



Best of Strategy 2017

 CB INSIGHTS

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Amazon Strategy Teardown

Building New Business Pillars In AI, Next-Gen
Logistics, And Enterprise Cloud Apps



Seattle-based Amazon is doubling down on AWS and its AI assistant, Alexa. It's seeking to become the central provider for AI-as-a-service.

Amazon is the exception to nearly every rule in business. Rising from humble beginnings as a Seattle-based internet bookstore, Amazon has grown into a propulsive force in at least five different giant industries: retail, logistics, consumer technology, cloud computing, and most recently, media and entertainment. The company has had its share of missteps — the expensive Fire phone flop comes to mind — but is also rightly known for strokes of strategic genius that have put it ahead of competitors in promising new industries.

This was the case with the launch of cloud business AWS in the mid-2000s, and more recently the surprising consumer hit in the Echo device and its Alexa AI assistant. Today's Amazon is far more than just an "everything store," it's a leader in consumer-facing AI and enterprise cloud services. And its insatiable appetite for new markets mean competitors must always be on guard against its next moves.

As the biggest online retailer in America, the company accounts for 5% of all retail spending in America, and the company has been publicly traded for two decades. While its market capitalization has swelled recently, so too have expectations. Wall Street banks like Morgan Stanley expect Amazon to continue growing at a rate that no company its size has ever done before: 16% average compound growth in sales through 2025. If Amazon were able to satisfy the lofty goals, it would be "the most aggressive expansion of a giant company in the history of modern business."

Understanding the many-headed beast that is Amazon is no easy feat, especially because Amazon is far less transparent than its peers. As the Times has written, "It isn't just secretive, the way Apple is, but in a deeper sense, Jeff Bezos' e-commerce and cloud-storage giant is opaque. Amazon rarely explains either its near-term tactical aims or its long-term strategic vision. It values surprise."

By all accounts, Amazon is just getting started in newer initiatives like cloud services, artificial intelligence, and logistics. Given Amazon's enormous breadth, we won't be covering every aspect of its business. But some of the main takeaways from our analysis include:

- **Amazon's latest raft of acquisitions could indicate more hunger:** Amazon had a large uptick in M&A in Q1'17, buying Harvest.ai, a cybersecurity player; Do.com, a meeting productivity software; while also buying its way into a new geography with Souq.com, a Middle Eastern e-commerce site. This is out-of-character behavior given the company's generally more conservative M&A history and could mean Amazon is shifting to a more proactive stance to fuel its AI and enterprise ambitions.
- **Amazon's next pillar is likely to be AI:** In a letter to shareholders published in April 2017, Bezos wrote extensively about AI and machine learning as a focus of new company efforts to maintain relevance and its edge over the competition. Voice, virtual assistants, and natural language processing will continue to be a focus. But Amazon is also focused on AI-as-a-service and putting the basic tools of AI in the hands of its cloud computing and developer community. More than ever before, Amazon has aspirations to become a platform company.
- **Amazon's interest in GRAIL may foreshadow healthcare AI interest:** Its investment into GRAIL was a vote of confidence that genomics, with its massive data and processing needs, will be a major area for computing. Amazon's existing tools for big data and AI mean it's well positioned to enter the healthcare arena, where many AI startups are already proliferating.
- **Amazon's corporate venture arm, the Alexa Fund, has nurtured the developer and hardware ecosystem around Alexa as a universal AI assistant:** The Alexa platform offers SDKs which allow third-party developers to build skills for the AI assistant and other manufacturers of hardware to integrate the Alexa assistant into their products. The Alexa Fund's investments also point to new interfaces – like gesture controls championed by Thalmic Labs – as well as hardware category possibilities, like robotic companions, such as those developed by Embodied.
- **The company is also making more diversified investments into logistics, cloud apps, and media:** Amazon's recent forays into logistics and media foreshadow areas of new business interest. Amazon tends to invest mainly where it can make strategic partnerships. India-based Housejoy will help expand its reach in the region, and Twilio has partnerships with AWS.

- **Secretive R&D skunk work Lab126 is behind Amazon's recent consumer tech hits:** The secretive Silicon Valley-based R&D lab is behind hardware hits like the Echo and Kindle. And although it was also where the ill-fated Fire phone was developed, it is an under-appreciated example of Amazon's internal dedication to innovation.
- **Next-generation logistics is a centerpiece of Amazon's R&D:** Nearly 80 of Amazon's 2016 patents are focused on developing its logistics network, which is already far more than just a few years ago. Amazon also patents heavily for its cloud computing and cybersecurity efforts.
- **Amazon has also raised its profile in consumer goods and physical retail:** Amazon operates its own shoe lines and apparel brands, as well as consumer goods grouped under its Amazon Basics label. It has begun opening brick & mortar bookstores, and has launched its Amazon Go, check-out free, convenience store concept. It's conceivable that Amazon Go could become a licensable white-label solution for retail tech. Certainly, Amazon is putting more pressure on traditional retail than ever.

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Background

Jeff Bezos, the company's founder and long-time CEO, first hatched the idea for Amazon while working on Wall Street at the hedge fund and tech private equity group D. E. Shaw & Co. For a while, it was bootstrapped as an internet bookstore with Bezos' money along with contributions from friends and family. In 1995, Bezos raised nearly \$1M in small checks from 20+ local angels with a typical check size between \$30k and \$50k. Among those angels, Nick Hanauer, Eric Dillon, and Tom Alberg (of Madrona Venture Group) were brought on as company advisors. Finally, in 1996 Bezos sought outside investment from John Doerr of Kleiner Perkins Caufield & Byers. In Amazon's only round before IPO, KPCB invested \$8M at a \$60M valuation for a 13% stake. In 1997, Amazon went public at a \$381M valuation. Twenty years later, as of March 2017, its stock price is up 35,000%. Its market capitalization hovers around \$419B.

Over the past two decades, the Seattle-based company built an e-commerce-centric business that now appears to be at an inflection point. In a recent interview Bezos said Amazon rests on 3 pillars: Amazon Prime, which offers membership e-commerce bundled with elite digital media products; Amazon Web Services, which leads the tech pack in cloud computing; and Marketplace, its third-party seller business. Bezos has mentioned there are several new pillars in the works, but added "ask him in 10 years," on how they will pan out.

Amazon's newer, possibly "pillarable" initiatives — including the Alexa platform for voice-enabled apps or "skills" — are aligned with the core e-commerce business and are already beginning to pay dividends by enabling even more frictionless commerce. Amazon's customers can already order and purchase items directly through Alexa, and Prime members can access exclusive discounts and content through the platform.

In other words, success in the newer bets has cracked open new opportunities, but Amazon must defend and build on its new businesses. Amazon can only do so if it continues to innovate faster than rivals Apple, Google, Walmart, and Alibaba, among others. No one in big tech wants it to own e-commerce and the cloud like it does, and even its China-based e-commerce rivals are stealing from Amazon's playbook and unrolling competing cloud services.



AMAZON'S OPEN JOB LISTINGS

As of 4/11/2017



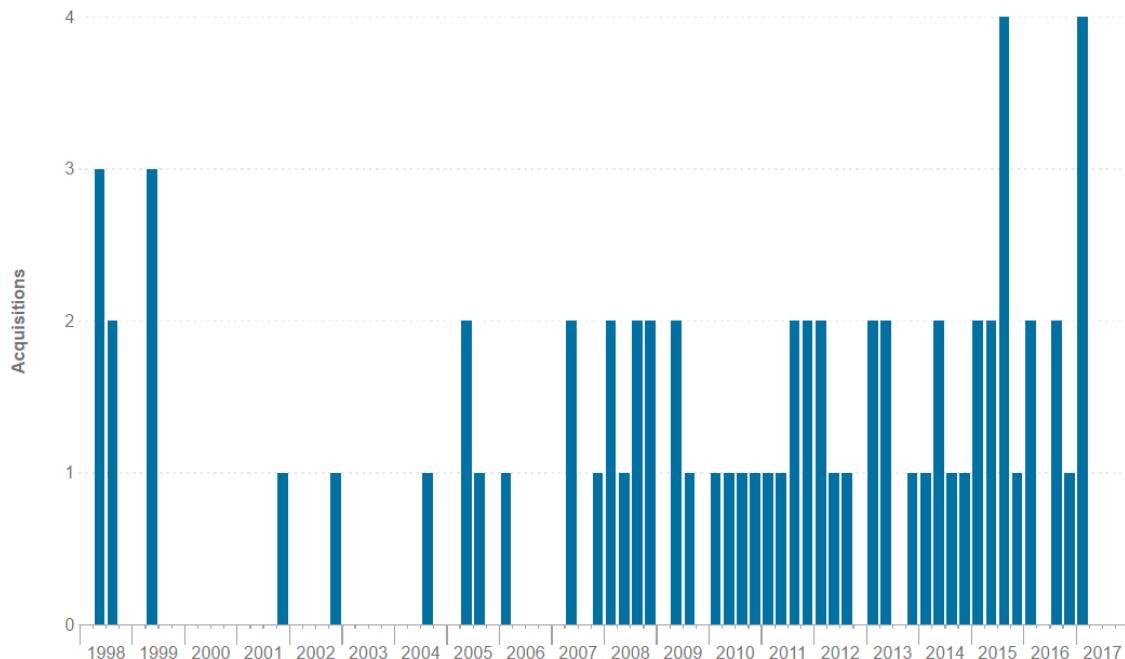
Clearly, AWS is the biggest area Amazon is scaling up with more than 5600 jobs, which translates to about 33% of all the open listings. Fulfillment & Operations was the next largest hiring area, representing about 19% of open positions. Some surprising cohorts were the Alexa Team, with more than 890 jobs, making Alexa nearly 5% of all Amazon's open positions. And the Amazon Devices team, which includes the recommendation algorithm team MAKO, also accounts for about 5% of job listings.

Acquisitions

Amazon has earned a reputation as a conservative M&A player, but the tide may be turning. Doing 4 deals in Q1'17, the company's acquisition tally matched a record quarterly high set in Q3'15, and outpaced activity in the previous two quarters. The sudden uptick in M&A is notable, given the company has rarely done more than 2 deals per quarter.

Amazon Acquisitions by Quarter

Q1 1998 - Q2 2017 (to date)



That said, Amazon's appetite for M&A appears to ebb and flow. Looking at the acquisition history by year, activity clearly cratered during the dot-com bust, then rebounded through 2015, and has fallen again in the past two years. In 2016, Amazon's M&A was on the downswing year-over-year, and according to the company's annual 10K filing, Amazon only spent \$103M on acquisitions, compared to \$862M in 2014 and \$690M in 2015.

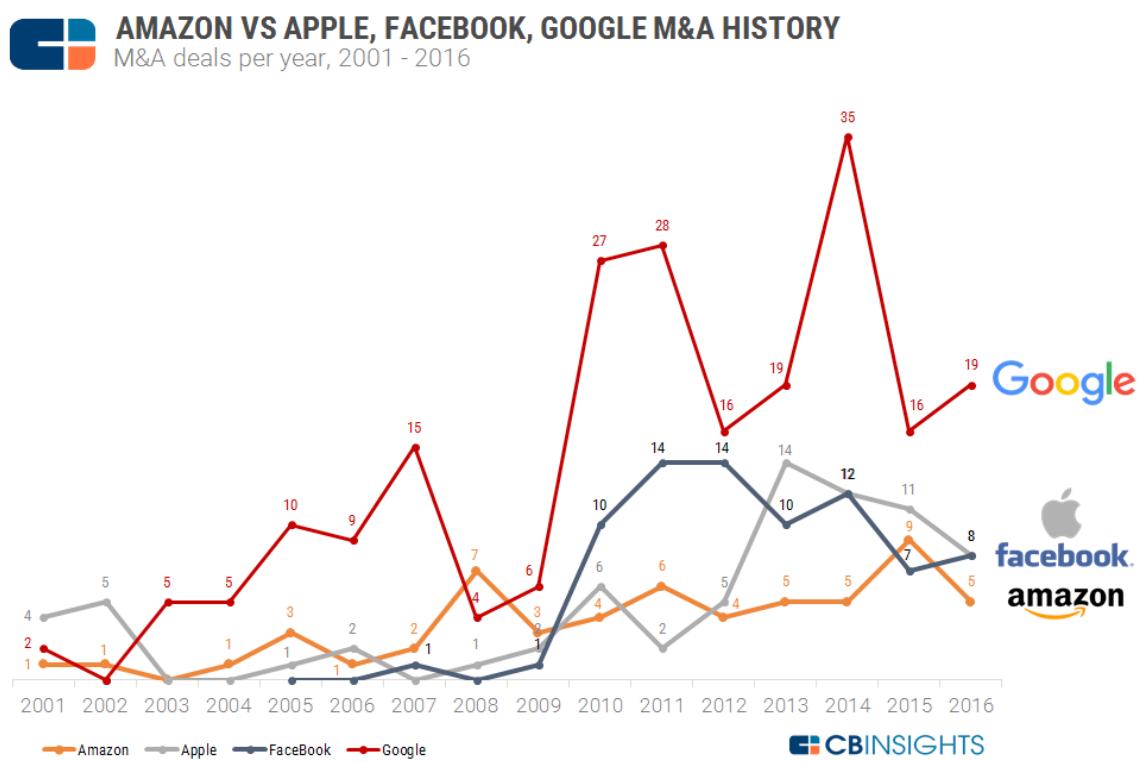
Amazon's lack of recent interest in high-flying, aka expensive, startups might be due to a culture of conservative investment. For example, Nat Burgess, a mergers-and-acquisitions specialist at TechStrat remarked that Amazon had a good business case for acquiring Twilio to strengthen AWS' offerings, but likely balked when Twilio went public at a valuation that was 16x revenue.

"Amazon is a conservative buyer. They think long term and they don't get seduced by high-flying valuations....

Amazon is unlikely to overpay for a high-flying, fully baked platform as the basis for the next dreamy business. They are more likely to fill gaps through smaller deals, which makes M&A less central to their strategy than it is to a company that expands to entirely new markets through acquisitions."

- Nate Burgess, M&A Specialist at TechStrat

The data back up the idea that Amazon historically moves more cautiously in the M&A arena. Compared to its tech giant peers, Amazon is less acquisitive and did only 5 deals in 2016. Apple, for reference, has recently done between 8 and 14 M&A deals per year. Facebook's activity, while trending downward more recently, once hit back-to-back years of 14 deals. Google is certainly an outlier in M&A activity, since it is particularly active, but in 2014 it did 35 deals where Amazon only did 5. Adding to that, it recently came to light that Amazon was mulling over a \$10.7B acquisition of Whole Foods, which would have immediately invigorated its push into groceries. The deal "would turn Amazon into a grocery giant overnight and help it sideline Instacart," but evidently Amazon shelved such a bold move, which would have been uncharacteristic for the company.



Some of Amazon's largest acquisitions appear to fit those four criteria. In the company history, its largest deals were shoe retailer Zappos (\$1.2B, 2009), e-sports streaming site Twitch (\$970M, 2014), and warehouse robotics maker Kiva Systems (\$775M, 2012). And, years later, these are still fast-growing, significant parts of the company. Much of the tech industry was skeptical when Amazon bought Twitch, but analyst Gene Munster expects the subsidiary to be worth \$20B and generating \$1B in revenue by 2020.

"A dreamy business offering has at least four characteristics. Customers love it, it can grow to very large size, it has strong returns on capital, and it's durable in time – with the potential to endure for decades. When you find one of these, don't just swipe right, get married."

- Jeff Bezos, Founder & CEO, Amazon

Additionally, Kiva's robots have helped cut operating expenses in fulfillment centers by 20%. While Zappos is still reeling from experiments with its org structure, it did manage to hit its 2015 profit goals, according to Fortune.

While Amazon's biggest-ticket M&A deals helped establish itself in new markets and technologies, undoubtedly the recent theme has been about fortifying AWS offerings. A number of Amazon's five 2016 acquisitions appear to reinforce its blossoming cloud services business: Italian startup NICE made software for technical computing, and Cloud9 IDE made a collaborative development platform. All of these help AWS cater to developers and become the go-to place for deploying code.

Amazon's M&A spree in 2017 echoes the same desire to bolster AWS, along with a newer desire to expand overseas. The expansion effort was exemplified by the recent acquisition of Souq.com, the so-called "Amazon of the Middle East" that was bought for somewhere between \$650M and \$750M. The massive purchase will allow Amazon to expand its e-commerce footprint into Egypt, Saudi Arabia, and the UAE. The deal comes at a time when Amazon's overseas efforts, particularly in Asia, are beset by intense competition.

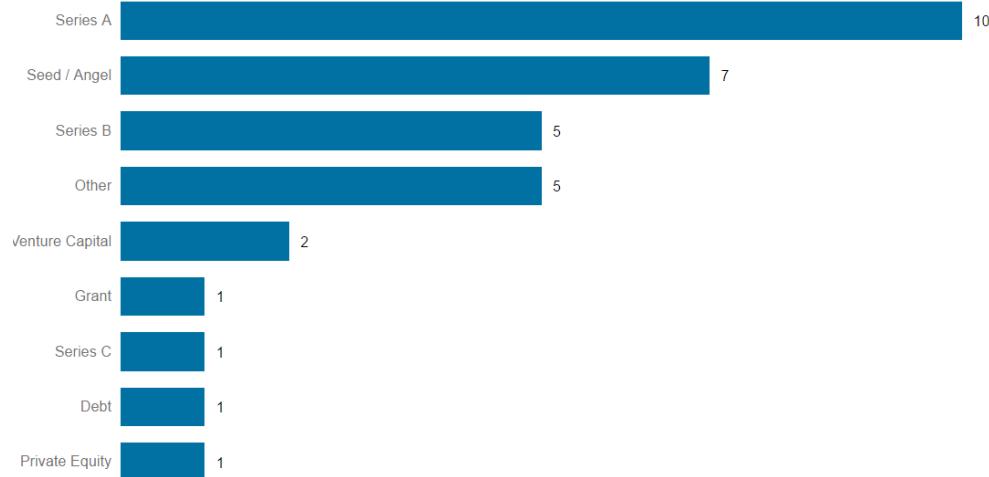
There is well-funded competition like Flipkart in India (which was launched by two former Amazon employees in 2007) along with the China-based giant Alibaba, which has been acquiring in other markets including Lazada in Southeast Asia. Amazon's competitors seem to be banding together to win certain markets, too. Flipkart recently raised \$1.4B from Tencent, eBay, and Microsoft, which all compete with Amazon in varying ways.

But the remainder of the Q1'17 deals fall into the purview of AWS. Cybersecurity startup Harvest.ai was likely bought to strengthen cloud offerings. Digital video, which makes up a lot of the data stored on AWS, has also been a focus with content creation toolmaker Thinkbox Software (which will build on video editing assets like Biba Systems). And it's been speculated that Amazon acquired enterprise meeting productivity tool Do.com to roll into AWS' new Chime initiative, which is a videoconferencing suite for business.

Since 2010, Amazon has favored buying early, acquiring 10 Series A stage companies, followed by seed/angel stage companies:

Amazon Acquisitions by Stage

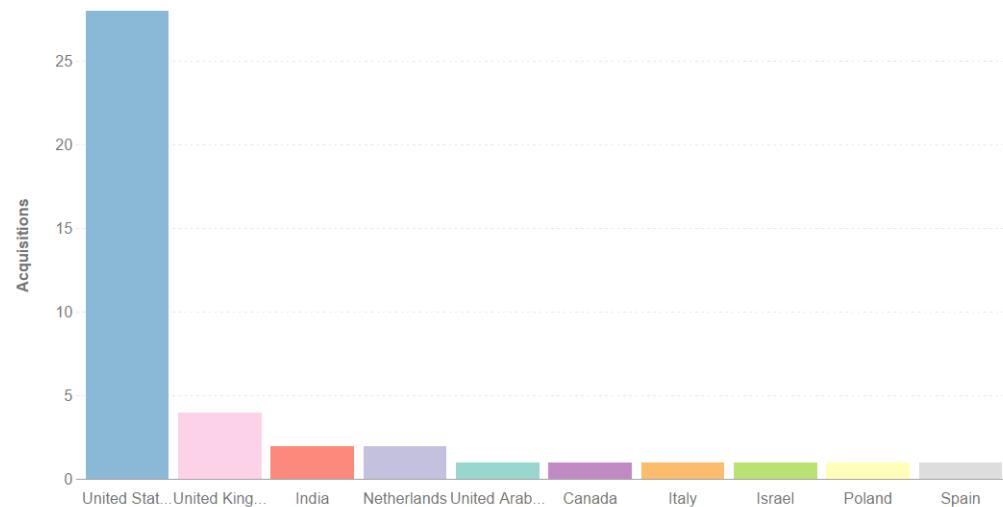
Q1 2010 - Q1 2017



It's also worth noting that Amazon's move in buying UAE-based Souq.com was a new area of geographic interest. Historically, almost all of the M&A deals have been to companies based in the US.

Amazon Acquisitions by Country

Q1 2010 - Q1 2017



In summary, Amazon mainly acquires value-adds to its main business pillars Prime, AWS, and Marketplace. There are some blockbuster deals to “dreamy businesses” that have scaled up well, but more often Amazon uses small, practical purchases to develop. After all, this is the same company whose CEO drove a Honda and proudly made new employees fashion desks out of doors as “a symbol of frugality and a way of thinking.”

Investments

When it comes to corporate venture, Amazon is beginning to get more active. As a fledgling internet company in the late 1990s, Amazon lost hundreds of millions investing in now-infamous dot-com startup failures such as Drugstore.com, Pets.com, and Kozmo.com, among a host of others (it reportedly lost \$60M on Kozmo alone). Narrowly evading death itself in the bust, the company would be licking its wounds for years and was decidedly inactive in investment until the late 2000s.

In more recent years, the focus has shifted to more forward-looking ventures across a number of industries spanning healthcare, voice, IoT, and communications platforms. The majority of these investments are thematically linked to its AWS ecosystem, which now encompasses voice, AI, development tools, and cloud computing.

In June 2015, Amazon committed \$100M to founding its first stand-alone corporate venture capital unit called Alexa Fund, which specifically invests in voice technology and IoT technology to bolster the ecosystem for its Alexa Voice Service. The Alexa Fund is relatively small (Google Ventures, for reference, started with a \$100M per year investment goal) and the fund was the 45th most active CVC in 2016, lagging far behind other tech giants’ CVC initiatives.

Here's a look at Amazon's investing frequency from both Amazon itself and the Alexa Fund:

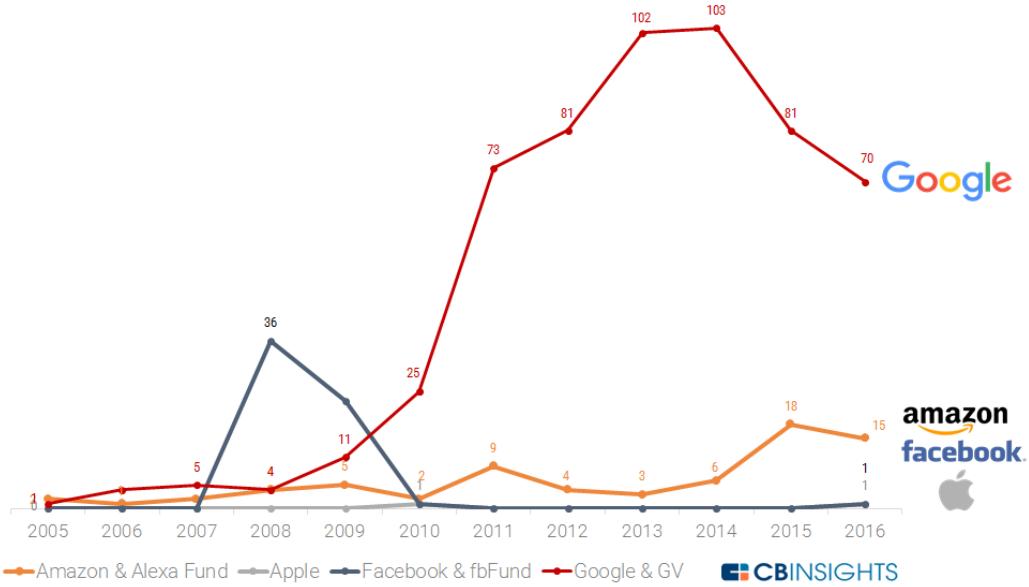


Mirroring much of the venture ecosystem in 2016, Amazon pulled back on dealmaking and made only 3 bets as a company and 12 bets from its Alexa Fund. Both entities did fewer deals than they had the previous year. Amazon's deal activity, excluding the Alexa Fund, remains on par with its numbers in the 1990s, back when the company was expanding as an internet bookstore.

Compare that level of activity to its tech competitors and Amazon falls somewhere in the middle. Google has made loads of bets, where Facebook and Apple hardly invest, opting instead to purchase companies outright or not invest at all.

AMAZON VS APPLE, FACEBOOK, GOOGLE FINANCING HISTORY

Corporate investments, 2005 - 2016



With the Alexa Fund propelling Amazon's investment effort, the company is showing a renewed interest in investing, and activity in the past two years is at its highest levels ever.

Alexa Fund

As Amazon makes its big foray into the AI world with its Alexa platform product, its corporate venture fund serves as a bellwether for its efforts to build the go-to platform for voice tech. The fund has existed for less than 2 years, and to-date (4/12/17) the fund has done 25 deals, 7 of which were announced with the fund's inception.

The Alexa Fund mostly does early-stage deals (seed & Series A), but has participated in Series B rounds to consumer IoT heavyweights Ecobee (home automation), Thalmic Labs (gestural computer controls), and Owlet Baby Care (baby monitors), along with a Series C deal to connected doorbell maker Ring. In one way or another, all these startups play into the smart home category which is a big use case for Alexa, or into new human-computer interaction models.

Here's a visualization of the fund's investment history:



The Alexa Fund has historically done just a deal or two per month, which, as previously mentioned, is well below the activity level of Google Ventures. Also, it is peculiar that there are no fund investments in 2017 so far. (Perhaps related is that in January 2017, Alexa Fund announced an all-new Alexa Accelerator in partnership with TechStars, one of the most active IoT accelerators.)

Alexa Fund investments: Nearly all Alexa Fund investments so far have a potential integration into Alexa's smart home voice controls. These include Rachio (connected sprinkler system), TrackR (small items finder), Nucleus (connected intercom system), Petnet (smart pet feeder), Musaic (connected speakers), and Scout Security (security camera). Investing here likely offers more strategic value in bringing these products closer into the Alexa ecosystem than a chance at serious returns.

A more forward-looking move might be detectable in Alexa's 2015 investment into Invoxia, which makes a magnetic kitchen device and was its first partner to use the Alexa Voice Service on third-party hardware (Lenovo and other hardware makers also now incorporate the Alexa platform). Other interesting bets have included Thalmic Labs whose Myo gesture tracking armband could add a new mode to control the Echo, along with DefinedCrowd, which supplies crowdsourced natural language processing (NLP) training data for 90% of world languages. (Presently, Alexa Voice Service only works in English.) Also interesting was the deal to Embodied, which is part of a new wave of social and educational robotic companions that are cropping up.

Alexa Fund's typical deal partners include familiar names from among the most active IoT investors such as Felicis Ventures and Intel Capital. Interestingly, the fund has shared a number of deals with Canadian early-stage firm Relay Ventures.

Finally, the Alexa Fund saw one exit with Orange Chef, which made a connected food scale. But the company was no home run and was essentially sold for parts to food discovery platform Yummly.

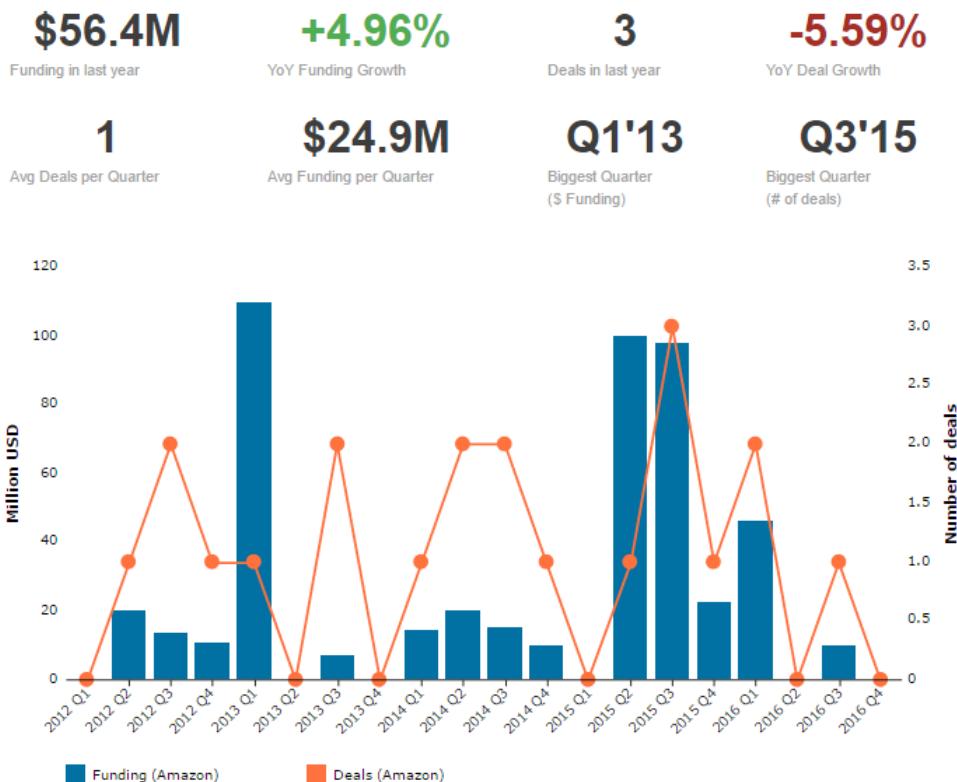


Amazon Corporate Investments

Investments coming from Amazon's corporate entity are relatively infrequent, which comes as somewhat of a surprise for a company that's stated strategy is to "experiment patiently, accept failures, plant seeds, protect saplings, and double down when you see customer delight." As we'll later explore, however, Amazon is beginning to make more diverse bets.

Amazon's already-sparse activity slowed in 2016. From 2015 to present, Amazon's stock has grown at 7 times the rate it did from 2013 to 2015. It may be counterintuitive that a company with such a recent meteoric rise in stock price would slow down its corporate venture efforts. Evidenced by the chart below, investment peaked in Q3'15, with 3 deals done. Since then, investments have trailed down.

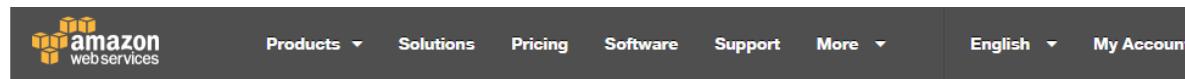
2 years 5 years



Despite the recent slowdown in activity, Amazon is putting capital behind a wider variety of industries. From 2011-2013, the company solely did deals to internet companies, whereas more recently, between 2014-2016, it has also invested in Media, Auto & Transport, and Mobile. This parallels some of Amazon's broader new business initiatives: investing in freight forwarder Yodel Delivery Network expands its logistics network and strategic knowledge in the UK, and AWS' developer community is bolstered with investment and partnership with now-public Twilio.



But perhaps the most intriguing new investment area for Amazon is in the Healthcare sector. The company recently invested in its first biotech startup with GRAIL, which focuses on genomics for cancer diagnosis. The deal marks interesting new territory for Amazon's investing appetite, and because genomic sequencing requires intensive computing power, GRAIL and genomics research and applications in general could parlay nicely into Amazon's existing AWS business. Not surprisingly, the homepage for AWS Health features gene sequencer Illumina, from which GRAIL spun out, as a customer success story.



Featured Customer Stories



Illumina uses AWS to power the platform its customers use for genomics analysis and storage.
[Learn more about Genomics on AWS »](#)



Bristol-Myers Squibb reduced the duration of a clinical trial by a year by using AWS.
[Discover Biotech and Pharma on AWS »](#)



Cleveland Clinic built a clinical AWS.
[Explore Healthcare Providers »](#)

Frequently, it seems that Amazon provides capital where it can also create a partnership. In 2015, it invested in cloud computing platform Acquia and India-based home services company HouseJoy. It now has partnerships with both. Twilio also has a partnership with AWS. And last year's investment in Ionic Security also mentioned a "collaboration" with AWS to create data protection infrastructure for regulated industries.

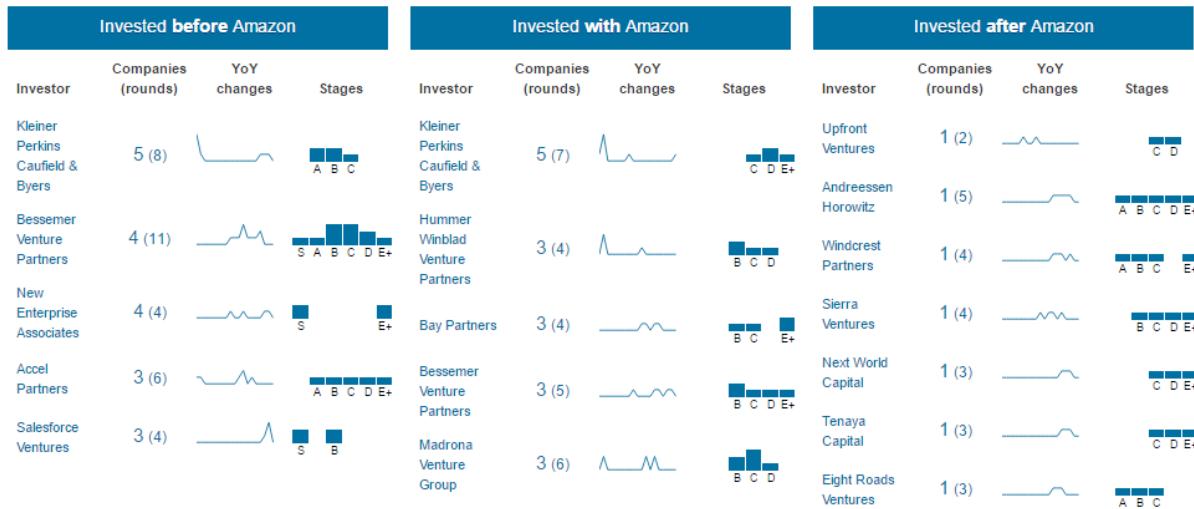
Some final interesting data slices: the Investor Analytics tab from CB Insights database shows how Amazon's corporate team heavily favors late-stage deals in the last 5 years. Most of the deals have fallen into the \$10M – \$25M range, and nearly one-third of deals have been at Series E+.

	Seed / Angel	Series A	Series B	Series C	Series D	Series E+
% of deals	7.14%	14.29%	14.29%	21.43%	14.29%	28.57%
Avg deal size	\$1.4M	\$3.48M	\$15.25M	\$27.62M	\$30M	\$65M
Median deal size	\$1.4M	\$3.48M	\$15.25M	\$12M	\$30M	\$65M
Deal growth (yoY)	-100%	N/A	N/A	-100%	N/A	-100%



Interestingly, Amazon has co-invested frequently with the same investment syndicate that helped the company launch as a young startup. As mentioned, Amazon originally raised from Kleiner Perkins Caufield & Byers and angel Tom Alberg of Madrona Venture Group, so it's worth noting that both firms and Amazon continued to do deals in the dot-com era.

Upfront Ventures, Andreessen Horowitz, and Windcrest Partners are top investors after Amazon makes bets.



Patents

Early on, Amazon's zealous use of intellectual property sparked some controversy. One of the company's early patents "Method and System for Placing a Purchase Order Via a Communication Network," perhaps best known by its trademarked name 1-Click, was granted in 1999. The patent is still used today in Amazon's online store, which, as the name implies, allows orders to be done in one click based on user data saved from previous orders. Notably, the 1-Click patent expires in 2017, and a number of e-commerce players, including Google, are already working on one-click browsers.



"Critics charged that the idea behind 1-Click was rudimentary and that its approval by the U.S. patent office was a symptom of lazy bureaucracy and a broken patent process. Bezos didn't altogether disagree—intellectually he was an advocate for patent reform—but he was determined to exploit the status quo for any possible advantage. He sued Barnes & Noble for infringing on the patent in late 1999 and won a preliminary ruling that forced the bookseller to add an extra step to its checkout process. Amazon licensed the patent to Apple in 2000 for an undisclosed sum and tried to use it, ineffectively, to gain some leverage over a rising and worrisome rival that first showed up on Amazon's radar in mid-1998: eBay."

[p. 77]

- Brad Stone, Author of "The Everything Store"

The 1-Click patent ended up being a central issue in Amazon's early life, and according to Brad Stone's book "The Everything Store," Amazon was aggressive in enforcing its IP.

Since the dot-com era, Amazon's patents have shifted and tracked Amazon's new business priorities. In recent years, Amazon has built a trove of patents, which we'll explore now in greater depth.

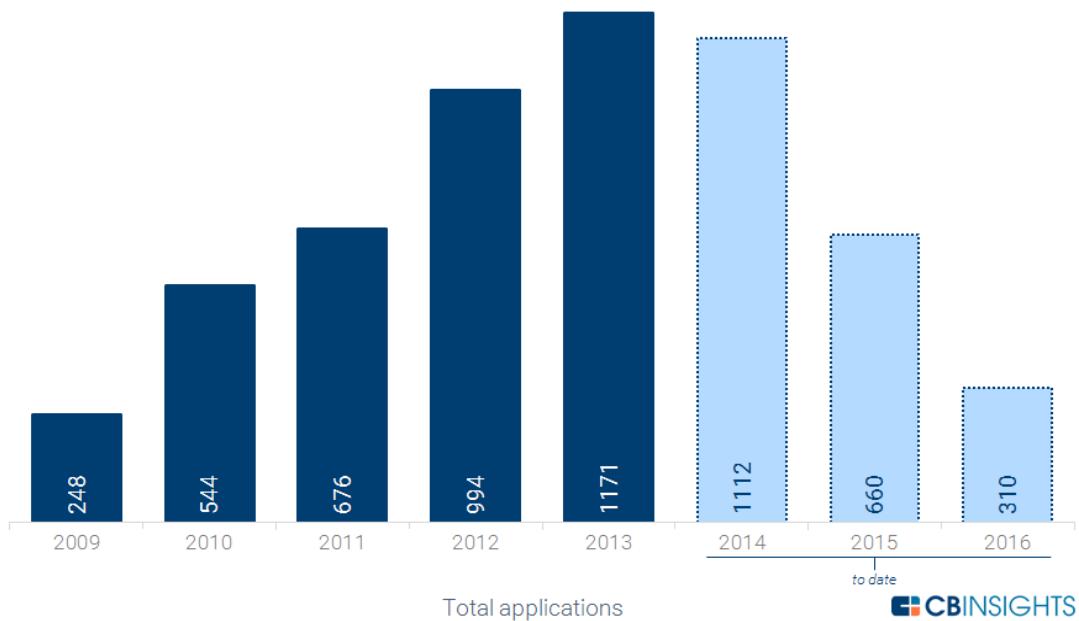
Note: This analysis comes with a few caveats, primarily that the patent filing process involves a significant time lag before the publishing of patent applications. This delay can range from several months to over two years. We also focused on Amazon proper for the purposes of this analysis, which would exclude patents absorbed through external acquisitions. Since the dot-com era, Amazon's patents have shifted and tracked Amazon's new business priorities. In recent years, Amazon has built a trove of patents, which we'll explore now in greater depth.

First, it's worth noting that in recent years Amazon has put more resources toward intellectual property efforts. From a modest 248 patents filed in 2009, only several years later in 2013 the company filed 1100+ patents. Again, though, compared to Google's patent efforts, Amazon is doing roughly one-third as many applications.



AMAZON OVERALL PATENT APPLICATION ACTIVITY

By date of application, 2009-2016



We also mined each year's applications to tease out recurring keywords from the patent abstracts, using a significance weighting scheme to surface words and phrases. (Note that records prior to 2014 are likely complete, but analysis for the most recent years only includes applications published to date.)

The key phrases data illustrates Amazon's diverse business priorities, albeit with some time lag. In the early 2010s, applications frequently used keywords like "electronic book" and "content device" which ostensibly would help dig a moat around Amazon's Kindle efforts. Similarly, Amazon's AWS business, which took off in the mid-2000s, offers virtualization services through Elastic Cloud Compute, or EC2. Evidently, securing IP around virtual machines is still a high priority: related phrases like "machine instance" were top patent keywords throughout the years, and "virtual machine" was the top key phrase in both 2010 and 2016.

While patents are still being released weekly, the ones that have rolled in from 2015 and 2016 indicate new interest in drones and cybersecurity, given the sudden prominence of keywords like "unmanned vehicles" and "cryptographic key."

Amazon Patent Keyphrases by Significance

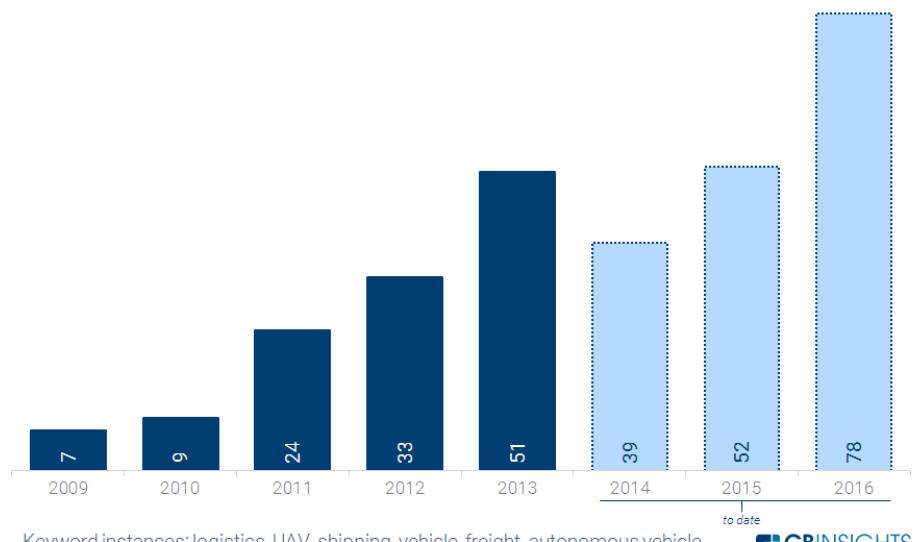
2010	2011	2012	2013	2014	2015	2016
virtual machine	network page	data storage	medium device	support plate	unmanned vehicle	virtual machine
electronic book	content item	content item	service provider	virtual machine	virtual machine	drive unit
touch sensor	resource control device	audio signal	virtual machine	inventory holder	computer network	mobile drive
network page	resource control	network page	content item	drive unit	client device	inventory holder
computer network	digital work	client device	client device	color palette	data center	data center
client device	device cover	computer network	data center	display device	machine instance	application state
data store	virtual machine	resource manager	inventory holder	first fluid	audio input output	cryptographic key
content item	network resource	display device	computer network	graphical user	mobile device	service provider
network site	mobile device	mobile device	drive unit	display screen	output device	computer network
tote delivery	data store	virtual machine	device cover	second fluid	inventory holder	inventory item
machine instance	electronic book	speech recognition	electronic tablet	mobile drive	program code	content item
electronic commerce	search query	portable device	tablet device	device cover	application data	data block
discussion forum	product category	power adapter	network page	aerial vehicle	content item	application state information
popular highlight	relative position	image information	mobile drive	second support	service provider	mounting bar
deployment unit	service request	storage controller	data block	network page	aerial vehicle	secure execution
virtual network	browse session	point of interest	machine instance	machine instance	drive unit	automated agent
other user	supplemental information	network site	data file	content item	search query	machine instance
commerce system	device image	network gateway	content provider	inventory item	data store	colorant mohety
intermediate destination	service provider	storage system	computing resource	service provider	virtual computer	second computing
social networking	reality environment	display screen	computing environment	mobile device	data storage	more player

Aerial drones are a large part of Amazon's strategy to expand its Prime Air logistics network, which Bezos announced in a 2013 episode of 60 Minutes. More recently, the company began making demo flights delivering sunscreen. With logistics and UAVs front-and-center in its patent portfolio, we isolated patents containing logistics-related keywords. This past year in 2016, for which we expect even more patents to keep surfacing, already has a record 78 logistics-related patents to date.

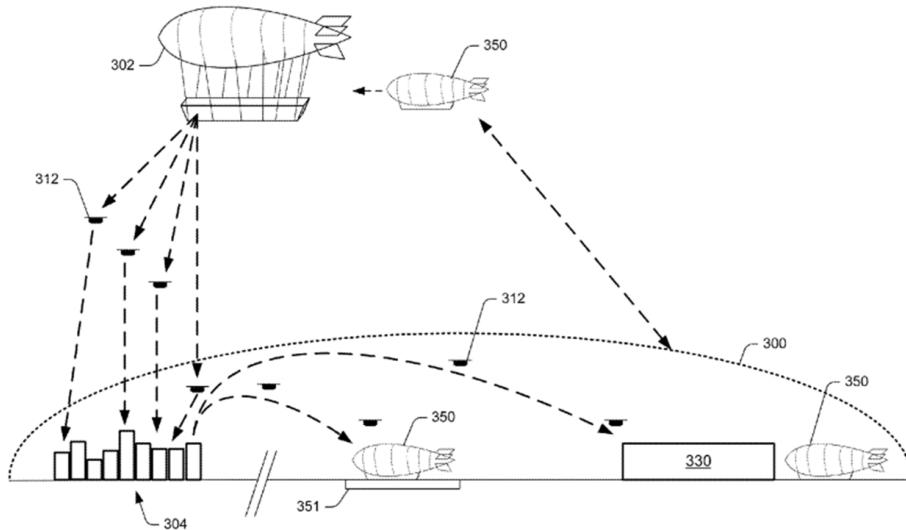


AMAZON LOGISTICS PATENT APPLICATION ACTIVITY

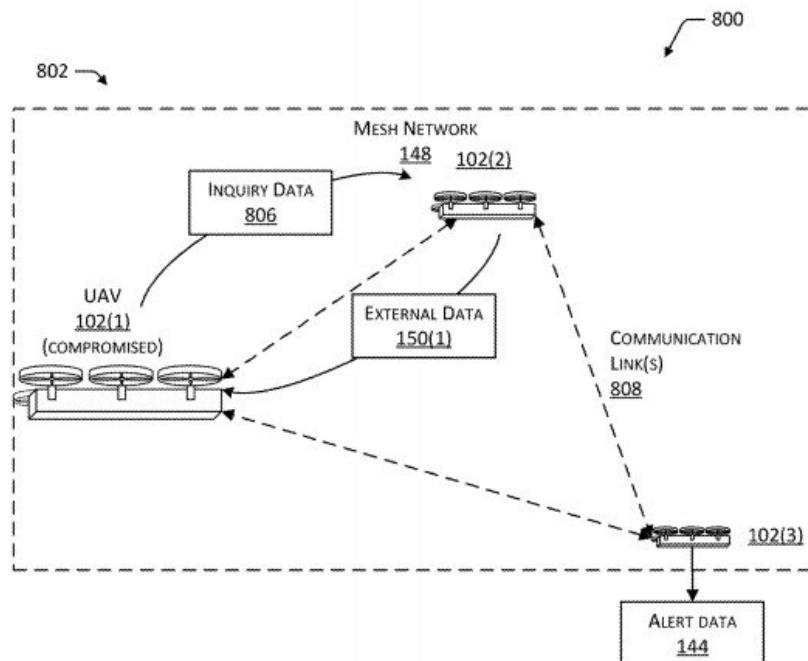
By date of application, 2009 - 2016 YTD (4/3/2016)



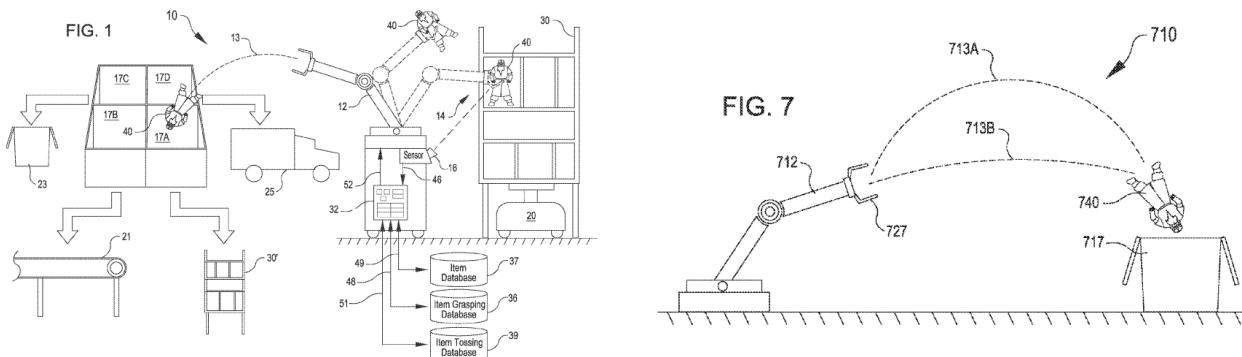
Also inside Amazon's patent portfolio were some forward-looking patents that give a peek into the futuristic logistics network Amazon may one day engineer. Recently, an application for a patent came to light that suggests Amazon is trying to create a flying warehouse that would dispatch package-laden drones to the ground. Called an "Airborne Fulfillment Center" (AFC), the patent describes it as "an airship that remains at high altitude."



In another patent, there are details about a drone mesh network that alerts all other drones about their surroundings.



And in more recent patent drawings, Amazon's fulfillment centers would use robotics to assemble orders by tossing items through the air.



"I very frequently get the question: 'What's going to change in the next 10 years?' And that is a very interesting

question; it's a very common one. I almost never get the question: 'What's

not going to change in the next 10 years?' And I submit to you that that second question is actually the more important of the two — because you can build a business strategy around the things that are stable in time.

... [I]n our retail business, we know that customers want low prices, and I know that's going to be true

10 years from now. They want fast delivery; they want vast selection. It's impossible to imagine a future 10 years from now where a customer comes up and says, 'Jeff I love

Amazon; I just wish the prices were a little higher,' [or] 'I love Amazon; I just wish you'd deliver a little more slowly.'

Impossible. And so the effort we put into those things, spinning those

things up, we know the energy we put into it today will still be paying off dividends for our customers 10 years from now. When you have something that you know is true, even over the long term, you can afford to put a lot of energy into it."

-Jeff Bezos, Founder & CEO, Amazon

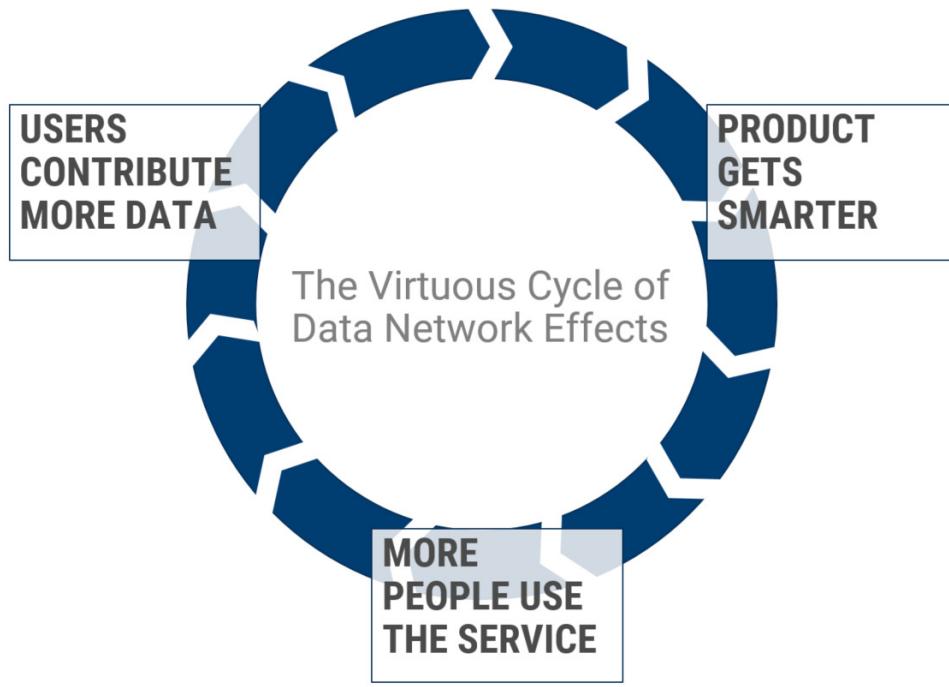
The 'River Delta': Where Amazon's Many Businesses Meet

Amazon operates in a wide range of businesses, but at the heart of the company is online shopping, and wielding technology to be the fastest, most convenient way to buy things. The best way to think about Amazon is as an amalgamation of many businesses with solid tech at its core. Ben Thompson on Stratechery wrote: "A more nuanced approach considers the fact that Amazon is not a monolithic operation, but rather a collection of businesses sharing resources, including a channel (Amazon.com), logistics, and a common technological foundation." It might have its hand in every business imaginable, but undergirding it all is technological prowess.

While revenue has grown massively, Amazon has hardly turned a profit because it continually reinvests its cash into new businesses, including building new warehouses and beefing up AWS data centers.

Always thinking of how to build tomorrow today, Amazon is investing in and improving its core business, by developing new ones.

Moreover, in nearly all of its main categories Amazon's position as a platform works in a data feedback loop: Amazon owns the richest data set on how consumers consume, how sellers sell, and (among the richest) in how developers develop. This, in turn, allows Amazon to optimize its online shopping experience, its logistics network, and developer environment (and even its voice AI), which all, in turn, make Amazon's offerings even richer.



In short, many of Amazon's businesses follow the classic network effect flywheel. And, as we'll explore below, some of Amazon's network effects are starting to collide.

A final theme that echoes through its dealings is the concept of diffusing its internal tools as products. The company began as the sole seller on Amazon.com, and eventually opened up its e-commerce platform (and logistics network) for 3rd parties to sell on. It opened up the computing infrastructure it spun up in-house, and sold the computing and storage tools through the now-dominant AWS. Now, it's in a position to do the same in cutting-edge areas like machine learning, workerless retail tech, drone delivery, and voice computing. As these startup-dominated industries become more and more a reality of everyday commerce, Amazon yet again becomes the "internet tax" for doing modern business.

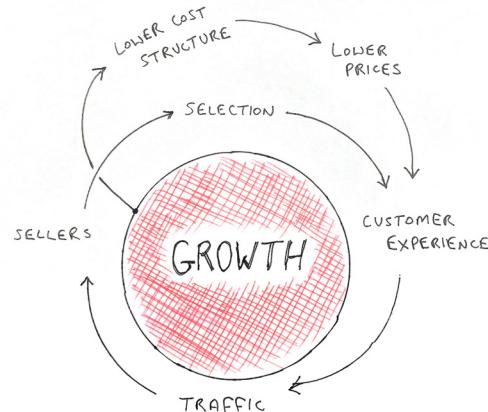
Initiatives

Core Business In Commerce And Retail

Borrowing from Walmart's "Everyday Low Price" playbook that was popularized in 1990s retail, Amazon delivered value through competitive pricing. After considering a list of 20 different items, Bezos originally settled on bookselling because of the markup and because no physical store could hold all the titles. Not having physical stores allowed Amazon to maintain a selection of over 1.1M book titles, and develop new customer friendly (and now-standard) e-commerce features like a personalized web page and book recommendation algorithms. By 1998, the company would offer music and DVDs. And nowadays, everything from cars to uranium ore can be bought online through Amazon.

Amazon's dominance is still often linked to its pricing strategy. Since inception, the lower cost structure of having no stores allowed savings to be passed on to customers. And early on, it would use a web crawler to find competitor prices and undercut them.

As Bezos famously sketched out on a napkin, Amazon's lasting value is derived from the virtuous cycle that it creates.



For most of the past decade, any company that competed with Amazon was either acquired (Zappos, Diapers.com) or simply steamrolled. The company seemed relatively unaffected by the rise (and subsequent demise in some cases) of on-demand startups bringing goods via apps, although it did start its own version of these with Prime Now. As retailers are shuttering stores, Amazon's e-commerce business is still growing. In 2016, Amazon accounted for 53% of the sales growth in online retail.

In 2000, Amazon gave outside companies the ability to sell on Amazon.com, and this program now accounts for 49% of the goods it ships. Behind the scenes, Amazon's retail marketplace "is like this massive slowed-down stock exchange" where its 2 million registered merchants leverage algorithms to undercut competitors. Prices even for commodity goods spike and fall like those in a volatile exchange.

Increasingly, manufacturers are also going straight through Amazon and its Marketplace division to reach consumers, and Marketplace is now the company's largest source of revenue after retail. Not coincidentally, in mid-April 2017 the company had more than 1200 open jobs listed for its seller services division alone.

And where Amazon can compete, it will also develop its own products as a competing supplier. About a year ago Amazon began selling over a dozen private-label goods for households. In addition to home essentials sold under its Amazon Basics brand, the company has private labels in apparel, CPG, and diapers. The strategy behind doing so is because Amazon can take advantage of higher profit margins: the company doesn't need to spend much on marketing and brand development, and with its e-commerce data it can know which products will resonate with customers. But Amazon's leverage as a seller and the platform owner makes for an awkward relationship. Amazon has the power to put its products higher in the search rankings. Resentful suppliers may want to leave the channel as a result but can't afford to lose the distribution channel and are forced to compete with the store brand.

Amazon Prime – the membership program created to gratify more time-sensitive and less price-conscious customers – gives two-day shipping with an annual membership fee. Prime has also expanded far beyond free shipping, and it now includes Prime Video media streaming and other exclusive services to keep its subscription rates high.

After decades thriving as a storeless internet company, Amazon is also making its foray into brick-and-mortar retail on several fronts: Amazon Go, Amazon Fresh, and Amazon Books. Amazon Go, a vision for a store without employees, will employ RFID tech and computer vision to allow any Amazon Prime member to shop without a checkout process. (Amazon board member Tom Alberg is also a backer and board member of recently-IPO'd RFID company Impinj.) Amazon said the Go Store technology may be delayed due to kinks in the technology, but once perfected the retail tech could be packaged and sold as a platform for physical retailers. This would allow retail tech to be yet another way Amazon "dogfoods" its tools into a tax on commerce, and perhaps – collects more customer data.

Paradoxically, moving into brick-and-mortar allows Amazon to expand its reach with an offline presence. Some consumers simply prefer touching and seeing goods in person, especially apparel, which Amazon is now supplying with AmazonBasics. It's counter-intuitive because stores, initially, were the enemy for Amazon and are limited by selection. But by having a last mile channel for books, groceries, and big ticket sales like furniture and appliances, it effectively sells what it wouldn't already be selling online. AmazonFresh Pickup will be a car-side grocery pickup offering as the company eyes the massive grocery market. (Amazon reportedly passed on acquiring Whole Foods recently, as detailed above.) And the company is increasing its footprint with physical bookstores, which are just hitting major American cities.

Overseas, Amazon is said to be targeting India for grocery stores. India is also expected to become the world's fastest-growing e-commerce market, and Amazon has said it's investing \$3B toward its India business. Its investment in home services company HouseJoy and insurance marketplace BankBazaar furthers its involvement in India's tech ecosystem. In just a few years in India, it's made contracts with major delivery services and is starting its own delivery service to augment these. But as it stands, only 35% of India's population is connected to the internet. And Amazon faces tough competition in India from local players Flipkart and Snapdeal, with backing from Tencent and Alibaba respectively.

Transportation And Logistics

Snapde Shipping items faster and cheaper has long been Amazon's way of making the customer happy. As Amazon has grown to deliver hundreds of millions of packages per year, scaling up its fulfillment infrastructure has been the priority. Early on, Amazon realized its shipments were all unique combinations of goods, and that its warehouse techniques would actually be closer to manufacturing than shipping. It poached heavily from Walmart's executives to grow its logistics network.

When Amazon bought warehouse robotics maker Kiva Systems in 2012, it might have been difficult to see the immediate value. But Amazon now has more than 45,000 robots in its warehouses, after adding about 15K each year. The acquisition of Kiva, according to Bloomberg, "set off an arms race among robot makers and shippers who scurried to keep up with the e-commerce giant" and its efficiencies.

Most recently, Amazon has been eager to grow its fulfillment center coverage. Right now, 44% of Americans live within 20 miles of an Amazon warehouse, compared to just 5% in 2015. The company is also looking to rely less on incumbent shipping networks and is taking steps to build its delivery network, which may eventually grow to a scale that could compete with FedEx and UPS.

Its efforts to achieve independence by land, air, and sea are bold: this year Amazon is finishing development of a \$1.5B air freight center in Kentucky. The company is planning to lease 40 "Prime Air" cargo jets, and offering China-based sellers use of its delivery network. In addition, the company is acting as a freight forwarder by helping Chinese suppliers book space on ocean vessels.

Unmanned logistics and delivery remain a question mark with an uncertain timeline, despite the patents mentioned above. On the drones front, Amazon is heavily focused on an in-house effort to add autonomous aerial drones to its arsenal of delivery methods. It's been several years since the announcement, and without much to show yet (except for isolated demos), a question going forward will be about how and if it can integrate this into its logistics network. FAA regulations have made domestic test flights more complicated. To avoid these complications, drone startups like Zipline International have tested in less regulated skies in Africa, where others simply focus on terrestrial drones.

AI & Voice

Amazon's work in AI is most outwardly visible with its Alexa Voice Service (AVS), which applies AI to natural language processing (NLP) to make a voice interface that's powered by the cloud. A part of Amazon's voice tech is built atop technology developed by a startup called Evi Technologies, which it acquired in 2013, and what would ensue was a consumer tech home run. Right around the time Amazon released its ill-fated Fire phone in late 2014, it also quietly released the Amazon Echo, a screenless cylindrical computer running its AVS cloud software. With NLP that appears to work better than the rest, the Echo has been a smash hit and shipped an estimated 5M units. Amazon's app store for voice "skills" now tallies over 10,000. Alexa also unlocks a new source of revenue: vocal commerce. Alexa has skills so users can seamlessly order more Amazon goods, in addition to third party integrations like hailing cabs and ordering pizzas.

It's estimated that Amazon is selling Alexa hardware at a 10% – 20% net loss (which totaled \$300M in 2016 and is expected to run ~\$600M in 2017), all in pursuit of being the dominant platform for NLP. But these might only be short-term expenses. Subsidizing its Alexa-powered hardware is a clear path to ascendancy within consumer and developer circles, and Amazon has conveyed it has no desire to make its bet solely on hardware.

Instead, the end goal is to be the cloud-based voice software powering everything from car dashboards to consumer wearables. As Don Morrill of the Alexa team has said, "You can run a skill [as a developer] for pennies a month. And so we find that's the best way: we want to eliminate as much friction to Alexa as possible, and keeping it open and free is the way to adoption." Amazon has thrown lots of resources behind this effort, including giving free AWS credits to Alexa and AI developers. Bezos has said they have more than 1000 people devoted to the Echo and Alexa ecosystem, and Amazon currently has 835 jobs listed for its Alexa team.

While it's currently the preeminent voice platform, Amazon is up against tough competition. Google's rival offering called Home powered by its own Google Assistant is a popular Echo competitor. Where Amazon might have the first-mover advantage, Google also benefits from its extensive AI research and from having 20% of its search engine queries being done with voice. Deepening Amazon's moat in voice is important, especially if consumers perceive a quality edge in Apple's Siri or Google's assistant, or another competitor. The switching costs are low, and very quickly, Alexa could quickly lose luster and market share.

On the subject of commercial AI, Bezos has said: "All of the major tech companies will do this ... Right now, bigger companies like Amazon have a bigger advantage especially because of the training data sets required to do this. You need a lot of data to do extraordinary things with the algorithms we have."

Again, widely diffusing its AI tools seems to be Amazon's strategy going forward.

Amazon's AI strategy is about being everywhere, or more technically speaking, achieving scale by being the ubiquitous platform that developers use to access AI services.

Amazon recently began selling AI-as-a-Service with "Amazon AI" under its AWS banner. This product offers algorithm training proportional to the power and capacity needed. Similar to how server racks were enormously cost prohibitive for startups pre-AWS, the same is presently true for training machine learning algorithms. Startups are continually devising creative (and expensive) hacks to train their algorithms. Amazon AI's goal is to serve big and small-time developers who want AI without the upfront costs or hassle. Amazon AI unveiled offerings that will work like an API and allow any developer to access Lex (the NLP inside Alexa), Amazon Polly (speech synthesis), and Amazon Rekognition (image analysis). With a drone effort in the works, which involves vision for obstacle avoidance, it seems likely that Amazon will continue to move into the vision space and offer more pre-built algorithms.

In Bezos' recent shareholder letter recapping 2016, he spent a significant portion writing about the AI strategy going forward. In no uncertain terms, Bezos highlights how its tools in voice NLP, computer vision, Amazon Go, and AI infrastructure will carry it forward:

"We're in the middle of an obvious [trend] right now: machine learning and artificial intelligence. Over the past decades computers have broadly automated tasks that programmers could describe with clear rules and algorithms. Modern machine learning techniques now allow us to do the same for tasks where describing the precise rules is much harder. At Amazon, we've been engaged in the practical application of machine learning for many years now. Some of this work is highly visible: our autonomous Prime Air delivery drones; the Amazon Go convenience store that uses machine vision to eliminate checkout lines; and Alexa our cloud-based AI assistant. (We still struggle to keep Echo in stock, despite our best efforts. A high-quality problem, but a problem. We're working on it.) But much of what we do with machine learning happens beneath the surface. **Machine learning drives our algorithms for demand forecasting, product search ranking, product and deals recommendations, merchandising placements, fraud detection, translations, and much more.** Though less visible, much of the impact of machine learning will be of this type – quietly but meaningfully improving core operations. **Inside AWS, we're excited to lower the costs and barriers to machine learning and AI so organizations of all sizes can take advantage of these advanced techniques."**

Bezos also mentions "quieter" machine learning and AI products working in the background. Amazon owes development of Alexa hardware to Lab126 and many of its early recommendation algorithms to A9, both of which are secretive divisions Amazon started in Silicon Valley. These bold bets on skunkworks teams have ended up paying off big, and the fruits of their labor are now front-and-center in Amazon's computing strategy.

Of course, as everything becomes more digitized, applying AI to more novel areas like healthcare could create new breakthroughs. Amazon's investment in genomics startup GRAIL was a vote of confidence in the area, and Amazon recently worked with Merck to make an Alexa skill for diabetes patients to check glucose levels. (Already, healthcare is one of the hottest areas for AI startups.)

Being that AWS is the go-to place for anything big data-related means Amazon is well-positioned to pivot once AI has its watershed moment. AI is at peak hype in the startup world currently, but from Bezos' words it seems that AI could likely be Amazon's next pillar, up there with Prime and AWS.

Media And Publishing

Bezos has said that Prime is one of Amazon's 3 current pillars. To bolster its Prime subscriptions, which is Amazon's largest source of revenue after e-commerce and its 3rd party marketplace, the company has introduced another special benefit to membership: Prime Video streaming.

Bezos has publicly explained the flywheel effect of Prime Video. With a suite of premium streaming, users are more likely to renew their (decently large ticket) Prime memberships, and are also inclined to buy more, which, in turn, make for more Prime memberships and e-commerce sales:

"Amazon Studios is making original content for Prime Video...from a business point of view for us we get to monetize this content in an unusual way. **Winning a Golden Globe helps us sell more shoes and it does that in a very direct way.** If you look at Prime members, they buy more on Amazon than non-Prime members. One of the reasons they do that is because they've paid their annual fee, they're looking around to see how to get more value out of the program. They look across more categories... We've monitored that Prime Video customers renew [Prime] at higher rates, and they convert from free trials at higher rates."

Interestingly, Bezos also said that he doesn't see Netflix as a competitor. He argues they don't necessarily compete head-to-head with Netflix on the demand side: "when it comes to these over-the-top subscriptions, I think people are going to subscribe to Netflix, and Prime Video, and Hulu, and HBO, and so on."

But similar to Netflix, Amazon has moved beyond simply distributing content. Amazon Studios produced movies that racked up three Academy Award wins at the 2017 Oscars: "Manchester By the Sea" won Best Actor and Best Original Screenplay, and "The Salesman" won best Foreign Film. (That's 2 more Oscars than Netflix, which won for a short-subject documentary.) Amazon's interest in content could further transform the entertainment industry: Amazon is expected to spend \$4.7B on content this year, which is twice HBO's budget. But that's still trailing Netflix's aggressive \$6B budget for 2017 content, which is double what it spent in 2016. Amazon also recently won a \$50M contract for NFL streaming, which could only further the company's reach.

Fred Wilson of Union Square Ventures recently expressed worry that Amazon has an unfair advantage in its ability to bundle content with other Prime services:

"I worry Amazon has an almost unfair advantage in the content business because of Prime. It's the craziest thing ever. ***Who would have ever thought shipping physical products to people at a loss would become this incredible competitive moat in the television business?*** Who dreamt that up? I happen to believe that it's an accident, that Bezos woke up one day and said 'Wow, actually we can take Prime we can use that revenue to subsidize our way into the content business.' But honestly, if you're a Prime subscriber it doesn't cost you any more to get their TV. And I gotta come out-of-pocket with Netflix. If you're only going to have one, which one are you going to have?...People who don't have hundreds of dollars a month to spend on entertainment might choose just one [entertainment provider], and Amazon might be the one they choose because they're already Prime. They gotta buy their groceries anyway. It's just this incredible bundle."

The Amazon store's position as a hub for eyeballs also makes it a valuable resource for selling ads. Amazon has implemented a programmatic ad product that's expected to generate over \$1B in online ad revenue in 2017. If it catches on, it could break up the Facebook-Google duopoly in internet advertising. Martin Sorrell, the head of advertising giant WPP, said Amazon's potential in this area is what keeps him up at night, since it could connect directly with the brands and manufacturers that are now WPP's clients.

Amazon also upended the bookselling industry from its start with features like "Look Inside," and later brought books into the digital era with its Kindle e-readers, another product of Amazon's R&D arm Lab126. Its acquisition of Audible continues to supply audiobooks, which is currently the fastest-growing format in publishing. Back in its infancy, Amazon would throw its weight around the publishing world by threatening to lower the store rankings of publishers who didn't meet their digitization demands.

As e-sports – competitive video-gaming – continues its rise to prominence, Twitch, the video game broadcast site Amazon bought for just shy of a billion dollars, now boasts being one of the largest bandwidth users in the US, and has 9.7M daily active users. The company has attracted YouTube gaming stars, and is planning to start selling video games, an expansion that would compete with the game marketplace world of Steam and Valve. Twitch membership is free with Prime, making joining Amazon attractive to gamers who are already well accustomed to buying their gaming titles online.

With its unique incentive to sell more shoes by way of giving away more content and services, Amazon is able to offer a premium media suite at a cost its competitors cannot.

AWS And Enterprise Cloud

AWS is now Amazon's largest source of revenue after its core business, posting \$12.2B in sales in 2016 and more than \$3B in profit.

AWS' genesis was a result of Amazon overhauling its own internal capacity for cloud services. This allowed startups to migrate from expensive server hardware and software which represented a fixed cost to a variable cost based on usage, and it played no small part in the new wave of startups that flourished in the aftermath including present-day unicorns like Palantir and Slack.

In fact, AWS' relationship to the venture world started off somewhat fraught. Amazon CTO Werner Vogels said that VCs initially loathed AWS because it "robbed them of the opportunity to get significant chunks of young businesses" by providing previously unaffordable computer infrastructure. But he also notes that it has increasingly been accepted because it allows VCs to spread risk across a greater number of smaller startups. Nowadays, VCs often give away AWS gift certificates to their startups.

As Brad Stone wrote, "It is not hyperbole to say that AWS, particularly the original services like S3 [storage] and EC2 [VMs], helped lift the entire technology industry out of a prolonged dot-com malaise." Stone also wrote that, more importantly, Amazon was also able to shake its own image as a simple e-commerce player and transform itself into a big-league tech company:

"Perhaps the greatest makeover was of Amazon's own image. AWS enlarged the scope of what it meant to be the everything store and stocked Amazon's shelves with incongruous products like spot instances and storage terabytes. It made Amazon a confusing target for Walmart and other rival retailers and gave the company fresh appeal to the legions of engineers looking to solve the world's most interesting problems. Finally, after years of setbacks and internal rancor, Amazon was unquestionably a technology company, what Bezos had always imagined it to be."

With cybersecurity being another hot startup category presently, it's also no surprise that AWS wants to beef up its offerings in this area. As indicated by their patents and acquisitions, Amazon is very focused on improving and securing the stack. Last fall, AWS suffered DDoS attacks, causing many websites across the internet to be affected because of AWS' status as the go-to for corporate computing. It wouldn't be surprising to see more cybersecurity M&A like the recent acquisition of Harvest.ai to continue the company's efforts to strengthen its offerings.

AWS likely got a head start because of classic Innovator's Dilemma nearsightedness, where many of its competitors didn't see infrastructure-as-a-service (IaaS) as a threat. Now that's reached a critical mass, and the strategy going forward will likely be centered on making code deployment even more seamless. We'll likely see more "as-a-service" type offerings that make deployment flexible and dead simple. One example in this arena is AWS' Lambda's serverless computing, which easily runs a snippet of code upon request, so developers don't need to consider provisioning or managing servers. In essence, this is the micro-service version of EC2, but EC2 is still a full server that has to be managed (think: Airbnb vs renting an apartment). With Lambda, developers can quickly go live with quick, one-time bits of code in a way that was previously cost and time-prohibitive. To build its moat, AWS will need to offer more services like Lambda, along with its AI and voice APIs that empower small-time coders.

Hardware & Devices

Along with its aforementioned line of Echo hardware products running its voice software, Amazon has a host of products like Fire TV stick, dash buttons, and a line of tablets. The hardware R&D group Lab126 was the visionary behind these successes, and the Echo's popularity has allowed Amazon to be the go-to name for voice computing. But Lab126 also was responsible for the massive failure of the Fire phone, which was caused by a string of strategic errors, with some coming straight from the top: Bezos was known to have played a large part in the demise, obsessing over the 3D feature that fell flat with consumers. (His taste in design also proved questionable with the Kindle, for which he demanded a clunky keyboard that in later iterations was removed.)

Amazon's had its share of mega-hits, but hardware might be its Achilles heel. Increasingly, it seems the company has recognized this by playing to its strengths in the cloud and focusing on the software platforms behind their IoT devices. This was first apparent with its plans for the Alexa Voice Service, and opening it up for third-party device makers like Invoxia. But now, Amazon is also opening up the hardware tools it made for the Echo and recently announced it's opening its 7-microphone array for voice processing to commercial developers. The move is yet another example of Amazon disseminating the essential tools and allowing creativity to evolve naturally.

How it will build on its latest success with Echo remains up in the air, and perhaps Amazon has realized that from here it can only open up its ecosystem to the creativity of third parties. Another option is that we could see Amazon's interest in mobile phones resurface in the future, but given its place as a black spot in the company history, we could be waiting a while.

Other New Businesses

Amazon has been experimenting with financial technology that could widen its reach. In India, which is expected to become the world's fastest-growing e-commerce market, as discussed, the company is offering thousands of loans to e-sellers so suppliers can expand their operations and manage seasonal spikes.

Amazon is also expanding its financial reach by launching Amazon Cash, which allows users to add to their Amazon.com balance by showing barcodes at brick-and-mortar checkout locations. The move is said to help appeal to the "underbanked" who are accustomed to dealing with cash and might be new to online commerce.

In addition to fintech, Amazon might have its eyes on augmented and virtual reality (AR/VR). Amazon's Lumberyard, a game development engine on AWS, could play a greater role in the development of VR content. The company is also rumored to be integrating more augmented reality tech into its brick-and-mortar effort so patrons could picture how items would look in their homes.

In short, fintech and AR/VR could help Amazon provide more frictionless commerce.

Final Words

Given its mutually reinforcing lines of business in commerce, cloud computing, and AI-as-a-service, it's not easy to find chinks in the Amazon armor. But in the AI arena at least, Amazon is up against more research-oriented peers in Silicon Valley who are aggressively recruiting the top AI talent and have data troves at least as large as Amazon's to train their algorithms on.

And Amazon is fighting the technical AI battle while it is simultaneously working across more than 5 industries and waging bare-knuckle fights for e-commerce market share in India and the Middle East.

Jeff Bezos, who has made relatively few missteps in twenty years of tenure, seems capable of carrying the company forward. Healthy and relatively young, much will still be demanded of him. As Brad Stone wrote, "In a way the entire company is scaffolding built around his brain — an amplification machine meant to disseminate his ingenuity and drive across the greatest possible radius." It's almost impossible to imagine Amazon carrying forward without Bezos at the helm, and there's hardly an inkling that he is going anywhere. Yet, it's also not clear that Bezos has cultivated the next generation of leadership to move toward a central vision without him driving the company forward.

Instead, the biggest threat to growth could be Amazon itself. Its outsize role in the commerce ecosystem, reports the Economist, could attract the ire of regulators: "If Amazon does become a utility for commerce, the calls will grow for it to be regulated as one."

Another question is how long investors will stand for a dream deferred. As the Times wrote back in 2013:

*"In its 16 years as a public company, Amazon has received unique permission from Wall Street to concentrate on expanding its infrastructure, increasing revenue at the expense of profit. Stockholders have pushed Amazon shares up to a record level, even though the company makes only pocket change. **Profits were always promised tomorrow.**"*

Despite having earned a reputation as a "profit miser," Amazon recently began posting profits in large part due to the success of Amazon Web Services. As Amazon dips deeper into its coffers to streamline its logistics network, boost its web offerings, and develop artificial intelligence, it will face increasing pressure to also reward patient shareholders. The tensions could one day reach a breaking point.

Apple Strategy Teardown



The maverick of personal computing is looking for its next big thing in spaces like healthcare, AR, and autonomous cars, all while keeping its lead in consumer hardware. With an uphill battle in AI, slowing growth in smartphones, and its fingers in so many pies, can Apple reinvent itself for a third time?

In many ways, Apple remains a company made in the image of Steve Jobs: iconoclastic and fiercely product focused.

But today, Apple is at a crossroads. Under CEO Tim Cook, Apple's ability to seize on emerging technology raises many new questions.

Primarily, what's next for Apple?

Looking for the next wave, Apple is clearly expanding into augmented reality and wearables with the Apple Watch AirPods wireless headphones. Though delayed, Apple's HomePod speaker system is poised to expand Siri's footprint into the home and serve as a competitor to Amazon's blockbuster Echo device and accompanying virtual assistant Alexa.

But the next "big one" — a success and growth driver on the scale of the iPhone — has not yet been determined. Will it be augmented reality, healthcare, wearables? Or something else entirely?

Apple is famously secretive, and a cloud of hearsay and gossip surrounds the company's every move. Apple is believed to be working on augmented reality headsets, connected car software, transformative healthcare devices and apps, as well as smart home tech, and new machine learning applications.

We dug through Apple's trove of patents, acquisitions, earnings calls, recent product releases, and organizational structure for concrete hints at how the company will approach its next self-reinvention.

Given Apple's size and prominence, we won't be covering every aspect of its business or rehashing old news. But some of our main areas of focus include:

Apple's bold bet on a post-smartphone world through augmented reality and battery-efficient wearables, including AR glasses.

There's strong evidence Apple is once again actively "cannibalizing itself," putting massive resources behind consumer tech that will render its own iPhone obsolete. Augmented reality is the company's biggest bet. New AR apps are on the way, and there is new evidence AR glasses are also in the works. Wearables such as the Apple Watch and in-ear computers like the AirPods already allow Apple's customers to make and receive calls without an iPhone.

In the last earnings call, Cook said Apple's wearables business was large enough to rank as a Fortune 400 corporation. That means Apple Watch and AirPods are generating ~\$27B or more in annual revenue.

Meanwhile the infrared camera tech behind the iPhone X can also underpin Apple's future moves into augmented reality and more. Apple is even looking at holograms as a possible UI.

AI is an Achilles' heel for Apple.

Despite some sizable recent acquisitions of AI companies at a valuation of \$200M or more and an initial lead with Apple's 2011 launch of its virtual assistant Siri, Apple has ceded ground in the fields of machine learning, natural language processing, and more to Google, Amazon, and others. Apple also has a relatively weak patent portfolio in this area.

That said, Apple has made 11 AI-related acquisitions in the last 5 years, and has the capacity to design its own AI-optimized GPU chips — something competitors like Google and Amazon do not have. More could be in the works.

Autonomous vehicle efforts seem to have pivoted away from a car, and toward autonomous driving software and technologies like a light and ranging detection sensor (LiDAR).

We dig into what information is available on Apple's auto project to hazard a guess on what Apple's looking to salvage from a project that once reportedly employed several hundred people.

Apple faces another uphill battle in media and entertainment.

Even as services and media (including the app store, iCloud, and Apple Music) become the company's fastest-growing business segment, Apple faces competition in one priority area: original content. Apple is late to the original content game in comparison to Netflix, Amazon, and even Hulu. And given Apple's \$1B content budge, barring a mega-acquisition, key hires may not be enough to catch up.

Perhaps surprisingly, Apple's jobs focus still leans toward hardware engineering.

This throws a wrench into the theory that Apple is increasingly focused on services over hardware.

Even at 80,000 strong, Apple is continuing to shore up its hardware and software engineering. Despite the company's increasing emphasis on AI, services, and software, it's still hiring for more open jobs in hardware than software divisions.

We also look at Apple's strength in frequently overlooked areas like cybersecurity, battery tech, and healthcare.

Apple is clearly aiming to be at the center of consumer wellness and preventive health with its Watch product.

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Organization & Priorities

Apple remains a top-down organization with a great deal of CEO control

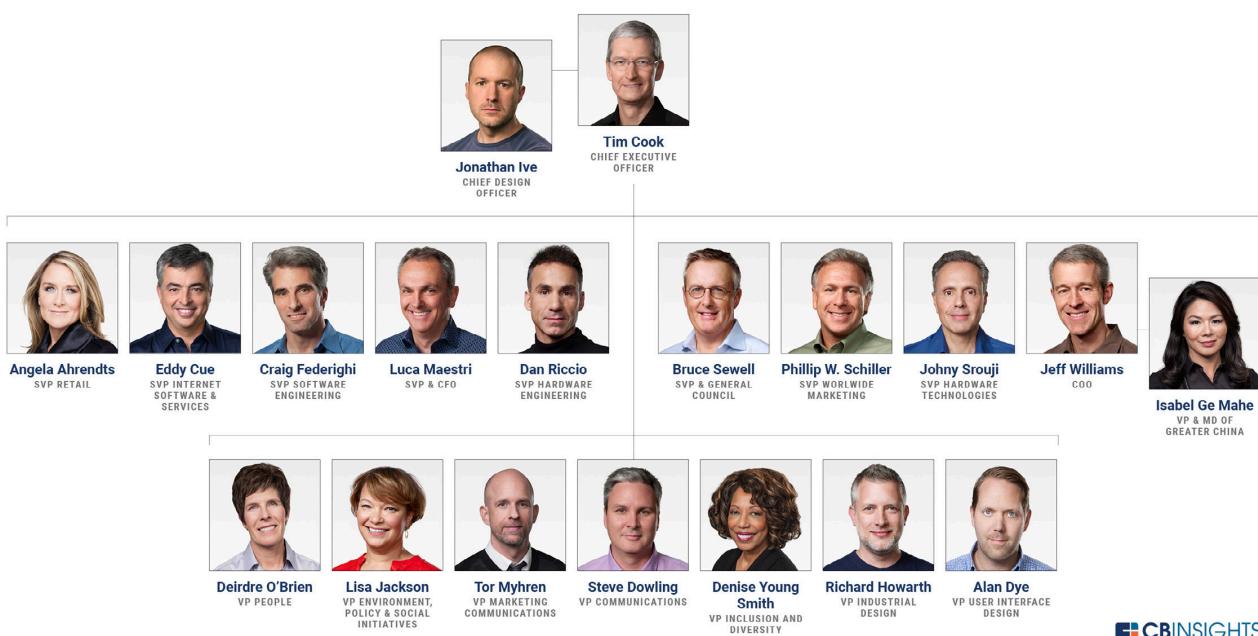
Apple used to be infamous for its top-down approach. A longtime trusted member of Steve Jobs' team, now-CEO Tim Cook was originally hired out of Compaq to revamp Apple's broken supply chain.

In contrast to Jobs' showmanship, Tim Cook is "a ruthless systems guy" who rose to Jobs' inner circle by managing the unglamorous parts of the business.

Today, it seems that Jonathan Ive has assumed control as Apple's design lead, the role once held by Jobs, while Cook manages just about everything else.

According to Apple's own key people page on its website, Tim Cook has 17 direct reports, including Ive, CFO Luca Maestri, COO Jeff Williams, and various SVPs and VPs.

Who's running the show: Apple's leadership As of 11/16/17



Apple's secrecy extends inside the organization, with every project on a need-to-know basis. Teams often don't know what other teams are working on, and are purposely kept apart. Former hardware executive Jon Rubinstein once told Businessweek, "We have cells, like a terrorist organization... Everything is on a need to know basis."

Notably, Apple is a “functional organization,” meaning it doesn’t divide itself up by product line, with teams specialized according to iPhone or Mac, for example. Instead, Apple is organized by functions, so that Phil Schiller’s marketing organization handles the marketing for all products and geographies.

This is no doubt an unwieldy structure at times, given the company’s diverse business lines in software and services, phones, and computer hardware.

But at the same time, this structure allows Apple to retain what might be called a startup mentality. (In contrast, at a company with a more traditional organizational chart branching off into product divisions, product VPs might campaign to keep obsolete products on the shelf for the sake of their jobs.)

When it comes to M&A activity, Apple’s acquisition focus has centered on bolstering the dominant products of the day. For the last decade, that’s been iPhone and its iOS, and as analyst Neil Cybart of Above Avalon notes, it was once the same way for the Mac:

“For 10 years starting with the NeXT acquisition in 1997, all but one Apple acquisition were related to strengthening the Mac platform. While this may not come as a complete shock given Apple’s product line at the time, it is noteworthy that M&A was not used for the iPod or to expand into other product categories or industries. Apple then experienced five years of limited to no M&A activity from 2003 to 2007. While the outside world did not know it at the time, this ‘buffer’ zone ended up being pivotal years for iPhone development. Since acquiring P.A. Semi in 2008, every acquisition but one has been focused on strengthening the iPhone and broader iOS platform. This new iOS focus ushered in a significant increase in both the pace of M&A and the amount of cash spent buying companies.”

According to *Inside Apple*, a 2012 book by Dan Lashinsky, internally the industrial designers have always been “untouchable,” but as iPhone and iPad grew into the company’s premier product, “the coolest faction of the company [became] the software engineers working on Apple’s mobile operating system.” That said, 5 years later, hardware engineers are still more sought after by Apple than their software-focused counterparts.

Apple is still hiring more in hardware than in software

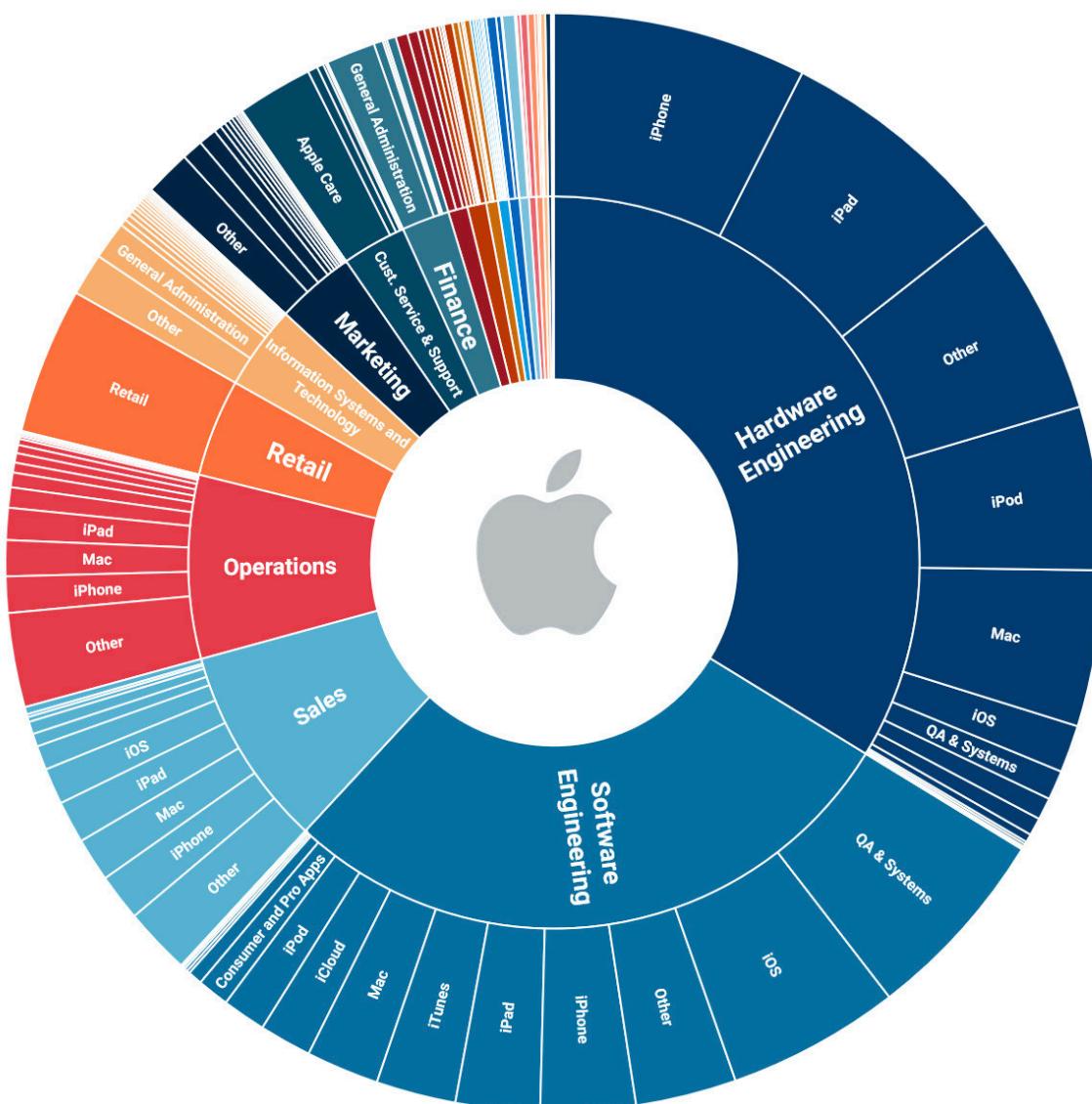
As of December 31, 2016, there were approximately 80,000 direct Apple employees.. To see where it’s looking to add more human capital, we recently collected data from its site and broke down the company’s 7,000+ open job listings.

Hardware Engineering leads by a significant margin, accounting for 34% of the open jobs.

The next largest slice was Software Engineering at 28%, followed by Sales (9%) and Operations (8%).

For a company that's trumpeting its growing Services business and racing to beat others in fields like AI and AR, it's somewhat surprising that Apple is focused on hiring for jobs in hardware.

Apple's open job listings As of 11/1/2017



Apple has recently made a few key hires. The company convinced former Burberry CEO Angela Ahrendts to head its retail stores (which it now has rebranded as "town halls," in a bid to open the company up to more current and prospective). In June, the company poached two Hollywood veterans from Sony to spearhead its \$1B push into original content, under Eddy Cue.

Additionally, Apple reportedly has 1,000 engineers in Israel working solely on ARKit.

Earnings calls reveal a focus on expansion markets like India and new products like Apple Watch and AirPods

Looking beyond job listings, we also mined Apple's annual earnings calls to highlight recurring keywords from the transcripts, using a significance-weighting scheme to surface words and phrases. For the last 5 years, iPhone has dominated the conversation, as have other main products like iPad and Mac.

Over the years, geographies like China, Brazil, Russia, and the United States are frequently mentioned, but in 2017 India seemed to be a new focus. Apple is increasingly looking to new markets like India for growth, seeing slowing growth in more mature markets like China and the US.

Earnings calls reveal Apple's latest focus on new markets and products

Most significant keywords in earnings call transcripts

2009–2017 YTD (11/17/17)

2009	2010	2011	2012	2013	2014	2015	2016	2017
iPhone	iPhone	iPad	iPad	iPhone	iPhone	iPhone	iPhone	iPhone
Mac	iPad	iPhone	iPhone	iPad	iPad	iPad	iPad	iPad
United States	Mac	Mac	China	China	Mac	China	China	China
iPhone 3GS	iPod	China	Mac	inventory	United States	apple watch	United States	Services
iPod	China	United States	United States	Mac	China	Mac	Mac	United States
App Store	apple tv	inventory	inventory	United States	iOS	United States	services	Mac
iPhone OS	App Store	Japan	iPod	iOS	App Store	inventory	India	iOS
iPod touch	United States	iPod	iphone 4s	App Store	inventory	App Store	inventory	App Store
supply	asp	iOS	iCloud	iPod	China mobile	IBM	iPhone se	India
MacBook	inventory	iCloud	supply	iMac	IBM	iOS	App Store	plus
retail store	android	supply	iPad mini	Montreal	Japan	cycle	apple watch	apple watch
China	Google	verizon	iOS	retail store	supply	headwind	iOS	high end
snow leopard	Japan	MacBook	iPod touch	Japan	high end	online store	r&d	inventory
inventory	pricing	App Store	iTunes Store	smartphone market	retail store	all-time record	supply	AR
desktop	iOS	pc market	App Store	tablet market	cycle	switcher	Russia	upgrade rate
pricing	handset	cannibalization	Brazil	iPad mini	iTunes software	watch	iphone asp	Japan
apple tv	supply	iPhone 4S	future product	product category	tablet market	upgrade program	switcher	iphone x
portable	att&t	macbook air	macbook air	high end	product category	geography	tablet market	Apple Music
iTunes Store	MacBook	supply-demand balance	retail store	pricing	security	Apple Music	all-time record	airpods
handset	iPod Touch	smartphone market	pricing	low end	apple watch	exchange headwind	replacement cycle	headwind

product geography iOS services



AirPods, Apple Watch, and augmented reality have also seen increasing mentions.

Increasingly, Apple has been underscoring its strong performance in "Services" (i.e. software-enabled digital purchases and cloud services), including Apple Music. However, as we've seen in hiring and other areas, hardware is still a focus.

As mobile penetration becomes higher, explaining Apple's strategy for dealing with the "upgrade rate," which is slowing, and its play for the high-margin "high end" market has become another theme. Here, Apple is explaining slowing iPhone sales and its effort to wrest more lifetime revenue from its customers.

In contrast to Google, which has called itself an AI-first company and mentions AI frequently in earnings calls, Apple execs are not emphasizing artificial intelligence in earnings calls.

Future-defining initiatives

Artificial intelligence is Apple's Achilles heel – and the company is turning to M&A to shore up its AI efforts

Pulling back the curtain on its AI effort, Apple appears to be behind.

Usage of Apple's voice assistant Siri dropped last year, according to third-party data source Verto Analytics, whereas usage of Amazon's Alexa grew.

Expanding Siri's footprint with HomePod – Apple's premium audio take on Amazon's Echo product and Google Home – was meant to be a start to the fight against the Echo. But earlier this month, Apple announced a delay to the HomePod, and it won't release until early 2018 (as opposed to late 2017 as intended).

More broadly, Apple seems to be consciously skirting the conventional wisdom on data and AI. For many companies today, every user interaction is thrown into cloud-based machine learning models to help tune products, such as for tagging photos in a photo app. Google Photos is considered to be a prime consumer-facing example of this.

But Apple has taken what might be called a "cloud-wary" approach, favoring a model where computation is largely done locally on its Future-defining initiatives 11 devices, without user data leaving the device.

This has worked in part because Apple is primarily in the business of selling devices, as opposed to selling advertising space like its rivals Facebook and Google, which seek to harness user data in the cloud whenever possible in order to increase consumer engagement on its platforms.

In 2015, Tim Cook acknowledged Apple's unique stance on aggregating user data over privacy, stating:

"Some of the most prominent and successful companies have built their businesses by lulling their customers into complacency about their personal information. They're gobbling up everything they can learn about you and trying to monetize it. We think that's wrong. And it's not the kind of company that Apple wants to be."

Inevitably, strengthening Apple's offerings has meant a shift toward AI. This year, Apple unveiled a new machine learning framework called Core ML, which will give its iOS developer community the ability to create apps that leverage more on-device computation using machine learning. Core ML also has computer vision and natural language processing frameworks that enable apps to label photos and objects and identify languages.

AI M&A TRENDS

The new AI focus has been echoed in its M&A moves, and Apple has ranked as the second most active corporate acquirer of AI startups, with a total of 11 AI-related acquisitions over the past 5 years. Recent deals include Apple's acquisition of image platform REGAIND in September, as well as its acquisition of Lattice Data at a \$200M valuation in May.

Even looking only at its largest acquisitions, there's a recent trend of Apple spending big on startups employing machine learning.

Large acquisitions of \$200M or more have gone to hardware companies like Beats and Anobit, but in the last two years Turi and Lattice, both of which developed horizontal AI, topped the list.

Many of Apple's other largest acquisitions have been of semiconductor companies, including Anobit Technologies, PrimeSense, and AuthenTec.

With the company now designing its own machine learning GPUbased hardware for the iPhone, we could see more acquisitions in this area.

Apple's strength in designing purpose-built chips will come in handy as corporates like Intel, Qualcomm, and Google put billions behind machine learning-specific chips for data centers and devices.

Presently, the chip world is white hot, with incumbents and venture-backed startups looking to take on the preeminent GPU maker Nvidia. By adding an Apple-designed GPU to its latest iPhone, the company is clearly taking the hardware front of AI seriously.

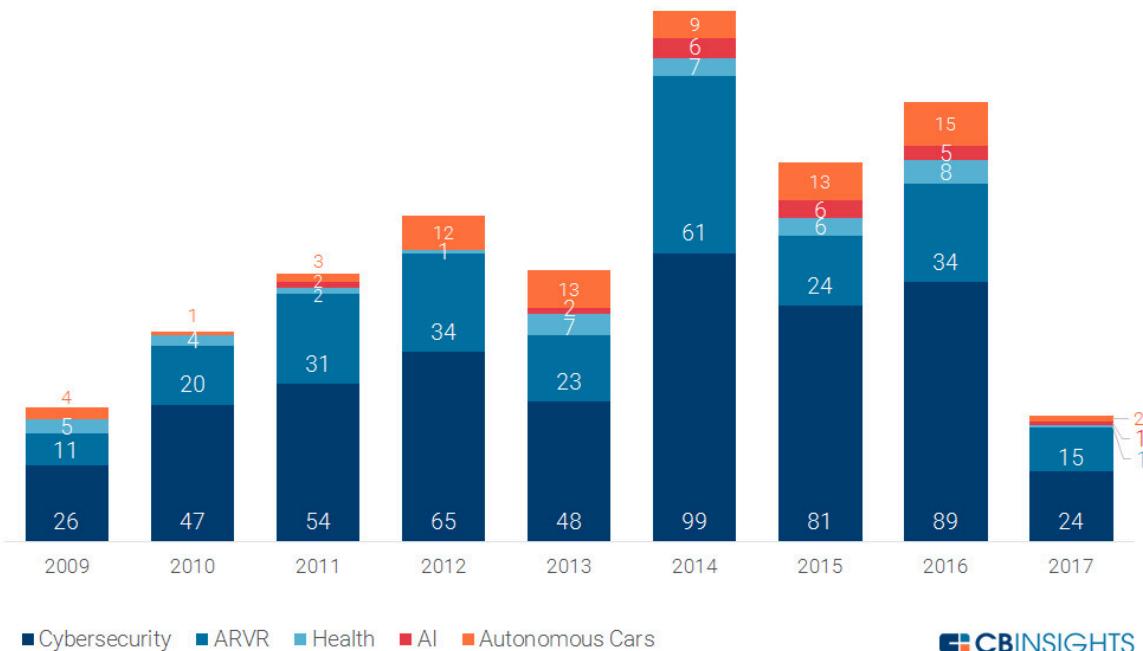
But for Apple to mount a meaningful offense here, it needs success on the software and data fronts.

AI PATENT TRENDS

Apple is fairly active in seeking patent protection on its intellectual property. Most famously it has patented relatively mundane things like the iPhone's packaging and Apple Store shopping bags.

Of course, an individual patent might only be an early sketch of a potential product. And many patents do not amount to products. But taken together, activity across hundreds of patents can reveal strategic direction and priorities.

**Apple's patent application activity by category
2009 – 2017 YTD**



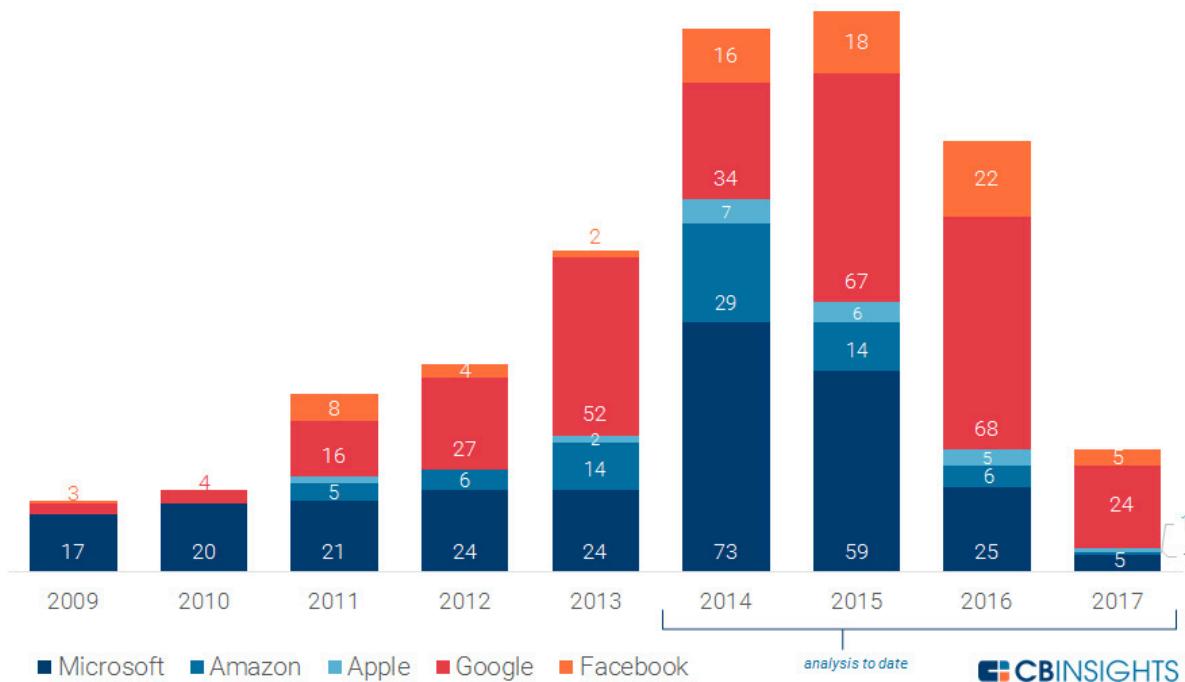
Interestingly, Apple's top patent segment is cybersecurity, which has seen 533 patents since 2009. The next most common patent focus was AR/VR (253 patents), followed by autonomous vehicles (72).

In comparison, only a small share of patents (22) have focused on artificial intelligence.

The fact that Apple has fallen behind on its AI patent portfolio is highlighted by a comparison of AI-related patents among the Big 5 global tech companies (those with the largest market caps).

**AI patent application activity,
Apple vs. Microsoft, Amazon, Facebook, Google
2009 – 2017 YTD (11/10/17)**

Apple's big bet on augmented reality

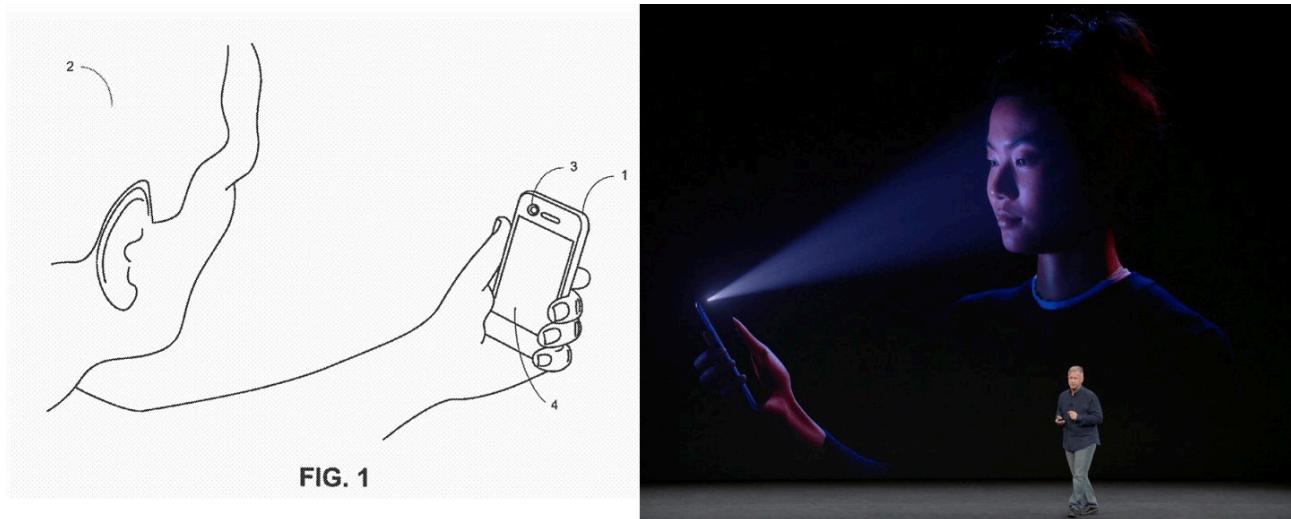


Today, FaceID, which unlocks the iPhone X by spraying thousands of infrared light rays to recognize a user's face, is the iPhone X's hottest new feature.

But this direction was clear in retrospect when looking at patents. Apple has 5 patent grants and 2 outstanding applications for patents in facial recognition dating back to 2015. In addition, it acquired facial-tracking software maker Faceshift back in 2015.

Likewise, Apple obtained at least two patents this year that in retrospect seem key for iPhone X screen innovations: one for reducing the border area of the device, and another one for embedding a fingerprint sensor in the display.

Below is a drawing from Apple's patent for "Locking and unlocking a mobile device using facial recognition" (granted in October 2016) side-by-side with the final product at launch:



Clearly, Apple's future direction is not divorced from patent and M&A bets. AR looks to be squarely in Apple's cross-hairs given the data we looked at.

AR M&A TRENDS

AR has been a serious M&A target in recent years: Arguably, Apple's most important recent acquisition was PrimeSense, whose infrared (IR) technology first made waves inside the Kinect, a body-sensing add-on for Microsoft's Xbox. As tech outlets have pointed out, the "notch" in the latest iPhone is basically a shrunk-down Kinect to enable FaceID.

While it's primarily used for mapping faces now, the infrared camera in the iPhone X could be used by future augmented reality apps to enable front-facing AR applications. For example, you could point your phone at a vacant lot, and the phone would spray thousands of infrared dots into the area's contours to render an image of how a custom home would look in that area.

Other AR/VR acquisitions, like the recent Sensomotoric Instruments deal, a computer vision company for AR headsets, indicate a serious hunger to expand here. Earlier AR acquisitions include Apple's purchases of FlyBy Media and metaio. Meanwhile facial recognition acquisitions (Emotient, RealFace, and Faceshift) could certainly have applicable technology too.

Notably, the recent \$30M acquisition of Vrvana indicates that Apple is pursuing AR headsets/glasses.

Vrvana's headset technology, pictured below, offers both AR and VR capabilities. So far, it appears to be Apple's first AR hardware (as opposed to AR software) acquisition, and its positional tracking could more immediately strengthen ARKit.



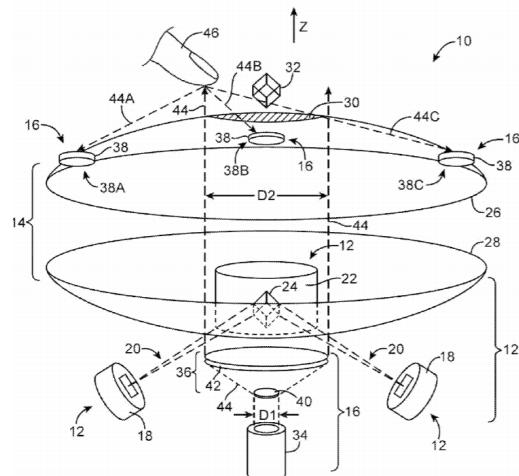
AR PATENT TRENDS

Apple is also looking beyond the physical iPhone screen for AR, and holograms are apparently on the table.

The below patent application, called "Interactive three-dimensional display system," details a system that projects hologram-type images that can be manipulated by users in mid-air, without the need for special glasses to see them.

The application, which was filed in October 2012 and could be part of the larger AR initiative, and mentions the fields of education, medical diagnostics, and biomedical engineering as possible application areas.

AR in the form of holograms is definitely a possible future direction 16 that augmented reality could take. AR via hologram would mean that projectors could beam images into physical environments (much as robots do in movies like Star Wars).



In doing so, holograms could remove the need for clunky headsets which have been a barrier to consumer adoption of AR. Lightform, a San Francisco-based startup, has raised nearly \$8M to pursue this vision.

AR EARNINGS CALLS TRENDS & THE FUTURE OFFERINGS

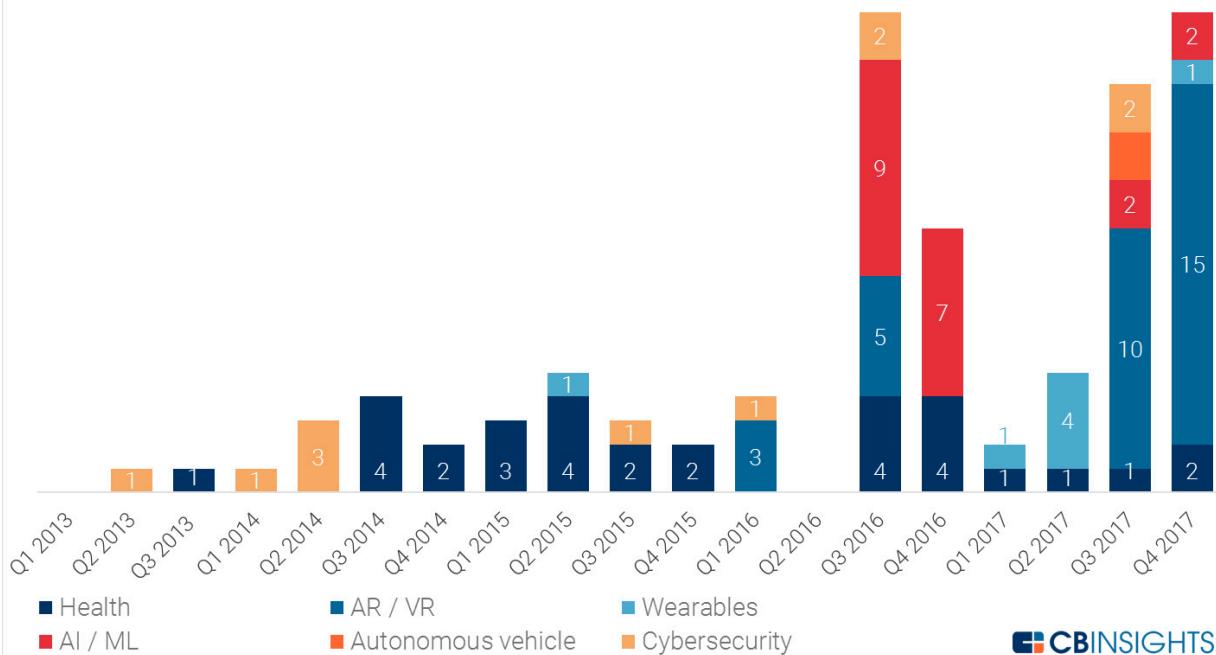
While often tight-lipped about its future products, Tim Cook has a tendency to foreshadow Apple initiatives in interviews and in quarterly earnings calls.

To get an idea of what's to come, we looked at technologies and geographies mentioned during the company's earnings calls and graphed them over time, using CB Insights' earnings transcripts search engine. We found:

- Mentions of AI are a recent phenomenon, beginning only in Q3'16.
- Autonomous vehicles (AVs) were first mentioned in late 2017
- By far, AR/VR is the most-mentioned sector we examined, tallying 33 mentions since first being mentioned in Q1'16.
- In the latest Q4'17 call, AR/VR keywords were mentioned 15 times, lending credibility to it being a big bet.

Apple earnings calls analysis

AI / ML, AR / AV, wearables, health and cybersecurity mentions



CB INSIGHTS

Notably, Apple's AR headset may be coming soon. Different pieces of evidence suggest Apple has been investigating virtual and augmented reality applications for more than a decade. And new revelations suggest Apple is going to have a standalone AR headset by 2020. The AR project, dubbed "T288," is reportedly led by Mike Rockwell, a key hire taken from Dolby Labs who is overseeing a team of several hundred.

The product will have its own rOS, or Reality Operating System, which will be the spiritual successor to Apple's mobile platform.

At WWDC in June 2017, Apple went public with its first major effort and unveiled ARKit, which are tools for iPhone and iPad app developers, as well as opening up a machine learning library called CoreML.

In just a few short months, ARKit developers have released hit augmented reality apps that will reach any Apple customer with an iPhone 6S or above. Today, that figure amounts to 381M iPhones and devices, but ARKit's footprint is projected to boom up to 850M units by 2020.

The smash hit AR mobile app Pokemon Go was reported to be the most downloaded app in its first week in App Store history. Apple is 18 also said to have 1,000 engineers working on ARKit in Israel.

And there's already a growing ecosystem of AR apps, which are turning the iPhone into what is arguably the most-used device for experiencing augmented reality. Apps range from furniture retailers like Ikea allowing users to visualize furniture in their homes to educational games for kids that project puzzles onto their bedroom walls, and many more.

In an early 2017 interview, Cook said he sees AR as Apple's next big thing:

"I regard it as a big idea like the smartphone I think AR is that big, it's huge. I get excited because of the things that could be done that could improve a lot of lives. And be entertaining. I view AR like I view the silicon here in my iPhone, it's not a product per se, it's a core technology. But there are things to discover before that technology is good enough for the mainstream."

Cook has also reiterated that "AR is going to change everything."

According to Apple's Q4'17 earnings call, the App Store boasts over 1,000 apps that use ARKit.

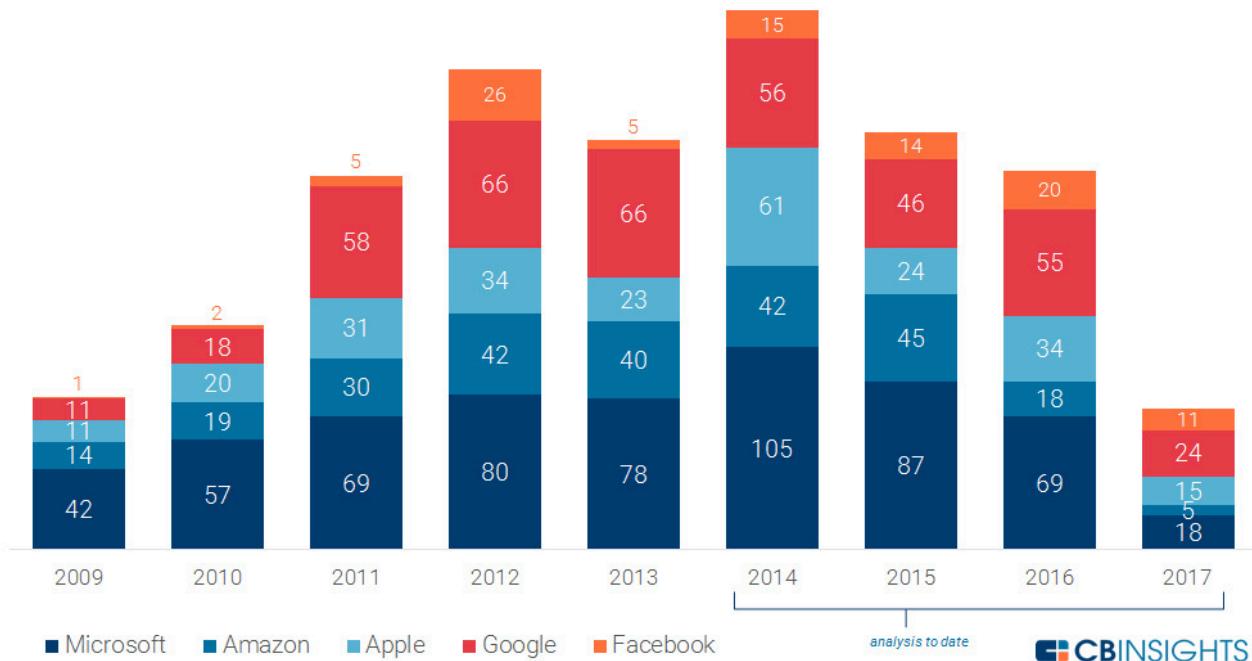
But Apple faces some headwinds here as well. Serious gamers and visual developers overwhelmingly use non-Apple PCs for their graphics and VR experiences.

When released, Apple's headset will surely compete with the Google and Hollywood studio-backed startup Magic Leap, which has been focused on pursuing an AR headset since 2011. (Neither Magic Leap or Apple have products to show yet.)

Additionally, Apple's patent portfolio in AR/VR, while sizable, is modest compared to its competitors. Microsoft, Google, and Facebook have been aggressive in this space, and have outpaced Apple in pursuing patents.

Finally, while Tim Cook has spoken frequently about augmented reality, but VR has mostly been neglected. Facebook's Oculus, Google Daydream, and Microsoft, among many others, have kickstarted developer communities and built headsets and phones for the burgeoning VR space, while Apple has seemingly placed all its chips on AR.

**AR/VR patent application activity,
Apple vs. Microsoft, Amazon, Google, Facebook**
2009 – 2017 YTD (11/11/17)



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Goldman Sachs Strategy Teardown

Goldman Attacks Lending Club & Prosper,
Courts Main Street



As its bond trading revenue plummets, Goldman has undergone a major strategic shift, looking to grow the revenue opportunity from its consumer digital finance operation. We analyze how this shift is playing out in its hiring, investments, M&A, and product development.

In 1869, former shopkeeper Marcus Goldman launched a new business trading in commercial paper. In other words, Goldman helped small businesses secure short-term capital by connecting those entrepreneurs with investors.

Today, that business is The Goldman Sachs Group, a \$90B multinational finance company engaged in investment banking, investment management, investing & lending, equities trading, and fixed income, currencies, and commodities (FICC) trading. In the first half of 2017, the mix of those five businesses was responsible for \$15.9B in net revenues.

Goldman Sachs has changed a lot through its 148-year history. But as technology continues to roll through the financial services industry, Goldman is one of the few bulge bracket banks today that is staking its reputation and future on new strategic bets in digital finance.

Eight years after Matt Taibbi famously called Goldman Sachs “a great vampire squid wrapped around the face of humanity” in Rolling Stone, perspectives are mixed on the future of Goldman Sachs’ consumer-facing fintech initiatives.

When Goldman announced it would be entering the online lending business in 2015, Lending Club’s then-COO Scott Sanborn quipped, “We are looking forward to competing with Goldman Sachs on customer experience.” More recently, when Goldman bought \$2.8B worth of bonds held by Venezuela’s struggling central bank at a 70% discount to market price, Ribbit Capital founder Micky Malka tweeted, “This is why @GoldmanSachs won’t become a consumer first brand.”

Others are more sanguine. Pascal Bouvier, a venture partner at Santander InnoVentures, recently wrote that he believes “Goldman Sachs might be more of a threat to traditional banking than all fintech startups put together and all tech companies.”

Below, our analysis aims to lay out Goldman's strategy by tying together data from its investments, M&A, patents, partnerships, hiring activity, and more. While this analysis will not cover every aspect of Goldman's business, some of the main takeaways from our analysis include:

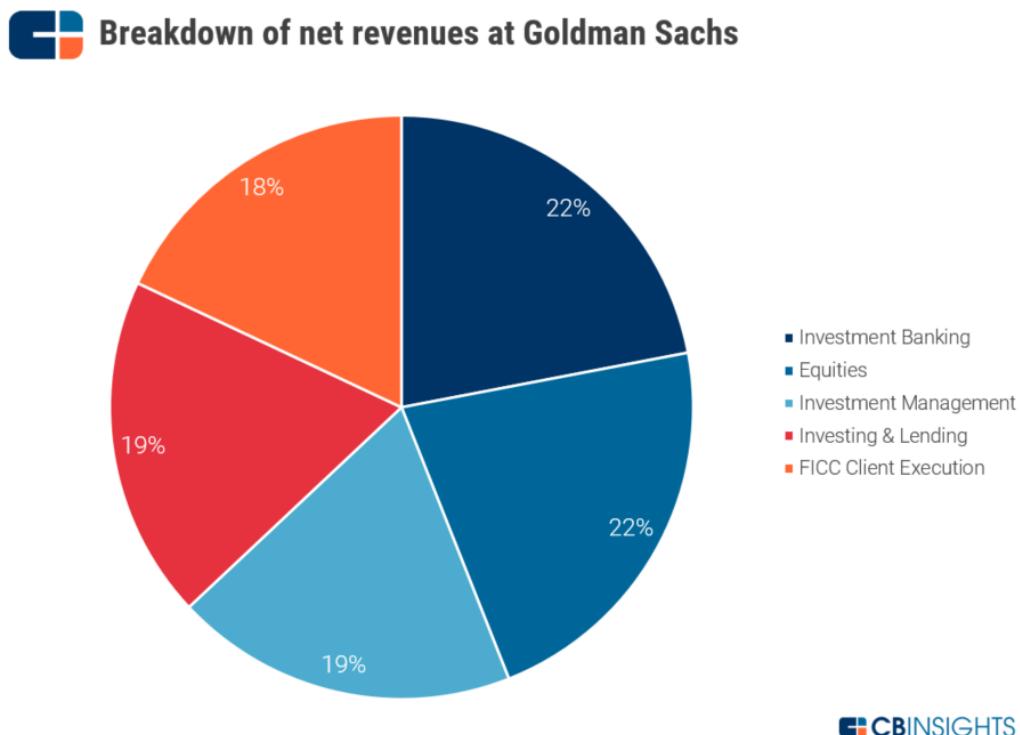
- **46% of Goldman Sachs job postings are in technology.** Based on Goldman's hiring activity, mobile consumer banking apps look to be next for the company's Digital Finance offerings as it actively seeks mobile developers.
- **Goldman Sachs' online lending arm Marcus lent \$1 billion in the first 8 months of operation. Now it is taking its digital finance brands global.** After taking on Lending Club and Prosper in the US, Zopa and Ratesetter look to be next. Goldman plans to launch its Marcus brand in the UK by the middle of 2018 and is actively hiring product managers, communications, and customer support personnel for its Digital Finance subdivision in London.
- **Goldman Sachs is one of the top two most active US bulge bracket banks investing in fintech startups.** These investments come out of different groups, including merchant banking and principal strategic investments, but have also gone to a broad array of categories, including marketplace lending, mobile payments, fintech infrastructure, and commercial real estate investing platforms.
- **Goldman has pushed investments into Brazil.** Goldman is betting on Brazil's economic and political situation to improve, with bets on fintech providers, self-storage companies, and logistics startups.
- **Goldman made its first fintech acquisition in 2016 and is looking for more.** In March 2016, Goldman announced it would acquire Honest Dollar, an Austin-based venture-backed startup focusing on small business retirement benefits that continues to operate today. Earlier this month, Goldman poached nearly 20 product, engineering, and marketing employees from small business direct lending startup Bond Street. Job postings indicate that Goldman Sachs's Digital Consumer Finance team is actively looking for professionals to "evaluate various M&A opportunities."
- **Goldman's cryptocurrency patent made headlines, but most of its patents have focused on improving its systems.** Recent patent activity has focused on internal systems, including managing compliance and regulatory risk, structured data distribution, and cyber risk.

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Background

Goldman Sachs makes money in five primary areas: investment banking, equities, investment management, investing & lending, and FICC client execution. Here's how Goldman's net revenues broke down in the first half of 2017:



Recent attention has heavily focused on the poor performance of the latter. Traditionally a profit machine, Goldman's bond trading unit saw net revenues fall to \$7.6B in 2016 from \$23.3B in 2009.

In Q2'17, Goldman's FICC client execution unit saw its revenues drop 40% on a year-over-year basis and 31% lower than Q1'17. While other major banks have also been hit by the FICC slowdown, some saw significantly smaller declines in Q2'17 such as Citigroup (6% drop YoY) and Morgan Stanley (4% drop YoY).

In a presentation at Barclays Financial Services Conference in September 2017, Goldman President and Co-Chief Operating Officer Harvey M. Schwartz attributed the decline in FICC revenue to both macroeconomic external factors (including interest rates and regulation) and specific ones (51% of FICC sales in the first half of 2017 were by hedge funds and active asset managers).

Goldman's stated plan to address FICC challenges is to deepen its penetration with asset managers and banks, attract new talent, and strengthen its corporate offering. Over the next three years, Goldman believes doing these three things can result in \$950M+ in additional net revenue.



FICC revenues at major US banks

Q2'17, YoY change in dollars



Meanwhile, Goldman's investment banking division saw an 11% drop in revenue last year. In order to broaden its relationships, Goldman has strategically shifted some of its key investment banking personnel to cities outside of core markets, including to Atlanta, Dallas, Seattle, and Toronto.

In his Barclays presentation, Schwartz further explained that Goldman would be "leveraging technology to efficiently scale the delivery of our products and services to our clients." In June 2017, Goldman made headlines for the work it's done mapping out the initial public offering into 127 steps and finding ways to automate parts of the process. An interface Goldman has built, Deal Link, is now replacing informal checklists and tracking legal and compliance reviews associated with IPOs.

Deposits have grown significantly as a source of funding at Goldman Sachs. In Q1'17, Goldman's deposit base grew to \$127.9B (versus \$82.9B in 2014). Goldman entered the consumer deposit market last year after closing its acquisition of GE Capital Bank's online deposit platform and assumed \$16B of deposits, \$8B of which were online retail savings accounts. Goldman's GS Bank had increased its online deposits from individuals to over \$12B by June 2017.

Digital finance initiatives

Notably, Goldman seems to believe that its digital consumer lending and deposit platform has as large of a net revenue growth opportunity as its FICC trading unit. This is a remarkable shift in strategy that only materialized in the last three years, and the strategy is still in the extremely early innings of its growth potential for Goldman.

In October 2016, Goldman formally launched its retail online lending business, Marcus, marking its first move into the consumer lending space. Backed by the funding advantage of Goldman's balance sheet, Marcus launched and still operates with a single, customizable personal loan product for Prime borrowers (660 credit score and above): up to \$30,000 with the promise of no fees and straightforward terms.

Marcus is led by Harit Talwar, who brings consumer finance experience as former president of US Cards for Discover Financial and now serves as Goldman's Head of Digital Finance, where he oversees the online lending and deposit businesses. While Marcus initially acquired customers by direct mail, it has since expanded into the aggregator channel, including Credit Karma and LendingTree, and direct online customer acquisition.

Marcus vs. Lending Club UX comparison

Marcus:
BY GOLDMAN SACHS®

Debt happens.
It's how you get out
that counts.™

Marcus by Goldman Sachs® offers a fixed-rate, no fee personal loan which can be used to pay off high interest credit card debt, or for major purchases and special occasions.

147 years new.

Backed by over a century of financial expertise, loans from Marcus are designed with you in mind.



 CB INSIGHTS

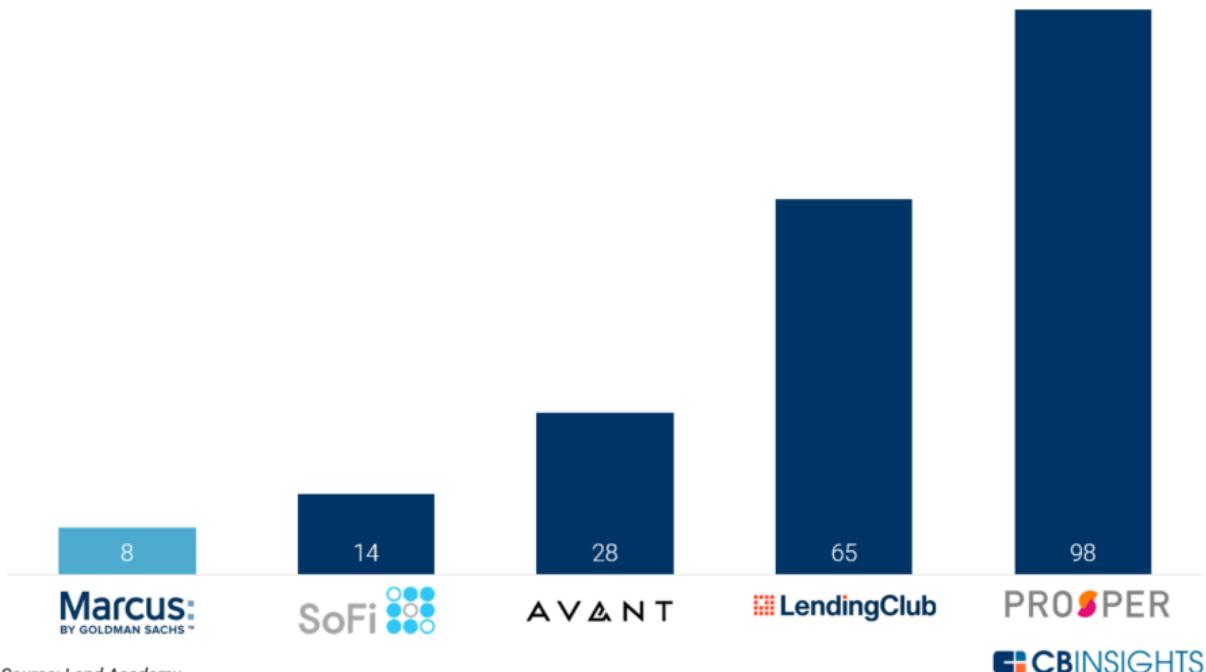
Another advantage Marcus has over other bank incumbents looking to launch a competing initiative is its non-legacy IT architecture and the fact that Goldman does not have an existing consumer credit card business for Marcus to cannibalize. This enabled Goldman to move from inception to launch in 12 months, utilizing existing platforms, open source software, and external APIs including FICO, Twilio, Facebook and Adobe. As Talwar explained,

"We built the middleware ourselves, which is a micro services API architecture. And once we did that, a lot of best-in-class modules, we purchased from the outside. So there are around 17 different modules which we've purchased from outside, which work through a middleware layer, delivering the customer experience."

Marcus reportedly passed \$1B in loan origination in its first 8 months and is expected to originate \$2B by the end of 2017. While data on number of loans doled out is hard to find, Goldman reached its first billion in consumer loans significantly faster than competing online personal loan companies (Lending Club launched in 2007). At the CB Insights Future of Fintech conference, Talwar noted that Marcus's average loan size was "around \$14,000."

Number of months to \$1B in total personal loans issued

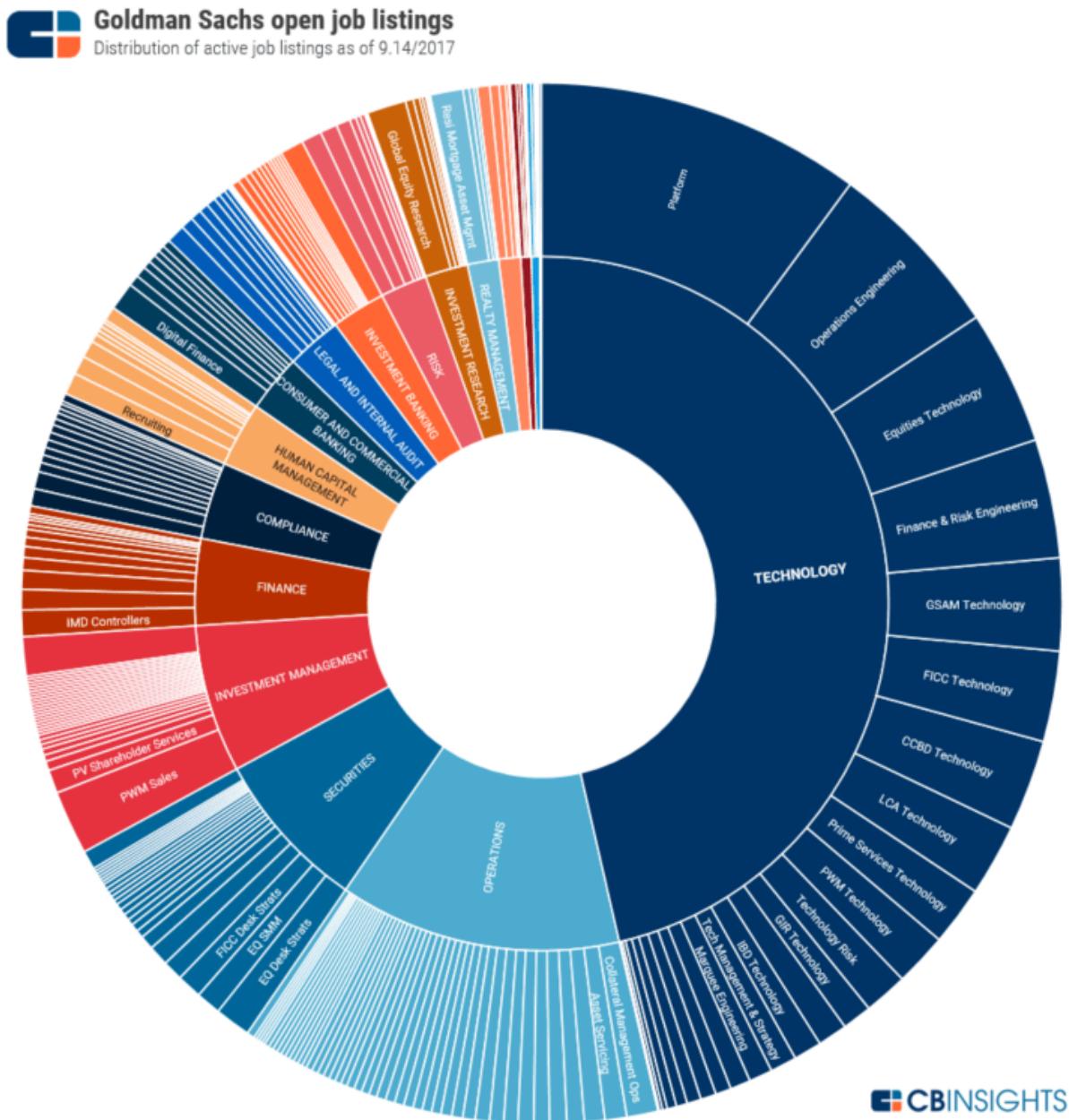
Marcus by Goldman Sachs vs. select lending platforms



Source: Lend Academy

Hiring trends

An analysis of Goldman's 2,000+ open job listings by division and business unit confirm its focus on technology and digital finance. As of 9/14/2017, 46% of all of Goldman's jobs were in its technology division. The highest percentage of technology jobs were for platform roles, followed by operations engineering and equities technology positions. 6% of all technology jobs at Goldman Sachs were in its Consumer and Commercial Banking business unit, which houses its Digital Finance subdivision.



Some key takeaways from analyzing Goldman's hiring data:

- **Goldman is actively hiring Android developers** to enable the creation of its "all digital retail bank." Earlier job postings focused on hiring iOS developers. This hints that Goldman's Digital Finance (GS Bank, Marcus) product offerings may soon include native mobile apps.
- **Goldman is hiring for roles to build out its own robo-advisory platform.** A job posting for a user experience engineering position notes that Goldman's "Digital Advise Solutions (DAS) business cover mass affluent market by building an Automated Digital Advice Platform."
- **Goldman is bulking up hiring for its Digital Finance unit in the UK.** London-based roles in the company's Digital Finance subdivision include communications, customer support, product management, and DevOps.
- **Goldman counts zero public-facing job postings mentioning the term "blockchain"** at present, despite setting up a microsite dedicated to the technology titled "Blockchain: The New Technology of Trust."
- **Goldman is also making a number of engineering hires for its Marquee platform,** which provides clients access to its analytics, trading, and data tools. 15+ engineering jobs in New York or India are for developer roles related to Marquee engineering. The hiring comes as Goldman is now looking to monetize some of its software as well. Goldman is also reportedly seeking investments to spin out its web app Simon, which allows brokers to buy and adjust structured note products, at a valuation of around \$75M.

Investments

Where Goldman's investments come from

Today, Goldman Sachs is one of the most active investors in private technology companies globally. Its tech investments primarily originate from several different groups within firm, including:

GS Growth – Goldman Sachs makes growth-stage investments into software, technology-enabled business services, and healthcare IT companies of \$25M or more out of a group within its Merchant Banking division.

Goldman Sachs Investment Partners – GSIP's venture capital and growth equity group has invested in a number of consumer-facing or B2B2C tech companies globally, including Uber, Facebook, Pinterest, Spotify, thredUP, foodpanda, GoEuro, and Compass. Goldman was a co-lead investor in Uber's Series B round in December 2011, when the ride-hailing company achieved a \$316M valuation.

Goldman Sachs Private Capital Investing – Within Goldman Sachs' special situations group, Goldman Sachs Private Capital provides "long-term capital to growth and middle-market companies" investing "\$20 to \$150 million per transaction in the form of common, preferred and structured equity." Goldman's recent \$153M debt and equity financing to British consumer lender Neyber was made out of its private capital unit.

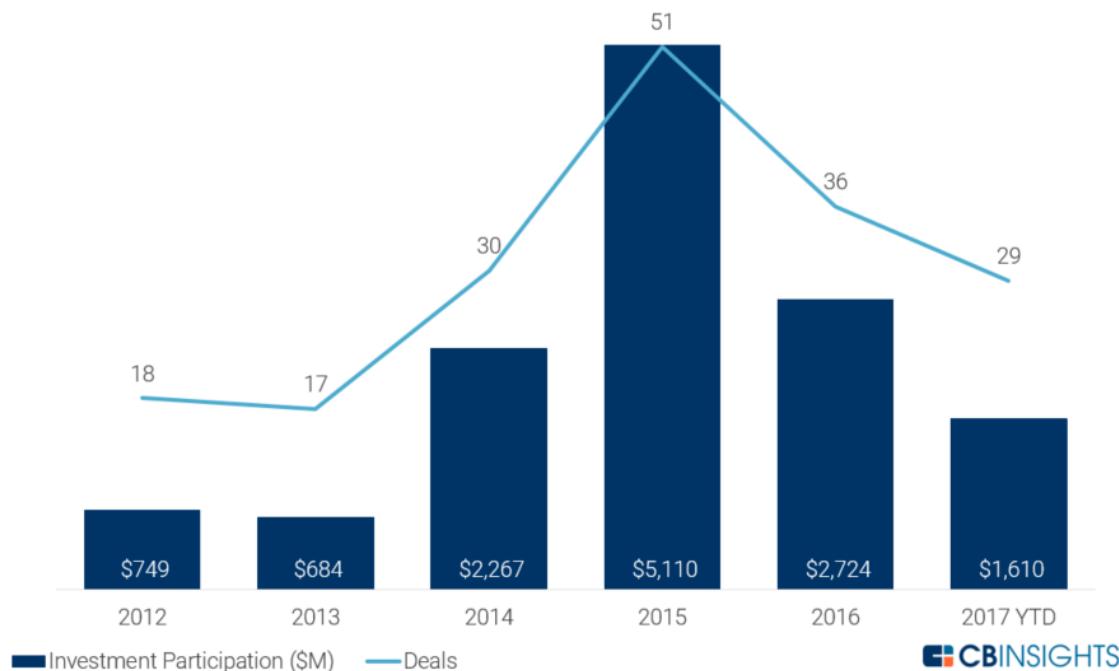
Principal Strategic Investments – Goldman makes long-term strategic investments into fintech, enterprise, and/or market infrastructure companies where it plans to use the technology internally or develop a business relationship. This includes an investment in over-the-counter derivatives trading systems vendor Droit Fintech.

Lending – Goldman also provides lines of credit to technology companies including Dropbox, Stripe, MediaMath, and fin tech companies including Nubank, Fundation, and, prior to its IPO, OnDeck Capital.

The chart below shows Goldman's participation in new and follow-on, enterprise and consumer, private tech investments over the last five years. Of note, Goldman's equity investments to private tech companies fell 29% YoY in 2016. Goldman participated in over \$5B of tech investment in 2015 including mega-deals to Uber, Spotify, and, in China, Guahao and iTutor Group. New private tech investments in 2017 YTD by Goldman Sachs include enterprise storage company Nasuni, enterprise database startup Redis Labs, and cloud computing vendor Skytap.

Goldman Sachs private tech investment participation

2012 - 2017 YTD (9/18/2017)



Goldman bets on Brazil

More recently, an analysis of Goldman's investments show it has made a handful of bets in Brazil. Last July, Goldman's Private Capital group led a \$10M investment in Brazilian trucking marketplace startup CargoX. In the same month, Goldman invested \$184M in Metrofit, a joint venture that owns self-storage sites in Brazil.

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Google Strategy Teardown

Betting The Future On AI, Cloud Services, And
(Tamed) Moonshots



Artificial intelligence is the thread running throughout Google, including autonomous vehicles, enterprise cloud, and its new smartphone line.

Since its 1998 incorporation in a Menlo Park, Calif. garage, Google has become the torchbearer for corporate innovation in the post-dot com era. Its affinity for incubating far-out concepts has manifested in several concrete ways—from its well-known “20% time” policy for its employees’ personal projects (which led to the birth of Gmail and AdSense), to its establishment of Google Ventures as a quasi-independent venture arm in 2009, to its moonshot-focused Google X innovation lab, now simply X.

However, in recent years the company has started to shift from its experimental approach, risky R&D, and decentralized company structure.

After taking the helm in 2011, CEO Larry Page (now head of Alphabet) announced Google would put “more wood behind fewer arrows”: transitioning from a democratic, bottom-up innovation approach to a more top-down, focused strategy.

Indeed, the “20% time” policy has reportedly been restricted in recent years, requiring more managerial approval and oversight.

At the same time, the company has moved beyond its core search and ad business to explore disparate fields from consumer hardware to autos and telecom to healthcare and venture investment.

Last October’s Alphabet reorganization was couched as an effort to bring greater structure, transparency, and fiscal accountability to this sprawling web of initiatives. The move coincided with the May hiring of Ruth Porat as CFO, an experienced Morgan Stanley executive with a reputation for financial discipline.

One year on, these moves have already driven clear changes in how Mountain View handles acquisitions and R&D. New equity awards will tie employees’ incentives to individual unit performance. At the X lab, head Astro Teller has written of the need to nudge moonshots toward “graduation,” company parlance for an eventual life as a scalable team and products within the Alphabet corporate family. In the case of GV, the venture arm has seen its longtime leader leave, and has scaled back both on deals year-to-date and particularly seed deals.

As the company stands at a crossroads, we've used the many tools available in the CB Insights tech market intelligence platform to distill the acquisition, investment, and research/patent activity of units across the Alphabet organization, providing a data-driven view into its strategy for the future. Given the breadth of the company's operations, we will not touch on every initiative and sector, instead focusing on major and recurring themes driving the Googleplex forward, such as:

- **A push into cloud and hardware:** Alphabet's pushing for growth in areas beyond advertising, with R&D, acquisitions, and investments focused on sectors with a proven capacity to become revenue and profit centers, such as premium mobile and smart home hardware, and especially cloud & enterprise services. Apigee, Google's largest acquisition since Nest, was a publicly traded enterprise cloud company.
- **An "AI-first" strategy :** The company is leveraging its AI/machine learning expertise, including those absorbed through its acquisition of DeepMind, to differentiate its products in the sectors above as well as search and advertising, overall consumer web services, and other Alphabet units. Google's new high-end mobile and smart home devices serve as exclusive outlets for some of these services.
- **A focus on AR/VR, autonomous driving, and digital health:** Investments, acquisitions, and patent data point to Mountain View's R&D in areas including autonomous driving, wearables, AI-driven healthcare, and efforts to bring broadband to a broader swath of the global population.
- **Acquisitions have picked up again:** The company made 9 acquisitions in Q3'16, the most since Q3'14, which could signal a resurgence in its M&A appetite given its stated intention to bulk up further in mobile hardware (with the Pixel phone and smart home hub), enterprise cloud offerings, transportation/logistics, VR, and other areas.
- **GV has largely pulled out of the seed market:** GV has mostly gotten out of the game of funding younger startups. Its seed activity has fallen almost 85% on a year-over-year basis, with no new seed deals at all in the first half of 2016.
- **Disciplining other moonshots:** The reining in of spending and a mandate for moonshot units to outline paths towards profitability. That has led to veteran attrition and the restructuring of teams to combat corporate sprawl, as well as the external hiring of industry veterans to nudge moonshots such as Loon and autonomous vehicles towards commercialization.

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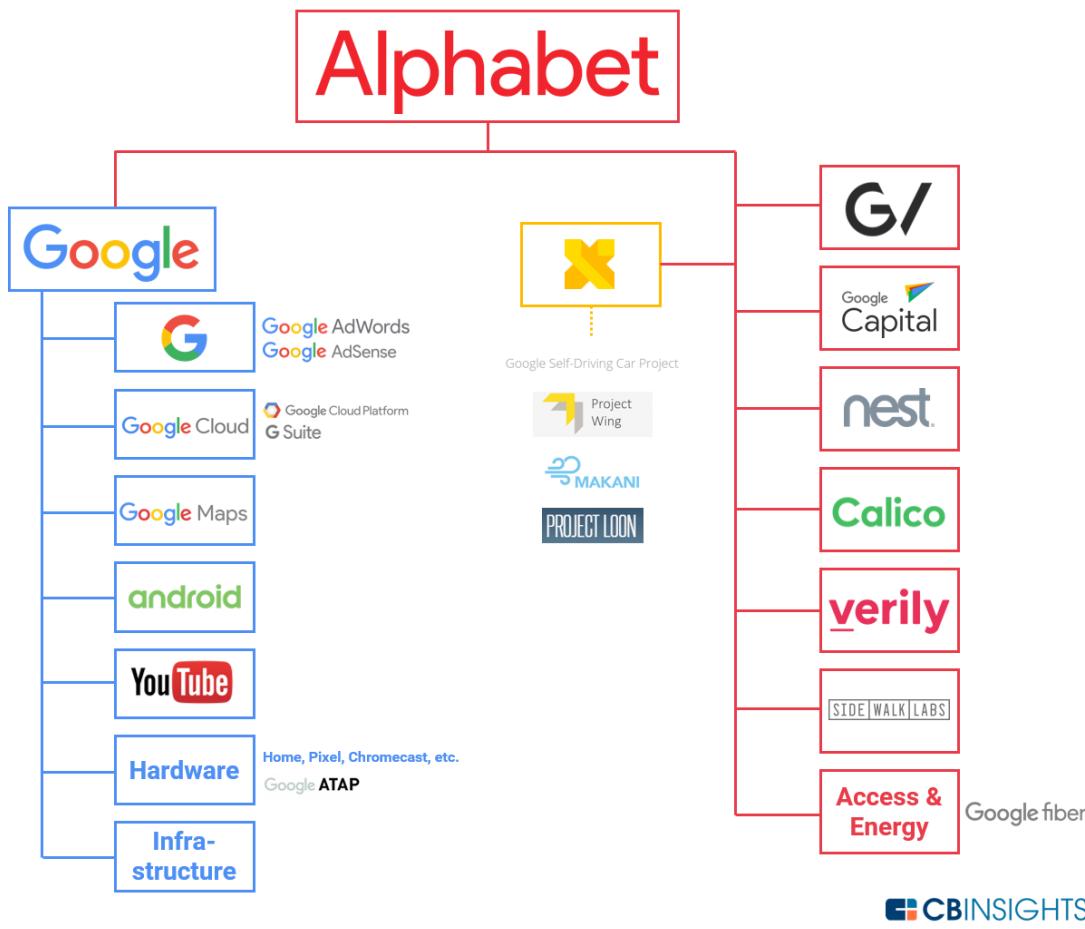
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Background

Before we dive into the data behind Alphabet's forward-looking strategy, we must quickly assess its most mature and most profitable (by far) business line: Google search and advertising.

As a reminder, Google now consists of search, mapping, cloud & enterprise, Google-branded consumer hardware and operating systems (Chrome, Android, etc.), and YouTube. All other units, from investment vehicles (GV, Google Capital) to the X arm, are now subsidiaries reporting directly to Alphabet management.

Below is a (non-exhaustive) diagram outlining Alphabet's structure and key units as of October 2016:



We will use the Google moniker when discussing either the company proper or historical pre-Alphabet activities under its banner.

The company outperformed analyst expectations in Q2'16 with surging top- and bottom-line growth. Fueled primarily by Google's core ad business, Alphabet quarterly revenue jumped 21% to \$21.5B while profit rose 24%, beating analyst estimates. Driving the strong beat was a successful transition to mobile platforms, including new mobile ad formats and better gauging of efficacy.

Though last quarter's results were largely positive, there are secular trends that may cloud the long-term outlook. For one, the share of Google ad revenue coming from its own websites topped 80% for the first time in Q2'16, up from 70% in 2011 and 60% in 2006.

This means that future ad growth will be more reliant than ever on Google driving traffic to its own sites (such as search results and Google News, etc.), as opposed to network members' sites.

Mobile ads generally are also less lucrative than desktop ads, so Google's success in mobile has been accompanied by a decline in cost-per-click (the average amount advertisers pay when consumers click on their ads on Google) even as volume gains offset some of this. Google's Q2'16 CPC on its own sites was only 76% of its CPC two years earlier.

The proliferation of apps and connected devices also presents a challenge, as it's unclear whether Google's search engine will dominate in a world where apps like Facebook and WeChat absorb so much of users' time online, and a new generation of devices like smart home hubs funnel search traffic to would-be competitors (such as searches made directly on Amazon via the Echo smart home device and its Alexa voice-powered assistant).

In fact, Google's share of global digital ad spend continues to decline, as both domestic competitors like Facebook and international rivals like Baidu and Alibaba continue to gain ground.

The strength of Google's ad business has long given the company stability, as well as the financial means to fund its moonshots. However, despite Alphabet's vast number of operations, its financial performance and growth prospects remain heavily dependent on Google's original business (advertising accounted for a full 89% of Alphabet's Q2'16 revenue).

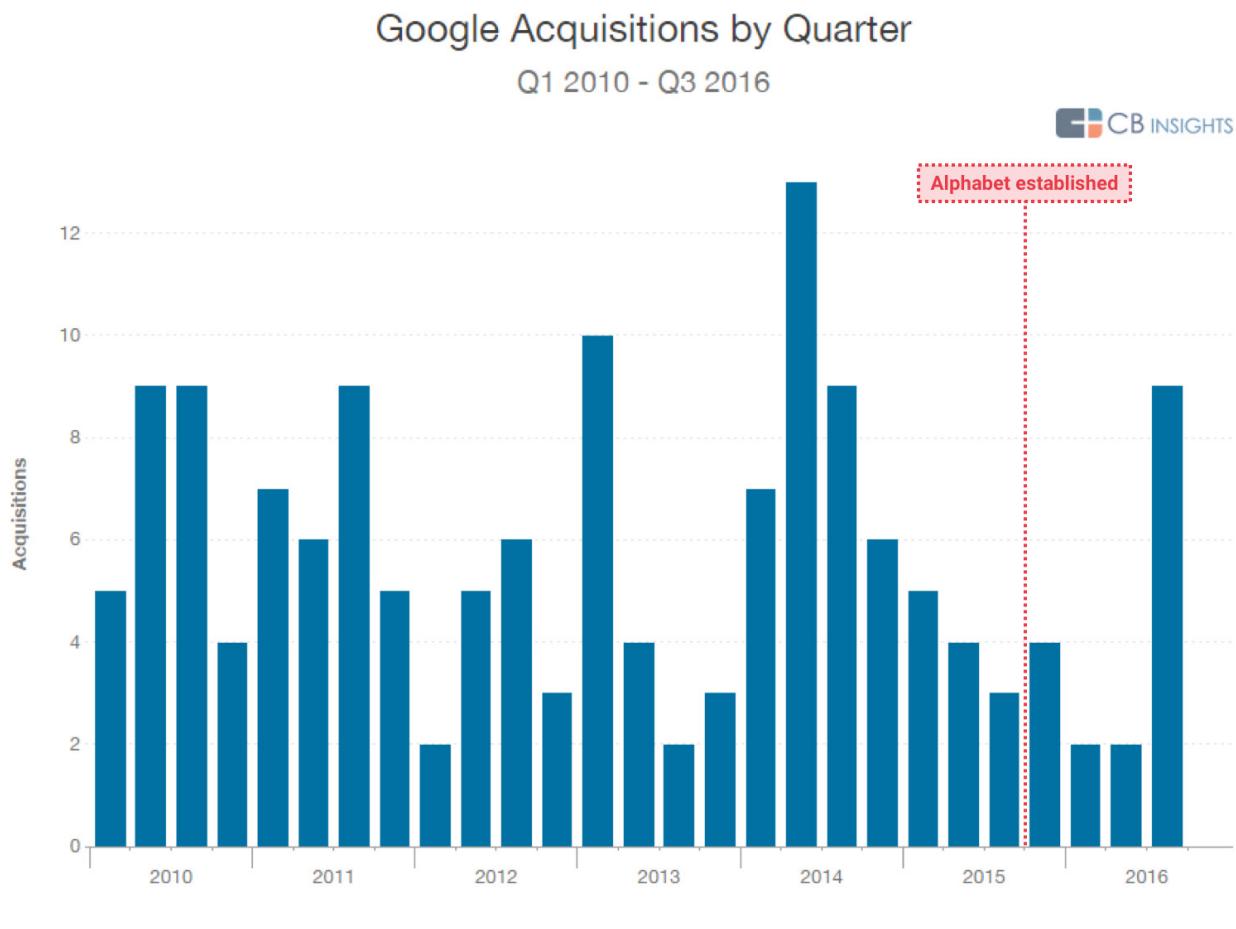
Outperformance in its core business is notable amid turmoil in other units, but Mountain View is keenly aware of the lack of diversity in its revenue streams. As we dig into Alphabet's activities across its subsidiaries, we will see how the search for new avenues for growth has shaped the company's strategy.

Acquisitions

Google has traditionally ranked among the most acquisitive tech corporations, but the pace of its acquisitions slowed both leading up to and following the reorganization under the Alphabet umbrella.

Since 2001, the company has made nearly 200 acquisitions to bring on external talent and expand into new sectors, and in the process coined another tech adage in the form of Larry Page's "toothbrush test" for whether an M&A target is worthy. (The target must develop a product that its customers consider indispensable on a daily basis.)

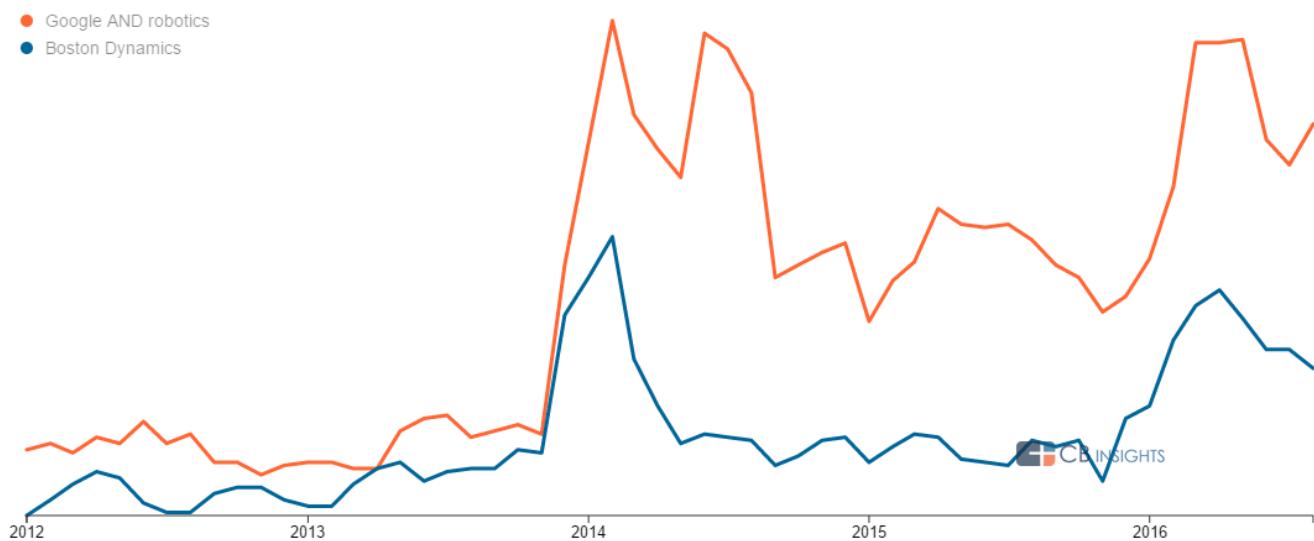
Our acquisition tracker includes each acquisition in the steady stream of Mountain View purchases. Alphabet has now acquired 13 companies year-to-date (10/10/16), with three acquisitions last month alone, including the \$625M purchase of publicly traded enterprise cloud company Apigee. We used the CB Insights Acquirer Analytics tool to track the company's M&A activity since 2010:



Google has remained a dominant force in tech M&A for much of the decade; activity peaked in 2014 as Google acquired over a dozen companies in the second quarter, ranking far ahead of other tech giants in acquisitions in that year. However, the company's acquisition pace slowed considerably leading up to the Alphabet restructuring, and decreased markedly in the first half of 2016. This most recent quarter has seen a resurgence in activity, though it remains to be seen whether that will be a temporary blip, or a signal that Mountain View feels comfortable maintaining the renewed pace under Alphabet.

To date in Q4'16, Alphabet has only acquired Famebit, a platform that helps brands connect with video creators on YouTube.

Aside from a new focus on fiscal restraint, lackluster results from marquee acquisitions earlier in the decade may have given the company pause. The company's rapid acquisition of at least 7 unique robotics companies—Schaft, Industrial Perception, Meka Robotics, Redwood Robotics, Bot & Dolly, Holomni, and most notably Boston Dynamics—triggered a peak in hype in 2014 (as shown by our Trends tool, below), but those companies never coalesced into a productive robotics unit.



Former Android head Andy Rubin led the robotics push, but Rubin departed the company in October 2014 to found hardware startup incubator Playground Global. The loss of the visionary figure likely held back his robotics division, named Replicant, from ever truly becoming a cohesive unit under either Google or Alphabet.

Instead, the Replicant companies came directly into management's crosshairs following Alphabet's creation, as the new company took a hard look at the revenue-generating potential of its various units. Though subsidiaries like Boston Dynamics were a hit on YouTube, the long road to commercialization led to the unit being shopped for sale in early 2015 (with a buyer still yet to emerge).

Most recently, Google's significant 2014 commitments to the smart home with Revolv, Dropcam (\$555M), and Nest (\$3.2B, its largest startup purchase to date) have also been troubled by allegations of mismanagement and employee attrition. The tensions at Nest came to a public head with the departure of Nest co-founder and CEO Tony Fadell in June. The run-up to Fadell's resignation saw repeated mentions of friction among smart home leadership, most notably a Medium post from Dropcam founder Greg Duffy (whose Dropcam team was folded into the Nest smart home division):

"It was my mistake to sell... There is a lot that I could say about my extreme differences on management style with the current leadership at Nest."

The troubles at Nest can be read as a failure of the old structure to properly discipline its various operating units and harmonize goals and culture across the Googleplex, even as the company expanded into new markets and product lines.

In fact, the Nest division (now a standalone Alphabet unit) was sidelined from the company's new smart home hardware effort, Google Home, just launched at an October 4, 2016 event. As Alphabet's de facto smart home unit, Nest might have seemed the natural candidate to build a challenger to Amazon's successful Echo device. However, the clear threat to the company's principal search business coming from Amazon's device, and the increasing competition with Amazon as a whole, may have led Google to conclude it had to develop Home within the core of the company, with direct supervision from Google's executive suite.

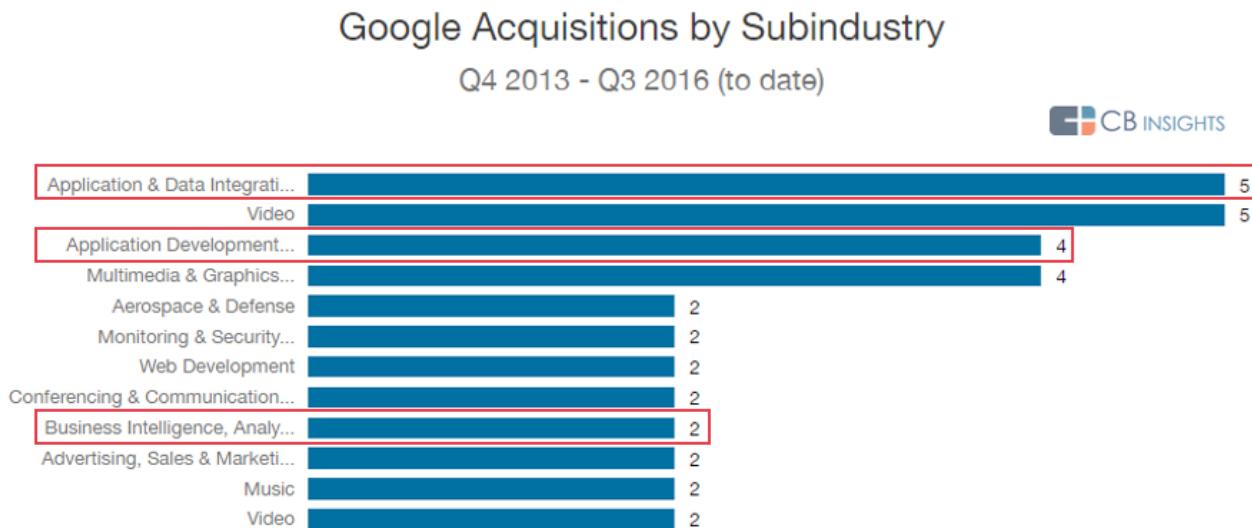
Moreover, such a product demanded close integration with Google's core search and virtual assistant services. Nest, at arm's length from core Google, would have had more trouble crossing interdepartmental borders and winning consensus to achieve this.

The new unitized Alphabet structure could be conducive to more successful M&A and integration of disparate businesses. The various divisions under Alphabet will be able to lobby for acquisitions aligned with their strategic interests and roadmaps, but also face a clearer organizational structure leading to Alphabet's executive suite, as well as a new mandate for less speculative bets.

Though its robotics and smart home investments have become cautionary tales, Google's acquisitions in many other fields have produced more unambiguously positive results. DeepMind, another 2014 purchase valued somewhere between \$500M and \$600M, has cemented Google's reputation in AI research with its high-profile AlphaGo and WaveNet projects and its tech has already been applied in areas from Google's data centers to its translation tools.

Beyond the smart home, Mountain View's intensifying competition with Amazon has also led to a spate of acquisitions in cloud and enterprise services, as well as a different strategic approach. Google proper has made bolstering its cloud platform a top priority, since it has traditionally lagged Amazon's AWS and Microsoft's Azure in this area (despite recently winning strategic cloud clients, including Apple and Spotify in early 2016).

Google is also relying heavily upon acquisitions in this area to supplement internal R&D and bolt value-added services on top of its platform. In particular, CEO Sundar Pichai has said that the company is aiming to compete with robust, developer-friendly services, as opposed to providing sheer scale. Our acquirer analytics data highlights this effort:



A prime example is Google's September 2016 acquisition of Api.ai, a startup helping developers build conversational intelligence interfaces. This meshes nicely with artificial intelligence, the other pillar of Google's differentiation strategy (discussed in greater detail within the industries section).

"Over the past year, according to someone who recently left Google, those inbound [acquisition] requests have come most frequently from one unit: Enterprise."

— Recode Report

Its other purchases in this area range from Stackdriver, Appurify, Firebase, and Zync Render in 2014 to its acquisitions of Apigee and Orbitera within the past two months. Indeed, over half of its 2016 acquisitions to date involve enterprise applications or B2B cloud services. Many of these have come after Recode's March report that Google was most actively hunting for targets in the enterprise cloud arena.

With its cloud push, Google has thus far focused on multiple targets serving the mid-market and aimed at adding a variety of enterprise capabilities, as opposed to a multi-billion blockbuster acquisition in the vein of Nest. Its \$100M purchase of billing service Orbitera is emblematic of this catch-up strategy, as well as its support of a flexible, "multi-cloud" world, where large enterprises increasingly rely on multiple vendors.

It's also worth noting that compared to leading-indicator bets in promising but unproven sectors (e.g., autonomous cars and robotics), Alphabet's string of cloud and enterprise acquisitions come in a mature sector with obvious financial opportunity.

Alphabet's June acquisition of Webpass also comes from the mature field of telecommunications. Alphabet's Access & Energy unit, which encompasses Fiber, has already announced plans to leverage Webpass's wireless technology to reduce the capital expenses and deployment times associated with Fiber's costly expansion. In this context, Webpass appears to be another immediate-impact acquisition to reduce losses and drive profitability.

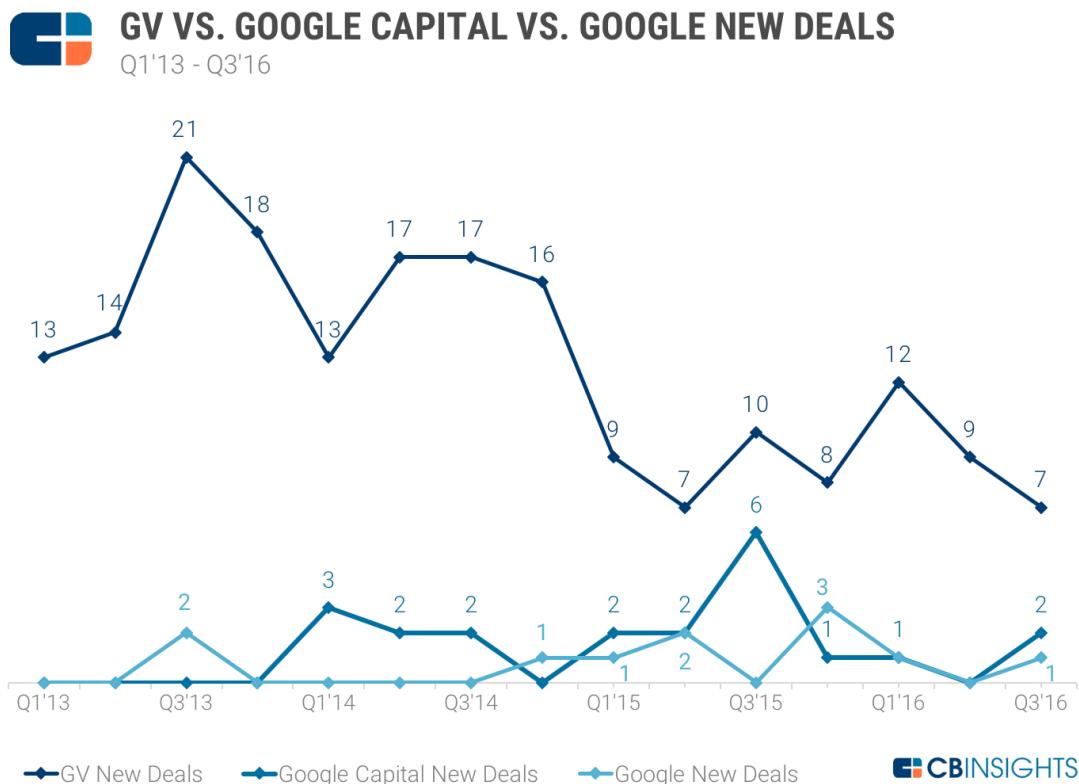
Admittedly, it has been a short year since the birth of Alphabet, but the data thus far reflects the new organization's attempt to balance moonshots with fiscal responsibility and clear paths to revenue.

Investments

Google, GV, And Google Capital

Alphabet's investment activity is closely watched by competitors and industry observers alike. A few are made directly by Google subsidiaries or divisions. (DeepMind, for example, has invested directly in telemedicine startup Babylon.) But the majority are made by Alphabet's two investment arms: the earlier-stage focused GV (formerly Google Ventures) and expansion-stage-oriented Google Capital.

These dedicated investment vehicles have always emphasized their strategic independence from Google proper. Last September's restructuring formalized this policy, with GV and Google Capital becoming distinct operating units under the new holding company. (But they do share common oversight in David Drummond, Alphabet's SVP of corporate development, who also oversees the corporation's M&A.) We isolated their activity accordingly, though some common themes still emerge upon closer analysis.



As the chart above illustrates, the investment activity of these three units has fluctuated of late. GV's new deal activity was already on the decline prior to Alphabet's formal announcement, while new growth investments through Google Capital and direct strategic investments from Google have both ticked upwards in recent years.

Google

Beginning with Google proper, the company's most prominent strategic investments include several mega-deals to companies in "frontier" areas such as augmented reality, space transportation, and exploration. It has led a \$542M round to stealthy augmented reality outfit Magic Leap in October 2014, as well as SpaceX's \$1B Series D in January 2015. Sources indicated that Google put up nearly \$900M of the latter deal, for a sizable 7.5% stake in the company.

The financial scale of these commitments underscores the strategic weight Mountain View is placing upon these fields. AR/VR is a central pillar of Google's forward-looking vision for computing. Its Magic Leap deal is a further diversification beyond various internal efforts (including the new consumer-ready Daydream mobile VR headset announced at the October 2016 event, along with older efforts such as Cardboard, Glass, and Tango).

Meanwhile, Google's hefty SpaceX investment aligns with broader Alphabet moonshots to improve geospatial data (Terra Bella, formerly Skybox Imaging) and drive global internet connectivity (Access and Energy, Project Loon, etc.). Cheap and reliable satellite launches will be a boon to both, and SpaceX head Elon Musk has also expressed like-minded ambitions to build a communications satellite network. Google's direct stake in satellite services company O3b Networks—though O3b was acquired for \$1.4B by European satellite communications company SES—is also thematically linked to these initiatives.

Besides strategic investments, in April 2016 Google also established Area 120, an in-house startup incubator for entrepreneurial employees. The move was partly a defensive one to counter the outflow of talent to Valley startups. The incubator's name also references the less available 20% time, which, like other Google traditions, has evolved into a formalized, clearly defined program.

GV

"I'm leaving because everything is great... It has nothing to do with Alphabet. Because the change to Alphabet had little impact with us at all. We've been independent since day one."

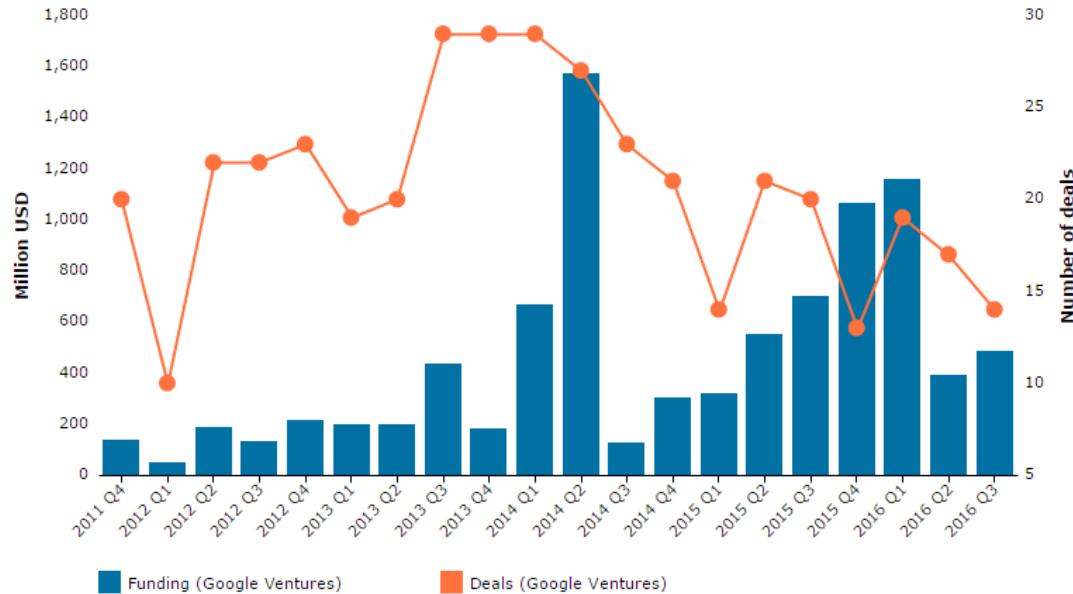
—Bill Maris, Former Founder and Head of GV

Alphabet's venture capital outfit has become a prominent player in the VC ecosystem since its founding in 2009, consistently ranking as one of the most active CVCs.

The elephant in the room is that GV founder and head Bill Maris departed the firm in early August. Anonymous sources suggested the Alphabet reorganization may have played a part (under Maris, GV has been known for its decision-making autonomy). However, the parting was publicly amicable on both sides.

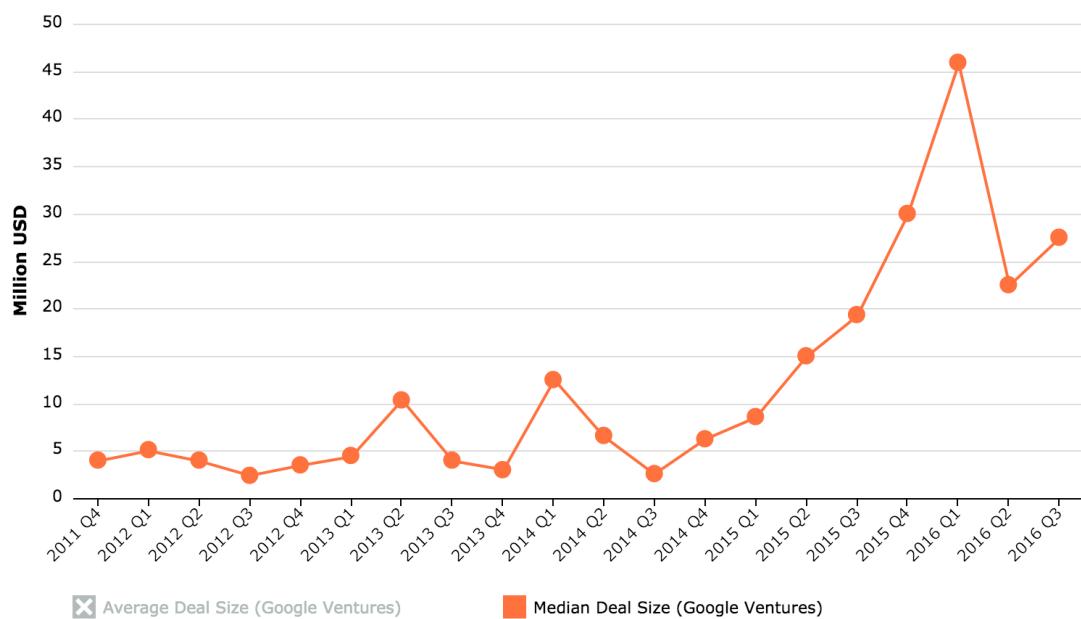
Nevertheless, one can see that post-Alphabet, the loss of foundational figures is a theme that will resurface across our examination of the company's other units.

Breaking down overall deal activity with CB Insight's Investor Analytics tool, we can see that GV's pace has been trending downwards since a peak from late 2013 to early 2014, which saw nearly 30 total deals per quarter (the number of deals are shown with the orange line). This aligns with GV's declining new deal activity that we saw earlier.



GV was founded with a \$100M capital commitment in 2009, which has since swelled to \$500M annually. As GV's financial resources have grown, it has increasingly participated in larger financings, like Uber's \$1.2B Series D in 2014 and Jet.com's \$500M Series B in 2015. Our Investor Analytics tool highlights this growth in median deal size; Q1'16 saw GV jumping into particularly large deals, including a \$400M Series C to Oscar in February. Overall, the data shows a sharp rise from the single-digit medians typical of pre-2015 GV.

2 years 5 years

\$34.8MAvg Deals Size in
2016 Q3**\$27.5M**Median Deal Size in
2016 Q3**+37.7%**Change in Average Deal Size Since
2016 Q2**+22.22%**Change in Median Deal Size Since
2016 Q2

The decline in deal pace and rise in investment size coincides with GV's near-total withdrawal from the seed market, once its bread-and-butter. Over the past two years, its seed activity has fallen almost 85% on a year-over-year basis, with no new seed deals at all in the first half of 2016.

1 year 2 years 3 years 4 years 5 years

	Seed / Angel	Series A	Series B	Series C	Series D	Series E+
% of deals	22.22%	26.67%	23.7%	18.52%	5.19%	3.7%
Avg deal size	\$2.48M	\$13.65M	\$46.68M	\$86.88M	\$54.76M	\$74.07M
Median deal size	\$2.05M	\$9M	\$25.1M	\$40.1M	\$45M	\$65M
Deal growth (yoY)	-84.62%	-28.57%	+120%	+50%	+150%	+50%

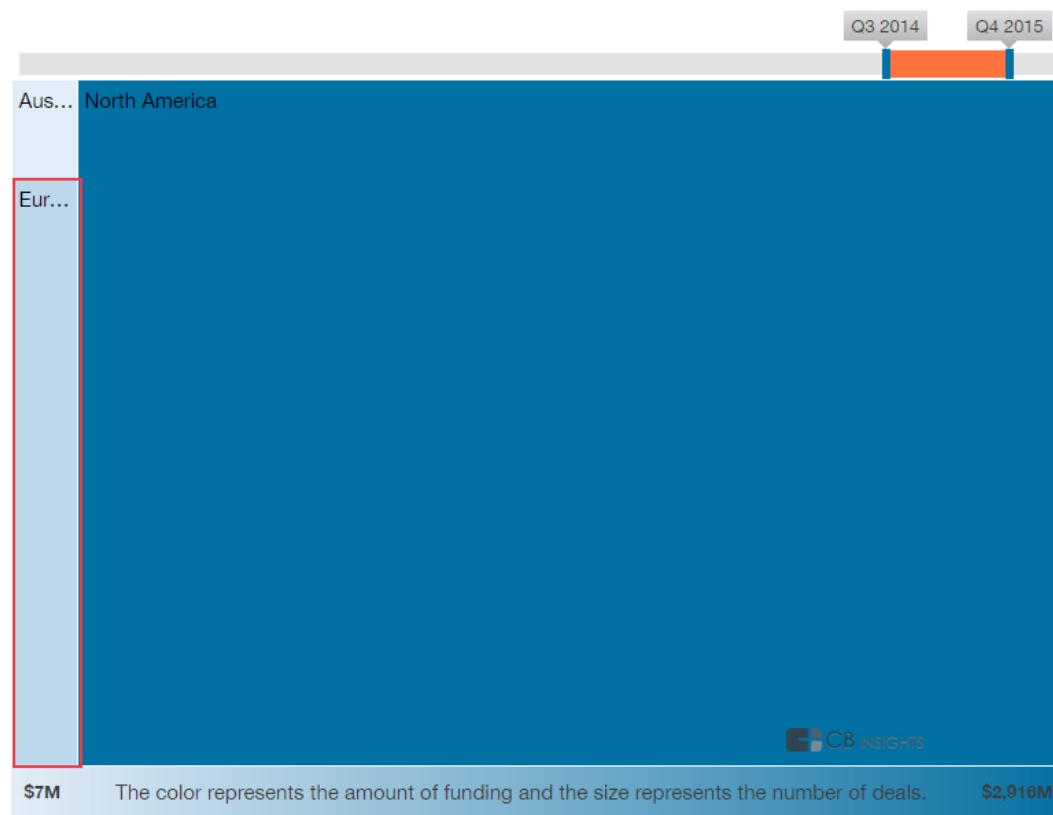
"When you have a \$2.5 billion fund, a seed investment has to take time to move the needle."

—Bill Maris, Exit Interview

Bill Maris acknowledged this pullback as early as last December, citing less opportunity in the seed space.

Meanwhile, GV's geographic focus has been more static, sticking to US-centric dealmaking. The firm had launched a \$125M fund in 2014 dedicated to European investing, with 5 partners to lead the unit. However, post-Alphabet the fund was scrapped in December 2015 and absorbed back into the global vehicle with GV's rebranding.

In roughly a year and a half, the European arm made less than 10 investments, with its largest deal being a \$60M Series C to flash hotel booking site Secret Escapes (which it co-led with Octopus Investments).

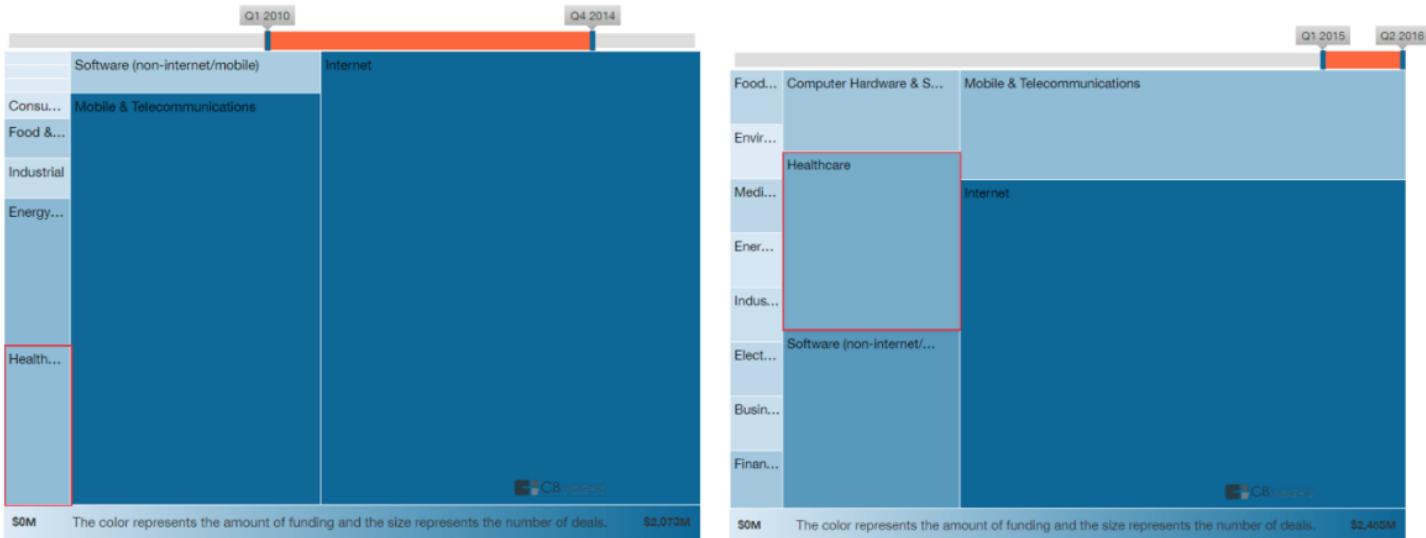


In terms of sector, GV has always stressed the firm's "independence" from the parent company's strategic interests, and its ability to ostensibly focus on financial returns and high-risk, but potentially high-reward moonshot-type efforts that are the classic province of traditional venture. Maris himself personified the Google old guard's affinity for moonshots.

"If you ask me today, is it possible to live to be 500? The answer is yes ... If given the choice between making a lot of money or finding a way to make people live longer, what do you choose?"

—Bill Maris, Former Founder and Head of GV

Indeed, GV has heavily committed to financing healthcare startups. These range from digital health companies (Flatiron Health) to providers (One Medical), as well as startups in fields like genomics (Editas, Foundation Medicine, 23andMe). In recent years, the firm has devoted a growing share of its deals to such companies. By March 2015, Maris disclosed in a Bloomberg interview that 36% of the fund's assets were invested in life sciences, up from 6% in 2013.



These investments parallel the efforts of other Alphabet subsidiaries Verily and Calico in transformative health research. These links are not surprising given Bill Maris's life sciences background; in fact, the former biotech portfolio manager was directly involved in the conception of Calico, Alphabet's mysterious anti-aging subsidiary.

At CB Insights, we've conducted in-depth research into GV's other areas of interest, spanning everything from AR/VR and drones to fintech, cybersecurity, and AI. Naturally, the breadth of both GV's portfolio combined with Alphabet's dizzying array of operations has led to substantial overlap. At least half a dozen GV portfolio companies were eventually acquired by Mountain View, most notably Nest in 2014.

On the other hand, Uber has suddenly become an example of the potential for strategic dissonance between a GV investment and Alphabet itself. Competitive pressure has risen as Uber has made serious moves to build out its own autonomous vehicles, while Google has begun leveraging driving app Waze (acquired in 2013) to explore the ride-sharing market through a new car-pooling feature. Though still in its early stages, this ride-sharing service might grow to rival UberPool.

In response, Uber began shutting out Alphabet exec and top dealmaker David Drummond from board meetings, leading him to step down. The ride-hailing company has also shielded information from board observer David Krane, the longtime GV partner tapped as Bill Maris' successor.

With a number of \$1B+ exits under his stewardship, Maris now leaves GV with both a strong record and uncertain future. As much of the firm's strategy was rooted in its leader, it remains to be seen how GV's investment style and philosophy will change under David Krane.

GV's Top Exits

Company	Valuation at time of exit	GV Stage of Entry	Year
Jet.com	\$3.3B	Convertible Note (Post Series A)	2016
Nest Labs	\$3.2B	Series C	2014
HomeAway	\$2.15B	Series E	2011
OnDeck Capital	\$1.32B	Series D	2014
Climate Corp	\$1B	Series B	2013
Hubspot	\$759M	Series D	2014
SilverSpring Networks	\$754M	Series D	2013
Editas Medicine	\$571M	Series B	2016
Foundation Medicine	\$489M	Series A	2013

 CB INSIGHTS

Google Capital

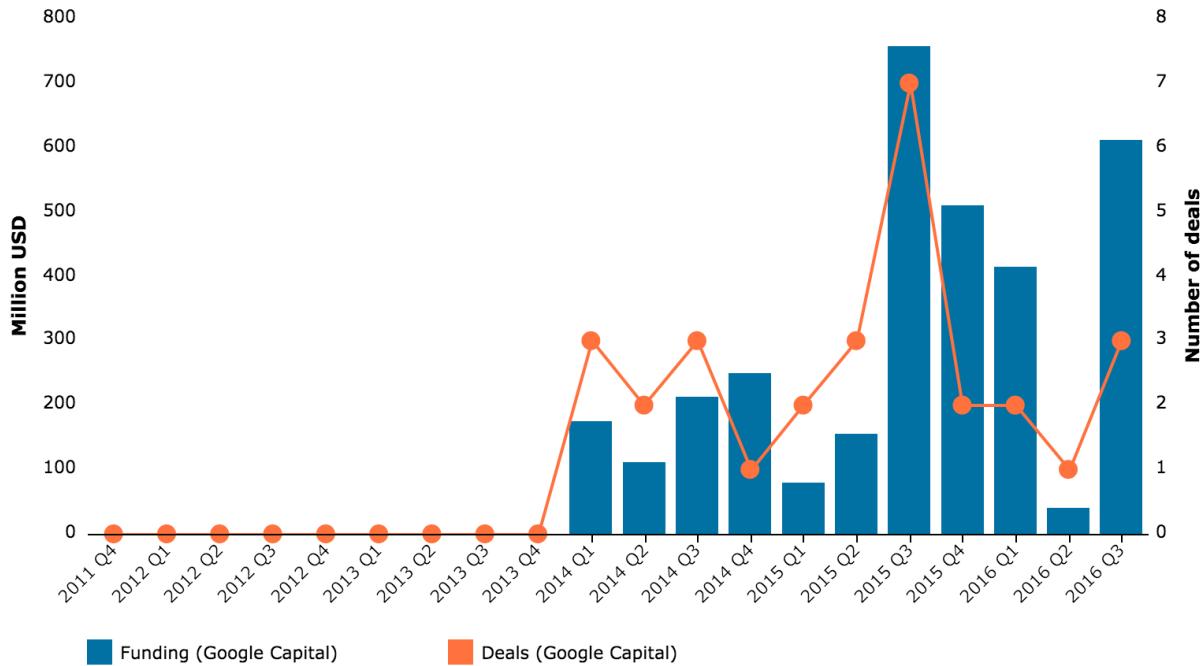
"They really have carte blanche within Google to find that one person and have that one person solve our problems. They actually bring a lot more to the table other than money."

—Edward Kim, CTO, Gusto (Google Capital Portfolio Company)

Google Capital is the adolescent of the Alphabet investment family, founded in 2013. As a growth equity fund, the investment arm obviously differs from its elder sibling with its focus on later-stage commitments. Its investment target is said to be \$300M annually, a healthy sum that nevertheless lags that of the senior GV.

As mentioned, Google Capital has also presented itself as a returns-based (rather than strategic) corporate investor. However, the growth fund does leverage the engineering expertise, recruiting infrastructure, and general cachet of its Googleplex mothership as key selling points. The sister firm promises some of the same access in this regard.

Since its formation, Google Capital has generally maintained a lower profile than GV. The investment arm has typically committed to 1-3 deals per quarter, with a noticeable spike in Q3'15:

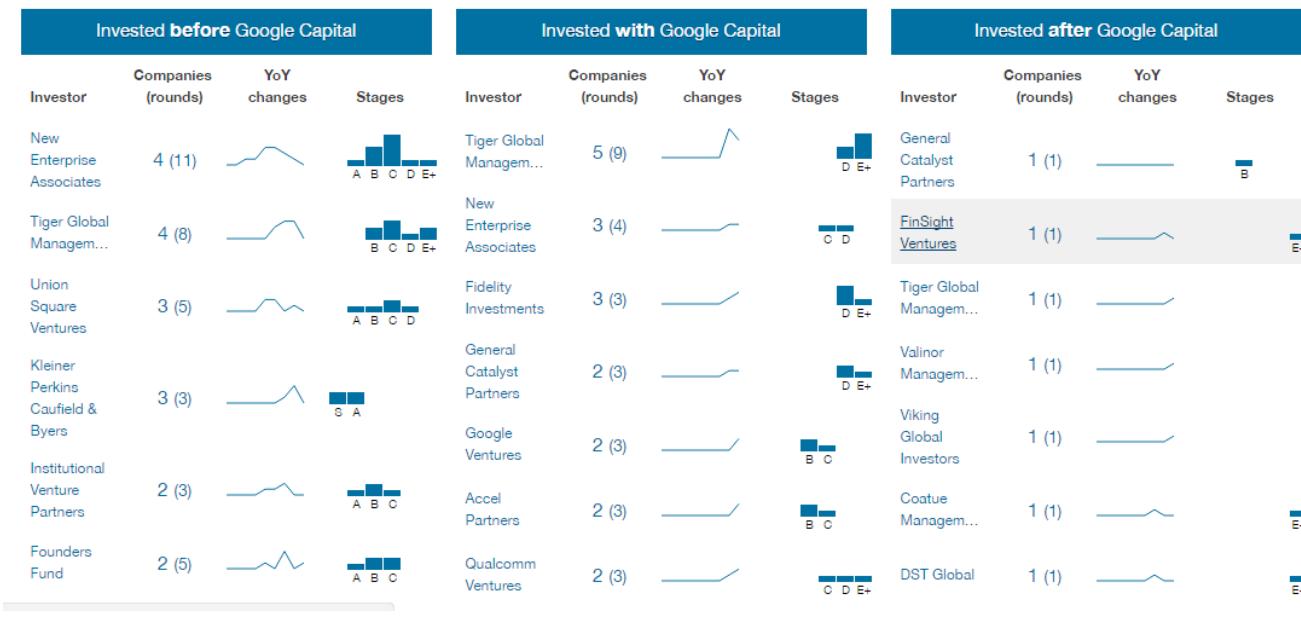


Google Capital most often participates in rounds between \$25M and \$100M, though it is not averse to larger deals, such as CloudFlare's Series D (\$110M), FanDuel's Series E (\$275M), or Oscar's Series C (\$400M).



The fund's investment syndicate reflects a general pattern of co-investing with and following leading Silicon Valley firms, as well as notable hedge fund and mutual fund tech investors in Tiger Global and Fidelity.

GV rarely invests ahead of Google Capital. The firm does appear further down Google Capital's list of co-investors, but this may be more by coincidence of chasing top deals than anything else. However, if GV's move away from the early-stage market holds, the two investment units might see increasing overlap moving forward.



The fund's most unique deal of late was its first public market investment in Care.com. Earlier this June, Google Capital announced a \$46.35M investment in the care services company, which had been publicly traded since January 2014. This transaction means the investment unit is now straddling private and public markets, the same territory as some of its mutual and hedge fund co-investors, with Google Capital partner Laela Sturdy remarking on the fund's agnostic stance toward targets' status as publicly traded or private:

"Care.com exemplifies the kind of company that we want to invest in. We've been focused on growth-stage companies, and really our only criteria is their having Google-sized aspirations."

It will be interesting to see whether Google Capital will pursue more PIPE (private investment in public equity) deals going forward, or if it will stick to traditional private growth equity investments.

Patents

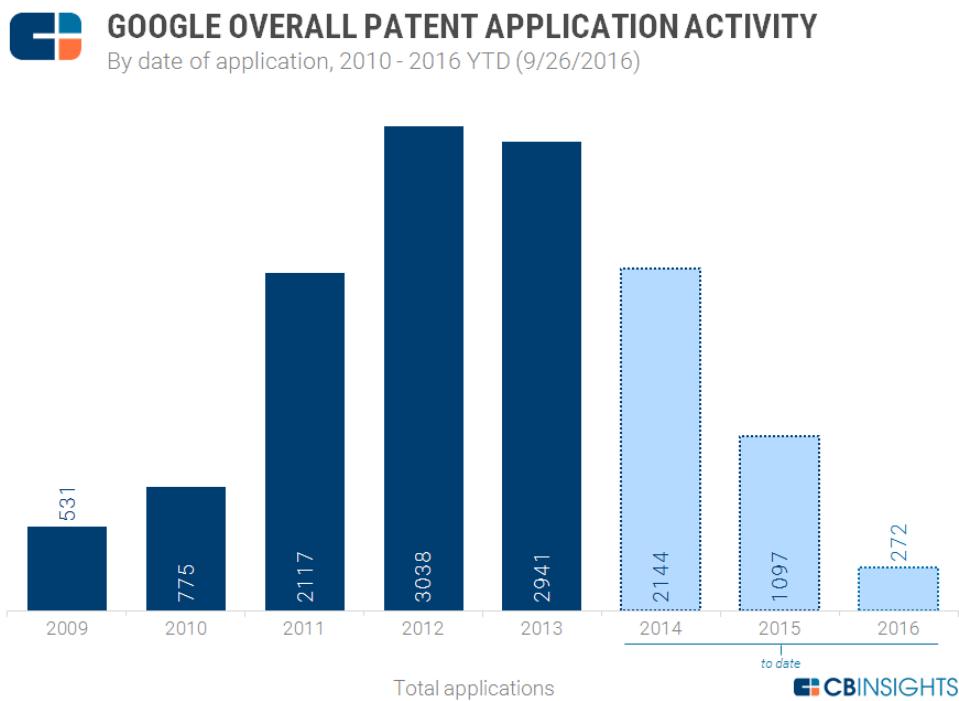
"A patent isn't innovation. It's the right to block someone else from innovating."

—Kent Walker, Google SVP General Counsel

Using CB Insights patent data, we've also sifted through trends on the company's research activity. This analysis comes with a few caveats, primarily that the patent filing process involves a significant time lag before the publishing of applications. This delay can range from several months to over two years. We also focused on Google proper for the purposes of this analysis, which would exclude patents absorbed through external acquisitions.

Also worth noting is Google's historical stance on patents. In the past, company executives including Larry Page and Sergey Brin themselves had opposed excessive patenting as a threat to the innovative spirit of Silicon Valley. When Steve Jobs released the first iPhone, Google had just 38 patents to its name in all.

As the threat of smartphone litigation intensified in the early 2010s, Google was forced to reverse its stance. It purchased Motorola Mobility in 2012 for \$12.5B, the company's largest acquisition to date, adding a wealth of handset patents to its growing IP arsenal. Google itself also began submitting patent applications at a blistering pace.



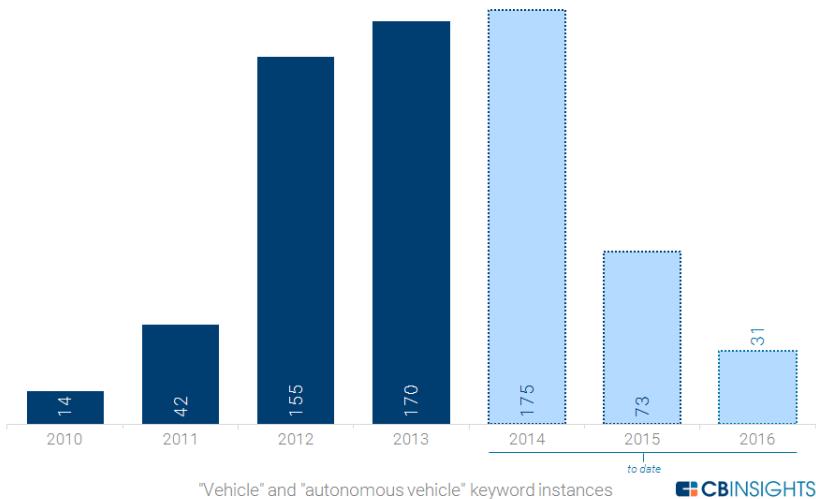
We also mined each year's applications to tease out recurring keywords from the patent abstracts, using a frequency weighting scheme to surface words and phrases. Note that records prior to 2014 are likely complete, but analysis for the most recent years only includes applications published to date.

The keyword data highlights patent activity related to several of Google's bleeding edge product initiatives. Mountain View's patents highlight the emergence of its Glass eyeglass computing device and other wearable research. "Balloon" also makes an appearance in 2014 and tops the list in 2016 to date, as development of Project Loon's balloon-powered internet network continues.

2010	2011	2012	2013	2014	2015	2016 YTD
document	image	image	image	image	glasses	balloon
query	search	search	search	vehicle	image	image
search	document	document	item	item	device	vehicle
location	query	item	query	video	application	search
result	item	video	application	application	module	item
image	application	query	location	sensor	video	word
video	message	application	vehicle	message	search	application
content	object	content	video	search	query	video
resource	page	vehicle	content item	content item	item	hotword
search result	search result	network	content	content	network	wireless
score	video	result	entity	location	vehicle	action
model	result	object	layer	wearable display	content	chunk
message	content	data	document	display device	mesh network	portion
server	resource	entity	object	data	content item	point
item	data	search result	result	module	display device	content item
application	model	location	message	device	event	command
advertisement	language	device	input	event	location	camera
file	mobile device	message	event	network	computing device	signal
conversation	location	resource	search result	balloon	power	user device
client	module	module	data	object	map	location

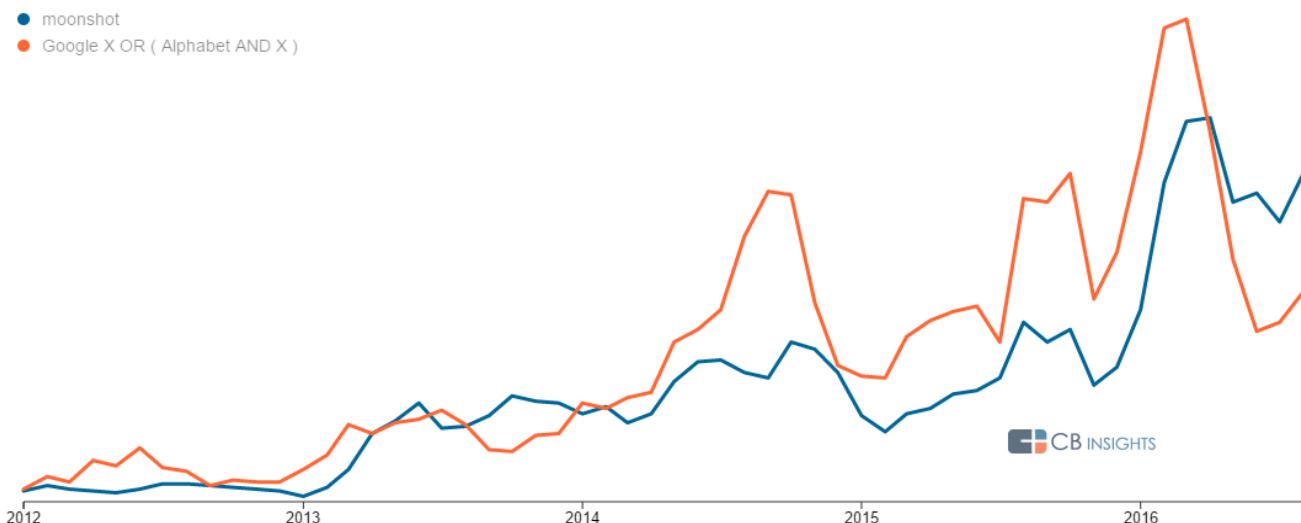
The rising frequency of "vehicle" also reflects Google's concerted efforts in the self-driving vehicle space, where it has been expanding its test fleet and searching for automakers to partner with. In fact, applications with automotive keywords in them surged in 2012 and continued to increase in more recent years, including 2014 where the patent data is perhaps incomplete and so may reveal even more automotive applications as these documents are made public.

 GOOGLE AUTOMOTIVE PATENT APPLICATION ACTIVITY
By date of application, 2010 - 2016 YTD (9/26/2016)



Many of these patent-generating moonshots, of course, including the self-driving car project, have been run out of Google's X lab. Since its founding in 2010, the X lab has tried to succeed as a cutting-edge corporate research arm where others like PARC and Bell Labs eventually failed for their parent companies (at least financially).

As shown by our Trends tool, which mines millions of media articles for insight into tech trends, the term "moonshot" for a time closely tracked the popularity of the term "Google X." In other words, Google's lab has come to be inextricably related to the concept of a moonshot but, like traditional operators of corporate innovation labs, Alphabet is no longer eschewing the patent system.

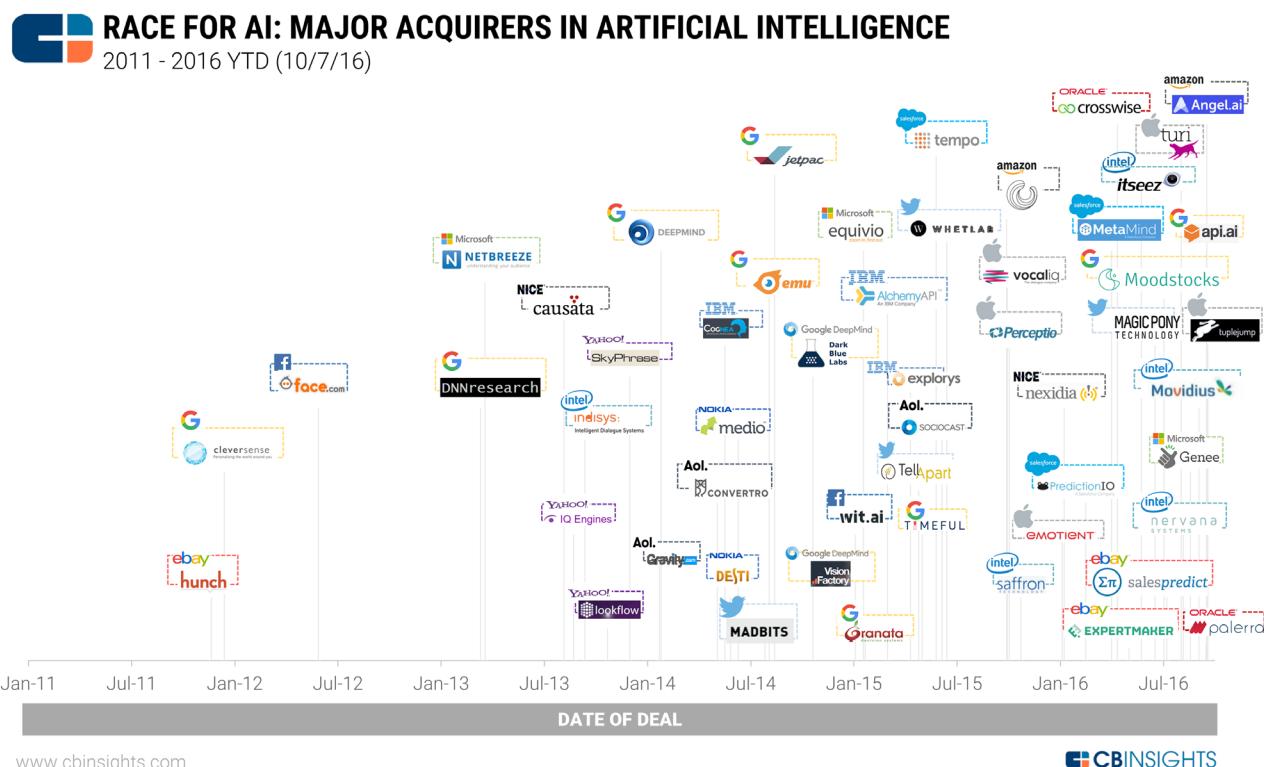


Initiatives

Much like its investment arms, Alphabet's other subsidiaries (including Google itself) operate across a laundry list of disparate sectors. Here, we've grouped Alphabet's activities by focus areas and dug into their programs within each. Again, what follows is not a comprehensive listing of all the company's many initiatives, but rather a consolidated overview of its current fields of interest.

Artificial Intelligence

In a keynote presentation in October 2016 to launch its new high-end Pixel smartphones, Google CEO Sundar Pichai said the world is moving from a "mobile-first" reality to an "AI-first" paradigm. Google is intimately linked with the trendy field of AI, and has been highly acquisitive within the space, ranking as the most active corporate buyer of AI companies.



Internally, Google Brain exemplifies the successful graduation of an X project. Last year Astro Teller described Google Brain as "producing in value for Google something comparable to the total costs of Google X," developing TensorFlow and improving core capabilities from translation to voice search.

Beyond concrete products, a DeepMind-derived system has even helped to realize cost and environmental savings at Google's power-hungry data centers, improving power usage efficiency by 15%.

"Machine learning is the engine that will drive our future ... more than 100 teams are currently using machine learning at Google, from Street View to Gmail to Voice Search and more."

—Sundar Pichai, CEO, Google Inc.
Earnings Call Q2'16

As Google is applying machine intelligence and learning across its businesses, we will similarly thread insights on its AI activities across the relevant focus areas below.

Cloud & Enterprise

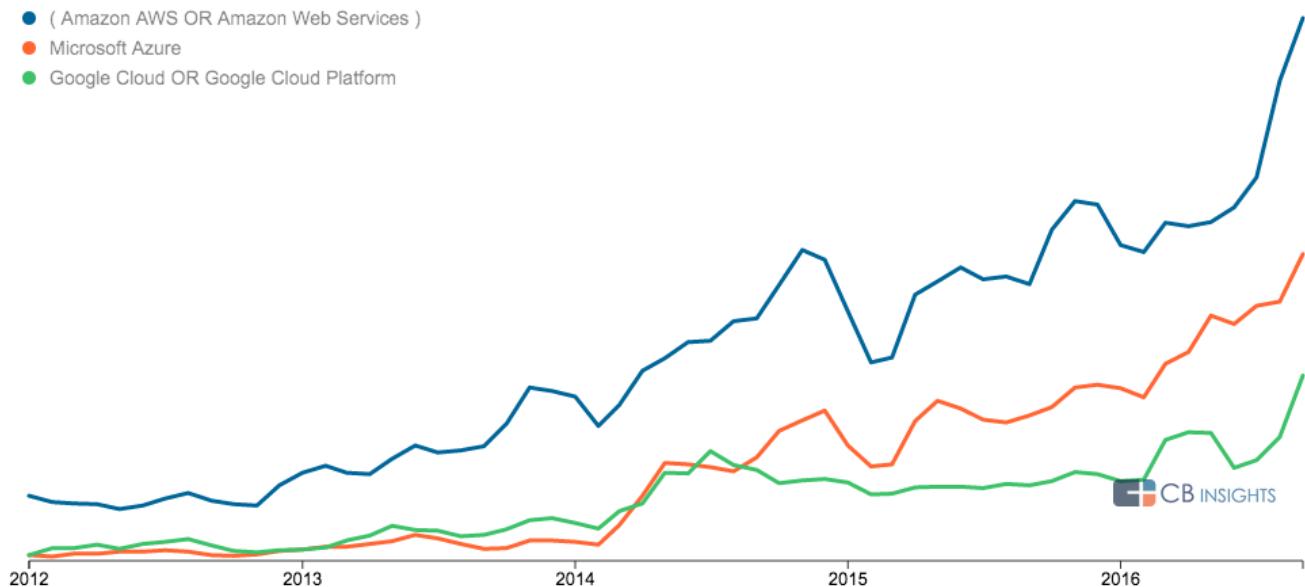
Google's cloud and enterprise services have rapidly ascended the company's list of priorities, as borne out by its acquisition spree. Pushing further into the lucrative cloud services market is a logical extension of Alphabet's emphasis on opportunities with more immediate financial upside (as of last quarter, Amazon's AWS division alone generated nearly \$10B in trailing 12-month revenue).

Immediately following Alphabet's formation, Google tapped former VMWare CEO Diane Greene to head this drive as SVP of Google Cloud Enterprise, a new unit encompassing Google for Work, Cloud Platform (Google's answer to AWS), and Google Apps. Google has begun repositioning its branding accordingly, with Google For Work rebranding as G Suite in September 2016. Hangouts and the unloved Google+ network are also being pivoted towards enterprise users.

We've seen that Google is acquiring and building numerous developer-friendly services to differentiate its platform. However, as with many of its efforts, Google is also leveraging its machine learning expertise here to gain a leg up on entrenched rivals.

Google Brain and the company's AI acquisitions have been instrumental in pushing these advances, while also serving double duty to remind casual observers of Mountain View's perceived leadership in the AI space. However, as our Trends analysis below shows, Google still lags behind Microsoft Azure and AWS in terms of media buzz regarding its cloud products.

- (Amazon AWS OR Amazon Web Services)
- Microsoft Azure
- Google Cloud OR Google Cloud Platform



Though Google remains behind Amazon, Microsoft, and even IBM, early returns have been positive. Google's "other revenues" (which includes Cloud as well as licensing fees, hardware, and other non-ad businesses under Google proper) notched a Q2'16 figure of \$2.2B on 33% year-over-year growth. As company executives were quick to note, cloud services were the primary driver of this increase and will remain a cornerstone of Google's strategy to find new avenues for growth.

Consumer Hardware & Platform

We've touched on this already, but Alphabet's consumer-facing arms have struggled to balance their penchant for radical projects with financial pragmatism. Nest's recent turmoil has been well-documented both here and elsewhere, but other units are facing headwinds of their own.

While X was spun out of Google, the Advanced Technology and Projects (ATAP) skunkworks focused on "epic shit" remained integrated with the company proper. However, like other divisions, the consumer-focused skunkworks also suffered from the loss of its foundational leader this year; founder and former DARPA director Regina Dugan was poached by Facebook in April.

Google has since brought ex-Motorola president Rick Osterloh back on board to head yet another reshuffling, bringing together disparate consumer teams such as ATAP, Chromecast, Nexus, Pixel smartphones, and Glass (the latter formerly under Tony Fadell's purview). The new hardware division recently shelved Project Ara, the once-hyped modular smartphone in development since 2013.

Google has doubled down on its own branded handset hardware lines Nexus and Pixel, with the latter due to supplant the former, and has done so supported by formal distribution agreements with major carriers. Google's consumer devices now span various smartphones, tablets, laptops, and a reported hybrid device running Andromeda, a unified Android and Chrome OS. The company continues to lean heavily on a rotating cast of manufacturing partners (Samsung, HTC, Huawei, etc.) to produce its devices.

Notably, Google's just-announced Pixel line dispenses the branding of manufacturers altogether, relegating partner HTC into a contract manufacturer a la Foxconn (which reportedly led Huawei to back out of the project). The new phones, along with Home and Daydream, were announced at the company's previously mentioned "Made by Google" event in October.

The product blitz set the tone for Osterloh's new hardware division, with the Google-centric branding suggesting that the company would somewhat mimic Microsoft's Surface line, moving closer to Apple's model with oversight of both hardware design and software services. The premium pricing of the new Pixel devices aligns precisely with the pricing of Apple's iPhone 7 lineup; here again, Google is now chasing a piece of a high-margin pie in a mature industry.

Google is also looking to the future with conversational intelligence platforms, from messaging via Allo to the smart home. Additionally, the new Pixel smartphones have exclusive built-in features tied to AI, including the new virtual Google Assistant as well as unlimited photo and video storage for Pixel owners. At least for now, Google is reserving its new voice Assistant exclusively for its branded Pixel and Home devices (Assistant is available as a chatbot though Allo, but without voice integration).

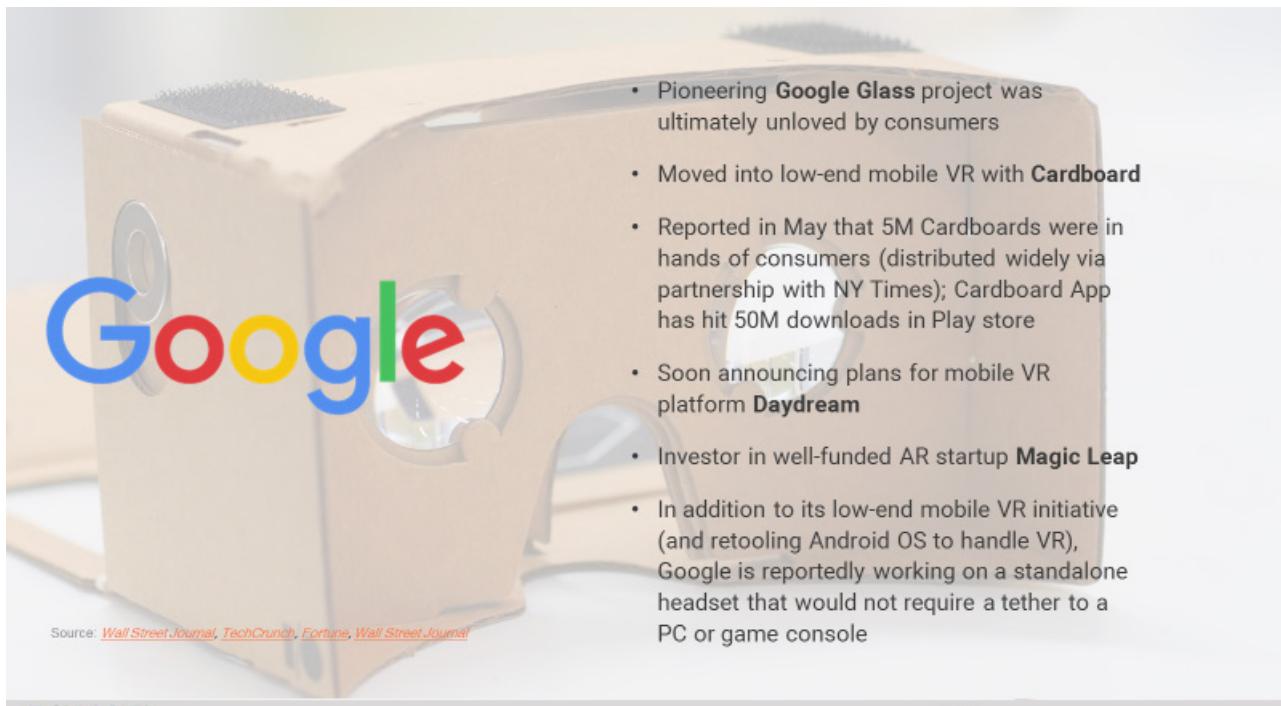
Google has already been utilizing AI to differentiate its consumer cloud products, such as its Photos product which features natural language searches and automatic face and object recognition.

In both hardware and messaging, Google is arriving late to the party, but these moves are vital for Mountain View to defend both its reputation for AI expertise and centrality as a search platform. Each query handled through an Alexa- or Siri-driven device threatens the foundation of Google's current revenue model. Even if Google does succeed here, though, a voice-centric search landscape might still upend the traditional web search-ad display paradigm that it has depended on for over a decade.

At the same time, if Google can differentiate its devices and services through the quality of its AI, it will have an opportunity to create new, potentially high-margin business lines even as it strengthens its hand against Apple and Amazon by carving out market share.

AR/VR

Alphabet's AR/VR strategy has, in classic fashion, involved multiple projects running in parallel. The company's plays range from budget VR (Cardboard) to AR (Glass) hardware to both VR (Daydream) and AR (Tango) platforms, as well as its aforementioned Magic Leap stake. We've examined Google and other tech corporates' approaches in our Augmented & Virtual Reality research briefing. The Daydream headset is interesting from a product innovation point of view, as it is the first headset to be made from fabric as opposed to a clunky set of plastic goggles, a design tailored towards mass-market consumers new to the VR concept.



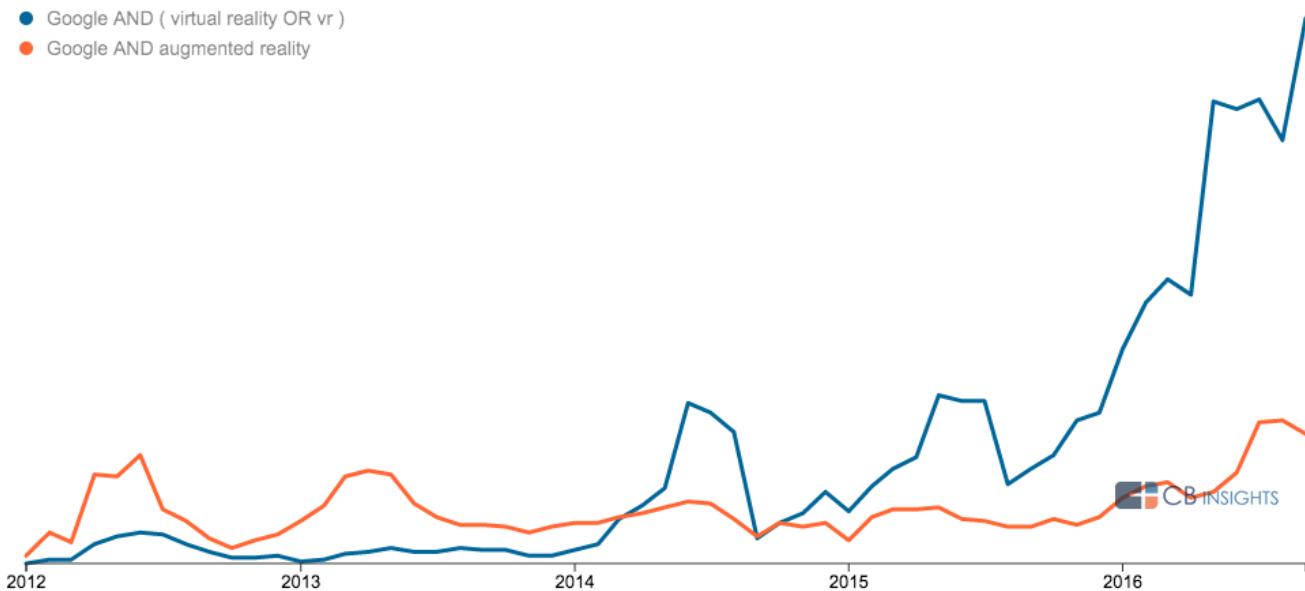
Source: [Wall Street Journal](#), [TechCrunch](#), [Fortune](#), [Wall Street Journal](#)

- Pioneering **Google Glass** project was ultimately unloved by consumers
- Moved into low-end mobile VR with **Cardboard**
- Reported in May that 5M Cardboards were in hands of consumers (distributed widely via partnership with NY Times); Cardboard App has hit 50M downloads in Play store
- Soon announcing plans for mobile VR platform **Daydream**
- Investor in well-funded AR startup **Magic Leap**
- In addition to its low-end mobile VR initiative (and retooling Android OS to handle VR), Google is reportedly working on a standalone headset that would not require a tether to a PC or game console

 CB INSIGHTS

#ARVR

In fact, the chatter around Google and AR/VR has increasingly been tied to VR and not AR, which is not surprising given the fact that its AR wearable product Google Glass flopped, and that Daydream has now become the company's standard bearer in the category.



Telecommunications & Energy

Alphabet has also funneled billions to improve internet accessibility worldwide across external investments (SpaceX, O3b Networks), acquisitions (Titan Aerospace, now Project Skybender), and a number of internal projects. What began as an experiment with Google Fiber has morphed into an attack on traditional telecom providers in certain markets, providing gigabit internet and television service to over a half-dozen metropolitan areas.

However, Fiber has grappled with the costs of deploying a fiber-optic network for some time, not to mention regulatory and legal challenges from incumbents. (Fiber has been cited as the largest single expense in Alphabet's "Other Bets," the conglomerate's umbrella term for the financial reporting of its moonshots.) Where capex once flowed freely, Fiber is now inviting of post-Alphabet financial scrutiny; highlighted by August reports of strict demands directly from executive leadership:

"Alphabet CEO Larry Page [demanded Fiber] to reduce customer acquisition costs to one tenth their current level while asking Fiber chief Craig Barratt to cut the unit's workforce in half, from 1,000 people to 500."

As we noted above, the Webpass acquisition appears to be a salve that will go directly towards staunching these losses.

Other initiatives include Google's Project Fi mobile virtual network operator (MVNO), which the company cites as an "experiment" and motivator for incumbent carriers to improve (much in the original vein of Fiber). An MVNO, in essence, buys bandwidth from wireless carriers and markets cell services under its own brand and with its own pricing and support schemes.

In this sense, Fi is already succeeding, with Comcast announcing plans to launch a similar MVNO in 2017. However, Fi has already brought on US Cellular and Three to complement launch partners T-Mobile and Sprint, and Google Fiber's shift towards wireless technologies may also lead to some synergies between the services.

Projects Link, Skybender, and Loon are targeting wholly different demographics in remote areas and emerging markets, but they are clearly extensions of the same universal-broadband-access philosophy. Like other X units, Project Loon recently looked outside the organization for veteran industry leadership, bringing on Tom Moore of WildBlue to nudge the project towards commercialization. Loon is yet another project utilizing Google's machine learning prowess, employing algorithms to optimize the positioning and navigation of its balloons.

Were any of these moonshots to “graduate” from X, it would be easy to envision them coalescing under Alphabet’s Access & Energy banner. The A&E unit has been rumored to be slated for a rebrand, but still includes Alphabet’s energy efforts for the time being. Project Sunroof is one such initiative, and the Makani airborne wind turbines (acquired in 2013) would be another natural candidate if successful.

Transportation & Logistics

The Google Self-Driving Car Project predates the 2010 formation of Google X; its tenure and public visibility has made it a de facto banner-carrier for the division. The company has invested accordingly, with a rumored \$10B earmarked for the long-term program.

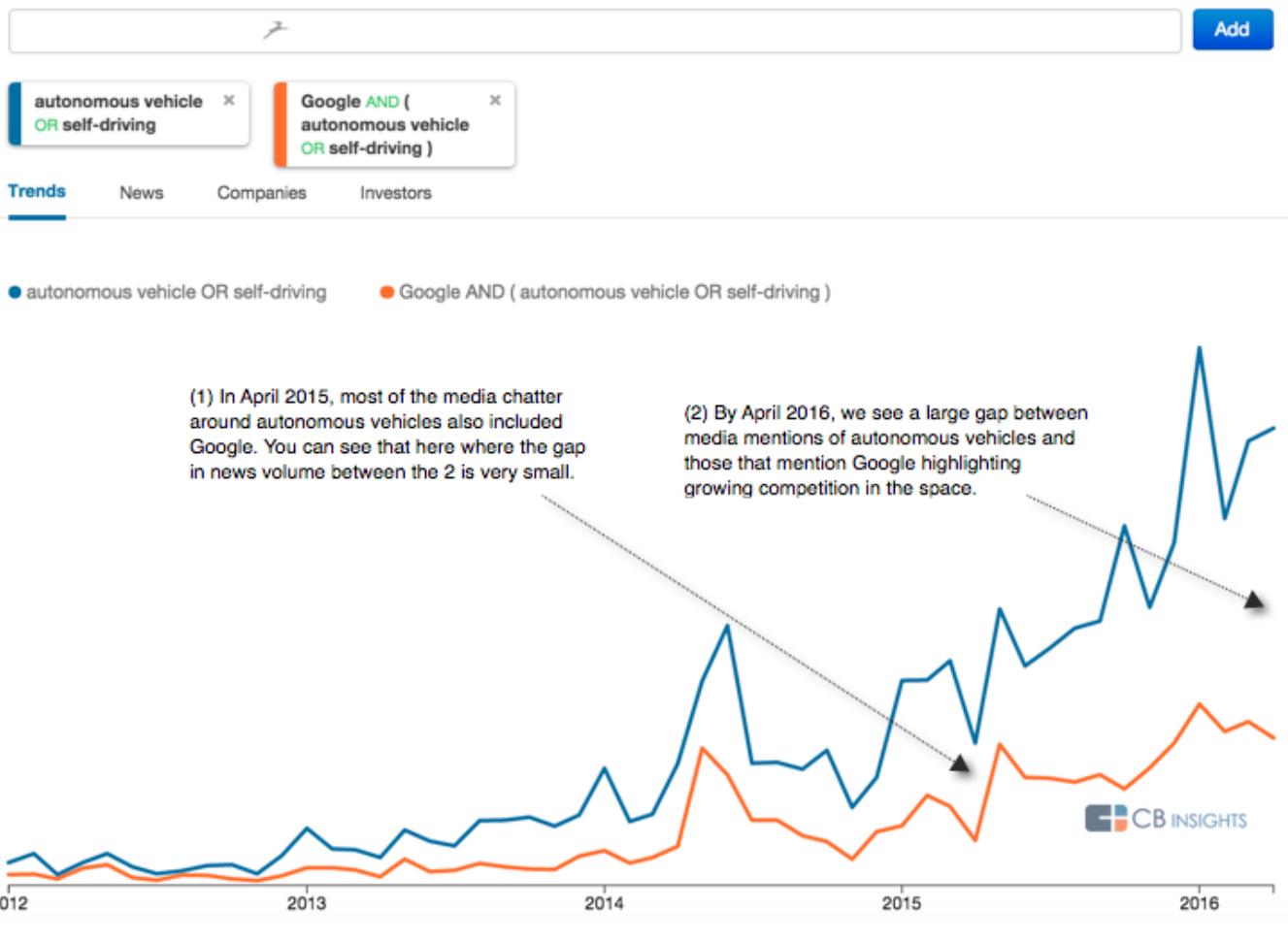
Just prior to the Alphabet reorg, the project hired its own industry veteran, John Krafcik of Hyundai America and TrueCar. The move was widely seen as a push to formalize the half-decade vehicle effort as a standalone unit, which Astro Teller described as “in the middle of graduating from X” in an April interview. (Despite X’s separation from Google proper, the car project has retained its original branding for now.)

Indeed, the Google car project has made strides in widening its testing scope beyond Mountain View to Texas, Arizona, and Washington state. It also secured its first partnership with a major automaker (Fiat Chrysler) in May, and brought on a legal lead in July.

However, longtime team members have departed the project. August saw the departure of project CTO Chris Urmson, and former engineers have also left to found startups such as Otto and Nuro.ai.

The company's pole position in the autonomous race is up for debate as other players have flooded in, as our Trends tool tracking of buzz around self-driving corroborates:

Trends



On the logistics side, Alphabet has Google's Express same-day delivery service, which expanded into fresh groceries in February.

Under X, there is also Wing, the automated aircraft project that just partnered with Chipotle to test burrito delivery at Virginia Tech.

As with other sectors, both delivery programs are defensive bulwarks against drone and other logistics initiatives from Amazon, given the e-commerce giant's threat to Google's product search traffic. They also bring Alphabet into competition with companies like Instacart, FreshDirect, and of course Uber, which we've already cited as a budding rival in autonomous driving and ride-sharing. Project Wing also shares conceptual ground with a growing number of automated delivery drone startups.

Beyond these initiatives, Alphabet's ambitions also span urban development, with its Sidewalk Labs unit leveraging technology to tackle urban challenges from transportation to sustainability and cost of living. Sidewalk Labs led a consortium that acquired and merged Control Group and Titan to form Intersection. Smart cities startups are proliferating as they also seek to apply technology to improve a myriad array of processes.

Healthcare & Digital Health

As we've seen, GV has invested heavily in healthcare and digital health startups under Bill Maris. Though it remains to be seen whether this will continue under GV's new leadership, Alphabet has two other distinct subsidiaries dedicated to life sciences research.

Of the two, Verily (f.k.a. Google Life Sciences) is the more recent construct, formed in December 2015 to corral a number of projects, including smart glucose-sensing contact lenses, nanodiagnostics, and stabilized spoons to counteract tremors (acquired via Lift Labs). Verily has also partnered with top healthcare brands including Johnson & Johnson (Verb Surgical), GlaxoSmithKline (Galvani Bioelectronics), and Dexcom (continuous glucose monitoring), among others.

Verily is yet another Alphabet unit that has been criticized for unclear paths to market. There has been some drain of top Verily talent, with veteran Googlers returning to the mothership or departing for competitors. Skeptical observers have also questioned the effectiveness and practicality of Verily's programs, including Stanford's professor of disease prevention.

Meanwhile, Calico embodies the true spirit of moonshot philosophy, aiming to prolong human lifespans by understanding the genetics of aging and combating age-related diseases. Unlike its sibling, Calico has hired medical experts from primarily external sources, rather than the Googleplex itself. As of September 2015, Google had disclosed a \$240M budget for the unit, with pledged support of up to \$490M as necessary.

Understandably given its mission, Calico is stealthy and shrouded in some mystery, having less in the way of tangible products and a greater emphasis on long-term research projects. (Verily does have a corollary in its Baseline genomics study.) Calico's corporate website is sparse, but still discloses a handful of notable collaborators, including AbbVie, AncestryDNA, and several universities.

Under Google proper, even its DeepMind unit has recently displayed interest in the healthcare space, with its aforementioned investment in telemedicine startup Babylon. DeepMind also acquired clinical task-management app Hark in February 2016, while simultaneously setting up its DeepMind Health division as it seeks more potential outlets for applied AI developments.

Fintech

We've written extensively about Alphabet's forays into fintech, so we will just touch on a few key areas here. In terms of investments, both GV and Google Capital's portfolios prominently feature their stakes in fintech startups.

GV AND GOOGLE CAPITAL FINTECH INVESTMENTS

2011 - 2016 YTD (6/9/2016)



Insurance tech has been a particular focus, with the company securing at least 6 distinct partnerships and investments in 2015. These range from Nest's insurance tie-up with American Family to its now-defunct Google Compare partnership with CoverHound and Compare.com.



In July, Google also announced the banning of payday loan ads on its advertising networks, a topic we covered with Arjan Schütte during our Future of Fintech conference. On the payments side, Mountain View shut down physical Google Wallet cards in June, but continues to maintain the platform alongside its Android Pay sibling. The latter faces competition not only from Apple but also Android licensees like Samsung, which have developed their own mobile payment platforms.

Final Words

Taken in full, Alphabet is very much in a transitional phase as it grows into its new corporate structure. Corporate objectives have been reoriented towards more coordinated goals and divisional profitability.

Alphabet has already brought greater clarity and accountability to units whose strategies have long been uncertain. Observers and shareholders alike have cheered the new divisions, hardware and software teams, and focus on veteran industry leadership.

Still, redundancies remain apparent among its many programs and most X projects have survived the transition.

As Alphabet places greater weight on profitability and commercial potential, as well as a more focused approach to meet the challenges of competitors, it has settled on one main weapon: artificial intelligence. AI will be its main differentiator used in fending off competitors and growing new markets. But it remains to be seen whether betting the farm on AI will keep Google ahead. Much depends on execution, and simultaneous success in newer verticals like transportation, cloud services, healthcare, and consumer hardware.

Uber Strategy Teardown

The Giant Looks To An Autonomous Future,
Food Delivery, And Tighter Financial Discipline



The \$68B gorilla continues to expand globally in places like India and Brazil and is still chasing autonomous driving. However, it will have to stem its losses ahead of an eventual IPO, which may lead to rollbacks in contested regions like Southeast Asia.

Uber is known for many things, but one thing that has remained constant is its ability to steal the spotlight. Once the darling of tech media, one of Silicon Valley's most lauded growth stories, and the progenitor of an entire category of on-demand startups, Uber's tumultuous 2017 has seen the company's fortunes shift almost overnight.

Scandal after scandal brought accusations of everything from misogyny to intellectual property theft. This has turned the executive ranks of the world's most valuable private startup into a revolving door. An exodus of senior leadership was capped by an investor revolt against co-founder and CEO Travis Kalanick, who had been virtually synonymous with the company and its famously aggressive culture.

New chief executive and former Expedia CEO Dara Khosrowshahi is just weeks into his new role, but faces pivotal decisions on how best to repair the company's battered image and right the ship strategically. With a stated target of taking Uber public within the next 18-36 months, Khosrowshahi must strike a balance between financial discipline while also maintaining the growth and opportunity narrative that seduced investors and helped give Uber its lofty valuation.

- **Balancing “paying the bills” and “big shots”:** Uber’s new CEO committed to both instilling financial discipline ahead of a potential IPO and remaining invested in major forward-looking initiatives (such as autonomous vehicles). Aside from the considerable task of repairing the company’s damaged image and culture, finding a balance between these goals will be his major challenge going forward.
- **Uber rethinks global strategy:** Uber’s growth ambitions have begun shifting away from the pugnacious, attack-on-all-fronts strategy and indiscriminate spending of its earlier years, although the company’s latest financials continue to show a growing top-line as well as considerable cash burn. Our jobs listing analysis reveals that the company is still actively hiring in India, Brazil and Mexico. However, with a stated vision of taking Uber public within the next 18-36 months, Khosrowshahi may look to further narrow the focus on Uber’s efforts abroad to rein in money-losing efforts. Southeast Asia is one hotly-contested region where the company is spending heavily against the well-financed Grab and Go-Jek.
- **Recent dealmaking focuses on divesting costly regional operations:** Uber has withdrawn from its China and now Eastern European operations, retaining a significant stake in both while ceasing involvement in day-to-day operations. The company has now established a template that it can return to should it decide to draw down losses in other geographies.
- **M&A to date has emphasized mapping and AI/AVs (autonomous vehicles):** A late entrant into the now-fierce race to develop AVs, Uber has turned to M&A to bridge the gap in related competencies such as mapping and artificial intelligence. Its highest-profile deal to date was its acquisition of self-driving truck startup Otto, headed by Google Self-Driving Car (now Waymo) veteran Anthony Levandowski. That acquisition has led the company into a potentially devastating lawsuit with Waymo.
- **AI, AVs remain a priority:** Despite the upheaval in the wake of Waymo’s lawsuit, Uber is still hiring actively for its autonomous vehicle development group (Advanced Technologies Group or ATG). The unit comprises 6% of Uber’s total job listings, with the company seeking talent in the white-hot field of autonomous vehicle engineering. Uber also added a prominent AI researcher to lead a new ATG self-driving team. However, the unit’s long-term future is in doubt, with the Waymo lawsuit a looming threat and ATG requiring a sizable and sustained financial investment.

- **Uber scales back other side ventures, focusing on food delivery:** Outside of its core ride-hailing business, the company has retrenched in its once-hyped UberRUSH courier service effort, focusing on meal delivery platform UberEATS instead. The company continues to push UberEATS into new markets. Uber is also pursuing significant talent to support its food delivery service; 14% of the company's open job listings mention UberEATS in the title. Uber has also recently launched its Freight service targeting the trucking brokerage market, but the new initiative has yet to gain meaningful traction.

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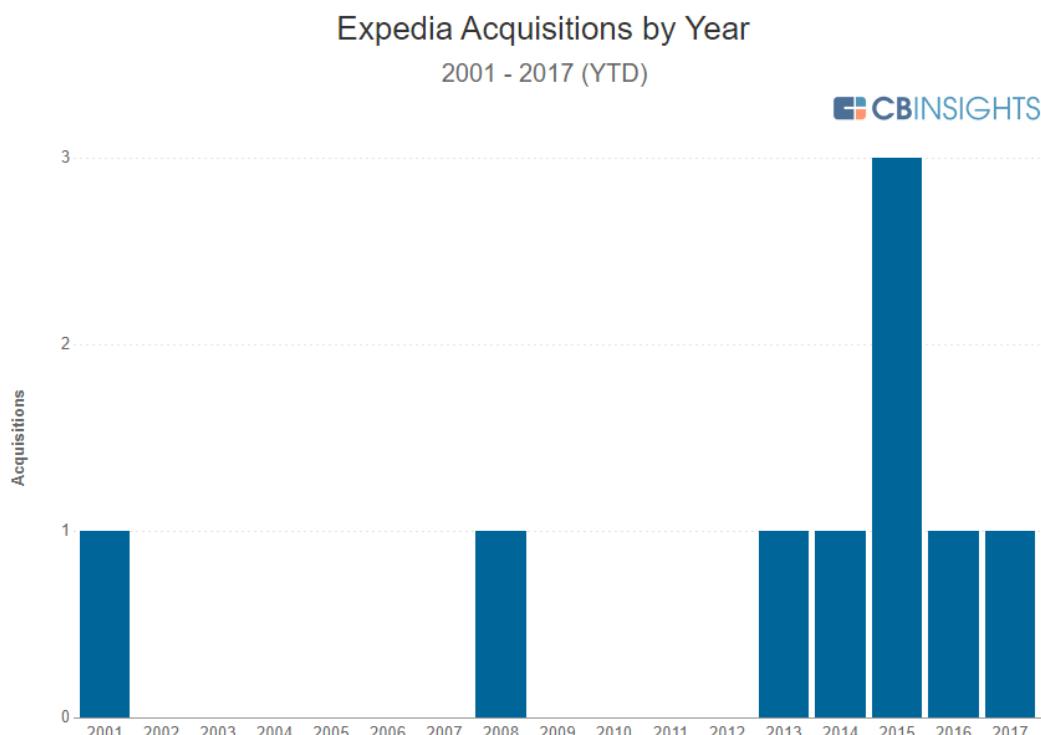
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Background on Uber and its new CEO

Though a surprise pick for the position, industry observers have generally praised Dara Khosrowshahi's appointment, variously noting his experience helming a travel aggregator as well as overseeing a turnaround as Expedia's chief executive. Expedia was losing share to competitors like Priceline when Khosrowshahi assumed the helm in 2005. The company was criticized for passing on an early chance to acquire Booking.com, which was acquired by rival Priceline and went on to become the world's largest hotel booking site.

However, Khosrowshahi was willing to commit to long-term fixes, including migrating Expedia's disparate brands to a common tech platform and recognizing the need for Expedia's business model to evolve (from its preferred "merchant model" where it bought blocks of hotel rooms, to a hybrid model with the newer, lower-margin "agency model" pioneered by Booking.com in which platforms act more as intermediaries). Not coincidentally, this is more like Uber's marketplace model.

These efforts have undergirded Expedia's recent uptick in acquisition activity, visualized below with our Acquirer Analytics tool. The company has made at least one purchase annually since 2015, and made three major acquisitions in 2015 alone:



3 Acquisitions in 2015

Company	Date	Valuation	Mentions
HomeAway	Nov 4, 2015	3.9bn	The Next Web, Business Journals, ZD Net, Mashable, dealstreetasia.com, iamwire.com, Xconomy, recode.net, FinSMEs and gigaom.com
Orbitz Worldwide	Feb 12, 2015	1.9bn	Business Journals, tnooz.com and TechCrunch
Travelocity	Jan 23, 2015	280M	PR Newswire

Khosrowshahi's efforts resulted in the company more than quadrupling its gross travel booking value and doubling its pre-tax earnings under his leadership. Uber's stakeholders are no doubt hoping that Dara-the-dealmaker will be able to lead another successful turnaround. He will likely have the missed Booking.com in mind as he weighs risk against reward for Uber's future opportunities.

It's worth mentioning that Uber also passed on a chance to merge with or acquire a major competitor: domestic rival Lyft offered to merge with Uber in 2014 for a share in the combined company, but talks broke down after Kalanick refused to budge on the share offered to Lyft (as Brad Stone writes in *The Upstarts*). Uber was again named as one of the potential buyers that Lyft had sought for itself in 2016, to no avail, according to the New York Times.

Though Uber still dwarfs Lyft by a considerable margin, the latter's increasing US market share and partnerships in the autonomous vehicle space represent a growing thorn in Uber's side. If Uber were able to strike a deal with its competitor under its new CEO, it would be able to draw down its domestic US spending in a major way to focus on international efforts and frontier initiatives like autonomous vehicles.

Although this teardown will primarily focus on data points around Uber's business strategy, it goes without saying that Uber and its new CEO face cultural and legal issues almost too numerous to list that have negatively affected the company's prospects and investor confidence. Moreover, its guiding principle to date has been Kalanick's mantra of "growth above all else," which has defined the company to date not just culturally but also strategically (and so will resurface throughout our analysis).

The company's alpha-male, growth-at-any-cost mentality and willingness to skirt regulatory and ethical boundaries arguably enabled it to crack open stagnant taxi and transport markets in the first place, attracting unprecedented amounts of capital in the process. In the same vein, a good deal of Uber's self-made crises can also be traced to the institutionalization of these traits. This double-edged sword mirrors Kalanick mentor Mark Cuban's description of the former CEO, saying in a New York Times interview:

"Travis' biggest strength is that he will run through a wall to accomplish his goals. Travis' biggest weakness is that he will run through a wall to accomplish his goals."

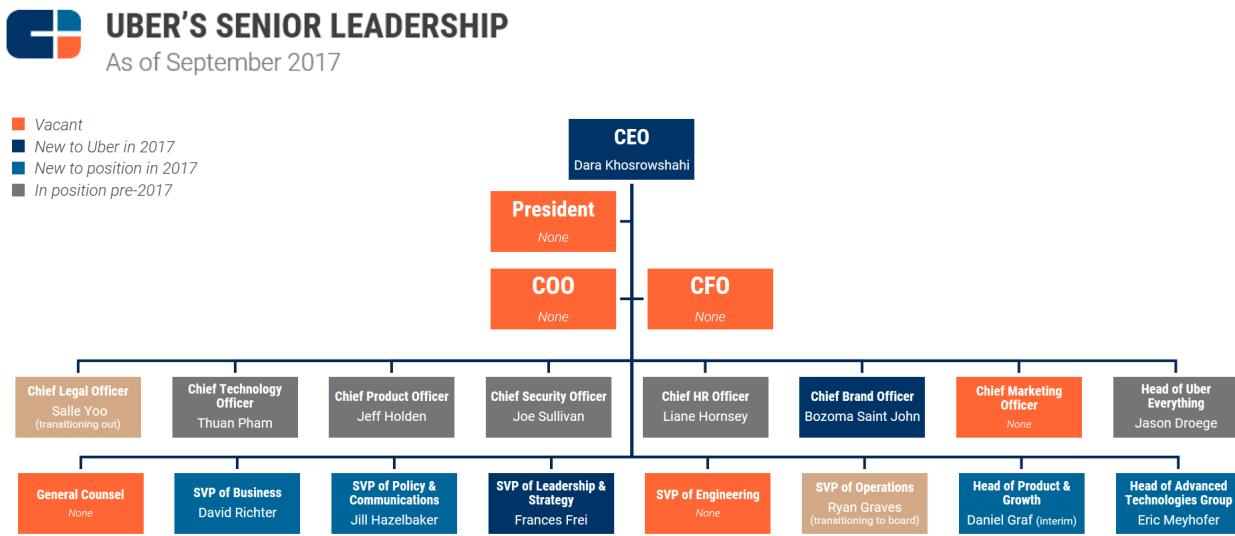
Taken to their extreme, these philosophies have manifested themselves in the company's Greyball tool for deceiving law enforcement, disregard for California DMV regulations for autonomous vehicle testing, and near-eviction from Apple's App Store, among many other scandals. Allegations of pervasive sexual harassment and discrimination have also come to light, most notably from former engineer Susan Fowler.

It is worth noting that many of these issues are not wholly new: Uber's abuse of its "God View" tool was first reported on 2014, as were sexist remarks from Kalanick and general knowledge of the company's less-than-scrupulous business practices and sometimes insensitive treatment of drivers. However, for years these issues failed to slow Uber's growth and fundraising momentum, as investors eagerly piled into technology's hottest company. For longtime Uber watchers, 2017 was the year these issues came to a head with material impacts on the company's business and investor outlook.

Active lawsuits and investigations involving the company include Waymo's suit for intellectual property theft (which will go to trial), early investor Benchmark's suit to remove Kalanick and three related seats from Uber's board (which has been sent to arbitration), and a DOJ foreign bribery law probe, just to name a few.

Finally, Uber has also toed the line with the cutthroat competitive tactics it has employed against its rivals. These include Uber's SLOG program for undermining competitors and its "Hell" program exploiting a Lyft vulnerability to track its opponent's drivers. While these tactics are ruthless and have often been grouped together with the company's other unscrupulous practices, their legality is undetermined. The FBI has begun investigating the software, although a lawsuit over the "Hell" program was recently dismissed in California federal court.

Khosrowshahi now faces the significant challenge of reforming Uber's culture; former Attorney General Eric Holder's investigation into the company resulted in a lengthy list of recommendations. Aside from extricating Uber from these many scandals, the company's new chief executive must tackle a range of serious business challenges. One fundamental issue is replenishing the depleted ranks of Uber's senior leadership:



Chief among these is Uber's vacant CFO position, which has become a sore subject with some increasingly uneasy investors (Benchmark singled out the issue in its lawsuit against Travis Kalanick). The company has technically been without a CFO for over two years, a nominal head of finance Gautam Gupta departed for Opendoor in May. A CFO would play a critical role in preparing for an eventual IPO, which Travis Kalanick famously thumbed his nose at the thought of pushing forward:

"I say we are going to IPO as late as humanly possible. It'll be one day before my employees and significant others come to my office with pitchforks and torches. We will IPO the day before that."

By contrast, by his first all-hands meeting at Uber's helm, Khosrowshahi had already floated the potential goal of taking Uber public within the next 18 – 36 months. The company has begun more regular, though still selective, financial disclosures over the past year. According to Axios, its latest Q2 2017 figures show continued top-line growth, with gross bookings up to \$8.7B and adjusted net revenue hitting \$1.75B (both roughly doubling year-over-year).

These figures do encompass the period of a large number of Uber's scandals from earlier this year and the #DeleteUber campaign, but do not cover Kalanick's departure and board civil war in Q3 2017. Uber's adjusted losses, though narrowing, are still considerable and also exclude stock compensation, which the company is known for paying out generously in lieu of high cash salaries. Uber burned roughly \$600M in cash through the quarter, with its total cash holdings down to \$6.6B from \$7.2B at the end of Q1 2017.

Coming back to Uber's growth-obsessed mantra, the numbers reflect that the company has done well by this criteria, with its central ride-hailing business continuing to expand. The company's booming top-line speaks to the still-considerable strengths of the company and opportunity ahead of it.

Though its product has evolved over time, from a tactical standpoint Uber has largely stuck to the same aggressive playbook: flooding new markets with incentives to recruit a critical mass of drivers and using subsidized fares to lure in riders. (Critics have labeled this as venture-financed predatory pricing, with the company often steamrolling regulators and misleading drivers in the process.)

Tracing this back to Uber's overall strategy, last September Ben Thompson of Stratechery voiced concerns over Uber's strategic finesse should the company meet an obstacle too stubborn to be overcome by the brilliance of its product-market fit and executional prowess:

"I do worry about this potentially fatal flaw: when and if Uber encounters a problem that requires more than simply hustle and execution, does their executive team have the temperament, strategic mindset, and deep-rooted understanding of their customer base to make decisions that aren't so easily swept under the rug of product-market fit?"

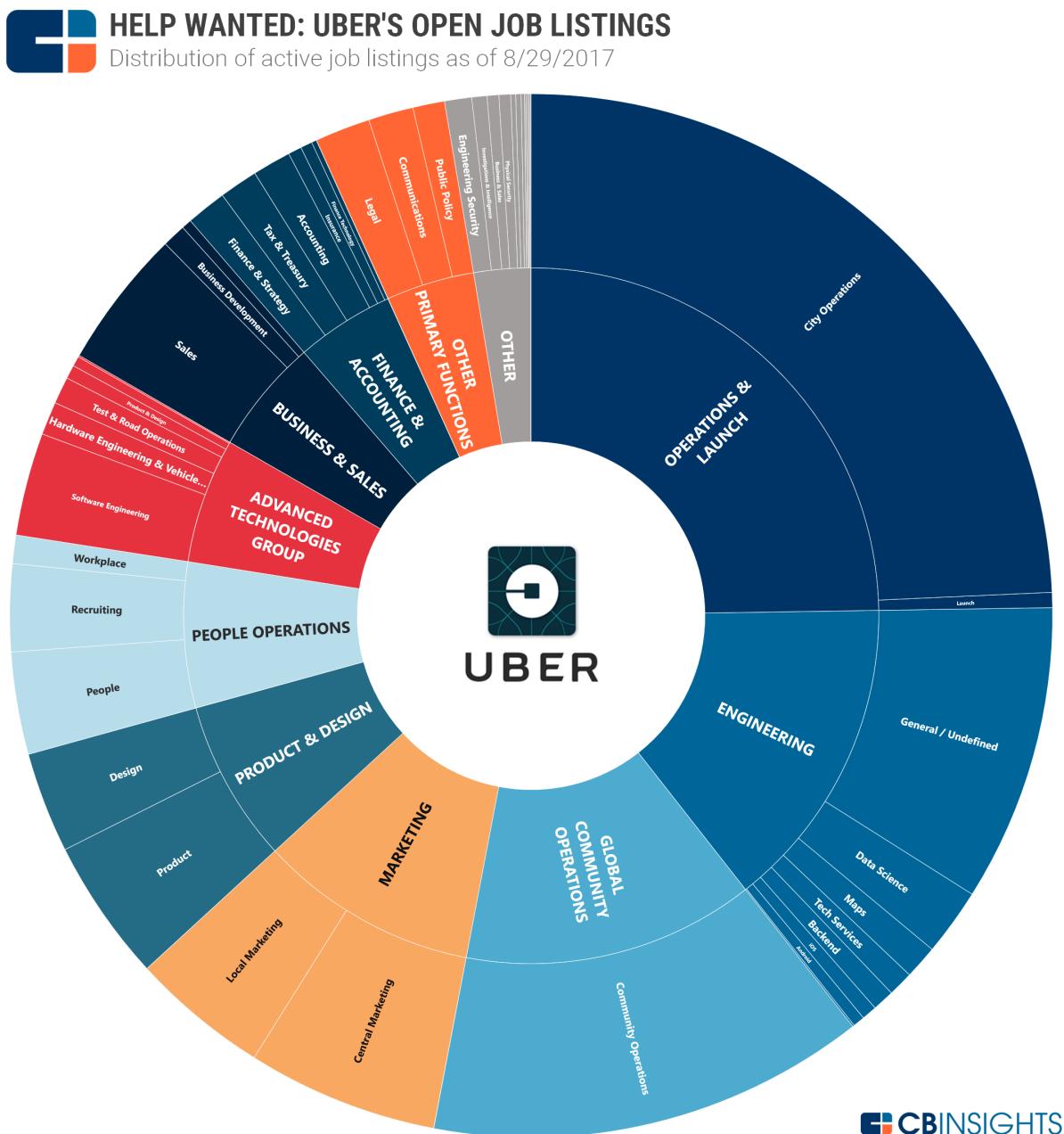
With thorny questions surrounding Uber's scandals, in addition to its plans for profitability, autonomous vehicles, international expansion, and beyond, perhaps it's true that the company can no longer afford to simply be operationally brilliant yet strategically lacking. Khosrowshahi has acknowledged Uber's multiple priorities, one being instilling financial discipline to "pay the bills" and the other being to "take big shots" and build for the future.

While it is too early in Khosrowshahi's tenure for meaningful strategic changes to have taken hold, the company has already pruned its worst loss-making ventures and refocused its business both geographically and organizationally. We'll explore those moves and other potential targets for Khosrowshahi in the sections ahead.

Job Listing Analysis

For a view into Uber's organizational priorities and growth areas (both geographically and vertically), we analyzed the company's open job listings as of 8/29/2017. Note that these listings are for Uber corporate, and exclude listings or openings for the hundreds of thousands of driver positions available at the company worldwide.

The following graphic shows the distribution of Uber's over 1,900 open job listings by team and subteam, where available.



Operations

As mentioned above, Uber's traditional strategy has historically emphasized growing and optimizing the supply side of their two-sided marketplace (that is, its network of drivers). The company's billions in losses stem in large part from its spend to recruit and retain its drivers, a basic formula Uber has stuck to in both established markets like the US and areas of opportunity it has targeted internationally.

It's not surprising, then, that the boots-on-the-ground work of launching, scaling, and maintaining operations in markets across the globe between the Operations & Launch and Global Community Operations teams accounts for over a third of Uber's active job listings at 38.3%. These teams are on the front lines of Uber's interactions with its "driver-partners" (in company parlance) and riders.

Engineering and product

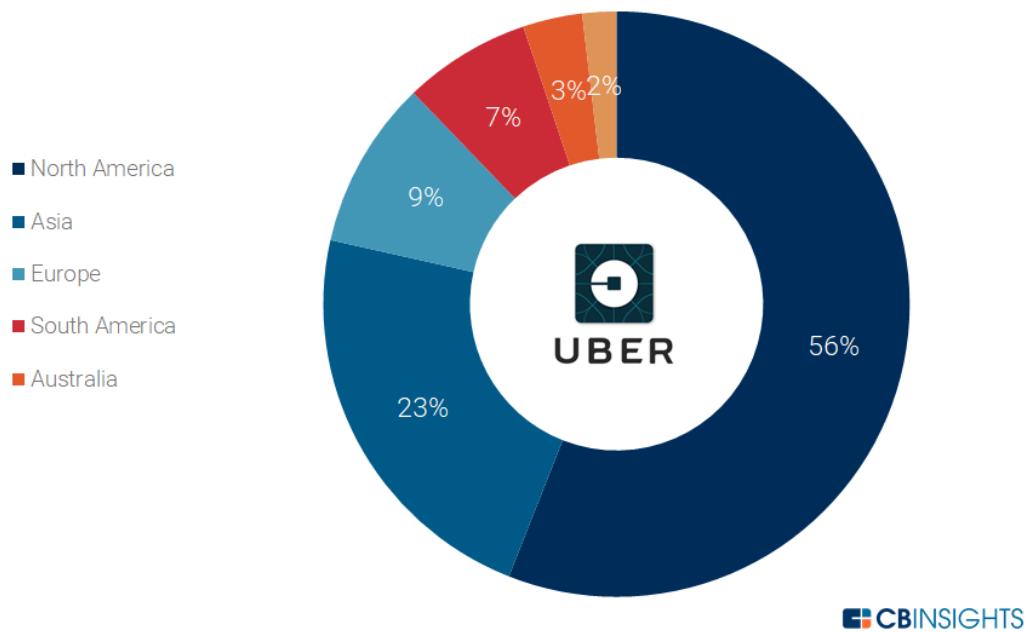
On the general engineering and product side, Engineering (14.7%), Product (4.4%), and Design (3.1%) collectively account for roughly a fifth of the company's openings. Peeking into Engineering subteams reveals a push on data science and mapping talent, both of which have been points of emphasis for the company.

Uber's Advanced Technologies Group (ATG) is the Uber unit attracting the most media attention (and legal scrutiny), primarily for its work on self-driving vehicles spanning both passenger cars and trucks. The company's recruiting efforts for ATG are apparent, with nearly 6% of its open listings filed under the unit (or just over 100 jobs). We'll be diving into detail on ATG later on, but Uber's job listings show ongoing recruiting efforts for deep learning and autonomous vehicle experts, among the most in-demand engineering roles in contemporary tech. Despite the legal specter hanging over the group, Uber is still investing in its autonomous vehicle efforts for the moment.

Looking at the geographic spread of Uber's roles, generally, over half of the company's open positions are based in North America. Asia represents just under a quarter of its listings, followed by Europe and South America.

UBER HIRING DISTRIBUTION BY CONTINENT

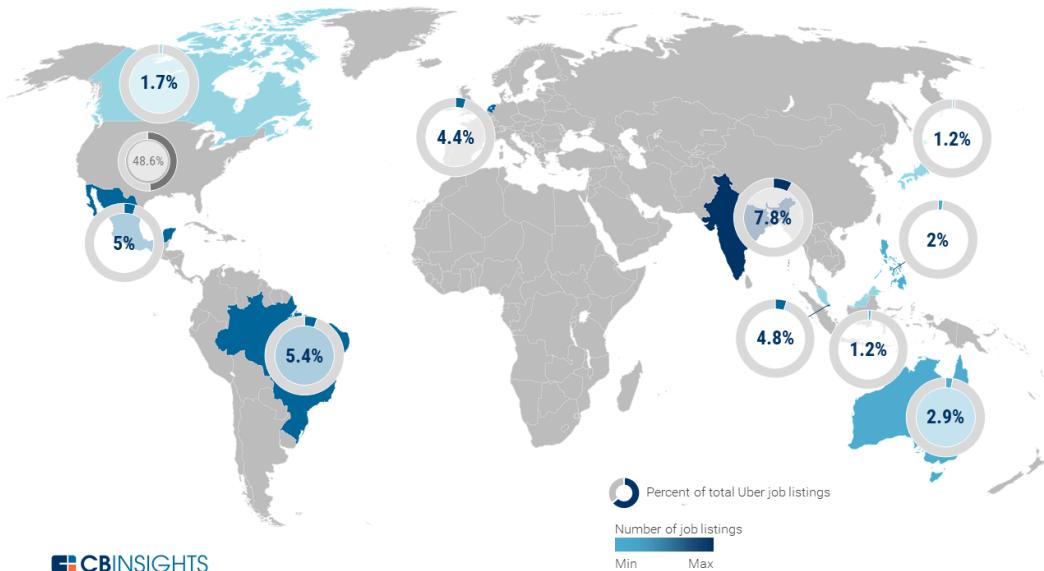
Distribution of active job listings as of 8/29/2017



Diving into specific countries, the US accounts for the lion's share of roles as expected, with 48.6% of Uber's open listings in its home country. We also analyzed the top ten ex-US countries where Uber is seeking talent:

GROWTH MARKETS: TOP 10 COUNTRIES BY OPEN UBER JOB LISTINGS (EX-US)

Active job listings as of 8/29/2017



Notable for their absence are markets such as China and Russia, evidence of Uber's retrenchments abroad. The company's August 2016 sale of its China unit to Didi Chuxing marked a sudden reversal in what had been a stubborn win-at-any-cost philosophy that cost Uber and its competitors billions (more on those deals in a moment).

Instead, Uber's new international strategy now involves a more targeted approach, with a particular focus on developing markets. Uber and its rivals sense an opportunity to "leapfrog" the traditional vehicle sales model as consumers in these markets grow wealthier, pushing their ride-hailing and fleet-based services where ingrained cultures of individual car ownership have not been established. With ambitions in logistics services and transportation beyond just ride-hailing, these players are also referred to as transportation network companies (TNCs).

These international growth priorities are evident in the graphic, with India ranking as the non-US country with the most open job listings at nearly 8% of the total (or 150 jobs). Uber is also aggressively seeking talent in Southeast Asia, with Singapore, Indonesia, and the Philippines all making the top 10. Outside of Asia, Uber is also recruiting heavily in Latin America, with Brazil and Mexico collectively representing over 10% of the company's open positions.

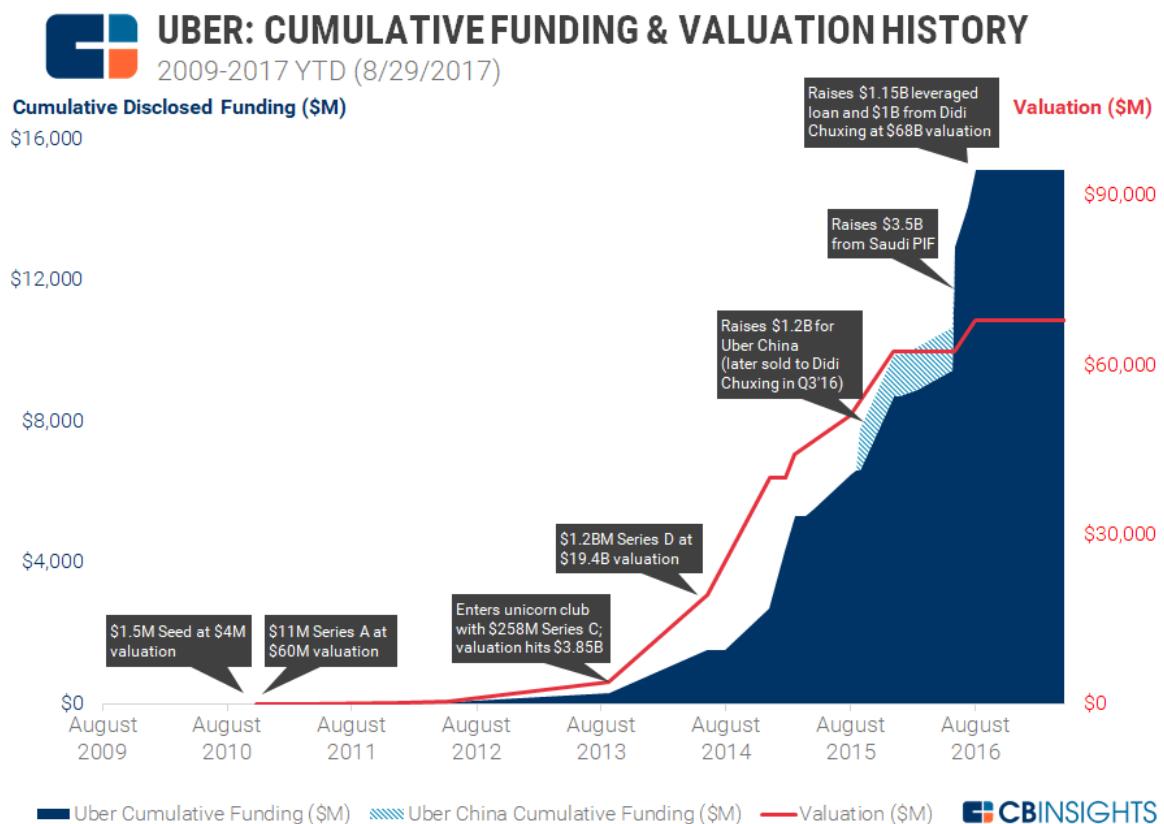
Uber's SVP of Global Business highlighted India, Brazil, and Mexico as Uber's top priorities; indeed, these three countries rank as Uber's top 3 ex-US destinations in our jobs listing analysis. (We'll cover that later on, with a deep dive on the stiff competition Uber faces from well-financed, home-grown rivals across these regions, including Grab in Southeast Asia, Ola in India, and 99 in Brazil, and more.)

Meanwhile, hiring in Uber's traditional overseas headquarters of Amsterdam remains significant, representing 4.4% of its total. However, Uber's European job listings in aggregate represented just under a tenth of its total, with the company listing more openings in emerging Asian markets and its home North American market.

Also not highlighted here is the Middle East and North Africa, another growth market where another ride-hailing competitor (Careem) has raised over a half-billion in capital. Egypt ranks just behind Japan for 11th place among Uber's top ex-US hiring destinations, with 1.1% of the company's open job listings.

Financing & Valuation History

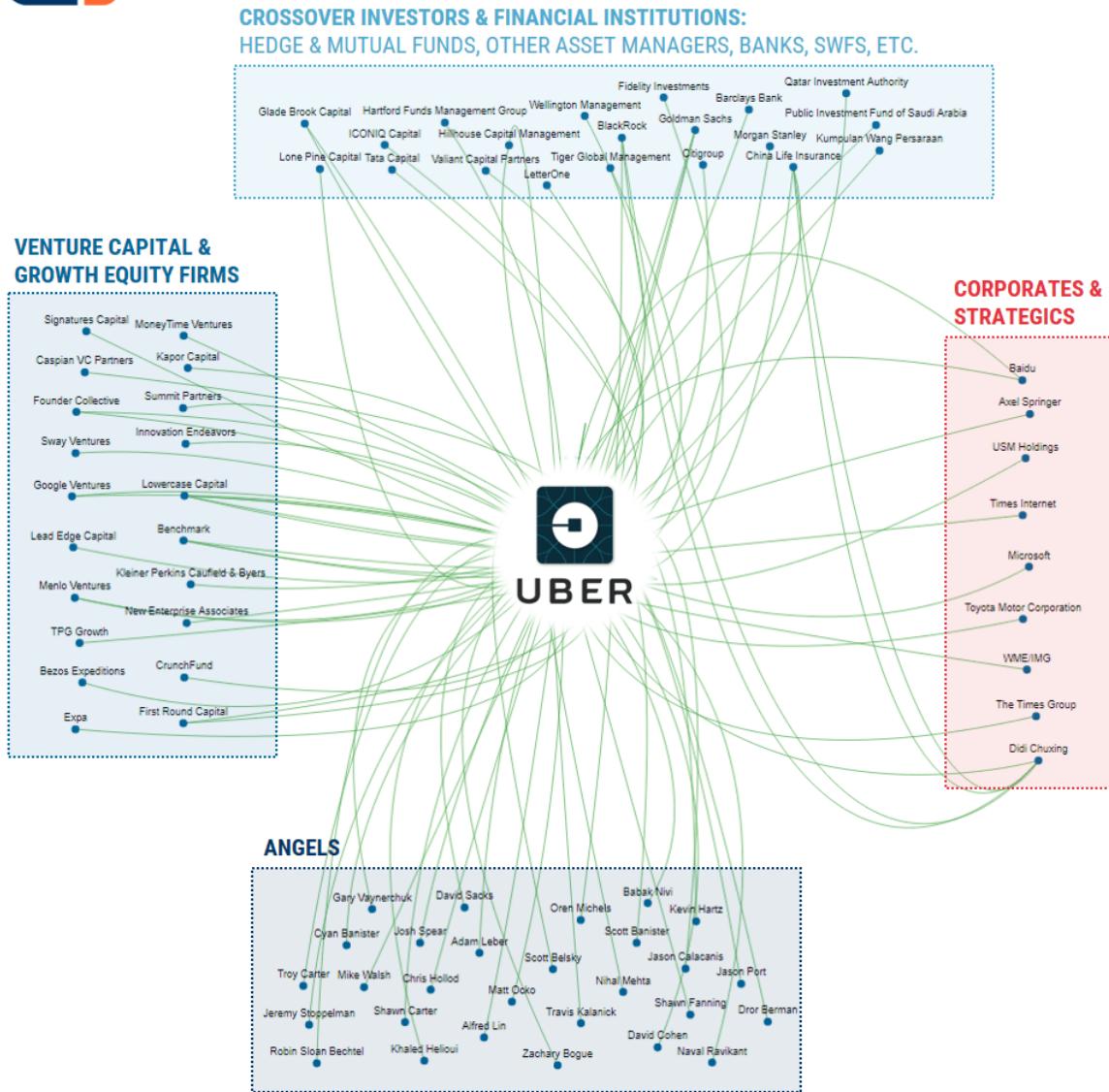
Uber has reached a level of mainstream consciousness uncommon among private startups, not just for the ubiquity of its service but also the vast sums of capital it has raised at eye-popping valuations. Our funding and valuation data reflects Uber's meteoric rise since its March 2009 founding as UberCab (note that funding raised specifically for Uber's China operations is broken out separately here):



Growth was especially dramatic in the early- to mid-decade, culminating in Uber raising upwards of \$6B in capital in 2016 alone. With Uber's cap table crowded with dozens of investors and employees tied to famously restrictive "golden handcuffs" until recently, Uber has looked beyond standard equity financing to avoid further dilution for its shareholders. One of the company's last major financings was a \$1.15B leveraged loan in July 2016, arranged by four banks including Morgan Stanley and Goldman Sachs. Uber is said to be paying a yield of roughly 5% on the loan, according to the Wall Street Journal.

Uber has tapped countless sources of capital to amass its war chest, and thus sports one of the most diverse investor networks of any private venture-backed company. We used our business social graph to highlight four key groups of Uber backers:

UBER'S INVESTORS BY TYPE



The company is famous for its clutch of early angel and VC investors, which the company has likewise lifted to stardom; Uber's meteoric rise in valuation could single-handedly return the fund for these VCs, and generate a fortune for early angels. Crucially though, many of these returns are still on paper, with most investors not seeing any liquidity beyond secondary market transactions. Investors have been rattled by their inability to lock in returns, combined with the uncertainty now surrounding the company. This friction has contributed to ugly confrontations like Benchmark's ongoing lawsuit against Kalanick (as disclosed by the firm's complaint, Benchmark holds a roughly 13% equity stake, with Kalanick currently holding around 10%).

Veteran VC and longtime Uber champion Bill Gurley departed the company's board in late June, after leading the push to pressure Travis Kalanick into his resignation. His board seat was filled by Matt Cohler, another general partner at Benchmark, but the firm remains in an uncomfortable position that has drawn ire from both other Uber investors and the venture industry as a whole. Shervin Pishevar, another early Uber backer, is now leading a coalition of investors pressing Benchmark to sell its Uber shares and leave the company's board.

However, this controversy does highlight a growing concern within the investor community, as startups (particularly highly-valued unicorns) continue to stay private longer with multi-billion-dollar late-stage financings and access to diverse sources of capital, while early backers see limited liquidity despite enormous paper gains. In some ways, Uber has been the banner-carrier for this movement, with the company raising billions from investors like mutual funds and the Saudi sovereign wealth fund that aren't typical private market investors, enabling Kalanick to avoid taking the company public.

Indeed, legendary VC Fred Wilson of Union Square Ventures sided with Bill Gurley on founders' and management teams' fiduciary responsibilities:

"I agree with Bill Gurley on this. [Uber] should be a publicly traded company. When you take money from me, am I getting money from you? You have a responsibility to give me my money back sometime. You can't just say f— you. Take the g— company public."

Another notable investor is GV (formerly known as Google Ventures), which first invested in Uber's 2013 Series C alongside TPG. Longtime Alphabet exec David Drummond joined Uber's board as part of the investment, but departed the position in late 2016 over a conflict of interest. Drummond had been "shut out" of meetings as Uber's autonomous vehicles ramp-up brought intensifying competition with the Google Self-Driving Car project (now Alphabet company Waymo).

Since gorging itself on new capital in 2016, developments on the fundraising front have been quiet since the company's Uber China divestment last August. Although the company still holds more than \$6B in cash, there are signs that Uber's business challenges and endless scandals have weighed on investor confidence in 2017. Uber's mutual fund backers, which regularly disclose their private company valuations, have become the most outwardly visible indicator of this, as some recently marked down their Uber positions by up to 15%.

Potential new investors on the horizon include previously-mentioned SoftBank (which has already secured stakes in nearly all of Uber's major rivals as well) and Dragoneer Investment Group, which are both said to be weighing a flat round, according to Bloomberg, that would bring Uber up to \$1.5B in new capital, while

also buying out up to \$10B from the company's existing shareholders. This deal would shake up the status quo considerably, as discussed in our analysis of SoftBank further below.

Despite not raising any significant disclosed funding in over a year, Uber still sits atop our unicorn tracker as the most valuable private VC-backed startup in the world:

CBINSIGHTS

The Global Unicorn Club

Current Private Companies Valued At \$1B+
(including whisper valuations)



Total Number of Unicorn Companies: 215
Total Cumulative Valuation: ~ \$741B

Company	Valuation (\$B)	Date Joined	Country	Industry	Select Investors
Uber	\$68	8/23/2013	United States	On-Demand	Lowercase Capital, Benchmark Capital, Google Ventures
Didi Chuxing	\$50	12/31/2014	China	On-Demand	Matrix Partners, Tiger Global Management, Softbank Corp.,
Xiaomi	\$46	12/21/2011	China	Hardware	Digital Sky Technologies, QIMing Venture Partners, Qualcomm Ventures
Airbnb	\$29.3	7/26/2011	United States	eCommerce/Marketplace	General Catalyst Partners, Andreessen Horowitz, ENIAC Ventures
SpaceX	\$21.2	12/1/2012	United States	Other Transportation	Founders Fund, Draper Fisher Jurvetson, Rothenberg Ventures

Chinese counterpart Didi Chuxing ranks among the few unicorns with a comparable valuation, last pegged at \$50B as of Didi's mammoth \$5.5B raise in April 2017. For its part, Uber's most recent \$68B valuation dates to over a year ago, when Didi Chuxing itself invested \$1B in Uber as part of the Uber China exchange (more on Uber's divestitures below).

Round	Date	Funding	Investors	Mentions	Valuation	Deal Terms
Corporate Minority - IV	Aug 1, 2016	\$1bn	Didi Chuxing	Engadget, Engadget, Mashable, Engadget, stttoday.com, Engadget, Autoblog, Mashable, Recode and Engadget	\$68bn	Direction: Up Round Price per share: 48.7722 Est. fully diluted shares: N/A Liq. Preference: Par Passu Liq. Multiple: 0 - 1x Stock Type: Conventional Convertible Capped Participation: No Anti-Dilution: Weighted Average Redemption: No Cumulative Dividends: No Dividend Rate: 8 Pay to Play: No Reorganization: No

Though our analysis of liquidation terms has found a recent resurgence in investor-friendly senior liquidation preferences, our enhanced deal terms and valuation data shows relatively vanilla deal terms on this round, with a 0-1x liquidation multiple and pari passu preference. However, given the leverage that Uber has historically commanded over investors, it's not surprising that Uber has been able to raise on largely favorable terms.

Deals

Acquisitions & Investments

In September 2014, then-CEO Travis Kalanick boasted about Uber's commitment to non-acquisitive growth:

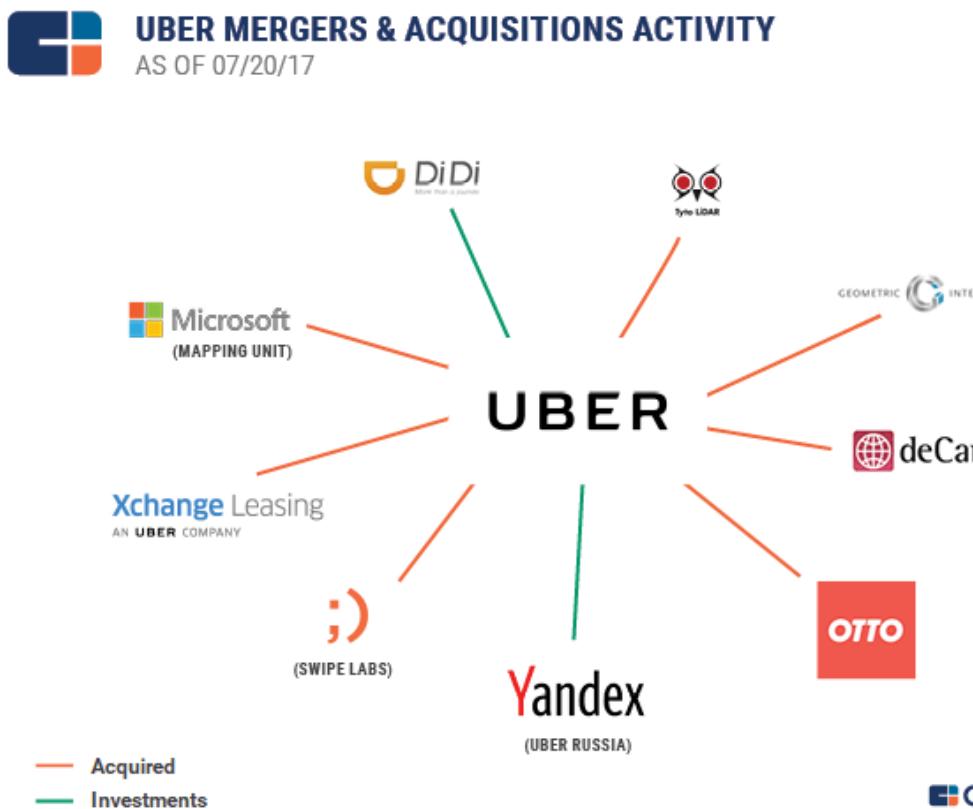
"Uber has not acquired a single company. We are focused on the product. We are in 45 countries. We haven't spent time on M&A."

That era of Uber's history is over. Uber recently completed its tenth major transaction as an investor with the acqui-hire of the team behind social app studio Swipe Labs, a deal that came less than a week after news of Uber's deal with competitor Yandex Taxi, in which Uber ceded its Russian operations to Yandex in exchange for a 36.6% stake in a new joint company (created from their merged assets in the Russia market).

Uber started acquiring and investing in startups in Q1'15, and nearly every deal has had notable consequences for the business, including:

- Patent acquisitions (and lawsuits)
- Market share concession
- Business-unit creation and management shifts

We used our data to take a closer look at the company's M&A history to analyze how Uber has behaved as a strategic investor.



Mapping has been a key focus, with Uber acquiring deCarta back in Q1 2015. The deal bolstered Uber's mapping and navigation functionality, but it also kept deCarta's patents out of the hands of Google, Apple, and other tech giants with aspirations in autonomous vehicles (AVs).

Uber followed up the deCarta acquisition by purchasing Microsoft's Mapping Unit in Q2'15. The deal brought 100 of Microsoft's engineers (as well as its data center and licensed intellectual property) in-house to Uber. As a result of the deal, Microsoft confirmed it no longer collects its own mapping data. In July 2016 Uber was said to be investing a further \$500M to enhance its mapping system. Uber's mapping vehicles have ranged as far as Singapore.

Uber has also taken a minority stake in an Indian company, plugging \$6.4M into Xchange Leasing India in Q3'15, likely with an eye for boosting driver participation in India: partnering with Xchange gave Uber a way to offer affordable leases to drivers. Olacabs, Uber's top competitor in India, announced a similar deal with an Indian automaker weeks before Uber acknowledged the investment in Xchange. Uber made a \$30.2M follow-on investment in Xchange in Q3'16, but continues to battle Ola for market share in India. (For more on these top global ride-hailing firms' investment and M&A strategies, click [here](#).)

All of Uber's systems- and talent-related acquisitions have sparked controversy. The company's Q3 2016 acquisition of Otto—a self-driving truck startup founded by former Google engineer Anthony Levandowski—for \$680M led Alphabet subsidiary Waymo to file a lawsuit in Q1 2017, accusing Uber of "calculated theft" of its AV trade secrets and technology.

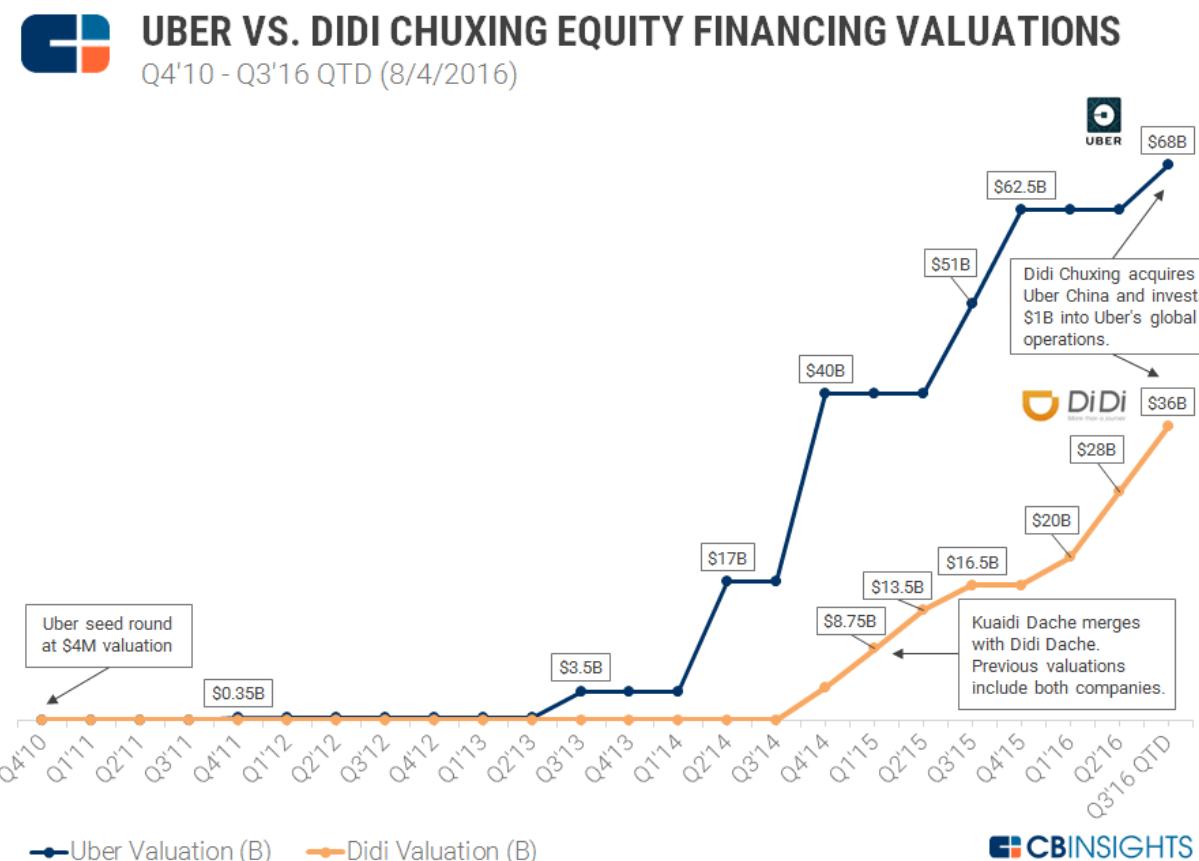
Prior to the Waymo suit, in Q4 2016 Uber acquired Geometric Intelligence and the company's 15 employees to form Uber AI Labs, a new artificial intelligence unit; the startup was working on making AI systems work with smaller sets of data than are typically required for object or scene recognition. Uber AI Labs saw a leadership change just three months after the acquisition: Gary Marcus, the former CEO/co-founder of Geometric Intelligence, stepped down from his role as head of Uber AI labs in March amid heightening criticism of Uber's management practices, business tactics, and workplace culture.

Uber's Q2 2017 acquisition of Swipe Labs—which built photo-sharing, chat, and video apps over its four-year history—was the company's first acquisition since Travis Kalanick left the CEO role. Since the deal brings experienced engineering talent into Uber at a time when recruiting is almost certainly a challenge, we'll be watching whether it's the first of many acquisitions.

Divestitures

Several of Uber's moves have also narrowed the scope of its international operations outside North America. Since launching its China operations in 2014, Uber had been locked in a fierce price and subsidy war against Didi Dache and Kuaidi Dache (the two later merged into Didi Chuxing, fka Didi Kuadi, to better combat Uber).

After burning over \$2B in cash in two years of Chinese operations, Uber moved to sell its Uber China operations to Didi Chuxing in Q3'16. The terms allowed Uber to retain a 17.7% stake in the merged entity (with a 5.98% voting stake) in exchange for a \$1B investment in Uber from Didi, with Uber becoming the largest single shareholder in its former rival.



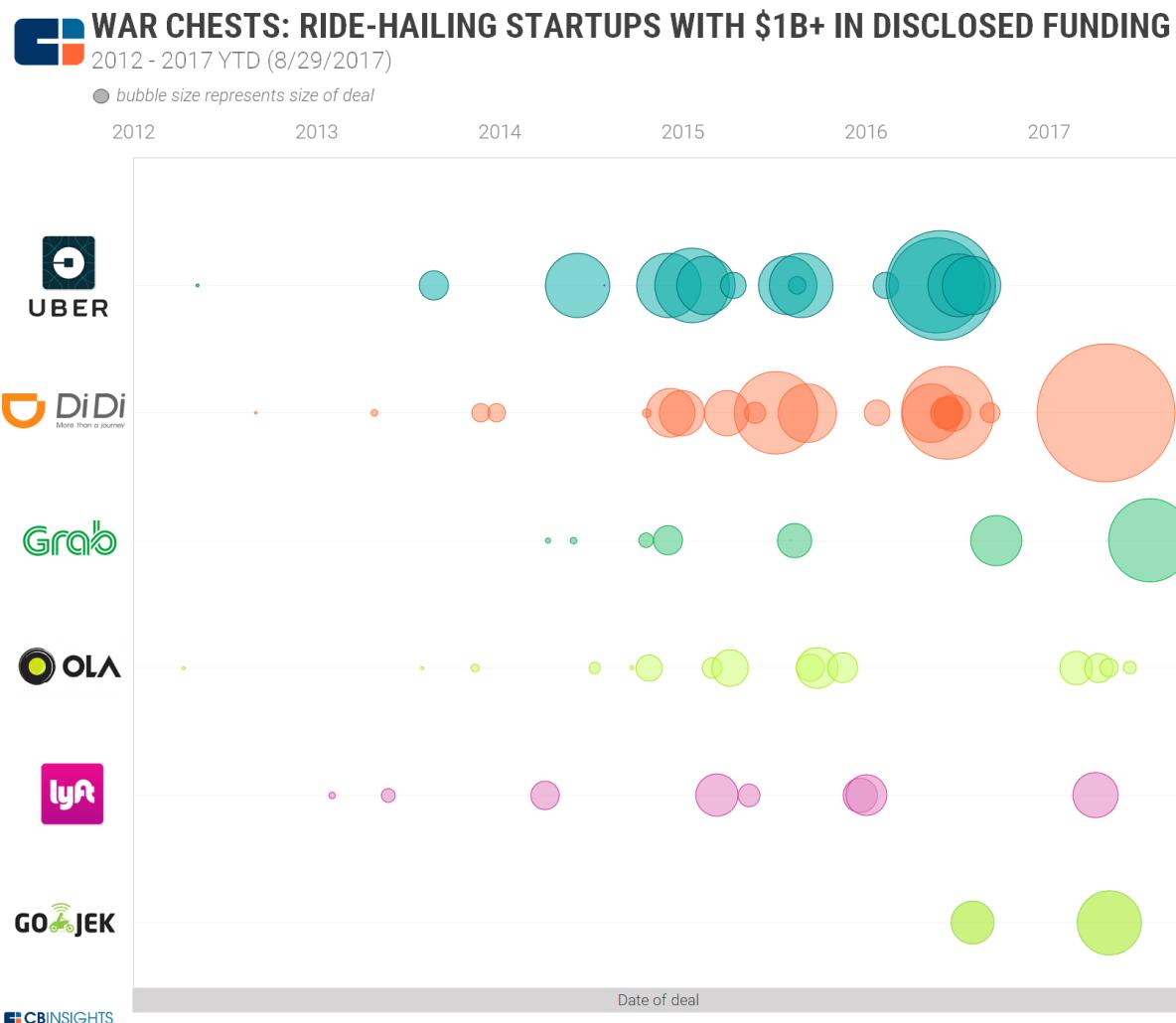
Media reports characterized the deal as Uber's "retreat" from China, and the divestment did mark a notable departure from the company's commitment to winning wars of attrition. However, Uber was able to distance itself from the cash furnace that was its Chinese operation while retaining a sizable stake in any profits from the lucrative Chinese market. With Didi now valued at \$50B as of its latest mega-round financing, Uber's 17.7% share in the company is nominally worth over \$8B.

In its most recent transaction, Uber also struck a deal with Yandex in Russia: with dynamics similar to the Didi Chuxing deal, Uber will invest \$225M for a 36.6% stake in a new company created from Uber's and Yandex's assets in the Russia market. Yandex will invest \$100M and own a 59.3% stake in the combined entity, with the remaining 4.1% held by employees. Once again, the company seemed to be looking towards narrowing its losses and geographic focus, while still retaining a stake in emerging markets (although it should be noted that the scale of the Didi and Yandex opportunities is vastly different).

Competitive Landscape and a Word on Softbank

As recently as two years ago, it seemed that Uber was poised to dominate ride-hailing markets across the globe, flush with cash and riding the peak of the unicorn craze. The company stayed true to Kalanick's aggressive growth philosophies, venturing into countries from China to Brazil.

With Uber's retrenchment in China and Eastern Europe, the company has reversed course from indiscriminately pouring resources across the globe. Although the company's war chest remains formidable, its competitors now sport impressive arsenals of their own. All of Uber's well-capitalized rivals, both domestically and internationally, have raised significant new financing in 2017 as Uber itself has stumbled from crisis to crisis:



Uber's battles with home-grown rivals in India (Ola) and Southeast Asia (Grab and Go-Jek) have been well-publicized, with its competitors also drawing multiple billions in funding. The threat to Uber's traditional strategy of fighting wars of attrition in new markets has grown in tandem with these companies' war chests. As seen in the jobs listing analysis above, these regions also rank among Uber's most active in terms of open job listings.

Of these Southeast Asian competitors, Grab has raised progressively larger rounds, capped by a \$2B Series G in July from Didi, SoftBank, and Toyota (as part of an ongoing \$2.5B raise). Among Uber's competitors, Grab in particular has invested aggressively in new markets, recently allocating \$100M over the course of three years to shut Uber out of the recently liberalized (and rapidly digitizing) Myanmar.

By contrast, Ola has comparatively stumbled. After raising a \$275M Series G in November 2015, the company did not see new capital until it received \$330M from SoftBank in February 2017. The financing was a significant downround, in which Ola's valuation was slashed from \$5B to \$3.5B amid competitive pressure in Uber and the broader slowing of venture investment in India.

Given Ola's struggles, Southeast Asia is beginning to look like a more uphill battle than India. Grab has strengthened its competitive position in Southeast Asia, while another major competitor in Indonesia, Go-Jek (whose ride-hailing service was originally founded on ojek motorcycle taxis), is ramping up.

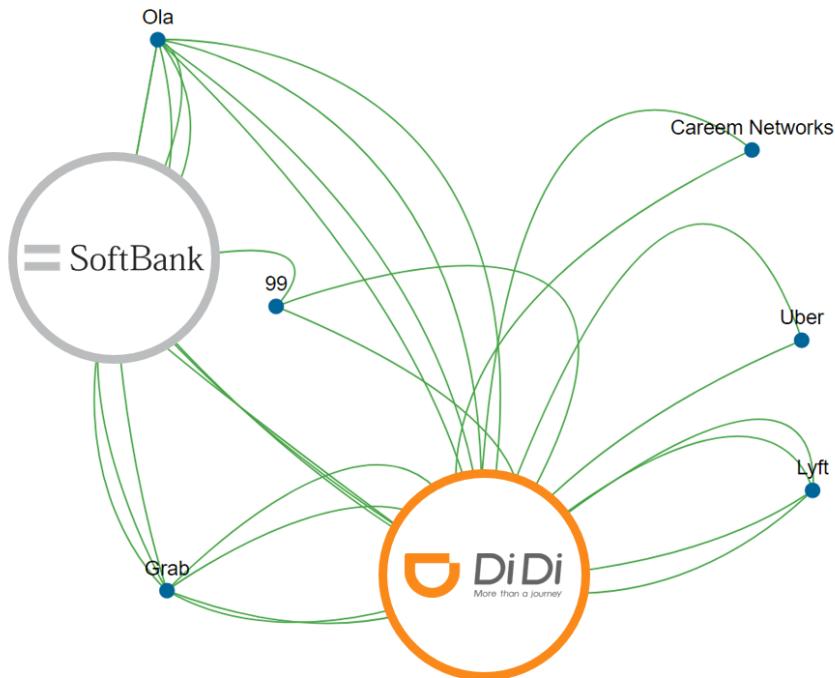
When speaking to Indian reporters in August 2017, Uber SVP of Global Business David Ritcher also made no mention of Southeast Asia, instead naming the same three countries as the top ex-US hiring targets we highlighted in our analysis above:

"There are three countries that we are betting on – India, Mexico, and Brazil. We have seen phenomenal growth in India, in July this year over last, we have seen 115 per cent growth."

To be sure, Uber is still in a firm second place behind its Indian rival Ola, but scaling back in Southeast Asia or any of its myriad areas of operation would allow the company to concentrate its resources against a narrower pool of competitors.

SoftBank and Didi Chuxing have both become ubiquitous names on the cap tables of ride-hailing companies. Using the CB Insights Business Social Graph, we can visualize SoftBank and Didi's various plays in the international ride-hailing market (each green line represents one deal):

EMPIRE-BUILDING: SOFTBANK & DIDI'S RIDE-HAILING INVESTMENTS



SoftBank has participated in multiple financings to Uber's three largest Asian counterparts, including Didi Chuxing itself. The conglomerate has also backed Uber's chief Brazilian rival 99 (formerly 99Taxis). This is another emerging market that has become hotly contested, and Uber seems to be committing to the Latin American opportunity (recall that Brazil and Mexico, respectively, ranked as the second-place and third-place countries by share of open Uber jobs in our analysis above).

As mentioned above, SoftBank is now said to be strongly considering an Uber deal, with Recode reporting that talks have advanced under Uber's new CEO. The potential arrangement is said to include both the sale of new shares (which would raise fresh capital for Uber) and the buyout of shares from existing investors, in a deal that could range up to \$10B total. Earlier in August, the conglomerate had signaled interest in either an Uber or Lyft stake.

Whether SoftBank strikes an Uber deal or not, the firm looks to be making a blanket bet on the ride-hailing space as a whole. The generous sums of capital doled out by the firm could further extend these private companies' runways and further distort the traditional private markets funding environment (investors are wary that the company and its \$100B Vision Fund might do the same in other tech sectors).

However, a potential deal is said to include a sizeable secondary market transaction, which could give some employees and early investors an opportunity to see liquidity. An infusion of new capital, combined with liquidity for early stakeholders, could reduce the need for Uber to go public and change its strategic standing yet again.

Didi has mutual stakes with SoftBank in all of the latter's ride-hailing investments, in addition to its own investments in Lyft and Middle Eastern counterpart Careem Networks. The Chinese firm's investment- and partnership-based approach to empire-building is a stark contrast to Uber's strategy of direct invasions and competition. Prior to the Uber China-Didi deal, Didi had also led the formation of an "anti-Uber" alliance spanning its regional investment partners, although that coalition has fizzled since the Uber China detente.

In Europe, Uber has established a significant presence, but has also been shut out from markets like Denmark, Germany, and Hungary by regulations. The Daimler-backed myTaxi service claims to be operating at a larger scale than Uber in Europe, while Daimler also recently invested in Via to bring that shuttle-based service's operations to London. Gett and Taxify are also notable competitors.

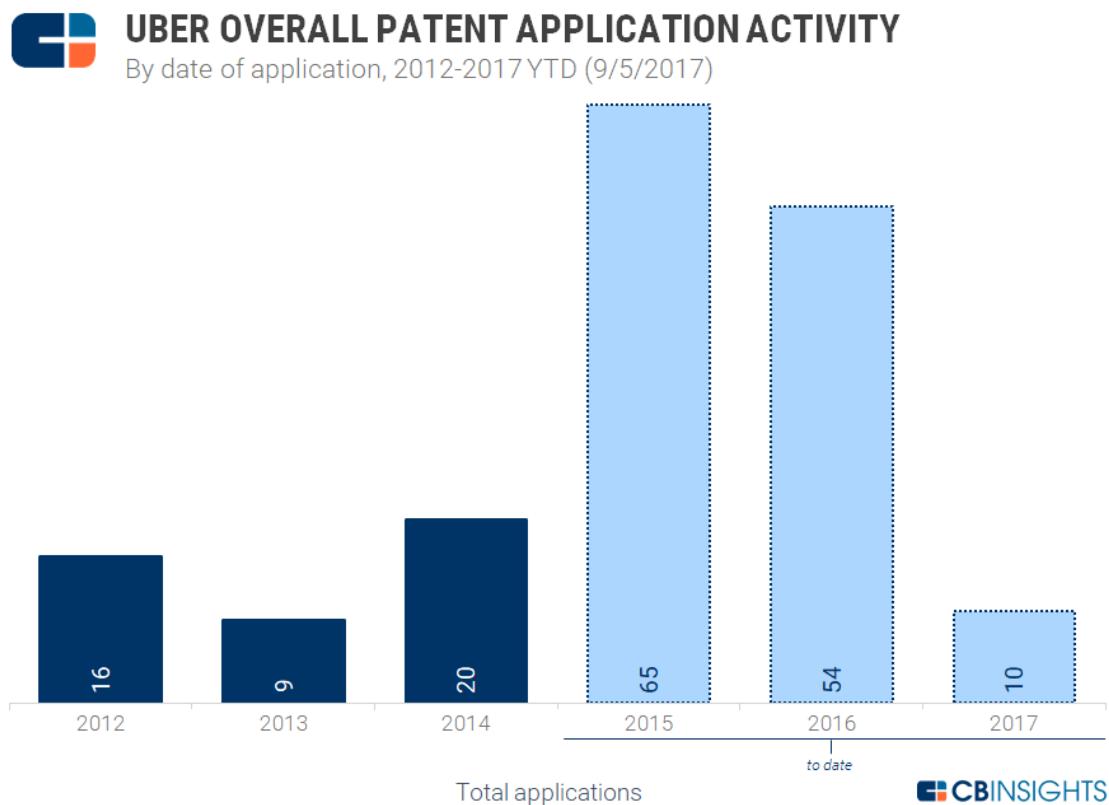
Given the patchwork state of European regulations and competitors, combined with the lack of a large primary opportunity and more mature market, it's not surprising that Uber's heaviest international efforts have focused on developing markets.

Finally, in the US, Uber's dominant position has eroded as Lyft has battled back with generous subsidies combined with concerted marketing and partnership efforts. Lyft has also taken advantage of Uber's tumultuous 2017, especially in the wake of the #DeleteUber campaign in the spring.

Second Measure's data on Uber's US market share showed that figure falling from over 90% in 2014 to 74% as of August 2017, with a near 5% drop in the week of #DeleteUber alone. The company's loss of share has come almost entirely at the hands of Lyft.

Patent Data Analysis

Uber's patent activity is predictably more sparse than that of giants like Google or Amazon. Nevertheless, the ride-hailing giant is growing more active in securing its intellectual property, particularly as it ramps up research efforts in frontier technologies such as autonomous driving.



Note: This analysis comes with a few caveats, primarily that the patent filing process involves a significant time lag before the publishing of patent applications. This delay can range from several months to over two years. We also focused on Uber proper for the purposes of this analysis, which would exclude any patents absorbed through external acquisitions not reassigned to Uber itself.

We also mined each year's applications to tease out recurring keywords from the patent abstracts, using a significance weighting scheme to surface words and phrases. (Note that records prior to 2014 are likely complete, but analysis for the most recent years only includes applications published to date, subject to the USPTO review and publication process.)

While patents are still being released weekly, the ones that have rolled in from 2015 and 2016 highlight Uber's intensifying focus on autonomous vehicles research following the formalization of its self-driving unit, seen in orange below. The company's significant patent phrases highlight a shift away from building its core on-demand network ("demand service" and "transport service") to autonomy and related efforts in mapping (highlighted in blue):

Uber Patent Keyphrases by Significance

	2012	2013	2014	2015*	2016*	2017*
1	demand service	demand service	transport service	transport service	autonomous vehicle	service option
2	user interface	service provider	transport request	location data	traction value	mobile device
3	transport request	location data	first user	user account	sensory stimulation	planar beam
4	geo search	location category	location data	event data	wait time	transit object
5	spatial key	sub region	driver device	user device	road segment	route path
6	service option	transition zone	mobile device	network service	stimulation system	computing device
7	electronic panel	plurality of location	multiple transport	sensor data	detection system	travel route
8	interest record	real time	push notification	autonomous vehicle	driver device	connection schedule
9	graphical user	map interface	predefined region	backend system	road network	gps information
10	gps information	view navigation	plurality of driver	dispatch system	location data	current location

While this analysis concentrates on patents assigned to Uber proper, it goes without saying that the company's acquisitions have brought Uber both additional intellectual property and serious allegations of IP theft. Waymo's suit against the company alleged, among other things, that Otto co-founder Anthony Levandowski stole 14,000 confidential documents before leaving Google, enabling Uber to infringe on its technology patents—particularly that of Waymo's proprietary lidar technology.

Levandowski has since stepped down from his role as head of Uber's self-driving unit, but the suit remains pending. Otto's acquisition of Tyto Lidar in Q2'16, in advance of Uber's purchase of Otto, will likely play a role in the case. Court documents have revealed Waymo's allegations that Levandowski personally owned and controlled Tyto during his tenure at Google; the company's path to Uber is obscured by a number of shell companies.

Regarding Uber's deCarta deal, reports show that the company transferred 7 patents to Google (related to matching mobile users and service providers, mobile advertising, and connecting mobile users based on degree of separation) and sold 6 to Samsung (related to mobile user notifications) prior to being acquired by Uber. At the time of Uber's acquisition, deCarta owned 25 patents, plus 6 pending, covering various aspects of route planning, point-of-interest identification, and internet-based map searching.

Uber Initiatives by Sector

AI and Autonomy (Advanced Technologies Group)

Uber's Advanced Technologies Group is the company's central hub for developing autonomous vehicle (AV), mapping, and safety technologies. Under Travis Kalanick, the unit ranks among the company's foremost long-term priorities. Although Uber itself has long threatened the model of traditional auto OEMs, Kalanick echoed automotive executives in labeling AVs an existential threat to his business, in an interview with Business Insider:

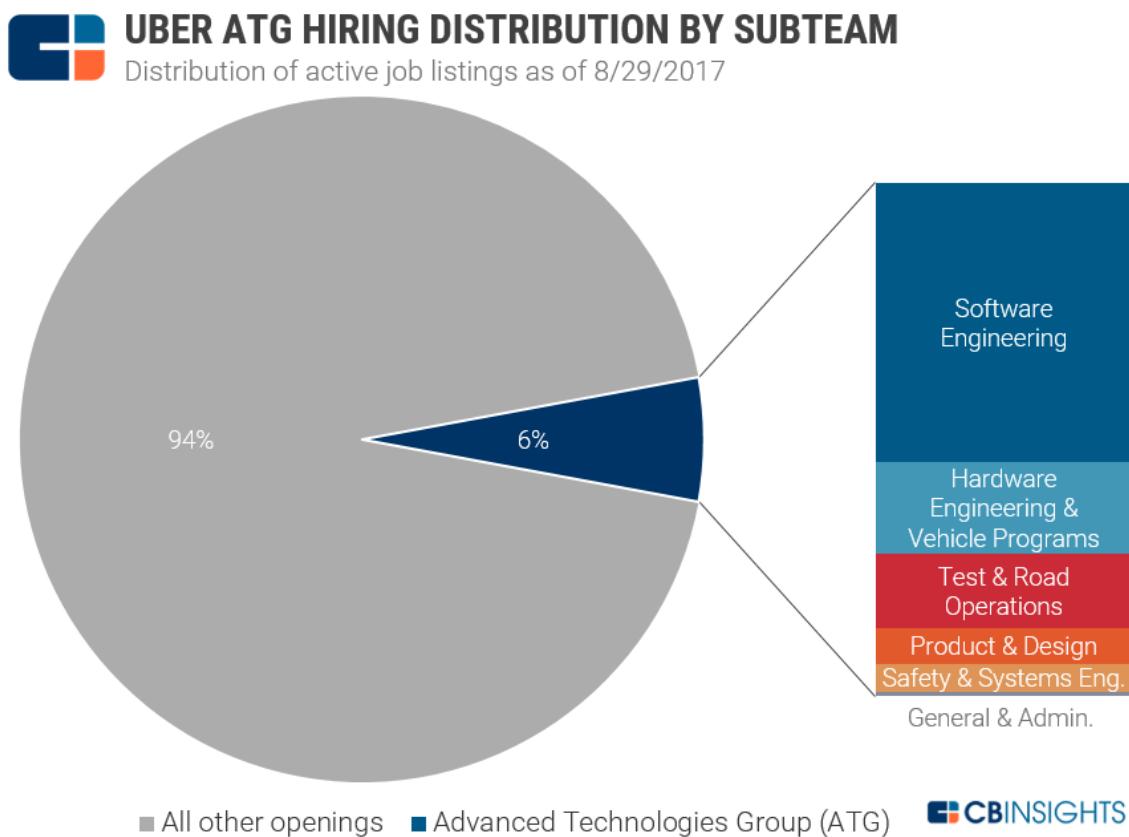
"It starts with understanding that the world is going to go self-driving and autonomous... So if that's happening, what would happen if we weren't a part of that future? If we weren't part of the autonomy thing? Then the future passes us by, basically, in a very expeditious and efficient way."

This sense of urgency to build in-house AV competencies fueled aggressive moves that have landed ATG into several controversies. Chief among these is the aforementioned Otto acquisition and subsequent Waymo lawsuit. The case has become a potentially existential threat to Uber's self-driving program (and even the company at large) should the process end with an unfavorable ruling, the worst-case scenario being a decision that Uber's Otto acquisition was an orchestrated play for intellectual property theft.

The trial is a month out at the timing of writing, but Alphabet is not known for being particularly litigious – executives like Larry Page and Sergey Brin have long been philosophically opposed to excessive patenting and IP litigation for stifling the innovative spirit of Silicon Valley. Thus, eyebrows were raised when Waymo disclosed its suit in February 2017.

The original founding of ATG itself caused some ill will as well, with Uber essentially abandoning a partnership with Carnegie Mellon in favor of poaching many of its staff directly onto its team instead (the company's original Advanced Technologies Center is located in Pittsburgh for this reason).

Despite the turmoil surrounding the team and company, Uber remains committed to its AV development for the moment, and is still actively listing open roles within ATG:



It's notable that recruitment areas here span some of the most in-demand fields in tech, including deep learning, sensor fusion, and computer vision specialists (mostly within the Software Engineering subteam above). With AV engineers in short supply and a fierce recruiting battle raging, salaries in the field now range up into quarter- or half-million-dollar territory, and Uber's worsening image had made finding scarce talent even more difficult. The company also lists a handful of additional positions to expand its Testing & Road Operations subteam, which is now active in Pittsburgh, Phoenix, and San Francisco (the latter after initially flaunting California DMV regulations, only to draw a sharp rebuke).

Aside from passenger vehicles, Uber teased the new look of its autonomous trucking prototypes in July 2017, perhaps as a reminder that its trucking program remains active in the wake of Waymo's suit. Notably however, the lidar sensors fitted to Uber's rigs was an off-the-shelf design, rather than any of the in-house solutions that have been implicated in the Waymo suit. The ongoing process has revealed that Uber continues work on its own proprietary lidar solutions, including an upcoming unit that it claims is "vastly different" from Waymo's.

The company has also committed to new executive hires to replace autonomous vehicle talent lost in the wake of Waymo's lawsuit. In May 2017, the company hired Raquel Urtasun, a noted University of Toronto AI researcher, to build out a lab for AV research in Toronto. The unit will be the third ATG office, joining Pittsburgh and the Bay Area (Geometric Intelligence continues to serve as the company's central AI lab).

Reports on Uber's AV progress to date have been spotty, but internal documents leaked to Recode in March 2017 painted a less-than-ideal picture, with the company's vehicles disengaging (with human drivers being forced to intervene) nearly once every mile. By comparison, Waymo's disengagement rates had fallen to 0.2 incidents per 1,000 miles in 2016. Although these companies may be recording these statistics differently, the relative gap is still considerable.

Despite its reputation as a maverick, Uber had originally looked to collaborate with high-profile AV developers, including both Google/Waymo Tesla. The Waymo-Uber lawsuit has revealed documents that detail Kalanick's attempts to forge a partnership with Google. Kalanick eventually met with Google's CEO Larry Page, but talks fizzled out and the companies quickly became bitter rivals. The former Uber CEO also met Tesla chief executive Elon Musk to propose an AV partnership but was rebuffed on that front as well.

Demanding a heavy capital outlay over a long timeframe and faced with an uncertain legal future, ATG stands as one possible candidate for the company to reduce its cash burn. Outward-facing indicators (like Uber's disengagement statistics and smaller test fleet) pegs the company's efforts behind competitors; new management may choose to jettison the sunk cost if the program is deemed too far behind. It remains to be seen whether Khosrowshahi will come to see an in-house AV development team as an "existential" necessity in the same way Kalanick did, although the new CEO did commit to "taking big shots" (in addition to "paying the bills").

As recently as last month, The Information reported that an unnamed automaker had approached Uber to buy its self-driving unit outright, which the company rejected at the time. Nevertheless, Uber is now said to be reconsidering the notion of entering joint ventures or partnerships to defray the costs of developing AVs. The list of candidates has narrowed, with Uber's list of acrimonious relationships, and Lyft actively seeking AV partners with its open autonomy platform (and also kicking off its own AV development efforts).

However, the company did strike a January 2017 agreement with Daimler to deploy the automaker's self-driving vehicles on Uber's ride-hailing network. Other automakers with fewer ride-hailing investments and partnerships might also be candidates, with Ford being one example. Should Uber ultimately scale back its AV program, many startups and larger corporations are developing on autonomous systems for retrofitting onto existing vehicles or licensing for third-party use.

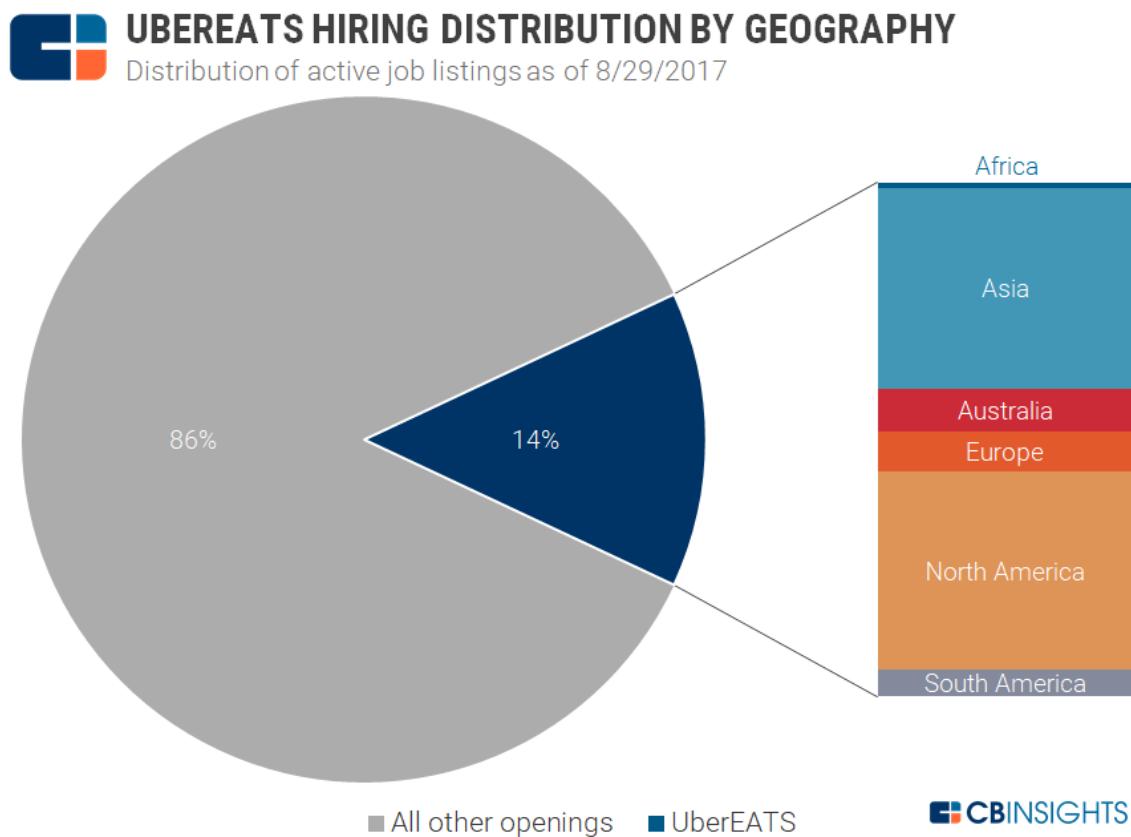
Courier and Food Delivery Services (UberRUSH and UberEATS)

Uber Everything, the company's startup-within-a-startup, resembles units like Alphabet's X for incubating experimental ideas. Uber Everything is more focused than Alphabet's "moonshot lab," with an emphasis on building on-demand services adjacent to Uber's core ride-hailing business. As one employee put it, Uber Everything would be like the countless "Uber for X" startups inspired by the company, except incubated within Uber.

The unit incubated two new products that have since taken divergent paths: UberRUSH, its on-demand local delivery service, and UberEATS, the company's meal ordering and delivery platform.

When UberRUSH debuted in 2015, the company hoped that its courier delivery service could leverage Uber's driver network, tech platform, and deep pockets to replicate the success of its primary business. However, in early 2017 the company shuttered its UberRUSH service for restaurants, encouraging them to move over to UberEATS instead. The service's website lists the same areas of operation (SF, Chicago, and NYC) as it did upon launch, and the company has barely a handful of job listings that mention UberRUSH by name.

Our cross-functional analysis of the nearly 2,000 job titles we collected revealed Uber's priorities here. Nearly 14% of Uber's active openings (or over 250 jobs) list UberEATS explicitly in the job title.



Uber faces stiff challenges here from other tech rivals, as dominant US player GrubHub Seamless recently acquired Foodler and Eat24 to further bolster its leading position. Amazon, too, may encroach further on the food meal delivery space following its Whole Foods acquisition. Internationally, Uber must contend with formidable local competitors across regions, much like its core ride-hailing market. These include Delivery Hero and Just Eat in Europe and Ele.me in China, just to name a few.

Despite this, Uber is actively seeking talent to expand UberEATS internationally; just 31% of its UberEATS-titled jobs are based within the United States, with the remainder spread across the globe. As with Uber's job listings overall, India again appears as the most active country outside of the US. Beyond India, Singapore, Australia, and Mexico all rank among the company's top current UberEATS hiring destinations. Uber is fielding nearly as many open UberEATS positions for Australia as it is for the whole of Europe combined.

Other Initiatives: Freight Brokerage and Flying Cars (Uber Freight and Uber Elevate)

Uber's brokerage efforts are still in their nascent stages, with Uber Freight having formally launched in May 2017 following a soft launch late last year. Its service aims to connect shippers needing to move cargo with truckers. The idea is not a new one, as our trucking market map highlights the considerable competition Uber faces in the broker space:



Uber Freight is rolling out in a handful of areas, including the Chicago area, California, Arizona, Georgia, and the Carolinas. The company listed 17 open positions with "Uber Freight" job titles as of 8/29/2017, showing ongoing recruiting but a gradual effort far from the ramp-up of other services like UberEATS (and another departure from the company's signature aggressiveness).

Of note, Uber's new CEO is an existing investor in Convoy, among the brokerage startups that has been referred to with the "Uber for trucks" moniker. Khosrowshahi may now need to divest his shares in the company due to a conflict of interest with Uber's new Freight initiative.

Finally, one of Uber's most fringe initiatives is its Elevate project, which aims to field on-demand urban transport with flying taxis. The company held a 3-day summit in 2017 around the topic, but listed almost no open positions explicitly for Elevate. It remains to be seen whether the company will be able to spread its resources across multiple engineering projects from autonomous cars and trucks to flying taxis, not to mention its global expansion efforts.

Final Words

Uber is very much at a crossroads as it seeks to leave the worst of its traits behind it, while carrying forward the vision of growth and boundless opportunity that initially defined the optimism around it. It seems unlikely that the company will be able to continue investing scattershot across global markets and various projects, especially as Dara Khosrowshahi looks to get Uber's finances in order.

There are potential parallels here to Alphabet, a tech giant obviously at a very different stage of maturity and financial health, but one that also saw new management (under CFO Ruth Porat) begin to rein in a sprawling web of business units and instill financial discipline across its many experimental initiatives.

Despite the negative sentiment towards the company, Uber's basic financials and hiring data still show an organization that has the potential for rapid growth. Going forward, Uber's greatest strategic challenge will be rewriting its playbook of venture-financed expansion to move towards a more profitable and sustainable model of growth.