efforts seem to be working. Thus far, 74% of Pinterest's visitors return to the site, and of those that return, visitor loyalty has been extremely impressive:

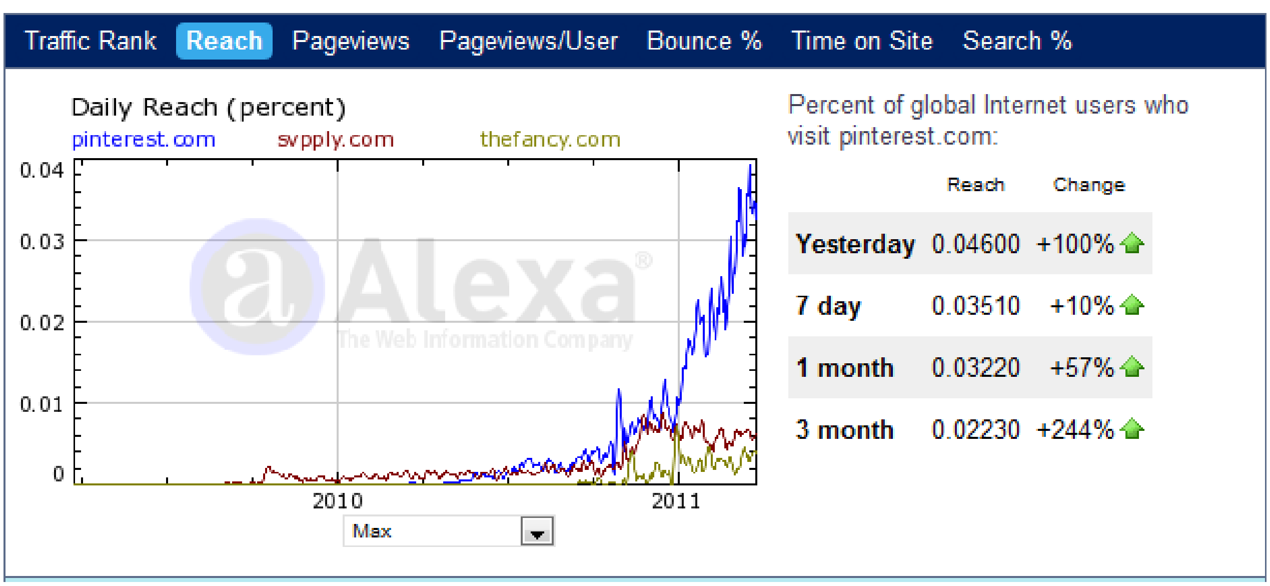


Business Model

Pinterest has not yet developed a business model and is not currently monetizing any of its traffic. Although this is one of the biggest risks for our investment, given Pinterest's focus on products, we believe there are a number of different ways in which Pinterest could monetize. The most obvious way is by becoming an affiliate for all merchants that have products pinned on Pinterest. But we think there's potential to create a marketplace which will let online retailers essentially bid on a CPC basis for clicks on the site, similar to how shopping comparison sites monetize. Unlike shopping comparison sites, however, Pinterest acquires all its traffic for free and because it wouldn't be forcing merchants to compete on end-user prices, the clicks it delivers will be a lot more valuable than comparison shopping clicks. As a point of reference, Shopping.com (owned by eBay) does approximately $200 million in annual revenues with about 72 million monthly page views worldwide.

Competition

Svpply / TheFancy: Svpply and TheFancy are the two closest competitors that we know. Both are New York City-based companies with similar functionality, talented founders but a different design aesthetic. Beginning in January 2011, Pinterest started to pull away from these players and emerged as a clear leader with more than 10x the pageview traffic and the reach differential shown here:



Facebook: Facebook has functionality that lets users "like" products on certain eCommerce sites via Facebook connect. Manufacturers set up fan pages on Facebook (e.g., http://www.facebook.com/huggies) where they aggregate comments and "Likes" from Facebook. We think Pinterest's functionality and product "social graph" is unique and not easily replicated in Facebook, but Facebook dominates social and already has strong relationships with manufacturers, so they remain a competitive threat.

BazaarVoice: BazaarVoice is a bit of a dark horse in social eCommerce. It powers the majority of product reviews on eCommerce sites and has millions of consumers registered in its system. Thus far, all of its efforts have been focused on building decentralized social eCommerce communities on eCommerce vendors' sites, but BV could choose to create more of a centralized community similar to Pinterest.

Amazon: Amazon dominates eCommerce in the US and also has one of the deepest and broadest collections of product reviews on the web. These product reviews come from a community of passionate reviewers. Many of Amazon's reviewers have written thousands of product reviews (http://www.amazon.com/review/top-reviewers) and engage in community features like an active forum on Amazon.com. Consumers can also create curated lists of products (Amazon Listmania). This feature is a bit hidden, and in fact, the top links in Google for Amazon Listmania are broken, suggesting Amazon isn't focused on lists. That said, Amazon has a huge audience of buyers and a great community of reviewers with which to seed a competitive community of curators.

Team

Pinterest was founded by Ben Silbermann and Paul Sciarra. The two met while at Yale from which they received undergraduate degrees in 2003.

Ben Silbermann (co-founder): After college, Ben joined the Corporate Executive Board, an infrastructure and IT consulting firm that works directly with CIOs of Fortune 1000 companies. After three years, he joined Google's AdSense team, where he was a product specialist and was responsible for analyzing product usage data and using that to inform AdSense's product roadmap (this training is probably what helped the company notice the social sharing data in Tote and pivot to Pinterest). Ben is the product visionary here.

Paul Sciarra (co-founder): After college, Paul spent three years at Radius Ventures, a VC firm specializing in medical devices. He left Radius in August 2008 to start Tote with Ben. Our sense is that Paul has also had a hand in the company's product design but is more focused on early business and administrative issues (e.g., fund raising).

Deal

We have signed a term sheet to lead a $10m Series A investment at a $40m pre-money valuation, inclusive of a 13% post-money option pool. Previously, the company raised just under $2m in seed capital from a handful of angels, Highline Ventures (a seed fund started by Shana Fischer of IAC), and FirstMark Capital. We would get a board seat along with one for each of the two founders.

Post-closing, the company may facilitate a buy-back of shares from early, non-employee investors. The buy-back will be at a ~25% discount to the Series A price; we may, in turn, have an option to purchase up to $2m of additional Series A shares to increase our ownership. We haven't yet tested the waters with the early investors, so we don't know the potential available here, but we'd like to request up to $10m of investment from BVP.

Risks

Monetization: As already noted, Pinterest does not have a developed business model. In order for Pinterest to build a valuable company long term, it will have to find a scalable business model that doesn't negatively impact the consumer experience.

Consumer Adoption: Pinterest's consumer traction thus far is promising, but it will need to grow substantially in order to build a significant company and cross the chasm from early adopters to mainstream users.

Competition: Pinterest already has two competitors in the space with very similar product offerings, and more are sure to follow (how many high profile mobile photo sharing startups are there now?). Pinterest must also navigate the constant potential threat from Facebook should it decide to compete.

Team: It's only five people at this point! Thus far, we've been really impressed by Ben and Paul, but they are both first-time entrepreneurs and relatively inexperienced managers. Moreover, neither of them is deeply technical, and the site is already having trouble scaling. They'll need a complement in the form of a strong CTO/VPE and broader bench of technical talent.

Scenario Analysis

This scenario assumes the $10m round described in the deal section ($8.6 from BVP, $1.4m from insiders) plus an extra $1m from BVP to facilitate a discounted buy-back from early angels. So, the net amount invested into the company will be $10m, but there would be $11m of new preferences (in addition to the $2m of preferences from capital already raised).

Exit Value	Scenario Description	to BVP	BVP Multiple	Probability
$0M	Disaster. Company implodes.	$0.0	0.0x	10.0%
$25M	Community hits 1m monthly uniques but growth tapers out and it becomes clear that Pinterest is a niche community and won't be able to cross the chasm. Company is acquired by a strategic for the talent and community.	$9.6	1.0x	17.5%
$65M	Community hits 1m monthly uniques but growth tapers out and it becomes clear that Pinterest is a niche community and won't be able to cross the chasm. Company is acquired by a strategic for the talent and community.	$12.6	1.3x	17.5%
$100M	Site reaches 3m monthly unique visitors and community continues to grow, but company struggles to monetize its userbase. Ultimately, Pinterest's visitors are just window shopping. Acquired by a strategic for value of community.	$16.5	1.7x	32.5%
$325M	Pinterest becomes one of the leading social commerce brands. Reaches 6m monthly unique visitors and 100m page views. Affiliate monetization strategy is successful but manufacturers are less interested in Pinterest's value proposition. Company is acquired by strategic.	$53.6	5.6x	17.5%
$500M	Company becomes leading social commerce brand and eCommerce affiliate. Accessing Pinterest's community become required strategy for all manufacturers. Company is acquired by strategic.	$82.4	8.6x	4.0%
$850M	Pinterest is firing on all cylinders. Goes public.	$140.1	14.6x	1.0%

Conclusion

Pinterest represents an opportunity to invest in a talented early stage team with noteworthy traction against what could be a very large and compelling business. Despite the expensive price and the inherent early stage risks, we are bullish on this opportunity and recommend this investment.

SendGrid

To: BVP Group
From: Byron Deeter, Ethan Kurzweil, Peter Lee, Rahul Jaswa, & Jeff Epstein
Date: December 16, 2011
Re: SendGrid Series B IR

We recommend a $13.2mm investment in the $21.2mm BVP-led Series B financing of SendGrid. SendGrid is an e-mail Platform-as-a-Service (PaaS) company that presented to the partnership from Menlo Park several weeks ago. After receiving very positive feedback from the partnership, we gained the support of the SendGrid team and board to allow an outsider into the round. After a long back-and-forth process, we ultimately signed a term sheet with the company to lead a plain vanilla round at a $60mm pre-money valuation, including $4.9mm of founder liquidity (we will receive preference protection on the full amount). Including the effect of this share buyback, the resulting post-money valuation is $76.3mm, and BVP will own 17.3% of the company.

Introduction

SendGrid is an email PaaS that allows web developers to reliably send their transactional emails at large volumes. The business has been experiencing tremendous growth; launched via the August 2009 TechStars class, they have signed up over 57,000 customers and are on track to exit 2011 at a $10.2mm ARR run rate. Current CMRR is ~$850k which is up from ~$200k in 2010 and maps to an impressive double-digit average MoM CMRR growth rate. There are many parallels to Twilio which have us excited, including their consumer-like growth rate, their PaaS disruption of a large established industry, and their huge popularity with the developer community and correspondingly efficient developer-oriented marketing efforts.

While it may seem that sending emails reliably is a solved problem, many challenges come with scale particularly for sending automated emails at large as navigating overeager spam detection systems is beyond the core competence of most web developers. SendGrid allows these developers to outsource email delivery for all automated, transactional messages (account updates, notifications, password resets, etc.) tied to their applications and is also building an application ecosystem for third party ISVs to build complete email applications (e.g., generating marketing newsletters).

Market

The SendGrid vision is to be the email platform of choice for the billions of automated, non-spam emails that are sent each month. With a multi-tenant cloud infrastructure, they can offer a lower TCO than the roll-your-own systems prevalent today, as well as deliverability assurances that would be out of reach or cost-prohibitive for most use cases.

A truly massive amount of email is sent around the world each month, with most estimates in the hundreds of billions for non-spam emails (e.g., one estimate pegs it at 188B messages/day to 2.9B email accounts. In the online gaming world, Zynga has an 8 person team managing the infrastructure that sends out 3B emails per month; they've told SendGrid they would have outsourced it to them if SendGrid had existed when they were starting. Forrester estimates that $1.5B will be spent on email marketing in 2011with a 10% CAGR through 2016. For comparison, SendGrid has sent over 20B emails to date and is rapidly approaching the 100M emails per day milestone.

As a firm and a cloud computing practice specifically, we have largely stayed away from the email marketing space due to fear of competition and commoditization, but in hindsight this appears to be a market that we over-thought. It's a huge and (amazingly, still) growing category, and has proven to support dozens of successful businesses including Constant Contact, ExactTarget, and MailChimp as well as producing multiple large acquisition outcomes. We are now excited at the opportunity to participate in this market through a disruptive entrant.

Product

Developers sign up for the service by applying for an account (only 10% of customers end up needing to contact the two-person inside sales team.) After a short verification process (to cull out the spammers) developers can be up and running that same day, choosing between several pricing tiers:

Free – includes all features, but is capped at 200 emails / day

Lite – includes only the sending of mail, priced at $0.10 per thousand emails sent

Bronze – adds reporting to Lite, priced at $0.25 per thousand emails sent

Silver/Gold/Platinum – adds dedicated IP addresses (needed to develop an email reputation), priced from $0.57-$0.80 per thousand emails sent

High Volume Pricing – same features as Platinum but with steeper discounts

Developers can then send their email to be delivered by SendGrid via a variety of APIs, as well as monitor and report on key metrics like open rate, click rate, unsubscribe rate, report as spam rate, etc.

90% of provisioned customers are in the Free plans. Paying customers are split evenly between the Lite / Bronze tiers and the Silver / Gold / Platinum, with 95% of revenues coming from the Silver / Gold / Platinum / High Volume tiers.

Competition

Of the competitors, Amazon Web Services (AWS) is the one to watch most closely as their Simple Email Services (SES) offering most closely mirrors SendGrid functionality (specifically SendGrid's lite tier). They launched in January 2011 and make it especially easy by plugging directly into their EC2 infrastructure. Features and functionality-wise, it is a low-end offering lacking dedicated IP addresses and much of the administrative and reporting layer in particular. But Amazon clearly enjoys a large developer community who may go for the good-enough solution. Shortly after the AWS announcement, SendGrid announced the Lite tier to directly compete with SES on price, as well as Rackspace and Softlayer partnerships to tap into their cloud developer ecosystems. So far, SendGrid hasn't seen any material impact to their acquisition or attrition rates due to SES, but they are monitoring Amazon's offerings closely.

On the higher end of the stack, Constant Contact, ExactTarget, MailChimp and others will likely make further efforts to open up their platforms based on their existing infrastructure and lure developers to their platform. MailChimp is making one of the stronger plays in the space, having opened up an API last fall, and offering a private beta "Mandrill" service for high-volume customers to send transactional email. We need to do more research on Mandrill's current traction, but we believe it to be pretty nascent. ExactTarget is a very large and well-funded email marketing vendor that is also making moves into the PaaS market and should be taken seriously.

On the infrastructure side alongside SendGrid, there have been many new entrants, most notably Mailgun, Postmark, and Mailjet that we will need to watch as well although they haven't yet made a dent in SendGrid's trajectory.

Partnerships

SendGrid has developed partnerships with several players in the hosting (Rackspace, Softlayer) and platform-as-a-service (Heroku) ecosystem who contribute 10k+ free accounts but very few paid accounts. However, these partnerships could expand considerably and there have even been real discussions where SendGrid would, in the near-term, be the default transactional e-mail service provider for every Rackspace customer. Monthly, Heroku contributes $8.4k MRR (30% revenue share to Heroku), Rackspace contributes $2.9k MRR (no revenue share to Rackspace) and Softlayer contributes only $0.15k MRR (70% revenue share to Softlayer who handles all support requirements). They are also pursuing a formalized relationship with Amazon where they would be the default upgrade from Amazon's lite SES service, though they are walking a fine line between competition and cooperation there.

These partnerships have largely been opportunistic and, as you can see from the vastly different economic terms, do not constitute a coherent channel sales strategy. The company realizes this but doesn't have a resource dedicated to partnerships yet and has chosen instead to experiment with different arrangements and measure the results before adding business development resources here.

Financial Metrics

Sendgrid has ~60,000 "customers," ~ 6,000 of which are paying, for an aggregate CMRR of ~$850k, and an annual subscription revenue run rate (ARR) of ~$10.2m. They are on track to hit their 2011 budget of $6.7mm in subscription revenue, up from 1.4mm in 2010, and project $17mm and $34mm in 2012 and 2013. Because customers pay up-front for an e-mail allowance and pay the overages at the end of the month, SendGrid has strong predictability on the first day of a month. November's absolute floor, for instance, was $790k and the company ended with $810k due to ~$20k in overages. In 2011, the average MoM CMRR growth rate was and continues to be in the double digits: they grew 11.7% between September and October and 8.7% between October and November.

Their gross-margins are ~63% (and improving, November was just shy of 70%) which is good for PaaS at this stage, and may even go up further because:

~25% of that is in headcount for technical support agents who primarily help to close sales (and so on a non-GAAP basis could be considered an operating expense).

They only use 15-20% of the capacity they purchase from Rackspace so their hosting costs will hold flat for the foreseeable future (they agreed to a monthly floor as part of their partnership negotiations).

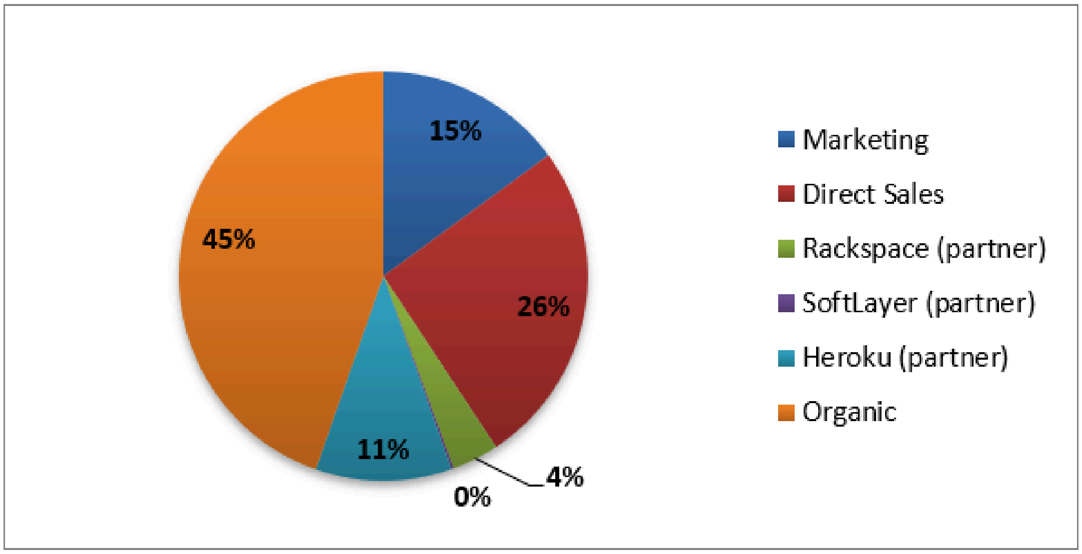
Longer term, it is possible that they need to build out more of a marketing services function in the company (as other ESP's have done) to accommodate a wider range of email inquiries, which could add to the cost structure. However, we have been encouraged thus far that their API-centric, developer sponsored sales cycle results in fewer services calls per customer and therefore like Twilio they will have lower S&M costs in their long term business model.

Summary Income Statement**

	10-Dec	11-Jan	11-Feb	11-Mar	11-Apr	11-May	11-Jun	11-Jul	11-Aug	11-Sep	11-Oct	11-Nov
MRR	236,455	291,508	306,839	388,134	432,245	456,681	524,192	563,006	615,921	667,099	745,185	810,137
Growth %	5.88%	23.28%	5.26%	26.49%	11.36%	5.65%	14.78%	7.40%	9.40%	8.31%	11.70%	8.70%
COGS	73,010	69,165	102,232	105,331	105,558	170,982	229,144	237,392	241,173	248,617	251,266	246,246
Gross Profit	163,445	222,343	204,607	282,803	326,687	285,699	295,048	325,614	374,748	418,482	493,920	563,891
Gross Margin	69%	76%	67%	73%	76%	63%	56%	58%	61%	63%	66%	70%
Sales Expense	34,490	29,849	28,818	27,674	30,783	47,285	55,050	52,122	62,598	85,481	80,115	80,042
Marketing Expense	40,316	41,058	83,724	70,934	91,424	105,409	87,236	98,902	145,130	156,810	176,571	180,422

Unit Economics

The company's SaaS metrics are extraordinary and the vast majority of their growth continues to originate from organic sources (word-of-mouth, direct search, etc.).



However, they have experimented with several marketing channels for the last few quarters and already have solid metrics around a material amount of marketing spend (10k+ in several different channels). For instance, Quantcast, Extole and AdWords all generate CACs below $100, but the average customer is contributing $117/month in recurring revenue. These are early experiments and we aren't sure to what extent they are scalable but they are actually ahead of where Twilio was at this point in that they are starting these experiments now. We've included a marketing spend analysis in Appendix A.

Their Customer Acquisition Cost (CAC) ratio (inclusive of all S&M expense and headcount) for Q1 was 5.24 (pre-marketing), for Q2 was 2.8 (start of marketing) and for Q3 was 2.02 mapping to fully loaded payback periods of under 6 months. Gross customer "logo" churn is 3% monthly (stabilizing in the mid-to-low-70's), however their cohort analyses point steeply upwards on a net dollar basis. Compared to the 1st month, cohort revenue contribution in months 12 and 18 are 136% and 186%! This theoretically maps to a massive Customer Lifetime Value (CLTV). The combination of low CAC and high CLTV has us quite excited and our additional diligence has only confirmed our excitement around these financial metrics.

Customer Diligence

The company sent us a list consisting of customers ranging in size and industry. We did many reference calls and received enthusiastic confirmation (often with colorfully positive language!) that customers have an unusually deep adoration for SendGrid's product. In summary, it allows them to forget about email and focus on core areas of the business, is significantly underpriced compared to other e-mail alternatives, is extraordinarily easy to implement and use, and comes with amazing and free customer support. Most customers did agree that competitive pricing would cause them to think twice, but barring extremely drastic underpricing, the cost savings alone would not overwhelm the features SendGrid provides and that they have come to love.

We have begun but haven't yet completed calling their top customers and customers who discontinued the service. However, they have never lost a customer from their highest spending tier except by kicking them out for bad e-mail practice (too much spam). Additionally, a cursory look through their list of customers who have spent more than $1,000 in aggregate and no longer use the service reveals almost entirely unrecognizable companies that are in most cases extremely small, unsophisticated, and in some cases, now defunct.

Team

The team is constituted by three founders and several professional management execs brought in by Foundry and Techstars. The founders all met at UC Riverside where they were administrators for the e-mail application and infrastructure provided by the school to students. Isaac Saldana was initially the CEO and is an extremely talented product visionary who has guided product development to building the best possible product for developers. His co-founder Tim Jenkins is responsible for the back-end infrastructure and they have beefed up the engineering team with the addition of VP Engineering Tom Albers.

There is solid outside leadership in the form of Jim Franklin (CEO) and Chad Varra (CFO). Jim and Chad have continuously engaged with us competently and we believe they are extremely trustworthy and receptive to our input. They have also brought in professional marketing and sales executives who strike us as solid for this stage of company.

Jim Franklin, CEO - Jim was brought in by Foundry Group and Techstars, where he has worked extensively with the Boulder tech community. He is a former VP/General Manager at Oracle, a VP/General Manager at Hyperion, a VP at Crystal Ball, a CEO at Decisioneering (an enterprise software company which he left and then rejoined as CEO 4 years later), CFO at Vericept (venture backed network monitoring company), and CFO at Webfamilies.com (a consumer facing image sharing website).

Chad Varra, CFO – Chad was also brought in by Foundry Group and Techstars from Rally Software, one of the largest private enterprise software companies in Boulder, where he was the VP of Finance and Accounting. He was previously an accountant at Arthur Andersen and a financial controller at ChannelPoint.

Joe Scharf, VP of Operations – Joe runs the support and operations team at SendGrid and serves as its postmaster. He was promoted from a director level position in the support and ops department of SendGrid, and was previously a consultant at a software development consultancy called Obility, a program director at Techstars, and a software engineer at Ball Aerospace and Carrier Access.

Robert Phillips, VP of Marketing – Robert has many years of experience in marketing including as director of Marketing at Memeo, Director of Marketing at Solatube International, Marketing Manager at Netflix, Senior Marketing Manager at PeoplePC, and 6 years of experience at advertising agencies, where he began his career.

Tom Albers, VP of Engineering – Tom is a really passionate agile software development leader. He was formerly a CTO at a consulting company called StoryLeaders, a Web Development Manager at MySpace, the director of engineering at an e-commerce software company called Direct EDI, and a VP at Health Management Systems.

Isaac Saldana, Head of Product – Isaac is the principal founder of SendGrid and like his other co-founders learned e-mail as the e-mail server administrator at UC Riverside. He graduated in 2003 with degrees in computer science and electrical engineering, and worked as a software engineer at Advatech Pacific (a mobile communications company), and then founded a series of startups where he was primarily responsible for infrastructure and backend software development.

Denise Hulce, VP of Sales and Business Development – Denise was formerly a Senior Director of Sales and Marketing at 3Dconnexion (a Logitech company), Director of International Operations at @Last Software (acq. Google) and held various manager and director level positions at DoubleClick and MessageMedia.

Key Risks

While the company has exhibited tremendous financial momentum and all of its metrics are trending in the right direction, there are still several remaining risks that we are sensitive to:

-Potential for slowing organic growth/customer acquisition – while the company's organic growth and amazing virality throughout the developer community is very encouraging and exciting, that market is not unlimited and eventually SendGrid's ability to rapidly acquire new customers who fit the savvy techie startup profile will diminish. The company needs to quickly identify scalable marketing channels to reach customers that don't fit the "Web 2.0" profile.

-Inability to reach established enterprises – SendGrid leaves a very significant chunk of market and high-value customers untouched with their current strategy of going after only newly formed companies and growing with them. If SendGrid is incapable of implementing a technology development strategy that eventually compels large existing organizations to switch their internal email infrastructure over to SendGrid, the company's growth may abruptly hit a brick wall and significantly diminish their maximum potential.

-Commoditization – there are some meaningful technical barriers to entry around delivering e-mail at scale, and delivering a high quality product that manages a complex transactional process on the back-end while appearing dead simple to the customer. However, hacking together a basic e-mail solution requires relatively little engineering sophistication, and so new market entrants, or incumbents (e-mail marketing companies moving downstream), could significantly undercut SendGrid, slashing their margins and stealing market share.

Deal

After receiving positive feedback from the partnership, we offered a term sheet for an investment of $13-15m at a $55m pre-money valuation and $5m in liquidity for the founders. We suggested below pro rata investments of $2-7m from the insiders Highway 12 and Foundry. This was enthusiastically received by the management team but wholly rejected by the insiders who were actually hoping to buy up ownership in this financing and offered their own term sheet for a $10m financing at a similar pre-money.

After a long courtship, the insiders finally expressed some willingness to step back from their original hopes but would not back far off pro-rata. We were finally able to get the insiders to sign off on a plain vanilla $21mm Series B led by BVP with a $13.2mm investment at a $60mm pre-money valuation. $4.9mm is allocated towards secondary (each of the 3 founders will redeem 30% of their equity through a company buyback). The resulting post-money valuation is $76.3mm, resulting in 17.3% BVP ownership.

Outcomes Analysis

Date	Outcome	Probability	Value ($M)	To BVP	Multiple
Sep-11	*(investment)*	100%		-$13.2	
Jan-14	Total wipeout. Competition takes pricing to zero and no customer or product salvage value.	**10%**	**$0.0**	$0.0	0.0
Jan-13	Competition from Amazon, Contant Contact, MailChimp undercuts market. Tech and customer base sold 1.5x rev in fire sale.	**15%**	**$27.0**	$13.2	1.0
Dec-14	Company grows decently in 2012 but reaches saturation point with startup developers and cannot move upstream. Growth stalls in 2013 and 2014. Sold for 2x revenue in late 2014.	**20%**	**$50.0**	$13.2	1.0
Jan-15	Company hits plan in 2012 but slows down in 2013 and 2014 and multiples compress. Company sells for 3x TTM rev of $60m	**30%**	**$180.0**	$31.1	2.4
Jan-15	Company reaches $20M in 2012, then 2.5x growth in 2013 and 2x growth in 2014. IPO or M&A in early 2015 off 3x TTM (2014) revenue of $100m	**20%**	**$300.0**	$51.9	3.9
Jun-16	Home run. Platform becomes global standard for email PaaS. Exits 2015 at rev of $175m and IPOs at ~5x TTM / 3x FTM revenue.	**5%**	**$900.0**	$155.7	11.8
		Avg Value to BVP		$32.1	
		Multiple		2.4	
		IRR		30.1%	

Conclusion

We are quite excited by the company's extraordinary early momentum and progress, and like the similarities to Twilio in low sales and marketing overhead given their developer focus. We also feel that this is the right stage for an investment like this – as they've mitigated product, team and distribution risks but we can still buy 17%+ ownership at a sane valuation. While we have some concerns around commoditization potential and market size, we feel those risks are priced into the deal. We've been positively encouraged by the team and metrics each step of the way, and have almost fully completed our diligence without any red or yellow flags. We strongly recommend this investment and look forward to the group's feedback. Barring any objections from the partnership, we'll plan to swiftly complete our final legal and business diligence and complete the investment in very early January.

Appendix A

Marketing Spend Analysis

Advertising Program	Time Period	Spend	Impressions	Clicks	CTR	Conversions	Cost Per Acct	Revenue 1 Mo.	Revenue 24 mo.
Retargeter Free	October	$1,500	944,476	456	0.05%	N/A	N/A	$2,716	$65,192
Retargeter Paid	October	$1,500	224,721	102	0.045%	N/A	N/A	$2,300	$55,190
Quantcast	October	$13,021	3,255,370	1,302	0.04%	178	$73	$3,498	$83,952
Launchbit	November 1st half	$1,090	37,072	527	1.4%	N/A	N/A	N/A	N/A
Facebook	Past 30 Days	$4,848	57,422,544	4,985	0.009%	N/A	N/A	N/A	N/A
Linkedin	Past 30 Days	$3,750	4,630,967	993	0.021%	N/A	N/A	N/A	N/A
Extole (Refer-A-Friend)	October	$2,672	N/A	N/A	N/A	29	$92	$1,379	$33,092
Adwords	August	$22,663	565,972	11,580	2.05%	229	$99	N/A	N/A
Affiliate	October	$3,250	119,593	2,484	2.07%	6	$542	$420	$10,076
SEO	October	$1,450	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Content Syndication Test (GigaOm)	November (1 week)	$5,000	N/A	N/A	N/A	4	$1,250	$1,335	$32,036
Content Syndication (Tech Target)	In test queue								
Corporate Referral Pgm	Just launched no data								

CRM Programs	Messages Delivered	Won	Revenue 1 Mo.	Notes
Sales Lead Nurture Pgm (#8)	1098	12	$1,229	In initial testing phase. Not optimized.
Lite / Bronze Upgrade Pgm (#5)	4541	20	$1,939	In initial testing phase. Not optimized.
Free Trial Upgrade (#4)	1308	24	$1,149	In initial testing phase. Not optimized.

Twitch

To: BVP Group
From: David Cowan, Ethan Kurzweil, Sunil Nagaraj, and Mackey Craven
Date: July 7, 2012
Re: Twitch Series B IR

Recommendation

We recommend that BVP invest $13 million in Twitch.tv (fka Justin.TV) at $53 million pre-money to own 18.3% of the Company.

Mackey's data-driven sourcing efforts gave us an early indicator of the company's growth, positioning us to lead the Series B ahead of any peer firms. The inside venture firm Alsop Louie is scrambling to get capital from LP's to make a follow on investment, but they can likely not invest more than $1 or $2 million more in the business. Still, we are competing against another firm which has agreed to a $90 million pre-money valuation (although fortunately the Company sees no other value from that investor).

Since Twitch.tv presented to BVP three weeks ago, we have been selling hard against the other proposal, pitching BVP's value, and we think we have a deal, but it's still shaky. During that time, we have nearly completed our due diligence on the opportunity, while the Company has made impressive progress with strategic partners like Tencent, EA, Activision, and Take Two.

It is important to note that we would be investing in the Justin.tv corporate entity which includes both Twitch.tv and Justin.tv. The company plans to immediately sell the Justin.tv asset, so any proceeds from that sale would accrue to our investment. Justin.tv generates $4m per year in cash flow but is declining – both in viewership and revenue. Management is confident that they can sell the asset for $10m-$20m with some but not all of the cash up-front and are in late stage negotiations with one buyer about such a transaction.

Summary

Twitch began in January 2011 as a "skunkworks" project within Justin.tv, a user-generated live streaming video platform, and by the end of 2011 was the sole focus of the company. Since then, Twitch has grown viewership at an average of 9.6% month over month to 18m monthly uniques watching nearly 4B minutes of live gaming. Earlier this year, Twitch began to monetize these viewers through advertising (primarily mid-roll video), subscriptions to specific streams, PPV, and paid HD.

Twitch enables gamers to stream live sessions over the internet and monetize their viewers through revenue sharing agreements. Over 150k gamers stream content on Twitch each month despite the need to install complicated software, and in the case of console gamers, hack together ~$200 of 3rd party hardware. Approximately 1,700 streamers consistently have 300 or more viewers, and 15 of the top gamers often draw tens of thousands of viewers. However, even the largest streamer represents less than 1% of the total viewership in any given month. As a result, Twitch's revenue is highly distributed across the streaming community.

We agree with the Twitch team that the path to long-term sustainable growth is by making it as easy as possible to engage new streamers. To that end, they are focused on integrating with games for direct content and data feeds. Gamers can see how others have navigated the level, or how they used a virtual good on sale, thereby driving usage and sales. Gamers can also easily share their experience to e-sports viewers, or to their twitter and Facebook friends, driving viral awareness of the game. Integration with games would also enable virtual goods marketing and monetizing VOD content on Youtube (or directly through the twitch.tv site).

The company will need to scale its infrastructure given several large publisher integrations already in the pipeline. We are excited by the fact that Twitch is creating a fundamental shift in how games are consumed by turning gameplay into media experiences. That said, creating a new market comes with many inherent risks including the fact that the market size has yet to be defined. In addition, Twitch faces potential competition from other streaming video platforms and game publishers if they decide to build Twitch functionality into their games. We have become increasingly comfortable with these risks after focusing our diligence efforts on vetting proxies for market size and growth, and after receiving positive endorsements from game publishers and other ecosystem players (e.g., YouTube – a competitor!) of the company's team and strategy.

Company History

The company was originally founded as Justin.tv in 2006 by Emmett Shear, Justin Kan, Michael Seibel, and Kyle Vogt. An early participant in the YCombinator program, Justin.tv allowed consumers to stream live video from their webcams to the Justin.tv destination site. The resulting user-generated live video content proved to be very difficult to monetize due to the poor production quality and inherently low-brow UGC, unpredictable content. In January 2011, the company started two "skunkworks" projects in an attempt to pivot to a better business. CEO Michael Siebel launched Justin.tv mobile and CTO Emmett Shear launched Justin.tv gaming. Surprisingly, both showed early signs of success and the respective teams wanted to continue to pursue the opportunities they each were working on. As a result, the company spun out Justin.tv mobile as Socialcam earlier this year (a strong competitor to our BVP seed investment Viddy, led by former justin.tv CEO Michael Siebel) and Justin.tv gaming was renamed Twitch.tv and became the sole focus of the remaining company. At the same time, founder Justin Kan left the company to launch a new startup in the TaskRabbit/Zaarly local marketplace space called Exec. The fourth co-founder Kyle Vogt continues to run Justin.tv as a division of Twitch.

Re-branding the company Twitch, Emmett began to re-orchestrate the company to focus exclusively on streaming live gaming content, replacing 2/3rd of the team. Today, 48 of the 50 employees at the company work directly on Twitch or the underlying streaming video platform built for the original business, while Kyle Vogt and one other employee maintain the Justin.tv destination site. As it turns out, Twitch was already in the process of selling the Justin.tv asset when we first approached them, but that transaction will not close before our proposed investment. After selling Justin.tv, both sites will continue to operate on shared infrastructure and Twitch will likely be compensated slightly above cost for providing the infrastructure to support Justin.tv. While we originally believed that the Justin.tv sale would not generate much cash, the company is now redlining a final agreement that would bring in $10m-20m with at least some of the payment upfront. This is one of the key reasons for management's increased negotiating leverage and interest in the company – as they could theoretically forgo fundraising altogether and run the company off of the proceeds from selling Justin.tv.

Value Proposition

It is helpful to think of Twitch as a marketplace where gamers use the IP of publishers as "raw materials" to make content that viewers want to consume, and charge those viewers through advertising, subscriptions, PPV, and paid HD. Like many marketplace businesses, Twitch creates value for all constituents by allowing them to transact in a low friction environment and handles all monetization on their behalf. As a result, the company is able to capture the majority of the transaction value. CBS Interactive sells advertising on Twitch's behalf with 60% of the inventory sold as premium "e-sports content" generating $35-$40 CPMs and the remaining 40% on private exchanges with $8-$9 CPMs. It shares half of this revenue with Twitch. Eventually Twitch may build a direct advertising sales team but for now they are happy with CBS' representation as they package it with GameSpot and other premium gaming content and are in the process of further segmenting the private exchange content so portions of it can be sold as premium. CBS' involvement is extremely helpful to Twitch in that they are able to ensure that the inventory stays solidly in the "premium" bucket – enabling them to generate 4-5x the CPMs of remnant. Of course this is also a key risk as it's unclear what the value of the inventory would be on a standalone basis. We have become increasingly comfortable with this risk as they grow their audience size to become a top 5 gaming destination and one of the top two sites for gaming video – of increasing interest to brand advertisers.

The key reason that Twitch is able to capture so much of the value created on the site is that gamers see the revenue they generate by streaming as purely incremental. A streamer's primary purpose for purchasing and playing a game is enjoyment. Twitch allows a portion of that purchase, and in some cases orders of magnitude more, to be recouped by simply sharing the experience online. Even beyond compensation, there are very strong social motivations to share content and experiences, especially when competition is involved. This is actually more important than the revenue share for hardcore gamers who seek recognition from their peers.

While our intuition from the worlds of music, film, television, and most other traditional media would suggest that publishers try to curtail consumers streaming content, game publishers have actually embraced Twitch and the live streaming community. The key reason for this is that games can be consumed both as a participant and a viewer, whereas traditional media generally has only one modality. This means that unlike traditional media, most games can be shared without cannibalizing the revenue the publisher derives from direct use. In fact, because indirect consumption in gaming also exposes individuals to the product, it's essentially free social marketing for game developers and publishers.

Since this effect strengthens the community around a game and therefore the lifetime value of the title, especially now that virtual goods are becoming a standard monetization technique, we believe publishers value streaming communities quite highly. Our initial diligence calls validated this claim and after speaking with the top brass at EA, Ubisoft, Riot Games, Activision (call pending) and other publishers, we are now even more convinced as publishers are shifting an increasing portion of their advertising and marketing dollars online. Furthermore, they view Twitch's product as an authentic and effective way to draw in new users and re-engage existing users, which is important given the free-to-play nature of most new games since the industry has shifted in this direction over the past five years. Many developers have now built spectator and theater modes into their games so users can view the environment from a different user's perspective or from a controllable "free floating" camera during the game. While this often allows gamers to view sessions from inside the game directly rather than on Twitch, the net result is higher impact Twitch streams for that game because of the added production capabilities (different camera angles, 3rd party commentary, etc.). A related concern was that the game developers may create their own Twitch-like site to view gameplay for their own game, but over the course of our diligence conversations we have become comfortable that this will not happen in any meaningful way given game developers' inability to build engaging web presences or communities, a fact they readily admit. (Check out Blizzard's World of Warcraft site: http://us.battle.net/wow/en/ - built on circa 1998 web technology.)

Twitch is in discussions with all of the largest hardcore gaming publishers including Activision/Blizzard, EA, Ubisoft, and even mobile publishers like ng:moco to integrate the ability to stream to Twitch directly into their games without third-party software or hardware as is required today. The first of these integrations with a small Swedish game developer Paradox was announced two weeks ago at E3 and that game should be live later this year. They have also informed us that an integration with one of the largest game franchises in history on Xbox is already underway. The Twitch technology (a "broadcast to Twitch" in-game button and corresponding SDK) can be fully integrated into a title in a day – assuming the publisher has built some sort of spectator or theatre mode into the game. Many of these publishers have never integrated third-party software into their games previously, so this level of traction is particularly noteworthy, and has only accelerated in the past several months. Several large publishers we have spoken with have confirmed their current integrations of the Twitch SDK and their eagerness to incorporate it into more of their game portfolios. They view Twitch as complimentary to their own efforts to engage with their audiences – not competitive – and want to make it as easy as possible to push their content out into the Twitch community.

In addition to simplifying broadcasting, this level of integration allows gamers to automatically share additional metadata such as their virtual goods inventory, weapons used, level achieved, location, etc along with the stream. This metadata could be used to index the video streams more intelligently, so that viewers can learn what the best players are using and in what fashion. The team believes that there are potential revenue opportunities around driving additional virtual goods sales and improving gamer education, however these additional business models are purely speculative at this stage. The company also allows publishers to integrate a "view mode" SDK into their games so that players can watch and learn from other players directly in the game without going to twitch.tv on the web. One such integration is live today – with Tribes Ascend, a first-person shooter gamer from Hi-Rez Studios.

Market

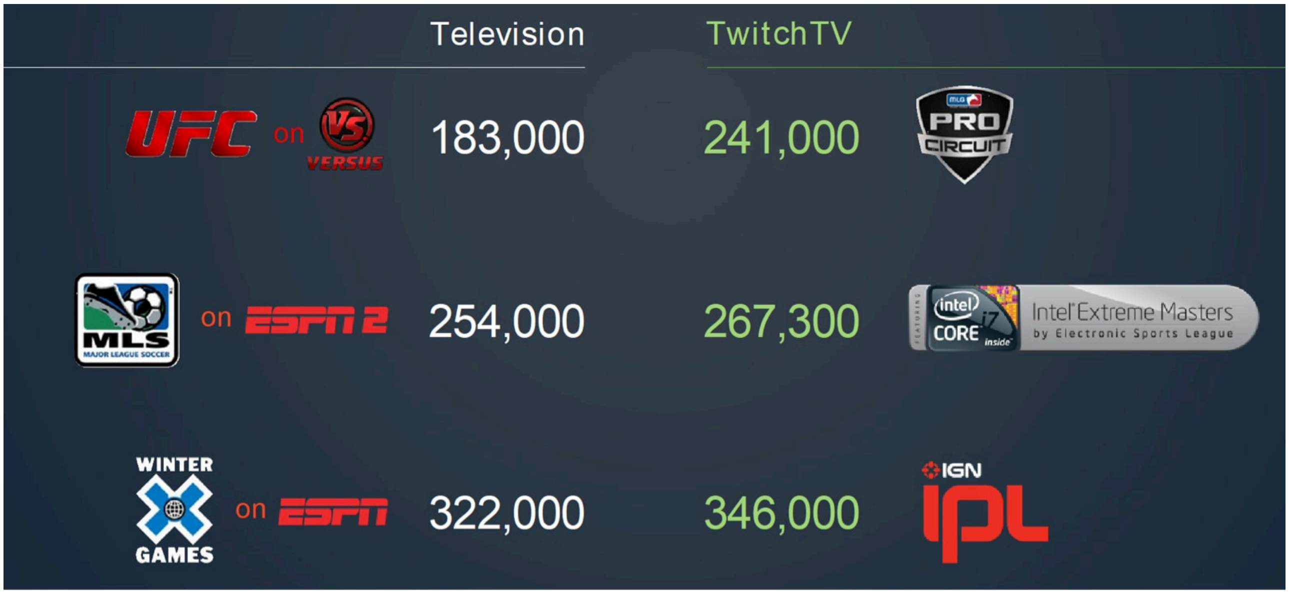
Twitch's value proposition for streamers and publishers, and therefore its business model, are predicated on the idea that there is demand for viewing live digital gaming content. It's obvious from global human interest in sporting events that there can be a large audience for watching games, especially when a portion of that audience has played and/or enjoyed the game. The relevant question for Twitch is whether there is a large enough audience for viewing live digital game content to support a valuable media business around what is being termed "eSports." Since this is an emerging category in the US, there are no incumbents to directly measure the size of the opportunity or how monetizable that viewership will be at scale. We are encouraged by the explosion of live eSports events in Asia, such as:

The image above is the equivalent of half-time at a StarCraft II tournament in South Korea. South Korea has been an early adopter of eSports with dedicated cable channels devoted to it. Events like this at a smaller scale are being held around the world with increasing frequency. In fact, eSports leagues on Twitch are beginning to see television audience sizes. This is not surprising when one considers that the 30m players in the Call of Duty community outnumber US residents who played football, basketball, baseball, tennis or golf in the past year. The fact that a single hardcore gaming franchise outnumbers some of the most popular and commercialized US sports in terms of direct engagement is a hopeful sign that latent demand may exist for viewing live game content (just as real demand exists for viewing live sports).

Another encouraging sign is that video on demand (VOD) viewership for streaming game content is 7x the size of the live market at 250m monthly uniques. This space also has a clear leader, YouTube, where gaming is the largest category after music. The majority of YouTube's gaming content comes from its second largest network after VEVO, Machinima, which grew 3x last year and has reached 175m monthly uniques. The scale and growth rate of Machinima's VOD viewership through YouTube suggests a large latent demand for gaming content. Machinima does not have its own video platform and has to syndicate its video through Youtube and other partners. While they would like to compete in live, YouTube does not currently have the platform capabilities to enable this in gaming, and their own gaming business development team indicated to us that they are unlikely to catch up quickly enough.

While the biggest risk to this investment remains market size, we have talked to several experts in the space who confirmed our belief that there exists a large, latent audience for this type of content. One Paramount executive with a gaming background compared Twitch to a regional sports network like NESN or YES and felt that Twitch could grow to equivalent audience and revenue size.

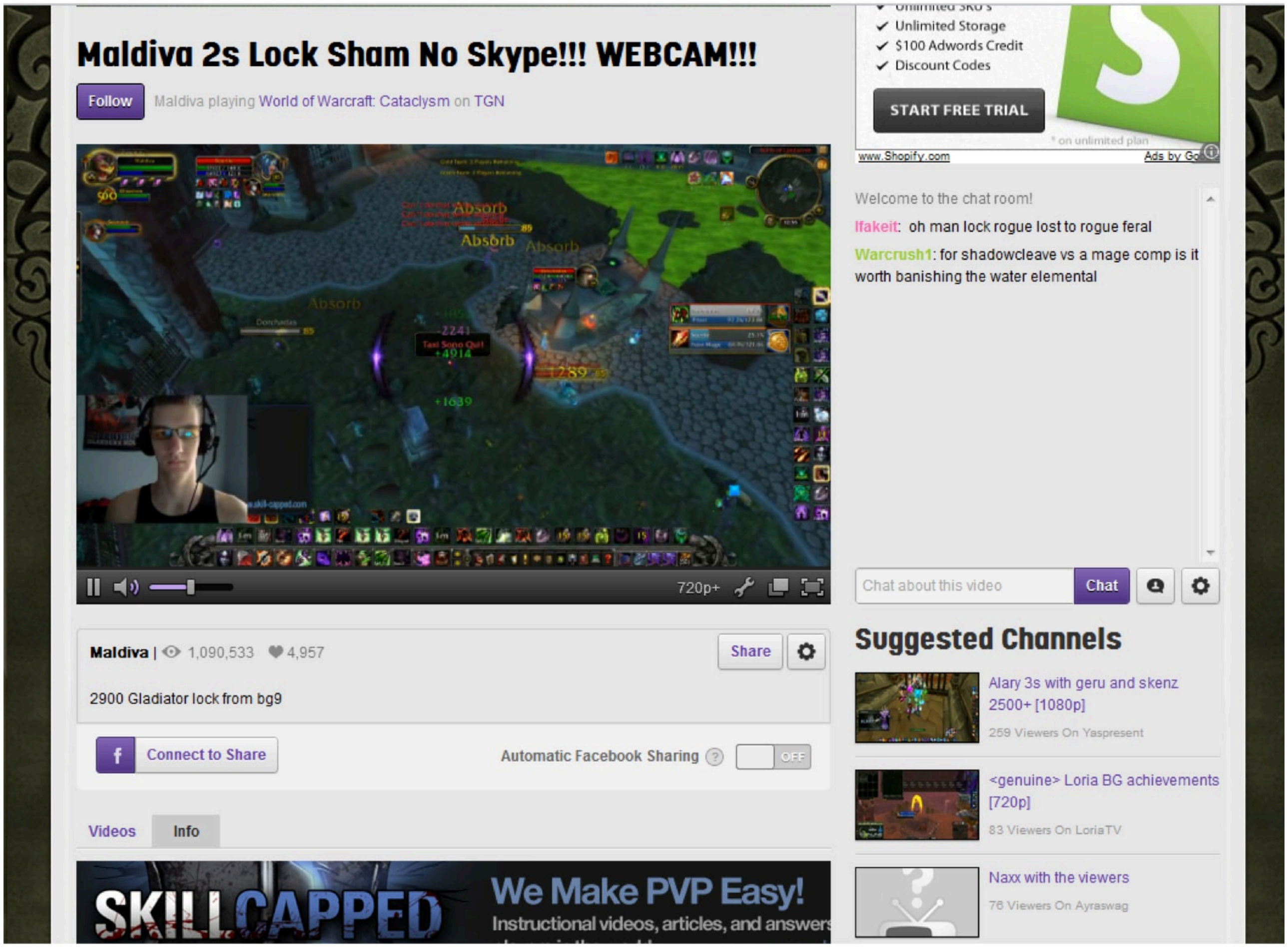
Concurrent Viewers



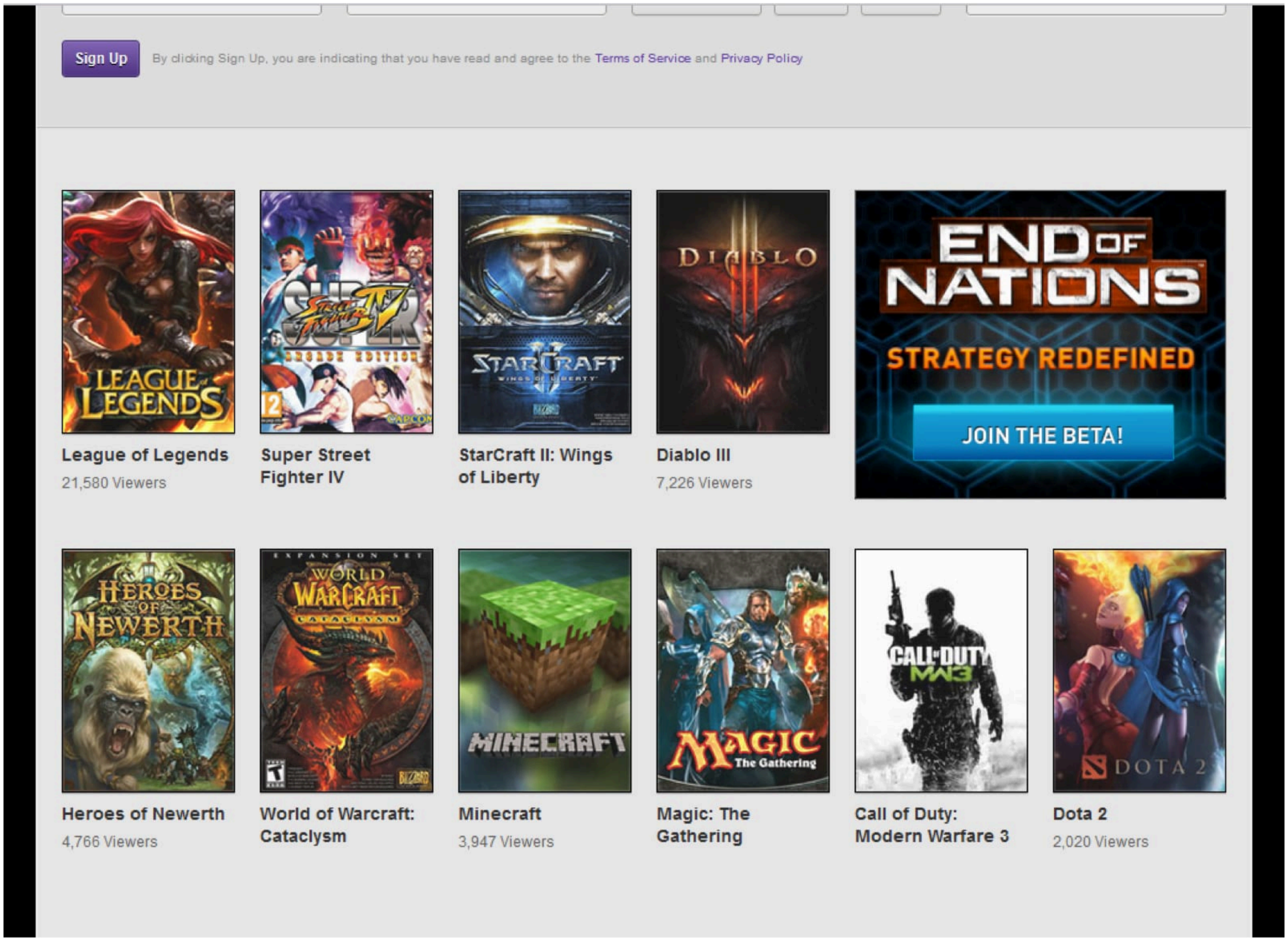
Product

Twitch is based on the non-intuitive idea that watching other people play videogames is entertaining. The company likes to compare this to watching poker on television which is now a massive franchise. Over the last 10 years, there has been a set of innovations that have brought audience, technology, and distribution to poker to make watching it on television entertaining. Two specific innovations were the "pocket cam" which allows you to see a player's cards, and the statistics engine that computes the likelihood of winning.

Twitch is following a similar playbook of bringing audience, technology, and distribution to videogame watching. On audience, there is clearly a large and growing user-base playing these games, as discussed in the "Market" section above. By amassing a large number of streams, Twitch presents a new broadcaster with an ecosystem where almost 20 million monthly uniques can tune in. On technology, the two key innovations are the Justin.tv infrastructure and theater/spectator modes that allow for commentary. The upcoming integration into more games will enable even more gamers to broadcast their gaming seamlessly. Finally, the ubiquity of broadband provides distribution, completing the televised poker analogy. The Twitch.tv site allows a viewer to browse by game title, begin watching a live, high-quality (720p) video stream (a "channel"), and chat with fellow viewers. The typical video stream includes a webcam view of the player (who often has a headset on to communicate with his competition) as well as the fast-paced gameplay.



Broadly, there are two types of channels on the site: * The major channels have 10-20K viewers watching a famous gamer and his/her narration or a highly-produced gaming program in the style of ESPN's SportsCenter. Viewers tune in to catch the action as it happens but are only able to passively observe given the size of the viewership. * Smaller channels have 100-300 viewers following a gamer. In this environment, viewers have more interaction with the live gamer via an integrated IRC chat. Viewers can ask questions and enjoy more social interaction, though the game play may be less impressive and the gamer less famous. They claim to be already running the largest IRC cluster in the world. Viewers can tune in to watch many of the most popular console and desktop games today. In addition to ongoing game-play, these games have 20-30 minute player-vs-player competitive modes, and gamers often play a "best of 5" tournament mode. Below are several of the most active game titles on Twitch:



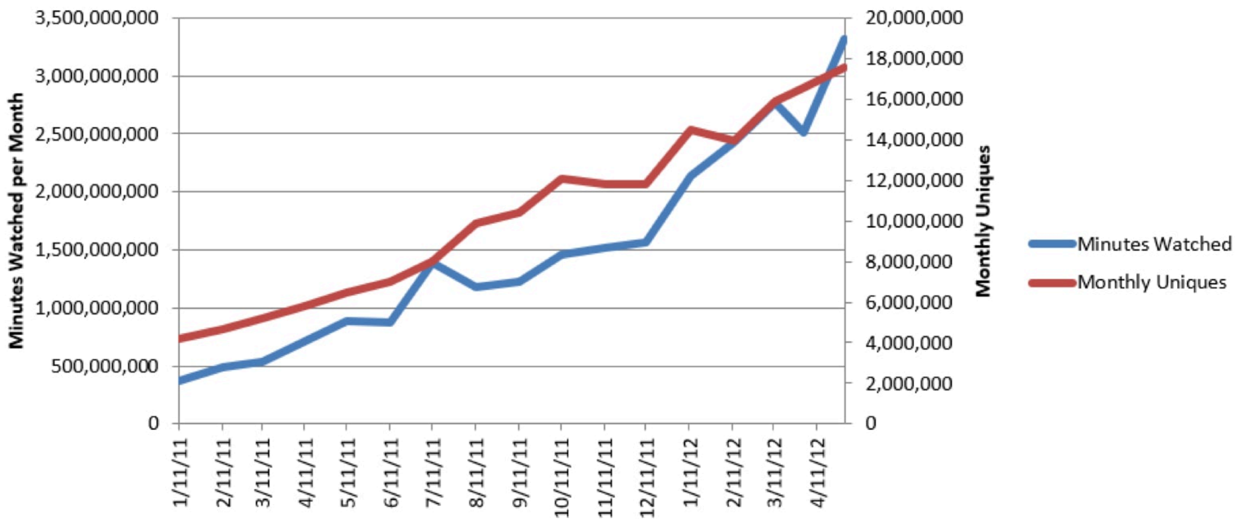
While no individual broadcaster represents more than 1% of views, the consolidation among the game titles being streamed is in line with their overall popularity in the market:

Game	% of broadcasts
Diablo III	16%
Minecraft	12%
League of Legends	12%
StarCraft II: Wings of Liberty	10%
Call of Duty: Modern Warfare 3	8%
World of Warcraft: Cataclysm	7%
Others	35%

On the other side of Twitch, broadcasters can currently stream content from desktops and videogame consoles. These broadcasters go through significant hurdles to share this content, ranging from jerry-rigging open-source desktop software to capturing and encoding their local desktop gameplay, to inserting a video-splitter into their television gaming consoles. We believe the fact that broadcasters are doing so despite this friction to be a good sign for the future of Twitch as they enable in-game broadcasting without additional setup.

Metrics

Twitch has experienced phenomenal month-over-month growth since January 2011. The company is growing monthly uniques at an average of 9.6% and minutes watched per month by 16.0%. In addition, average daily unique visitors now watch over 75 minutes of content while on the site. Of the 18M monthly uniques, ~40% are in the US, ~40% are in Western Europe, and ~20% are in Asia.



However, revenue has not tracked as we would expect given this growth, ostensibly due to CBS Interactive needing time to ramp up their sales efforts. Twitch did between $635k and $670k in net revenue in each of February, March, and April 2012. They claim to be on a run-rate of $1m in June now that CBSi is more fully ramped up. We plan to validate this prior to closing.

Having spoken with CBSi, we now have a firm understanding of how advertising on Twitch is sold, and anticipated to be sold in the near future. Currently CBSi sells 60% of Twitch inventory as premium "e-sports content" at $35-$40 CPMs and the remaining 40% on private exchanges with $8-$9 CPMs. Twitch receives half of this and, in turn, shares a $3.50 CPM with broadcasters, leaving Twitch with a net of ~$9.00 CPM. CBS segments the Twitch inventory into 3 categories:

E-sports – this is live gaming content between high-profile players or in a high-profile tournament. This drives the highest CPMs and is typically highly curated video content with announcers and on-screen overlay scores, etc. CBSi routinely gets CPMs above $50 for this content.

PG-13 – streamers can identify themselves as "PG-13"-friendly content which means that they will ensure that the gameplay and their audio/webcam does not contain R-rated violence, profanity, etc. CBSi asked for this category and Twitch is aggressively pushing its broadcasters into this bucket.

General – this is the catch-all category for the content that remains. CBSi is able to monetize this on private exchanges at $8-$9 CPMs, above remnant inventory rates

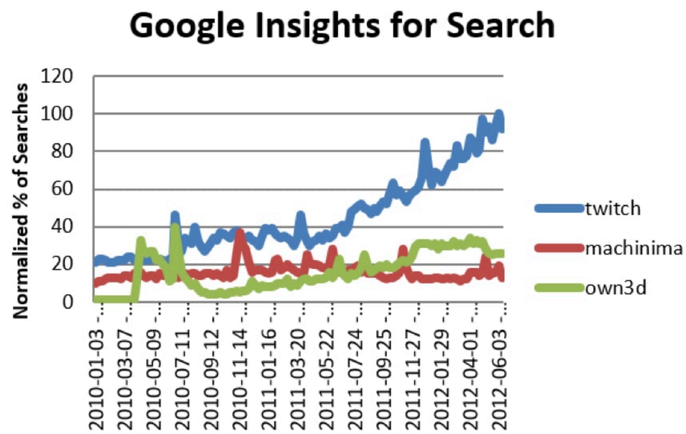
We don't have a firm view as to the long-run potential of subscriptions and PPV revenue but we are encouraged that even at small scale, the revenue from these categories is meaningful.

Risks

Market Size – As Twitch pioneers the market for streaming live game content, there is a risk that we are overestimating the latent demand for generating and viewing this novel content type. We are encouraged by the success of eSports in Asia and Machinima's gaming VOD content on Youtube but can't say for sure that live gaming will attract an audience of similar size. We continue to view this as the single largest existential risk around the investment, but have become increasingly comfortable after YouTube, CBSi, and game publishers uniformly viewed a large percentage of the Machinima audience as overlapping with potential Twitch viewers.

Monetization – We've generally shied away from media business models because monetization is difficult. This is a risk for Twitch – especially given that the content is on the borderline between premium and UGC. Adap.tv classifies it as UGC and therefore is unable to monetize the inventory as premium in their marketplace. Thus far, CBSi has been able to position it as high-quality premium content and sells it alongside their other gaming properties at CPMs upwards of $25-30. CBSi is continuing to segment the Twitch inventory and the long-term average eCPM is still not certain but is likely to remain well above remnant rates given the highly-targeted, highly-monetizable audience. The Twitch demographic is a lucrative one and they should be able to continue to monetize such a highly engaged, targeted demo watching online video effectively. Future business models predicated on subscriptions or virtual good sales are purely speculative at this stage.

Competition – Despite trailblazing the market for streaming live game content and growing significantly faster than its direct competitor, own3d.tv (no longer a meaningful threat to Twitch), Twitch faces potential competition on many fronts. YouTube is the dominant VOD platform in gaming and recently solidified its relationship with Machinima, the largest gaming VOD content source, through a $35m equity investment sponsored by YouTube (not Google Ventures) in May 2012. After YouTube noticed that 23 of their top 100 gaming contributors were streaming on Twitch, they made a push to popularize gaming on the YouTubeLive platform. Despite initially attracting 12 of the 23 to YouTube Live, all 12 streamers and 27 more from the top 100 have since rejoined Twitch because of the company's focus on gaming features in their platform. Even though YouTubeLive's initial push into gaming failed to break Twitch's momentum, this is a key risk as the Youtube product managers and business development folks we spoke with were keenly aware of Twitch's success and admitted that it was enabled by deficiencies in their Live platform. They are focused on catching up, however at the same time predicted that they wouldn't prioritize building the necessary live gaming features to do so effectively because of conflicting corporate priorities (e.g., YouTube is primarily focused on getting high quality entertainment content onto their platform).



Game publisher dynamics – While not their core business, game publishers are realizing the power of live video to drive engagement in their communities and could attempt to build competitive streaming destination sites. While the majority of publishers have expressed an interest in partnering with Twitch by integrating their SDK and/or supporting the existing streaming ecosystem through the construction of in-game spectator and theater modes, game publishers are notoriously difficult to work with and could be fickle on these points. Our continued conversations with publishers, as well as their growing strategic interest in investing in Twitch, have led us to believe they view Twitch as a strategic partner and are focused on these integrations. The most likely candidate for building directly competitive capabilities is Steam, an online gaming platform operated by Valve, with over 1,100 titles including several of Twitch's top games such as Call of Duty: Modern Warfare 3 and Dota 2. With an average of 3.5m active gamers at any one time, Steam could be a threatening fast follower if they overcame the challenge of building internal online video expertise. They don't have any such capabilities today and to our knowledge are not working on it.

Team

Emmett Shear – CEO. Despite being a first time CEO (he was CTO of Justin.tv before spearheading the Twitch initiative) Emmett has impressed us with his open leadership style, calm and effective negotiating approach, and his passion for the Twitch product and community. The one thing we hope to see out of Emmett going forward is a deeper focus on implementing process and standards (specifically around partner support) as the team scales. We believe he can be the long term CEO of the business.

Kevin Lin – COO. More than any other executive, Kevin is Emmett's partner in building Twitch. He is a detail-oriented executive whose primary focus is on the day-to-day operations of the business. He is a grounded, solid counterpoint to Emmett's focus on high-level strategic thinking. He handles the financial aspects of the business today but the business will need a CFO pretty quickly.

Jonathan Simpson-Bint – CRO. Jonathan joined Twitch in October 2011 after a career in game content having founded IGN in 1996 and subsequently developing products for publishers including Microsoft, Sony, and Nintendo. He is the prototypical industry insider and is the reason Twitch has had the ear of top brass at Activision, EA, Ubisoft and other tier one publishers. Beyond having a world class rolodex, Jonathan has proved himself to be an excellent salesman and core asset to the Twitch team.

While the remainder of the executive team is strong, specifically in infrastructure and video technology, we believe Twitch will need to augment the group with an experienced ad sales leader and more business development talent as they continue to scale.

Deal

We recommend a $13 million investment by BVP in an $18 million round including insider Alsop-Louie Partners and additional strategic co-investors at $53 million pre-money. We would own 18.3% of the Company, and similar to the prior rounds, our security includes participation with a 3X cap.

Scenario Analysis

Justin.tv Series B Outcomes Table

Investment

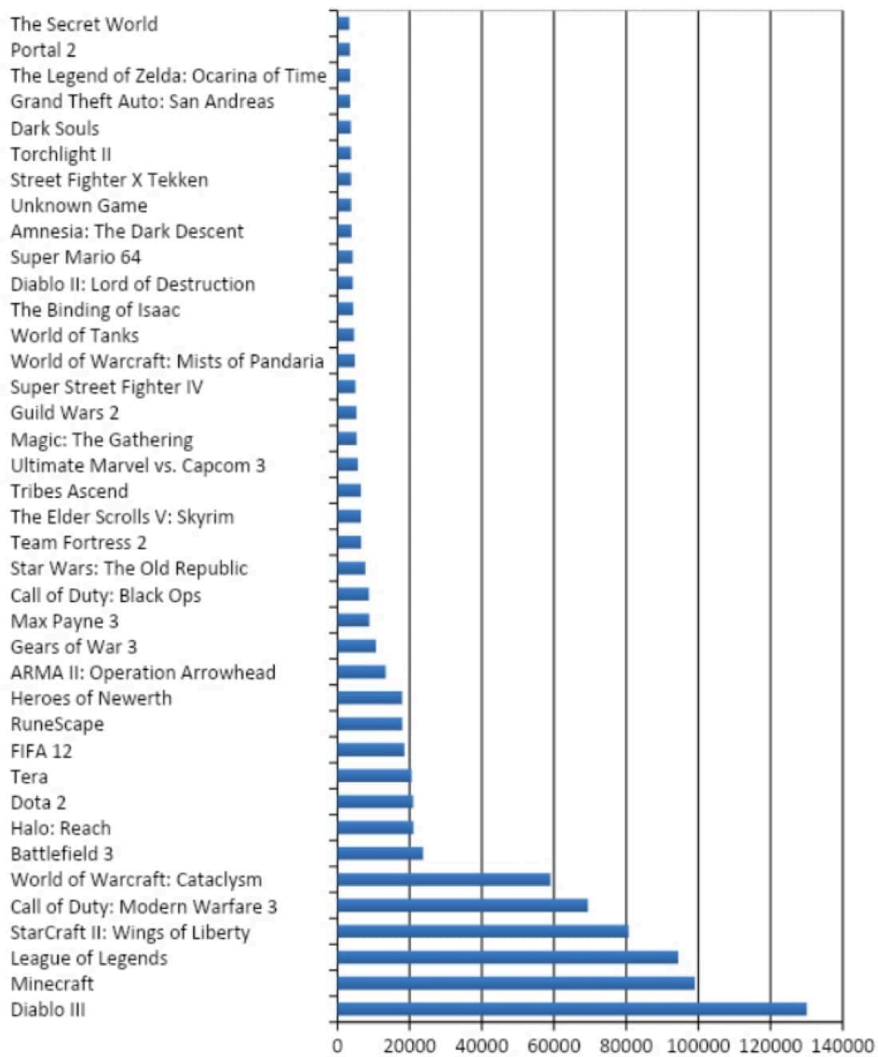
Series B Investment	$18.0	Pre-Series B Preference	$6.9
Pre Money	$53.0	BVP Series B	$13.0
Post Money	$71.00	BVP Fully Diluted Ownership	18.3%
Cap on Series B Participation	3x	Investment Date	Sep-12

				BVP		
Outcome	**Exit Value**	**Exit Date**	**Prob.**	**Gross Proceeds**	**Mult.**	**IRR %**
Wipeout. Twitch is sued by game publishers for copyright infringement or game veiwing is a passing fad in the hardcore gaming community. Shut down.	$0	Mar-14	15%	$0.0	0.00x	-100.0%
No Growth. Twitch has fully penetrated the market for game viewership and is unable to further monetize their current inventory. Sold for 3x revenue to a gaming content site.	$30	Sep-14	20%	$13.9	1.07x	3.5%
Slow Growth. The company continues to acquire viewers, but at a decreasing rate. Levels off at 1/5 the size of Machinima and CPMs compress due to the commoditazation of video advertising. Sold for 3x revenue to a gaming content site.	$75	Mar-15	30%	$22.5	1.73x	24.1%
Strong Growth. Twitch continues to grow at a steady pace, reaching 1/2 Machinima's current size, but engagement falls as casual gamers flood the platform. Sold for 4x revenue to a large media conglomerate.	$240	Sep-15	20%	$43.9	3.38x	49.3%
Market Leader. Twitch maintains its lead as the #1 place to watch live gaming content and grows to 100m MUs. CPMs hold and egnagement hold with scale and the company goes public at 4x revenue.	$550	Mar-16	12%	$100.7	7.75x	79.9%
Home Run. Twitch outpaces Machinima as the #1 place to watch game related content on the internet growing to 200m monthly uniques. Goes public at 5x revenue.	$1,250	Sep-17	3%	$228.9	17.61x	78.1%
Weighted Average (to BVP)					**2.87x**	**38.2%**

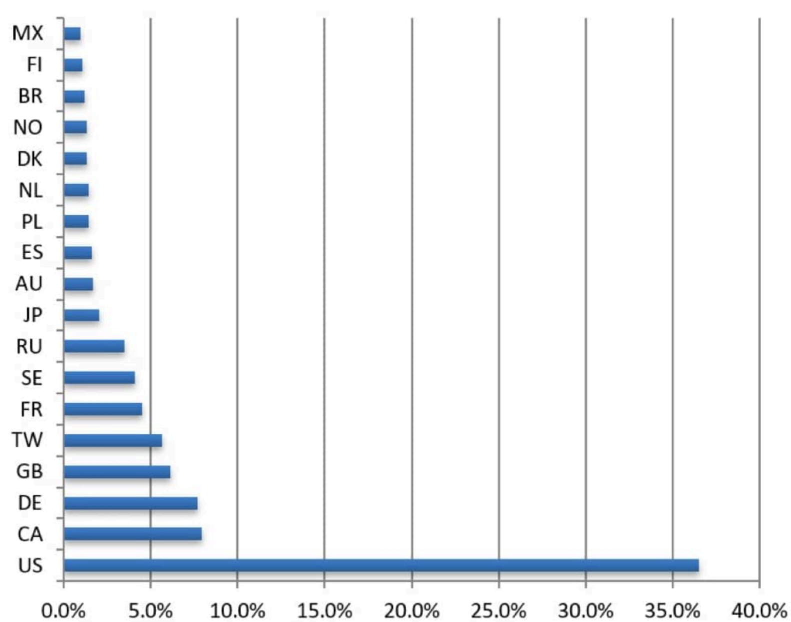
Conclusion

We are excited by the opportunity to make a meaningful investment in a very strong, scrappy team pioneering a fast-growing video community site with a very passionate and engaged audience. The company has strong momentum in viewership and is on the cusp of some very large partnerships which should further accelerate their growth and yield additional monetization and engagement opportunities. We are also encouraged by the tailwinds behind eSports, as well as the size and growth rates of other ecosystem players like Machinima. Having validated the company's strong partnerships with game developers and media and become comfortable with ecosystem players as a proxy for market size, we are excited to recommend that BVP invest $13m to lead the Series B financing of Twitch.

Appendix I - Traffic Distribution



Video View Distribution by Country



Why I Am Leaving Goldman Sachs

By Greg Smith
New York Times Article

Wednesday March 14th, 2012

TODAY is my last day at Goldman Sachs. After almost 12 years at the firm — first as a summer intern while at Stanford, then in New York for 10 years, and now in London — I believe I have worked here long enough to understand the trajectory of its culture, its people and its identity. And I can honestly say that the environment now is as toxic and destructive as I have ever seen it.

To put the problem in the simplest terms, the interests of the client continue to be sidelined in the way the firm operates and thinks about making money. Goldman Sachs is one of the world's largest and most important investment banks and it is too integral to global finance to continue to act this way. The firm has veered so far from the place I joined right out of college that I can no longer in good conscience say that I identify with what it stands for.

It might sound surprising to a skeptical public, but culture was always a vital part of Goldman Sachs's success. It revolved around teamwork, integrity, a spirit of humility, and always doing right by our clients. The culture was the secret sauce that made this place great and allowed us to earn our clients' trust for 143 years. It wasn't just about making money; this alone will not sustain a firm for so long. It had something to do with pride and belief in the organization. I am sad to say that I look around today and see virtually no trace of the culture that made me love working for this firm for many years. I no longer have the pride, or the belief.

But this was not always the case. For more than a decade I recruited and mentored candidates through our grueling interview process. I was selected as one of 10 people (out of a firm of more than 30,000) to appear on our recruiting video, which is played on every college campus we visit around the world. In 2006 I managed the summer intern program in sales and trading in New York for the 80 college students who made the cut, out of the thousands who applied.

I knew it was time to leave when I realized I could no longer look students in the eye and tell them what a great place this was to work.

When the history books are written about Goldman Sachs, they may reflect that the current chief executive officer, Lloyd C. Blankfein, and the president, Gary D. Cohn, lost hold of the firm's culture on their watch. I truly believe that this decline in the firm's moral fiber represents the single most serious threat to its long-run survival.

Over the course of my career I have had the privilege of advising two of the largest hedge funds on the planet, five of the largest asset managers in the United States, and three of the most prominent sovereign wealth funds in the Middle East and Asia. My clients have a total asset base of more than a trillion dollars. I have always taken a lot of pride in advising my clients to do what I believe is right for them, even if it means less money for the firm. This view is becoming increasingly unpopular at Goldman Sachs. Another sign that it was time to leave.

How did we get here? The firm changed the way it thought about leadership. Leadership used to be about ideas, setting an example and doing the right thing. Today, if you make enough money for the firm (and are not currently an ax murderer) you will be promoted into a position of influence.

What are three quick ways to become a leader? a) Execute on the firm's "axes," which is Goldman-speak for persuading your clients to invest in the stocks or other products that we are trying to get rid of because they are not seen as having a lot of potential profit. b) "Hunt Elephants." In English: get your clients — some of whom are sophisticated, and some of whom aren't — to trade whatever will bring the biggest profit to Goldman. Call me old-fashioned, but I don't like selling my clients a product that is wrong for them. c) Find yourself sitting in a seat where your job is to trade any illiquid, opaque product with a three-letter acronym.

Today, many of these leaders display a Goldman Sachs culture quotient of exactly zero percent. I attend derivatives sales meetings where not one single minute is spent asking questions about how we can help clients. It's purely about how we can make the most possible money off of them. If you were an alien from Mars and sat in on one of these meetings, you would believe that a client's success or progress was not part of the thought process at all.

It makes me ill how callously people talk about ripping their clients off. Over the last 12 months I have seen five different managing directors refer to their own clients as "muppets," sometimes over internal e-mail. Even after the S.E.C., Fabulous Fab, Abacus, God's work, Carl Levin, Vampire Squids? No humility? I mean, come on. Integrity? It is eroding. I don't know of any illegal behavior, but will people push the envelope and pitch lucrative and complicated products to clients even if they are not the simplest investments or the ones most directly aligned with the client's goals? Absolutely. Every day, in fact.

It astounds me how little senior management gets a basic truth: If clients don't trust you they will eventually stop doing business with you. It doesn't matter how smart you are.

These days, the most common question I get from junior analysts about derivatives is, "How much money did we make off the client?" It bothers me every time I hear it, because it is a clear reflection of what they are observing from their leaders about the way they should behave. Now project 10 years into the future: You don't have to be a rocket scientist to figure out that the junior analyst sitting quietly in the corner of the room hearing about "muppets," "ripping eyeballs out" and "getting paid" doesn't exactly turn into a model citizen.

When I was a first-year analyst I didn't know where the bathroom was, or how to tie my shoelaces. I was taught to be concerned with learning the ropes, finding out what a derivative was, understanding finance, getting to know our clients and what motivated them, learning how they defined success and what we could do to help them get there.

My proudest moments in life — getting a full scholarship to go from South Africa to Stanford University, being selected as a Rhodes Scholar national finalist, winning a bronze medal for table tennis at the Maccabiah Games in Israel, known as the Jewish Olympics — have all come through hard work, with no shortcuts. Goldman Sachs today has become too much about shortcuts and not enough about achievement. It just doesn't feel right to me anymore.

I hope this can be a wake-up call to the board of directors. Make the client the focal point of your business again. Without clients you will not make money. In fact, you will not exist. Weed out the morally bankrupt people, no matter how much money they make for the firm. And get the culture right again, so people want to work here for the right reasons. People who care only about making money will not sustain this firm — or the trust of its clients — for very much longer.

Greg Smith is resigning today as a Goldman Sachs executive director and head of the firm's United States equity derivatives business in Europe, the Middle East and Africa.

Bessemer Venture Partners

The Memos

Auth0

To: BVP Group
From: David Cowan, Sunil Nagaraj, and Peter Lee
Date: June 28, 2014
Re: Auth0 Seed IR

On Monday, Auth0 co-founders Jon Gelsey, Eugenio Pace, and Matias Woloski will present from Menlo Park. The Seattle-based company bills itself as the "Twilio of identity" because it enables developers to outsource their identity and access management for their web and mobile apps. With just a few lines of code, Saas vendors and enterprise developers can use Auth0's identity-as-a-service functionality to connect their apps to a variety of identity sources making it easier for end users to sign in. The team of 12 has raised $850K to date and is generating $10K of MRR from 75 paying customers. Though we met the company just two weeks ago, we accelerated our diligence because this investment fits well with our developer roadmap. Auth0 appeals to developers first and foremost with superior ease of use, technical documentation, and metered pricing. We moved quickly and were able to convince the company to let us invest $1M of additional capital in their prior $850K seed round which is effectively a convertible note with an $8M pre-money cap. We have also negotiated a super pro rata right to take up to 1/3 of their Series A.

Product

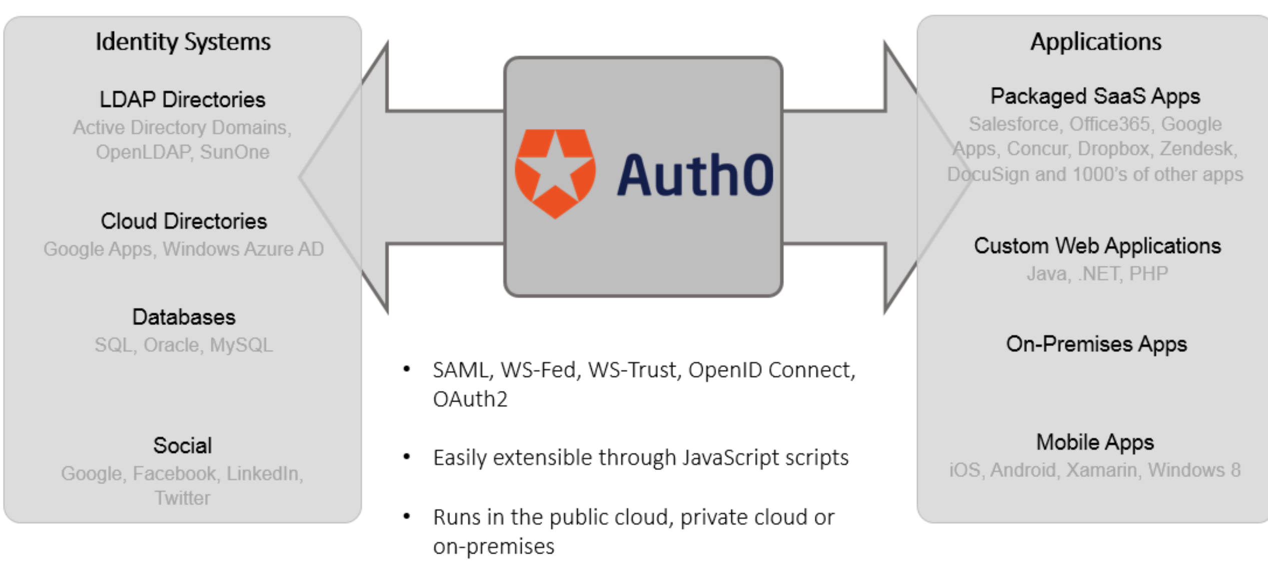
Auth0 allows developers and enterprises to authenticate and authorize any application or resource with any identity store with just a few lines of code. As a result, they refer to themselves as the "Twilio for identity." Whereas Twilio makes it easy for developers to enable voice and SMS, Auth0 does the same for identity and access management (IAM). They provide an IAM system that runs in the cloud or on a managed VM behind the firewall. This allows developers to offload the creation and ongoing management of their apps' login/authentication modules while retaining best-in-class functionality and security. Auth0 sits between a developer's application and the systems that know about users. These systems, often called identity providers, include any of the following:

Microsoft Active Directory domain controllers that hold all information about an organization's users, passwords, and permissions

LDAP (lightweight directory access protocol) or SAML-based identity systems (SAML = Security Assertion Markup Language, an XML standard based originally on VeriSign's X-TASS protocol)

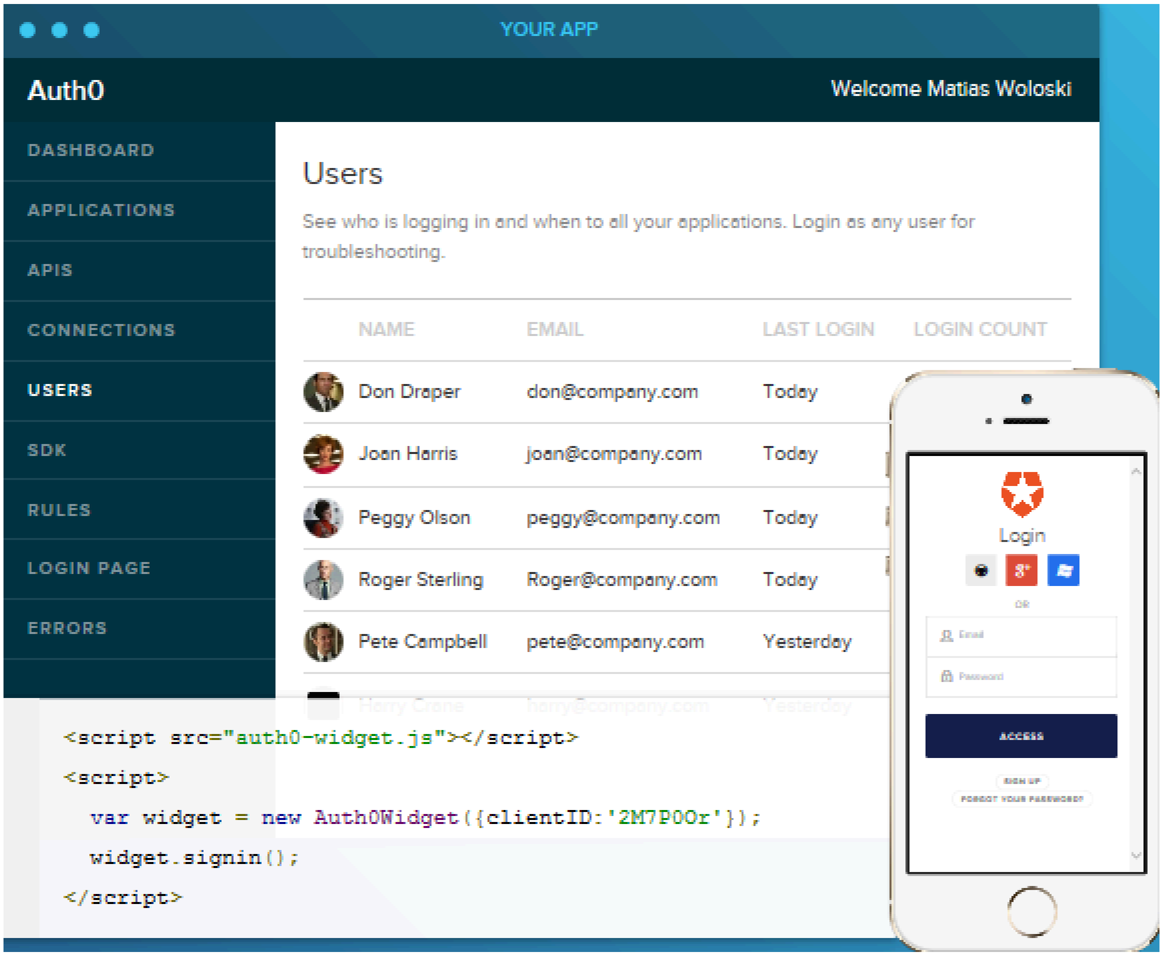
Social networks like LinkedIn, Google, Facebook, GitHub and others that allow "Connect with Facebook" functionality

A simple username/password table for credentials unique to a particular app



There are two categories of developers who would use Auth0. First, Saas vendors, such as Adaptive Insight, can use Auth0 to allow end users to login with their company-internal credentials, a social login, or a unique username and password. This speeds their time to market and streamlines the user experience by eliminating another username and password to remember. Furthermore, the 30+ social logins available through Auth0 provide a 1-click experience and enable a rich user profile. The other category of developers that Auth0 targets are enterprise app developers who build a company's internal apps and want to quickly enable authentication in a complex identity environment. This also means that an app can authenticate partners, vendors, consultants without having to manage their usernames and passwords. In this way, Auth0 provides automated tools for quickly setting up identity federation.

To get started, developers sign up at Auth0.com, select their programming language and identity store, and receive a few lines of code. Once they add this to their app, they get a login widget that includes whichever identity providers they have selected. The example below shows a mobile app that has selected github, Google+, Windows Live, and an app-specific login option. Auth0 serves up the entire login widget including "signup" and "forgot your password" functionality. With a few clicks, this developer could add the ability to authenticate against a company's Active Directory server as well. Despite the variety of authentication options, developers get a single, unified list of all users, regardless of how those end users chose to authenticate. Auth0 normalizes this user data so that developers can depend on standardized user fields deeper in their app.



Developers love this level of abstraction so they can focus on building the internals of their app. We have also heard from developers that there are a lot of obstacles and risks to building their own authentication functionality. First, it is difficult to find developers who are knowledgeable about this topic. Several developers have told us that they see authentication as absolutely critical to get right as a single mistake or vulnerability could be highly detrimental. While some have tried to build it internally, they are never sure they are doing it the right way and incorporating the latest best practices. Furthermore, the landscape of identity providers is constantly evolving, be it Facebook changing their API, Microsoft patching an Active Directory vulnerability by changing its interface, or a new enterprise identity source coming online.

We spoke with one customer (Concurix) who estimated that building a basic version of this functionality could take 2 engineers a month or two to build initially and then require an engineer plus support staff on an ongoing basis for password resets and other issues. However, this customer (a small Saas vendor) said that if their Auth0 bill exceeds $50K/year, they might consider doing it themselves but noted that their real concern is a mistake or vulnerability in their authentication code (such as Heartbleed). This makes the true cost of DIY authentication much higher.

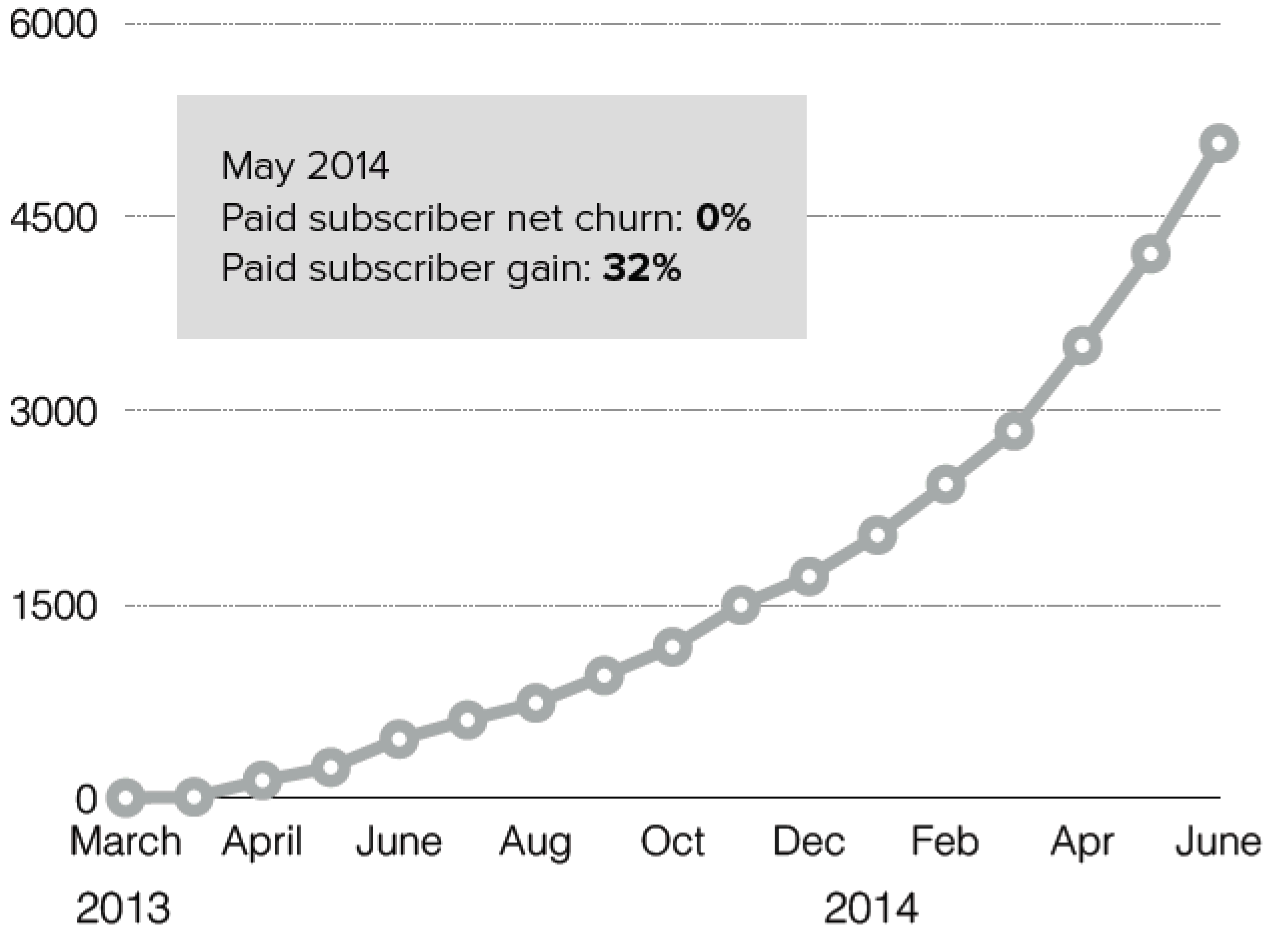
Beyond authentication, Auth0 provides several features that developers love including audit logs, analytics, outbound SSO (like Okta), and extensible rules. This last feature means that developers can use rules to extend the authentication pipeline to perform arbitrary operations: log activity to an external system; add extra validations on user access based on context such as date, time, device, network, application; etc. This gives the developer full control to execute additional authentication steps such as two-factor authentication. The Auth0 community has already created over 40 rules which are posted on their GitHub. One rule that has been popular is to create a new lead in Salesforce on first login. This rule calls Salesforce API to record the contact as a new Lead in the background when a new user signs up. Another popular rule performs "profile enrichment" by calling FullContact's API to fill in additional details on users based on their email addresses.

Auth0's current pricing is based on the number of applications and the number and type of users to be authenticated. The company is continuing to iterate on their pricing model.

			MOST SELECTED	
	DEV	TEAM	PRO	BIG
	$ 0 per month	$ 19 per month	$ 99 per month	$ 499 per month
	BASIC FEATURES	YOUR BRANDING	ENTERPRISE FEATURES	ENTERPRISE FEATURES
# of Applications / APIs	1	1	4	8
Active* Social Users	100	200	2,000	20,000
Active* Users w/ Password	50	100	1,000	10,000
Active* Enterprise Users	10	20	200	2,000

Traction/Financials

The company has generated an impressive amount of traction despite their early stage and small team. They currently have over 75 paying customers that generate $10K of MRR at 90%+ gross margins. Though it is early, the company has had basically no churn in recent months as the v1 product has matured. Since launching, they have grown to almost 5,000 registered developers of which 350 are live and using Auth0 to authenticate users daily.

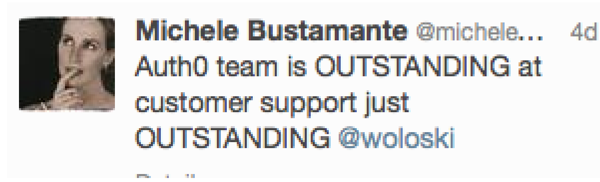


The company has not spent any money on advertising though they do regularly speak at conferences and events as thought leaders in the field. Since Jon Gelsey joined as CEO 6 months ago, we believe the company's growth has been inflecting with both self-service and enterprise customers. Currently the enterprise customers are Sancor Seguros (Argentina's largest insurance company with 4,000 users authenticating their insurance policy management and loss management apps with Auth0), FMI (a research arm of Novartis), TMZ (the media site), and The Journey (a national church). The customer pipeline is strong as well with a diverse set of large accounts in redlines right now.

Auth0 is currently doing $5K in self-serve MRR and $5K in enterprise/direct MRR, each growing at 15-20% a month. They currently have 71 self-serve customers and 4 enterprise customers. Based on accounts currently in the pipeline, they have visibility to a 2014 exit MRR of $100K though we have not spent a significant amount of time vetting their pipeline. Their current plan is to exit 2015 at $500K MRR based on 75 enterprise customers and 1,200 self-serve accounts.

We have spoken to several of their customers and they highlight a few common themes:

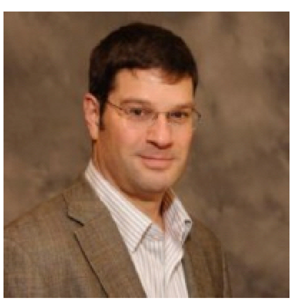
> Auth0 has one of the sharpest teams in the identity space. Co-founders Eugenio and Matias are well known in the identity space and engender a tremendous amount of trust with their customers.
>
> Customer support is off the charts. Every single customer (as well as many self-service customers on Twitter) rave about how fast and helpful customer support is.



Their documentation is consistently cited as the best out there and a key reason developers chose to use Auth0. It is incredibly thorough and has deep code samples that automatically integrate your user keys so you can copy and paste snippets directly into your app. Their comprehensive and developer-centric documentation is a key reason that integration with Auth0 can take minutes to get up and running.

Team

Auth0 was co-founded by Eugenio Pace and Matias Woloski in February 2013. In January 2014, Jon Gelsey joined as CEO. The team is now up to 12, with Jon and Eugenio in Seattle and the rest of the team in Buenos Aires, Argentina. All but 3 are engineers.



Jon Gelsey, CEO – We have been impressed with Jon and the impact he has made in 6 months since he joined the team. He brings a diverse business background including 7 years at Microsoft in corporate development and 6 years at Intel Capital. We have found him to be very thorough and detail-oriented. Eugenio and Matias brought in Jon to serve as CEO and we believe he is the right fit at this stage.

Eugenio Pace, VP of Customer Success and Co-Founder – Eugenio may be the most impressive of the group as he is adept at the business and technology sides of Auth0. He can seamlessly transition from deep technical architecture to high-level business strategy. He brings 13 years of product experience at Microsoft, mostly leading the patterns and practices group of Microsoft which creates technical guidance for all Microsoft developers. Along with Matias, he wrote Microsoft's book on identity and federation and it is from this work that he came up with the idea for Auth0.

Matias Woloski, CTO and Co-Founder – We have spent the least amount of time with Matias but from what we know, he is the technical expert behind Auth0 and leader of the engineering team in Buenos Aires. He worked with Matias on his identity work as a Microsoft contractor. Prior to Auth0, he spent 8 years at a technology consulting company that created developer evangelism materials. It is here that he honed his technical skills and this is reflected in Auth0's ease of use and phenomenal technical documentation.

Competition

The core issue that Auth0 addresses is the tension between a heterogeneous IT landscape of legacy behind-the-firewall Identity and Access Management (IAM) systems (Active Directory, LDAP, etc. from vendors like Microsoft, CA, IBM, Oracle, NetIQ and others) and the rapid adoption of best-of-breed SaaS applications (Salesforce, Box, etc.) each with their own username and password schemes.

The rapid move to SaaS creates tension for both IT and SaaS vendors. IT struggles to maintain a consistent IAM policy across legacy and new applications (Which users have access to which applications, how do we enforce the right level of access, how do we retract access when an employee is terminated, etc.). Vendors struggle to support all the various flavors of enterprise IAM that IT needs, particularly when IAM is not a core competency, as described in the Product section.

The first wave of startups attacking this problem addressed IT needs first with a single sign-on (SSO) solution, Essentially an abstraction layer across SaaS applications, these companies raced to build app catalogs or portals, to allow IT to maintain a single set of credentials, and then federate those to as many SaaS applications as IT wished to support. On the vendor side, they urged the adoption of the authentication standard SAML, as a way of leveling out the field. In practice, SAML is implemented by only a fraction of SaaS vendors, and so Cloud SSO vendors often bundle sizable professional services contracts to build custom connectors for the long tail of apps.

Of this set, Okta is the largest, and primarily targets the enterprise segment. They just raised a $75M Series E, with an estimated $30M ARR at the end of 2013. (BVP uses Okta as our own internal SSO solution.) OneLogin is also doing quite well, aiming more at the mid-market, with an estimated $10M ARR at the end of 2013. While there are several businesses rapidly gaining traction with this model, we've stayed away from making an investment here, as our ultimate view is that SSO will commoditize, and all vendors will ultimately support the full catalog of apps. (In our interviews with customers, while they confirmed the strong need for an SSO solution, they are already beginning to view SSO as a commodity, and expect to evaluate their next contracts primarily on price.)

On the SaaS developer side, while the more nascent space, there are several emerging players:

ForgeRock is one of the best-funded, having just raised a $30M Series C. Led by former Sun employees, ForgeRock is focused on supporting the Sun Identity Stack, now open source, with a variety of services and training to help support the ecosystem. While a powerful IAM solution, the model is very different from Auth0, and less accessible to developers looking for a Twilio-like service to get them up and running quickly.

Stormpath is the closest in terms of model, with a similar developer-centric approach. However, after 18 months in market, they seem primarily web-focused at the time (Facebook, Google+, etc.) with limited traction of ~100 developers. They have just begun to add support for enterprise identity providers, so this is a competitor we continue to watch closely.

Gigya is an Israeli company that also delivers an IAM solution focused on social login; however, their target customer is the Chief Marketing Officer, with login support primarily used as a way to gather marketing and targeting data. This application is best suited for large consumer sites, with customers like ABC, CBS, CNN, etc.

For the SaaS developer market, we actually believe DIY will be the strongest competition. Particularly with no marginal COGS (unlike Twilio which bundles communications services) at some price point a SaaS vendor might be tempted to roll their own solution. Moreover, if only a few, high-value customers have a single identity system to implement, perhaps a DIY solution is not too difficult, or at least worth the cost savings. In the case where an enterprise has multiple identity stores however, the problem becomes much more difficult. The Auth0 team contends this latter scenario is much more common. Moreover, they contend that while the adoption of SSO solutions like Okta and OneLogin will help rationalize some of this heterogeneity, like many "standards" not all SAML implementations are the same, leaving developers to implement multiple versions anyway. Given our customer conversations to date, we're inclined to agree, but plan to confirm further with diligence.

Lastly, it is possible that as SaaS vendors mature in their needs, they ultimately "graduate" to an enterprise solution like ForgeRock, or need to extend the feature set beyond what Auth0 offers, but this has not yet happened. As detailed in the Product section, customers we've spoken to are quite happy with the solution, even in its V1 state, and the early cohorts are promising. We believe that Auth0 will grow with these smaller customers and continue to add functionality rapidly so these customers never consider more cumbersome enterprise solutions.

Risks

Competition – the IAM space is a crowded one with several legacy competitors going after lucrative enterprise contracts. We believe Auth0's focus on developers and rich documentation make it stand out among the audience of developers. This combined with the fact that our developer roadmap hinges on the increasing ability of developers to select critical technology components for an organization means that Auth0 should win in this space.

Market size – The company has enjoyed strong early traction with 75 paying customers, but we may find that the product only resonates with early adopters. The majority of customers may want a heavier weight solution and Auth0's message may get lost in the noise for them.

Technology – Is the current product, which has found traction with so many developers, complex enough to justify its existence? Will developers prefer to build authentication themselves? We have had this question with several of our developer roadmap companies, and the answer is almost always that developers want to focus on their core problem and outsource/abstract away everything else.

Deal

We have verbally agreed to invest $1M in Auth0's prior seed round, along with a super pro rata right for 33% of the Series A. We are aiming to close by this Thursday 7/3. Last quarter, the team closed an $855K seed round as a SAFE with an $8M pre-money valuation cap. A SAFE, or "Simple Agreement for Future Equity", is a YCombinator-devised financial instrument that behaves much like a convertible note but the investment earns no interest and has no maturity date. This $1M of capital, combined with the $780K currently on the balance sheet, should take the company through the end of 2015 on a conservative plan. However, if the company achieves its top-line growth goals, we can expect the company to spend more aggressively and raise a Series A in early- to mid-2015. Just for historical context, Twilio raised its Series A with only about $20K of MRR, though I believe that Sendgrid's MRR was much higher at the time of its Series A (it was already $800k when we led the Series B).

Scenario Analysis

Outcome	Exit Value	Exit Date	Prob.	Seed Gross Proceeds	Mult.	IRR %
Wipeout. Auth0 has team issues and falls apart.	$0	Jun-15	30%	$0.0	0.00x	-100.0%
Team sale. Auth0 is not able to attract more customers but the team's strong reputation drives a fairly attractive team sale to competitor	$10	Jun-15	30%	$1.0	1.00x	0.0%
Slow Growth. Auth0 grows from $10K to $150K of MRR (75 to 1,000 customers) but slower than planned. 25% add'l dilution from Series A.	$30	Jun-16	20%	$2.3	2.28x	52.2%
Strong Growth. The company becomes a leader in identity-as-a-service with 150 enterprise customers and 2,000 self-serve customers. 35% add'l dilution.	$150	Jul-17	19%	$9.9	9.90x	112.1%
Home Run. Auth0 powers identity for most Saas vendors and enterprise app developers. Goes public at 8x 2019 revenues of $125M (1,000 enterprise and 5,000 self serve customers). 50% add'l dilution.	$1,000	Jul-19	1%	$50.8	50.76x	117.0%
Weighted Average (to BVP)					**3.15x**	**51.2%**

Summary

Autho0 sits at the intersection of our cyber security and developer API roadmaps: with its strong vision, compelling team, and promising early traction, Auth0 could be the Twilio of identity. Our diligence has made us more confident that Auth0 is the ideal identity-as-a-service provider for a growing number of developers. We believe this $1M seed investment represents an attractive opportunity to get in early and maintain ball control for the eventual Series A. We recommend BVP make this investment.

Bessemer Venture Partners

THE MEMOS

PagerDuty

To: BVP Group
From: Trevor Oelschig, Ethan Kurzweil
Date: July 21, 2014
Re: PagerDuty Series B IR

Following PagerDuty CEO Alex Solomon's presentation to the partnership on June 16th, we signed a term sheet to lead the company's Series B with an investment of $19.6m out of a $27.2m round at a $180m pre-money valuation (14x June ARR) with a 5% unallocated option pool. In addition, we will purchase $6m of Series FF shares directly from the founders; these shares convert into Series B once we purchase them.

As a refresher, PagerDuty is the leading incident management system / command center for IT operations. Since its launch in 2009, PagerDuty has rocketed to the #1 position in the space on account of a well-designed, easy-to-use product and a lack of any strong competition until recently. SaaS metrics are off the charts. Most metrics are in the right column of our framework—136% YoY growth, 0.5% gross MRR churn, 103-104% monthly net negative churn with upsells, and gross margin in the high 80s%. The company ended June on a $12.6m ARR.

After the company presented to the partnership, we've spoken to a large number of customers and companies using competing products and spent more time with the founders and broader exec team—CFO, VP Sales and VP Marketing. We continue to be very excited about an investment here, as it is clear that the company has hit a sweet spot and very quickly cemented itself as the de facto solution for managing, routing and measuring alerts—not just among early adopter tech companies but mainstream enterprises. The big bet is that PagerDuty can expand from being an alerting tool to a full platform for IT operations that provides cross-platform and app-specific intelligence and analytics. If the company is successful here, we see a path to them establishing a new category of IT operations performance software and comprising a dominant position within it. Even without achieving this bigger vision, there are a large number of potential acquirers from old-school software vendors like IBM, HP and BMC to newer players like ServiceNow (which just completed its second ~$100m acquisition), Splunk and SolarWinds that help mitigate the downside risk.

We've been very positive about the quality of the broader executive team that Alex has assembled - and the company's finance, marketing and sales processes are further along than we anticipated. While there is still work to do on all fronts, the company is just beginning to reap the rewards from these investments and we're confident that their current trajectory isn't a fluke and there is a great deal more opportunity even without expanding the product too much beyond the current core alerting capabilities. At the same time, our diligence has highlighted the risk that competition from startups like VictorOps and incumbents has finally begun to wake up to the magnitude of this opportunity and the company will have to turn its attention back to product innovation to stay ahead of the pack.

Original Summary

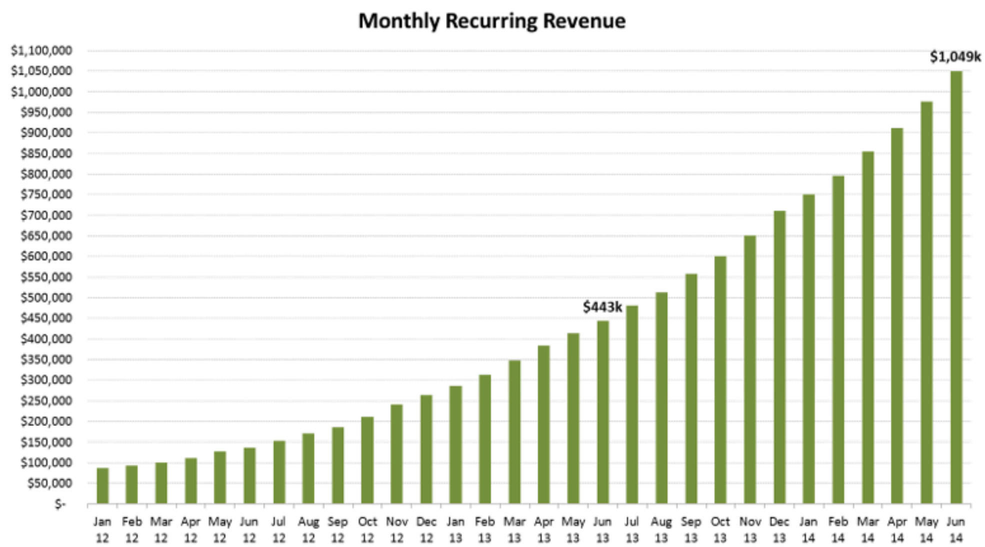
Think of the product as a 9-1-1 dispatch system for IT operations teams in that it connects to all systems and routes alerts to whichever employees are on call for that particular type of alert – according to pre-defined rules that companies set up in PagerDuty. While the general problem of alerting ops teams to system failures sounds relatively basic, there is a great deal of complexity to it in that most enterprises and startups have dozens of systems that each can fail or exhibit performance issues in dozens of ways. Some issues are irrelevant, some are worthy of batched alerts that should be reviewed in bulk at the end of a shift, some require immediate notification, and some require immediate attention and action by a SWAT team of engineers and the attention of the CEO. Configuring and routing alerts according to the severity and type of problem to the right person based on their shift is hard to do at scale without a SaaS product in the middle to manage it. PagerDuty goes beyond this basic level of functionality to also provide analytics and reporting on past incidents so that companies can evaluate which systems are causing the most issues and how strong their operations teams are at resolving issues. Most companies hold their ops team (and even specific people within it) to an SLA which is made easy to measure in PagerDuty.

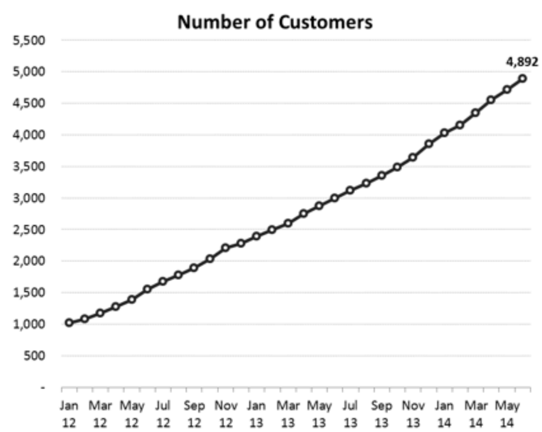
After the usual YC process of selling to other YC startups, PagerDuty has now had success selling to startups and enterprises alike – and lately has penetrated non-tech enterprises. Their customer list is too long to list here but it spans the gamut, including consumer tech, financial services, educational institutions, retailers, media companies, and even government sites.

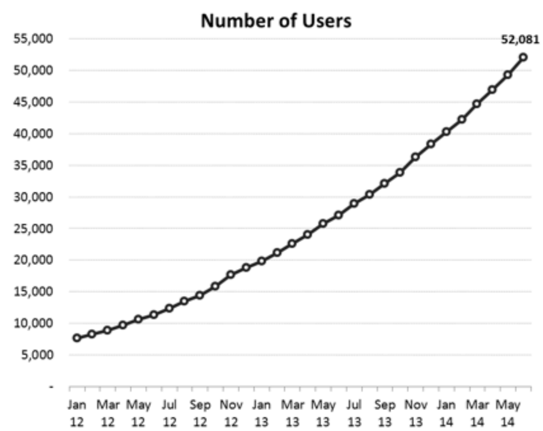
Founder Alex Solomon graduated from University of Waterloo in 2006 after which he worked on the Amazon operations team for two years – handling incidents with the core Amazon.com e-commerce site, which apparently has a number of well-designed internal tools for handling this type of alerting. If we have any concern, it's that despite a vision well beyond an IT ops command center, the company has made little progress at attacking it beyond adding support for more sophisticated rules and routing – and a lot of support for mobile which for obvious reasons is the main medium for receiving alerts. It's hard to argue with that prioritization though as they clearly are in the sweet spot of having found product/market fit and being in the fortunate position of scaling up sales and marketing to capitalize on it.

Topline Metrics

For the month of June, both new MRR and net new MRR came in strong at $39k and $73k, respectively. PagerDuty is now at $1.05m in MRR and continues to grow at 6-7% per month. (See APPENDIX for a detailed look into the metrics.)







Customers & Users

PagerDuty's core customers are small and medium-sized businesses. However, over time, they have found themselves moving upstream into large enterprises such as MasterCard, Capital One, IBM and Apple. Customers are relatively sticky, especially in the context of SMBs. The average customer churn is 1.0% per month. Gross MRR churn is 0.5% per month, while net MRR churn is negative and is running between -3% and -4%, thanks to tremendous account expansion.

Core users are IT Ops and DevOps teams. However, broader parts of an enterprise's organization are also users and include SysAdmins, DBAs, network engineers, IT support, developers, and QA as well as various managers up to the VP of Operations and VP of Engineering. In some cases, users also include the VP of Support, VP of Sales and the CEO.

Go-to-market: Land and Expand

The model is a combination of self-serve and inside sales. Leads come in through a combination of word-of-mouth and AdWords. Most then convert to paid customers via credit card without ever speaking with a person, although PagerDuty is now ramping its inside sales team, which now stands at 9 quota-carrying reps.

The fully-loaded CAC payback on new initial MRR has averaged roughly 19 months over the last six months, although it's spiked as they've ramped marketing spend on lead volume ahead of the rate of hiring new sales reps. Once signed up, accounts expand consistently. By month twelve, initial MRR across customer cohorts has grown by 75%. And by month 24, revenue has grown by 260% (see APPENDIX). Based on our analysis, the effect of this is that the CAC payback for the April'14 customer cohort is more like 9-10 months.

As accounts have expanded, PagerDuty is starting to see meaningfully-sized deals. A retail customer started with 2 users paying $40 per month with a credit card and now pays $10,000 per month (they are still paying with a credit card). One tech media company moved from 300 users at $40,000 per year to 900 users at $150,000 per year. These are not one-offs. PagerDuty is seeing this type of expansion across the board.

Sales Execution

The sales team appears to be productive. By and large, they are hitting their quotas and are bringing in MRR that's above what we've seen for inside sales reps at similar companies. On average, PagerDuty's reps are closing $6.4k in new and expansion MRR ($77k in new ARR) per month. By comparison, typical targets for reps are in the range of $4-5k per (or $50-60k) per month. We've included the expansion MRR in this analysis given their focus on landing new accounts with a small toehold and then focusing aggressively on the upsell.

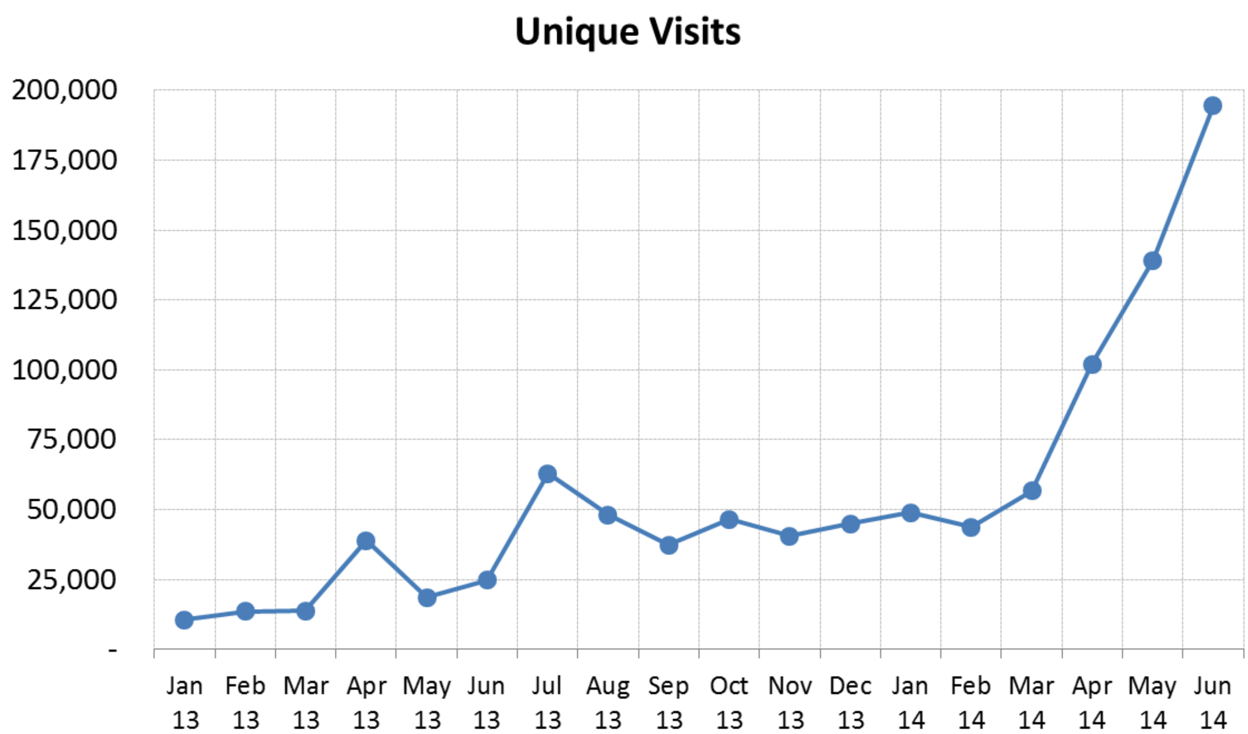
New and expansion MRR bookings:

	Oct'13	Nov'13	Dec'13	Jan'14	Feb'14	Mar'14	Apr'14	May'14	Average (30 days after hire)	
sales rep 1	-	-	-	$245	$2,292	$3,923	$2,721	$9,154	$4,523	
sales rep 2	$15,218	$8,516	$10,537	$6,850	$3,139	$4,465	$6,196	$7,466	$7,798	
sales rep 3	-	-	-	-	-	-	$2,105	$7,360	$7,360	
sales rep 4	$1,779	$4,896	$6,547	$6,891	$4,265	$4,086	$7,816	$7,853	$6,050	
sales rep 5	-	$719	$1,710	$3,245	$3,863	$4,286	$4,127	$9,213	$4,407	<--Moved to Mid-Market Acct Mgmt *(Farmer)* in May
sales rep 6	-	$905	$3,595	$2,553	$2,893	$5,419	$3,639	$8,862	$4,493	<--Moved to Mid-Market Acct Mgmt *(Farmer)* in May
sales rep 7	-	$2,691	$3,616	$2,065	$1,634	$2,743	$3,656	$22,193	$5,985	<--Moved to Mid-Market Acct Mgmt *(Farmer)* in May
sales rep 8	$10,515	$12,740	$18,616	$5,289	$17,029	$12,623	$9,028	$14,234	$12,509	
sales rep 9	-	-	-	-	$1,487	$4,060	$5,228	$4,634	$4,640	
sales rep 10	-	$2,029	$2,407	$4,191	$3,083	$5,117	-	-	-	<--Let go in April
Avg New MRR per Month	$6,147	$3,996	$6,082	$4,039	$4,893	$5,476	$5,582	$11,165	$6,419	
								Avg New ARR per Month	$77,022	

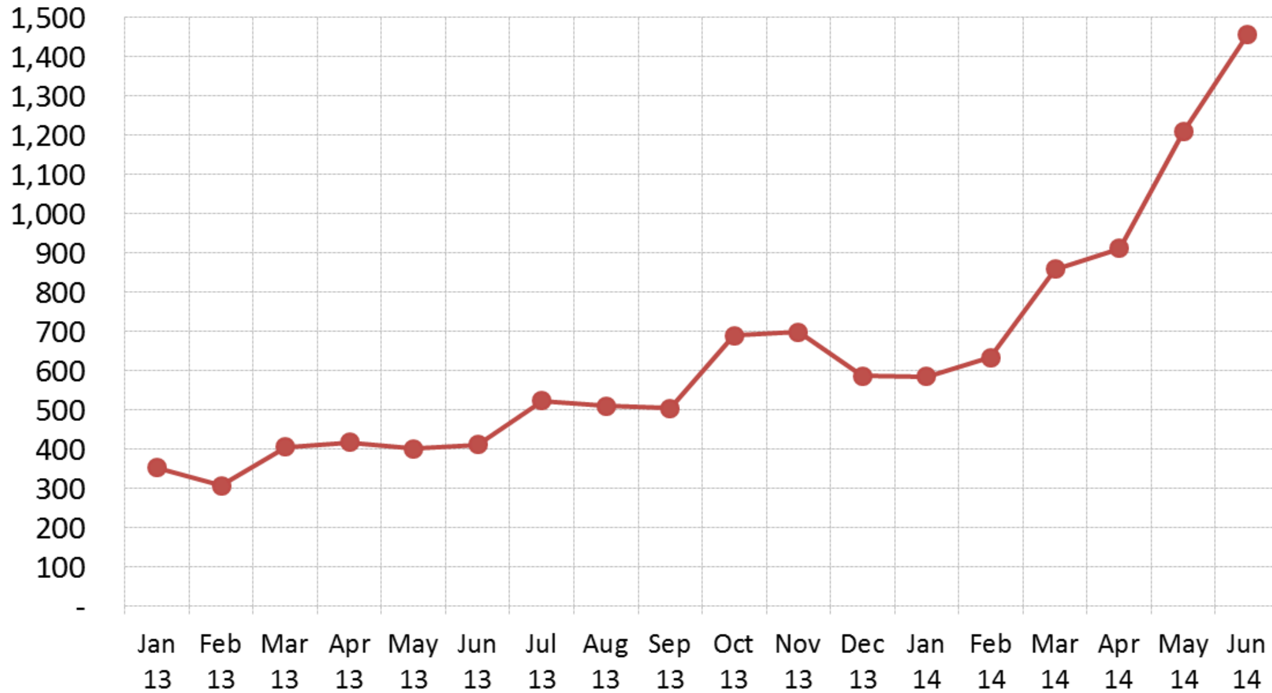
New customer signups have been growing at an annualized rate that's in the range of 35-50% over the last 18 months. These signups haven't kept up with lead volume which is growing at a much faster rate (see below). As we've talked through this with the team and analyzed the sales team's productivity, we believe that there are two reasons for this. First, signups tend to lag site visits and trials by 30-60 days. This has meant that the ramp in trials in the last two months, in particular, has yet to be borne out in new customers, although we think that the impact of the lag is modest. Second and most importantly, we think that the sales team has been understaffed – especially in the area of farming leads. On average, it frequently takes the team 24 hours to respond to a warm lead. While this latency has been improving over time, a response time in hours and not minutes is far from world class. To address this, the VP of Sales is in the midst of a farming test and has shifted 3 of his 9 reps away from hunting and into farming roles. You'll see above the impact from this in the jump in new and expansion MRR generated by Reps 5, 6 and 7.

Generally, it's harder to scale lead volume than to grow a sales organization. The good news is that PagerDuty is consistently growing leads at a rate greater than new customers. One of the uses of this fundraise will be to ramp the sales team to handle the increased lead flow.

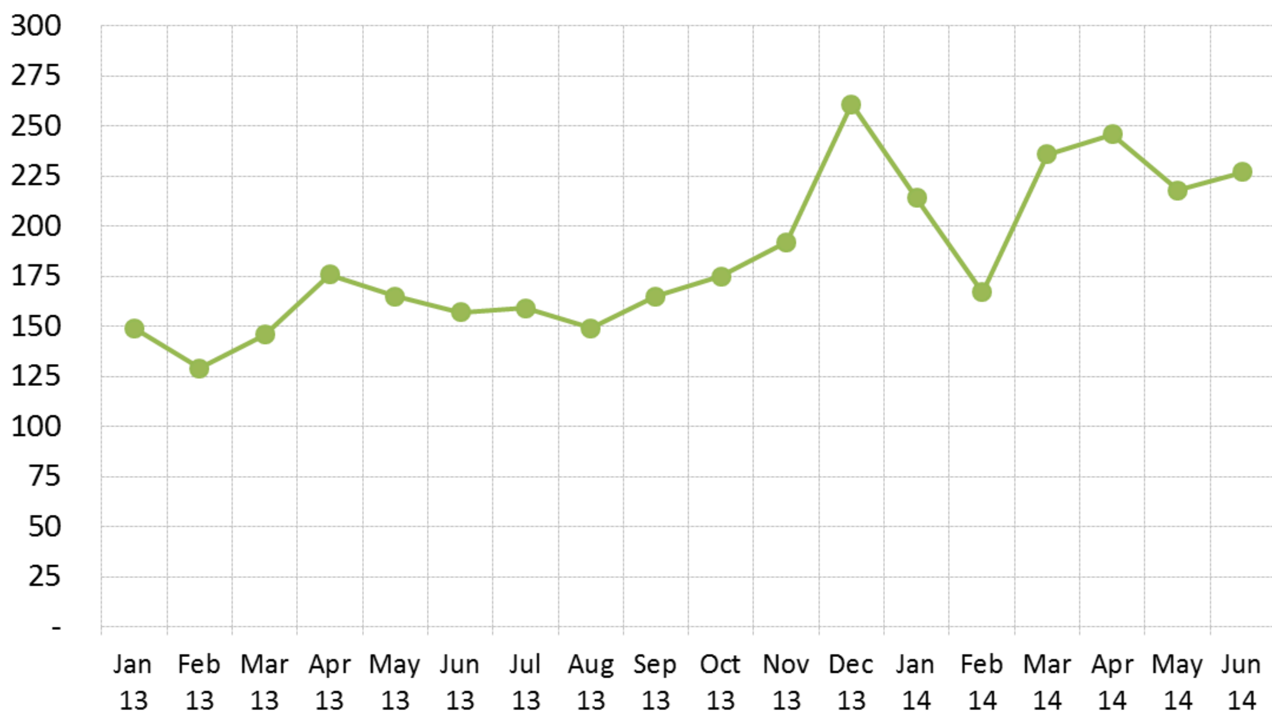
Sales funnel:



Trials



Paid Signups



Product

To monitor and manage their systems, companies use a variety of tools—like Nagios for server monitoring, Pingdom for website monitoring, and New Relic for Application performance. It's not uncommon for a large enterprise to have 100s of monitoring tools. The average PagerDuty customer uses 7 different tools. Each tool sends its own alerts. Typically, alerts are blasted to one person or a whole IT Ops team, with no prioritization or filtering or mechanism to escalate and route alerts to the right person. Not only do the critical alerts get lost in the noise but alert fatigue itself becomes an issue with the noise of continual false positives constantly hitting the inbox or SMS account of the dev-ops person.

PagerDuty ingests incoming alerts from virtually every monitoring tool. It's a 'Switzerland' strategy and in total, it has 75 different integrations. As alerts are ingested, PagerDuty de-duplicates and normalizes them to cut down on noise. More sophisticated correlation and clustering is on the roadmap.

From an end-user perspective, the product has several components:

Incident Management and Alerting

PagerDuty automatically routes incident calls to the right person based on schedule and the underlying system that's in trouble. Ops people receive alerts via email, SMS, automated phone calls, and push notifications via PagerDuty's mobile app. The product isn't mobile-first, but is mobile-centric, since much of the workflow occurs while a person is away from the office.

Escalation policies re-route alerts to the standby on-call engineer if the primary person doesn't answer or respond quickly enough. There is simple prioritization in place today. PagerDuty is building more sophisticated rules and routing as well as technology to correlate and cluster alerts to reduce alert noise.

When IT Ops teams are working to triage an incident, PagerDuty doesn't have much in the way of collaboration capabilities, but it's on the roadmap. Today, teams typically use generic chat tools like Atlassian's HipChat, Slack or Google Hangouts. PagerDuty's roadmap calls for a purpose-built Ops collaboration tool, which will do things like visualize similar incidents from the past, how they were resolved, and any other relevant data.

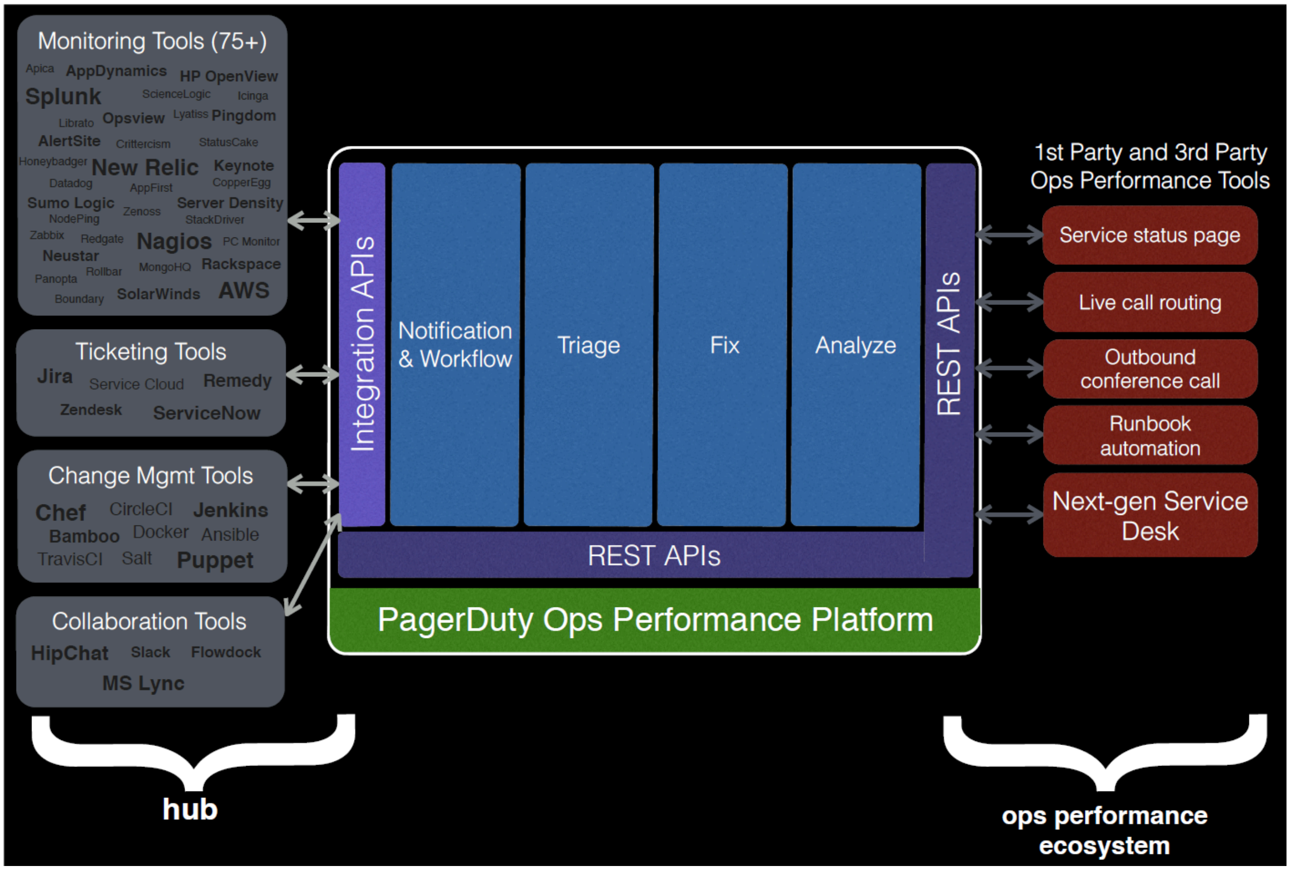
In speaking with customers (and companies using competing products), we've heard that IT Ops teams are often reinventing the wheel and providing a central knowledge base is a big missing capability. Teams today are largely using Atlassian's Confluence product or maintaining a Google Doc that captures and organizes information about prior incidents and how they were resolved.

Analytics Dashboard

Today, the product provides basic reporting. Slated for release next month is more sophisticated analytics that will answer questions like "How is my IT Ops team performing?" and "How are my systems performing?" Also added will be a post-mortem analysis on what went wrong and if it's a recurring problem.

The company started by building a straightforward incident alerting tool. In doing so, it's now found itself sitting at the center of both the flow of information and day-to-day activities of an IT operations team. We think that this is a very strategic position and puts PagerDuty in a good position to create an entirely new product category—IT Operations Performance Software. Essentially, it wants to be the platform that teams use across the entire lifecycle of an incident. This is something that none of the incumbent vendors own today.

PagerDuty's vision—IT operations performance platform:



The longer-term idea is to then extend PagerDuty to business users such as marketing and customer support. For example, when a system goes down, marketing is alerted and can immediately get on Twitter to communicate with customers – or even provide basic status communications automatically. While there's risk that the market won't latch onto this, we think that this vision is pretty compelling and our only concern is that the company's rapid growth will prevent them from ever getting to it.

Team

PagerDuty was founded in 2009 by Alex Solomon (CEO), Andrew Miklas (CTO), and Baskar Puvanathasan (senior engineer), three Waterloo-grads who worked together after college as infrastructure engineers at Amazon. All are typical software developer founders. They've lived the problem and are product-oriented. We've spent quite a bit of time with Alex and Andrew. Alex is self-aware and while we're not yet sure it's necessary, he has asked how we would think about bringing on-board a coach to help him grow.

Historically, there hasn't been much of a management team. However, in just the last year, the company has filled out all of the major roles:

VP of Sales (joined Aug'13): Trenton Truitt, former VP Sales at Appcelerator.

VP of Marketing (joined Nov'13): Nisha Ahluwalia, former VP Product Marketing at RingCentral and previous marketing experience at WebEx.

CFO (joined 8 weeks ago): Charles Frerer, former CFO at Rafter.

VP of Product (joined 6 weeks ago): Jonathan Wilkinson, former Director of Product Mgmt at Websense.

There are 89 employees today.

We've spent time with most of the execs. The VP of Marketing is impressive. She is the brainchild behind PagerDuty's expanded product positioning. We like the VP of Sales as well and based on the productivity of the team, he appears to be doing a great job. We've also interacted with the new CFO through the course of diligence and he seems very strong as well and likely able to handle an IPO. We've yet to meet the VP of Product; this will be an especially important role towards realizing the expanded product vision.

Competition

There isn't much in the way of meaningful direct competition besides a handful of smaller startups. Ops teams at most companies simply put up with a flurry of alerts from the various monitoring tools that they've deployed without any central command center to organize them. A few large companies like Google, Facebook and Amazon have built their own systems. There is one direct competitor, xMatters, and another new upstart, VictorOps. xMatters is a 10-year old company whose product is generalized and spans emergency mass notifications and IT operations; it's largely deployed on-premise. Boulder-based VictorOps, which has raised $6.5m from Foundry, is much smaller but has a slick looking product and strong team. VictorOps has not been able to get out from under PagerDuty's shadow to date and has been much less aggressive about ramping but will definitely be credible competition in the future. We've heard through the grapevine that several companies have tried to acquire VictorOps but the team hasn't been interested in selling.

The competitor that we worry most about is ServiceNow. The product suite is broad. In general, it's used by IT departments within large companies to do such things as: (1) manage trouble tickets created by employees or customers (e.g., when an application is slow or when a password needs to be reset), (2) track all of the software and hardware assets and vendors within a company, or (3) manage the change process around internal IT projects. ServiceNow has ~2,200 customers, which are almost all enterprises. With an ASP of ~$230k and a number of $1m+ deals, ServiceNow is very much big enterprise-focused.

While it's very rare for PagerDuty to compete head-to-head, ServiceNow does have an alerting product called "Notify" that's sold as part of a suite of ServiceNow products. This product is generally more difficult to setup and can't be used on a standalone basis. And as ServiceNow is an older company – the product architecture is single-tenant not multi-tenant which presents a challenge in the mid- and lower-end of the market. However, ServiceNow is a formidable competitor and so we don't want to discount it too much. SerivceNow is on a tear. It did $425m in revenue last year and is growing at 50%+ per year and has an $8bn market cap.

We're much less worried about the "big four" incumbents—HP OpenView, CA, BMC and IBM. Their products have been cobbled together over years of M&A. There is a good history of startups taking on these players and winning. PagerDuty almost never sees them come up as competition.

Financials

PagerDuty is projecting $13m in revenue for 2014. Based on the month of June, the current ARR is $12.6m (+137% YoY) and the company is forecasting to end 2014 with $19m in ARR. Given the predictability of PagerDuty's growth, we believe these numbers.

PagerDuty is burning about $800k per month on a P&L basis, but because about 35% of customers are paying annually upfront, the actual cash burn has been more modest. In June, its operating cash flow was actually positive at $250k. At closing, PagerDuty will have about $34m in cash.

The preliminary plan for 2015 is to do $27mm in revenue with an aggressive ramp in expenses, particularly around engineering. Admittedly, there isn't much precision around the 2015 plan since the new CFO has only been in place for about 2 months. There may be additional upside on the topline if marketing continues to perform well at demand generation but it's too early to say for sure.

Summary P&L:

	Actual	Actual	Actual	Actual	Actual	Actual	Forecast	Forecast	Forecast	Forecast	Preliminary
	Q1'13	Q2'13	Q3'13	Q4'13	2013	Q1'14	Q2'14	Q3'14	Q4'14	2014	2015
Revenue	$974,173	$1,270,450	$1,586,514	$1,967,750	$5,798,887	$2,401,556	$2,923,641	$3,527,442	$4,408,599	$13,261,238	$27,285,422
YoY Growth %	*226%*	*213%*	*190%*	*161%*	*189%*	*147%*	*130%*	*122%*	*124%*	*129%*	*106%*
COGS	$168,763	$183,322	$220,948	$328,369	$901,403	$277,173	$391,478	$493,842	$617,204	$1,779,697	$3,819,959
Gross Profit	$805,410	$1,087,128	$1,365,566	$1,639,381	$4,897,484	$2,124,383	$2,532,163	$3,033,600	$3,791,395	$11,481,541	$23,465,463
GM %	83%	86%	86%	83%	84%	88%	87%	86%	86%	87%	86%
Sales	$146,010	$150,774	$273,853	$560,951	$1,131,587	$710,247	$699,047	$874,721	$891,906	$3,175,922	$4,262,916
Marketing	$95,171	$149,009	$322,689	$422,308	$989,177	$446,201	$917,757	$1,342,517	$1,617,126	$4,323,602	$8,456,277
Engineering	$493,170	$720,634	$939,268	$1,237,864	$3,390,937	$1,389,474	$1,708,206	$2,449,696	$3,162,699	$8,710,075	$17,300,947
G&A	$177,711	$302,475	$379,738	$862,885	$1,722,810	$803,127	$1,518,451	$1,767,592	$1,946,274	$6,035,444	$10,952,153
Total Oper. Exp.	$912,063	$1,322,892	$1,915,548	$3,084,008	$7,234,511	$3,349,049	$4,843,461	$6,434,526	$7,618,005	$22,245,042	$40,972,294
Operating Profit	($106,653)	($235,764)	($549,982)	($1,444,628)	($2,337,027)	($1,224,667)	($2,311,298)	($3,400,926)	($3,826,610)	($10,763,501)	($17,506,831)
Cash Balance*	$11,405,082	$11,440,472	$9,969,767	$8,502,618	$8,502,618	$7,858,407	$7,106,361				

**Note the change in Cash Balance differs from the Operating Profit because many customers pay upfront for one year subscriptions.*

The company ended the first half of 2014 3% behind plan on the topline but way underspent (18%) and so had an operating loss of $3.5m vs. a plan of $5.2m:

2014 YTD: Actual vs. Budget

	Actual (YTD)	Budget (Original)	
	Q1-Q2'14	Q1-Q2'14	Diff. %
Revenue	$5,325,197	$5,485,784	-3%
YoY Growth %	*137%*	*144%*	
COGS	$668,651	$695,075	-4%
Gross Profit	$4,656,546	$4,790,709	-3%
GM %			
Sales	$1,409,294	$1,827,277	-23%
Marketing	$1,363,958	$1,824,598	-25%
Engineering	$3,097,680	$3,985,844	-22%
G&A	$2,321,578	$2,328,211	0%
Total Oper. Exp.	$8,192,511	$9,965,930	-18%
Operating Profit	($3,535,965)	($5,175,221)	-32%

Deal

There are two parts to the deal. The first is a Series B investment of $27.2m. BVP will invest $19.6m. Existing investor Andreessen Horowitz will invest $5.5m (or 77% of their pro rata). The Series B security is straight preferred and pari passu with the Series A and Series Seed. The available option pool will be topped up to 5% and included in the pre-money valuation. The pre-money is $180m and post-closing of the primary piece of our investment, BVP will own 9.5%.

Soon after the close of the Series B, we anticipate a $6m secondary purchase of Series FF stock at the same price as the Series B share price. After the purchase, these shares will convert immediately into Series B Preferred Stock with all of the Series B rights. We have pushed for the entire amount and so we are seeking approval for this purchase in addition to the primary Series B. Assuming that the secondary goes forward, BVP will have invested $25.6m and own 12.4%.

In total, PagerDuty will have raised $39.8m. However, its total preferences are $45.8m. The delta represents the $6m worth of Series FF shares purchased that will convert into Series B shares.

Outcomes Analysis

	Series B Investment		Anticipated Secondary Purchase*		Overall
Estimated Close Date:	25-Jul-14		25-Aug-14		
Price per Share	$7.4162		$7.4162		
BVP Investment Amt ($m):	$19.6	+	$6.0	=	$25.6
Fully-Diluted %;	9.5%	+	2.9%	=	12.4%

$ million	Exit Value	Prob.	Timing (Years)	Est. Future Dilution	Series B Investment: Gross Proceed	Mult.	IRR%	Anticipated Secondary Purchase*: Gross Proceed	Mult.	IRR%	Overall: Gross Proceed	Mult.	IRR%
Cash & burn. Woefully overspends. Product is a feature with no economic value to customers.	$0	5%	3.0	0%	$0	0.0x	0%	$0	0.0x	0%	$0	0.0x	0%
Fails to innovate and expand into a platform. Gross slows dramaticlly to 35% CAGR (the vast majority is through acct expansion). Acquired for 1.5x ARR.	$50	15%	3.0	0%	$20	1.0x	0%	$6	1.0x	0%	$26	1.0x	0%
Grows to $45m in ARR (50% CAGR). Acquired for 5.6x ARR by the likes of a BMC, IBM, HP, Compuware, or ServiceNow or by a newer vendor like a New Relic.	$250	20%	3.0	0%	$24	1.2x	6%	$7	1.2x	6%	$31	1.2x	6%
Grows to $70m in ARR (75% CAGR). Acquired for 7x ARR by the likes of BMC, IBM, HP or by Cisco or VMware who have made moves into IT Ops software.	$500	40%	3.0	10%	$43	2.2x	29%	$13	2.2x	29%	$56	2.2x	29%
Defines a whole new product category. Grows to $120m in ARR (50% CAGR). Acquired for 8x ARR by one of the companies mentioned above.	$1,000	15%	5.0	15%	$80	4.1x	33%	$25	4.1x	33%	$105	4.1x	33%
Breakout. Sustained growth through IPO--$225m in ARR (50% CAGR). Exits at nearly 9x ARR.	$2,000	5%	7.0	20%	$151	7.7x	34%	$46	7.7x	34%	$198	7.7x	34%
				Weighted Average:	$44	2.3x	23%	$14	2.3x	23%	$58	2.3x	23%

Conclusion

Over the past 2-3 years, PagerDuty has grown quickly to become the leading infrastructure alerting platform with a reputation for high reliability and easy integration with third-party services. We're excited by the company's roadmap for the next phase to become the leading IT ops performance platform benefitting from the strong rise of the DevOps movement impacting startups and big companies alike. We find the valuation compelling given the size of the market opportunity and the company's strong performance on all meaningful SaaS metrics. We highly recommend this investment.

Appendix: MRR Expansion by Cohorts

MONTHS SINCE ACTIVATION:

COHORT		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2012, Jan	$ 5,858	100%	106%	107%	111%	119%	117%	119%	122%	120%	121%	124%	129%	139%	139%	143%
2012, Feb	$ 4,508	100%	117%	120%	133%	135%	142%	149%	151%	160%	165%	180%	186%	189%	188%	196%
2012, Mar	$ 5,021	100%	103%	116%	121%	133%	137%	146%	151%	157%	160%	162%	167%	175%	164%	167%
2012, Apr	$ 7,930	100%	110%	113%	118%	118%	116%	124%	126%	124%	127%	132%	138%	147%	152%	152%
2012, May	$ 11,987	100%	92%	98%	111%	130%	167%	179%	182%	187%	193%	202%	211%	220%	232%	241%
2012, Jun	$ 7,673	100%	106%	113%	117%	123%	154%	156%	159%	157%	165%	171%	175%	179%	184%	184%
2012, Jul	$ 11,691	100%	110%	113%	116%	118%	117%	121%	127%	132%	142%	143%	145%	152%	158%	168%
2012, Aug	$ 11,334	100%	109%	130%	158%	179%	194%	204%	213%	217%	220%	229%	272%	284%	283%	295%
2012, Sep	$ 9,311	100%	104%	117%	115%	117%	119%	121%	122%	123%	127%	130%	131%	131%	130%	134%
2012, Oct	$ 11,964	100%	108%	119%	125%	155%	173%	185%	187%	200%	207%	211%	218%	231%	235%	245%
2012, Nov	$ 16,989	100%	104%	102%	109%	111%	112%	119%	122%	127%	131%	174%	178%	187%	202%	202%
2012, Dec	$ 13,112	100%	101%	102%	105%	107%	109%	111%	114%	115%	117%	116%	118%	123%	124%	129%
2013, Jan	$ 14,965	100%	114%	162%	167%	172%	173%	185%	193%	196%	202%	174%	185%	191%	196%	194%
2013, Feb	$ 12,266	100%	103%	113%	114%	118%	121%	126%	132%	136%	136%	159%	162%	162%	163%	163%
2013, Mar	$ 18,467	100%	110%	113%	118%	123%	126%	128%	131%	134%	136%	137%	143%	164%	167%	173%
2013, Apr	$ 22,639	100%	105%	112%	113%	116%	120%	127%	136%	139%	140%	147%	151%	161%	174%	
2013, May	$ 17,612	100%	105%	111%	113%	116%	118%	118%	122%	136%	135%	135%	137%	143%		
2013, Jun	$ 17,543	100%	107%	108%	112%	114%	119%	123%	125%	125%	126%	128%	132%			
2013, Jul	$ 17,031	100%	103%	103%	113%	115%	116%	116%	118%	121%	127%	132%				
2013, Aug	$ 20,860	100%	103%	102%	106%	114%	116%	117%	125%	131%	136%					
2013, Sep	$ 16,939	100%	108%	116%	121%	125%	126%	131%	130%	131%						
2013, Oct	$ 24,016	100%	104%	109%	112%	113%	118%	121%	123%							
2013, Nov	$ 36,100	100%	102%	102%	103%	108%	109%	111%								
2013, Dec	$ 37,137	100%	102%	105%	111%	115%	117%									
2014, Jan	$ 23,361	100%	103%	108%	116%	120%										
2014, Feb	$ 23,380	100%	105%	108%	114%											
2014, Mar	$ 30,669	100%	106%	107%												
2014, Apr	$ 35,956	100%	103%													
2014, May	$ 26,327	100%														
AVERAGE		100%	105%	112%	118%	124%	131%	137%	141%	146%	151%	157%	165%	175%	181%	186%

COHORT	15	16	17	18	19	20	21	22	23	24	25	26	27	28
2012, Jan	144%	149%	152%	156%	159%	160%	174%	189%	198%	210%	215%	220%	231%	244%
2012, Feb	196%	194%	200%	203%	216%	231%	243%	254%	255%	262%	271%	281%	294%	
2012, Mar	176%	184%	191%	195%	197%	204%	213%	219%	222%	228%	227%	238%		
2012, Apr	174%	168%	169%	173%	177%	178%	182%	184%	186%	191%	198%			
2012, May	261%	312%	332%	340%	348%	358%	369%	383%	391%	411%				
2012, Jun	212%	219%	236%	246%	251%	274%	303%	301%	299%					
2012, Jul	173%	178%	180%	180%	181%	185%	188%	191%						
2012, Aug	310%	310%	314%	329%	341%	343%	351%							
2012, Sep	138%	142%	142%	143%	141%	146%								
2012, Oct	256%	285%	294%	299%	318%									
2012, Nov	208%	218%	239%	244%										
2012, Dec	130%	129%	128%											
2013, Jan	165%	171%												
2013, Feb	167%													
AVERAGE	194%	204%	215%	228%	233%	231%	253%	246%	259%	260%	228%	246%	262%	244%

Bessemer Venture Partners

Rocket Lab

To: BVP Group
From: David Cowan and Sunil Nagaraj
Date: October 18, 2014
Re: Rocket Lab Series B Flash

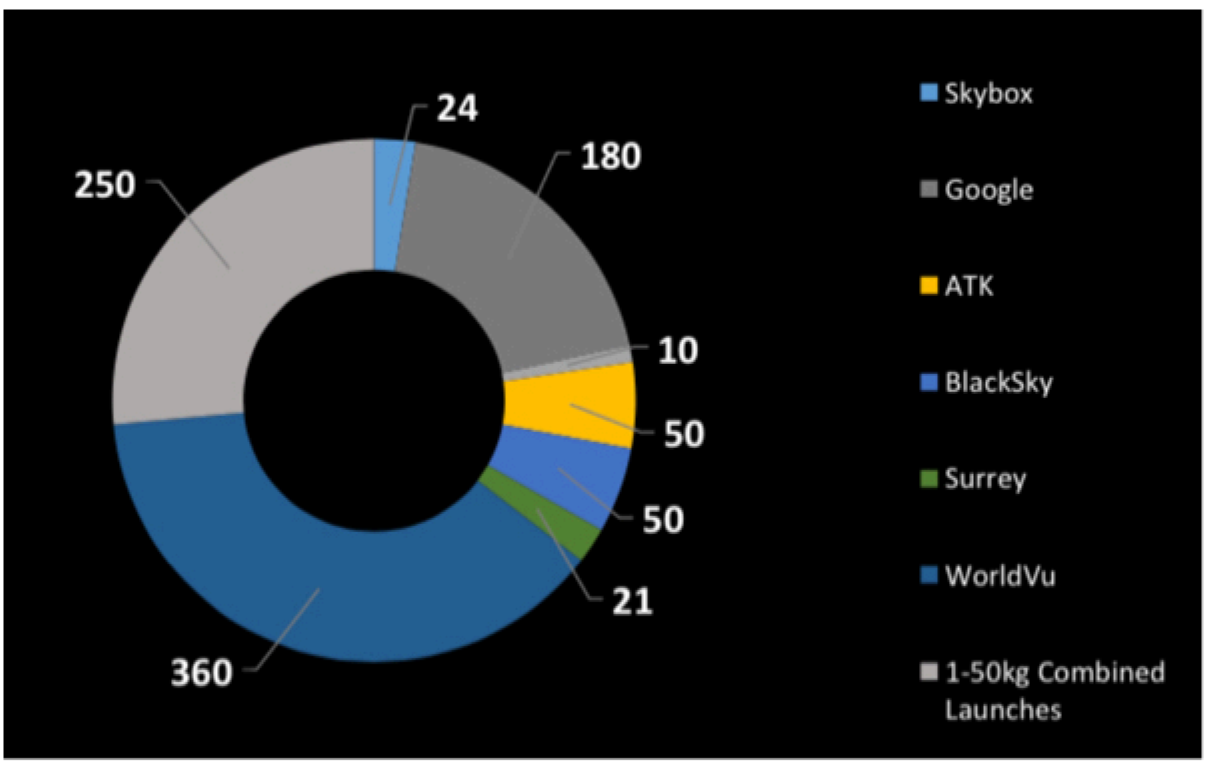
On Monday, Rocket Lab CEO Peter Beck will be presenting from Menlo Park in slot 1. New Zealand-based Rocket Lab is building rockets capable of sending 100kg payloads, the size of Skybox Imaging's satellites and smaller, to low-earth orbit and doing so on a weekly schedule at a price of $5M per rocket. Over the last 7 years, the company has successfully launched 89 sounding rockets, which carry scientific instruments to suborbital altitudes before they descend. They did this as part of development programs with Lockheed Martin and DARPA but in the last year have taken venture capital and broadened their ambitions. Now they are using their considerable expertise to provide much needed launch capability to the burgeoning nanosatellite and microsatellite market (945 launches needed in the next 5 years). As we know all too well from Skybox Imaging, launch options for small and medium-sized payloads are hard to find and suffer from unreliable schedules. SpaceX has gone up-market, where their Falcon-9 rocket lifts payloads of 6,000kg, while Ukrainian Dnepr rockets have unreliable launch schedules and are slowly being exhausted as the supply of old ICBMs runs low. For Rocket Lab's new rocket, "Electron", they have made several technical innovations, including an all carbon composite rocket, electric turbopumps, and customer-side payload integrations to make launches frequent and an attractive price point. Peter touts that you will be able to launch a payload to orbit with the same amount of fuel it takes for a commercial airliner to fly from San Francisco to Los Angeles. We recommend watching their 2-minute introduction video.

The company is right on schedule with their plan and is now raising a $20M Series B to execute 3 test flights and their first commercial flight. Peter's current plan is to make this the last capital he raises, and though he has hit all timelines to date, we are encouraging him to plan for inevitable delays. In terms of legal structure, Peter has already set up Rocket Lab to have a Delaware-based US parent company which is what we will be investing in. While the entire team is in New Zealand today, he plans to eventually grow a small team in the US as well. Of the many benefits of being in New Zealand, most notable to the financing is that the New Zealand government refunds, in cash, 20% of company's expenses up to $25M so this $20M of capital will actually enable $24M of spending. At the Series A, Peter added a New Zealand strategic, K One W One, to that last round and would like to do the same this time. Lockheed Martin and In-Q-Tel are both in diligence to join this Series B.

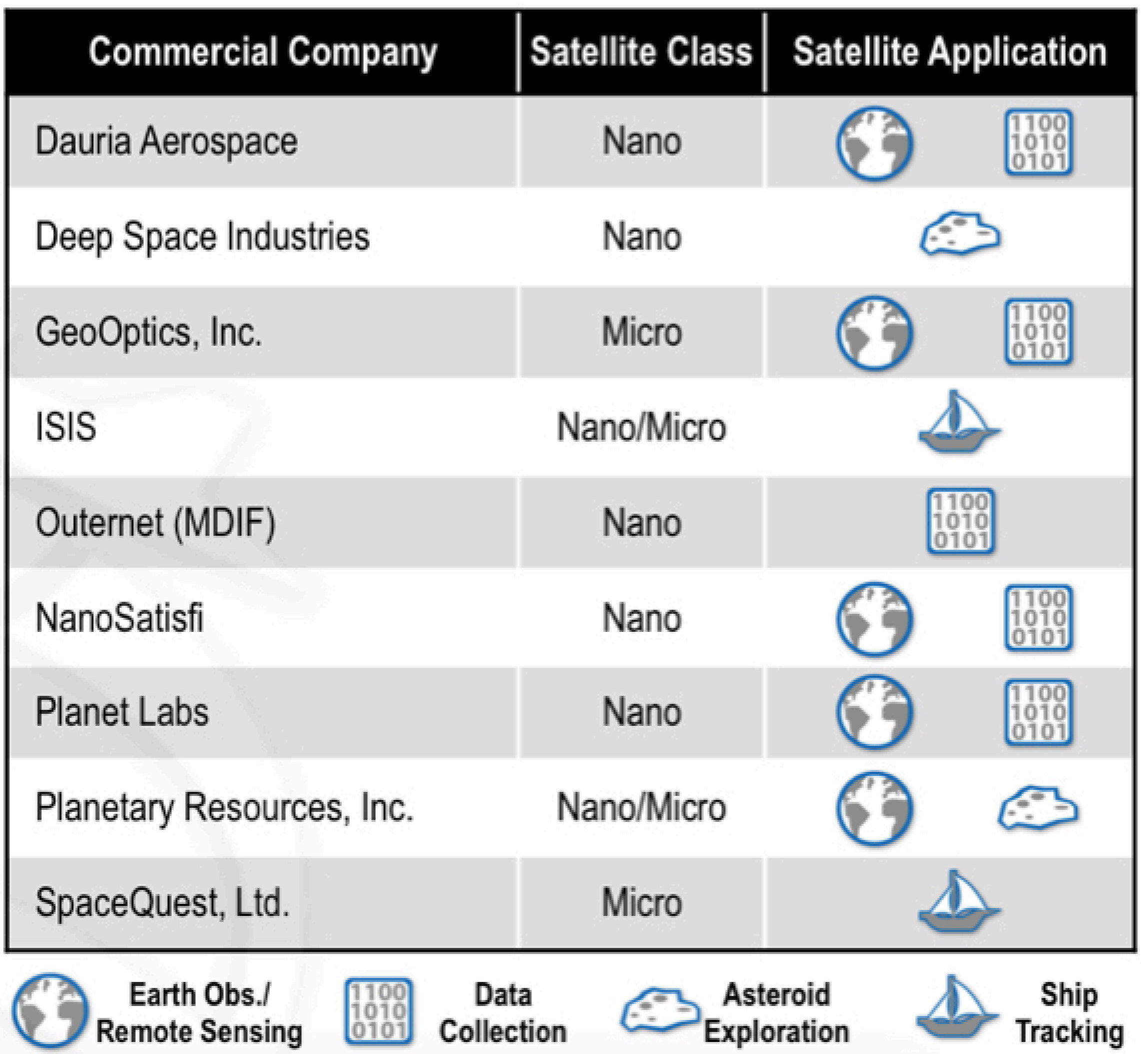
Market

Rocket launches to-date have been an expensive and unpredictable affair. Last year, there were 19 launches from American soil at an average cost of $132M. Over half of these were government-related, but even SpaceX only had 3 launches of their Falcon-9 rocket which costs $65M and launches 6,000kg to orbit. Smaller payloads are forced to "rideshare" as secondary payloads on a rocket from SpaceX, Falcon-9, or Ukrainian Dnepr. As a secondary payload, you go when the primary payload goes, where the primary payload goes (orbital altitude and inclination), and can easily get bumped for a variety of issues. It is exactly for these issues that our launches at Skybox were delayed several times.

By Peter's calculations, there are 945 100kg satellites that require launch by 2020 but have no launch options today beyond ridesharing and even that is in short supply. These payloads have increasingly commercial purposes so they demand predictability in timeline. In addition, they want to select non-standard orbits (altitude and inclination) so they would deeply value being a primary payload.



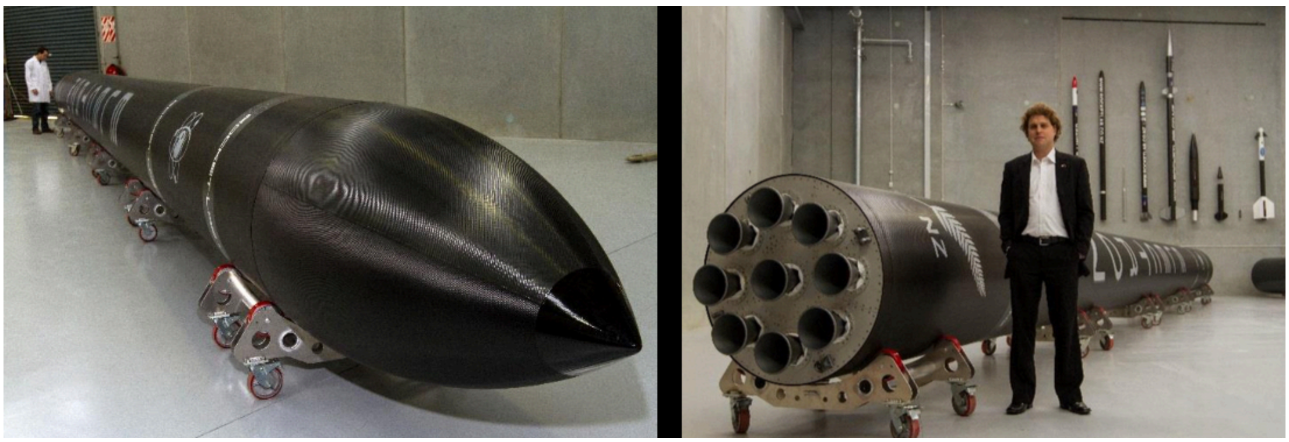
As a result, there is a major shortage of launch options for small and medium-sized payloads. We've spoken to several of Rocket Lab's early customers, and they have verified this. Space Flight Services, the leading secondary payload aggregator that brokers deals and integrates payloads on to launch providers, brokered 87 payloads in September which were all between 5kg and 50kg. Close to half of these are from smaller upstarts (such as Planet Labs) so that demand is growing but may be less certain in the long term. They also see sub 100kg demand coming from universities and the government sector because there is a shortage of launch supply. Below is a snapshot of emerging satellite companies that market research firm Spaceworks has seen as of 2013:



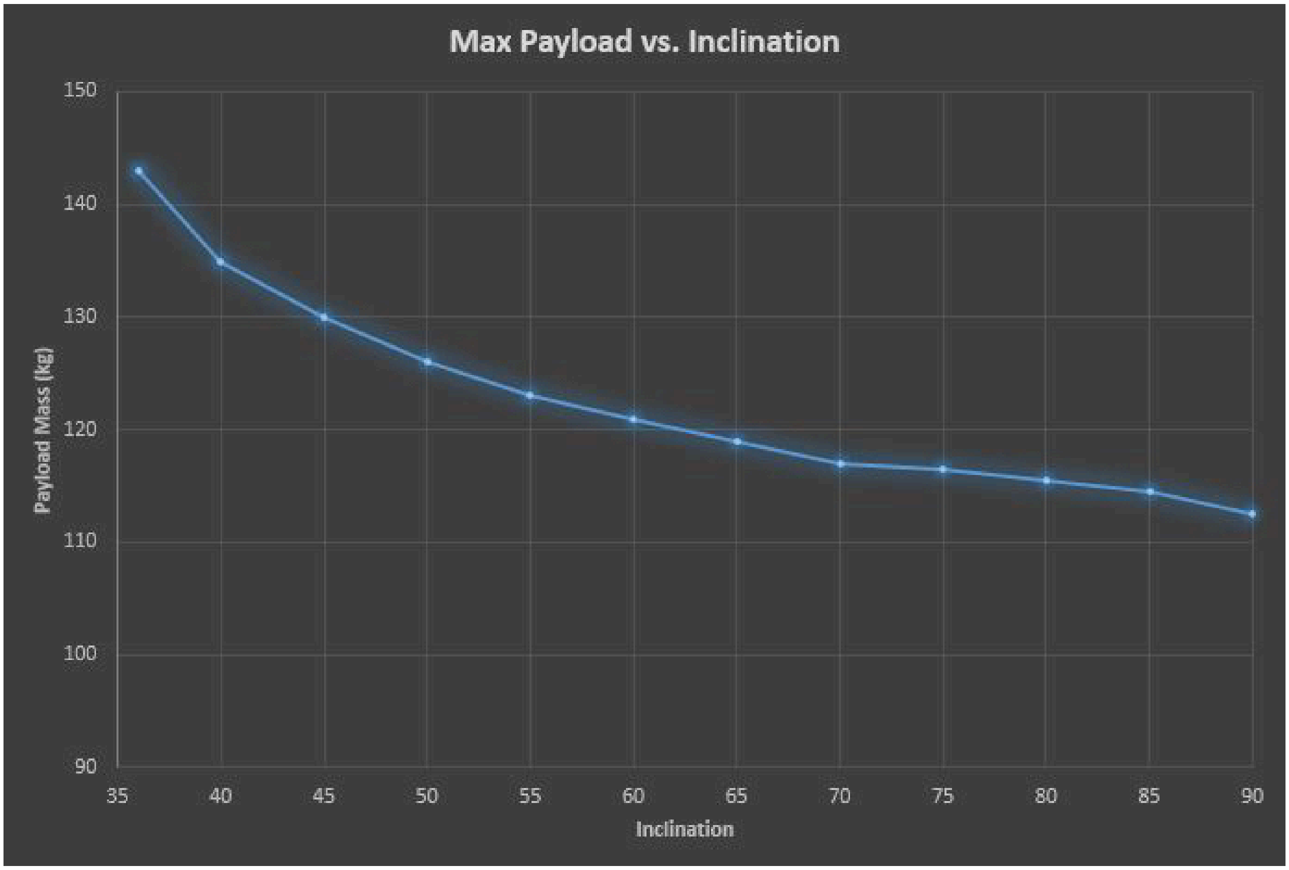
Commercial Company	Satellite Class	Satellite Application
Dauria Aerospace	Nano	Earth Obs./Remote Sensing; Data Collection
Deep Space Industries	Nano	Asteroid Exploration
GeoOptics, Inc.	Micro	Earth Obs./Remote Sensing; Data Collection
ISIS	Nano/Micro	Ship Tracking
Outernet (MDIF)	Nano	Data Collection
NanoSatisfi	Nano	Earth Obs./Remote Sensing; Data Collection
Planet Labs	Nano	Earth Obs./Remote Sensing; Data Collection
Planetary Resources, Inc.	Nano/Micro	Earth Obs./Remote Sensing; Asteroid Exploration
SpaceQuest, Ltd.	Micro	Ship Tracking

Product

Rocket Lab has designed a rocket for high volume build and launch of 100-150kg payloads to low-earth orbit. Their rocket, "Electron" is 18 meters long and utilizes their learnings from the last 7 years they've spent on rocket development. Electrons will cost $1M to build and will sell for $4.9M. This price point of $49K/kg of payload has been purposely set at what launch customers pay today for rideshare, but with Electron there will finally be capacity available. In addition, the majority of payload customers can buy their own rocket and serve as the primary payload.



Electrons can launch 100kg to a 500-km sun synchronous orbit, which is an orbital inclination that is particularly good for earth observation because it allows you to image the same part of earth at the same time of day all year long. Their launch capacity varies with inclination because you are either using Earth's rotation to help you gain launch speed or you are fighting it as you do with a sun-synchronous orbit which is 98 degrees (8 degrees retrograde). For reference, the international space station is at a 52-degree inclination.



To-date, Rocket Lab has launched all of their sounding rockets from a privately owned island, 30-minute flight from Auckland. Given Electron's targeted launch frequency of once/week, this island location is not ideal because the rocket and propellants would constantly need to be shipped over across uncertain waters. Rocket Labs has commenced a launch site search now to identify, purchase, and build a launch site from the ground up. The leading candidate is in Eastland, near the Eastern tip of the North Island of New Zealand. Launches in New Zealand only have a $400 government fee vs. the $700K fee in the US. In addition, they will launch under an FAA license so they will be indemnified from any ground damage they create provided they comply with the FAA rules.

The Electron rocket itself is a 2-stage liquid oxygen kerosene rocket. The rocket has been designed to simplify manufacturing, assembly and integration with payloads in order to enable volume production – it's the T Model Ford of space. For example, parts are standardized as much as possible in the design so that there is only type of bolt for the entire craft, and even one type of computer module with upgradeable firmware for navigation, telemetry, etc.

One of the main innovations is that they use an electric turbo pump to feed the engines which demand high pressure fuel at a tremendous rate. Typically turbo pumps are powered by a secondary gas-fed engine, but Rocket Lab is reducing cost and complexity by using battery-powered high-powered turbo pumps. No one has made electric turbo pumps work before but this has been a focus of their Series A runway and they tell us they have working turbopumps. This will be a key area of diligence for our technical consultant. Given that the rocket has powerful batteries on board for the turbopumps, Rocket Lab has also chosen to use electromechanical actuators (in blue in the photo below) to control the direction/vector of thrust (TVC). They can gimbal each of the 9 engines 2 dimensions to steer. While this element is uncommon, Rocket Lab is not the first to do electric TVC. Hydraulic TVC is more common because you don't have a supply of power.

Another innovation is the heavy use of 3D printing for the creation of most of the Electron's engines. This is very sophisticated laser-based 3D-printing, unlike the plastics-based 3d printing you may have seen from MakerBot and others. 3D printing is not only a cost savings, but it means Never Having to Say You're Sorry, You're Waiting For a Part. The engine is shown in the above photo and includes the 3D-printed thrust chamber, injector, and elements of the turbo pumps. Rocket Lab has provisional patents on the 3d-printed thrust chamber, injector, and electric turbo pumps. Electron will also feature all carbon-composite tanks which are 40% lighter than aluminum.

One of Rocket Lab's final innovations is the ability to have customers integrate their payloads on their own site before sending anything to the launch site. Customers are sent faring halves where the payload can be inserted and hermetically sealed in advance. This faring system suspends the payload and dampens vibrations during launch and releases the payload upon reaching orbit. This Plug and Play approach to payload integration is a key process innovation: by shifting the job to the customer's site, the customers feel more control of the process, and Rocket Labs can improve their frequency of launch because many ready-to-fly sealed farings will be at the launch site. If a customer pulls their launch on a given week, they can pull another payload off the shelf and send that one instead.

Customer Traction/Feedback

To-date, Rocket Lab has secured commitments for over 40 launches. This includes signed MOUs from Planet Labs, Surrey Satellites, Weathernews, Outernet, and Space Flight Services. Planet Labs is interested in 20 launches. Space Flight Services, the secondary payload aggregator, would like to do 6 launches in the first year. Weathernews is interested in launching 2 45-kg satellites. Rocket Lab is currently in discussions with Skybox to help launch the remainder of their constellation. We have had conversations with 3 of these customers to date and heard the following:

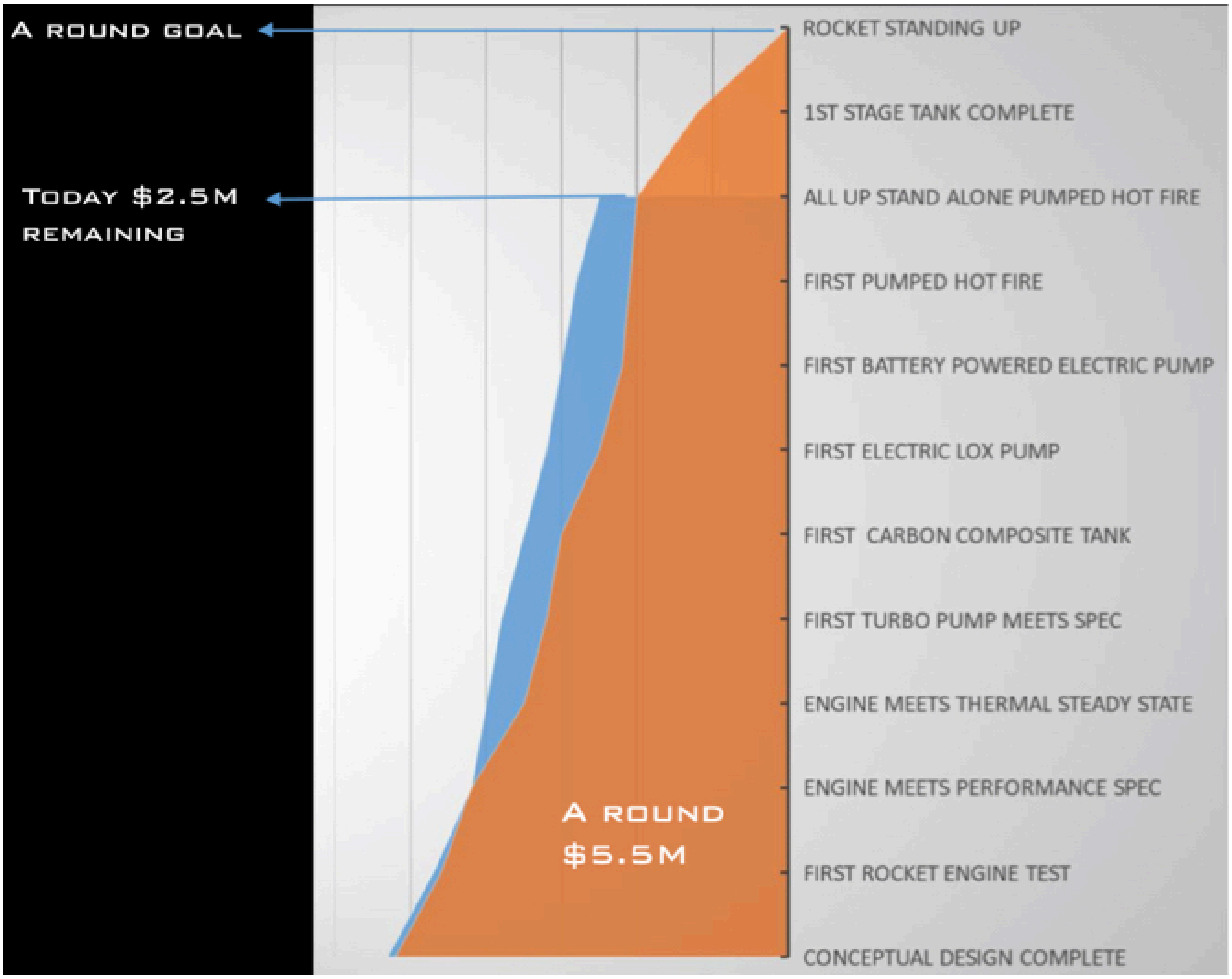
Curt Blake at Space Flight Services, the leading secondary payload aggregator that brokers deals and integrates payloads on to launch providers, believes they could fill up an Electron with 100kg of payload every 2 weeks given the demand they see directly. Space Flight Services has had experts diligence Rocket Lab and thinks that they are the new launch provider most likely to be successful. In the end, they don't really care how the tech works as long as the payloads get into orbit reliably.

Peter Wenger at Blacksky, a new imaging satellite company, believes that Rocket Lab's new launch capacity is much needed.

Robbie Schlinger at Planet Labs hopes to do 20 launches. He believes that they need to be a primary payload going forward given the importance of predictable launch schedules to their business. Robbie has been out to New Zealand to vet the technology and believes that Rocket Lab is "an order of magnitude ahead of any other new launch vehicles."

Timeline/Financials/Fundraising

Within their Series A funding, Rocket Lab believes they have addressed all high risk elements of their launch vehicle. They have designed and built electric turbopumps, tested high-capacity batteries, designed and built carbon composite tanks, and written their initial flight navigation code for their flight computer.



Their next step is to begin vehicle construction in 3-4 months and launch their first test vehicle in late 2015. This will be followed by 2 more test flights and then their first commercial launch in mid-2016. They aim to get to 13 launches before the end of Fiscal Year 2016 (which ends March 2017).

A key next step in our diligence is to have our space consultant, Strategic Space Design, review their rollout timing and financial plan. The plan seems aggressive overall, driven entirely by the number of launches, but Peter has designed this vehicle to be a weekly launcher from the beginning.

The company is now raising a $20M Series B to finish building their first rocket, conduct 3 test flights as well as their first commercial flight. By this point, the company expects to be generating cash and will not need to raise additional capital.

In his presentation, Peter will bring up that once Rocket Lab is successful, they plan to take another disruptive step (but it is likely beyond the period of BVP's investment so we are not really planning for it). Right now used rockets burn up, along with all their radios, navigations systems, etc. so Peter would like to design an integrated launch vehicle/satellite that repurposes the rocket components in a satellite.

Team

Though we have only met CEO Peter Beck to-date, the 25-person Rocket Lab team seems to be seasoned in all aspects of rocket design and manufacturing. 25% of the team has a PhD.

Peter Beck, CEO

Peter Beck founded Rocket Lab in 2007 following almost a decade and a half of propulsion research and market development in the international space community. Peter is an acclaimed scientist and engineer, having been awarded a Meritorious Medal from the Royal Aeronautical Society for service of an exceptional nature in New Zealand aviation, and the Cooper Medal, presented by the Royal Society bi-annually to those deemed to have published the best single account of research in physics and engineering. In our interactions with Peter so far, we have found him to have an inspiring combination of vision and no-nonsense execution. We will conduct reference checks as part of our continuing diligence.

Shaun O'Donnell, GNC Lead

As head of the Guidance Navigation and Control (GNC) division, Shaun O'Donnell has broad responsibility over all electronic and software systems on board Electron. Shaun has been involved with Rocket Lab since 2007, where he was solely responsible for all electronics and software systems. Prior to Rocket Lab, Shaun worked with a small start-up designing electronics for GPS-based systems, following which he started the specialist electronics company Novitas Technology Development, which creates turn-key electronics solutions using the latest technology available.

Dr Sandy Tirtey, Vehicle Lead

Dr Sandy Tirtey has 12 years of experience with hypersonic technologies and planetary re-entry vehicles. He started his career in 2002, working on the Mars Sample-Return Orbiter vehicle and more particularly investigating the impact of a Mars planetary aero-capture manoeuvre on the vehicle thermal protection system. He has then developed three in-flight experimental payload on-board of the European EXPERT (European eXPErimental Re- entry Testbed) vehicle. By the end of his PhD thesis, he was recognized for his expertise in planetary re-entry critical. He has also served as the Technical Lead and Project Manager of the Scramspace I Scramjet Propulsion free-flight experiment which, along with 12 others international partners, successfully built and flew the Scramspace I vehicle in September 2013.

Solomon Westerman GNC Engineer

Solomon is a highly-skilled GNC (guidance and navigation control) engineer having worked at Space X, NASA Marshall Space Flight Centre & Boeing Space Exploration. At SpaceX, he was part of the GNC team on the Falcon 1, Falcon 9 v1.1 and Falcon Heavy launch vehicles. He then led GNC for the Crewed Dragon capsule, moving the design through conceptual design to PDR for the abort engines. His specialties are Dynamics & Control and Rocket Propulsion. He also has extensive mission operation experience including, but not limited to Dragon C1, (primary operator Cape Canaveral), GNC operator for Dragon C2, Falcon 9 and Dragon C2.

Competition

Rocket Lab faces competition from heavy payload launchers like SpaceX's Falcon 9, Orbital Sciences, and Russian/Ukrainian launch vehicles. Both customers and Skybox have told us that launch capacity is rare and undependable but this rideshare offering will remain an alternative for Rocket Lab's customers.

Rocket Lab also has yet-to-launch rocket companies:

Virgin Galactic, the same company that offers consumers sub-orbital flights to space for $200K, is also working on Launcher One. This will replace the "white knight" passenger vehicle you may have seen with a payload launcher. The design is still to have a plane lift Launcher One to high-altitude flight and then release Launcher One and trigger its rocket power. We have heard they have a 12-person team working on Launcher One, but its economics depend on the consumer business thriving.

Firefly is an Austin-based team hoping to build a 400-kg payload launch vehicle. They are 24 months or more behind Rocket Lab, and though their CEO was a top propulsion lead from SpaceX, we find the rest of the team to lack space and rocket experience. They have never built a complete rocket and are just now beginning to design their rocket, so there is significant risk. They will offer more capacity given their 400-kg – and eventually 1,000-kg payloads – at a much more attractive price point, but this means that Rocket Lab's target customers are probably not the likely primary payloads on these rockets.

We expect generally that competition will heat up, and that different players will have different strengths. Rocket Labs will be weak in payload capacity and cost, but we see no one on the horizon who plan to compete with Rocket Lab on volume and schedule reliability. From our Skybox experience, these are the key factors for smaller Low Earth Orbit Satellites.

Summary

We believe Rocket Lab will bring online much needed small satellite launch capability. The team has years of experience with this problem and is at an attractive stage for investment, if our expert consultants confirm that the key technical milestones are behind them, and that we have properly sized the demand landscape. We look forward to your feedback on this investment.

Bessemer Venture Partners

ServiceTitan

To: BVP Group
From: Byron Deeter, Kristina Shen, and Talia Goldberg
Date: March 15, 2015
Re: ServiceTitan Series A Flash

Based in LA, ServiceTitan is a vertical SaaS company for home services businesses. ServiceTitan sits at the core of a home services business' daily operations and provides everything from inbound call management to mobile dispatching/invoicing to back office management. Ara Mahdessian (CEO) and Vahe Kuzoyan (co-founder, Head of Product), presented to the partnership from Menlo Park a few weeks ago.

We first met the ServiceTitan team at the Muckerslab Demo Day in LA 1 year ago when they were ~$1M in ARR. We've tracked them closely over the course of the year and since then they grew their SMB business to >$3M ARR ($5M CARR) and landed a massive $4M ACV deal with a large plumbing franchise. They were able to hit these achievements with a team of 20 employees (8 at the beginning of the year), no sales and marketing, while being cash flow positive. Ara was not planning on fundraising until the summer, but we convinced him to take a pre-emptive deal with us and, thus, the price is seemingly rich on recognized revenue but more reasonable on booked revenue.

ServiceTitan is attacking a billion-dollar market that is ripe with opportunity. The market has historically been dominated by manual processes and clunky on-premise vendors. We are pleased that ServiceTitan is the gold standard among newer SaaS vendors that are rapidly replacing their legacy counterparts and enabling desk-less workers to take advantage of mobile technology. We think that Ara and Vahe are hungry entrepreneurs who will work tirelessly to provide this industry with easy to use, state of the art software, and we recommend partnering with them for the journey ahead.

Why are we so excited?

Traction / Financials: The momentum speaks for itself.

- $3.5M ARR and ~$9.4M CARR, representing 6x growth on ARR and 10x on CARR YoY
- 236 paying SMB customers paying on average $15k ACV
- Just landed a $4M ACV franchise deal with the CUSTOMER
- Net negative churn and limited logo churn
- No sales and marketing spend and cash flow positive

Market: The field services market is expected to more than double from $1.58B to $3.52B in the next 5 years due to the proliferation of SaaS and mobile in the space. The home services market is experiencing the highest growth.

Product/Competitive Differentiation: ServiceTitan's key differentiation is that in addition to offering back office service management like all their competitors, ServiceTitan also offers sales & marketing performance tracking (powered by Twilio), enabling businesses to capture more potential revenue.

Team: Ara and Vahe both seem strong with domain knowledge and horsepower. They grew up with families in the plumbing and residential contracting space. They started ServiceTitan right out of undergrad (Stanford and USC) because they couldn't find good plumbing software to run Vahe's dad's business and spent the next 3-4 years building the product. The founders are strong positives for us in making this investment.

We recommend that BVP invest $17M in the $18M series A financing of ServiceTitan at a $75M pre money valuation. This represents a ~15x ARR multiple of March ending run rate, but 8x CARR multiple which feels reasonable given their growth and opportunity. Over the past month, we wrapped up our diligence, spent a day with the team in their LA office, and completed 8 customer calls and 5 industry expert calls. We remain confident that ServiceTitan has the best product and the most momentum (6x growth in MRR and 13x in CMRR over 13 months) in the home services software market.

After the partnership presentation, we identified two key areas of apprehension. First, there was concern over ServiceTitan's ability to sell to smaller businesses comprised of less than 10 technicians. We analyzed their existing customer base and found that ~50% of their current customers fall into this category and likely have between 3 and 7 technicians and pay less than $XXXX per month. We also spoke to a few of these customers and found that the product was just as valuable to them as it is to larger businesses. This is encouraging given that over half of the market is dominated by small independent business. Nonetheless, this is still a vertical SaaS company and while the TAM is over $1 billion, they will likely need to enter adjacent verticals in order to achieve a billion dollar value outcome.

Second, with $4.1M of February run rate ARR but over $9M of CARR, ServiceTitan has a sizeable revenue backlog. We diligenced that nearly all of the committed revenue will be recognized this year (and the majority by Q3).

However, our diligence has uncovered a new risk. Given that sales and the team have grown so rapidly in the last year, and this is both the co-founders' first job out of undergrad, they have not been laser focused on execution but neglected close tracking of KPIs. Out of all problems to have, growing too fast is one we'd rather have. The team is aware of their weakness in this area and we're pleased with the hire they have just made for VP Finance who joins shortly.

MARKET

Over the past decades, field service management software solutions have emerged to automate and facilitate everything from worker activity, to scheduling and dispatch, to appointment routing, to billing. The field service management market has been dominated by legacy, on-prem vendors primarily selling into service-oriented industries such as telecom, energy, manufacturing and utilities. These solutions were expensive and clunky, primarily sold into the midmarket and enterprise, and initially solved the pain point of schedule optimization across hundreds of customer service reps (CSRs) mapping into hundreds of field technicians schedules. In the last few years, mobile and cloud transformed the market, and a new generation of SaaS vendors began rapidly replacing their legacy counterparts. The home services market saw the most disruption as mobile enabled invoicing at client site, which improved time value of cash (time to payment) and the cheaper SaaS delivery model enabled SMBs to purchase software solutions for the first time.

MarketsandMarkets expects the global Field Service Management market to grow from $1.58 billion in 2014 to $3.52 billion by 2019, at a 17.3% CAGR during 2014–2019 due in part to mobile and cloud's ability to bring cheaper, simpler, and more accessible software to market. Gartner claims the enterprise space is only 25% penetrated and our diligence has concluded the SMB space and the home services market are poised to experience the strongest growth.

There are 600k home services businesses in the United States. ServiceTitan is initially targeting three of the largest and most sophisticated verticals within home services: electrical, plumbing, and HVAC, which together account for roughly half of the broader home services market. The majority of these businesses are SMBs. Our diligence calls suggest the following distribution of businesses by technician count:

1. ~40% - One to two person sole proprietor businesses (however, less than 20% of revenue).
2. ~45% - Three to 20 service technician businesses
3. ~10% - 20 to 60 person businesses
4. ~5% - Franchises and businesses with over one hundred service technicians

ServiceTitan successfully sells to all of these categories except for the one to two person businesses who are less sophisticated, don't have back office managers, and therefore can't gain as much value from the sales and marketing capabilities. Today, ServiceTitan is best suited for businesses in the residential segment with at least three technicians and three back office managers or customer service reps. They estimate that there are 42k businesses in the United States that exactly match that profile. With a $X.Xk average MRR per customer, this represents a $600M+ market in their core business. We feel this is a conservative number and believe ServiceTitan has many levers to pull to increase revenue per customer and to expand to adjacent verticals with product enhancements. For example, they are already increasing revenue per customer by offering credit cards processing, they are considering offering a lighter weight SMB product to capture market share in the one to two person businesses, and are thinking about adding functionality that would enable them to sell to other verticals like roofing, windows/glass, and pest control.

In general, businesses with three to twenty field technicians have a CSR to technician ratio of 1:5 or 2:5 and the larger businesses have CSR to technician ratios of 1:15. ServiceTitan charges $XXX for CSRs and back office managers and $XX for mobile field technician users. The histogram below shows a breakdown of MRR by customer. As the histogram demonstrates, about half of the customer base pays less than $X.Xk, which confirms that ServiceTitan successfully captures market share from the long tail.

PRODUCT

The ServiceTitan product sits at the core of an organization's daily operations and provides everything from inbound call management to mobile dispatching and invoicing to back office management. ServiceTitan's key differentiation is that in addition to offering back office service management (dispatching, billing, payroll, and inventory) like all their competitors, ServiceTitan also offers sales & marketing performance tracking capabilities. This S&M performance tracking is possible because the company is built on top of Twilio and they are the only solution in the market that fully integrates the telephony and workflow components of the business. By integrating telephony directly into the product and attributing a phone line to each prospect, ServiceTitan is able to track each prospect as it moves from lead, to appointment, to sale in their fully integrated CRM. ServiceTitan can give visibility into S&M metrics that have never been well tracking in the industry – for example (1) a customer service rep's (CSR) ability to convert inbound calls into appointments, (2) a field technicians ability to sell services and (3) marketing attribution through dedicated numbers to track individual campaigns.

More detailed view of the core features below:

CRM and Back Office Management – Tracks all transaction history, email, call logs, and communication related to every opportunity.

Dispatching and Scheduling Dashboard - GPS system tracks and routes field technicians via text to upcoming jobs. Sends customers a picture and bio of their field technician and estimated arrival time.

Call Tracking (Twilio integration) - Track all incoming and outgoing calls to measure efficiency of CSR's and determine whether CSRs convert a call into an appointment. Additionally, it ties calls to a lead in the CRM and based on area codes can help tie leads to specific marketing campaigns to attribute spend and determine ROI .

Mobile App (HTML5) – currently 25% adoption - Enables field technicians to create and review estimates in the field, sign contracts and invoices on the go (eliminates paper invoices), and to log and document activity.

Generates a product menu which technicians can display to customers on-site to create upsell opportunities.

ServiceTitan charges an average of $XXX per employee per month for each CSR or back office manager and $XX per employee per month for each field technician. They are able to charge premium pricing compared to their SaaS startup competitors (typically priced $XX - $XX per technician per month) because of their sales and marketing capabilities. We estimate that for most small businesses, there is a ratio of one CSR to three or four field service technicians in the SMB segment, and one CSR to ten or twenty technicians for businesses with more than a few hundred employees.

COMPETITION

We've talked to the vast majority of new startups in the space and have completed 7 GLG expert calls to form our opinion on the competitive landscape. The field services space is both extremely competitive and fragmented. The space is split into 2 main segments: home services (plumbing, HVAC, electrical) where ServiceTitan is initially focused, and support-oriented services (telecom, energy, manufacturing).

ServiceTitan is emerging as an early leader in the home services market for the following reasons:

Only vendor focused on the sales and marketing workflow in home services

By offering S&M performance tracking in addition to back office management, ServiceTitan enables businesses to capture their full potential revenue (many home service businesses only capture 1/4th their revenue potential).

Focused on time to cash value

Especially for SMB businesses, the paper invoicing process can delay payment to a business for weeks. By enabling mobile invoicing onsite, ServiceTitan decreases payment cycles from weeks to days.

Success selling to both SMBs and enterprises / franchises

ServiceTitan is the only SaaS vendor that has successfully sold up market to large franchises ($4M ACV deal with Mr Rooters Plumbing franchise).

Home Services Competitors – ServiceTitan's Initial Market

- The home services market is the fastest growing category in field services.
- The legacy, on-prem players are all very dated products built 20+ years ago and many do not have smartphone capabilities.
- Dozens of new SaaS vendors have emerged
  - **COMPETITOR 1 (~$2M ARR)** and **COMPETITOR 2 ($2M ARR)** and recently acquired by COMPANY - primarily sell to SMBs and are light workflow and mobile invoicing tools that are focused on improving the time value of cash.
  - **COMPETITOR 3 (~$4M ARR)** - primarily an all-purpose-use mobile forms provider that gained some traction in home services.
  - None of the new SaaS vendors have telephony integration so they are unable to move upmarket to sell into the enterprises.
- By both revenue scale and customer breadth, ServiceTitan is the clear SaaS leader in the market.

Support Oriented Services Competitors

ServiceTitan does not currently focus on this market.

Legacy vendors have historically focused in this space.

Unlike the home services market where businesses focus on improving sales, industries like telecom are focused on optimizing time to service and thus focus on schedule optimization.

This requires telephony integration to do smart routing/disbatching to handle hundreds of CSRs mapping into hundreds of technicians that do dozens of appointments a day.

Emerging SaaS vendor have seen success replacing their legacy counterparts in this space.

COMPETITOR 4 (~$30-40M ARR) - differentiates itself by having tight integration with Salesforce (built on force.com) and has raised $120M to date

COMPETITOR 5 ($8-10M ARR) - founded by the Fleetmatics team and has raised $20M to date.

COMPETITOR 6 – leading SaaS provider and was acquired by Oracle for an undisclosed amount. They had ~500 employees at time of acquisition (Sept. 2014)

GO-TO-MARKET

Until the last few months, the company had effectively spent zero dollars on sales and marketing and acquired the vast majority of new customers via referrals and other forms of word of mouth.

Referral channels

ServiceTitan's success to date has primarily been driven by referral channels, in particular with influential affinity groups and associations. Home services businesses heavily rely on associations for advice on vendors. ServiceTitan has started to form strategic partnerships with associations which provides them with direct access to members through email lists, tradeshows, and webinars in return for a ~4% rebate off list price. ServiceTitan estimates that there are over 10k businesses across a dozen of the most prominent industry associations, of which 5-6k of businesses fit ServiceTitan's target customer profile exactly.

Nexstar

ServiceTitan has had the most initial traction with Nexstar Network, a well-known association comprised of 550 businesses. ServiceTitan took a bottom up approach and grew organically in the Nexstar member base, acquiring 20 customers before forming a formal strategic partnership with Nexstars one year ago. Now they are one of only two software partners (they have ~100 services strategic partners), benefit from direct exposure to members, and have closed 78 customers in the Nexstar member base. The other software vendor, Serveman, only has 48 customers after 5 years as a partner and is very dated software. We spoke to the Nexstar Head of Strategic Partnerships and she believes ServiceTitan will win over one-third if not over half of Nexstar's membership base within the next 12-24 months.

ServiceTitan also has strategic partnerships with two other associations (Service Roundtable, QSC) and across the top associations, has acquired another 70 customers. Through these relationships, ServiceTitan has email lists of 2k+ prospects and growing. In total association referred customers represent 50% of their customer base and generally result in larger deals ($2.5k MRR).

The company is also exploring a number of other referral strategies including:

Manufacturers – Especially in the HVAC space where 90% of businesses work with 5 manufacturers, the manufacturer is the main vendor for most businesses and could evangelize ServiceTitan because we help track performance.

Tech affiliate partners – Already in discussions with Yelp to allow consumers to book home services directly in Yelp to ServiceTitan customers. Other potential opportunities include Yellow Pages, Yodle, Anglelist, Yahoo, Nextdoor, etc.

Independent consultants – Follow the Xero model and leverage consultants to recommend to ServiceTitan their customers. One consultant has already brought in 20 customers.

Sales and Marketing

Given the company has more inbound leads then they can handle, they have been most focused on referral channels and closing inbound leads rather than building a demand generation funnel or sales processes. Half of leads come from referral and half from direct channels through a web form lead capture. The sales process is low touch for the majority of their customers; SMB customers with <20 technicians can be sold in 1-2 calls and a demo. Larger prospects (>25+ techs) require 3-4 calls and often require an on-site visit or do site visits with existing customers to see how they use the product. Up until January 2015, all sales were closed by Ara (CEO) and one sales rep. In the last few months, they've brought on 3 more sales reps with an initial quota of $15k MRR a month, or $2.2mm ACV (which we don't expect reps to hit given how high this is!) and ~$200k OTE.

Overall the organization is still working to form basic S&M protocols. They loosely use Close.io for their CRM (just track 3 stages, lead, qualified, onboarding) and have no formulized forecasting or pipeline management in place. The team is aware of these shortcomings and is currently recruiting a VP of Sales.

CUSTOMER FEEDBACK

We completed 8 customer calls and 5 calls with industry experts. We also spoke CUSTOMER, their largest customer (covered in section below) and to Nexstar, a prominent industry association.

Reconfirmed that ServiceTitan is the strongest SaaS product in the space and is differentiated by providing strong sales and marketing ROI

On top of being easy to use and just better software then the dated legacy vendors, customers raved about how ServiceTitan figured out the "one right way to do something" rather than providing 10 options.

Majority of customers have reported increased sales from better marketing spend decisions and measuring performance at each step in the sale cycle. In particular, technicians gain the greatest ROI because

ServiceTitan gives them a more professional offering, improves upsell, and decreases time to payment.

None of their competitors offer robust (if any) sales and marketing functionality.

Core software can easily cross over from plumbing, electrical, and HVAC

ServiceTitan is best matched for the plumbing industry, but there is over 85% product match for the HVAC and electrical industries. Experts confirmed there are a handful of add-on modules ServiceTitan could build to expand into adjacent verticals.

Product gaps

The most mentioned product gaps are inventory management (in particular for the HVAC industry that has expensive parts to manage) and commercial product capabilities (such as relationship tracking and WIP tracking). Some plumbers manage both residential and commercial businesses and we believe building commercial capabilities would expand our TAM estimates by 30%, but residential has been their focus to date.

Overall, customers have very positive implementation and support experiences.

Most customers migrate their entire business to ServiceTitan within 3-6 weeks. Ara and Vahe are extremely responsive and committed to customer success since it's such a referral based business.

Mobile Web App Issues

The main "area of improvement" related to issues with the mobile web app. Last year, 15-20% of the time, technicians had connectivity / refresh issues and had to do manual paper invoices.

ServiceTitan has since fixed these network issues (primarily driven by very content heavy pricing books), and is also testing a native mobile app primarily to access a credit card swipper to generate more revenue for the credit card processing business. The new and greatly improved native mobile apps will roll out in the next month or two.

FINANCIAL PERFORMANCE

We continue to be impressed by ServiceTitan's financial performance.

Financial summary:

The company grew from $54k MRR in January 2014 to a $344k MRR run rate today with $70K in CMRR.

This represents 6x MRR growth and 13x CMRR growth in thirteen months.

We believe they will end the year at $13.1M in ARR.

They have ~300 paying customers and $50M of monthly transaction volume flowing through ServiceTitan.

The average customer pays $X.Xk MRR while their largest customer pays $XX.XK MRR.

They have been slightly cash flow positive for the past year.

Gross dollar churn averages under 1% each month. Net churn is slightly negative as customers are upsold on additional mobile licenses.

Currently, 61% of MRR is attributed to back office or CSR users, 18% of MRR is attributed to mobile licenses, and 21% to phone tracking. They are launching a new native mobile product (previously web app) in a few months and expect that mobile will increase to 35% to 40% of MRR in the next year. Many customers are currently on a wait list to roll out mobile once their much improved product is ready.

Other non-recurring revenue:

ServiceTitan generates $X.Xk in one time implementation revenue from each new customer. They are also in the process of rolling out credit card transactions from which they will collect XX basis points per transaction. This represents $XXk of potential additional monthly revenue (we estimate they will be able to achieve XX.X% penetration by end of 2015).

Onboarding / Support and Gross Margins

ServiceTitan currently has a team of 5 on-boarders who can accommodate 50 customers per month. The average onboarding time is one month, but the team recently built automated data migration systems which could decrease onboarding time to 2 weeks. The company had healthy 65% gross margins in Q4, and expects them to increase significantly in the next year or two.

2015 Forecast

We built a simple 2015 forecast below that gets us to $13.1M ARR by the end of 2015, representing 240% growth YoY. If any bigger deals hit (ARS could be a $3-$4M ACV deal) they could dramatically increase the forecast. This model assumes they bring sales reps from 3 to 8 by end of 2015 and add an average of $120k CMRR a quarter.

TEAM

Ara Mahdessian (CEO) and Vahe Kuzoyan (Head of Product) grew up with a keen understanding of the frustrations and challenges in the industry. Both of their parents are immigrants; Ara's father is a residential contractor and Vahe's is a plumber. The two began thinking about ServiceTitan seven years ago while they were in college when Vahe's father asked for help evaluating software to manage his business. Ara graduated from Stanford and Vahe from USC, where they both studied computer science. After graduating, they spent three years developing the product at Mr Rooters, part of Dwyer Group, (now their largest customer) to fit the needs and specific use cases for the industry. Their empathy and mission to empower these blue collar workers has resonated extremely well in the industry and helped to fuel organic growth. Ara spends most of this time selling to the larger customers and franchises. Vahe focuses on product and is incredibly customer service oriented, often spending weeks at a time on-site with customers to figure out their needs and how they can better improve the product. We see them as strong positives. The product launched in early 2013.

We did our third site visit and spent a day with the full exec team at their offices last week. The team is 40 FTE mostly based in LA. They are incredibly hard working and scrappy, but high horsepower (Stanford & USC grads along w many of their key execs) and have been quite receptive to our feedback and guidance. They are first time entrepreneurs and this is their first real job, which was reflected in their elementary methods of tracking KPI's. They are very aware that they need to implement better processes to measure their business as they scale. The good news is that they are very coachable and we are working with them to improve internal processes and to recruit a VP of Finance.

RISKS

Can they build a sales engine when referrals slow down?

The market is heavily driven by WOM and referrals from associations and we believe there are still 5-6k target customers across a dozen large associations we currently have a presence with.

The sales organization is very early (currently 4 sales reps, 2 of which are very new) and remains a risk. They still need to hire a VP of Sales and prove an outbound model.

No precedent for large software companies in this space. Can ServiceTitan build a big business?

The core market is over $600M and there are several market expansion opportunities into the commercial side of the business, tangential home services verticals, and add on revenues such as credit card processing. This easily could be a multi-billion dollar market opportunity. We believe a major reason why no big company has formed in this space is because up until recently, there were no cost efficient ways to acquire customers in this very fragmented market. With the recent formation of associations to drive better business practices, we believe ServiceTitan has cracked the nut on how to virally capture market share.

CONCLUSION

We are excited to back a hungry team with a strong product that is making waves in an industry that has been largely left behind by modern software.

OUTCOMES ANALYSIS

Scenario	Exit value	Prob	Years	Est future dilution	Gross Proceeds	Mult.	IRR
Wipe-out	$0	15%	2	0%	$0.00	0.00x	-100%
Major failure w key account(s) and growth slows dramatically at ~$15m ARR	$80	18%	2	0%	$15.20	0.89x	-6%
Competition increases, organic growth stops, sales force performs so/so ~$30M ARR	$200	22%	3	10%	$34.20	1.99x	26%
Leader in the space, but the space cools down	$350	20%	3	15%	$56.53	3.30x	49%
The market continues to be hot, ST is the leader, hits $75M ARR. Sold to a strategic or IPO.	$750	20%	5	20%	$114.00	6.65x	46%
Home Run: is able to expand into commercial market or other verticals. IPO at 8x 2021 revenue of $150M	$1,200	5%	6	30%	$159.60	9.31x	45%
		100%		Weighted average	$52.35	3.05	26%

Velo3D

To: BVP Group
From: David Cowan and Sunil Nagaraj
Date: May 23, 2015
Re: Velo3D Series A IR

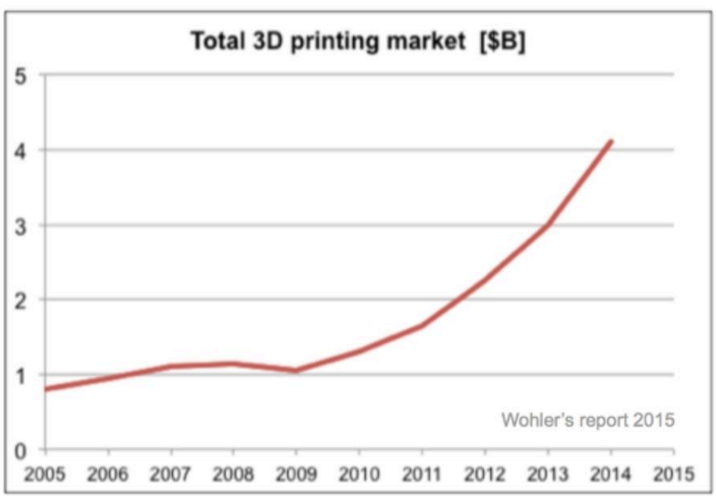
On Monday morning, Velo3D co-founder and CEO Benny Buller will present from Menlo Park. His one year old Santa Clara-based startup promises to transform metallic manufacturing by developing the first 3D metal printer that does not require support structures to hold up the material, overcoming what is arguably the single largest hurdle to printing metal parts at scale.

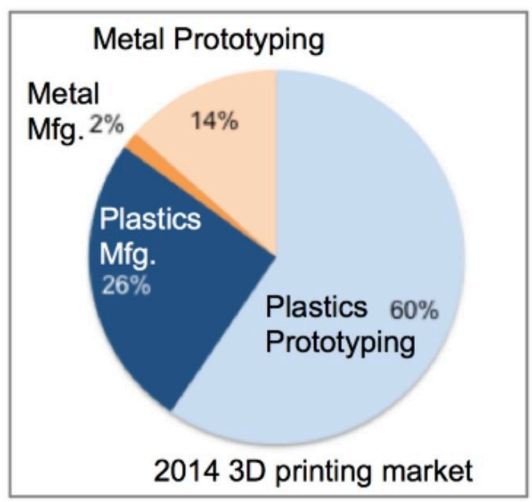
"Supports" are necessary but time-consuming structures added to 3D models to enable the printing of certain geometries and to help with heat transfer. Supports make metal 3D printing significantly more time consuming, complex, and expensive. We were introduced to Velo3D by Rocket Lab CEO Peter Beck, who covets support-free printing for his rocket engine parts. Velo3D initially raised a $4m loan convertible at $12M pre, and his seed investors Lightspeed, Khosla, and Formation8 have all independently offered to lead the company's Series A round; but Peter Beck, Dan Berkenstock and even Velo3D seed investor Pierre Lamond (formerly with Khosla) have convinced the founders that they should get BVP as their lead.

We are considering a deal where we invest about $8M of a $15M round at a fully diluted $40.4M post-money valuation with a 10% option pool. Formation8 would invest $5M (though they have not yet agreed to be cut back this much) and strategic investor Autodesk would take the remaining $2M. We are still completing our diligence but are positive given the strong team and how disruptive this technology can be in the already rapidly growing metal-printing market.

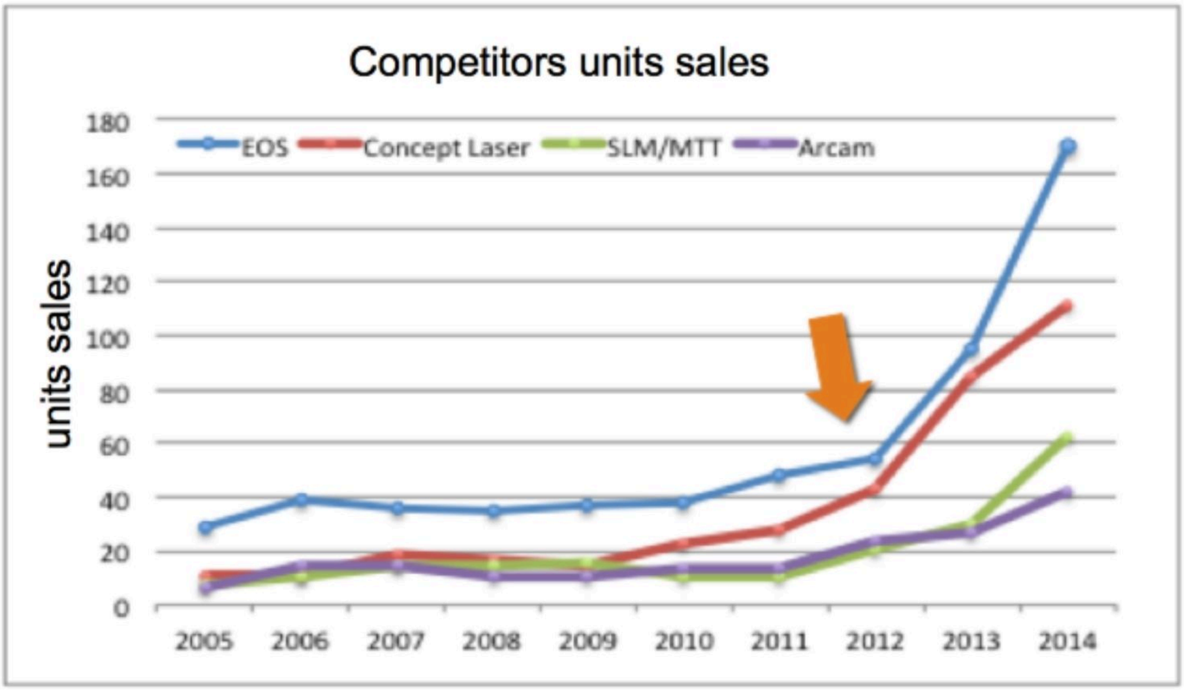
Additive Manufacturing ("3D printing") Market Size and Growth

3D printing is a $4B market, with a 6-to-1 ratio of plastics-to-metal, and a 5-to-2 ratio of prototyping to manufacturing. The manufacturing segment is growing fast – now a third of the plastic printing market – but it still represents only an eighth of the metal printing market.





Last year, about 500 metal 3D printers were sold at an average of $700K each, totaling $350M of revenue. Growth has started to inflect in recent years as this market grew by over 60% in 2013 and again in 2014. This is in contrast to the overall additive manufacturing market which grew 25%. The primary industries purchasing metal 3D printers are Industrial machining, Aerospace, Dental/Medical, Academic, and Automotive. The market for metal 3D printers is dominated by 4 European companies: EOS Systems, Concept Laser, SLM, and Arcam.

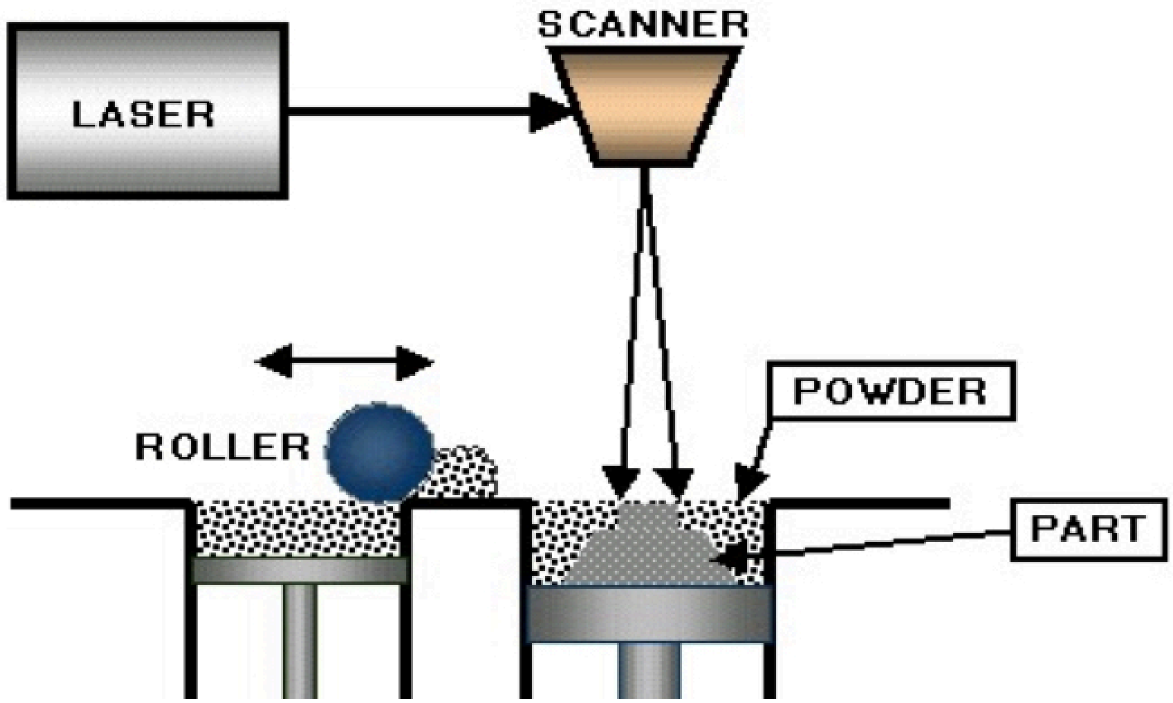


Benny's singular goal is to expand metal 3D printing from a $350M market printing mostly metal prototypes into a larger piece of the broader $500B metal machining market by enabling the printing of production metal parts.

How 3D Metal Printing Works

The most common method is called Direct Metal Laser Sintering (DMLS). A layer of metal powder is deposited on a build platform by a recoating blade. A very powerful laser then very precisely melts certain areas of the powder to fuse the metal powder to the metallic build platform. The build platform is then lowered 75 microns and the recoating blade pushes another layer of fresh powder onto the build platform. The laser then fuses this second layer to the first in a very specific pattern. These steps of recoating, lowering the build platform, and lasering continues until the part is complete (1,000 passes or more). At the end, the part is removed from the deep chamber of powder surrounding it. The most common metal powders are aluminum, cobalt chrome alloy, nickel alloy, stainless steel, and titanium. These each have different melting points and other mechanical properties so they are used for various reasons and in different industries.

By virtue of the additive nature of this process where parts are built layer by layer from the bottom up, metal 3D printed parts need "supports". Supports generally provide temporary support for a geometry that will be strong when complete but is weak during the build process. These geometries generally have horizontal overhanging surfaces, so they would collapse or be impossible to build through bottoms-up layering. Supports also serve an important role in dissipating heat from the newly-formed geometry. This prevents warping during the rapid melting and cooling process. Here is an example of a metal 3D printed part for the dental industry and all the supports necessary to enable its printing (left is before support removal, right is after):



This example underscores the complexity that supports add to a metal 3D build. Supports must be painstakingly added to the CAD model manually based on judgements of where the geometry requires it. This is a bit of an art because the supports also serve a thermal role. As a result, parts requiring supports must be printed and studied several times with small iterations on the number and location of supports, consuming a significant amount of time on a very expensive machine. In fact, most metal 3D printed parts are actually designed with the constraints of the printing process in mind from the beginning, compromising some combination of material cost, weight, and strength. Once a suitable design with the appropriate supports has been reached and the part is completely printed, supports must be manually removed through wire cutting or machined off with CNC equipment. In sum, supports are a very painful but required feature of metal 3D printing today. We have spoken with several metal 3D printing experts and customers and there is very clear consensus that supports are a major issue holding back this market.

Product: Supportless 3D metal printing

Velo3D is building a metal 3D printer as well as a cloud-based service to process CAD models into machine instructions. These 2 offerings work closely in concert to enable support-free 3D printing. There are four major problems with support-free printing:

> Any horizontal (or close to horizontal) overhangs will not be printable or will collapse under their own weight without a support.
>
> Without supports, the heat differential in the chamber causes the part to crack while printing.
>
> If the object isn't firmly supported during printing, then as the top most layer of metal cools and therefore contracts, it pulls in the edges, causing an upward curl, or warp, of the object.
>
> The re-coating mechanism, which pushes powder over the build after each layer is created, jostles the unsupported powder particles underneath so that they are too uneven to reliably fuse.

Velo3D's magic is that one by one it solves each of these problems. To protect the company's intellectual property, the solutions to these problems are not included here. Rather, they will be presented orally on Monday morning.

Velo3D Product Benefits

Less pre-processing/preparation before printing: Designers will be able to print any part imaginable, free from the constraints of the underlying printing process. This allows for the creation of parts that would be previously unprintable and eliminates the need to compromise weight and strength.

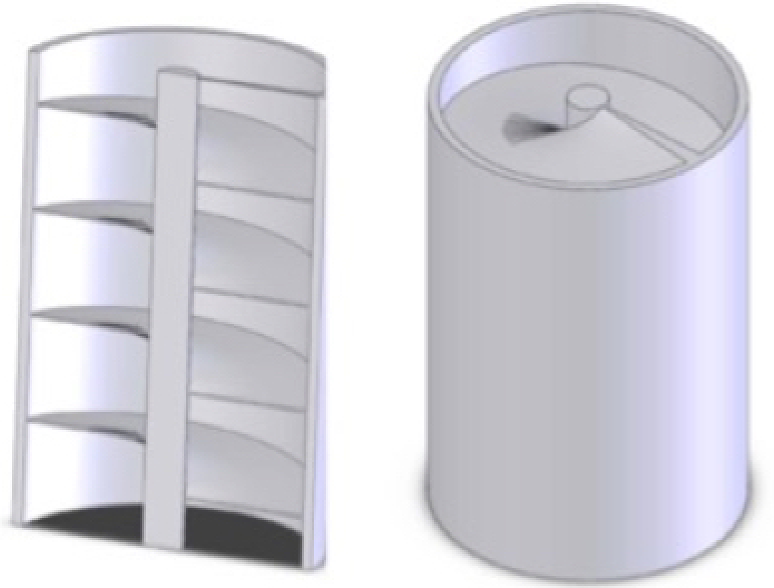
No need to determine where to place supports: Support placement is usually determined with an iterative process that requires a lot of designer time and several full builds before the supports are appropriately placed.

Faster builds with less material: The build takes 50% less time because the laser does not have to continually re-position to random XY locations to build up a support. Skipping the support build will also save powder, reducing material costs by 15%.

Less post-processing and yield loss: Supports no longer need to be painstakingly sawed off from the part. Parts are often ruined during the support removal process.

This innovation will be particularly valuable for low-volume, high-value parts; as additive manufacturing becomes sufficiently viable, fast and cheap, Velo3D expects Aerospace, Medical, Energy/Oil, Automotive and Machinery businesses to adopt it in their production lines. Today, this is rare because of the time and complexity involved with a process fraught with supports. We have heard from customers in a few of these industries that the weight reduction, quicker turnaround, and lower cost are very attractive.

For example, this turbine (from the SpaceX Falcon 9) is incredibly difficult to make with any printer other than Velo3D:



Eventually, Velo3D believes that more standard metal parts, even those that might have been machined, will be redesigned to take advantage of 3D printing. For example, part weights can be reduced while strength and stiffness are increased through the use of internal structures (such as lattices) rather than a completely solid part. Below is an example of an airline seat buckle before and after this process:

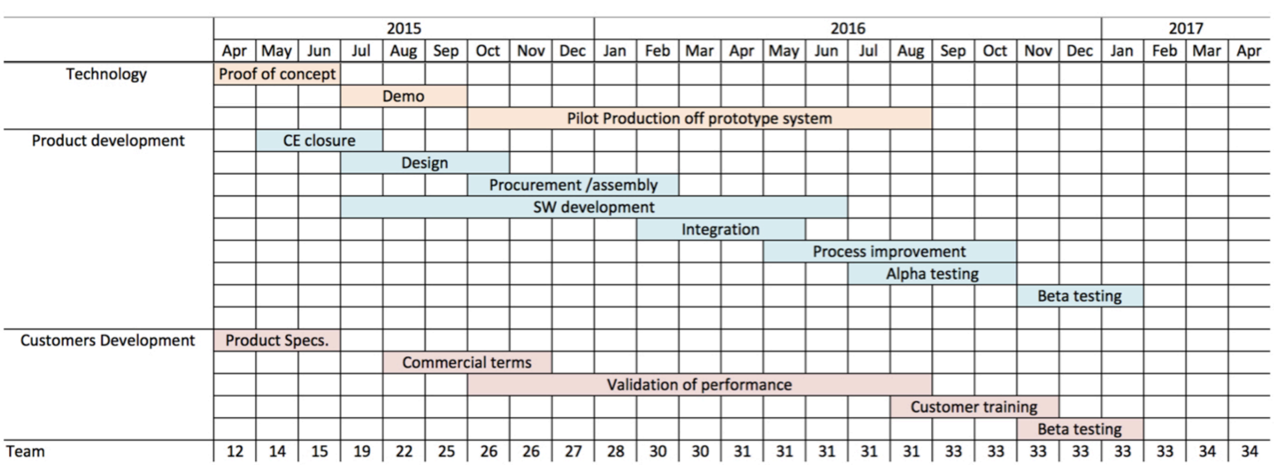
This redesign changed the weight of this airline seat buckle from 140 grams to 68 grams without compromising any strength. For an Airbus A380 with 853 seats, this totals 74 kg of weight savings. This leads to almost 1 million gallons of fuel savings over the lifetime of the aircraft.

Intellectual Property

Velo3D is pursuing a novel strategy for legally protecting their IP. Rather than patent all the mechanical details of their approach, they are patenting the signature that is left in parts made using their process. In this way, if a competitor infringes on their invention, they can sue anyone in the customer's supply chain rather than just the printer manufacturer (who may be in China). It also limits how much of the secret sauce needs to be disclosed in the patent filings. As of today, they have filed 5 provisional patents that they expect to split into many more full patent filings.

Financials/Traction

From here, the company hopes to use $15M of new funding to grow the team from 12 to 34 and start alpha testing on their first machine by mid-2016. They hope to ship beta units to customers in November of 2016 and have general availability by January 2017. This round takes them through April 2017 with an average gross monthly burn of $700K. It's an aggressive schedule that we expect to slip, requiring another round in early 2017.



Velo3D is still iterating on their pricing strategy. They believe they can build a machine for $350K (based mostly on COGS of existing printers) and sell it for $700K as their competitors do. To extract a premium for the support-less feature, they hope to add a $200K annual recurring SaaS fee for use of their processing cloud to turn CAD models into instructions for their machine (it's a computationally expensive operation). Using these assumptions, they plan to sell $10M, $24M, and $79M in 2017, 2018, and 2019 at close to a 60% gross margin, achieving 5% market share in metal 3D printers:

		2017				2018				2019			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Bookings units		3	5	5	5	7	8	10	15	22	29	34	40
Deliveries units		0	2	4	4	5	7	8	10	15	22	29	34
Installed base units		3	5	9	13	18	25	33	43	58	80	109	143
Revenue													
Total Revenue		2,730,000	1,750,000	2,730,000	3,010,000	3,952,500	5,117,500	6,397,500	8,517,500	12,305,000	17,327,500	22,267,500	26,832,500
Revenue - systems		2,730,000	1,750,000	2,730,000	3,010,000	3,780,000	4,830,000	5,880,000	7,770,000	11,270,000	15,890,000	20,370,000	24,360,000
Revenue service		0	0	0	0	22,500	37,500	67,500	97,500	135,000	187,500	247,500	322,500
SaaS revenue		0	0	0	0	150,000	250,000	450,000	650,000	900,000	1,250,000	1,650,000	2,150,000

Since raising their $4M seed round in July 2014, Velo3D has demonstrated support-less printing for basic shapes by printing several parts that were previously impossible to print. They have also recruited a talented team of 12. The team has also built early relationships with 4 prospective customers but this is very nascent. One of them, Proto-labs is one of the biggest players in this space (traded on Nasdaq).

Competition

The metal 3D printing market has several competitors that we are still working to understand better. From what we can tell, Velo3D will be the world's only support-free printing with laser sintering. The only competition that claims to offer support-free printing is Arcam, a Swedish company that targets the aerospace and medical industries. Arcam has a $1M machine based on electron beam welding technology, rather than lasers. As a result, their machine heats up the entire powder reserve to 1,100C and must complete the build in a vaccuum. They use the build powder as a kind of support, but this powder turns into a substance like sandstone that must later be picked away. Then, by heating everything, they remove the thermal concerns that also drives the need for supports. In certain instances, the build speed can be faster but the "resolution" of the part is lower so the acurracy and surface finish is lower. In addition, they cannot work with aluminum as a material. They sold roughly 40 units last year.

There are several other competitors:

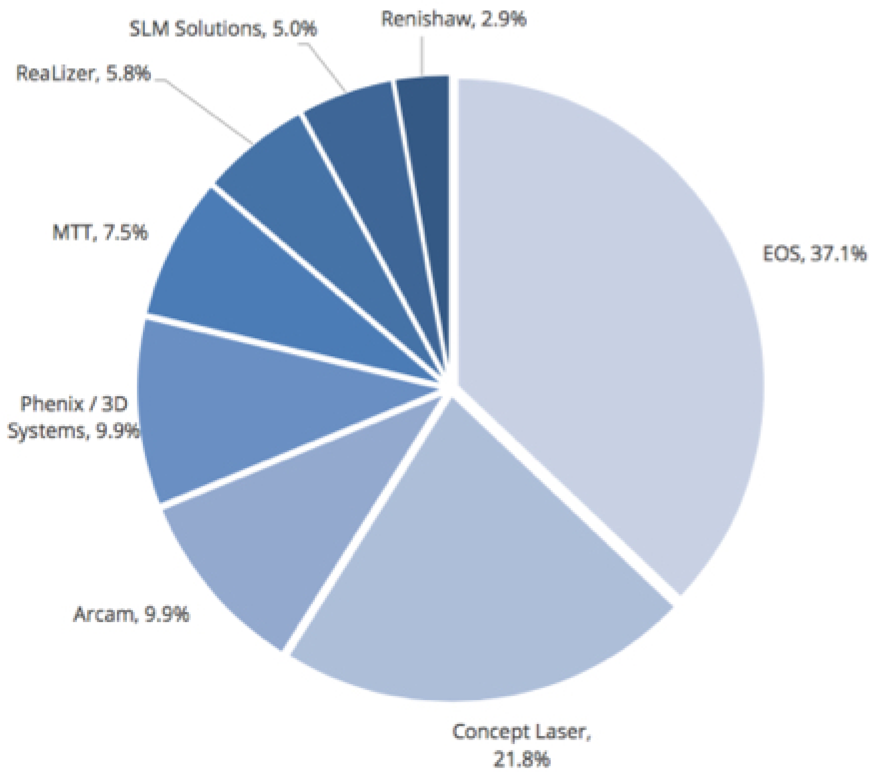
EOS Systems is based in Germany and has 400 employees, half of whom work on their metal printers.

Concept Laser is based in Germany and has 500 employees, 20% of whom work on their metal printers.

3D Systems is based in Valencia, California and has over 1,000 employees, 5% of whom work on their metal printers.

SLM is based in Germany and has 65 employees.

Renishaw is based in England and has over 3,000 employees, 2% of whom work on metal printers.



Team

Velo3D has a team of 12 talented engineers, technicians, and material scientists.

Benny Buller is co-founder and CEO of Velo3D. He is a graduate of Technion in Israel after which he spent 10 years in the Intelligence Technology Unit of the Israeli Defense Force (Unit 8100). He then spent 4 years at Applied Materials as Director of Electron Beam Pattern Generation Systems and 1.5 years at Solyndra as VP of Product Development where he invented the company's core technology. Most recently he was VP of Module Technology Integration at First Solar for 4 years and spent 2 years at Khosla as a Principal. He is a named inventor on 120 US patents. In the short time we've known Benny, he has impressed us with his intelligence and transparency. We find him to be an ideal combination of hungry entrepreneur and talented engineer.

Erel Milshtein is co-founder and VP of R&D for Velo3D. He spent 8 years at Applied Materials in technical roles ranging from Physicist to Technology Team Leader. He then spent 2 years at Solyndra where he met Benny. Benny then pulled him over to First Solar where he was Director of Engineering for 6 years.

It is also worth noting that Ofer Shochet, formerly VP of Products of leading 3D printing company Stratasys, is on the board of Velo3D.

Risks

We see several major risks for Velo3D:

> **Technology:** As you'll hear on Monday morning, Velo3D has been able to print several previously unprintable geometries with their prototype machine. However, they still have many technical problems to overcome before they have a working machine that can reliably deliver a metal 3D printed part. The company has allocated the next 10-12 months to working through these challenges but it could take longer.
>
> **Market:** While the metal 3D printing market is $350M today and growing 50-60% annually, this investment will only be attractive if Velo3D can attract new business from customers who appreciate the support-free printing solution. We believe that Velo3D has a chance at massively increasing the addressable market by making it viable to print production parts for a number of industries but the company has not focused on customer sales to date.
>
> **Competition:** There are roughly 10 companies who offer metal 3D printing technology, but with the exception of Arcam, none of them offer support-free printing. We believe that the number and size of changes they would have to make to their machines will keep them out of Velo3D's crosshairs for several years. In addition, Velo3D will have a strong IP position. With regard to Arcam, we are still digging into this further but believe the low accuracy and vacuum requirement of their machine limits their applicability, and their customers still have to extract the fused powder, limiting the printable geometries.

Outcomes Table **

Outcome	Exit Value	Exit Date	Prob.	Gross Proceeds	Mult.	IRR %
Wipeout. Velo3D has team or major IP issues and falls apart.	$0	Dec-16	20%	$0.0	0.00x	-100.0%
Team/IP sale. Velo3D is not able to complete a working machine but the team and IP is sold to a metal 3D printing competitor	$15	Dec-16	15%	$6.5	1.00x	0.0%
Slow Growth. Velo3D sells 20 machines for $700K each in 2017 but softening pipeline causes us to sell for 7x revenues	$100	Jun-17	32%	$10.9	1.67x	26.2%
Strong Growth. The company unlocks metal 3D printing for production parts. Sells 100 machines annually (20% of 2015 metal printer market) along with Saas revenue before exiting. 20% add'l dilution from Series B.	$500	Dec-18	30%	$43.5	6.67x	67.1%
Home Run. Velo3D is used throughout industry for production metal 3D printed parts, taking significant share of the $500B metal machining market to achieve $300M revenue (250 machines annually). IPO for 9x revenues.	$2,000	Jul-20	3%	$108.8	16.67x	70.4%
Weighted Average (to BVP)					**3.18x**	**40.1%**

Summary

We are excited to invest in an early-stage company that is revolutionizing the fast-growing market for metal 3D printing by removing the need for supports. In doing so, Velo3D has the potential to print production parts in a variety of industries, disrupting the $500B annual market for metal manufacturing. We recommend this investment.

Toast

To: BVP Group
From: Kent Bennett, Eric Ahlgren
Date: 12/14/15
Re: Toast Series B IR

We recommend a $17.5M investment in the $24M first institutional round of Toast, a Boston based company selling restaurant point of sale (POS) software. Our $17.5M will purchase 14.3% FD ownership and will see a 2X return at a $150M exit and a 2.5X return at a $210M exit. Our hope, of course, is that Toast will use what we believe is a meaningful product advantage to grab a large share of the 1M restaurants who will transition to cloud based POS in the coming decade. The benefit of a massive market is that with a little more than 1% market penetration Toast could be a $100M revenue company. The company momentum since signing our term sheet has us eager to close ASAP and we hope that an impressive product, a huge market, and potential for continued capital efficient hyper-growth will make up for an admittedly premium price on entry.

By the Numbers

At the effective pre-money we're paying 12x CARR / 17x ARR (the company has a ~3 month backlog of booked sites) – this is 3.8X YE2016 forecasted CARR although the company is ahead of that plan at the moment.

November was a record month with $800K of new ARR, a 7% increase in ASP, 0.3% gross churn, and most ramped reps above quota. Across the board things appear to be humming.

$24MM CARR / $17MM ARR forecast exiting 2016 - ~300% YOY growth.

75% blended Gross Margins on ARR (subscription + payment processing)

8-month CAC payback on live ARR (although inefficient implementation has stretched the cash on cash payback closer to a year – this is already headed back down in November)

<1% gross quarterly churn

>150% net retention, including upsell and account expansion

$5300 ARR / location (November bookings averaging $6200)

Market size: ~1M restaurants and bars (US only) = $6B for Toast at current monetization level with potential for expansion (product modules, international)

$14.5MM capital invested to date

$3.4MM cash remaining

$1MM monthly burn

Product:

Toast offers a cloud-based system to quick serve (QSRs) and full service restaurants (FSRs), with a modular all-in-one restaurant management platform encompassing POS, payments, operations management, online ordering, self-serve kiosk ordering and checkout, inventory management, loyalty program management, gifting and myriad other restaurant needs (much of this is live today, although there may be a >5 year roadmap with endless product features ahead). Toast's Android tablet-based cloud solution is beating out other new systems head to head and more impressively attacking on prem proprietary hardware incumbents Micros and NCR, who together make up 50% of the market.

While there are a handful of "next gen" players attacking this market, we believe that Toast has a significant early advantage. First off, the sheer amount of software the team has built in a short span is impressive – feature for feature they are already much more in the class of the >20 year old enterprise systems than the next gen "Bistro" players, and so for restaurants with any level of sophisticated feature requirements they win easily. But beyond just being very good at building good product quickly, the company also made two smart choices that sets them apart from the other players.

First, while competitors have almost all built on iPads/iOS, Toast's Android-based architecture allows restaurants to be much more flexible in their hardware choices (iPads are simply not enterprise grade and come in far fewer form factors than Android), has fewer software versioning issues than iOS and the upfront hardware costs are cheaper.

Second, Toast also did real work to build out transaction processing capability, which lets them subsidize their fees by operating as a transaction processor (they simply match current restaurant rates and almost always win the transaction business without objection.) This allows Toast to price competitively and earn a much higher margin than competitors head-to-head.Despite what we think is an early lead, Toast's product is still very immature, and every day they roll out new features like online ordering and inventory management (a $75 / mo upsell they introduced in October to 10% immediate adoption.)

There are countless ways they can expand the product offering over time, and with a modern software stack and open API they will continue to improve their product and integrate with partners who can offer great functionality on top of Toast.

We attended a company hackathon, where in two days employees had built applications to do among other things kiosk ordering, rapid backroom inventory, order ahead on mobile, vendor purchasing management – basically several other startups we've seen in the restaurant space are simply modules on Toast. We think an app store model over time (a la Shopify) is possible and could contribute to Toast's defensibility along with integration into several ecosystem players.

We spent significant time with Toast customers, prospects, and industry experts and continue to feel confident that Toast has a best in class product. Despite a VERY noisy space we think they've emerged as a product leader fueled by the quality of the team and great decisions, namely Android as an OS and the decision to do the hard work of building out processor capability which supports a differentiated value proposition.

We've collected some data to back up this product assessment, namely:

Toast beats every major competitor head-to-head in sales scenarios by a significant margin and has never lost head to head on product criticism (other than for a feature that they have not built yet). Combing through all of their loss explanations it seems to us they only lose based on either an owner who has already selected another system, or on price, and there just at the low-end of the market (where they have a plan to simplify their pricing as most losses are to snake oil competitors who manipulate their pricing with sleazy hardware leases)

Toast churn is driven almost entirely by restaurants going out of business, and they have never lost a customer to another cloud-based POS, whereas they have stolen several customers from their competitors. Occasionally they will lose a customer in a complex location where wifi issues make handheld tablets (part of the Toast value prop for some buyers) difficult and in those cases the owners tend to revert to legacy systems but remain big fans of the Toast product.

Toast net retention and upsell across multi-unit locations has been a big growth driver – many times a one unit pilot has turned into a multi-unit adoption

Beyond combing through their salesforce data, we have also spoken to 30 Toast customers – in addition to the 12 references provided by the company we did another ~20 "secret shopper" in-person visits – representing about 7% of Toast's booked restaurant locations, and the feedback has been overwhelmingly positive, producing an informal NPS of over 80 with only one mild detractor (we think a WiFi issue). Encouragingly, when we ask users for their favorite features of Toast, the range of answers has common themes but is also impressively long including:

It's intuitive and really easy to use.

- Much more efficient than legacy systems on key workflow activities. Occasionally an owner will mention something that could be improved and are always amazed when the software improves the next week...
- Really easy for a new employee which means reduced time training

Cloud solution – multiple users cited benefits of the cloud including

- Make updates or review analytics from anywhere. An owner can set alerts giving them visibility throughout the day on performance at any location, or in a particular server area
- Feature improvements – impressed at the rapid deployment of new features to make the product even better
- No more server crashes. If anything stalls it's only just for a minute and the devices can operate in offline mode so no outages
- Integration with third party software – several users favor another third-party restaurant solution (like a loyalty program or inventory tool) and Toast has been able to easily integrate into these solutions.

Table-side hardware drives throughput efficiency:

- Allows servers to send orders immediately to the kitchen
- Guests can run credit cards at the table – and give dynamic feedback on service
- Many customers have seen significant increase in table turns and service speed

CRM:

- Guests receive receipts by email (this also speeds up line throughput in QSRs/cafes), and restaurant has entire order history easily accessible which allows for analysis on best guests, quick retrieval of a past receipt, etc. We think the potential to improve CRM functionality over time is one of the most exciting aspects of the Toast roadmap.

Other advanced features such as online ordering, website menu integration, integration with other third-party software, etc.

Only points of criticism are around non-Toast specific issues like wifi connectivity and hardware sensitivity and some mild critique that their service has degraded (which the team admits has been true at times in this period of hyper-growth.)

The bottom line is that we think this is a stand-out product which is driving the company's early success, and there is a ton of potential for the product to improve with modules for mobile checkout, scheduling, inventory management, CRM, and others just getting started.

As for the tech under the hood we spoke to both Adam Ferrari as well as Keith Johnson who were the former CTO and VPE at Endeca and have been working with the Toast team. Both are convinced that the company currently has a solid engineering team with a code base ready to support the product roadmap although one that will require continued investment to support the growth in 2016/17.

Market:

There are approximately 1 million addressable restaurants in the US, and with current ARR / location around $5,000 and upside with additional product features potentially approaching $10,000, we estimate the market size at $5 – 10 billion. This is large, but maybe not surprising relative to the $600B Americans spend at restaurants every year. Approximately seven in ten of these million restaurants are "independent" often single location operations, as opposed to chain stores, although a significant fraction of these "independents" have shared ownership or multiple locations. Toast's core demographic today is independent operators but they have begun to move into "mid-market" 10-200 location chains as well. The likely sweet spot for Toast in 2016/17 is the combination of larger independent restaurants and "mid-market" chains – approximately 300-400K of the 1M restaurants fall into this sweet spot. Over time we think any restaurant that uses meaningful software should be a Toast customer. As an example Toast is engaged with the CIO of Chipotle (1400 locations), and inspired by positive market buzz the CIO of Burger King (14K locations) called Toast two weeks ago and has already scheduled a second meeting. While we don't expect any national chain to move quickly we do believe Toast could be in position to take down national chains in the next 24-36 months which could drive a step-function of growth.

Competition:

In addition to being massive, the POS market is extremely fragmented, with two large incumbents, Micros and NCR, each accounting for roughly 25% market share. Beyond these two big players there is a growing list of cloud challengers, including:

Revel: Early leader in the iOS tablet market and has raised >$100MM. iPad based.

Breadcrumb: Feature-light POS acquired by Groupon.

POS Lavu: iOS.

Clover: extensive distribution, low upfront cost and proprietary hardware.

Square: For basic single countertop and cash register restaurants only - no true restaurant operating system.

TouchBistro: targeting smaller restaurants.

HarborTouch: Catering to the 1-2 terminal restaurant.

Aldelo: built around an on prem solution.

Positouch

The market is incredibly noisy, but we have reviewed Toast's win/loss rates against all of the above competitors and Toast consistently wins based on the quality of product and reasonable pricing relative to such a full-suite product.

Go-to-market/sales strategy:

Toast is primarily selling direct to SMBs today via an inside sales force, but the company is also in the early stages of building out a channel strategy. The company claims that the Micros acquisition has been painful for their VAR channel and is freeing up many VARs in search of new solutions to sell. Toast's most notable channel partner to date is Gordon Food Service, a distributor to >100K locations who are pushing Toast and an integration to their food costing/ordering service – GFS accounted for about 25% of Toast bookings this year.

The sales effort to date has been effective, but we believe highly under-optimized. Both SMB and enterprise sales are being run by co-founder Aman Narang, an ex-star product leader at Endeca who had previously never sold anything in his life. Room for improvement is also clearly evident on the marketing side; a search for "best restaurant POS" will show Toast only several pages deep. Despite this "bootstrapped" approach, Toast is seeing >4x YoY growth and 6-8 month payback on sales efforts.

Most exciting for us is Toast's ability now that the product has matured to push into the mid-market chains which have much more volume per location and thus monetize at a much higher rate, and have sophisticated needs that drop away all of the competitive noise as no cloud POS other than Revel (which we think is an inferior product with a bit of a head start) can compete at this level.

Over the course of 2016 Toast plans to hire 3 enterprise reps to tackle this end of the market and are already engaged with senior sales leaders from Aloha and Micros who tellingly have been approaching Toast.

Marketing for Toast has been largely organic with trade shows driving some leads, but many leads coming in from restaurants researching solutions or hearing about or seeing Toast out in the market. This year we think Toast has an opportunity to build out their SEO and lead gen capability although leads are not the problem at the moment as Toast reps are able to cold generate many of their own leads.

A quote from a sales rep we introduced to Toast (from Intigua) who after a month is already ramped: "It's remarkable to me. Typical days here include 2+ demos per rep (I did 4 today)! You were definitely right about Toast. They are onto something big here."

Financials:

Toast makes money in five ways: subscriptions, a rake on payment processing, hardware sales, services and consulting fees. When we talk about CARR and ARR here, we are talking about only subscription revenue and Toast's margin on payment processing. Together, subscription fees and payment processing margin have blended gross margins of ~75% due to Toast's US-based support services (another differentiator from competitors like Revel, who rely on cheaper offshore support that many customers hate).

Note also that installations are struggling to keep up with rapid sales growth so there exists a backlog, which accounts for most of the difference between October's $7.1MM "CARR" and $4.25MM of live "ARR." Since the last Flash, we also received news of an outstanding November, which saw a 10% increase in CARR to $7.8MM and a 20% increase in live ARR to $5.1MM, putting the business ahead of the forecast laid out below.

The way to think about the business is about a core recurring engine of high margin subscription software and payment processing, served by an implementation arm working to get these customers live. Today Toast makes a slight margin on hardware, breaks even on consulting (which ends up being a way for Toast to subsidize some product development) and loses money on implementation services which is a big area for improvement in 2016 with pricing and process upgrades.

Toast has built a highly performing SaaS sales engine, achieving >3x YoY growth, 75% gross margins, <3% annual gross churn, >150% net retention including upsell and account expansion and a 14-month CAC payback that should be <8 months if Toast's implementation teams were able to keep go-lives on pace with bookings. Overall, we are comfortable that the machine is working, but believe there is room for significant improvement. For example, the company has been undercharging for implementation and is currently losing ~$2000 per install, but has been steadily increasing pricing and projects to break even on installs by YE2016. The company makes a slight margin on hardware today that offsets part of this install cost, and we also expect those margins to improve as Toast scales. We also expect an increase in sales efficiency as 2/3 of ISRs are already achieving quotas of 4.5 locations / month with several significantly overachieving. We expect that quota will increase to 6 locations / month by YE2016. And this is not to mention mid-market sales which we think have a chance to significantly increase sales efficiency as those reps come online.

Below is a snapshot of 2015 revenue growth:

	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
Locations												
Live	383	414	452	487	542	585	652	715	771	830	899	981
Booked	489	572	657	721	808	923	1,005	1,100	1,254	1,346	1,446	1,550
New Bookings	52	86	90	71	90	121	94	101	183	100	109	115
% of total bookings	11%	15%	14%	10%	11%	13%	9%	9%	15%	7%	8%	7%
New Go Lives	33	33	43	43	56	46	71	68	61	64	74	87
% of total go lives	9%	8%	10%	9%	10%	8%	11%	10%	8%	8%	8%	9%
Revenue												
Services Revenue	14	11	23	22	32	40	63	65	47	72	90	113
Hardware Revenue	120	98	256	295	213	226	353	293	307	235	269	313
Subscription Revenue	53	56	63	71	79	90	101	112	118	127	138	151
Payments Revenue	393	414	542	599	736	798	856	968	941	933	998	1084
Consulting Revenue	31	35	29	30	25	56	47	70	60	35	55	35
Total Revenue	611	614	912	1018	1085	1210	1420	1508	1474	1402	1549	1697
ARR*												
ARR + Bookings	1866	2235	2969	3234	4034	4624	5063	5564	6213	6522	6970	7475
ARR (Live)	1462	1616	2042	2188	2703	2929	3287	3615	3818	4021	4335	4729
ARR Margin	69%	74%	73%	71%	77%	81%	77%	75%	72%	76%	72%	73%
ARR / Location	$ 3,813	$ 3,906	$ 4,522	$ 4,488	$ 4,991	$ 5,009	$ 5,040	$ 5,057	$ 4,955	$ 4,844	$ 4,821	$ 4,822

*Subscription Revenue + Payments Margin run rate

This is the plan they handed us mid-October, but they are already $830K ARR ahead on bookings as of November month end, and are $765K ARR ahead on go-lives.

CAC payback is somewhat lumpy month to month, in particular as larger restaurant groups come online, but the overall picture shows a payback of 8 months assuming no backlog. While there will always be some delay in getting sites online, we believe this will significantly improve after this round of financing, and look at CAC payback from booking as an accurate indicator of the efficiency of the sales model. Below is an analysis of CAC payback in 2015.

CAC Payback Analysis	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	
New ARR (ARR +Bookings)		368,661	734,110	265,024	800,155	589,854	439,374	501,142	648,848	
New Annual GM (ARR + Bookings)		271,761	535,521	187,471	612,507	476,902	339,814	376,441	468,429	
New ARR (Live)		153,858	426,166	145,848	515,600	225,381	358,498	328,120	202,602	
New Annual GM (Live)		113,417	310,881	103,170	394,684	182,222	277,265	246,473	146,266	
Sales & Marketing	150,566	154,105	218,455	190,356	205,412	313,776	361,065	348,693	396,531	
CAC Payback - Monthly Basis										Avg
CAC Payback (ARR + Bookings)		6.6 mo	3.5 mo	14.0 mo	3.7 mo	5.2 mo	11.1 mo	11.5 mo	8.9 mo	8.3 mo
CAC Payback (Live)		15.9 mo	5.9 mo	25.4 mo	5.8 mo	13.5 mo	13.6 mo	17.6 mo	28.6 mo	15.3 mo
CAC Payback - Quarterly Basis										
CAC Payback (ARR + Bookings)						4.9 mo			7.2 mo	6.1 mo
CAC Payback (Live)						9.2 mo			12.7 mo	11.0 mo

Deal:

We are investing $16M in an up to $22.5M fresh primary round at a post money valuation (inclusive of an outstanding $8M convertible note) of $125M. Google Ventures will be investing $5MM of the round which we see as a positive given their Android association and the halo of their brand. The board will be BVP, Steve Papa, CEO, founder, and one independent seat.

Toast Series B Outcomes NOTES

Cost basis:	$17.5

Exit multiple (standard)	Expected dilution	Implied EV (diluted)	Estimated Probability	Time to exit	Returns: $ to BVP	Returns: IRR	Return contribution	Notes
0.0x	0%	$0	5%	2	$0	-100%	0%	Wipeout
0.5x	0%	$17	10%	2	$9	-29%	2%	Acqui-hire / product IP sale
1.0x	0%	$34	18%	3	$18	0%	7%	Growth plateaus, PE backed roll-up
2.0x	15%	$170	35%	3	$35	26%	27%	Low end strategic or PE sale @$25MM ARR
3.0x	15%	$441	17%	3	$53	44%	19%	M&A - mid case to legacy player (7x ARR in 2017)
5.0x	20%	$781	10%	4	$88	50%	19%	M&A - high case to legacy player (10x ARR in 2017)
10.0x	20%	$1,563	4%	5	$175	58%	15%	Successful IPO at >$100MM ARR and >100% growth
30.0x	25%	$5,000	1%	7	$525	63%	11%	The next Micros or NCR - reaches 25% market share or greater
			100%		Duration	3.1yrs.		
					EV to BVP	$46		
					Multiple	2.6x		
					IRR	30%		
					SD	38%		
					Sharpe	0.67		

"just goes nuts"

Exit multiple	Expected dilution	Implied EV (diluted)
40x	40%	$8,333
Notes:	Leading POS company	
$ to BVP	$700	

Team:

We believe this is the best product team in the POS space. CEO Chris Comparato and co-founders Steve Fredette, Aman Narang, and Jon Grimm were A players at Endeca, and the team is extremely hungry working all hours obsessed with building out the best product the restaurant industry has ever seen.

Chris Comparato, CEO: Chris joined Toast in 2015 from Acquia, where he was SVP of Customer Success. Prior to Acquia Chris was SVP Worldwide Solutions at Endeca and was Steve Papa's best operator. We have been impressed so far with Chris although this is his first full CEO role.

Steve Fredette, Co-Founder: Steve is a world-class product/engineering unicorn, and previously led pre-sales and product at Endeca. He focuses more on product and engineering at Toast.

Aman Narang, Co-Founder: Aman currently helps run Product as well as Toast's inside and field sales efforts, and has performed impressively in the role given a background otherwise totally devoid of sales experience. Previously, Aman was a member of the product leadership team at Endeca. We're not sure where Aman's focus will settle in the long run, but he's extremely talented and has a ton of upside potential.

Jon Grimm, Co-Founder: Jon is currently focused on technology—making sure the product works at all times including payments. Tech is a massive challenge here as restaurant customers don't tolerate a minute of product downtime and Jon has performed admirably although has a big challenge on his hands to keep the tech performing as the company scales.

The team will hire other senior engineering leadership, a VP of customer success, and in 2016 the company will likely need to add a head of HR as headcount is expected to double from 150 to 300.

Key Risks/Ways This Can Fail:

Competition is noisy and Toast fails to emerge as one of the few next gen winners

Toast's growth overwhelms them – backlog swells, financing market gets more challenging, and the team is forced to adjust the growth path.

Financing markets seize up and companies are forced to halt growth and run off of cash flow.

Summary:

We're very excited about this investment – for the past 18 months we've stood by anxiously as the team hit obvious product market fit but punted on raising more equity. Finally they've seen an opportunity to step on the gas, and frankly have seen the capital markets "rationalize" (okay, slightly) which has given us an opportunity to invest in a deal we can stomach.

Our deep look over the past two months has validated this is a best in class product, that the commercial engine, while still under optimized, is impressively efficient, and we believe they're only getting started and have significant opportunity to build a real moat in this market and be one of a few, and perhaps the dominant next gen restaurant POS player. We strongly recommend this investment.

1/14/2019

• • •

Clifford Sosin
CAS Investment Partners, LLC
8 Wright Street, 1st Floor
Westport, CT 06880

Performance Summary		
	Sosin Partners, LP*	**SPY****
2012***	**14.0%**	**-1.5%**
2013	**66.6%**	**32.3%**
2014	**6.3%**	**13.5%**
2015	**14.5%**	**1.3%**
2016	**22.0%**	**12.0%**
2017	**31.2%**	**21.7%**
Q1 2018	23.6%	-1.0%
Q2 2018	17.1%	3.5%
Q3 2018	13.6%	7.7%
Q4 2018	-21.1%	-13.5%
YTD 2018	**29.8%**	**-4.6%**
Cumulative return since inception	**380.0%**	**94.8%**
Annualized return since inception	**28.6%**	**11.3%**

See disclaimer regarding comparison to indicies at the end of this letter.
** Performance net of 2% management fee and 20% performance allocation.*
*** Includes dividends reinvested.*
**** Sosin Partners LP launched 10/9/2012; performance for both the fund and SPY shown from that date.*

To My Partners:

As shown in the performance summary, during the three months ended December 31, 2018, Sosin Partners, LP reported a loss on a mark to market basis net of all fees, expenses, and performance allocations of 21.1%. The broad market as represented by the SPY ETF including dividends was down 13.5% during the same period.

For the year ended December 31, 2018, Sosin Partners, LP reported a gain on a mark to market basis net of all fees, expenses, and performance allocations of 29.8%. The broad market as represented by the SPY ETF including dividends was down 4.6% during the same period.

Since its inception on October 9, 2012, Sosin Partners, LP has reported gains on a mark to market basis net of all fees, expenses, and performance allocations of 380.0%; this represents a 28.6% compound annualized rate of return. The SPY ETF is up 94.8% including dividends during that period representing an 11.3% compound annualized rate of return.

The Balance Sheet

We ended the quarter with six stock positions on the long side of the balance sheet, totaling 108% of equity capital. Our largest holding, representing 25% of equity capital, is our investment in Carvana, which I discussed in detail last letter. Our other holdings range in size from 6% of equity capital to 22% of equity capital. We also have a short position in the portfolio at 2% of equity capital. No other positions are material individually or collectively.

Holding Cash and Market Timing

There is something of a trope of value investors holding onto piles of cash, sometimes for many years, passing on opportunity after opportunity, in order to buy the very best investments in a moment of absolute market panic. Indeed, this behavior is often portrayed as virtuous and reflective of prudence, discipline and restraint.

I think of our method of investing as value investing, and I think of our approach as prudent disciplined and restrained… yet we have never held onto cash. In fact, we have been more than 100% invested essentially continuously since the start of the fund.

So a fair question for an investor to ask is why we don't hold any cash? I am going to address this question by telling you a story about a real business decision faced by a friend of mine. We'll call him Bill.

Bill, a businessman and part time student of investing, owns and runs a profitable local chemical business. His business makes a variety of niche products for various markets. His customers demand the very best performance and are willing to pay for his superior chemistry. His markets are small, which limits room for competitors who would have to make large investments in research relative to the size of the market in order to compete. This limited competition allows him to charge fair prices for his unique materials.

We were discussing his aspiration to grow his business by buying small competitors who offer other unique materials in different niches, but whose economics are otherwise similar. (I love chatting with my friends about their business problems!) It turns out that since these businesses are quite small with very limited potential to grow, they can often be purchased for fairly compelling prices. Moreover, since many of these chemicals are produced using common types of equipment, he can make these already comfortably profitable companies even more profitable by bringing their production into his facilities, thereby reducing their costs. In sum, Bill believes he has the opportunity to earn very attractive returns on these investments.

As we discussed, Bill explained that, while the economics of these potential acquisitions are quite compelling, it was his intention to wait until the next recession to acquire one. After all, he reasoned, it is likely that in the next recession he will be able to buy one of these already well priced assets for an even more compelling price. Why not pay less? My friend Bill had clearly internalized the lessons of wise value investors to sit on cash and to wait for just the right moment to buy.

However, as we discussed his plan further, it became clear to both of us that this seemingly prudent, disciplined and restrained approach was wrong. Let's walk through the math:

Suppose that investing $1 million in one of these bolt on acquisitions promises a return of about 15% per year better than a comparable investment in short term treasuries. In other words, the investment promises a profit of $150k per year. Suppose further that in a typical recession, the same company with the same earnings stream would be available for 30% less, or $700k.

Since a recession will invariably happen at some point, if he is patient, Bill will eventually be able to make the acquisition at the bargain price of $700k, thereby saving himself $300k. However, every year that Bill waits costs him $150k that he only gets if he owns the asset. Clearly if there is going to be a recession tomorrow or in the next two years, Bill should wait. But if the next recession happens in two years or more, he is better off buying today, even though he could buy for less in the future because the accumulated profits during those two plus years will exceed the bargain savings from buying at the lows. Indeed, if no recession occurred until year ten, patience will make end up costing Bill a whopping $1.2 million versus buying immediately.[1]

In essence, by deferring the acquisition, Bill was making a bet on the occurrence of a recession. Given that the gains from a recession happening were $300k, but the cost of a recession not happening were $150k per year, this bet implied a roughly 50/50 chance of a recession in any given year.

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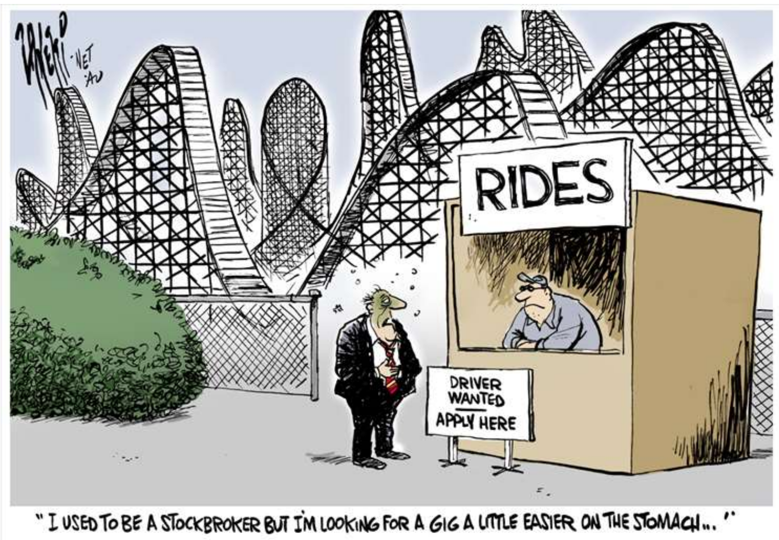
[1] I am ignoring the effects of reinvestment for simplicity.

Neither my friend nor I think we can predict recessions. In fact, I'd venture that nobody can reliably predict recessions. Despite this naivete, we both reasoned that since recessions have occurred on average every 5-10 years since World War II, the implied 50% odds seemed far too high. Consequently, we realized that in order to maximize his wealth over time, Bill should make these acquisitions as soon as possible!



The key to understanding Bill's choice was to frame the question as a comparison of his opportunity cost of non-ownership against the potential savings by making the acquisition at a future date. This method of framing does not imply that he should always make any acquisition. It just dictates that he take advantage of compelling opportunities when they present themselves but hold off on less compelling opportunities. For example, if buying the company today resulted in only $15k of expected incremental profits per year instead of $150k per year, by waiting Bill would be betting that a recession would occur sometime in the next twenty years, implying recession odds per year of about 5%. In this scenario, waiting would seem like the more appropriate choice in spite of the foregone profits each year.

This brings me back to the topic of investing in stocks.

Just as Bill has opportunities to invest in small chemical companies, we have opportunities today to invest in businesses with certain expected returns through the stock market. However, stock prices are volatile, and it is not uncommon for stocks to get cheaper from time to time for many reasons or for no reason at all. So, like my friend with his chemical business, we face the question: should we buy these stocks today or wait for a better price? As you would expect by now, the best answer depends on our sense of the expected profits from ownership versus the potential savings from buying the same stocks for a cheaper price in the future.

For example, suppose you think that a particular stock at a particular price promises a risk premium (return in excess of short term treasuries) of 6% over the long term. Additionally, suppose that once in a while you think that you'll have a chance to buy the same stock at a temporary 40% discount. If you thought the odds of such a dislocation occurring were less than 15% per year, you'd buy the stock today. If you thought they were greater than 15% per year, you'd wait. Of course all of these machinations assume that you'd actually be able to identify and act on the transient 40% discount. In reality this is much harder, since as the expression goes, "nobody rings a bell at the bottom."

I have no special insights into the funny ups and downs that the market prices of stocks take. However, I do think that over the years I've been able to identify a few investments which promise particularly high returns over time, and that our investments today (assuming I've correctly analyzed them) also offer compelling returns over many years. These anticipated returns are sufficiently high that, like my friend with his chemical business, it is obvious that I'd need to have a very high expectation of the likelihood and severity of a decline in stock prices in the near term in order to forgo the opportunity to buy or own them today. Since I have no such view (and doubt I will ever have such a view), we are and have been fully invested. Put another way… it is always better to pick up a 50c dollar today than to wait in hopes you can get it for 40c unless you are darn sure that you will get it for 40c pretty soon.

Let's turn back to my friend Bill's chemical company. Recall that we worked out that he should make the bolt on acquisition today for $1 million even though he knows that at some point that same company will be available for $700k, because the profits he'll make over the years owning the business will likely exceed the savings he'd enjoy by waiting. Now let's assume that emboldened by this observation, my friend starts making one of these acquisitions every year. This behavior would be profit maximizing since he is making the same good bet year after year, and more of a good bet is better.

Of course even though these bets are good on average, they will not ***all*** be good bets. In fact, my friend will ***inevitably*** end up making a couple acquisitions in the runup to a recession and overpaying for those acquisitions. How foolish he'll look at that point for those foolhardy acquisitions. Imagine the recriminations he might face for his "lack of discipline" if he had third party investors or a board. Fortunately, my friend has no third party investors or board to answer to, but most investors do and these pressures must clearly exert their influence.

Stock investors have it even harder than Bill. Since selling a private company is laborious and the potential transaction price is opaque, nobody expects Bill to sell his company and whatever previous acquisitions he has accumulated at the highest price just before a recession in order to buy it back at a lower price during the recession. Nor is anyone precisely aware of what the company could sell for on any given day. Likewise, while people may understand generally that the transaction price of a private company is lower in a recession, this fact is not advertised to them via to the penny mark to market losses in bold red text and breathless CNBC commentators. In short, a general sense that a private company would fetch less value today than in the past is far less salient than a readily computable mark to market loss in the stock market. It's no wonder that so many investment managers in the public markets insist on holding cash or try to time their purchases and sales even if they expect that the returns on their best investments will be high over time.

CAS is different than most investment managers. As I say ad nauseum but will repeat again, our approach is built around long term compounding. This means that I will happily trade the risk of embarrassment/ mark to market drawdowns for higher potential returns on average. In keeping with this approach, we buy and own stocks when we think that the expected returns over many years are very attractive knowing full well that, from time to time, in retrospect it would have been better to hold cash. While this strategy should produce higher returns over time, it will invariably produce bumps in the road. To a greater extent than other investment managers, we at CAS are dependent on your trust and long term perspective.

For this I am extremely grateful.

<u>Administrative</u>

The Partnership's Amended and Restated Confidential Offering Memorandum (the "Offering Memorandum") requires that I disclose whether my investment in Sosin Partners, LP represents over 50% of my liquid net worth. I am pleased to say it does. In fact, it represents over 90% of my entire net worth. My family and I are invested right alongside you.

In addition, the Offering Memorandum requires that I disclose whether I have any other significant income generating activities. I do not. The management of the Partnership is my sole occupation and source of income.

<u>Conclusion</u>

I am excited for the prospects of our Partnership. While I expect our short term results will be volatile, I believe that profits over time will be worth the volatility.

You'll recall that we endeavor to benefit from a virtuous cycle wherein:

1) our investors <u>trust</u> us and allow us the space necessary to focus on <u>long-term</u> investment performance;

2) this long-term focus allows us to make better investment decisions unclouded by short term considerations; and
3) better long-term investment decisions, in turn, (hopefully) allow us to produce better long-term returns, thus earning our investors' trust and restarting the cycle.

With this in mind, we continue to look for additional partners who understand and support our approach to investing. The wrong partners, partners who focus on short-term performance, will not be welcome. Prospective investors should review the Amended and Restated Confidential Offering Memorandum for more information.

I appreciate your continued trust in me. As always, feel free to call or drop by the office if you'd like to chat.

Sincerely,

Clifford Sosin

CAS Investment Partners, LLC

The information contained in this report is intended for informational purposes only and is qualified in its entirety by the more detailed information contained in the Sosin Partners, LP offering memorandum (the "Offering Memorandum"). This report is not an offer to sell or a solicitation of an offer to purchase any investment product, which can only be made by the Offering Memorandum. An investment in the Partnership involves significant investment considerations and risks which are described in the Offering Memorandum.

The material presented herein, which is provided for the exclusive use of the person who has been authorized to receive it, is for your private information and shall not be used by the recipient except in connection with its investment in the Partnership. CAS Investment Partners, LLC is soliciting no action based upon it. It is based upon information which we consider reliable, but neither CAS Investment Partners LLC nor any of its managers or employees represents that it is accurate or complete, and it should not be relied upon as such.

Performance information presented herein is historic and should not be taken as any indication of future performance. Among other things, growth of assets under management of CAS Investment Partners LLC may adversely affect its investment performance. Also, future investments will be made under different economic conditions and may be made in different securities using different investment strategies.

The comparison of the Partnership's performance to a single market index is imperfect because the Partnership's portfolio may include the use of margin trading and other leverage and is not as diversified as the Standard and Poor's 500 Index or other indices. Due to the differences between the Partnership's investment strategy and the methodology used to compute most indices, we caution potential investors that no indices are directly comparable to the results of the Partnership.

Statements made herein that are not attributed to a third party source reflect the views, beliefs and opinions of CAS Investment Partners LLC and should not be taken as factual statements.

Vice Chairman's Thoughts – Past and Future

To the shareholders of Berkshire Hathaway Inc.:

I closely watched the 50-year history of Berkshire's uncommon success under Warren Buffett. And it now seems appropriate that I independently supplement whatever celebratory comment comes from him. I will try to do five things.

(1) Describe the management system and policies that caused a small and unfixably-doomed commodity textile business to morph into the mighty Berkshire that now exists,

(2) Explain how the management system and policies came into being,

(3) Explain, to some extent, why Berkshire did so well,

(4) Predict whether abnormally good results would continue if Buffett were soon to depart, and

(5) Consider whether Berkshire's great results over the last 50 years have implications that may prove useful elsewhere.

The management system and policies of Berkshire under Buffett (herein together called "the Berkshire system") were fixed early and are described below:

(1) Berkshire would be a diffuse conglomerate, averse only to activities about which it could not make useful predictions.
(2) Its top company would do almost all business through separately incorporated subsidiaries whose CEOs would operate with very extreme autonomy.
(3) There would be almost nothing at conglomerate headquarters except a tiny office suite containing a Chairman, a CFO, and a few assistants who mostly helped the CFO with auditing, internal control, etc.
(4) Berkshire subsidiaries would always prominently include casualty insurers. Those insurers as a group would be expected to produce, in due course, dependable underwriting gains while also producing substantial "float" (from unpaid insurance liabilities) for investment.
(5) There would be no significant system-wide personnel system, stock option system, other incentive system, retirement system, or the like, because the subsidiaries would have their own systems, often different.
(6) Berkshire's Chairman would reserve only a few activities for himself.

(i) He would manage almost all security investments, with these normally residing in Berkshire's casualty insurers.

(ii) He would choose all CEOs of important subsidiaries, and he would fix their compensation and obtain from each a private recommendation for a successor in case one was suddenly needed.

(iii) He would deploy most cash not needed in subsidiaries after they had increased their competitive advantage, with the ideal deployment being the use of that cash to acquire new subsidiaries.

(iv) He would make himself promptly available for almost any contact wanted by any subsidiary's CEO, and he would require almost no additional contact.

(v) He would write a long, logical, and useful letter for inclusion in his annual report, designed as he would wish it to be if he were only a passive shareholder, and he would be available for hours of answering questions at annual shareholders' meetings.

(vi) He would try to be an exemplar in a culture that would work well for customers, shareholders, and other incumbents for a long time, both before and after his departure.

(vii) His first priority would be reservation of much time for quiet reading and thinking, particularly that which might advance his determined learning, no matter how old he became; and

(viii) He would also spend much time in enthusiastically admiring what others were accomplishing.

(7) New subsidiaries would usually be bought with cash, not newly issued stock.

(8) Berkshire would not pay dividends so long as more than one dollar of market value for shareholders was being created by each dollar of retained earnings.

(9) In buying a new subsidiary, Berkshire would seek to pay a fair price for a good business that the Chairman could pretty well understand. Berkshire would also want a good CEO in place, one expected to remain for a long time and to manage well without need for help from headquarters.

(10) In choosing CEOs of subsidiaries, Berkshire would try to secure trustworthiness, skill, energy, and love for the business and circumstances the CEO was in.

(11) As an important matter of preferred conduct, Berkshire would almost never sell a subsidiary.

(12) Berkshire would almost never transfer a subsidiary's CEO to another unrelated subsidiary.

(13) Berkshire would never force the CEO of a subsidiary to retire on account of mere age.

(14) Berkshire would have little debt outstanding as it tried to maintain (i) virtually perfect creditworthiness under all conditions and (ii) easy availability of cash and credit for deployment in times presenting unusual opportunities.

(15) Berkshire would always be user-friendly to a prospective seller of a large business. An offer of such a business would get prompt attention. No one but the Chairman and one or two others at Berkshire would ever know about the offer if it did not lead to a transaction. And they would never tell outsiders about it.

Both the elements of the Berkshire system and their collected size are quite unusual. No other large corporation I know of has half of such elements in place.

How did Berkshire happen to get a corporate personality so different from the norm?

Well, Buffett, even when only 34 years old, controlled about 45% of Berkshire's shares and was completely trusted by all the other big shareholders. He could install whatever system he wanted. And he did so, creating the Berkshire system.

Almost every element was chosen because Buffett believed that, under him, it would help maximize Berkshire's achievement. He was not trying to create a one-type-fits-all system for other corporations. Indeed, Berkshire's subsidiaries were not required to use the Berkshire system in their own operations. And some flourished while using different systems.

What was Buffett aiming at as he designed the Berkshire system?

Well, over the years I diagnosed several important themes:

(1) He particularly wanted continuous maximization of the rationality, skills, and devotion of the most important people in the system, starting with himself.
(2) He wanted win/win results everywhere--in gaining loyalty by giving it, for instance.
(3) He wanted decisions that maximized long-term results, seeking these from decision makers who usually stayed long enough in place to bear the consequences of decisions.
(4) He wanted to minimize the bad effects that would almost inevitably come from a large bureaucracy at headquarters.
(5) He wanted to personally contribute, like Professor Ben Graham, to the spread of wisdom attained.

When Buffett developed the Berkshire system, did he foresee all the benefits that followed? No. Buffett stumbled into some benefits through practice evolution. But, when he saw useful consequences, he strengthened their causes.

Why did Berkshire under Buffett do so well?

Only four large factors occur to me:

(1) The constructive peculiarities of Buffett,
(2) The constructive peculiarities of the Berkshire system,
(3) Good luck, and
(4) The weirdly intense, contagious devotion of some shareholders and other admirers, including some in the press.

I believe all four factors were present and helpful. But the heavy freight was carried by the constructive peculiarities, the weird devotion, and their interactions.

In particular, Buffett's decision to limit his activities to a few kinds and to maximize his attention to them, and to keep doing so for 50 years, was a lollapalooza. Buffett succeeded for the same reason Roger Federer became good at tennis.

Buffett was, in effect, using the winning method of the famous basketball coach, John Wooden, who won most regularly after he had learned to assign virtually all playing time to his seven best players. That way, opponents always faced his best players, instead of his second best. And, with the extra playing time, the best players improved more than was normal.

And Buffett much out-Woodened Wooden, because in his case the exercise of skill was concentrated in one person, not seven, and his skill improved and improved as he got older and older during 50 years, instead of deteriorating like the skill of a basketball player does.

Moreover, by concentrating so much power and authority in the often-long-serving CEOs of important subsidiaries, Buffett was also creating strong Wooden-type effects there. And such effects enhanced the skills of the CEOs and the achievements of the subsidiaries.

Then, as the Berkshire system bestowed much-desired autonomy on many subsidiaries and their CEOs, and Berkshire became successful and well known, these outcomes attracted both more and better subsidiaries into Berkshire, and better CEOs as well.

And the better subsidiaries and CEOs then required less attention from headquarters, creating what is often called a "virtuous circle."

How well did it work out for Berkshire to always include casualty insurers as important subsidiaries?

Marvelously well. Berkshire's ambitions were unreasonably extreme and, even so, it got what it wanted.

Casualty insurers often invest in common stocks with a value amounting roughly to their shareholders' equity, as did Berkshire's insurance subsidiaries. And the S&P 500 Index produced about 10% per annum, pre-tax, during the last 50 years, creating a significant tailwind.

And, in the early decades of the Buffett era, common stocks within Berkshire's insurance subsidiaries greatly outperformed the index, exactly as Buffett expected. And, later, when both the large size of Berkshire's stockholdings and income tax considerations caused the index-beating part of returns to fade to insignificance (perhaps not forever), other and better advantage came. Ajit Jain created out of nothing an immense reinsurance business that produced both a huge "float" and a large underwriting gain. And all of GEICO came into Berkshire, followed by a quadrupling of GEICO's market share. And the rest of Berkshire's insurance operations hugely improved, largely by dint of reputational advantage, underwriting discipline, finding and staying within good niches, and recruiting and holding outstanding people.

Then, later, as Berkshire's nearly unique and quite dependable corporate personality and large size became well known, its insurance subsidiaries got and seized many attractive opportunities, not available to others, to buy privately issued securities. Most of these securities had fixed maturities and produced outstanding results.

Berkshire's marvelous outcome in insurance was not a natural result. Ordinarily, a casualty insurance business is a producer of mediocre results, even when very well managed. And such results are of little use. Berkshire's better outcome was so astoundingly large that I believe that Buffett would now fail to recreate it if he returned to a small base while retaining his smarts and regaining his youth.

Did Berkshire suffer from being a diffuse conglomerate? No, its opportunities were usefully enlarged by a widened area for operation. And bad effects, common elsewhere, were prevented by Buffett's skills.

Why did Berkshire prefer to buy companies with cash, instead of its own stock? Well, it was hard to get anything in exchange for Berkshire stock that was as valuable as what was given up.

Why did Berkshire's acquisition of companies outside the insurance business work out so well for Berkshire shareholders when the normal result in such acquisitions is bad for shareholders of the acquirer?

Well, Berkshire, by design, had methodological advantages to supplement its better opportunities. It never had the equivalent of a "department of acquisitions" under pressure to buy. And it never relied on advice from "helpers" sure to be prejudiced in favor of transactions. And Buffett held self-delusion at bay as he underclaimed expertise while he knew better than most corporate executives what worked and what didn't in business, aided by his long experience as a passive investor. And, finally, even when Berkshire was getting much better opportunities than most others, Buffett often displayed almost inhuman patience and seldom bought. For instance, during his first ten years in control of Berkshire, Buffett saw one business (textiles) move close to death and two new businesses come in, for a net gain of one.

What were the big mistakes made by Berkshire under Buffett? Well, while mistakes of commission were common, almost all huge errors were in not making a purchase, including not purchasing Walmart stock when that was sure to work out enormously well. The errors of omission were of much importance. Berkshire's net worth would now be at least $50 billion higher if it had seized several opportunities it was not quite smart enough to recognize as virtually sure things.

The next to last task on my list was: Predict whether abnormally good results would continue at Berkshire if Buffett were soon to depart.

The answer is yes. Berkshire has in place in its subsidiaries much business momentum grounded in much durable competitive advantage.

Moreover, its railroad and utility subsidiaries now provide much desirable opportunity to invest large sums in new fixed assets. And many subsidiaries are now engaged in making wise "bolt-on" acquisitions.

Provided that most of the Berkshire system remains in place, the combined momentum and opportunity now present is so great that Berkshire would almost surely remain a better-than-normal company for a very long time even if (1) Buffett left tomorrow, (2) his successors were persons of only moderate ability, and (3) Berkshire never again purchased a large business.

But, under this Buffett-soon-leaves assumption, his successors would not be "of only moderate ability." For instance, Ajit Jain and Greg Abel are proven performers who would probably be under-described as "world-class." "World-leading" would be the description I would choose. In some important ways, each is a better business executive than Buffett.

And I believe neither Jain nor Abel would (1) leave Berkshire, no matter what someone else offered or (2) desire much change in the Berkshire system.

Nor do I think that desirable purchases of new businesses would end with Buffett's departure. With Berkshire now so large and the age of activism upon us, I think some desirable acquisition opportunities will come and that Berkshire's $60 billion in cash will constructively decrease.

My final task was to consider whether Berkshire's great results over the last 50 years have implications that may prove useful elsewhere.

The answer is plainly yes. In its early Buffett years, Berkshire had a big task ahead: turning a tiny stash into a large and useful company. And it solved that problem by avoiding bureaucracy and relying much on one thoughtful leader for a long, long time as he kept improving and brought in more people like himself.

Compare this to a typical big-corporation system with much bureaucracy at headquarters and a long succession of CEOs who come in at about age 59, pause little thereafter for quiet thought, and are soon forced out by a fixed retirement age.

I believe that versions of the Berkshire system should be tried more often elsewhere and that the worst attributes of bureaucracy should much more often be treated like the cancers they so much resemble. A good example of bureaucracy fixing was created by George Marshall when he helped win World War II by getting from Congress the right to ignore seniority in choosing generals.

Sincerely,

Charles T. Munger