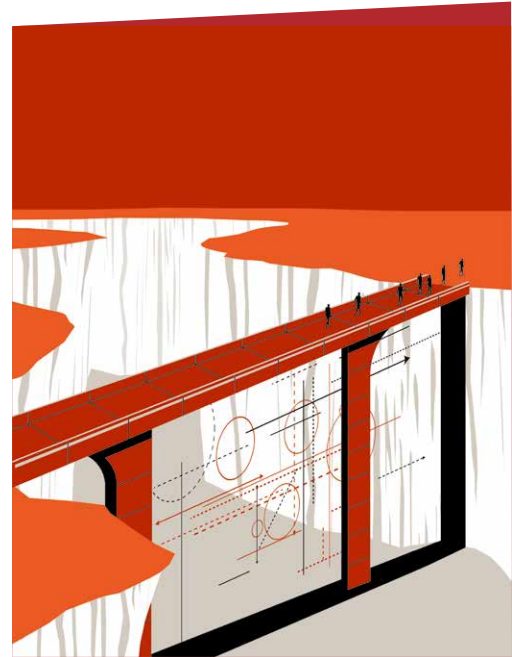
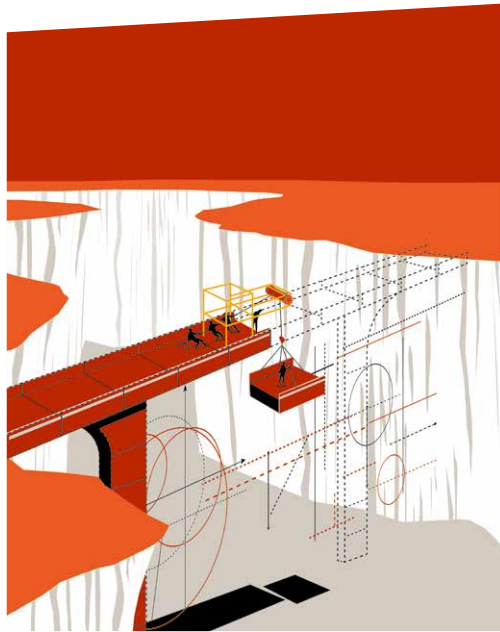


An Executive Introduction Design to Disrupt

Report 1 of 4



Sander Duivestein, Jaap Bloem,
Menno van Doorn, Thomas van Manen



CONTENTS

Disruption is the New Normal 3

1 Disruption, ranging from old media to the U.S. Department of Defense 4

2 Innovator dilemmas and Eroom's Law 14

3 The enterprise in times of exponential acceleration 16

4 Beyond the New Normal 20

5 Gearing into overdrive 22

6 Four Design to Disrupt challenges 24

A Continuous Design in the digital era 24

B The design of trust 25

C The design of new service and business models 26

D The design of client obsession 27

7 Conclusion and considerations for the CIO 28

Illustrations and references 30

DISRUPTION IS THE NEW NORMAL

This Executive Introduction to Design to Disrupt marks the start of a new research project. Three reports on the vigorous acceleration that is now taking place everywhere form the basis of this venture. Your input is certainly welcome and, in that respect, this is a request to join in. Interviews with directors and leaders of innovation sections – perhaps also from your organization – form an important ingredient of this new project.

The challenge is a major one. Quite some notable people have remarked that existing organizations cannot match today's disruptive innovations and that they should leave this field to lean startups. But Design to Disrupt is an imperative: an appeal to every organization that refuses to passively accept becoming obliterated, but truly believes that pioneering innovations are indeed possible. The design of one's own disruption is the focus of attention in this process.

This Executive Introduction initially may cause some fear. We begin with the Pentagon and The New York Times, which are afraid of losing themselves in the jungle of rapid developments. We present culture as every organization's greatest enemy: frenetically embracing

past successes, regulations and self-imposed rules that obstruct progress. And we present theories and statements that announce even more exponential acceleration than we see today.

Internet pioneer Kevin Kelly states, "You're not too late." We are at the beginning of the harvest. Thirty years of investment in information technologies and digital infrastructures has produced new platforms and numerous new possibilities. There is sufficient reason to assume that innovation is genuinely becoming easier rather than more difficult.

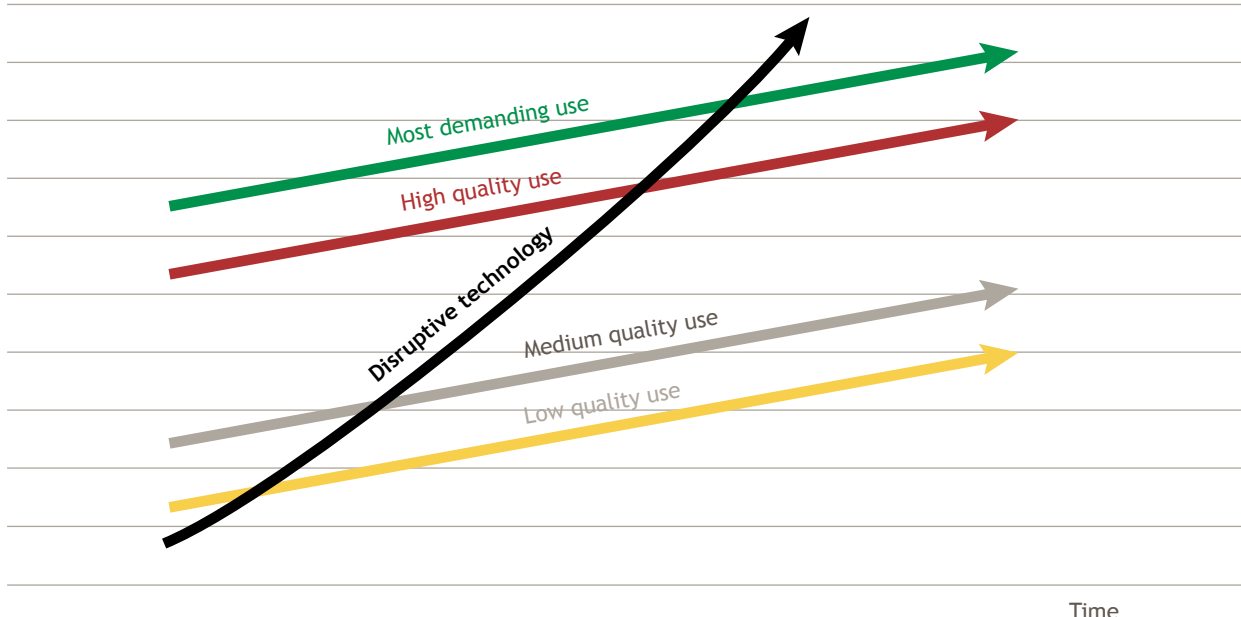
Digital disruption and disruptive innovation is the New Normal. We invite anyone who regards this truism as a challenge to enter into our discussion about the following design issues: Continuous Design in the digital era, the design of trust, designing the ultimate customer experience, and the design of new service and business models.

Would you like to participate in Design to Disrupt? If so, please let us know.

Contact: d2d@sogeti.com

Disruptive technology

Performance



1 DISRUPTION, RANGING FROM OLD MEDIA TO THE U.S. DEPARTMENT OF DEFENSE

In March 2014, an openhearted New York Times internal report leaked out to the general public, exposing a lack of vision and execution regarding new media innovation. The research, on which a “dream team” of journalists, marketers and designers had worked, contained the analysis of hundreds of experts. They were assigned to develop an innovative news and information service but the problem appeared to be far more fundamental. The way in which news is made and disseminated, the way

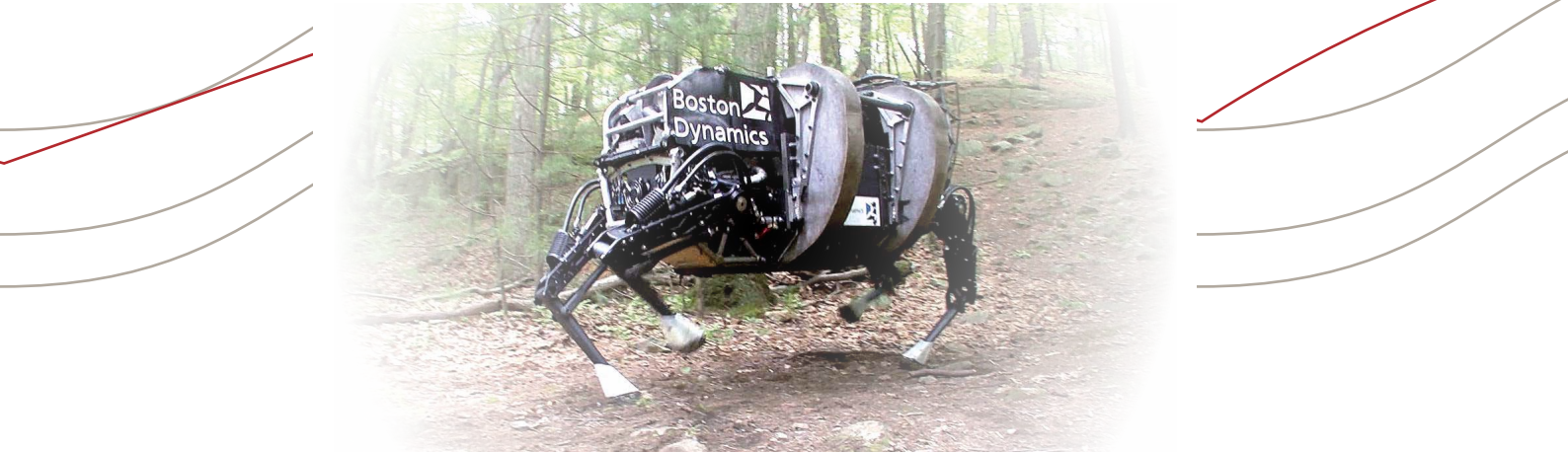
the newsroom operates, had to be revised. A transformation of the core business was imperative. Top journalism only is unable to generate a competitive edge in times of a current and dynamic multimedia mix from all sides on every conceivable screen. Interesting and polemical messages and articles are flying across the Internet to inquisitive readers. However, the sender is not The New York Times but rather The Huffington Post, Vox or BuzzFeed. Also The Washington Post, which was saved by Jeff Bezos (CEO and founder of Amazon) and now has turned to the new formulas, has joined the ranks of disruptors, drawing attention away from the venerable New York Times. While new entrants embrace citizen journalism, social media, and mobile apps such as Flipboard, The New York Times was confident to preserve its majestic status. Backed by indisputable figures, the newspaper now feels the urge of challenging the potential disruptors that swallow its pie.



“Our competitors, particularly digital-native ones, treat platform innovation as a core function.”

The New York Times

Three months after The New York Times, in June 2014, the U.S Armed Forces through The Center for a New American Security (CNAS) sounded the alarm about the



American forces' weakening grip on the new technological developments that are relevant to everyone who wants to dominate others. It is all recorded, black on white, in the report entitled *Creative Disruption: Strategy, Technology and the Future Defense Industry*, which was presented by the task force of the same name at the eighth annual CNAS conference.

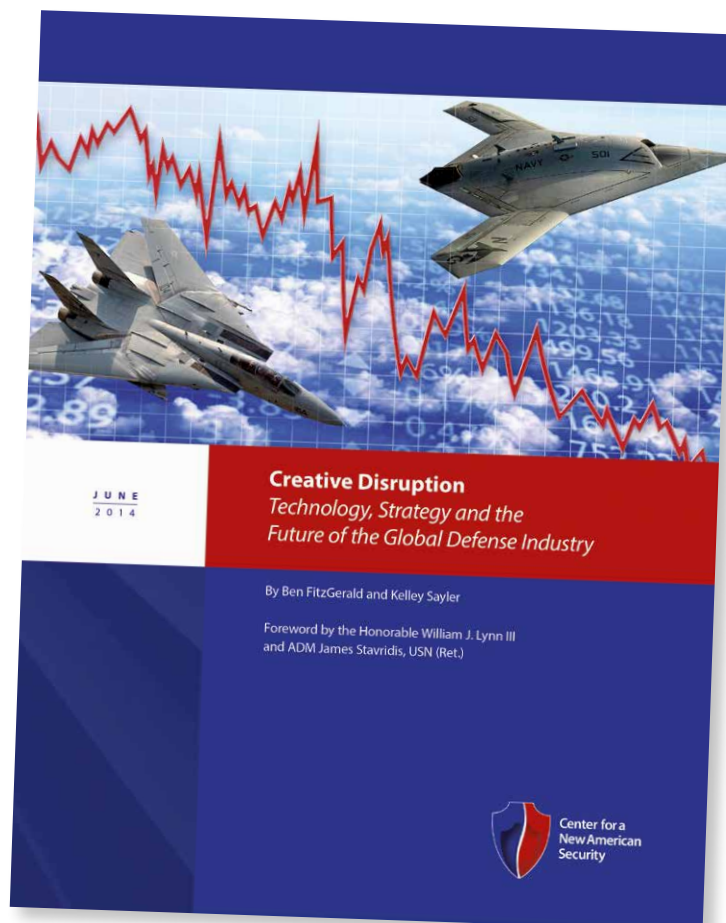
Here too, just as was the case with The New York Times, we read that the once-so-powerful defense industry establishment feels itself threatened in its position as engine and inventor of innovation. For generations, the Pentagon developed transformative technology from which the commercial sector gladly benefited, such as GPS and the Internet. But the U.S. Department of Defense is now sinking under the weight of regulations that were created to allow third parties doing business. The barriers are so high that only the less creative defense industry establishment supplies goods to the department. At present, there are no defense suppliers in the world top 20 of industrial R&D innovators, and even the five most prolific suppliers together would not reach the top 20. Boston Dynamics, which does belong to the world top, was bought by Google in 2014. Their advanced robot technology may not be available to the Department of Defense in the future because Google decided not to hand over any more ownership of innovations.

The New York Times and the Pentagon fear to become victims of disruptive innovations. Both feel they are losing their grip on the rules of play. Digital and business model innovations are taking over the market at an enormous rate, but the response mechanisms are sluggish, and in many cases erroneous. From the media to the defense industry: nowadays every organization can be

prey to new players, new technology and new solutions that dovetail amazingly well with actual market needs. Brian Chesky, the CEO of the highly successful digital Airbnb platform, says:

“We’re living in a world where people can become businesses in 60 seconds.”

Brian Chesky



The Rise of airbnb.com

#Bookings

4M

3M

2M

1M

0

2008

2009

2010

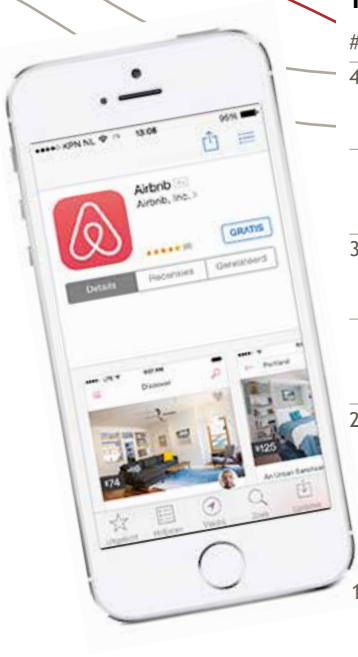
2011

2012

2013

Year

Source: <http://www.airbnb.com/annual>



Airbnb grew from the necessity of selling a night's worth of air bed space to help pay the rent for a small apartment to a popular broker service that accommodated four million guests worldwide in 2013. Such disruptive digital and business model innovations confront the business establishment with a huge dilemma:

- How can we see such innovations coming?
- What can we do to stop them: imitate or outbid?
- What does it mean for traditional business: how long can we keep up?

Disruptive innovations can be slowed down and delayed by regulation. This may happen to the irritation of the companies and directors, clients and customers, or a former European Commissioner, such as Neelie Kroes. In April 2014, she castigated the banishment of the digital taxi and transportation platform Uber from Brussels, the EU capital, as follows:

"I am outraged at the decision today by a Brussels court to ban Uber, the taxi-service app."

Neelie Kroes
former European Commissioner

“The court says Uber drivers should have €10,000 fines for every pick-up they attempt. Are they serious? What sort of legal system is this?

This decision is not about protecting or helping passengers — it’s about protecting a taxi cartel. The relevant Brussels Regional Minister is Brigitte Grouwels. Her title is “Mobility Minister”. Maybe it should be “anti-Mobility Minister”. She is even proud of the fact that she is stopping this innovation. It isn’t protecting jobs Madame, it is just annoying people!”

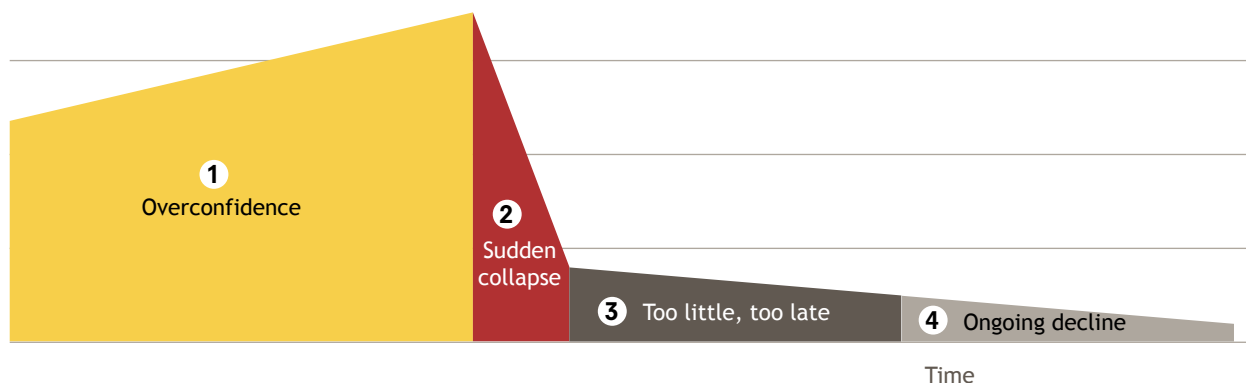
Source: http://ec.europa.eu/commission_2010-2014/kroes/en/content/crazy-court-decision-ban-uber-brussels-show-your-anger

Overconfidence and the Disruption Valley of Death

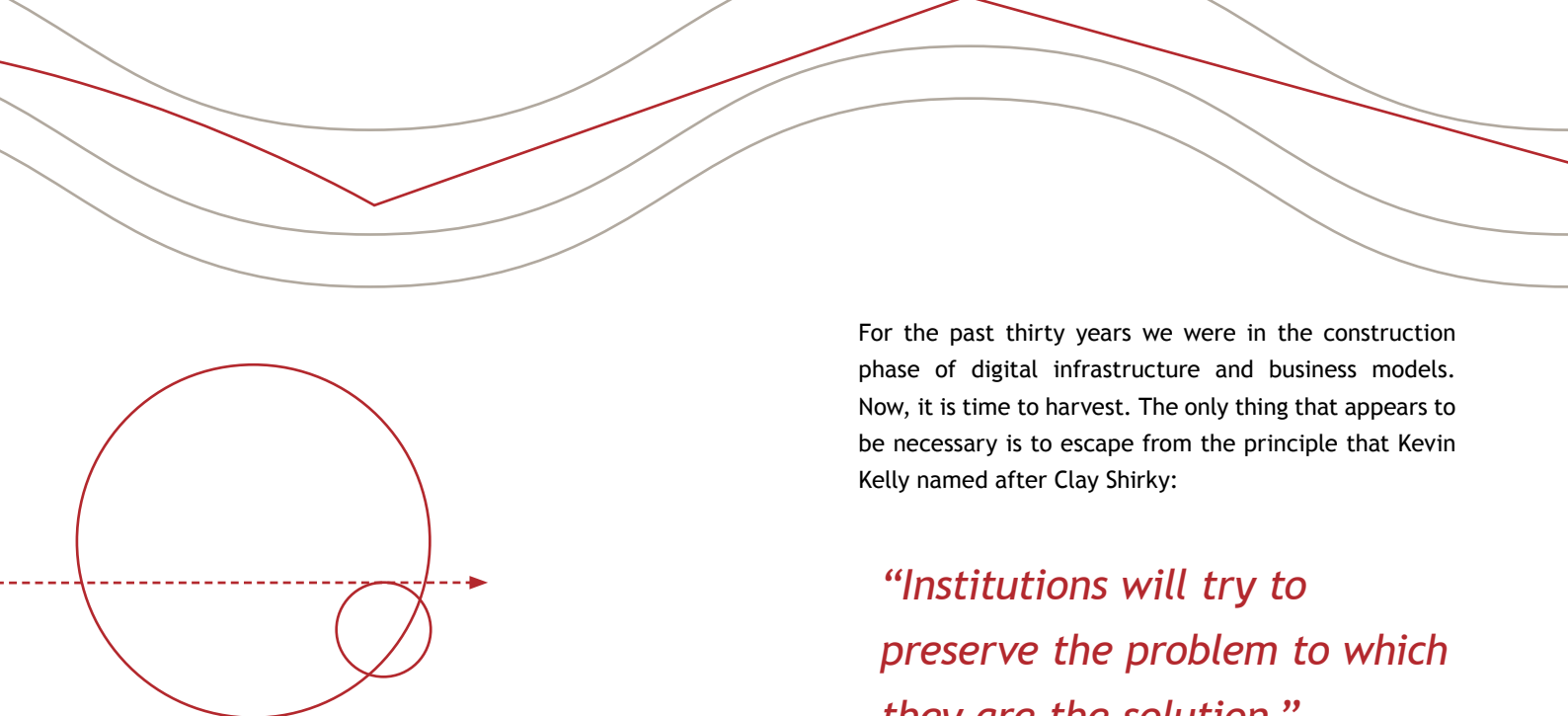
The reaction to the first cracks in a business model is often one of audaciousness and denial: we have always had hegemony — as in the case of the Pentagon and The New York Times — so why would this suddenly change? But, before you know it, it may be too late and a company unwittingly but irreversibly slips away into the Disruption Valley of Death.

Going down in the Disruption Valley of Death

Incumbent value



Source: <http://techcrunch.com/2014/01/19/uber-and-disruption>



For the past thirty years we were in the construction phase of digital infrastructure and business models. Now, it is time to harvest. The only thing that appears to be necessary is to escape from the principle that Kevin Kelly named after Clay Shirky:

“Institutions will try to preserve the problem to which they are the solution.”

Clay Shirky

New alarming management literature, such as *Exponential Organizations: Why new organizations are ten times better, faster, cheaper than yours (and what to do about it)*, advises organizations to invest themselves in disruptive innovation. Or, as Gary Hamel says:

“The single biggest reason companies fail is that they overinvest in what is, as opposed to what might be.”

Gary Hamel

This is not easy for established companies which are primarily oriented to innovative maintenance (sustaining innovations) and to efficiency renewal. They may never arrive at empowering or disruptive innovation, largely because they are afraid, justifiably or not, of undermining their own position.

Empowering innovations: Think disruptively.

Create a large-scale impact.

Sustaining innovations:

Improvements.

Better outcomes, the same products.

Efficiency innovations:

Cost-saving innovations.



Three Types of Innovation

Efficiency innovation

- Reducing production of transportation costs
- E.g. auto insurance writers using the Internet

- most companies invest here
- 70% of current shareholder return

Sustaining innovation

- Product replacements from one model to a similar, slightly better one
- E.g. replacing an annuity

- majority of current innovation here
- translating into zero sum economic game

Empowering innovation

- Expanding the market from costly items for the few to mass-market items for the many
- E.g. from whole-life to term products

- here lie solutions to coming threats
- 70% of future income

"Sustaining innovation is controlled by incumbents, but disruptive innovation is owned by new companies"
—Clayton Christensen

The bridge that the disruption-hit establishment is hastily attempting to build to win back customers, often already crumbles apart under its feet. Hit by disruptive innovation, it most of the time is simply too late for the establishment, as numerous real-life examples have shown.

Disruption according to The New York Times

Disruption is a predictable pattern across industries in which fledgling companies use new technology to offer cheaper and inferior alternatives to products sold by established players (think Toyota taking on Detroit decades ago). Today, a pack of startups are hoping to "disrupt" our industry by attacking the strongest incumbent — The New York Times. How does disruption work? Should we be defending our position, or disrupting ourselves? And can't we just dismiss the BuzzFeeds of the world, with their listicles and cat videos?

Disruptive Breakthrough

Quality

Minimum customer need

Sustaining innovation

Disruptive innovation

Time

1

2

3



Here's a quick primer on the disruption cycle:

1. Incumbents treat innovation as a series of incremental improvements. They focus on improving the quality of their premium products to sustain their current business model.
For The Times, a sustaining innovation might be "Snowfall."¹
2. Disruptors introduce new products that, at first, do not seem like a threat. Their products are cheaper, with poor quality – to begin with.
For BuzzFeed, a disruptive innovation might be social media distribution.
3. Over time, disruptors improve their product, usually by adapting a new technology. The flashpoint comes when their products become "good enough" for most customers.
They are now poised to grow by taking market share from incumbents.

Hallmarks of disruptive innovators

- Introduced by an "outsider."
- Less expensive than existing products.
- Targeting underserved or new markets.
- Initially inferior to existing products.
- Advanced by enabling technology.

1) <http://www.nytimes.com/projects/2012/snow-fall/#/?part=tunnel-creek>

The design strategy of Philips Lighting

It all sounds rather unsettling, but it is possible to bridge the Valley of Disruption, even if we do not see that happening too often. Perhaps the most concrete and inspiring statements have been made by Marc de Jong in his LinkedIn profile (see below). The former CEO of Philips Professional Lighting Solutions concisely describes the success the company was able to book through a lucid and systematic approach. The lighting bulb industry faced competition from outsiders who introduced LED lighting to the market. At first, this type of illumination was not particularly attractive to the eye, it was technologically inferior and the normal light bulb seemed to have a benign future. In the meantime, LED has become the norm and also provides numerous other possibilities such as smart lighting. Philips, today indisputably ranking among the disruptively innovative LED lighting leaders, reaped success by systematically following the rules of Clayton Christensen, as expressed in his 1997 book *The Innovator's Dilemma*:

Marc de Jong
CEO Professional Lighting Solutions Philips
2009–2013

From Marc's LinkedIn: "... built the global leader with over 1 B\$ sales in LED-based solutions (growth 400% in 4 years with accreditive margins) making Philips the undisputed leader in this field. PLS obtained double the marketshare in the Digital LED world versus its share in the analogue conventional technology by applying systematically the rules of the Innovator's Dilemma. Simultaneously we moved from a pure product company into a solutions provider quadrupling sales to over 400M\$."

Philips connected retail **lighting system**

Philips pilots new system that uses intelligent LED in-store lighting to communicate with shoppers smartphones to deliver targeted offers and information based on their location

David has decided to cook a Mexican meal for his friends this evening.

1.

He chooses guacamole in the supermarket app he downloaded. It suggests a recipe for fresh guacamole that he accepts



5.

The light fixture communicates his location and the app plots a route to the churros

2.

The light fixture above David sends his location to his smartphone and the app plots a route to the ingredients

3.

Spotting David's location at the fresh vegetables section, the light fixture prompts the app to offer him 50% off on avocados

4.

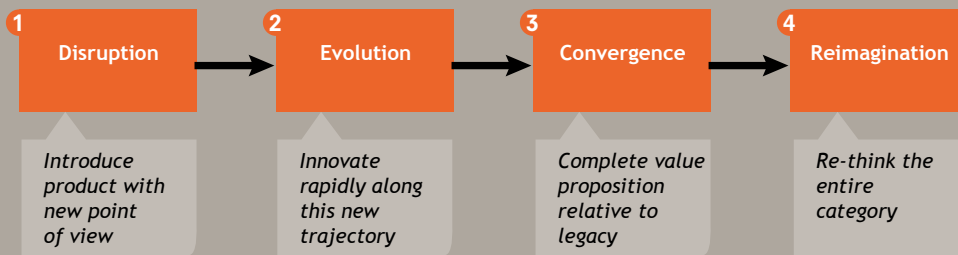
David then receives a suggestion for a dessert for a Mexican "churros". He opts for a readymade option

PHILIPS

Philips now is in the business of smart LED lighting. In addition to light, the lamps can also emit digital data. The company is also oriented toward the rapidly growing so-called "beacon" industry which enables new forms of contact between the shopping public and retailers.

Former Microsoft top executive Steven Sinofsky, who is currently Board Partner at the renowned venture capital company Andreessen Horowitz, shares his four-stage analysis of the working of disruptive innovation in terms of disruption, evolution, convergence and reimagination for both low-end situations like Airbnb and high-end ones like Philips Lighting:

The Four Stages of Disruption

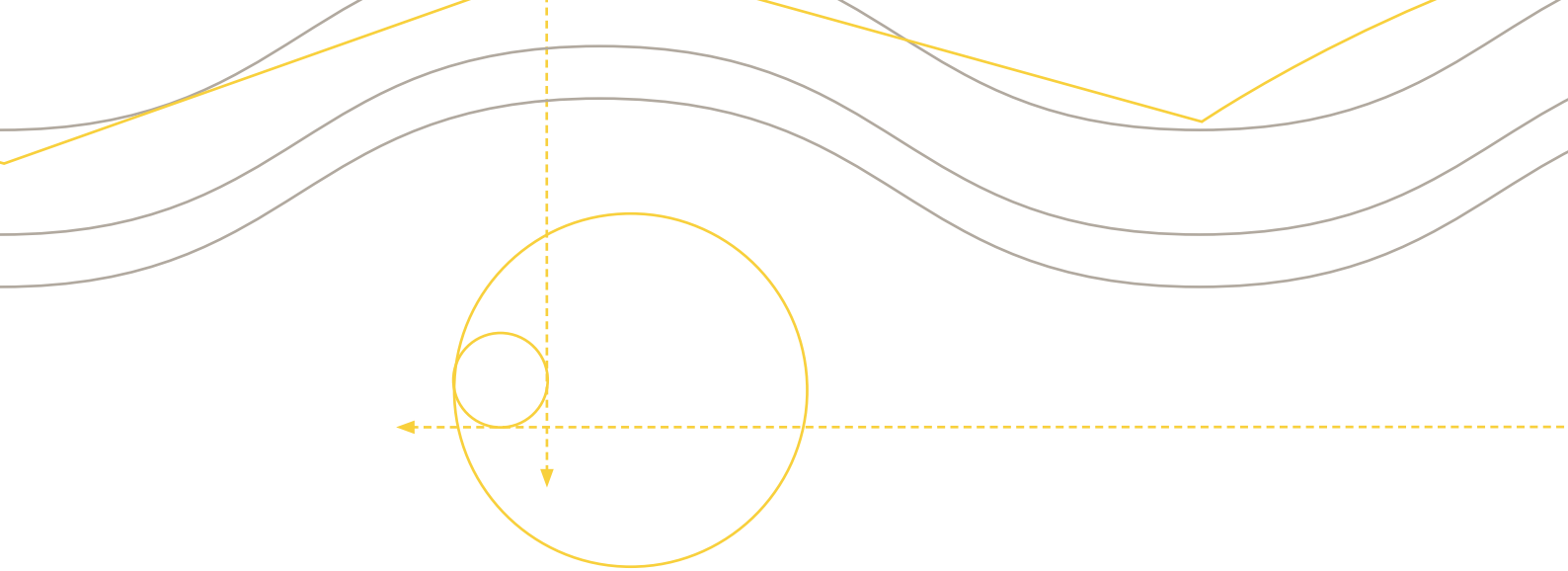


Source: <http://recode.net/2014/01/06/the-four-stages-of-disruption-2/>

On the right-hand side is the established incumbent who moves through the steps from “deny” to “too late.” On the left-hand side we have the challenger who evolves from a niche solution to a benefit-for-all situation:

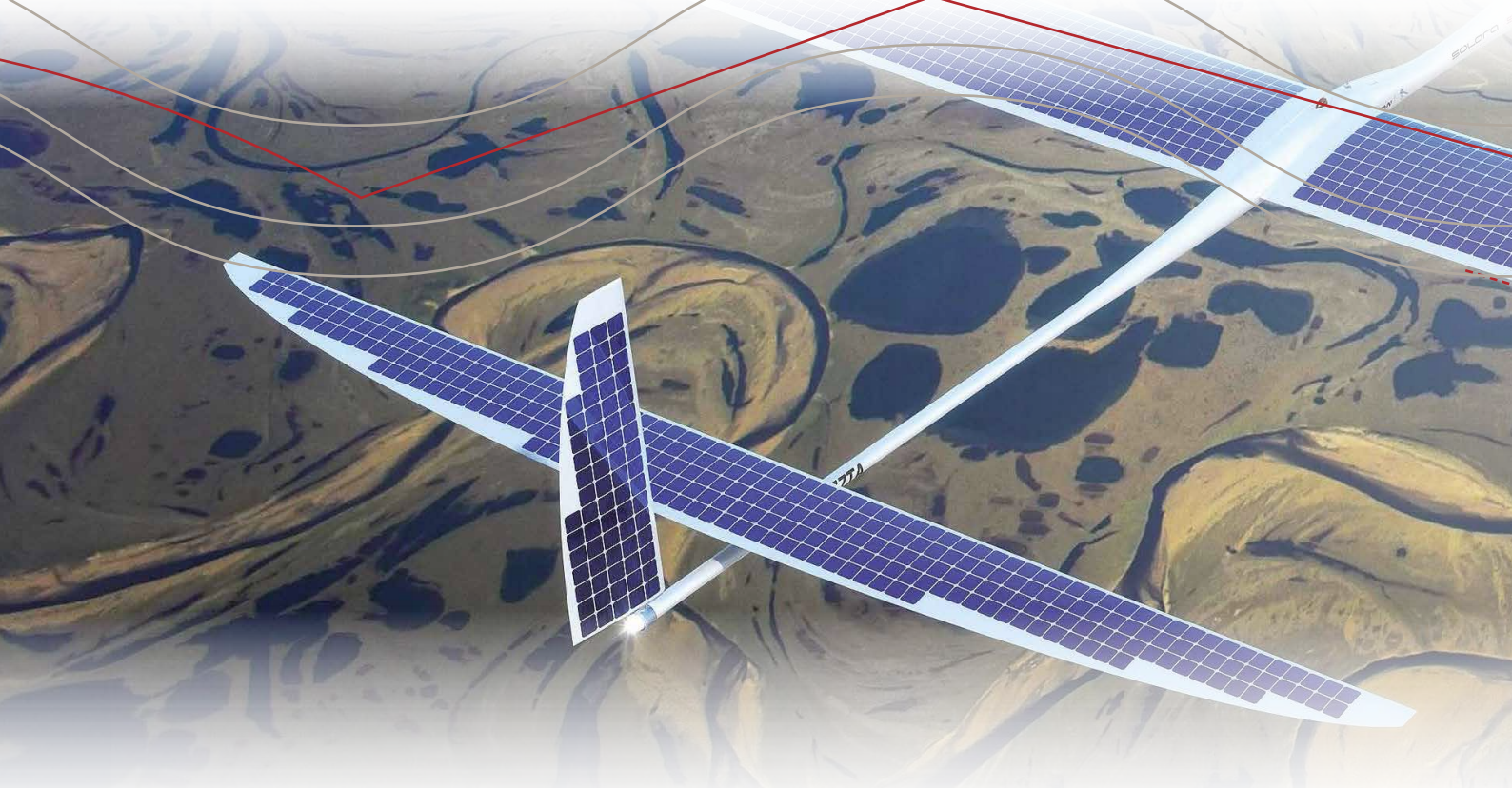
Stage	Disruptor	Incumbent
Disruption of Incumbent	Introduces new product with a distinct point of view, knowing it does not solve all the needs of the entire existing market, but advances the state of the art in technology and/or business.	New product or service is not relevant to existing customers or market (also known as “deny”).
Rapid linear Evolution	Proceeds to rapidly add features and capabilities, filling out the value proposition after initial traction with select Early Adopters.	Begins to compare full-featured product to new product and show deficiencies (also known as “validate”).
Appealing Convergence	Sees opportunity to acquire broader customer base by appealing to Slow Movers. Also sees limitations of own new product and learns from what was done in the past, reflected in a new way. Potential risk is being leapfrogged by even newer technologies and business models as focus turns to “installed base” of incumbent.	Considers <i>cramming</i> some element of disruptive features to existing product line to sufficiently demonstrate attention to future trends, while minimizing interruption of existing customers (also known as “compete”). Potential risk is failing to see the true value or capabilities of disruptive products relative to the limitations of existing products.
Complete Reimagination	Approaches a decision point as new entrants to the market can benefit from all your product has demonstrated, without embracing the Legacy Customers as done previously. Embrace legacy market more, or keep pushing forward?	Arguably too late to respond, and begins to define the new product as part of a new market, and existing product part of a larger, existing market (also known as “retreat”).

Source: <http://recode.net/2014/01/06/the-four-stages-of-disruption-2/>



This mirrors the way in which Airbnb, Uber, Bitcoin, Tesla, Philips and Amazon, among others, are currently acting. These players target existing industry by offering a cheap and richer alternative that appeals to an ever growing market. First of all they build a platform that everyone can join and utilize. For example, Airbnb provides one where people can offer their own home for temporary hire (bed and breakfast). A completely new (local) economy has now arisen around Airbnb, in which contract cleaners and restaurants also eagerly partici-

pate. Are you hiring an apartment here? If so, we can ensure that you can leave it nice and clean when you leave. And, when you're here, these are the best places to eat at a reduced rate. All such initiatives ensure that the acceptance of the platform gradually increases and that it can be quickly rolled out due to the network effect. In the wink of an eye, new companies with a turnover of billions suddenly arise, mowing down many of the existing industrial sectors.

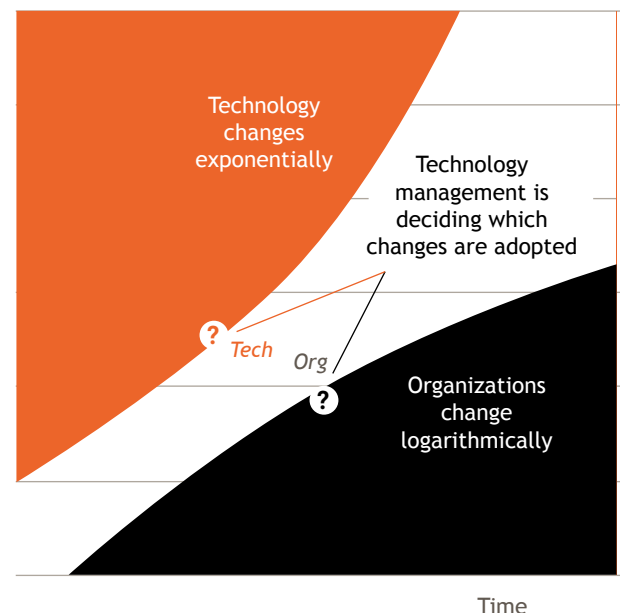


2 INNOVATOR DILEMMAS AND EROOM'S LAW

The CNAS defense report from June 2014 discusses *Creative Disruption*, a tribute to the Austrian economist Joseph Schumpeter, who introduced the concept of *creative destruction* in 1942. With this, he described the dynamics of innovation in which new technology consistently heralds a new age at the cost of existing business. Fifty-five years later, Harvard professor Clayton Christensen refined this concept into *disruptive innovation* in his book *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Down through the years, this train of thought, to which a whole library has been devoted by now, has been generally acclaimed. At present, the subtitle has become: *The Revolutionary Book that Will Transform the Way You Do Business*. There is also some harsh criticism, however. In June 2014, Jill Lepore wrote a polemic article in *The New Yorker*, "The Disruption Machine,"² in which she expressed doubt about the quality of Christensen's research and his conclusions. The dust has now settled and Christensen — according to the reaction of experts on the web — has remained proudly standing. Still, it is interesting to read that Christensen often betted on the wrong horse with his own capital fund. For example, he did not believe in the potential success of Apple's iPhone.

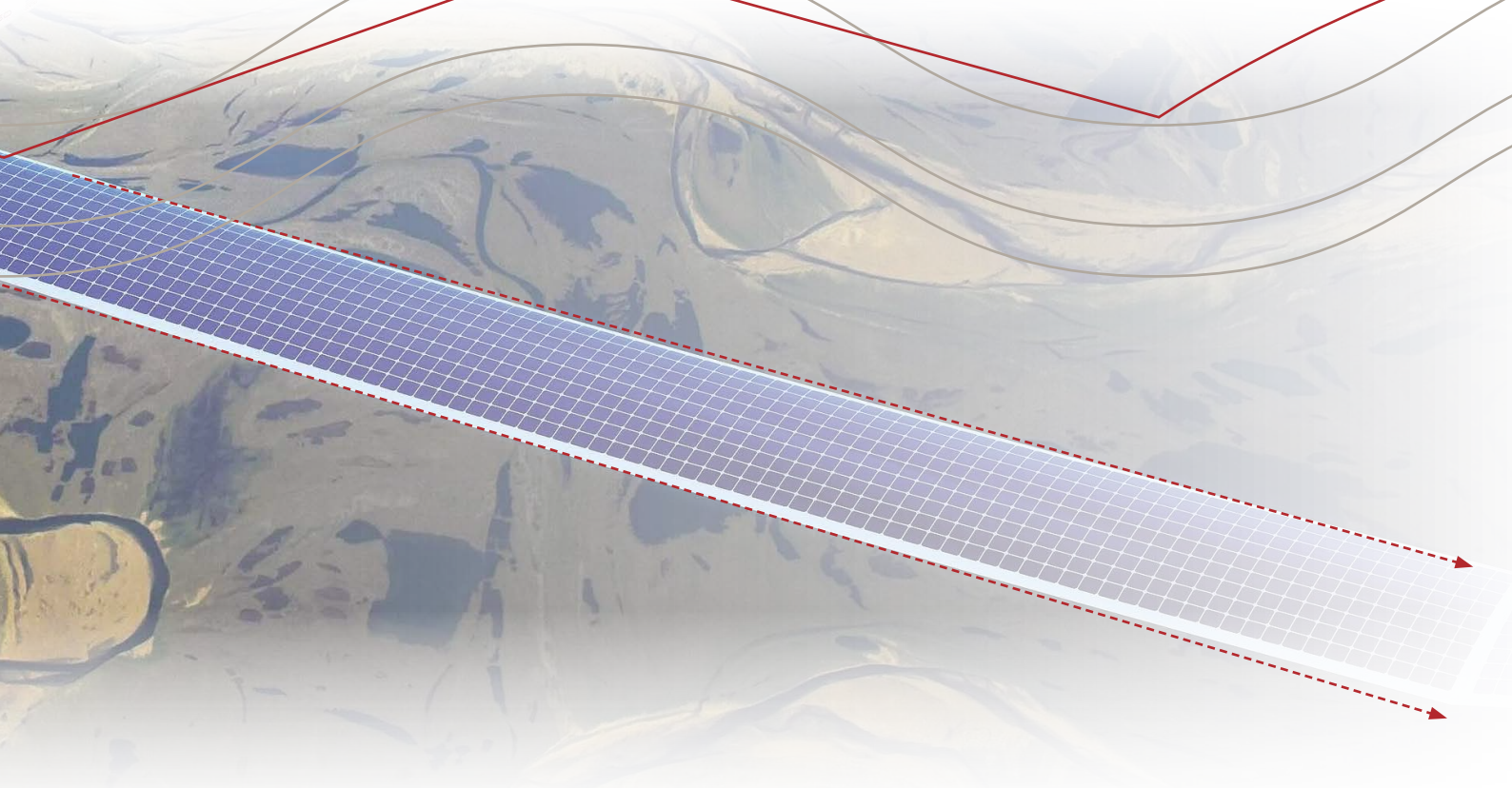
The evolution that innovators have to cope with lies not only in the way in which the challengers are capturing the market but also in the rate of disruption. Disruptive innovations are now occurring much more rapidly due to digital acceleration, its intimate relationship with business models and customer experience, and globalization

Martec's Law of Disruption



2) <http://www.newyorker.com/magazine/2014/06/23/the-disruption-machine>

Source: Scott Brinker, <http://chiefmartec.com>



of the economy. Smartphones, cloud computing, social media, the Internet of Things and (Big Data) analytics are developing much faster than organizations can keep up with. This situation is called Martec's Law, named after the weblog of marketing technologist Scott Brinker.

The exponential growth of technology is directly derived from Moore's Law, which predicts that the capacity of computers doubles every eighteen months if costs remain constant. In contrast, organizations change slowly. A group of researchers named this growth curve "Eroom's Law" in an article in the *Nature* journal. It is Moore's Law, spelled backwards.³ The article analyzes the cause of the diminishing successes of R&D in the pharmaceutical industry. Management fixation turns out to be the most significant reason for the fact that new breakthroughs take so long to be realized, and one of the causes is the "Better Than The Beatles" effect:

It may be an explanation of why organizations lag behind their rivals — because they place too much faith in the old repertoire. Or, following Clayton Christensen, it may explain how even the most outstanding companies can do everything right — yet still lose market leadership or even collapse. Most companies miss out on new waves of innovation. No matter the industry, Christensen says, a successful company with established products will get pushed aside unless managers know how and when to abandon traditional business practices.

"The Better Than The Beatles effect is what we face as we continue to compete against our greatest hits of the past."⁴

3) <http://www.nature.com/nrd/journal/v11/n3/full/nrd3681.html>

4) http://pipeline.corante.com/archives/2012/03/08/errooms_law.php

3 THE ENTERPRISE IN TIMES OF EXPONENTIAL ACCELERATION

In 2001, Richard Foster and Sarah Kaplan showed, via the Standard & Poor's index, just how fast creative destruction can work. This index was first drawn up in 1923 and listed 90 major American companies, all of which remained on the list for an average of 65 years. Around 1997, the year in which *The Innovator's Dilemma* was published, the average lifespan of a company on this list had decreased to 10 years, and only 74 of the first 500 companies listed on the S&P index in 1957 remained.

During that whole period, only 12 companies performed better than the index itself. In 2014, a comparative investigation by Sogeti VINT of the lifespan of companies on the AEX-Euronext index shows a similar pattern. Extrapolation of the data of this investigation reveals that, since 1993, in measurement intervals of 10 years, the lifespan of AEX notation has decreased by 20 years. If this trend continues, the average lifespan of companies on the AEX index will decrease to 25 years in 2023 and dwindle to a mere 5 years in 2033.

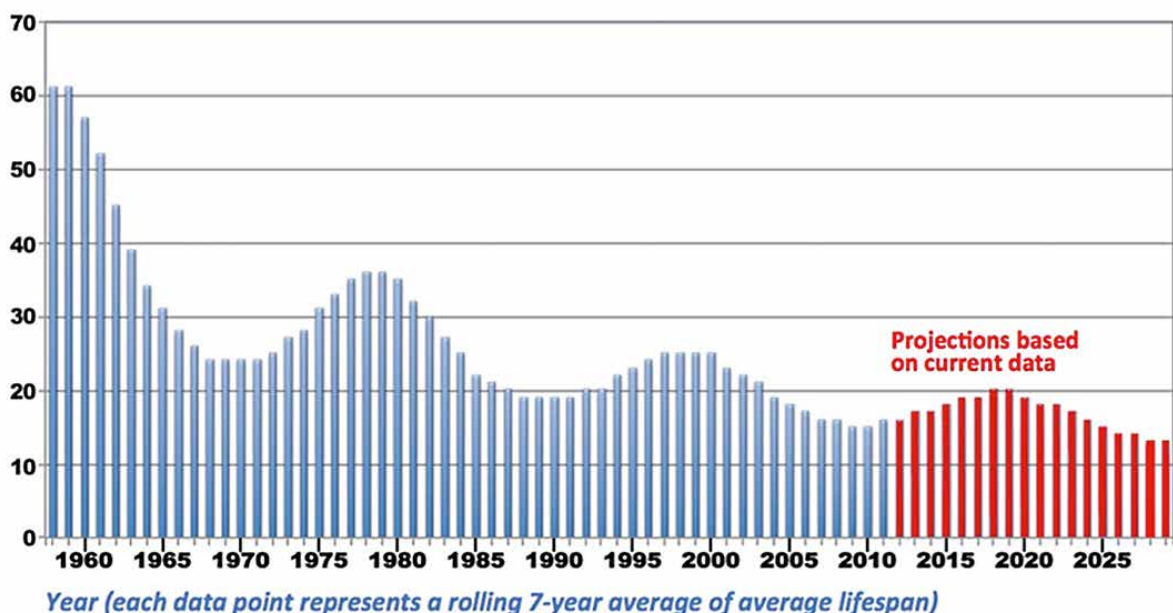
Foster and Kaplan's pitch: well-established companies may think they have eternal life, but the figures prove otherwise. The ever-increasing speed at which one innovation succeeds another is hard to keep up with. The following title of Foster and Kaplan's book is a reference to other popular books on management, such as *In Search of Excellence*, *Good to Great*, *What Really Works* and *Built to Last* (by Jim Collins, 1994):

“Creative Destruction. Why Companies That Are Built to Last Underperform the Market – And How to Successfully Transform Them.”⁵

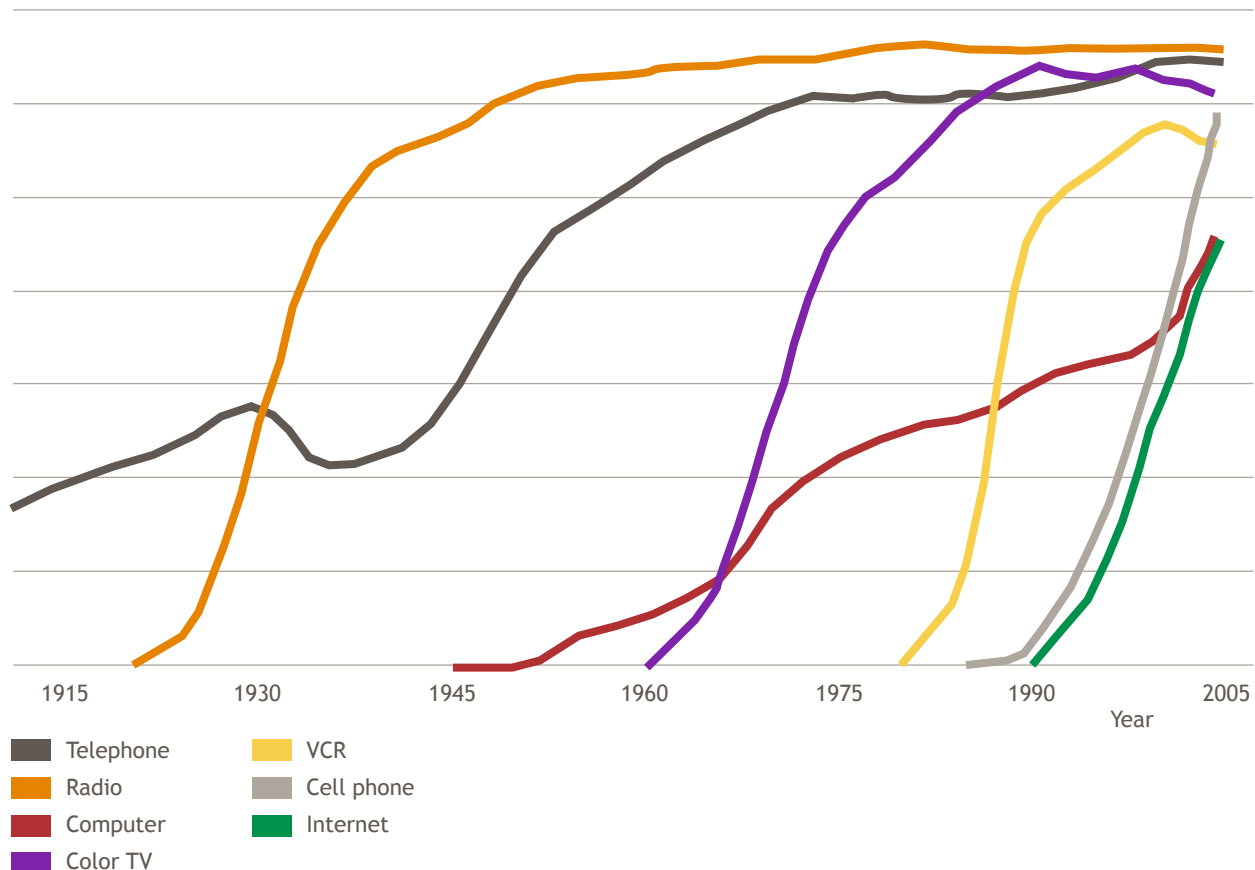
Richard N. Foster & Sarah Kaplan 2000

5) <http://itech.fgcu.edu/faculty/bhobbs/Creative%20destruction%20McKinsey%20Report%20CDch1.pdf>

Average company lifespan on S&P 500 Index (in years)



New Technologies' Adoption Curves



Cutting-edge technological development today is an exponential, digital and combinatorial process. There is an obvious change in the adoption curves of new technologies, which once used to follow a linear path, whereas nowadays the patterns are increasingly exponential.

Shark fin: exponential adoption of innovation

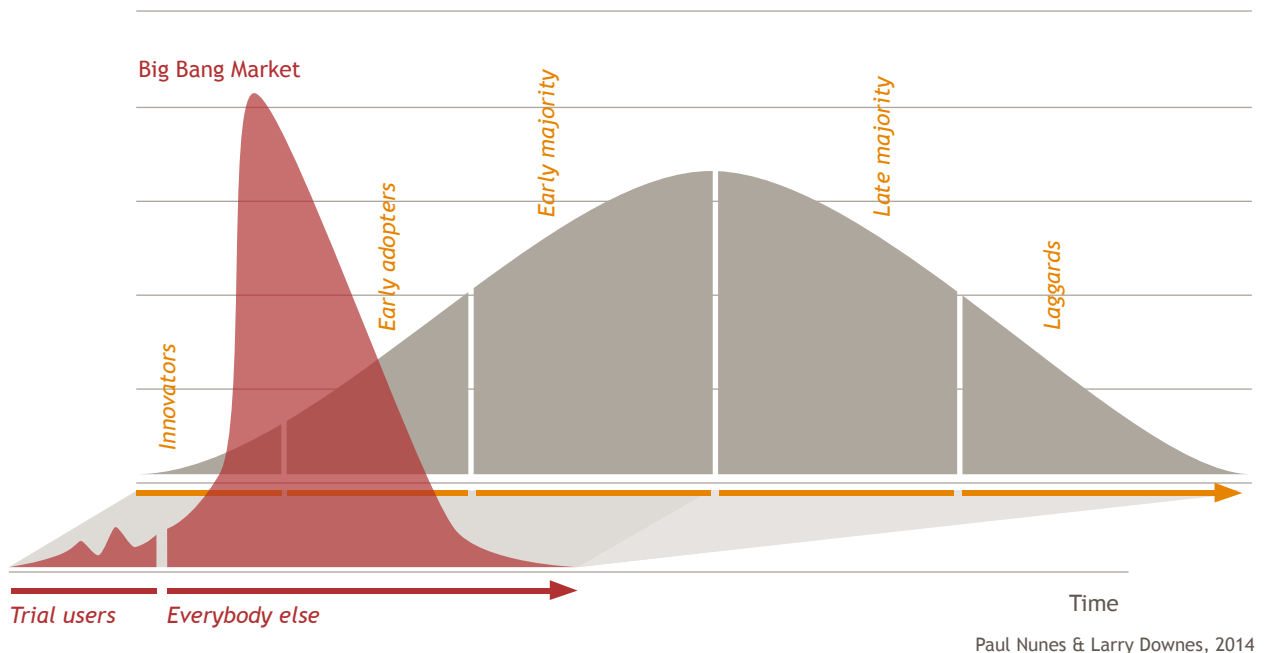
In his book *Diffusion of Innovations* (1962), Everett Rogers was the first to describe the life cycle of a product. He distinguishes five different stages, all of which follow a normal distribution, with five types of consumers: the innovators, the early adopters, the early majority, the late majority and the laggards. Recently, in their book entitled *Big Bang Disruption*, Larry Downes and Paul Nunes indicated that distribution and adoption of innovations no longer follow the normal distribution curve.

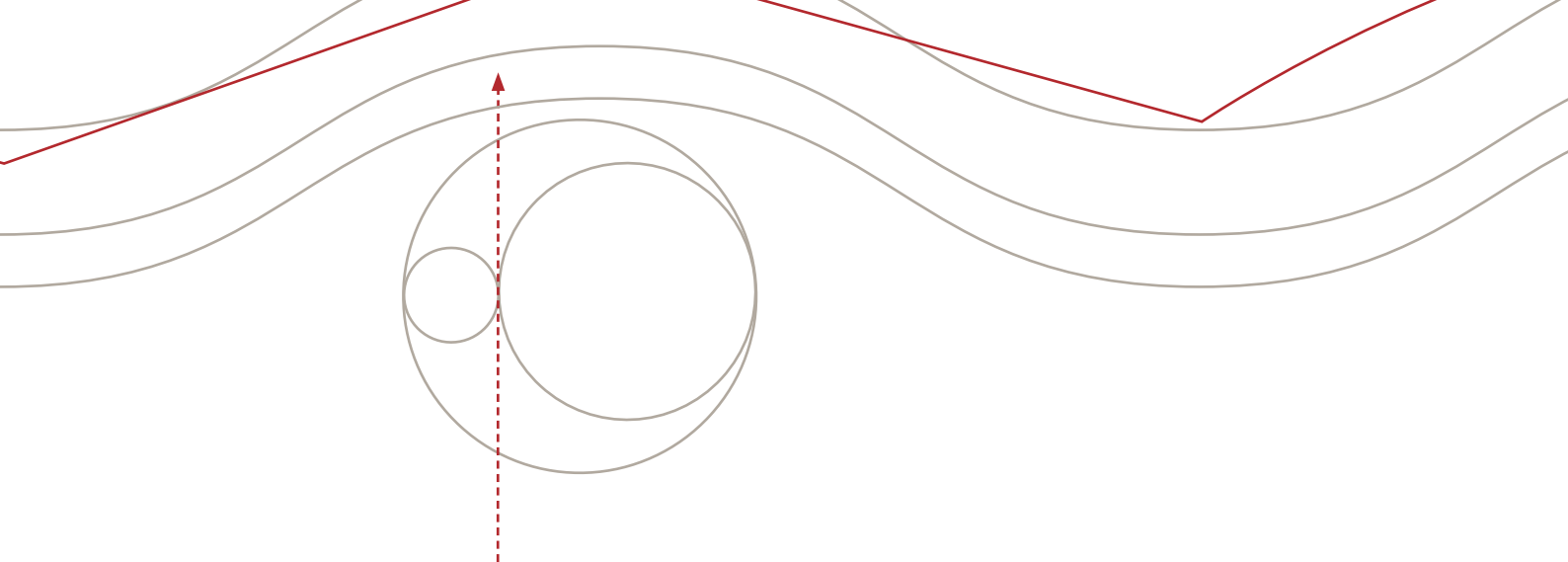
New technology has reduced the number of consumer types to only two: guinea pigs (trial users) and the rest (everybody else). The bell curve has been replaced by a sharkfin.

In her article “The Pace of Technology is Speeding Up,”⁶ Rita Gunther McGrath, professor at Columbia Business School, author of the book *The End of Competitive Advantage*, and ranking among today’s top ten major management thinkers on the Thinkers50 list, states that the increase in the speed at which innovations are adopted puts

6) <http://blogs.hbr.org/2013/11/the-pace-of-technology-adoption-is-speeding-up/>

Life Cycle Disruptive vs. Incumbent Market

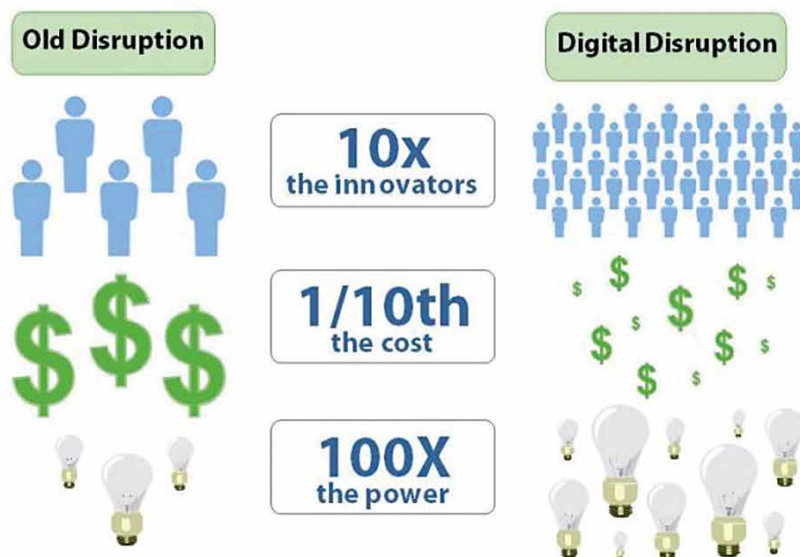




— logically — great pressure on companies to innovate at an even greater rate. Every competitive edge is only temporary, there are fewer barriers, the existing players on the market must innovate at a greater speed lest they be overtaken by their competitors. Innovation must become the most important process within a company.

James McQuivey, vice-president and principal analyst at Forrester Research and author of the book *Digital Disruption*, has expressed this increasing speed of innovation in the formula below. He states that today's digital technology causes the effects of disruption to be a hundred times stronger, at one tenth of the costs, and with ten times as many innovators in the market.

Digital product disruption is better, stronger, faster





4 BEYOND THE NEW NORMAL

Video: “30 years to go” – Carlota Perez on the IT wave,
<http://vimeo.com/53577644>

The term New Normal has become the inspiring cliché for all changes that have occurred since the recent economic crisis and its aftermath. The whole thing started with the abnormal behavior of the financial markets (and the resulting crisis, which had a normalizing effect on the situation), but soon the term began to be used within a socio-economic context for everything that was to become the new norm: a definitive end point with new principles of design, where everything is again stable and steady, but different from the way to which we were accustomed.

In fact, it appears that disruption itself has become the New Normal. Arguments in favor of this assumption may be found in Clayton Christensen’s inspiring enthusiasm or in the decrease in the lifespan of companies on the Stock Exchange. However, for a comprehensive predictive theory we turn to the Neo-Schumpeterians, named after the famous Austrian economist who lived from 1883–1950. From professor Carlota Perez’s elaboration of Schumpeter’s ideas we learn that:

1. We are only just at the beginning of the era of digital applications and ditto disruptions.
2. This situation is likely to last for quite a while.
3. There are opportunities for everyone: the “Golden Age” in the area of innovation lies in the future.

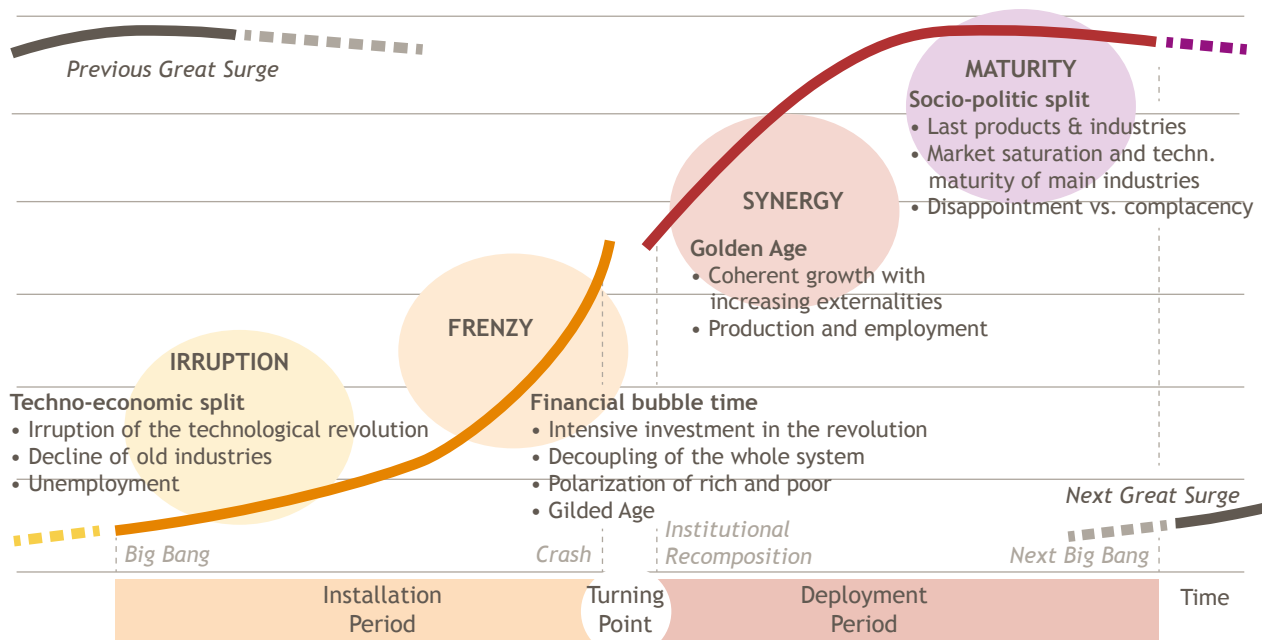
An explanation for the great speed at which the changes take place may be found in Carlota Perez’s book *Technological Revolutions and Financial Capital* (2002), in which she explains the economic undulating movements – the so-called Kondratieff waves, which occur at regular intervals with a frequency of about sixty years. Following Schumpeter, Ms. Perez says that these movements are caused by the introduction of new *infrastructural* technology, such as the impact that water and steam have had on history, or oil and steel. Today, we have digital technology.

Every wave is subject to a number of (fixed) rules or patterns and goes through two phases: the *installation phase*, in which a new technology is introduced, distributed and multiplied, which changes the prevailing logic of innovation and leads to the establishment of a new infrastructure and the modernization of the existing industries. This period starts with a financing wave and ends with a bubble that will eventually burst. What follows is the so-called *deployment phase*, in which the newly developed infrastructure is put to full use. We have witnessed similar cycles on several occasions, such as after the introduction of the railway, the automobile, steel, and canals (in Britain), for example, which all led to infrastructural innovations. At first, it was a predominantly technical revolution (the installation phase) which later on led to an institutional revolution (the deployment phase). This means that each aspect of the old system needs to be revised,⁷ with much less emphasis being placed on small improvements

7) Further information, including the role of economic crises and the technological phases, can be found on <http://www.carlotaperez.org/pubs>.

Recurring phases of each great surge in the core countries

Degree of diffusion of the technological revolution



Source: Perez, *Technological Revolutions and Financial Capital* (2002)

in the process, thus on incremental and sustaining innovations, but with many more possibilities to alter the rules of play, “to take into production” the built infrastructure, and an increasing necessity to take apparently inferior rivals most seriously.

Like Carlota Perez, the visionary and Internet pioneer Kevin Kelly believes that the really great breakthrough is still ahead of us. He regards the past thirty years of digital development as a starting point, an overture to things yet to come — to which he adds, reassuringly: “You’re not too late.” He says:

“The Internet is still at the beginning of its beginning. [...] The last 30 years have created a marvelous starting point, a solid platform to build truly great things. However, the coolest stuff has not been invented yet—although this new greatness will not be more of the same-same that exists today. It will not be merely ‘better’, it will be different, beyond, and other.”

Kevin Kelly

5 GEARING INTO OVERDRIVE

You may not be too late, but you may very well be too slow. As digital technology (and digital disruption) is of a different order, the phase Carlota Perez describes could very well take place much more abruptly and faster than we can now foresee. The digital-physical interaction is unique in its kind. The digital world, for example, is characterized by abundance, whereas the physical world is governed by the scarcity of goods and services. In

short, this might imply a distinct break with Schumpeter's and Perez's theories.

John Hagel, author and founder of the Deloitte Center for Edge Innovation, says that digital disruption is, indeed, unique in its kind and that it will cause changes at a much greater speed than expected. His conclusion is that stability and steadiness are impossible and that there is hardly any reference material. The rules for success have yet to be written:

“Digital technology is different — in fact, it’s unprecedented in human history. It’s the first technology that has demonstrated sustained exponential improvement in price/performance over an extended period of time and continuing into the foreseeable future.”

John Hagel





The second phase in Perez's techno-economic framework, the roll-out phase, might then be different from what we have seen in previous wave movements. Indeed, Hagel states that we will also see more disruption(s) in adjacent areas:

“This exponentially improving digital technology is spilling over into adjacent technologies, catalyzing similar waves of disruption in diverse arenas like 3-D printing of physical objects, biosynthesis of living tissue, robotics and automobiles, just to name a few. The advent of exponentially improving technologies in an expanding array of markets and industries only increases the potential for disruption.”

John Hagel

In their book *Exponential Organizations*, Salim Ismael, Mike Malone and Yuri van Geest speak of an *information-based paradigm*, with a physical world that obviously still exists, but it is the relation with that physical world that is changing fundamentally. Information and knowledge systems create an entirely new filter through which we look at the world around us and the way in which we can organize, structuralize and make our world.

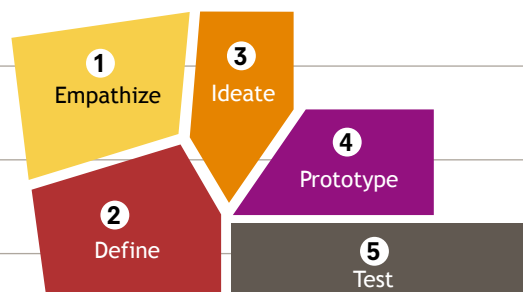
6 FOUR DESIGN TO DISRUPT CHALLENGES

The challenges are substantial, but their contours are now beginning to become clear. For further research, and for the alignment of the discussions we conduct on these topics with these organizations, we concentrate on a number of research issues. At this stage, we distinguish four developments that form the basis of disruptive innovations. First of all, there is the question of how to deal with this vast digital acceleration. What does Continuous Design signify in the light of existing business culture? Trust in the scalability of this Continuous Design is a second design principle. New platforms play an important role in this framework. The design of new business models, particularly in the context of new cyber-physical relations through SMACT technologies (Social, Mobile, Analytics, Cloud, Things), is the third focal point. The fourth is the design of the customer and employee obsession.

A Continuous Design in the digital era

If disruption has become the New Normal, it makes perfect sense to work on an organization's *Continuous Design*. Forbes columnist Steve Denning, who previously worked for the World Bank and is now an Amazon Affiliate and director of the Scrum Alliance, wrote a relevant article on this subject, entitled "Clayton Christensen And The Innovators' Smackdown." He concluded that *Continuous Disruption* is the way to go. An example of this can be found in Alan Moore's book *No Straight Lines*, in which he describes how organizations should constantly monitor and adapt their organizational "design" and strive for a "Permanent Beta" state. Others, such as the Silicon Valley entrepreneur Eric Ries, give a similar advice: convert your enterprise into a "lean startup." However, this is easier said than done, as such a cultural switch cannot be realized overnight.

Disruptive Innovations Design Issues



B The design of trust

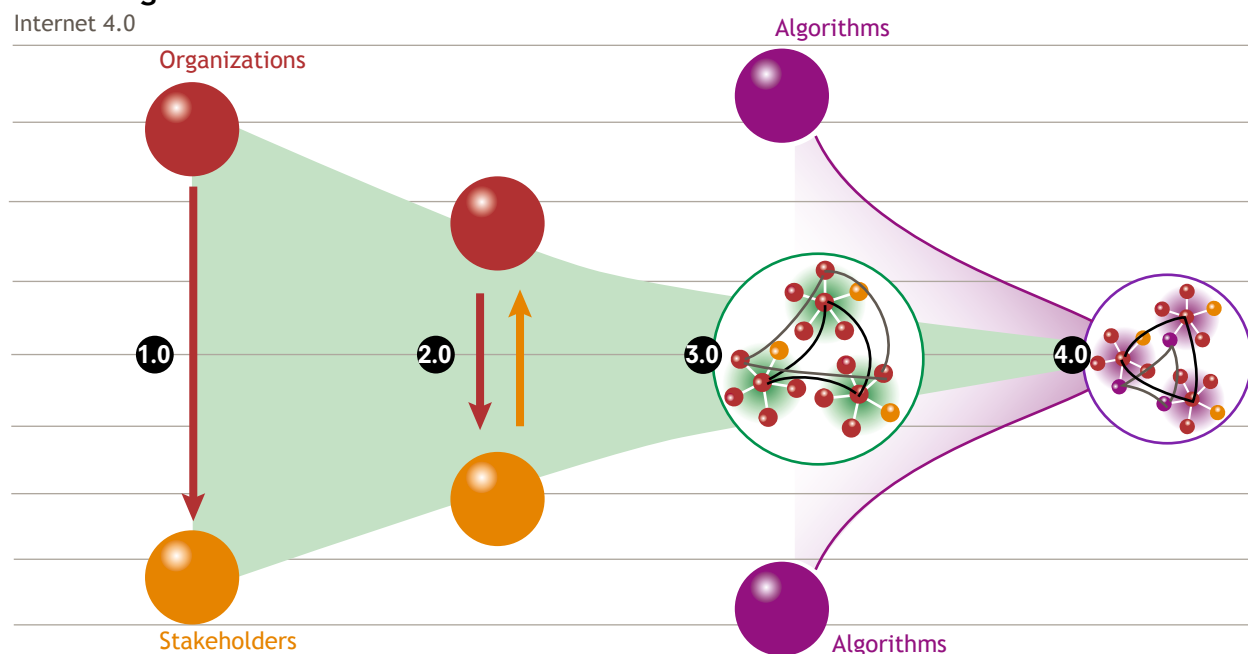
On top of all these technologies, the so-called Platform Economy is building out. Thanks to the new opportunities, there is a tendency to return to the human measure, in which human contact again becomes of paramount importance. Trust becomes scalable thanks to the application of information technology, which enables us to solve an old problem. Economic activity is developing from stage 1.0 to 4.0, where the fourth stage that we are entering now corresponds with the network organization, this time enriched with advanced algorithms and artificial intelligence that make trust scalable.

Companies such as Airbnb and Uber use assessment systems that are transparent to all, which makes it possible

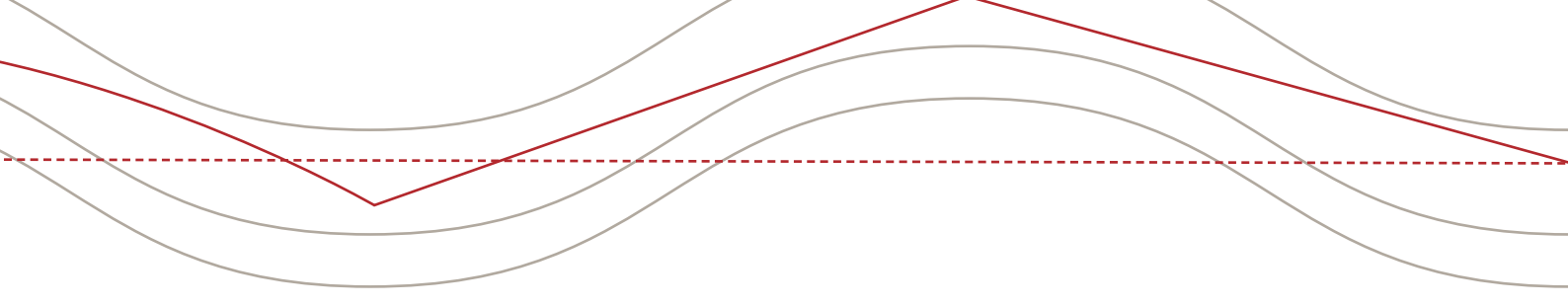
to e.g. appraise the renter of an apartment, but also the guest. Likewise, you can assess the driver of a vehicle as well as the passenger. Trust is made scalable by computer software, which makes it possible to take the step towards technology-driven, distributed, bottom-up networks that consist of individuals and communities. The future seems to be the reverse of the centralized twentieth century. Platforms such as Airbnb, GitHub, Homejoy, Uber, Kickstarter, Bitcoin, TaskRabbit and Coursera are the front runners in this development. Trust is no longer something that is monitored and controlled by companies, institutions and governments, but is built up online. The network, the algorithm, is the trusted party, in which the individual's reputation (or that of an intelligent machine) is the new currency.

The Design of Trust

Internet 4.0



Source: Sander Duivestijn, Ronald van den Hoff, Marco Derksen, 2014



The design of new service and business models

Digital disruption, leading to exponential acceleration and scalable platforms, requires and leads to new business models. In this context, John Hagel uses the term “re-think business models” (see quote below).

In this new world it is not the ownership of products that counts, but the access to these products via services. In practice we see more and more examples of this principle: hotel service, taxi service, educational service, healthcare service and banking service. The key to success for future companies is to crowdsource their production. In such a network economy, where value is created on various platforms, an economic entity plays one of the following roles: as a consumer, as a producer, or as the network itself. In practice, these roles will be

strongly mixed. Therefore, companies will have to look at their corporate processes with different eyes. They will have to set up their corporate functions around digital platforms and regard their employees, suppliers and customers as participants on these platforms. This means that the traditional boundaries of the organizations will automatically fade, and become less noticeable. In the achievement of a company’s final objective, when and who plays which role – consumer, producer or platform – will become less important. An organization’s environment is no longer filled in by clearly recognizable, organized units, but by a crowd of autonomous platform agents. Sharing is the new having, and the crowd is the new company. Thus, the consumer is the hotel, the software designer, the cleaning agency, the taxi office, the startup, the bank, the job agency and the teacher.

“These two forces – exponentially improving technology and economic liberalization – are combining to create environments that are increasingly vulnerable to disruption. In economic terms, they are doing two things. First, they are systematically and substantially reducing barriers to entry and barriers to movement on a global scale. Second, exponentially improving technology is offering untapped capabilities that can be a catalyst to fundamentally re-think business models and institutional arrangements.”

John Hagel

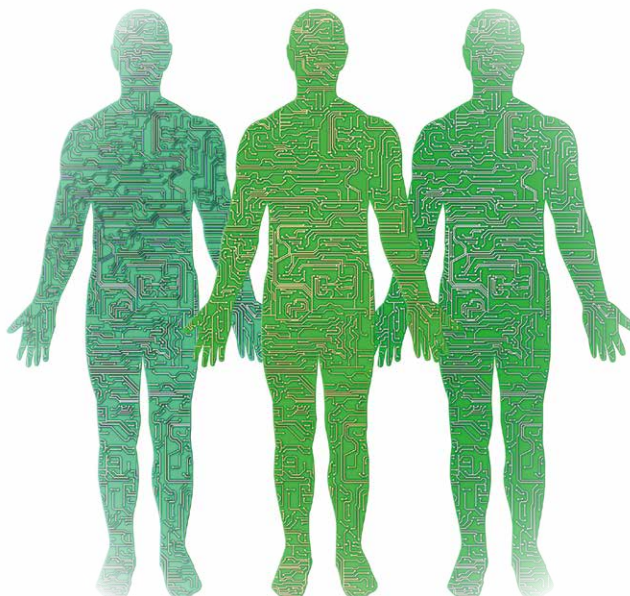
D The design of client obsession

Technological forces such as Social, Mobile, Analytics and Cloud have reached maturity and, in conjunction with interconnected Things, form a new SMACT alliance. In the next thirty years, the digitally transformed world will be implemented in the physical world: from bits to atoms. And the new world will look totally different from what we are accustomed to. It is thanks to digital technology that we are able to equip, arrange and organize the physical world in a completely different way.

Looking at Ms. Perez's five waves, we can establish that the infrastructure for the digital world (the digital highway) was constructed in the past thirty years, during the installation period. It is, as it were, the transition of atoms into bits. In his book *Being Digital* (1995), Nicholas Negroponte, founder of the MIT Media Lab, argues that "bits are the new atoms." In his opinion, all information that is stored in atoms (books, CDs, etc.) will eventually be converted to bits. In his book *Free* (2009), Chris Anderson, former editor-in-chief of *Wired* magazine, claims

the opposite: "atoms are the new bits." In the coming thirty years, the Digital Transformation will be morphed into a Physical Transformation. With this, the circle will be closed: from atoms to bits and on to atoms again. Thus, the Digital First strategy can equally well be reinterpreted as Physical First strategy.

Two inspiring thoughts come up. The old web world, the time of e-commerce when the Internet was something that had to be accessed deliberately, was predominantly a self-service era. In the new SMACT applications, self-service has been changed back to service once more while consumers and clients can be accommodated much better. What have changed – in a disruptive way – are the new possibilities. This development forms the basis for the second thought, namely that the experience is all that counts. Interactive moments (touchpoints) are all mobile, and may occur anywhere: at home, in the street, on the workforce, in shops, on the battlefield. These Mobile Moments form the basis of an entirely new concept of customer contact.





7 CONCLUSION AND CONSIDERATIONS FOR THE CIO

Assuming that exponentially growing technology is an inevitable factor in the current era, it is imperative that organizations develop a structure and a matching culture in which accelerated change is the New Normal. This places special demands on an organization's corporate environment and strategy, in which room for experiment, pioneering and innovation are common daily practice. Too often, these conditions are absent from large, sluggish and bureaucratic organizations. Institutions will try to preserve the problem to which they are the solution. However, the first outlines of this new type of organization are looming on the horizon.

The seven points below are a summary of the design principles that are imperative to effectuate disruptive innovation.

1. **Exponential growth of technology.** The consequent disruptive innovations put pressure on existing companies. Owing to the constantly changing (business) environment, companies have to constantly change and adapt (**Continuous Design**).
2. It is imperative that a corporate culture is created in which innovation is embraced, instead of confronted with feelings of distrust or resistance. **Innovation must become the major process within a company.**
3. **Trust made scalable by technology.** From centrally controlled organizations we are moving towards decentralized, distributed platforms. Existing companies must be unbundled. The physical world will be organized and structuralized in substantially different ways from those to which we are accustomed, thanks to the deployment of digital technology. As a

direct result, IT and business will merge seamlessly into one another. One possible consequence of this is a rise in technological unemployment, as work is increasingly taken over by robots and algorithms.

4. Platform economy players such as Bitcoin, Airbnb and Uber show us a world in which transparency is the new norm, and where, as a consequence, everyone can assess one another. **It is no longer about ownership/possession/control of products, but about having access to / controlling all kinds of services.** This requires and opens up all kinds of possibilities for new working methods. **Reputation becomes the new currency.**
5. **Information technology democratizes.** Now, the consumer possesses the tools to optimize his experience. The customer is the radiant central point, the linchpin around which the new economic systems revolve. **More than ever, the customer is king.**
6. **The anxious customer obsession from the past has made way for a wave of new opportunities.** Thanks to SMACT, it is now possible to create surprising customer experiences at all conceivable mobile-contact moments. After the initial transformation of atoms into bits, they now materialize once again in the actuality of our physical world. **With a further thrust of bits into atoms, the circle of service to the customer will be closed with a focus on Mobile Moments to accommodate every need and wish.**
7. **The role of the CIO** will be the outcome of a dilemmatic debate which Michael Raynor and Clayton Christensen, author of *The Innovator's Solution*, characterize as follows:



Point

CIOs should sustain the business.

Efficiency, effectiveness and regulatory mastery are even more important now. CIOs should focus on sustaining innovations that address today's growing concerns.

Technology is the fuel, not the driver.

Technology enables innovation, but the business should be doing the driving. The CIO should respond to the needs of the business, not the other way around.

Immediate returns come from driving down costs.

IT is the largest capital expenditure in many companies. Keeping up with technology's declining cost curve is a full-time job with a high return on investment.

Chasing disruption is a crapsheet.

Better to focus on incremental improvements that are more likely to pay off than risk limited resources on a long shot.

Counter-point

CIOs should lead disruption.

Social computing, mobility and the cloud aren't just changing society, they're disrupting business. Who's better positioned to help take advantage of these tools than the CIO?

Technology can break constraints. That's where innovation happens.

The CIO is in a rare position to lead the creation of disruptive business models given technology's prominence across business.

You can't shrink your way to greatness.

It's worth the deliberate sacrifice of some efficiency gains to achieve the potential long-term advantages offered by disruptive innovations.

The odds are better than you think.

Disruptive innovation is just as likely to pay off as sustaining efforts when pursued deliberately and consistently, with a strategy and operational metrics tuned to its specific needs.

Source: http://www.deloitte.com/assets/Dcom-UnitedStates/Local%20Assets/Documents/us_consulting_MeasuredInnovationDebate_022312.pdf

ILLUSTRATIONS AND REFERENCES

- Anderson, Chris (2009): "Free: The Future of a Radical Price," Hyperion, July 7, 2009
- Anderson, P., and M.L. Tushman (1990): "Technological Discontinuities and Dominant Designs: A Cyclical Model of Technological Change," *Administrative Science Quarterly*, 35, p. 604-633
- Andreessen, Marc (2011): "Why Software Is Eating the World," *Wall Street Journal*, August 20, 2011
- Anthony, Scott D., Mark W. Johnson, Joseph V. Sinfeld, and Elizabeth J. Altman (2008): *The Innovator's Guide to Growth: Putting Disruptive Innovation to Work*, Harvard Business School Press
- Barnay, Jay B. (1997): "On Flipping Coins and Making Technology Choices: Luck as an Explanation of Technological Foresight and Oversight," in: R. Garud, P.R. Nayyar, and Z.B. Shapira (eds.), *Technological Innovation: Oversights and Foresights*, Cambridge University Press, p. 13-19
- Bessant, John (2008): "Dealing with Discontinuous Innovation: The European Experience," *International Journal of Technology Management*, 42, 1/2, p. 36-50
- Bloem, Jaap, Menno van Doorn, and Sander Duivestijn (2010): *Don't Be Evil: Imagineering 21st Century Business – People, Planet, Profit 2.0*, Sogetibooks
- Brafman, Ori, and Rod. A. Beckstrom (2006): *The Starfish and the Spider: The Unstoppable Power of Leaderless Organizations*, Penguin Group
- Brinkler, Scott (2013): "Martec's Law: Technology changes exponentially, organizations change logarithmically," June 13, 2013
- Brynjolfsson, Eric, and Andrew McAfee (2014): *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*, W.W. Norton & Company
- Christensen, Clayton M. (1997): *The Innovator's Dilemma*, Harvard Business School Press
- Christensen, Clayton M. (2013): "Christensen: We are living the capitalist's dilemma," *CNN*, January 21, 2013
- Christensen, Clayton M., and Michael E. Raynor (2003): *The Innovator's Solution: Creating and Sustaining Successful Growth*, Harvard Business School Press
- CNAS (2014): *Creative Disruption Technology, Strategy and the Future of the Global Defence Industry*, http://www.cnas.org/sites/default/files/publications-pdf/CNAS_FutureDefenceIndustry_FitzGeraldSayler.pdf
- Cowen, Tyler (2013): *Average Is Over: Powering America Beyond the Age of the Great Stagnation*, Dutton Adult
- Danneels, Erwin (2004): "Disruptive Technology Reconsidered: A Critique and Research Agenda," *The Journal of Product Innovation Management*, 21, p. 246-258
- Derksen, Marco (2013): "De opkomst van de platformeconomie," <http://koneksa-mondo.nl/2013/11/30/sharing-economy-netwerken/>
- Downes, Larry, and Paul Nunes (2014): *Big Bang Disruption: Business Survival in the Age of Constant Innovation*, Penguin
- Duivestijn, Sander (2009): "Het nieuwe normaal," *Frankwatching*, December 4, 2009
- Duivestijn, Sander (2014): "Nadenken over Society 4.0," <http://www.sanderduivestijn.com/2014/04/28/nadenken-over-society-4-0/>
- Duivestijn, Sander, and Jaap Bloem (2011): "We the Web: De herovering van het leven op de hectiek," *Frankwatching*, February 2011
- Dzedek, Lars (2009): *Disruptive Innovationen: Identifizierung, Bewertung und strategische Handlungsoptionen für etablierte Unternehmen und ihre Entscheidungsträger*, VDM Verlag
- Ellermann, Lutz (2010): *Organisation von diskontinuierlicher Innovation: Ein ressourcenbasierter Ansatz*, Gabler Verlag
- Eurostat (2009): *European Business: Facts and figures*
- Foster, Richard, and Sarah Kaplan (2001): *Creative Destruction: Why Companies That Are Built to Last Underperform the Market – and How to Successfully Transform Them*, Random House
- Furr, Nathan (2011): "Big Business... The End is Near: Why 70% of the Fortune 1000 Will Be Replaced in a Few Years," *Forbes*, April 21, 2011
- Gordon, Robert J. (2012): "Is U.S. Economic Growth Over? Faltering Innovation Confronts the Six Headwinds," *The National Bureau of Economic Research*, August 2012
- Govindarajan, Vijay, and Praveen K. Kopalle (2005): "Disruptiveness of Innovations: Measurement and an Assessment of Reliability and Validity," *Strategic Management Journal*, December 22, 2005
- Govindarajan, Vijay, and Praveen K. Kopalle (2006): "The Usefulness of Measuring Disruptiveness of Innovations Ex Post in Making Ex Ante Predictions," *The Journal of Product Innovation Management*, 23, p. 12-18

- Hagel, John (2014): "The Disruption Debate — What's Missing?," Edge Perspectives, June 30, 2014
- Hagel, John, John Seely Brown (JSB), Tamara Samoylova, and Michael Lui (2013): "From exponential technologies to exponential innovation," Deloitte University Press, October 4, 2013
- Hauschildt, Jürgen, and Sören Salomo (2010): Innovationsmanagement, Vahlen
- INNO-Grips (2012): Disruptive Innovation: Implications for Competitiveness and Innovation Policy, <http://www.innogrips.empirica.biz/home/>
- Ismail, Salim, Mike Malone, and Yuri van Geest (2014): Exponential Organizations: Why new organizations are ten times better, faster, cheaper than yours (and what to do about it, Singularity University
- Kelly, Kevin (2010): "The Shirky Principle," The Technium, April 2, 2010
- Lanier, Jaron (2013): Who Owns the Future?, Penguin
- Leifer, Richard (2001): Radical Innovation: How Mature Companies Can Outsmart Upstarts, McGraw-Hill Professional
- Lawler, Edward E., and Christopher G. Worley (2008): Built to Change: How to Achieve Sustained Organizational Effectiveness, Jossey-Bass
- Markides, Constantinos (2006): "Disruptive Innovation: In Need of Better Theory," The Journal of Product Innovation Management, 23, 19-25
- McGrath, Rita Gunther (2013): "The End of Competitive Advantage: How to Keep Your Strategy Moving as Fast as Your Business," Harvard Business Review Press, May 14, 2013
- McQuivey, James (2013): Digital Disruption: Unleashing the Next Wave of Innovation, Amazon Publishing
- Moore, Alan (2011): No Straight Lines, Bloodstone Books
- Moore, Geoffrey A. (2002): Crossing the Chasm: Marketing and Selling Disruptive Products to Mainstream Customers, Harper-Collins
- Moore, Geoffrey A. (2008): Dealing with Darwin: How Great Companies Innovate at Every Phase of Their Evolution, Penguin
- Morner, Michele (1997): Organisation der Innovation im Konzern, Gabler Verlag
- Negroponte, Nicholas (1995): Being Digital, Alfred A. Knopf Inc.
- OECD, Organisation for Economic Cooperation and Development / Eurostat (2005): Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data (third edition)
- Perez, Carlota (2002): Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages, Edward Elgar Pub
- Philips, W. et al. (2006): "Beyond The Steady State: Managing Discontinuous Product and Process Innovation," International Journal of Innovation Management, 10, 2, p. 175-196.
- Philips, W. et al. (2006): "Discontinuous Innovation and Supply Relationships: Strategic Alliances," R&D Management, 36, 4, p. 451-461
- Piketty, Thomas (2014): Capital in the Twenty-First Century, Harvard University Press
- Porter, Michael E. (1980): Competitive Strategy, Free Press
- Rao, Venkatesh (2013): "The Mother of All Disruptions," Ribbonfarm, October 11, 2013
- Rifkin, Jeremy (2014): The Zero Marginal Cost Society: The Internet of Things, the Collaborative Commons, and the Eclipse of Capitalism, Palgrave Macmillan
- Rogers, Everett M. (2003): Diffusion of Innovations (fifth edition), Free Press
- Rushkoff, Douglas (2011): Life Inc: How the World Became a Corporation and How to Take It Back, Vintage Digital
- Satell, Greg (2014): "Strategy in a Networked World," Digital Tonto, June 15, 2014
- Schmidt, Glen M., and Cheryl T. Druehl (2008): "When Is a Disruptive Innovation Disruptive?" The Journal of Product Innovation Management, 25, p. 347-369
- Schumpeter, Joseph A. (1942): Capitalism, Socialism, and Democracy, Harper
- The New York Times (2014): Innovation, <http://visualdays.no/files/2014/05/224608514-The-Full-New-York-Times-Innovation-Report.pdf>
- Varian, Hal (2011): "Micromultinationals Will Run the World. And Cheap Robots Will Help Them Do It," Foreign Policy, August 15, 2011
- VINT (2014): "SMACT 2004-2020: The Final Countdown," <http://vint.sogeti.com/smact-2004-2020-final-countdown/>
- Weinberg, Gabriel (2012): "Software eating the Fortune 500," June 3, 2012
- Welsch, Johann (2005): Innovationspolitik: Eine problemorientierte Einführung, Gabler Verlag
- Yu, Dan, and Chang Chieh Hang (2010): "A Reflective Review of Disruptive Innovation Theory," International Journal of Management Reviews, in: The Journal of Product Innovation Management, 12, p. 435-452



Design to Disrupt

About VINT vint.sogeti.com

VINT, the Sogeti trend lab and part of Sogeti Labs, provides a meaningful interpretation of the connection between business processes and new developments. In every VINT publication, a balance is struck between factual description and the intended utilization. VINT uses this approach to inspire organizations to consider and use new technology.

About Sogeti Labs labs.sogeti.com

Sogeti Labs is a network of over 90 technology leaders from Sogeti worldwide. Sogeti Labs covers a wide range of digital technology expertise: from embedded software, cyber security, simulation, and cloud to business information management, mobile apps, analytics, testing, and the Internet of Things. The focus is always on leveraging technologies, systems and applications in actual business situations to maximize results. Together with the Sogeti trend lab VINT, Sogeti Labs provides insight, research, and inspiration through articles, presentations, and videos that can be downloaded via the extensive Sogeti Labs presence on its website, online portals, and social media.

Want to
participate in our
Design to Disrupt
research project?
Please send
an e-mail to
d2d@sogeti.com

About Sogeti www.sogeti.com

Sogeti is a leading provider of technology and software testing, specializing in Application, Infrastructure and Engineering Services. Sogeti offers cutting-edge solutions around Testing, Business Intelligence & Analytics, Mobile, Cloud and Cyber Security, combining world class methodologies and its global delivery model, Rightshore®. Sogeti brings together more than 20,000 professionals in 15 countries and has a strong local presence in over 100 locations in Europe, USA and India. Sogeti is a wholly-owned subsidiary of Cap Gemini S.A., listed on the Paris Stock Exchange.



SOGETI