



Executive Summary

The Myths and Realities of Digital Disruption

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1980

2000

2020

2040

Over the last few years, the concept of *digital disruption* has received as much or more attention than any other business topic. Given the massive changes we have seen in the media, advertising, retail, taxi services and other sectors, speculation that similar shifts will spread across the wider economy is only natural.

But are these disruptions imminent? Why have some industries been so much more disrupted than others? How, and to what extent, will each of our major industrial sectors really change? Where will Silicon Valley (or its many global imitators) find the next generation of mega successes? These are among the questions the LEF has been researching in 2015. While our key findings are provided in this executive summary, we encourage clients to engage with the complete report.

Disruption past and present

The historical pattern couldn't be more clear. Each major phase of information technology industry progress has been led by a new generation of firms – IBM in mainframes, Digital Equipment Corporation in minicomputers, Microsoft and Intel in personal computers, Apple in mobility, Google, Amazon and Facebook in the internet era. As new firms have arisen, many once-great firms have become a shell of themselves or vanished altogether.

The reason Clayton Christensen is the most famous business professor of our time is that he developed the best explanation of why new firms have so often defeated much larger rivals. When a disruptive innovation emerges, it is usually immature, and thus it is easily dismissed by incumbents as a 'toy' that can be safely ignored – even ridiculed. But as the technology improves, the new approach becomes an increasingly serious 'threat' that must be either resisted or co-opted. In the final stage, the once-mocked technology is seen as the 'obvious' solution. Of course, by then it is almost always too late. Personal computers, mobile phones and social media have all followed this toy/threat/obvious pattern.

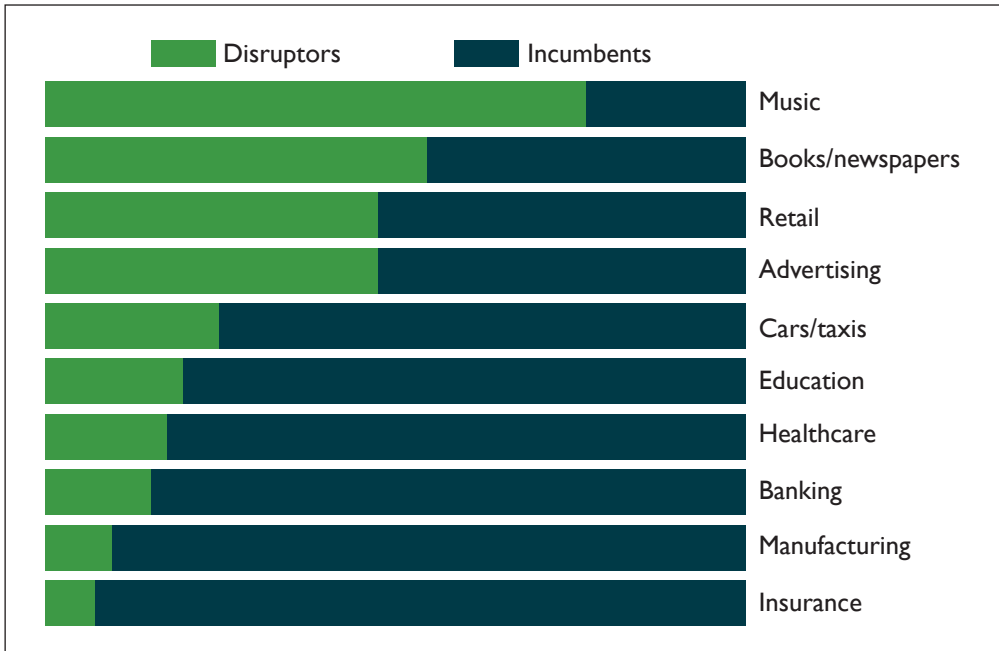
But this three-stage dynamic is not just an IT industry phenomenon. PayPal, Netflix, Skype and Uber were also once dismissed as 'toys', and in recent years, the number of technologies in the 'toy' phase has risen sharply: 3D printers, digital cash, self-driving cars, smart watches, internet TV, 3D goggles, robots, smart clothing, MOOCs, drones, expert systems, do-it-yourself medical tests, the quantified self, artificial intelligence and more. It is this proliferation of possibilities that fuels today's sense of accelerating disruption. Helping clients determine which of these 'toys' will become 'threats' and ultimately the 'obvious' new order is one of the main goals of our research.

Silicon Valley's dual disruption agenda

Silicon Valley has long been the hi-tech capital of the world. Since the 1970s, it has been developing a 'technology stack' that serves as the central nervous system of companies globally. While there are important technology centres all around the world, none come close to matching the skills, wealth, talent and experience of the Valley ecosystem, which now extends from San Francisco to San Jose, and arguably from Seattle to San Diego.

Technology firms will continue to generate ever-more powerful innovations – cloud computing, social media, mobility, analytics, machine intelligence, virtual reality, wearables, and so on. But these cross-industry, *horizontal* disruptions are now largely taken for granted. The big question today is whether the Valley can pull off its *dual disruption* agenda – cranking out ever-more powerful general-purpose technologies, while also disrupting specific industry sectors.

The state of disruption today



Actual industry disruption thus far varies widely by sector

The figure above provides our sense of how industry disruption has varied thus far – from dramatic transformations to almost no change at all. Interestingly, no industry has experienced total disruption. There are still successful newspapers, recording labels, bookstores, travel agents, taxi operators and advertising firms. The *Financial Times* was just sold for an impressive \$1.3 billion, and printed books are now holding their own against ebook competition. Super Bowl television ad slots still sell out at astronomical prices. Incumbent firms still have many strengths and advantages.

Nevertheless, our attention is inevitably drawn to the bottom half of the figure. Why have these industries changed so much less than others, and, more importantly, will these differences continue?

In our research we examined ten major industries. Six of these are commercial – automotive, manufacturing, retail, banking, insurance and professional services – and four are *quasi-public* in nature. Healthcare, electrical utilities, education and defence are provided by a mix of private companies and public services, and this structure has important implications for the nature of future change. Overall, we expect today's mixed industry disruption picture to continue, with much depending upon whether one is using a five- or ten-year timeframe. Our top-level industry perspectives are briefly summarized below.

Banking. The potential for disruption is strong across the entire banking industry value chain, especially in lending, payments, currency, funds transfer and financial advice. We expect increasingly fierce competition between traditional banking incumbents and emerging *FinTech* players.

Insurance. In contrast, insurance shows little sign of imminent change. There are very few exciting new digital insurance firms, and there is still a great deal of inertia in the system. The fact that many forms of insurance are purchased annually, and used even less frequently, seems to be a major gating factor.

Healthcare. *MedTech*, like *FinTech*, is evolving rapidly, and sophisticated at-home, retail and self-administered healthcare services will significantly *disaggregate* much of today's medical industry. But the big question is how well public healthcare services will adapt to these important new capabilities. Every country will need to find its own way.

Cars. Uber and various on-demand services are fundamentally disrupting the taxi business. However, their impact on the major car makers will be modest. Electric and self-driving cars will

have much greater disruptive potential, but not until the 2020s. While Silicon Valley has the technological edge today, partnerships with Detroit, Germany, Japan and Korea (and eventually China) will prove essential.

Manufacturing. Smart products, robots, 3D printing and new materials have yet to alter the current advantages of high-volume, offshore manufacturing. Additionally, the internet of things (IoT) has thus far proven to be more sustaining than disruptive. While we expect some significant changes (see below), the overall level of manufacturing industry disruption for the next five years will be modest.

Retail. While Amazon has disrupted physical retail stores, Google and Alibaba are seeking to disrupt the disruptor by adopting *less asset-heavy* approaches. While it is still very early in the game, the idea of using data, search and partners to become *a retailer without inventory* has disruptive potential.

Detailed profiles of these six industries, as well as professional services, energy, education and defence, are provided in the full report.

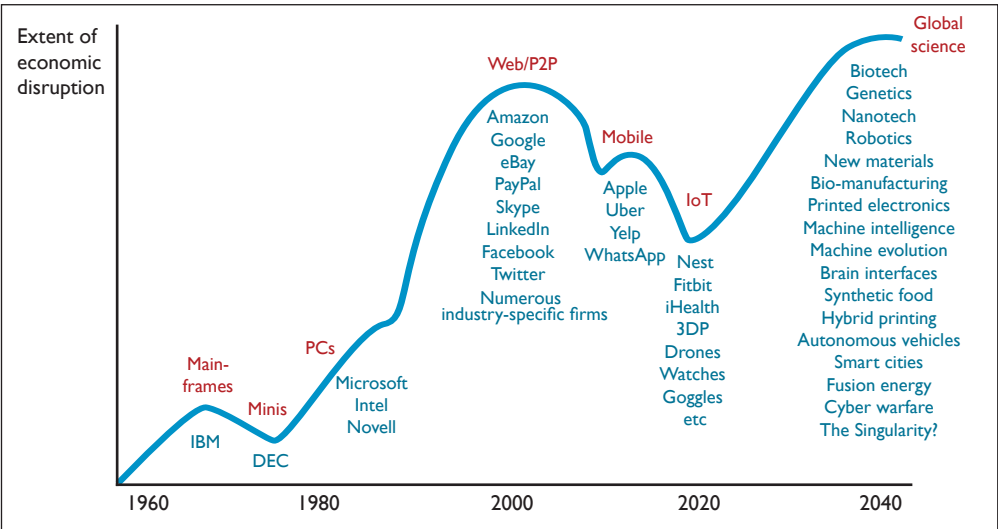
Technology Myths and Misconceptions

While we have no wish to disparage the importance and progress of our times, when it comes to disruptive change, there are at least three myths that need to be dispelled. Contrary to popular belief:

Technology is not accelerating. The time it takes for a new technology to be used in 50 percent of US homes has long been used as a comparative adoption benchmark. By this standard, both radio and television were accepted faster than personal computers or mobile phones. More importantly, most IoT technologies – Fitbits, smart watches, 3D printers – are being adopted even more slowly.

Technology is not becoming more disruptive. Most of the big disruptions thus far have been internet/web based. In contrast, mobility and the IoT have thus far been much more sustaining in nature. While virtual reality goggles and drones will likely become important exceptions to this pattern, overall we are in a relative technology disruption lull as depicted in the figure below.

Technology is not changing society as never before. The innovations of the 1900-1950 period – electricity, lighting, telephony, television, radio, heating, cooling, plumbing, cars, aircraft – had far greater societal impact than digital technology has had, at least thus far. However, as is also depicted in the figure below, we are still early in the game and major future disruptions are likely.



Some waves of technology are much more disruptive than others

From science fiction to science fact

Almost all of the major technological innovations in the first half of the 20th century came from Europe and North America. Somewhat surprisingly, this pattern has also largely held true for the first 50 years of the information technology era.

But looking ahead, we expect this to change profoundly, as we enter an era of truly *global science*. In addition to North America and Europe, world-class R&D is now taking place in China, India, Japan, Korea, Taiwan, Singapore, Israel and Australia, with Brazil, Russia, Mexico, Chile, South Africa and others not too far behind. Combined with the rapid increases in the number of women in the scientific community, it seems fair to say that the total scale of scientific endeavour will increase by an order of magnitude.

This tremendous expansion of talent and investment will prove to be vital because sustainably supporting a planet of nearly 10 billion people will require major scientific advances and significant disruptive change across virtually every realm of human activity, including transportation, energy, agriculture, food, materials, healthcare, infrastructure, education and the environment. Information technology will be an essential enabling technology in all of these areas, as capabilities that once seemed to be science fiction become the new global norms.

Telling your firm's disruptive story

These days the media, especially in America, loves to use the word 'narrative', but we're basically talking about storytelling: clear, high-level (but detailed enough) strategic communications. It's an area where many of our clients still fall short.

Most firms today can articulate their business strategy, and most IT departments have some sort of strategic planning process. But we see surprisingly few incumbents make a concerted effort to produce a *digital business strategy* document that uses plain language, and is compelling inside and outside of the firm. This is unfortunate. The act of producing such a document forces the entire company to get on the same page in a way that separate business and IT strategy documents do not.

We think strategic storytelling is particularly valuable in coping with potentially disruptive change. As our research shows, there is a wide range of possibilities and opinions in every industry. But how are these many uncertainties translated into the logic of what your company actually intends to do? The industry-specific profiles provided in our full report can serve as a useful starting point. How does your firm expect technology to change the way your industry works, and how is this thinking shaping the digital direction of your firm? Seeking and sustaining consensus in these ever-evolving areas is at the heart of strategic leadership today. Does your firm tell a convincing digital disruption story?

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