

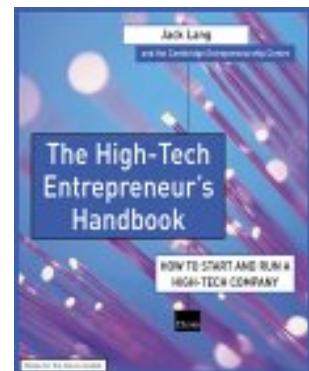
CSC 491: Professional Experience

From idea to Business

Instructor: Haidar M. Harmanani

Entrepreneurship

*The Question is what
do you want to do with
your (professional)
life??*



Entrepreneurship

The Question is what do you want to do with your (professional) life??



More about this one next week!

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Play it Safe!

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..or not!

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“A startup is a temporary organization formed to search for a repeatable and scalable business model.” – Steve Blank

“A human institution designed to create new products and services under conditions of extreme uncertainty.” – Eric Ries

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Start-ups

- Why me?
 - Because I can: available time and resource
 - Just graduated, or made redundant and nothing else to do
 - Brilliant idea or market opportunity

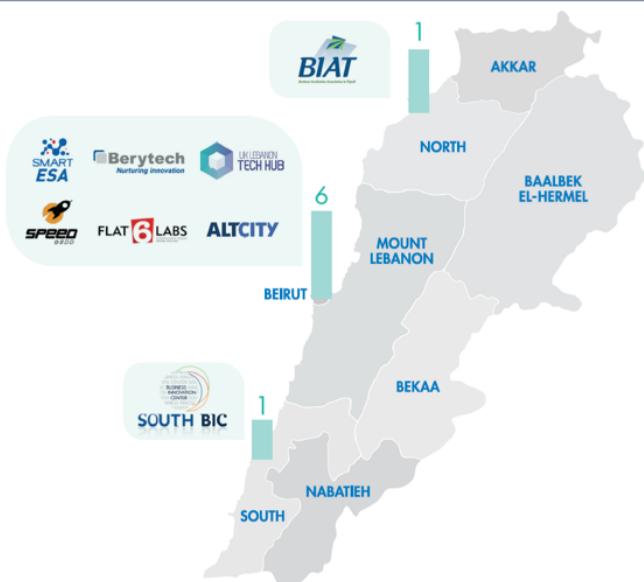
Start-ups

- Barriers to market entry
 - What have you got to make it through?
 - Expertise, resource, relationships
- Barriers to competition
 - What stops others doing the same thing
 - IPR, network effect, niche
- Unique advantages
- Know yourself
 - Know your motivation so you can motivate others
 - What counts as success?

Start-ups: Getting Started

- Money
- Support
- Infrastructure
 - Banks, lawyers, accountants, Office space, Internet (ouch!)
- People
- Government
- Society attitude
 - OK to lose,
- “Dare to Begin” (Horace)
 - Nothing will be attempted if all possible objections must be overcome (Samuel Johnson)

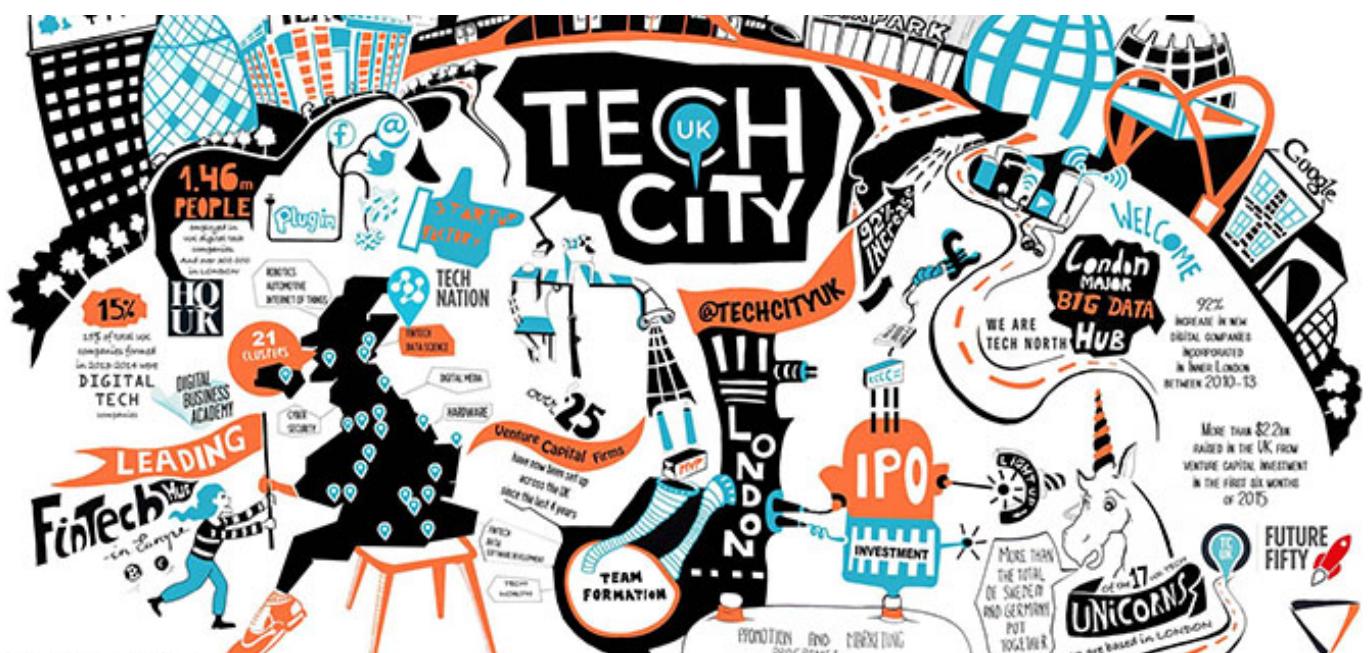
Incubators/Accelerators in Lebanon



Incubators/Accelerators in Lebanon



- Incubators/Accelerators offer some or all of the following:
 - Mentoring and coaching
 - Business advisory
 - Access to market and soft landing
 - Training and capacity building
 - Hosting
 - Incubation
 - Acceleration
 - Access to funding
 - Outreach
 - Research

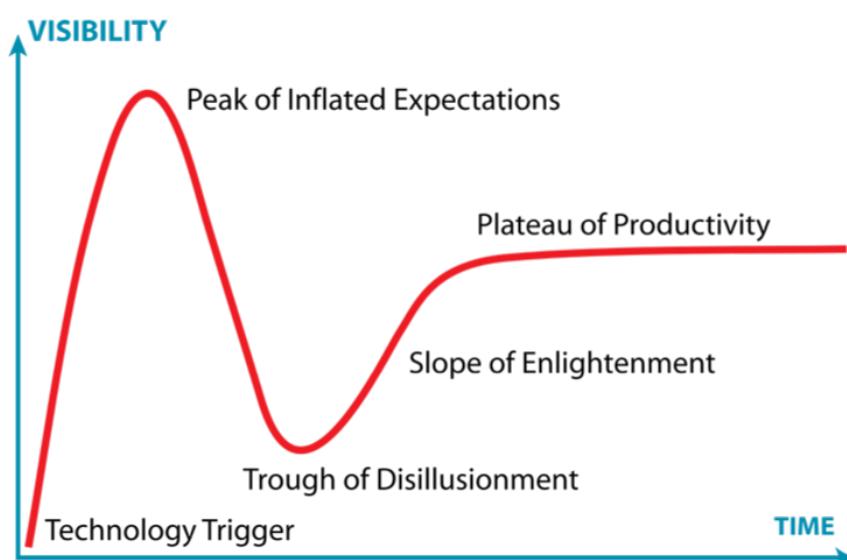


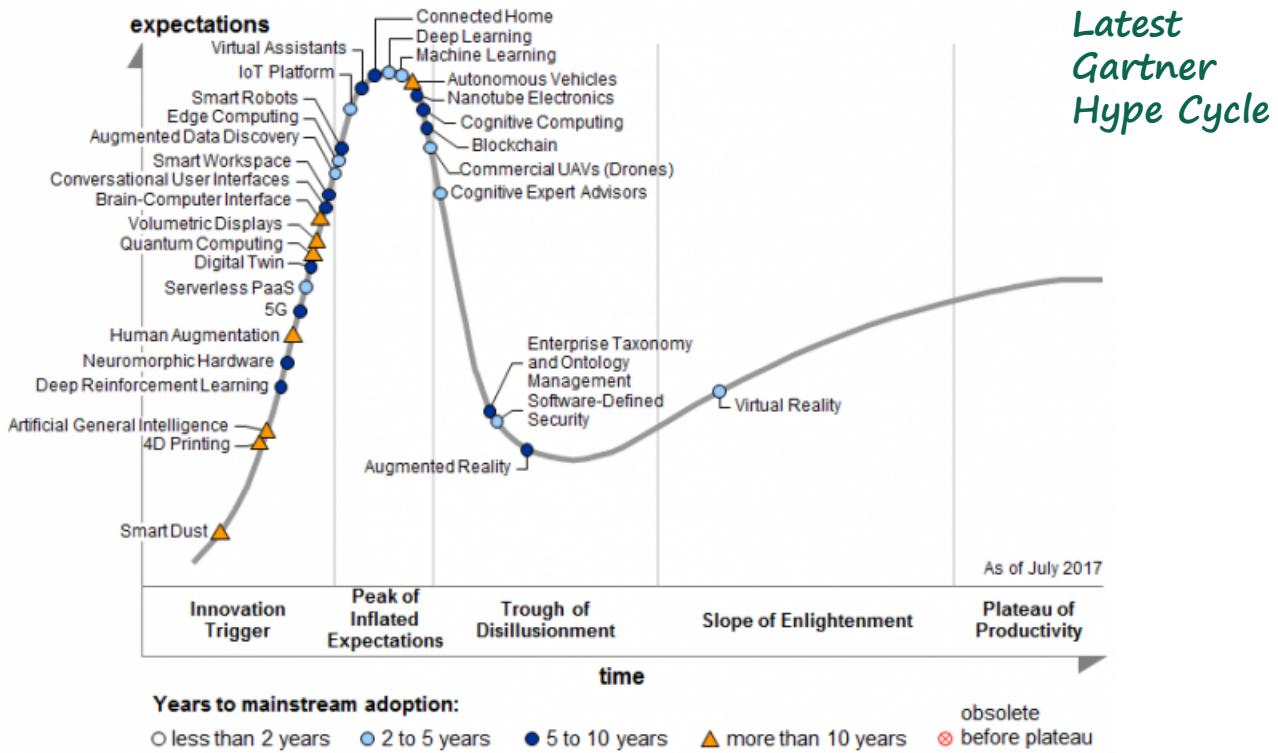
Entrepreneurship

So, you have an idea...

- What is it?
 - Defining the product or service; types of company
- Who needs it?
 - Market analysis
- How?
 - Writing the business plan

Gartner Hype Cycle





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So, you have an idea...

- Self-test
 - Is it something new? Has it been done before in this way?
 - Does it solve another person's (important) problem?
 - What is your USP? (one sentence max, or you lost me)
 - What is your market size and how do you tap in it?
 - How much money do you need? What are the steps from proof-of-concept to commercialization
 - Would YOU mortgage your house and invest in your company?
 - HYPOTHETICAL – do not do it!

Why are you doing it?

- Wealth generation
- Better toys
- Make a difference
 - Social consequences
 - Generation of employment
 - Death of the nation state
- Fun or profit?
 - Lifestyle or high growth?
 - Funding
 - Eventual size?



If you are not in business for fun or profit, what are you doing there?

The Rules of Entrepreneurship

- Do not panic
- Devote time & effort
- Develop nerves of steel
- Seek alliances
- Remain optimistic
- In case of a sidetrack...

Business thinking

- How will you fund your idea? (start-up)
 - Personal/family
 - “Angels”
 - Venture Capital
 - National or European R&D projects
- Your company
 - Get legal help for the start-up (or read)
 - Be sure to start correctly (very hard to fix later)
 - Get yourself a good accountant!!
- Your team
 - Choose your founding members wisely & do not get caught up in the excitement

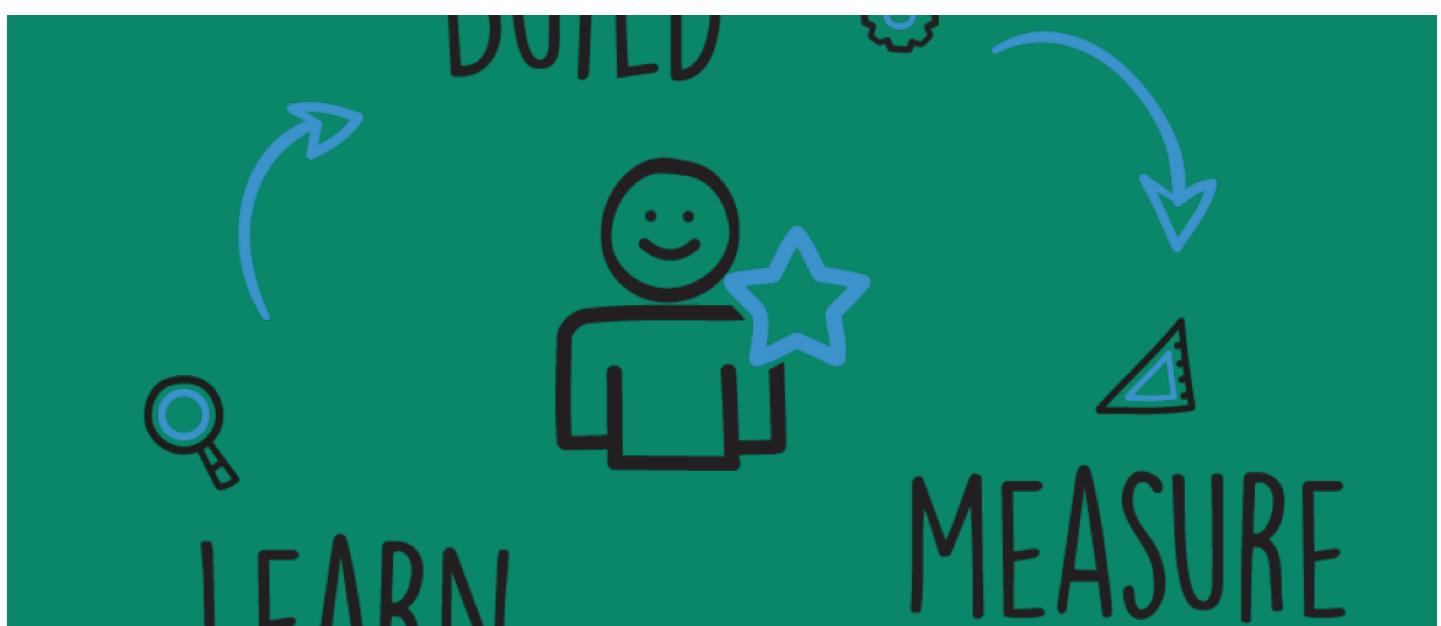
You & the big players...

- My start-up develops a disruptive technology and I will go head-to-head with “Google”
 - Wrong!



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Lean Start-Ups

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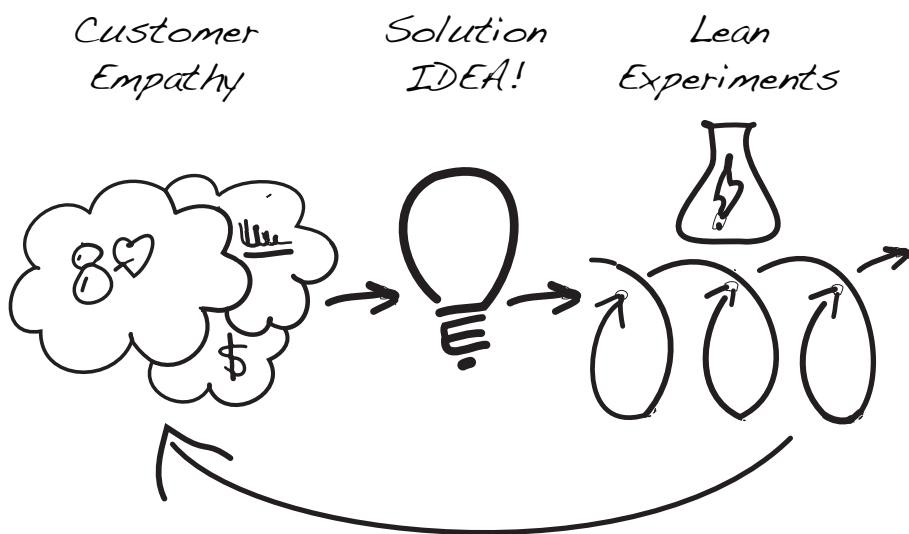
What is “Lean Startup”?

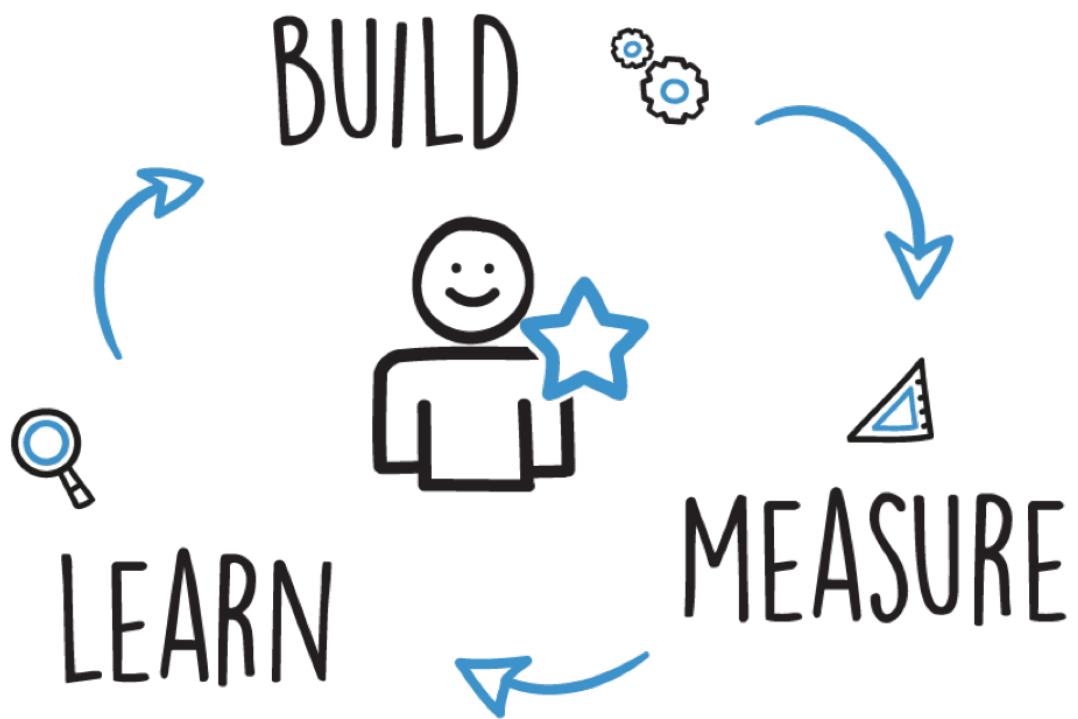
- Elimination of waste in searching for a scalable business model, or significant business impact.
- Goal for lean startups: Learning!
- Lean Startup Myths
 - Lean = cheap or poor quality
 - Only for high tech (hint: it works in large orgs too)
 - Replaces vision with customer demands

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What is “Lean Startup”?





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Lean Startup Principles

- Entrepreneurs are everywhere
- Entrepreneurship is management
- Validated Learning
- Build – Measure - Learn
- Innovation Accounting

STARTUP

=

EXPERIMENT



Most Startups Fail!

Entrepreneurship is management

- Goal is to create an institution, not just a product
- Traditional management practices fail
 - “general management” as taught to MBAs
- Need practices and principles geared to the startup context of *extreme uncertainty*
- Not just for “two guys in a garage”

The Pivot

- What do successful startups have in common?
 - They started out as digital cash for PDAs, but evolved into online payments for eBay.
 - They started building BASIC interpreters, but evolved into the world's largest operating systems monopoly.
 - They were shocked to discover their online games company was actually a photo-sharing site.
- Pivot: change directions but stay grounded in what we've learned.

Speed Wins

- If we can reduce the time between pivots
- We can increase our odds of success
- Before we run out of money

Achieving Failure

- If we're building something nobody wants, what does it matter if we accomplish it:

*On time?
On budget?
With high quality?
With beautiful design?*

- **Achieving Failure = successfully executing a bad plan**

Achieving Failure

- If you cannot fail you cannot learn
- Learning milestones instead of product and business milestones

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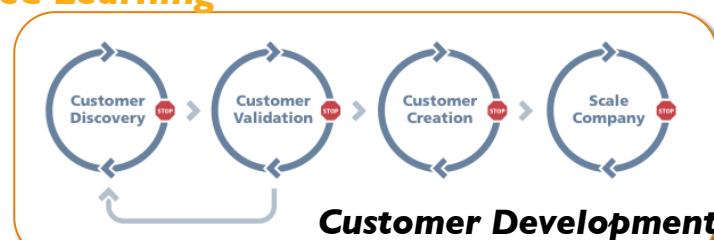


Lean Startup

Unit of Progress: Validated Learning



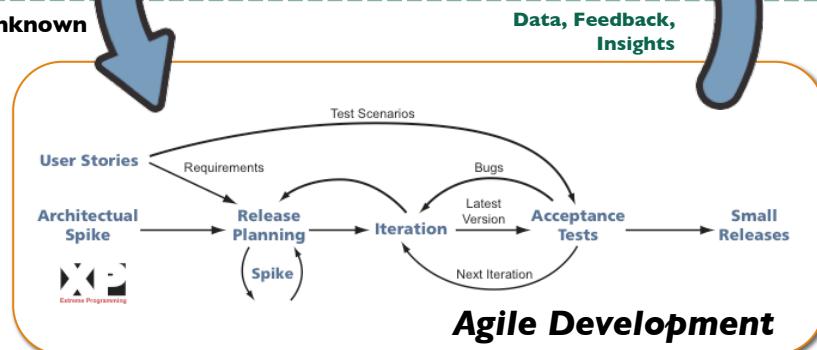
**Steve Blank
(still alive)**
Problem: unknown



Customer Development

Solution: unknown

**Data, Feedback,
Insights**



Agile Development



Lean Startup Principles

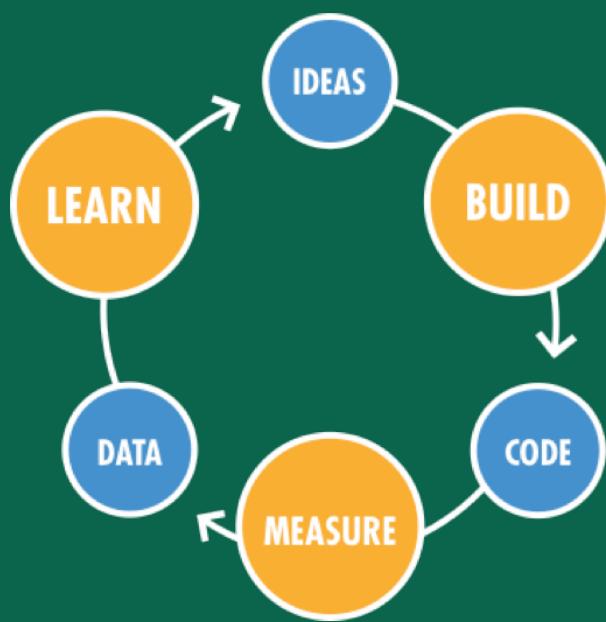
Entrepreneurs are everywhere

Entrepreneurship is management

Validated Learning

Build – Measure – Learn

Minimize **TOTAL** time through the loop



There's much more...



Lean Startup Principles

Entrepreneurs are everywhere

Entrepreneurship is management

Validated Learning

Build – Measure – Learn

Innovation Accounting

The Three Learning Milestones

- Establish the baseline
 - Build a minimum viable product
 - Measure how customers behave right now
- Tune the engine
 - Experiment to see if we can improve metrics from the baseline towards the ideal
- Pivot or persevere
 - When experiments reach diminishing returns, it's time to pivot.

MVP (minimum viable product)

- Skimp on features not on quality.
- Remove any feature, process or effort that does not contribute to the “test”.

NOBODY is going to steal your idea

**And if they can execute your idea
quicker and better than you, you're in
trouble anyway.**

Questions

- How do we know when to pivot?
- Vision or Strategy or Product?
- What should we measure?
- How do products grow?
- Are we creating value?
- What's in the MVP?
- Can we go faster?

Quantitative learning

- You can always justify failure as part of the learning experience, but that's a bit cheap....
- Use experiments, not market research.

The Business Model Canvas

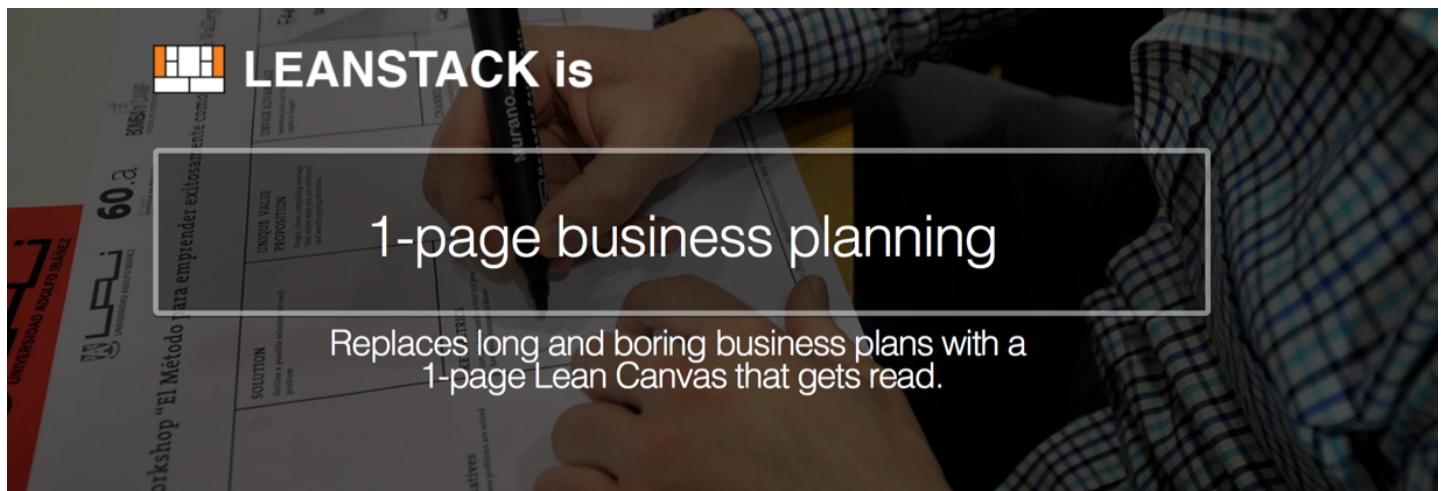
| | | | | |
|--|---|--|--|---|
| PROBLEM <i>List your top 1-3 problems</i> | SOLUTION <i>Outline a possible solution for each problem.</i> | UNIQUE VALUE PROPOSITION <i>Single, clear, compelling message that turns an unaware visitor into an interested prospect.</i> | UNFAIR ADVANTAGE <i>Something that can't be easily copied or bought.</i> | CUSTOMER SEGMENT <i>List your target customers and users.</i> |
| EXISTING ALTERNATIVES <i>List how these problems are solved today.</i> | KEY METRICS <i>List the key numbers that tell you how your business is doing.</i> | HIGH LEVEL CONCEPT <i>List your X and Y analogy (e.g. YouTube = Flickr for videos)</i> | CHANNELS <i>List your path to customers.</i> | EARLY ADOPTERS <i>List the characteristics of your ideal customers.</i> |
| COST STRUCTURE <i>List your fixed and variable costs.</i> | | REVENUE STREAMS <i>List your sources of revenue.</i> | | |

The Lean Canvas

| | | | | |
|---|---|---|--|--|
| PROBLEM It is hard to get a clear overview of my everyday activities It is hard to balance my workload / (It is hard to say no and respect my own capacity) It is hard to prioritize my activities according to value It is hard to balance my time between different stakeholders and projects (Work related stress) | SOLUTION Taskboard to get a clear overview of all your everyday activities Add Comment Add Experiment | UNIQUE VALUE PROPOSITION Kanbana is a simple and easy to use task board that will help get a clear visual overview of all your everyday activities and achieve a stress less day, good decision making and easy prioritization according to your own goals and values Add Comment Add Experiment | UNFAIR ADVANTAGE The owners knowledge and experience in personal effectiveness Kanbana will help you to get started fast and easily 1 Add Experiment | CUSTOMER SEGMENTS Self-managing office workers juggling with many different kinds of projects, stakeholders and activities at once Students Add Comment Add Experiment |
| KEY METRICS Recruitment: Conversion rate of level 2 users Retention: Rate of level 2 users that has stopped using the product Number of paying customers Add Comment Add Experiment | CHANNELS Search engine Twitter Personal effectiveness talks Mouth to mouth Add Comment Add Experiment | | | |
| COST STRUCTURE List your fixed and variable costs 7 Add Comment Add Experiment | | REVENUE STREAMS List your sources of revenue 6 Add Comment Add Experiment | | |

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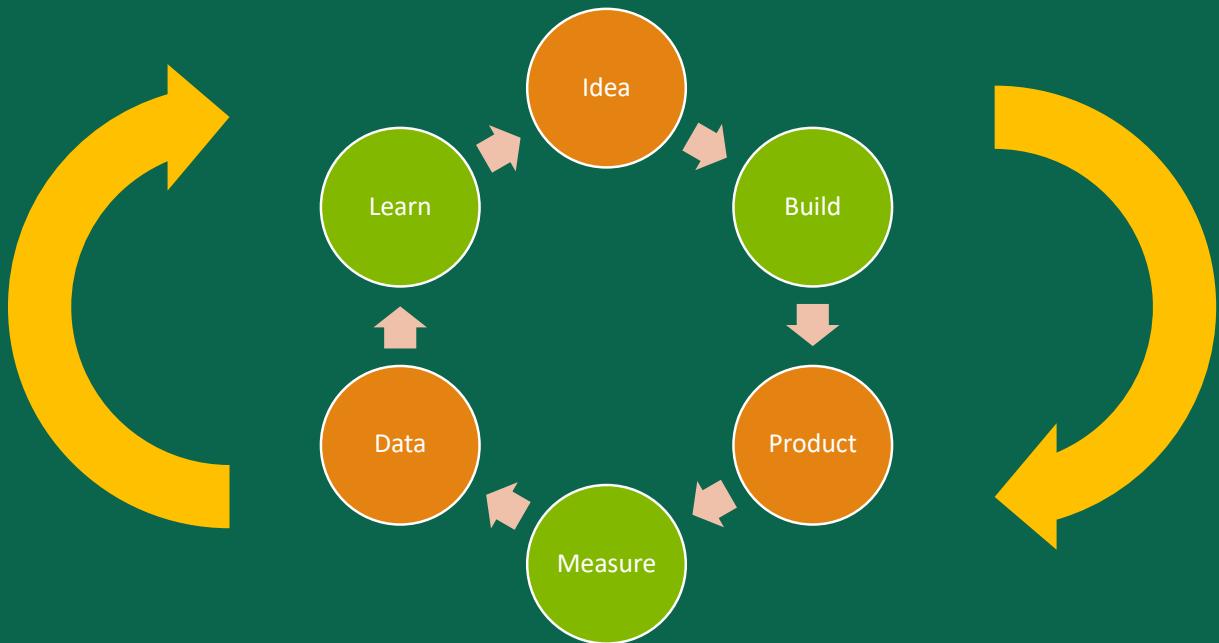


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Accelerate



Grow & adapt

- Make sure the paid acquisition is not higher than the customer lifetime value.
- Eventually your business should grow faster than the build-measure-learn feedback can loop.

Traditional Business Model

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Market Research

- Largest risk factor: everything else is process or resource
- Who needs it?
 - Why?
 - What are they doing now?
 - How much is it worth to them?
 - How is it sold, or advertised?
 - Routes to market
 - Alliances
 - Branding
- Under served need
 - Competition
 - What other solutions?
- Sustainable or one-shot wonder?
- Growing market
 - Global potential



Market Research

- FAB: Features Advantages Benefits
 - Feature:
 - This program runs really quickly
 - Advantages:
 - Less waiting time
 - Uses less resources
 - Benefits:
 - Less frustration
 - You can get more done
 - Cheaper to run
- USPs: Unique Selling Points



Believable Plans

- Business Plan
- Development Plan
- Marketing plan
 - Adverts, mail shots, web-sites
- Sales Plans
 - Distribution, Direct Sales
- Quality Plans
- Financial Projections
 - Budget
 - o 60% IRR
 - Pay back financing in third year
 - Cash flow

Business Plan

- Business plan describes what you want to do
- KISS: Keep It Simple and Stupid!
- Write for the target audience



Writing the Business Plan

- 1. Executive Summary and funding requirement
- 2. Concept
- 3. The Market
 - 3.1 Global market size and need
 - 3.2 Sustainability
 - 3.3 Competition
 - 3.4 Marketing plans
- 4. The Team
 - 4.1 CEO
 - 4.2 CTO
 - 4.3 CFO
 - 4.4 VP Sales and Marketing

Writing the Plan

- 5. The technology and its IPR
- 6. Summary of plans
 - 6.1 Development plans
 - 6.1.1 Methodology
 - 6.1.2 Milestones
 - 6.2 Marketing
 - 6.3 Sales and distribution
 - 6.4 Quality and industry standards
- 7. Financials

Writing the Plan

- Appendices:
 - Financial model
 - Key staff
 - Letters of support
 - Correspondence re IPR
 - Full development plan
 - Full marketing and sales plan
 - Examples and brochures



Management

Management

- Goal setting
 - Overall direction
 - Measures of success
 - Strategy rather than tactics
- Culture lead
- Communication

Management Theories

- “7 people is a natural hunting group”
 - Company growth break points: 7, ~50, 350...
- Classical/Hierarchical
- Human Relations

Classical

- Formal and rational approach
- Focus on STRUCTURE of organisation
- Tasks reduced to simple elements ->boring and repetitive
- Assumptions that individuals primarily motivated by PAY

Management Tasks - Classic model

- Henri Fayon
 - Objectives
 - Forecasts
 - Planning
 - Organising
 - Directing
 - Co-ordinating
 - Controlling
 - Communicating

Management Tasks - Classic model

- F W Taylor
 - All knowledge should be recorded
 - Scientific selection and progressive development of workforce
 - Work for maximum output
- Frank and Lilian Gilbreth
 - Time and Motion study
 - Introduced rest periods
- Henry Gantt
 - Gantt Chart
 - replaced piece rate with day rate and bonus

Human Relations

- Consider individuals
 - social needs
 - motivation
 - behavoir
- Focus on WORK done

Theory X and Theory Y companies

- Mc Gregor
 - Theory X: traditional heirarchical structure
 - Stick
 - Autocratic
 - TheoryY: People oriented
 - Carrot
 - Participative

Theory X

- People don't want to work, they have to be made to do so
- People must be coerced, controlled, threatened
- Hierarchical structure, Defined roles, task oriented, little job flexibility
- Poor communication, status demarcations - "Them and us"
- Slow to change or adapt
- Traditional e.g. armed forces, smoke stack industry

Theory Y

- People want to work, but are prevented from doing so
- They will exercise self-control when committed to common objectives
- Accept and seek responsibility
- Flat management structure (e.g Matrix)
- Good communications, little status
- People oriented: Flexible work teams
- Adapts well to rapid change
- Most modern computer companies



Setting up: Legal aspects

Company Formation

- Legal entity
- Purchase:
 - Solicitor
 - Share conditions
- Company books
 - Minute book: initial resolutions
 - Appointment of Bankers, Auditors

Details

- Premises: Serviced offices/ Lease/ Purchase
- Phone
- Net
- Letterhead (with company number)
- Accounts and accounting system
- Purchasing system; Contracts
- Asset control
- Insurance
- Recruitment
- Furniture
- Equipment



Plans

- Budget
- Project Plan
- Quality Plan
- Marketing plan

Business Structures in Lebanon



| TYPE OF COMPANY | MINIMUM CAPITAL REQUIREMENT | NUMBER OF SHAREHOLDERS | APPLICABLE SECTORS | RESTRICTIONS ON FOREIGN PARTICIPATION |
|-----------------------------------|------------------------------|---------------------------|---|---------------------------------------|
| JOINT STOCK Company S.A.L | LBP 30 million or USD 20,000 | Minimum: 3 | All sectors | NO except for certain sectors |
| HOLDING Company | LBP 30 million or USD 20,000 | Minimum: 3 | Strictly defined by law | NO |
| OFFSHORE Company | LBP 30 million or USD 20,000 | Minimum: 3 | Strictly defined by law, except transaction in Lebanon, banking & insurance | NO |
| LIMITED LIABILITY Company S.A.R.L | LBP 5 million or USD 3,333 | Minimum: 3 Maximum: 20 | All sectors except for banking, finance, supplies & organized freight | NO except for certain sectors |
| BRANCH OF FOREIGN Company | None | N/A | All sectors | NO |
| REPRESENTATIVE Office | None | N/A | All sectors | NO |

Registration



- Lebanese Joint Stock Company (Société Anonyme Libanaise or s.a.l.)) is constituted amongst shareholders who are only liable to the extent of their contribution and who subscribe to negotiable instruments referred to as 'shares'
- Lebanese joint stock companies must necessarily have the Lebanese nationality, and must by all means establish their headquarters in Lebanon.
 - An association of funds contributed by three or more persons
 - Need a minimum capital of LL 30 million, which is equivalent to around \$20 k
 - Board of Directors must have at least three Lebanese members out of the maximum 12 allowed
 - The chairman/general manager should be Lebanese
 - Have the option to issue shares and bonds convertible into shares
 - No restrictions on foreign participation except for real-estate

Registration



- An Offshore Company is a special type of Joint Stock Company designed to be constituted in Lebanon but which operates only in the Lebanese free zone and/or outside the Lebanese territory.
 - Special case of Joint Stock Company
 - Operates in the Lebanese free zones or abroad, but is constituted in Lebanon
 - Does not require Lebanese Nationals as Board members and could be fully owned by non-Lebanese
 - Minimum capital can be denominated in foreign currency

Registration



- A Holding Company is a special type of Joint Stock Company that has a limited object and benefits from special tax treatment and other provisions.
 - Minimum initial capital is USD 20,000
 - Minimum number of shareholders is 3
 - Board of Directors can be entirely constituted of non-Lebanese
 - Exempted from taxes on profits and distribution of dividends
 - Minimum capital can be denominated in foreign currency

Registration



- A Limited Liability Company's (Société à responsabilité limitée or s.a.r.l.) partners have a limited liability, limited to the amount of their contribution to the company
 - Minimum initial capital of LBP 5,000,000, or USD 3,333
 - Partners (at least three) have a limited liability based on their contribution to the company
 - May not operate in the fields of insurance, economics, banking, finance, supplies, and organized freight
 - Does not have a governing Board
 - May not issue 'negotiable instruments'

Registration



- For a Foreign Commercial Company to operate in Lebanon it must register as a 'Branch' or 'Representative' office.
 - The Branch must have the same object as the mother company, and can engage in regular trade activities
 - The Representative Office is restricted and limited to the promotion of the head office's services and products

Corporate Tax

- Tax structures for joint stock and limited liability companies
 - 15% tax on corporate profit
 - 5% tax on profits received from the development or sale of real estate
 - A withholding tax at a rate of 10% is levied on all proceeds derived from movable capital assets generated in Lebanon
 - Distributed dividends, interest and income on shares
 - Directors' fees as well as amount payable to them from profits
 - Distribution of reserve or profits in form of additional shares or under any form

Shares and Share structure

- Shares govern the ownership of the company:
 - Distribution of control
 - Distribution of capital
 - Distribution of profits (dividend)
- Shareholders agreements
 - Pre-emption rights
 - Tag-along/Drag-along and anti-dilution clauses
- Taxation issues

Stock Option schemes

- Agreement to sell shares at fixed price
 - Part of remuneration package
 - Recruit and motivate key staff
- Relevant for high growth companies
 - In a large company problem to make scheme relevant to work done
 - Profit share schemes
 - Exit route
- Balance advantages to company and staff
 - Nominal (par) price
 - 4 year monthly accrual; 1 year cliff
 - Lock in as employee
- Tax implications

Other remunerations

- Profit share
- Commissions (paid when?)
- Pension scheme
- Car

IPR

- Intellectual Property Rights
 - Patent
 - Copyright
 - Trademark
 - URL
 - Design right
 - Registered Design
 - Database right
 - Trade secret
 - Plant breeders rights

Patents

- Absolute right to invention
- Bern Convention
- Expensive: need professional advise
 - Seperate jurisdictions
- Must be
 - Novel
 - reducable to hardware
- Provisional Patent:
 - low cost,
 - one-year,
 - can be challenged

Undesirability of Patents

- Expense
 - 3K first application
 - 10K grant
 - 100K International
 - 1M+ to defend
 - o Thermo nuclear stand-off
- Network effect
 - Bio vs tech
 - Utility increases with square of users
 - Standards
- Timescale
 - Moore's Law
- Untimely Publication
- Hard to administer
 - No large IPR collection has ever worked
 - o E.g NRDC, IBM, Gemstar, University
- Typically
 - Tech has many weak patents
 - Ways around
 - Bio-tech has strong patents
- Conclusions
 - Defensive rather than offensive for tech
 - Be very selective
 - Handy for bean counters, but suppress innovation

Trademarks

- Right to exclusive use of name or mark
 - classes of goods
 - Local jurisdiction
 - in USA use must be shown
- Company name does not imply trademark

Copyright

- Copying prohibited
 - but not re-invention
 - “clean-room” clones
 - Techniques: include nonsense signatures
- Self-declarative
 - Copyright <year> <Author>
 - library rights
 - Include statement of rights (e.g. backup)
- FAST

Internet and Copyright

- Overextension of Copyright
 - 70 years from death of Author (e.g. Mickey Mouse)
 - DRM etc
- “Fair Use” text only
 - “Deep linking” other than through the main page
 - Probably OK but
 - Germany Paperboy case,
 - US; Ticketmaster vs Microsoft
 - UK: Shetland Times vs Shetland Chronicle in the UK
 - “Direct Linking” eg directly linking in another's picture without permission
NOT OK
 - Search Engines
 - Still undecided; Kelly v. Arriba Soft Corporation
 - Implicit permission by omitting the NOINDEX tag

Internet Issues

- Legality of Encryption
 - Fight for your rights!
- Signatures and contracts
 - Jurisdiction
 - Audit trails
 - Liability
- Domain names
- “Fair use” and copies

Contracts

- Complex law
 - exchange of value
 - Fairness
- Signatures
 - Problem for Internet
 - TTP's, CA's
 - Trust and Liability
 - Signifying assent
 - But can you prove it?
 - Audit trails

Contracts

- *Making the contracts you want to make, and avoiding the commitments you don't want to accept*
- Mechanics
 - Offer and acceptance
 - Offers to treat
 - Writing and signature
 - Incorporating terms
 - Standards
 - Sale of Goods Act 1979
 - Supply of Goods and Services Act 1982
 - Implied terms
 - Limits
 - Unfair Contract Terms Act 1977
 - Unfair Terms in Consumer Contracts Regulations 1999 <<http://www.hmso.gov.uk/si/si1999/19992083.htm>>
 - One World?
 - Applicable law
 - Place of litigation
 - Enforcement of foreign judgments
 - Arbitration

Tort

- Avoiding infringement of the rights of others, and giving adequate notice to others of your rights that you may want to enforce
- Defamation
 - Derogatory statements you cannot prove true
 - o Linking to others= statements
- Negligence
 - Careless advice causing injury or (sometimes) loss
- Copyright
 - Making derivative work
 - Publishing others work (linking)
 - o Asserting your own claim: © Nicholas Bohm 2001
- Trademarks
 - Taking others reputation
 - Domain names, metatags, framing, inlining
 - Marking: ®, ™, narrative
- Patents
 - Novel non-obvious inventions
 - Scope differences US/UK/EU
 - Cost

Regulations

- Complying with regulations
 - So as to avoid penalties
 - So that your rights are enforceable
- Distance Selling
 - Consumer Protection (Distance Selling) Regulations 2000
 - o www.hmso.gov.uk/si/si2000/20002334.htm
 - o Detailed rules on content of "selling" web pages
- Data Protection
 - Data Protection Act 1998 <www.legislation.hmso.gov.uk/acts/acts1998/19980029.htm>
 - Information Commissioner: <www.dataprotection.gov.uk/>
 - o Need to register
 - o "Fairness" may require opt out
- Consumer Credit Act 1974
 - Formalities for credit agreements
 - o Cooling off period
 - Financial protections for cardholders
- Special cases
 - Share dealing, insurance, banking, gambling, prescription drugs, pornography, tobacco, alcohol, fireworks, guns, etc
 - Radio Spectrum Consumer protection (OE), HSE....
 - Value Added Tax (especially import & export)



"There go my people. I must follow them, for I am their leader." (M. Gandhi, quoting Alexandre Ledru-Rollin, (1848) "Eh! Je suis leur chef, il fallait bien les suivre")

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Strong management team

- You can't do it all by yourself
 - "Small" project >10 person-year
 - Team building
 - 1:3:10 rule
- Alliances
- Recruit experience
 - Financial Director
 - Sales & Marketing
- Training & experience
 - Merchant bank/Management Consultancy
 - MBA



Senior Team

| <i>Position</i> | <i>Job Description</i> |
|-----------------|--|
| Chair | Senior figure; Old wise head Experience and contacts; Major dispute resolution; part-time |
| CEO | Finding money; Investor relations; Style setting; Keeping the peace |
| CFO | Accounts etc. Office management; Administration, Legals, Quality control |
| CTO | Inventing new things; development |
| COO | Running the factory and distribution |
| VP Marketing | Deciding what and how to sell; pricing Marcoms; Market information |
| VP Sales | Selling; CRM. |

People

- Motivating factors
- Groups and Teams
- Ego
- Hiring and firing; Employment law
- Interviews
- Meeting techniques

Management

- Goal setting
 - Overall direction
 - Measures of success
 - Strategy rather than tactics
- Culture lead
- Communication

Management Theories

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 - Work for maximum output
- Frank and Lilian Gilbreth
 - Time and Motion study
 - Introduced rest periods
- Henry Gantt
 - Gantt Chart
 - replaced piece rate with day rate and bonus

Management Tasks - Classic model

- Henri Fayon
 - Objectives
 - Forecasts
 - Planning
 - Organising
 - Directing
 - Co-ordinating
 - Controlling
 - Communicating
- Mintzberg

Human Relations

- Consider individuals
 - social needs
 - motivation
 - behavoir
- Focus on WORK done

Theory X and Theory Y companies

- Mc Gregor
 - Theory X: traditional heirarchical structure
 - Stick
 - Autocratic
 - TheoryY: People oriented
 - Carrot
 - Participative

Theory X

- People don't want to work, they have to made to do so
- People must be coerced, controlled, threatened
- Hierarchical structure, Defined roles, task oriented, little job flexibility
- Poor communication, status demarcations - "Them and us"
- Slow to change or adapt
- Traditional e.g. armed forces, smoke stack industry

Theory Y

- People want to work, but are prevented from doing so
- They will exercise self-control when committed to common objectives
- Accept and seek responsibility
- Flat management structure (e.g Matrix)
- Good communications, little status
- People oriented: Flexible work teams
- Adapts well to rapid change
- Most modern computer companies

Theory Y

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Human Relations

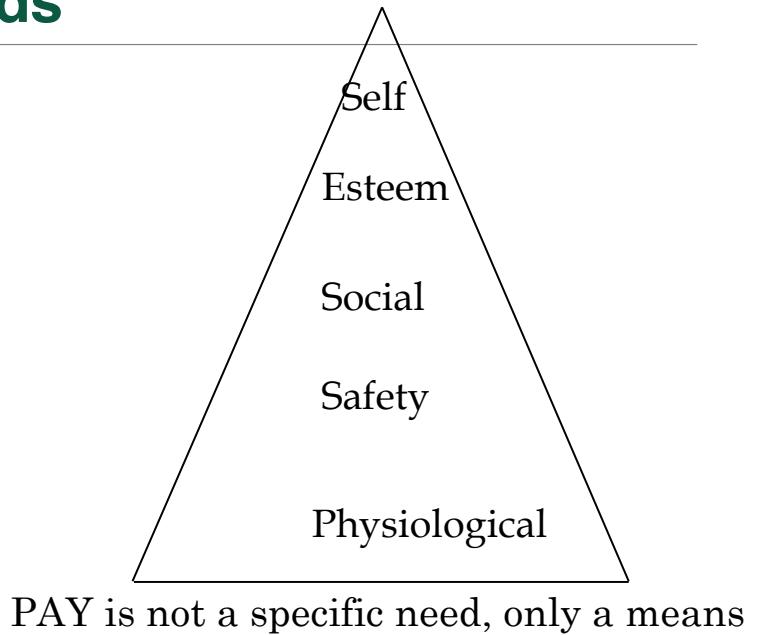
- Consider individuals
 - social needs
 - motivation
 - behaviour
- Focus on WORK done
- People are the key asset

Hierarchy of Needs

- Abraham Maslow
- Human needs arranged in levels
- As soon as lower level satisfied, the next level emerges and demands satisfaction
- Only unsatisfied needs motivate behaviour

Hierarchy of Needs

Growth
Realisation
Self Esteem
Recognition
Peer esteem
Belong, be accepted
Give and receive friendship
Protection from danger
Economic Security
Warmth
Food
Drink
Air



Groups and Teams

- Limit to project size an individual can tackle
- “7 people is a natural hunting group”
 - Company growth break points: 7, ~50, 350...
- Informal as well as formal communications

Groups

- Definable Membership
 - a collection of two or more people identifiable by name or type
- Group Consciousness
 - Members think of themselves as a group
 - Collective perception and identification
- Shared Purpose
 - Common tasks, goals or interests
- Interdependence
 - Need to help each other to accomplish the purposes for which they joined the group
- Interaction
 - Communicate with each other
 - React to each other

Work Types

- Chairperson
 - calm, controlled, self-confident
- Ideas person
 - individualistic, serious-minded, unorthodox
- Shaper/Starter
 - outgoing, dynamic, highly strung
- Company worker
 - predictable, dutiful, conservative
- Resource Investigator
 - extrovert, enthusiastic, curious, communicative
- Monitor/Evaluator
 - sober, unemotional, prudent
- Team builder
 - socially oriented, mild, sensitive
- Completer/Finisher
 - orderly, painstaking, conscientious, anxious

Stages in Group Development

- Forming
 - before individuals see themselves as a team
 - feels difficult, anxious, unsure
- Storming
 - challenge the leader
 - Hostility, aggression, emotions high
- Norming
 - organise tasks
 - co-operating, secure, comfortable
- Performing
 - work surges ahead, people perform well
 - openness, mutual trust and support, enthusiasm, inspiration

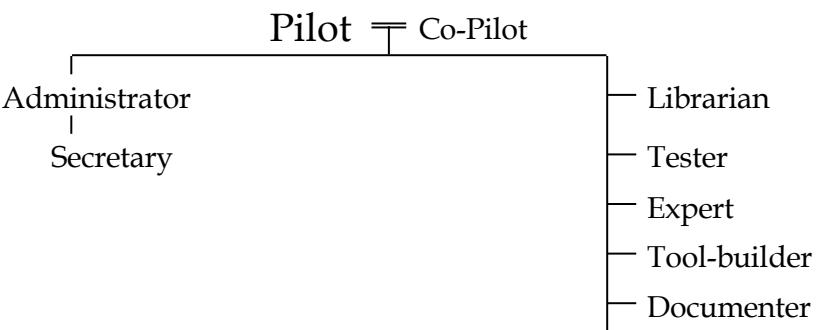
Ego-less programming

- Ego-less programming concept
- Culture
- It's OK to admit mistakes and ask for help

Networking

- Teams do not exist in a vacuum
 - Depend on help, co-operation with other teams to achieve objectives
- Pitfalls if they don't network
 - Inter-group hostility
 - Insularity and inward thinking
 - NIH factor

Chief Programmer Model



Hiring and firing

- Employment contract/Statement
 - Hours and holidays
 - Remuneration
 - Grievance procedure
- Firing:
 - 2 verbal, 2 written warnings - keep records
 - Redundancy

Non-discrimination

- Sex
 - harassment
- Race
 - Must show reason for non-nationals
 - work permit
- Disability
 - “Differently abled”

Recruitment

- Personal contact
- Advertisements
 - Net
- Agencies

Interviews

- Recruitment
- Appraisal
- Why
 - Learn more about candidate
 - Compare with job spec
 - Give candidate further information about the organisation
 - Encourage positive feeling about organisation
- Preparation
 - Who needs to know, or be present?
 - Who greets, refreshments, room, seating,
 - Questions and outline
 - Report form
 - Circulate papers

Conducting Interview

- Problems
 - Pre-conceived ideas
 - Only remembering last candidate
 - Eye conduct
- Discussion
 - Create rapport - smile
 - Summarise/reflect
 - Listen - don't talk
 - Tone
 - Body language

Interview

- Questions
 - Speed/pace
 - Open/closed
 - Situational
 - Probing
 - Stress- why?
- Close
 - Check plan - covered everything?
 - Any questions?
 - Explain next stage
 - Check still interested

Interview - after

- Make the decision
 - skills
 - Personal qualities
 - Best compared to rest
 - CV's
 - Check references
 - Check unexplained gaps
 - Check unusually short job duration
- Follow-up
 - Offer
 - Contract
 - Induction

Appraisals

- Purpose
 - Enable team members to get a clear idea of how they are doing
 - Identify where they might need support/training
 - Set objectives
 - Personal career/growth
- Form
 - Date, Name, Job title, Assessor
 - Self assessment
 - Assessor or line manager assessment
 - Key objectives
 - Development plan
 - Actions - jointly agreed
 - Follow-up

Interview

- 15 minutes to sell yourself
- Be yourself
- Enthusiasm, achievements
- Questions
 - What are the best and worst aspects the company?
 - Where will I be in 3 years time?

Communication skills

- Say it three times
- Not more than three major points
- What does the target audience know?



Project Planning and Management

Spring 2018

CSC 491: Professional Experience



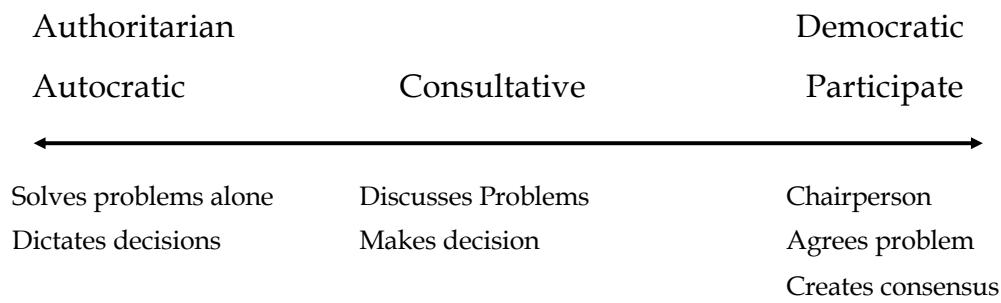
Project planning and management

- Role of a manager
- Charts and Critical Path Analysis
- Estimation Techniques
- Monitoring

Role of a manager

- Directs resources for the achievement of goals
- LEADER also provides
 - Vision
 - Inspiration
 - Rises above the usual
- No one right way to manage

Management Continuum



Managerial Roles

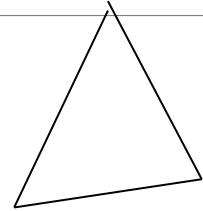
- Interpersonal
 - Figurehead
 - Leader
 - Liaison
- Informational Roles
 - Monitor
 - Disseminator
 - Spokesperson
- Decisional Roles
 - Entrepreneur
 - Resource Allocator
 - Disturbance Allocator
 - Negotiator

Qualities

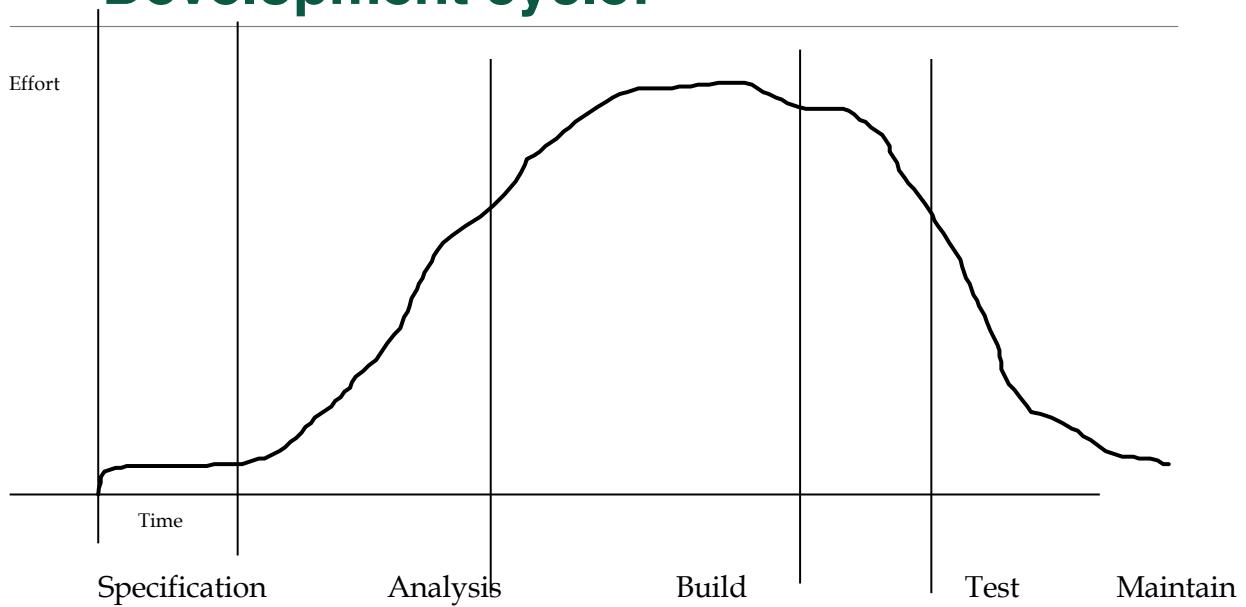
- Technical/Professional knowledge
- Organisational know-how
- Ability to grasp situation
- Ability to make decisions
- Ability to manage change
- Creative
- Mental flexibility - Learns from experience
- Pro-active
- Moral courage
- Resilience
- Social skills
- Self Knowledge

Variables

- Resource
- Time
- Function
- “ You can have any two of quick, good or cheap, but not all three”

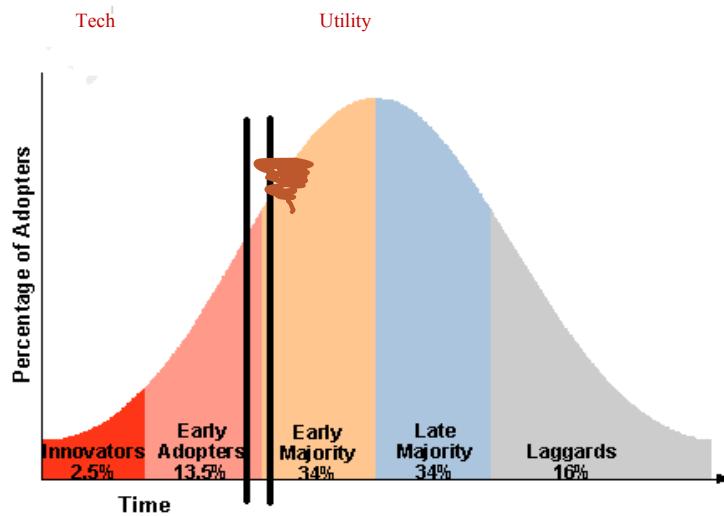


Development cycle:



Crossing the Chasm

- Geoffrey



Approaches and methodologies

- Top Down
 - Waterfall decomposition
- Bottom Up
 - meta machine
- Rapid Prototype
 - successive refinement
- Muddle through

Spiral Methodology

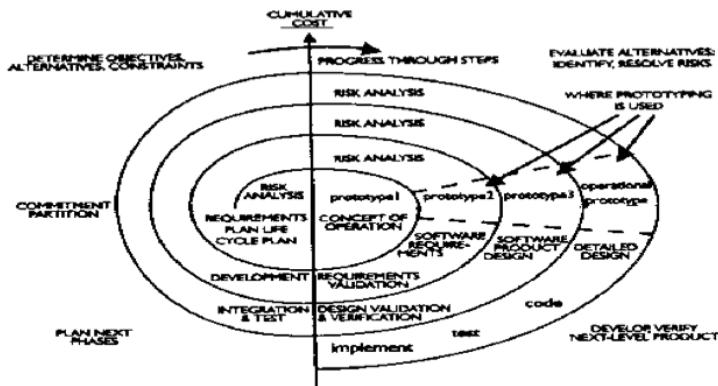


FIGURE 4: BOEHM SPIRAL MODEL (REPRINTED WITH PERMISSION FROM [10]).

| Phase | Deliverables |
|---|--|
| Envisioning – agreeing the overall direction and the contents of this phase | Vision/Scope document Risk assessment Project structure |
| Planning – design for this phase. | Functional specification Risk assessment Project schedule |
| Developing – the actual build | Frozen functional specification Risk management plan Source code and executables Performance support elements Test specification and test cases Master project plan and |
| Stabilising – test, debug, rework. | Golden project schedule Release notes Performance support elements |

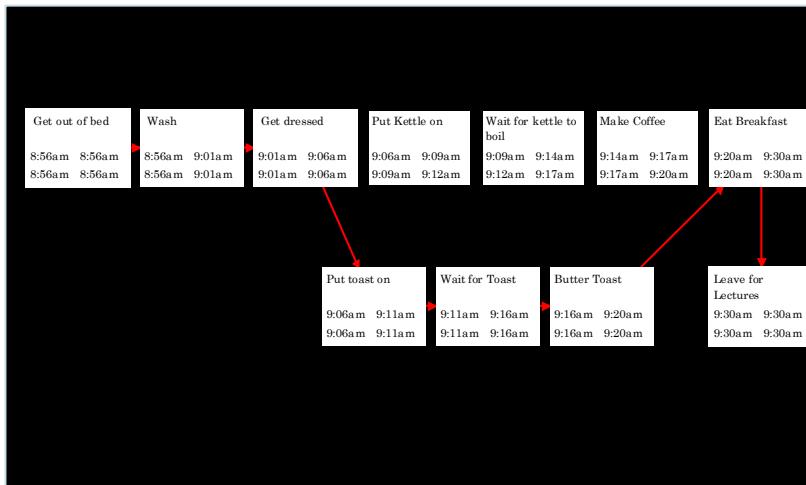
Pert and Gantt Charts

- Visual representation of project
- Microsoft Project

Example: Getting up in the morning

| Task | Duration (mins) |
|---------------------------|-----------------|
| 1 Alarm rings | 0 |
| 2. Wake Up | 3 |
| 3. Get out of bed | 5 |
| 4. Wash | 5 |
| 5. Get dressed | 5 |
| 6. Put kettle on | 2 |
| 7 Wait for kettle to boil | 5 |
| 8 Put toast on | 2 |
| 9 Wait for Toast | 3 |
| 10 Make coffee | 3 |
| 11 Butter Toast | 2 |
| 12 Eat Breakfast | 10 |
| 13 Leave for Lectures | 0 |

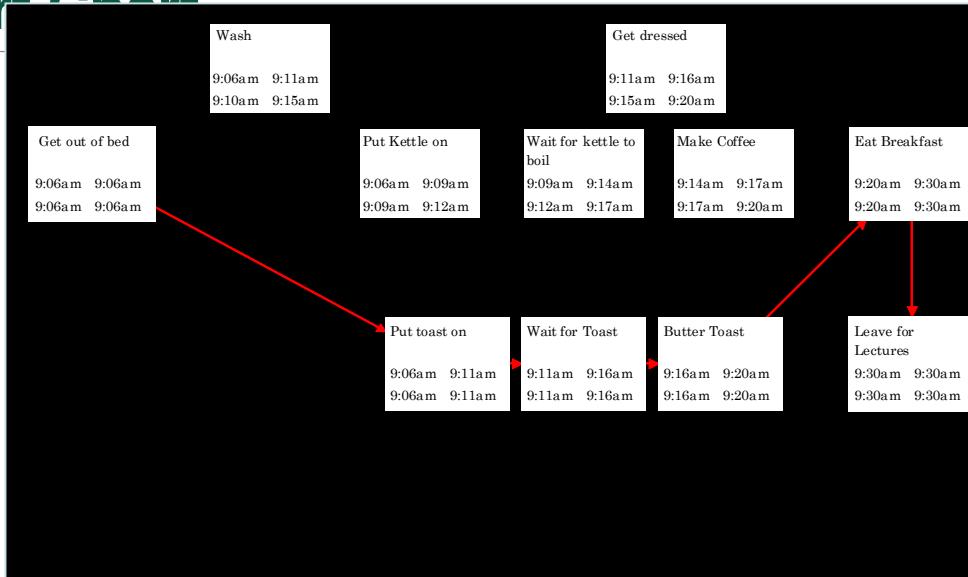
Pert Chart



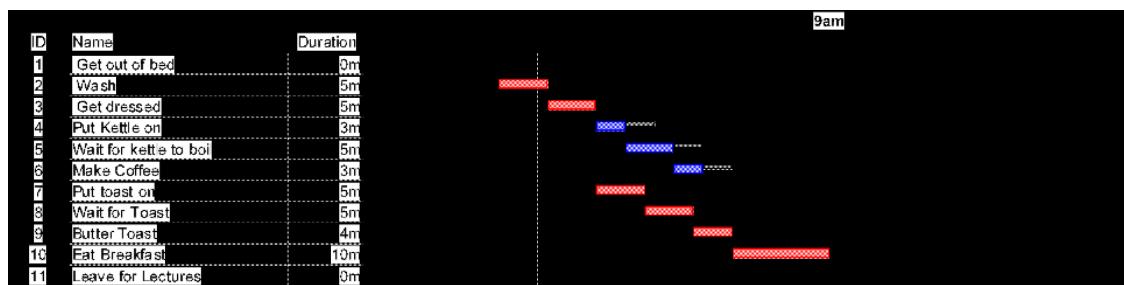
Critical Path Analysis

- Compute earliest and latest start/finish for each task
- The difference is the *slack*
- The Critical Path joins the tasks for which there is no slack
- Any delay in tasks on the critical path affects the whole project

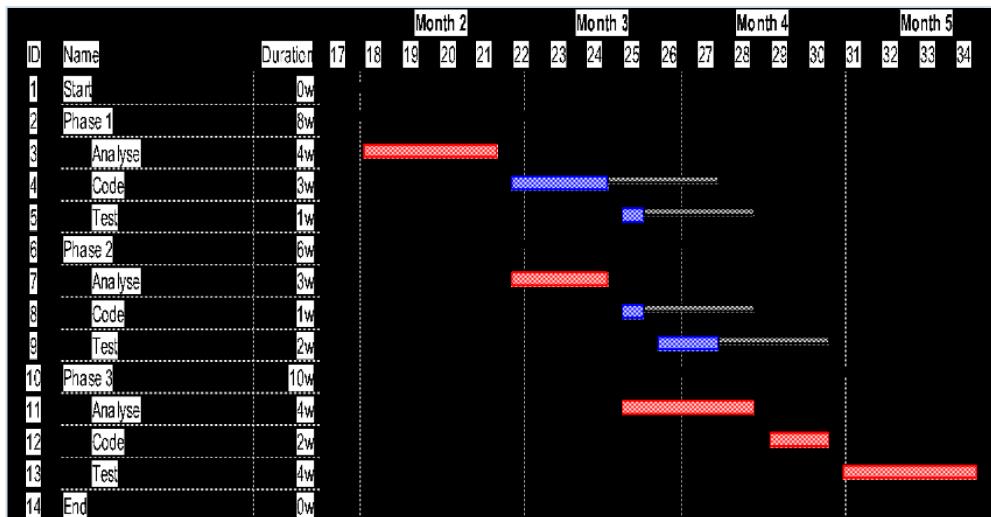
Pert Chart



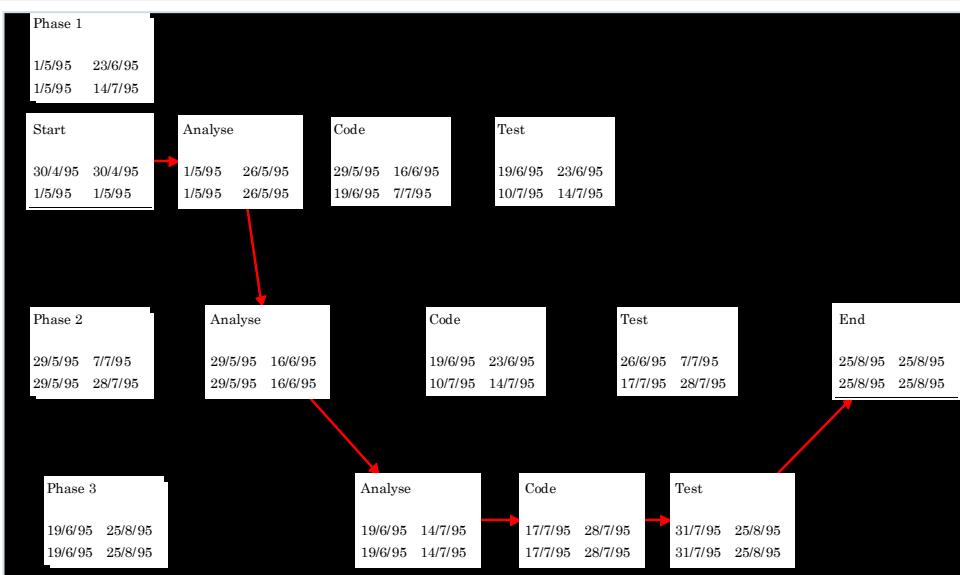
Gantt Chart

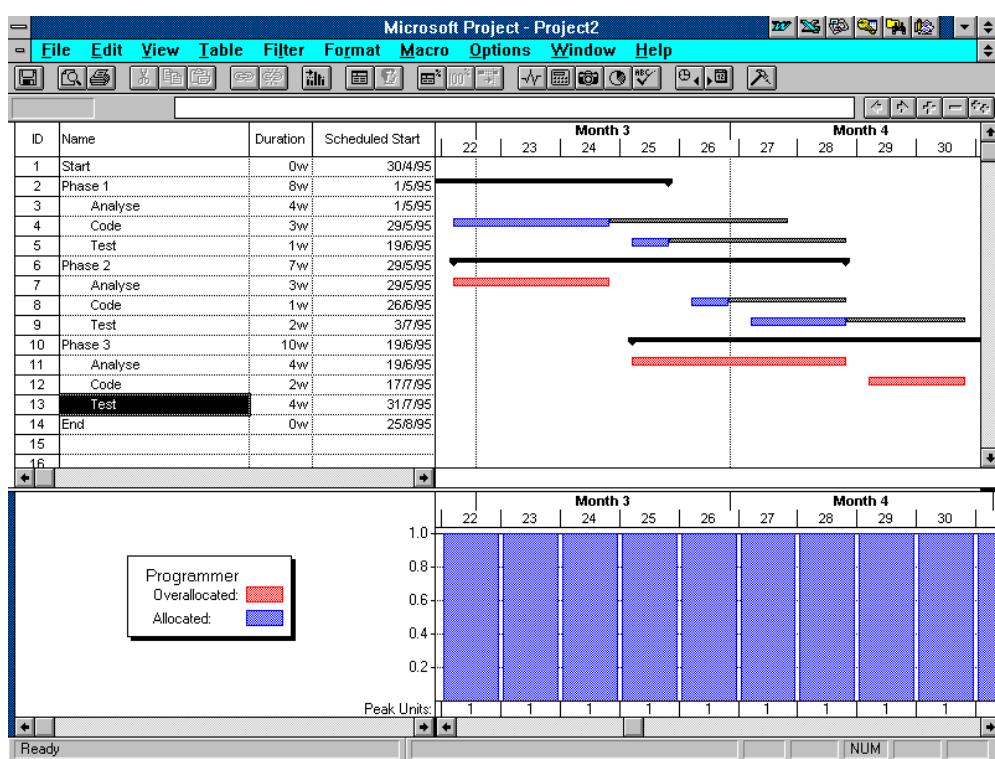
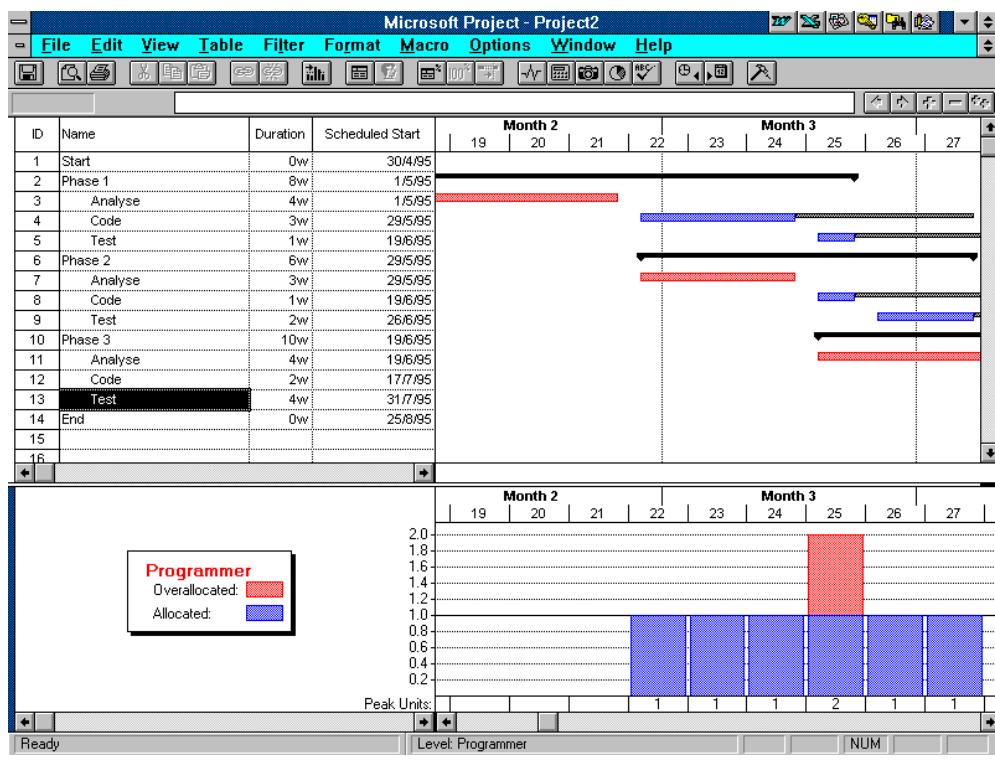


Example



Example Pert





Levelling

- Adjust tasks to match resources available
- Automatic systems available, but do not always give an optimum result
- Tasks may be delayed within slack without affecting project dates
- Otherwise consider extending project, or using more resource
- Adding resource to late project may cause RECURSIVE COLLAPSE
 - consider carefully whether the benefits outweigh the additional learning delays and overheads
- Derive costings

Estimation Techniques

- Experience
- Comparison with similar tasks
 - 20 lines of code/day
 - can vary by 2 orders of magnitude
- Decomposition
- Plan to throw one away
- 20 working days per month BUT 200 per year

Rules of Thumb

- Software projects:
 - estimate 10 x cost and 3 x time
- 1:3:10 rule
 - 1: cost of prototype
 - 3: cost of turning prototype into a product
 - 10: cost of sales and marketing
 - >>Product costs are dominated by cost of sales
- Hartree's Law
 - The time to completion of any project, as estimated by the project leader, is a constant (Hartree's constant) regardless of the state of the project
 - A project is 90% complete 90% of the time
- 80% Rule
 - Don't plan to use more than 80% of the available resources
 - o Memory, disc, cycles, programming resource....

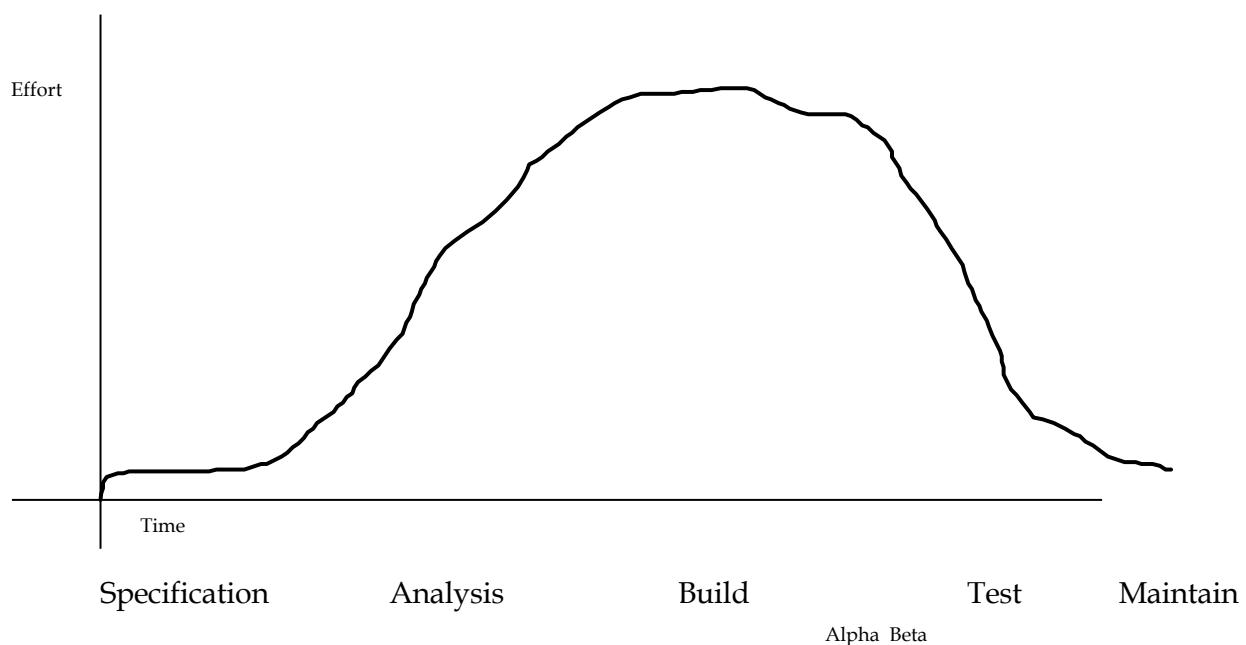
Cynic's Project Stages

- Enthusiasm
- Disillusionment
- Panic
- Persecution of the innocent
- Praise of the bystander

Quality, maintenance and documentation

- Development cycle
- Productisation
- Plan for quality
- Plan for maintenance;
- Plan for documentation:

Development cycle:



Productisation

- Generalisation
 - Does the product work on all target systems?
 - Hardware variants/constraints
 - O/S variants
 - Internationalisation
 - Language, number, date and time formats
- Documentation
 - Installation, User Guide, Reference Manual, Help texts, examples, training
 - System manual, maintenance documentation
 - Conformance
- Legals
 - IPR generated (Copyright, trademark)
 - IPR used
 - Licence, contract, liability

Productisation II

- Packaging
 - Artwork, Box, Deliverables
- Manufacture
 - Reproduction, Manual printing, Stocking
 - Distribution set-up
- Marketing Materials
 - Leaflets, brochures, advertisements
 - Text, Artwork, approvals
- Testing
 - Usability
 - Market
 - Standards approvals
- Maintenance
 - Organisation setup and training
 - Help desk - staff, facilities,, FAQs, training
 - Report forms, database and summaries

Plan for quality

- Cheaper in the long run
- Build-in from the start; can't be added later
- Board-level function
- “Good Practice”

Standards

- ISO 9000/BS 5750
 - Traceability
- BS 7799
 - Information Management and Security
- Internal standards

Control and review

- Record key decisions
- Control key documents
- Control versions and deliverables
- Define standards
 - Coding standards
 - Naming conventions
 - Routine structure
 - Testing
 - Documentation standards
 - House style
 - Conventions and examples
- Review and Audit

Key Documents

- Project Definition
 - User Requirement Document
 - Project Constraints Document
- Base definition
 - Functional Specification or prototype
 - Top Level design
- Control
 - Project Plan
 - Project Log
 - Quality Plan
 - Document Plan

Detailed Controlled Documents

- Sub-system specs and interfaces
- Data model and dictionary
- Module specs and interface
- Released code and documentation

Monitoring:

- Early warning of impending disaster
 - Time to do something about it
 - Avoid unpleasant surprises
- Culture:
 - Communication
 - Internal
 - With client
 - OK to ask for help
 - Requests taken seriously
- Milestones
 - Roughly one every 1-2 weeks
- Review meetings
 - Weekly

Meetings

- Keep it short
 - meetings are expensive
- Circulate agenda and papers BEFORE
- Start on time
- Purpose and structure
- Finish on time
- 1 page minutes

Brain-storming

- Problem solving
- Purpose
- List ideas/topics, no matter how crazy
- Vote
- Work on top three
 - break up into subgroups
- Report

Agenda

- Typical Board meeting
- Place for decisions, not discussion
 - CALL TO ORDER
 - Attendance
 - Minutes
 - Matters arising
 - STATUTORY BUSINESS
 - REPORTS
 - Financial Report
 - Business Development
 - Personnel
 - Shareholder's Issues
 - AOB
 - DATE OF NEXT MEETING

SWOT

- Strengths
- Weaknesses
- Opportunities
- Threats

ACCTO

- Criteria for customer acceptance
 - Everett Rogers "The Diffusion of Innovation"
 - 80% of new product failures are due to new customer acceptance
- A - relative Advantage
 - competitive advantage over existing products
- C - Complexity
 - Can I understand it
- C -Compatibility
- T -Trialability
 - Can I test it without risk first?
- O - Observability
 - Can I see the benefits?

Testing

- Test plan
- Test suite
 - Base functionality
 - Specific bugs
 - Performance
 - Correct failure
 - re-run the entire suite each time
- Bug reports and database
- Action plan for fixes
 - Prioritisation

Plan for maintenance

- The relationship goes on
 - Revenue stream
 - 12% p.a
 - Future sales channel
- Levels
- Help desk
- Internal documentation
- Record keeping

Plan for documentation:

- 10 x the coding effort
- Specialist skill
- Levels of documents
 - User
 - Training
 - System
 - Maintenance
- Avoid forward references!
- Conformance

Marketing and Selling:

- Sales and marketing are different
- Basic economics
- Marketing; Channels ; Market Communications
- Stages in Selling
- Control and Commissions

Sales and marketing are different

- Marketing: What and how to sell
- Selling: moving the product
- Relationship management

Marketing

- What?
 - Product characteristics - ACCTO
 - Price sensitivity
- Market Characteristics
 - Size
 - Defensible
 - Sustainable
- How?
 - Channels
- Inform
 - Routes

Product or Service Requirements

- Know about it
- Opportunity to purchase
 - shelf space
- Satisfy a real or perceived need
- Affordable (but not too cheap)

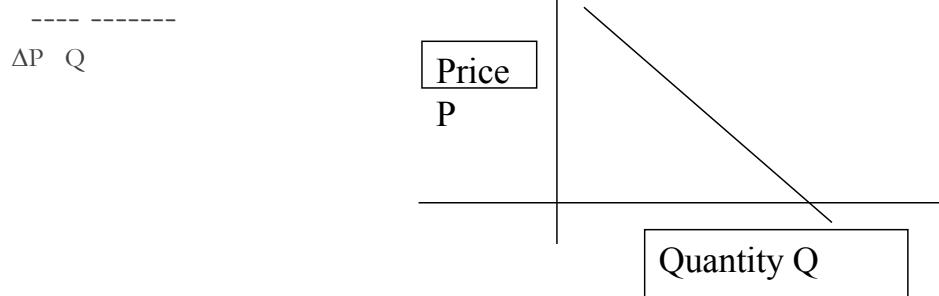
A brief introduction to market analysis

- Desk research
 - Existing market or solutions
 - Competition, actual and potential
 - Demographics
- Market surveys
 - Qualitative
 - groups, usability testing
 - Quantitative
 - Surveys, test marketing
- Distribution channels
- Market Communications

Basic Economics I

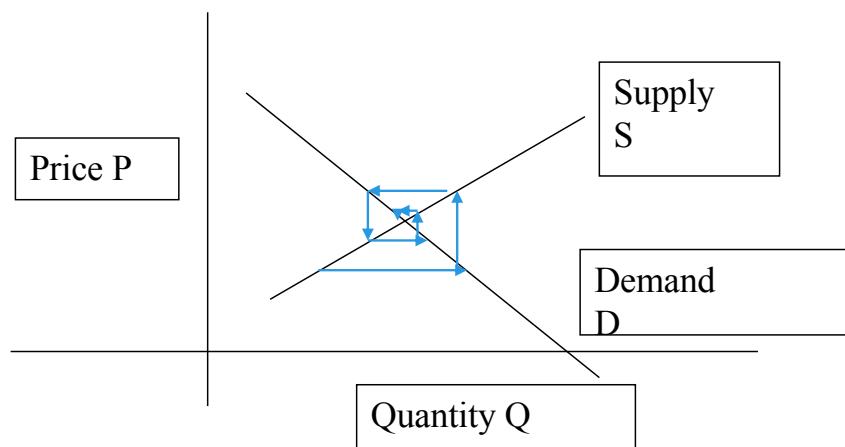
- Demand curve: Price depends on volume

$$\text{Elasticity } e = -\frac{\Delta P}{P} \cdot \frac{\Delta Q}{Q}$$

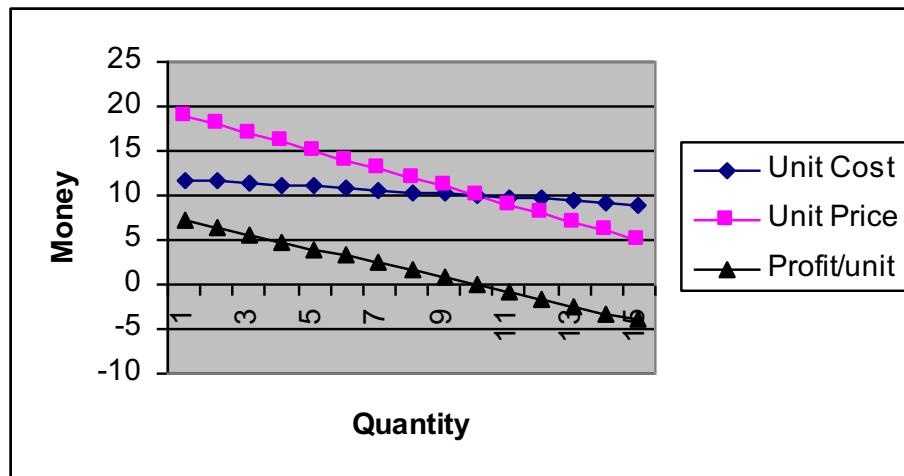


Supply Curve

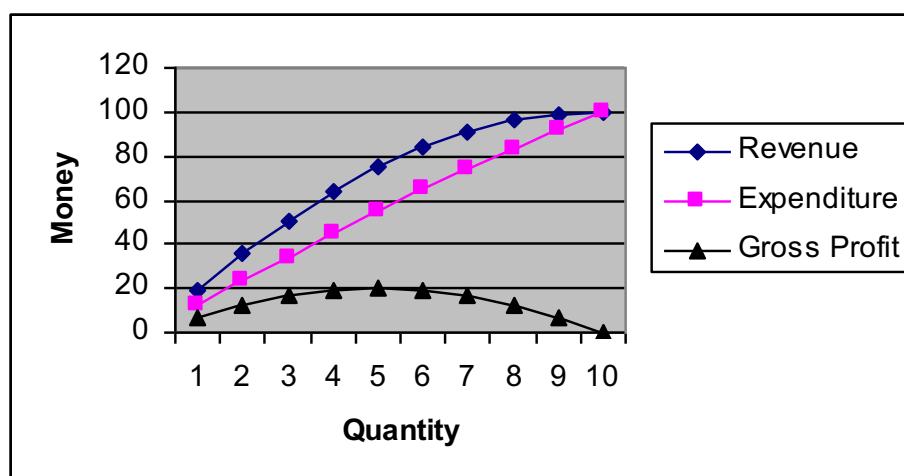
- Stable point is at intersection (Spider diagram)



Cost of Production



Gross Profit



Channels

- Direct Sales
- Distributor/Retailer
 - Distributors are your customers
 - National
 - International
- Choose carefully -
 - changing is expensive and difficult
 - Key sales
 - Opinion formers

Direct sales

- Bespoke -
 - sales staff/ Customer relationship manager
 - cash flow
- Mail order requirements
 - Product
 - Guarantees
 - Stocking
 - Support
 - Key accounts
 - Market communications

Distribution Channel

- Typical product
 - 40% manufacturer
 - o development, materials, overheads, profit, research
 - 30% distributor
 - o Advertising, stocking, profit
 - 30% retailer
 - o Local adverts, shop front, staff, profit
 - International
 - Localisation
 - Country agent
 - o control/performance
 - Trade fairs
 - o DTI outward bound missions
 - o Embassy



Ballpark pricing



Market Communications

- Targeting
- Advertising
 - Image
 - Message
 - Sales - MOP
 - General - Newspapers, TV
 - Specific - Trade press, specialist magazines
- PR
- Direct mail
 - List brokers
 - 1-2% response
 - Control and record-keeping

Exhibitions

- Expensive, hard work
- Make it obvious
- Place for meetings, not cold sales
- Preparation
 - Stand
 - Exhibits
 - Manual
 - Travel and accommodation
- Be attentive
- Follow-up
 - Timeliness

Sales techniques: listen to the customer

- Needs
- Concerns
- Authority

Stages in Selling

- Prospecting
- Pre-approach
- Approach
- Survey
- Proposal
- Demonstration
- Close
- Service

Prospecting

- Locating the most likely buyers
 - Cold calling
 - Directors Guides, Yearbooks
 - Local council offices, Chambers of Commerce
 - Institutional meetings
 - Qualified Prospects
 - Marketing response: Advertising, PR, Mailings
 - Service organisation, exhibitions
- How many?
 - 10% result in a sale
 - Maybe 2 calls per day

Pre-approach

- Research
 - Who are the decision makers?
 - What is the management structure?
 - What are their concerns?
- Preparation
 - Presentation
 - Visiting cards, brochures

Approach

- Listen, establish mutual ground
- Contact building
- Generalities

Survey

- Needs, requirements
- Constraints
- Budget
- Structure, contacts, decision points
- Timescale

Proposal

- Sell the benefits to the customer
 - F.A.B
 - U.S.Ps
 - Price is not an issue; value is
 - Lifetime cost
 - Service, reliability, reputation
- Sales proposal
 - Introduction
 - Objectives
 - Recommendations
 - Benefits
 - Financial Justification
 - Warranty and service
 - Company Background
 - Price and conditions
- Follow-up

Demonstration

- Objectives
- Administration
 - Who, where, maps, car parking, accommodation
 - Greeting, seating
 - Catering: coffee, lunch or sandwiches
- Script
 - Rehearse, and stick to the script
 - Points to emphasise, or not
- Sum up
- Agree follow-up

Close

- Small step at a time
- Advantages
- Customers concerns
 - hidden agenda
- Kicker
 - Discount, limited offer

Service

- Relationship management
 - communications
 - contact point
 - Regular liaison
 - early warnings
- Spec changes and the consequences
- Meeting milestones

Planning and Records

▪ Graded Prospect List

| Company Name Action | Address | Phone | Contact Fax | Name | Decision Makers | Potential % | Previous Contact Date Who Action | Next Contact Date Who |
|---------------------------|---------|-------|----------------|------|-----------------|-------------|-------------------------------------|--------------------------|
|---------------------------|---------|-------|----------------|------|-----------------|-------------|-------------------------------------|--------------------------|

▪ Sales Forecasts

| Company | Amount | -----Time Analysis----- | Product Analysis | Comments |
|---------|--------|-------------------------|------------------|----------|
| | | Q1 Q2 Q3 Q4 | | |

- Call analysis
- Sales Cost analysis

Control and Commissions

- Control
 - Sales organisation structure
 - By product
 - Geographical
 - By channel, key account
- Measurement
 - Cost per sale
 - Response rate
 - Timeliness
 - Individual measures, targets
- Commission
 - Don't stint
 - Basic salary
 - Pay on delivery, or payment

8. Growth and Exit routes

- New markets: horizontal and vertical expansion
- Problems of growth; second system effects
- Communication
- Exit routes: acquisition, floatation, MBO or liquidation.
- Places to look for new enterprises
- Conclusion: now you do it!

New markets

- Horizontal
 - Similar products or services
 - New Customers
 - Geographical/Export
 - New application area
 - New pricing
- Vertical
 - New products or services
 - Similar customers
 - New model
 - Vertical integration

Problems of growth

- Communication
- Control and Monitoring
- Structural change; different skills, people
- Formalisation
- Cash
- Second system effects

Communication

- Formal channels
- Charters
- Newsletters
- Company meetings and informal events
- Needs conscious effort: company culture

Management structures

- Groups and sub-groups
- Charters
- Reporting structures

Exit routes

- Acquisition
 - Trade sale
- Floatation
 - Sell to the public
- MBO
 - Sell to the staff
- Liquidation
 - Sell the assets

Acquisition

- Natural process
 - Wildflower model
 - Forced sale
- Marriage
 - Doesn't happen quickly
- Courtship
 - Selling the company as a product
 - Pre-nuptial relationship
 - Distributor/customer
 - JV
 - Competitor
- Tying the knot
 - Due diligence
- Clergy
 - Lawyers, Bankers, accountants
 - M&A
- Honeymoon
 - Learning to live together
 - Culture clash
 - Rationalisations
 - Lock-ins

How much is it worth? Valuation

- Asset value
- NPV of profitability
- DCF
- Probabilistic methods
 - Matrix
 - Black Scholes
- Paper vs Cash
- Lock-in periods

Floatation

- Sale of shares to the public
 - Primary market
 - Highly regulated
 - o Potential for fraud
 - o Expensive – about £1M minimum
 - o Get advise!
 - Underwriter
- Admittance to an exchange
 - o Listing: admitted to the Official List (UK: LSE)
 - Public trade shares between each other
 - Secondary market
 - Usually immediately following primary market
 - Market maker
- Primarily for raising capital
 - £5-£10m
 - Valuation for the company
 - Capital raising
 - Exit for founders and investors
 - o Lock-in

Management Buy-out

- MBO
 - Buy-out
 - Variants
- Easier to fund
 - Existing cash flow, staff, customers etc
 - Easier to value
- Mature company
 - New blood

Liquidation

- Voluntary
 - Stop trading
 - Asset sale
 - Not usually as valuable as going concern
 - Except for Asset Stripping opportunities
 - Distribute proceeds
- Compulsory
 - e.g failing to pay the taxman
 - Bankruptcy
 - Illegal to trade if insolvent
 - Receiver and Directors accountable to Creditors (not shareholders)
 - Half-way houses:
 - Bankruptcy (Insolvency) need not force liquidation
 - Administration (US Chapter 11)
 - Creditors arrangement – talk to them
 - Bank guarantees
 - Arrangement
 - Talk to them EARLY

Managing Traumatic Change

- Exits and M&A are traumatic times within the company. Change counsellors recognise four stages:
 - Denial
 - Need information: who, what, when
 - Anger
 - Needs sympathetic hearing
 - Safe environment
 - Resignation
 - Needs information and planning
 - Small steps, quick wins
 - Acceptance

Futures: some emerging areas for new computer businesses

- Pace of change: Factor of 2 every 2 years
- About 10 years from Lab to mass product
- We can predict the near future (10 years)
 - Futures: Processor performance
 - Comms: 100,000 bandwidth cost reduction
 - Multi media and moving pix; digital TV; 3-D models
 - 10 quad Ghz, 1000Gbyte disc, photo realistic moving graphics, video mail, 500Mb/sec WAN, world-wide knowledge base, silent
 - Home networks;
 - Wifi / WLAN – ubiquitous access

The Trillion Dollar Market

- Effect of electronic commerce
- Customer pull, not advertising push
- Merging of computing, entertainment, communications
 - Games now gross more than films

Internet Commerce

- Works for
 - Established Brands
 - Specialist goods
- 60% of accesses are to adult content
 - Driven factor: Hidden agendas
 - Communities of interest
 - Mostly male - men look at porn, women shop
 - Wide age range
- Don't believe the hype
 - Most internet ventures not profitable unless adjunct to existing business
 - Advertising model (mostly) doesn't work
 - Micro payments don't work

Predictions

- Microsoft/Intel will remain dominant
 - Other chip manufacturers will continue to struggle
 - UNIX will remain specialist
 - Java will be increasingly minority interest
- Internet/ WWW will dominate
 - AOL dead; Google vs Microsoft for control of the desktop
 - Migration to remote services
 - Software as service
- Differentiation
 - “Lean forward” or 3-foot experience
 - o Private
 - o e.g PC, phone, PDA,
 - “Lean back” or 10-foot experience
 - o Public
 - o Internet TV
 - o Passive Couch mouse; server pushed experience

More Predictions

- Game machines will become PC based
 - Continue to lead low-cost graphics technology
 - Networked
 - VR
 - X-box -> “Home Station”
- Video-on-demand specialist market only
 - Hotels, airplanes, BUT Internet TV widespread
- No new major applications
 - But see .NET

Watch Points - a personal list

- Internet and Digital TV
- Freenet (<http://freenet.sourceforge.net/>)
- Intelligent agents (e.g EPG)
- PDA's/ Cell phones - what personal systems we will all be carrying?
 - WAP
 - GPRS, 3G
- Voice recognition
 - Wristwatch systems
- Embedded and SoHo systems
 - Luxury cars now have more compute power on-board than the moon lander
 - Home networks