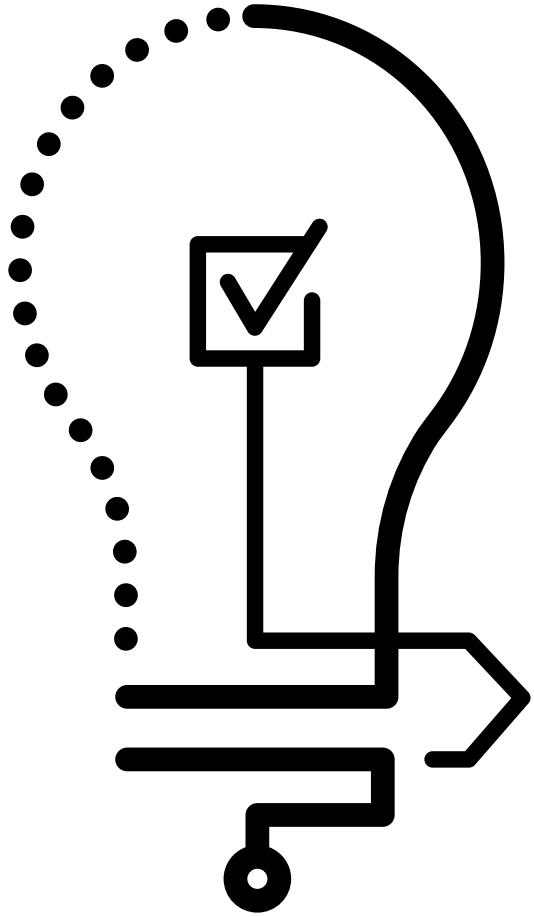
Fundación Innovación Bankinter

FTF Future Trends Forum

28 English Version

Disruptive business models



- Disruptive innovation breaks with the currently existing paradigm. P. 11
- Technology has become an enabler of transformation. P. 23
- There are new business models as a result of the latest technological developments. P. 33
- The impact of this disruptive wave requires a swift adaptation. P. 42

Disruptive business models

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Foreword

Lisa Gansky

Lisa Gansky is the founder of Instigating + Co and Mesh Ventures, an advisor and investor. Her work focuses on the profound shift rapidly unfolding in our society and economy fueled by a combination of challenges provoked by technology, inequality and climate change. Lisa + her global network of instigators experiment with self-organizing teams + platforms --- rethinking trust, value, risk in an era when talent, power + learning is distributed. Client and portfolio network includes: Apolitical, BBVA, Breather, Clear Cove Systems, Edgeryders, Everledger, Fabl, Fujitsu, GE, La Ruche Qui Di Oui, Honest Buildings, Neighborly, Ouishare, Solar Mosaic, Taskrabbit (IKEA), Turo, Traity and Tripping.

Can you hear the perceptible hum of an interconnected world, spinning faster and faster, whirling whilst the old world slips through our fingers like grains of sand, never to return?

If not, read this collection of essays and notice what's unfolding. We're not on the cusp of a paradigm shift anymore; we're caught in the eye of the storm where business, governance, the very fabric of society as we've known it, is changing. It's time to notice the massive challenges we are facing, to courageously welcome the impact technology is having all around us.

These essays are an implicit warning that if we on both an individual and societal level don't find ways to rethink work, teams, and products through a whole new lens, we are guaranteed to arrive late with outdated or misaligned solutions. For businesses this will mean insolvency; for governments, possible irrelevance and ultimate failure. For the sustainability of our planet, our failure to listen, adapt and find ways to harness the opportunities digital connections has offered us, would be catastrophic.

Stop and look up from your smartphone; the old model of business won't cut it anymore. Giant players with their industrial machines, their centralized means of production, can't take the world by sheer force any longer. The industrial model is being outpaced by data driven, network-based, distributed hubs where collaborations between people and digital technologies find new solutions that just a decade ago many of us had not imagined. Blablacar, Transferwise, Taskrabbit, Wallapop, FabLab, Airbnb, Ethereum and Alibaba. This litany of instigators, driven by digital, decentralized networks, are just the beginning—reimagining and rethinking. Value and risk are newly defined. In the eroding worldview zero defects = low risk. But, in a world which reshapes markets and issues faster than we can learn, no mistakes leads to slow learning and high risk! Structures that were designed for centralized brains, are handicapped by minimal input and lumbering decision making. Nature is our best model for adaptive, agile and resilient learning.

Bubbling away, there are new forms of value: Bitcoin, Ether and other cryptocurrencies that the power of distributed assets, whether private homes, peers, solar power or currency are rapidly gaining on centralized models. It's a testament to the speed of disruption that in 2017 alone people invested over $1.2B in newly minted digital coins, according to Goldman Sachs.

There is an expectation amidst the work in this book, if you read between the lines, that all sectors must transform their business or dissolve. New products, services and a reconfiguring of what we have come to know in the past— structures, governance and value creation and capture. It's already happening, but there's more to come. Much more. Join the conversation or spark one

where you are. There is no shortage of opportunity to remake our organizations before they lose their potency.

No matter what, trust remains a social contract core to any healthy functioning of our communities, businesses and societies.

Our growing collaboration (deliberate or otherwise) with machines, often obscures who is granting trust to whom and for what. The speed, reach and 'fog' brokering which car you enter, what route the driver (or software driving), takes and the speed, safety and comfort of your journey depends on how many tiny biases were set by an often distant computer programmer. The detachment between the experience, consequences and the designer and programmer appear to be growing, inviting the question of who are you trusting and how would you know. The volume of data moving around us is remarkable and growing. For our economies and cities these data are more fuel than oil yet, most of our governments, companies and communities lag in understanding and valuing this data driven choreography that is more crucial to ensuring our healthy happy life with each day.

Remember: the unknown is exciting. But also unsettling. What appeared to be foundational in our culture, our businesses, our governments just a few short years ago, is being eaten away – byte by byte.

This book will help you listen, connect and learn – even or especially in the face of knowing that we don't (and won't) know.

Can you envision the data and networks chopping through GPS, payment, language and traffic data as your autonomous car glides up to bring you home?

Introduction

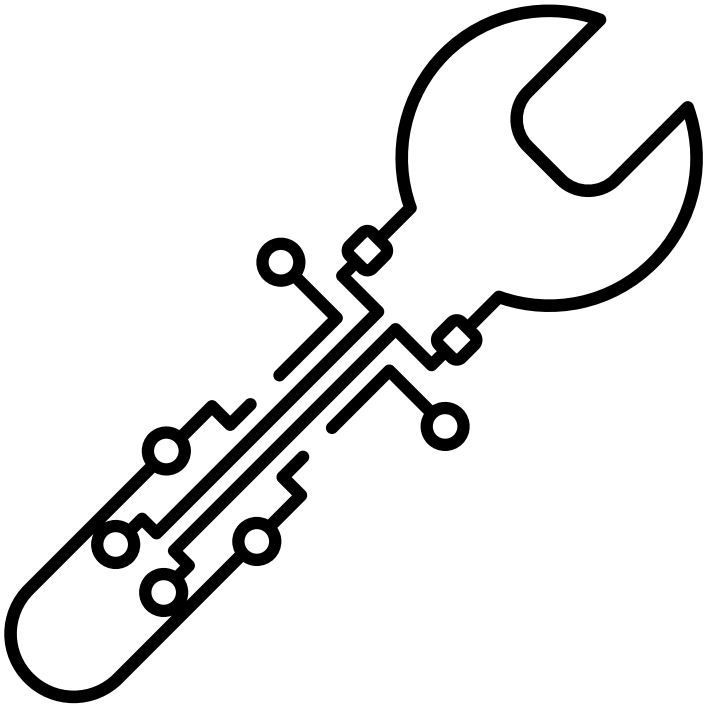
"Uber is the largest taxi company in the world and it owns no vehicles. Facebook is the most popular media corporation in the world and it creates no content. Alibaba is the most valuable retailer but it has no stock. And Airbnb, the largest accommodation provider in the world, owns no real estate. Something interesting is going on here." Tom Goodwin, SVP of Strategy and Innovation of the multinational Havas Media, pointed this out back in 2015.

There is a name for this phenomenon: disruption. This word that has gained so much popularity in recent years that the use of the expression "disruptive innovation" in the media grew by over 440% between 2010 and 2015, according to a study published by EY in 2016 as part of their report '*The upside of disruption. Megatrends shaping 2016 and beyond*'.

Disruption is defined as "disturbance or problems which interrupt an event, activity or process." The Foundation of Urgent Spanish BBVA describes it as "a process or a way of doing things (...) which ousts and displaces those that were used before." In this context, the notion of disruption is linked to innovation and technology. According to EY, it is also linked to globalization and demographics. They refer to these three areas as the "primary forces of disruption."

As a matter of fact, this term was hardly used in the past, and when it was, it was in a derogatory sense. It all changed with the sudden emergence of tech startups. They have burst into—or rather blown up—traditional business sectors such as tourism and transport (Airbnb and Uber), they have popularized new means of communication (Facebook, Twitter and other social networks) and they have transformed the business model which the exchange of goods and services used to be based on (Alibaba or Amazon are two of the most relevant examples).

"Despite growing awareness, only a handful of companies have successfully disrupted their own business models"



These apps and platforms, products of the on-demand "gig" economy, have pushed the established players aside. They join the other existing developments, such as artificial intelligence and its application in products (self-driving cars) and services (from chatbots and intelligent virtual assistants to medical diagnosis and personalized treatment), the Internet of Things (IoT), drones, digital manufacturing and 3D printing, virtual and augmented reality, or the blockchain, with its promises of smart contracts and one sole global digital identity.

Some of these technologies have already begun to spread their wings. Others are still diamonds in the rough, waiting to see who will shape them, and how. They are potential driving forces for change which are already being put to use in order to optimize processes, automatize services or increase efficiency between supply and demand by eliminating the middleman, and which promise to deliver many more benefits in the years to come. However, not all of their consequences are advantageous. Unemployment, precarious work conditions, tax evasion, technological dependence, the tyranny of the algorithm, the breeding of bias, the digital divide and inequality; these are some of the negative repercussions that these technologies can give rise to when developed and applied. Luckily, they can be avoided and corrected.

Beyond technology, we find other innovations such as the pop-up economy: a business and management model based on temporality. According to a study by the Delaware Valley Regional Planning Commission (U.S.), it occurs most commonly in the form of a temporary store, event or plan. One example of this is zoning; a grace period during which local entrepreneurs and civil servants are allowed to break some local regulations in order to carry out pilot tests. They all share one key success factor: risk reduction.

Eight megatrends stem from these new models, identified by EY in their report. The document lays out the redefinition of the current state of the industry and

the future of labor, it raises questions about the revolution in individual behavior and how it will affect our collective future, and it points out a path which we have started to walk already; the path towards an intelligent future on a planet where resources are distributed fairly and renovated towns are populated by empowered citizens, and costumers, who are reaping the benefits of innovation in fields such as healthcare and personalized medicine.

Disruption is shaping a better world—not without its risks—whose surface we have barely scratched yet. Nonetheless, experts are warning that it is at risk of becoming trivialized as a mere marketing concept. Such is the opinion of Jean-Marie Dru, Chairman of TBWA, one of the main strategy and advertising agencies in the world. He was the pioneer who first coined the term "disruption" in the business sector in 1992.

In his latest book, (*The Ways to New: 15 Paths to Disruptive Innovation*), Dru, who is also the Chairman of UNICEF France, speaks of an "innovation deficit." "It seems strange to talk about an innovation deficit when you have Google, Amazon, the startups, the biotechnology, the nanotechnology and all that. But you have to know that all these industries that are high-tech oriented, they represent no more than 20% of the worldwide economy. What about the other 80%?," he asks.

Then Dru himself provides an answer. "The remaining 80% of companies are being transformed—not disrupted—by digital, but that doesn't mean they're becoming more innovative. And in fact there is a lack of innovation." He believes that the word disruption is overused nowadays, but not with its original meaning, which was linked to a methodology and based on transformation, revolution and creative destruction.

"Disruption is not just a way of defining how startups clear the decks in any given section, or the success of a new product", he argues. EY's report agrees: "Despite growing awareness, only a handful of companies have successfully disrupted their own business models." It's true, too many of them falsely claim to be disruptive, adopting a superficial meaning of the term.

In a similar vein, journalist and educational scientist Antonio Martínez Ron states in an article published in *Voz Populi* that "the notion of disruption has become the great con artist of the 21st century. They try to pass it off as science when it's all just smoke and mirrors. Due to this obsession, the term "disruptive" is to the tech sector what the term "quantum" is to pseudoscience: it sounds so fancy and ground-breaking, but it's just a nicely wrapped up lie", he claims.

Now all cards on the table. This document aims to separate the wheat from the chaff, working with the notion of "disruption"—as Dru envisioned it—to analyze the impact and potential of the new disruptive business models. This analysis will encompass the limits and obstacles that hinder or clash with them, the challenges they pose, the risks they entail and the future we can surmise from them, whatever that looks like. For that purpose, we have collected the views, expertise and thoughts of more than 30 experts from around the world who gathered for the 19th Future Trend Forums think tank, organized by the Bankinter Innovation Foundation.

"Experts warn that the disruption concept could trivialised and become reduced to a marketing´s tearm"

Greg Kidd
CEO of Global ID.

Disruptive technologies

1.0.

Introduction

Greg Kidd

Greg Kidd is the CEO of globaliD, which seeks to provide a universal portable identity solution to individuals and groups throughout the world. Previously, Greg served as the chief risk officer of the digital currency company Ripple Labs. His regulatory experience includes working as a director at Promontory Financial and Board of Governors of the Federal Reserve. His investment company Hard Yaka made first round investments in Twitter, Square, and Coinbase.

The term "disruption" properly denotes the "detonation of the status quo." But whether disruption is a mere tearing down, or a further building anew, depends on the quality of the insight behind it. A truly innovative disruption brings into the world an alternate reality that some confluence of actors feels could and more importantly should exist in the world.

The advent of stealth technology altered the balance of power calculations of the cold war, ensuring a new sort of arms race that the Soviet Union could ill afford. While the cold war could arguably be described as disrupted, neither US nor Russian leaders hadn't a potent or visionary insight into what the post-cold war reality could and should look like. As a result, the disruption of stealth and other developments that ended the Cold-war did not result in a new reality that carried a corresponding peace dividend. Perhaps the cold war world is a safer place than what we experienced in the 1950s-1980s, but there are many that long for clarity of the us versus them cold war lenses.

Similarly there are those that feel we would be better off without Facebook, Twitter, Uber, and Airbnb. Social networks and the sharing economy weren't foundational pillars of our society 20 years ago, but may be so going forward. But as to whether the innovations that came with these disruptions is ultimately beneficial or dystopian is still unclear. Like any sporting event, one wonders how far along are we to the answers. Are we in the first or last inning -- its hard to tell.

Part of why life is worth living is that those of us who live long, may get to find out.

The technologies which have launched in the past fifteen years have dramatically accelerated innovation when it comes to business models. E-commerce and social networks, for example, are not even twenty years old. What new business models will the new wave of technologies bring about in the next three to five years? Have we already caught a glimpse of some of them?

In order to provide an answer to these questions, we first need to put some things into context; namely, the characteristics and potential of these new technological advances that make up the cornerstone of the new disruptive businesses. Such is the aim of this chapter, which will be focusing on six key technologies, or groups of technologies: artificial intelligence (AI), robotics, the Internet of Things (IoT), digital manufacturing, virtual and augmented reality and Unmanned Aerial Vehicles (UAV).

Artificial intelligence

1.1.

What are we talking about when we talk about artificial intelligence (AI)? We are talking about a series of algorithm-based computational technologies which have certain abilities. The most relevant among them are machine learning, deep learning, machine vision, biometrics, natural language processing and generation, speech recognition and text analysis.

These machines can learn by themselves by processing and sorting huge amounts of data within a structure which emulates the functioning of the human brain and the interconnection between its neural networks. They can also make decisions, interpret their environment in the same way humans do, recognize people from their physical features, produce a text from computer data and understand the purpose of words, their meaning in a particular context and what the person writing or saying them was feeling.

Peter Eckersley
Chief Computer Scientist at Electronic Frontier Foundation.

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"On the one hand, there's narrow artificial intelligence (AI), with learning algorithms based on deep neural networks. On the other hand, there's another kind of artificial intelligence which originated in science fiction, and which may or may not become a reality one day." Those are the words of Peter Eckersley, member of the Future Trends Forum and Chief Computer Scientist for the Electronic Frontier Foundation (EFF, U.S.). Gregory Clark, Professor of Economics at the University of California in Davis (U.S.) adds, "Up until now, artificial intelligence has only proven to be a mere extension of the existing data mining methods, just using a much larger database."

Eckersley claims that we are witnessing an "excessive hype" around artificial intelligence because of two key factors. Firstly, the very real technological advances (for example, algorithms that are able to create new algorithms, of an equal or even superior quality to those developed by engineers, or to develop their own language). But we also have the speculation that stems from science fiction. He mentions the risks of elation and uncontrolled growth, that will "open up many new business models (based on smarter decisions or predictive selling, for instance), but that will also "make our lives more complicated."

Among the most important issues with artificial intelligence, Eckersley highlights algorithm bias. This is because algorithms are fed with biased sources of information, and they also they also omit important variables" [which can lead to bias]. Other problems underlined by Eckersley were delegating decision-making to the machines and the risks to privacy. He mentions examples such as minority-populated neighborhoods where people pay higher car insurance premiums than in white-populated neighborhoods with an identical level of risk, as repor-

Peter Eckersley

How can artificial intelligence create new business models?

Peter explains what is artificial intelligence and machine learning possibilities for creating new business models.

8:15min

Gregory La Blanc
Lecturer in Finance, Strategy, and Law, Haas School of Business at University of California.

+INFO

Eugene Kandel
CEO at Start-Up Nation Central.

+INFO

ted by U.S. media outlet *ProPublica.* Or the systematic, biased increase in people of color's crime risk scores.

Gregory La Blanc, member of Future Trends Forum and lecturer of Finance, Strategy and Law at the Haas School of Business in the University of California, Berkeley (U.S.), replies, "We must not compare AI and random sorting, but human and artificial intelligence. Since the latter can use a larger amount of data and learn from its mistakes, it is much less likely to adhere to unjustified bias than humans are," he argues.

Eugene Kandel, an Israeli economist, Professor of Economics and Finance and CEO of Start-up Nation Central in Israel, among other positions, adds, "AI is not a choice, but a necessity, if we are to make sense of the increasingly huge amount of data we are collecting. We need to find a way to guarantee that the answers we obtain make sense."

Robotics and IoT

1.2.

Robots can manufacture, provide services, wait tables, and be used for therapeutic and rescue purposes, among many other uses. From simple to high-risk tasks and human interaction, robots' possible uses are being expanded and perfected. They create new business models and make old ones more efficient. When combined with technologies such as artificial intelligence, they can foster automation, optimize processes and reduce costs, all while destroying the labor market.

"Nowadays, people worry about being replaced by robots. I believe that one hundred years ago Henry Ford turned us into robots, with all those repetitive actions. Now we're trying to figure out what it means to be human. It isn't easy and that's where the disruption comes from", Peter Hirshberg asserts. He is a member of the Future Trends Forum and Chair of the City Innovate Foundation, a project in which the Government of San Francisco, the University of California, Berkeley and the MIT Media Lab work together to promote a network of citizen innovation global centers.

Apart from AI, robotics can be successfully combined with other technologies, such as the Internet of Things (IoT). Thanks to this technology, we can connect any object to the Internet and make it interactive. Or connect it to other objects, so that they become smarter and can work together. This is the foundation for "smart homes", "smart cities", etc.

These connections are often performed through sensors, or new products which are innovative precisely because of their connectivity. For instance, Wi-Fi-equipped speakers that can sync up with our phone's music, or connected fridges we can order our groceries from. Other examples are sensorized traffic lights which provide real-time reports on traffic, dumpsters that tell us how full they are or heavy machinery that warns us when it is broken.

The emergence of these technologies allows us to exert remote control over objects and people—through bracelets and devices that measure the level of activity or health indicators, to be used by the customer or by medical staff—as well as to collect useful data. That is precisely why connected devices are more vulnerable: they are vulnerable to hacking by people who want to steal the data. They make it easier for the manufacturers, but also for any third parties that might be interested, to obtain information. The most controversial case was that of iRobot, the manufacturer of the cleaning robot Roomba. In an interview published by Reuters, they admitted to be willing to sell their users' housing blueprints to third parties such as Amazon or Google, which might use them to connect their own smart devices.

Blockchain

1.3.

What is the most important invention of the 21st century so far? There are so many options: the first artificial heart, social networks like YouTube or Facebook, messaging apps like WhatsApp, Android's operating system, electric cars, self-driving vehicles... But none of them come close to blockchain. At least, that is what Nicolas Courtois—cyber-security expert at the University College London—claimed in an article published in the scientific journal *Nature* at the end of 2015.

Blockchain is a distributed consensus system created to make the functioning of Bitcoin possible. Bitcoin is a cryptocurrency that uses cryptography as a security system and as a defense against forgery. It is the first currency of its kind which can function without banks or central authorities, while protecting the identity of those involved in the transactions. All of this is possible thanks to blockchain technology, which is a shared, decentralized and secure database—though not completely threat-free.

"This is the first time that any individual can issue currency in a secure way. This used to be terribly difficult from a technological point of view. For instance, the issuing of banknotes that cannot be replicated used to be very costly. Nowadays, we are literally free to create our own currency, and I believe this is an enormous disruption that will give rise to many new models which we can learn a lot from," Eyal Hertzog—member of the Future Trends Forum and senior entrepreneur in cryptocurrency technology—claims.

Nevertheless, blockchain could potentially have many applications beyond cryptocurrency. It is a storage system that enables us to store all kinds of data and documents, creates distributed, decentralized records

Greg Kidd

The post uber era: superfluid markets

Greg Kidd poses a world without intermediaries, where the collaborative economy works directly, something that will be possible thanks to technologies like Blockchain.

7:30min

Eyal Hertzog
Product architect at Bancor.

+INFO

that prevent data from being deleted or modified (there are cryptographically-protected copies on millions of computers around the world), allows us to set specific rules for each transaction and keeps the identities of the participants a secret.

Thanks to these features, blockchain makes protection against cyberattacks easier, reduces operating and duplication costs, increases transparency and traceability in transactions and it reduces the risk of fraud. Its potential applications range from legal and financial uses to so-called "smart contracts", the electronic vote, smart electrical networks, transparency and digital identity. The latter is the area of focus of Greg Kidd, member of the Future Trends Forum, big data and machine-person interaction expert and CEO of GlobaliD, a company that seeks to provide a universal, portable identity that people and groups all over the world could use.

"Blockchain technology would allow us to always have our necessary attestations with us. They could sit in a public ledger, backed by the Government or some other authority. That way, we could walk into a bar without having to show our ID card, which contains tons of private information,", Kidd says. "We would live in a world in which we would only have to provide just enough information to be allowed to perform that particular act, instead of having to hand over all of our private information," he adds.

This all sounds great, but actually, these potential uses have yet to become a reality. Just like with AI, the hype surrounding blockchain carries the risk of a bubble effect. This is one of the criticisms made about blockchain, along with one of its cornerstones: decentralization. Is it always desirable? How can we guarantee efficiency of certain processes if there is no central authority? These are some of the questions that were raised during the Future Trends Forum that inspired this document, and we will tackle them later on.

Other critics question to what extent blockchain is actually decentralized. In order to become a miner (a person who solves the mathematical problem which verifies each transaction in blockchain), you need special equipment and must be ready to give it your all . Therefore, there are barriers to entry. Only certain people can become miners, and there is a risk that they might reach an agreement to corrupt a result.

Balaji Srinivasan, co-founder of 21.co—a company that pays users in Bitcoin if they reply to web or phone messages—and partner of the venture capital Andreessen Horowitz, claims that "It is fundamental that we are able to quantify decentralization. Its growth and the growth of the minimum number of entities required to compromise the system go hand in hand."

Digital manufacturing

1.4.

The old dream of democratization of the means of production is now closer than ever due to digital manufacturing technologies. That's what Nadya Peek claimed in an interview published by *El Mundo.* She is a researcher and a lecturer at the MIT Center for Bits and Atoms, a pioneering institution in the design and development of this computer-programmed, digitally-designed way of manufacturing in which the production tools are 3D printers, laser cutters and other machines "that anyone can build." "It's not about the technology itself, it's about who can use it," Peek says. Even though not everyone has a 3D printer at home, "fab labs" where they lend them out and teach people how to use them are becoming widespread in an increasingly high number of cities.

What can be made with these technologies? A better question would be what cannot be made. Houses, car parts, prosthesis, teeth and all kinds of medical objects, as well as drugs, maps, jewelry, food, prototypes, you name it. The production can be one by one or serially. The latter includes the so-called "additive manufacturing": the process of combining materials to make objects from 3D model data, usually layer upon layer, named to reflect an opposition to traditional subtractive manufacturing methodologies. This process is transforming how companies design and manufacture products, as it allows them

Greg Kidd
CEO of Global ID.

+INFO

to save money and time when designing prototypes, manufacturing and eliminating or reducing errors.

Back in 2015, in their report 'Digital manufacturing: The revolution will be virtualized', McKinsey pointed out that "Industry and academic leaders agree that digital-manufacturing technologies will transform every link in the manufacturing value chain, from research and development, supply chain, and factory operations to marketing, sales, and service," They also highlighted that "Digital connectivity among designers, managers, workers, consumers, and physical industrial assets will unlock enormous value and change the manufacturing landscape forever."

However, as Nadya Peek stated in *El Mundo,* this value lies not only in its business application, but also in its usefulness as a tool to democratize manufacturing and foster incremental innovation. "Anyone who needs something, or who knows what a community needs, can make it," she claims. This is not exactly true, though, given that not everybody has access to the premises where these technologies can be found (fab labs and similar places like Makespaces), or to the minimum necessary training to use them, design and program the objects they wish to create.

These technologies could also constitute good news for education and employment. Both Peek and Peter Hirschberg agree on that. "Kids were used to going to schools that were devised for the factory era: you sat and they poured knowledge into your brain. Now it's much more experiential. You want to do a project, where you're coming up with an idea, figuring out how to do it, you get to make the whole thing..." Hirschberg declares. "It's a creative process where, art and play go back and forth," he adds.

As an example, Hirschberg mentions the NuVu School, founded by MIT. They take in "alternative" kids, who are prone to academic failure, and they give them digital manufacturing tools. "These kids are now starting companies. A fourteen year old girl started a company

Peter Hirshberg
President of City Innovate Foundation.

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that built city-adapted wheelchairs, as sidewalks in the cities are narrow and people usually live in apartments." In Spain, there are similar projects to promote digital inclusion among young people facing social exclusion and other vulnerable groups, such as people with disabilities, like the ones in Makespace Madrid.

The maker movement and the DIY movement are growing at a staggering speed.

Virtual and augmented reality

1.5.

The most memorable image that the Barcelona Mobile World Congress 2016 produced was the founder of Facebook walking triumphant through a hall filled with thousands of people wearing virtual reality headsets. Mark Zuckerberg has established himself as the visionary par excellence of this technology, which his company is researching for potential applications. It's not the only organization in this field, but it was a significant milestone and it drew attention to this technology.

Virtual reality is a computer-generated reality emulation created from 3D images or environments which we can interact with in a seemingly real or physical way. We need a special headset for it which is normally a helmet with a screen inside—sometimes a mobile phone screen—but it can also be a pair of rudimentary cardboard glasses, like Google Cardboard, made popular by the tech giant in 2014.

Corporations, SMEs and entrepreneurs are striving to find the many possible applications of this technology. Entertainment is the first to come to mind. The audiovisual, cinema, TV and advertising industries will be among the first to reap the benefits of virtual reality, which provides a new way to tell stories. Some Spanish startups have already jumped on board, like FutureLighthouse, whose headquarters are in Madrid and Los Angeles and which is the creator of several appraised productions, both nationally (like an episode of Spanish TV show *El Ministerio del Tiempo*) and internationally.

Beyond entertainment, which includes the show business, videogames or the pornography industry, a new world of possibilities is opening up in numerous sectors. To mention but a few: education (immersive education), healthcare (immersive therapy, among others), business, the automotive industry, architecture, construction, sports or marketing. We're hearing about these sectors being, potentially, disrupted by virtual reality and another budding technology: augmented reality. In the case of the latter, a computer-generated image overlaps with reality in the user's view, giving them a composite view of reality (like in the movie *Minority Report*).

Is the hype surrounding these technologies justified? "They are still in the making, but many consider them to be one of the most important sources of digital disruption since the smartphone", claimed Patrick Imback, Head of KPMG Tech Growth in London, in a 2016 report. "We've already witnessed some stunning corporate and venture capital investments, and this paves the way for them having a tremendous market potential," he adds, while pointing out that we have already begun to see some of these technologies' applications in real life.

Nonetheless, he mentions some obstacles to the widespread adoption of virtual and augmented reality. Namely, the price range, the significant processing capacity required, the massive realism of the experience and potential side effects of virtual reality exposure such as dizziness or nausea. "In spite of these disadvantages, there's no denying that these exciting new technologies are here to stay and will transform the way we interact with digital content and the world around us," he concludes.

Peter Hirshberg

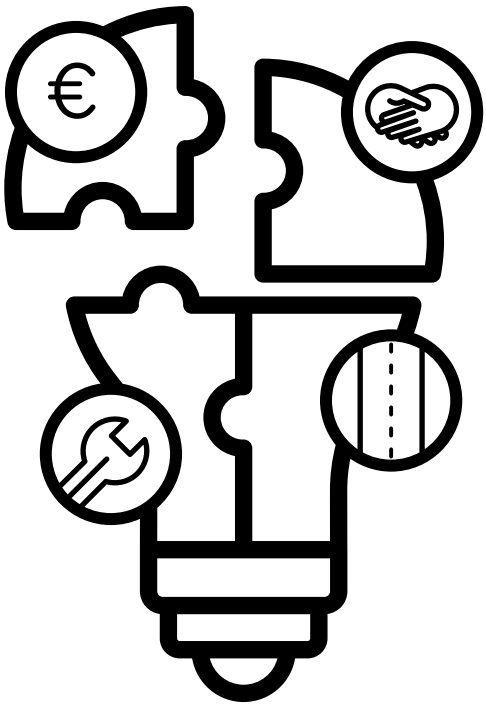
Preparing for the future from the cities

According to Peter, the city is the place where we need to prepare for the future.

10:17min

Drones

1.6.



"Our latest predictions estimate that seven million drones could be sold in the United States by 2020. That's more than twice the population of Nevada," Michael Huerta, Administrator of the Federal Aviation Administration of the United States, announced during the Consumer Electronics Show (CES) in January 2017. He refers only to retail sales for private use.

These small unmanned aerial vehicles (UAV) are here to stay, not only in the homes of a handful of enthusiasts, but in a huge range of industries, from the agriculture and cattle industry, to mining and entertainment and recreational purposes, to assistance in emergencies and rescue operations, freight and product transport, military and defense uses, etc. Drones can watch crops, run races, take survival kits to the wounded, deliver parcels and detect land-mines.

Needless to say, a myriad of new business models and business opportunities are opening up. Some companies are already counting their riches, others are trying new experiments. Amazon is one of them: they have conducted pilot testing for the drone-based delivery system Prime Air. Multinational retailer Walmart has requested permission from the FAA to do the same. They weren't the first ones to do so—before Amazon, Domino' Pizza had already carried out their first drone-delivery in New Zealand—and they won't be the last.

According to the report *The Drone Delivery Report: Opportunities and challenges for retailers at the frontier of delivery* by *Business Insider* (2017), there is a future for drone-based delivery and logistics companies, but it won't be immediate. "It won't happen until 2020 at least, due to regulatory barriers, technical concerns and consumer acceptance", it reports. The document compiles some of the advantages and disadvantages of drone-based delivery. The main advantage would obviously be a quicker and more reliable delivery. Among the disadvantages, we find job loss among delivery people and privacy issues, since drones would probably use GPS and cameras to find the homes where they have to deliver the parcels.

Apart from these problems, regulatory challenges and technical obstacles, there's another element to add to the list of concerns surrounding UAV: the controversy around their military use. It could become a low-cost, effective bombing machine, which could be automatized to reduce the need for human troops as much as possible. If combined with other technologies such as artificial intelligence, it could be especially dangerous. So much so that a growing list of more than 110 experts —Elon Musk is one of them—from 26 countries—Spain among them—have addressed an open letter to the United Nations to "entreat them to work hard at finding means to prevent an arms race in these weapons, to protect civilians from their misuse, and to avoid the destabilizing effects of these technologies."

Rebecca Lawson
Vicepresident of Marketing
in GE Digital.

Business models

2.0.

Introduction

Rebecca Lawson

Rebecca Lawson is vice president of product marketing for GE Digital. Her recent focus is on the Industrial Internet of things (IoT) and cyber security, with focus on emerging technology strategy, product marketing, new market development, and communications. Rebecca's expertise is in bringing new technologies to market has centered around platform and software as a service, analytics, cloud technologies, information security, industrial control system security (OT cyber security), industrial and service automation.

A business model describes the rationale of how an organization creates, delivers, and captures value, in economic, social, cultural or other contexts.

At its core, a business model describes how an organization makes money. It's an explanation of how value is delivered to customers at an appropriate cost, and in a way that is sustainable in the context of the provider's product or service offered.

What we're seeing today is how business models, and the traditional players in various business models, are being disrupted by innovative technologies. More specifically, the disruption is associated with the velocity of new and innovative technologies coming on to the scene. It's only natural that as innovations (such as artificial intelligence, peer-to-peer technologies, cryptocurrencies to name a few) surface and garner our attention, there's a sense of excitement but also a reticence to rapid change, especially as new models can so quickly permeate through the culture in our "always on" connected world.

What are the best models? Will they be shaped from the application of artificial intelligence applied to product development, service delivery, or new social networks that allow the rapid dissemination of social influence?

The very nature of "value" is now in question. Business models will always form around value translation. New paradigms, such as the platform economy, digital twins, superfluid markets will certainly have a role, as will many other innovations.

Transformation of business models is already here, already around us. As our team of experts conclude, there is no turning back: scientific breakthroughs lead to new technologies, which are entering the business streams faster than ever before. The strong business models will survive, while new business models are flourishing all around use.

Chris Meyer
CEO of Nerve LLC.

+INFO

As we mentioned in the previous chapter, the aforementioned technologies have given rise to new business models that are "transforming the economy, our expectations and our behavior," according to **Chris Meyer**, CEO of innovation consulting firm Nerve and trustee of Bankinter Innovation Foundation. He thinks this follows a distinct process, a structure that has existed in every technological wave in history, which goes as follows: 1) A scientific breakthrough, 2) gets turned into a new technology, 3) reaches the business sector, 4) and changes the organization.

It's a process that stems from the widespread use of Information and Communications Technology (ICT), big data and the aforementioned new technologies and advances. "All businesses are going digital—forsaking the industrial curve—and many of the newly-created business are digital from the start," he says. "For entrepreneurs, inventing new kinds of digital business is an invaluable source of opportunities," he continues.

Why do we call them disruptive businesses? Because, according to the definition by the Foundation of Urgent Spanish BBVA which we quoted in the introduction, they often generate a "process or a way of doing things which ousts and displaces those that were used before." The innovation that drives this process can come in different forms. "In his book '*The ten types of innovation*', our Future Trends Forum expert Larry Keely pointed out how we usually think of innovation as a new product. A new smartphone, for instance," Meyer notes.

Keely breaks innovation down into two categories: the first one is linked to the performance of a product (an iPhone, for example); the second one, to its by-products (in this case, the streaming and content-selling platform iTunes). He also adds another large category which includes several types of innovation: changes in the organization, in the way you envision your business. "Your processes, your profitability model, your network, the structure of it all: these are innovations as well. So are customer service, the channel, the brand, customer retention strategies..." Meyer lists. He mentions Quirky as an illustration of a new revenue model, a platform that pays royalties to those inventors who contribute new ideas to the market, or to those who help finalize others' ideas.

Keely's model also highlights the fact that truly successful businesses work on several forms of innovation at the same time. Amazon is a good example. Unlike any other retailer before them, their stock is enormous (from very profitable to very slow-moving products, meaning they can cater to a wide range of consumption needs, instead of specializing in just one area). Their warehouses are thoroughly equipped with information technologies which pinpoint the exact location of each product and optimize its search and shipping. They also offer added value in the form of services and products like Amazon Prime (one-day delivery and streaming content) and Amazon Echo (voice-controlled remote speakers)," Chris Meyer, trustee of Bankinter Innovation Foundation, explains. They have also innovated in the channel, interaction with the customer and their participation and in most links of the chain.

Innovations in business models are another aspect of this. Meyer underlines innovations based on crowdsourcing, including the crowdfunding (collective micro-funding) model that companies like Kickstarter use, and the popularization of R+D corporate processes, like the one implemented by Goldcorp. This longstanding gold production company published all their geological data on-

Chris Meyer

Disruptives Business Models

Chris Meyer, CEO of Nerve and Trustee of the Bankinter Innovation Foundation gives a speech about innovation and new business models.

8:14min

Larry Keeley

President and Cofounder of Doblin Group.

+INFO

line and offered a reward to those who came up with the best algorithm to find gold using this data.

Applying crowdsourcing to the channel has been Waze's chosen way of innovating. This traffic and navigation app relies on information shared by the drivers themselves. Regarding branding and customer participation, Meyer brings up Miller, the brewing company, which gained a high profile when they asked people for ideas for their Super Bowl ad.

These are just a few examples of recent innovations and the disruptive business models they bring along. Given their relevance and impact, we will sort them out into four categories to be analyzed in detail:

- By-products of companies' digital transformation.
- The platform economy.
- The decentralized model.
- The pop-up economy and the superfluid markets.

Corporate digitization. The case of GE

2.1.

Digital transformation is a major topic nowadays. Given that it encompasses a huge range of issues, which are not the subject of this publication, we will only focus on one aspect of it: the opportunity it provides to innovate and introduce new business models in corporations. If digital disruption can be viewed as a wave sweeping over industries, most are in the crest of that wave, or soon will be, according to a paper by Harvard Business Review Analytic Services called '*Competing in 2020: Winners and Losers in the Digital Economy*'. Out of 783 survey respondents, 80% believed that their industry would be disrupted by digital innovations before 2020.

"However, just which businesses will be the winners and losers in this digital economy is still being determined. Companies that form their strategies now, shift resources to new digital initiatives, and redesign their organization and culture will have a distinct advantage. Digital transformation is real and widespread, and while not all organizations are ready for it, surprisingly most business leaders see this as an opportunity rather than a threat," the report says.

According to data provided by **Rebecca Lawson**, VP Product Marketing in GE Digital, that's the way General Electric (GE), a multinational with 500 factories and thousands of employees around the world and 130 billion dollars in revenue, sees it. "We build big industrial products, and most of our revenue (around 60%) comes from servicing those large pieces of equipment in markets like energy, oil and gas or healthcare," Lawson reports. She's been in the technology industry for 30 years and she never expected to join an industrial company like GE, one of the many multinationals that have fully grasped the meaning of the phrase "evolve or die" in the digital era.

GE had a very strong motivation: their growth had come to a standstill over the past few years. A productivity growth between 1% and 4% was insufficient to keep the Wall Street guys happy, so they were forced to evolve the base of their business. They began exploring ways of transforming an industrial company—which builds and services large, expensive equipment which, for example, provides our homes with light—into a digital company.

GE's strategy was to compete with the rules of a new, more aggressive business ecosystem by developing their own technology. "We started to wonder what a digital company is and how to become one. We knew we could extract a lot more data, and by extracting data from these machines and using them, we could make them more efficient, increase their lifetime value and reduce

Rebecca Lawson

Digitization in big companies

Rebeca Lawson analyzes how they increase productivity in their company thanks to the exploitation of the data and through artificial intelligence. Also, through the digitization of their machines, they can find out how to give them better use and increase its useful life.

10:52min

the maintenance costs," Lawson explains. So they began adopting and developing technologies that combined the idea of material science with analytics and economics to figure out how to transform their business model.

GE works under the following premise: a large machine, just like a human being, has a past, a present and a future. They seek to understand the history of every machine with artificial intelligence tools. These machines learn by and from themselves, with mobile, connected pieces of equipment which are "alive" and which can contribute to the transformation of the business model. In a nutshell: physical and digital elements become intertwined. GE has also developed the idea of "digital twins": digitized versions of each individual engine, configured to enhance themselves with data and interact with one another.

As a result, their business model has undergone a huge shift. From a products and services company, GE became an outcome-based company. As they have a lot of control and insight into the whole of the physical jet engine, they can better account for and predict what the outcome will be for the customer, thus providing the customer with the service they're actually paying for. For that same purpose, they employ a historical data analysis system in their production process across all different silos (supply chain, customer service...) which provides a comprehensive view of the internal process. Each person in their role (a salesperson, for example) has access to all of the data and can look at it in context. Interaction with customers is the focal point: they analyze which data the salesperson and the customer will need, they integrate their own systems and devise their own applications.

In spite of all these efforts, GE knows they cannot rest on their laurels. They are aware that anyone can be crushed by the disruption, the chaos and the new startups, so they will stay ahead of the game and not wait around for someone else to get there first. Change can be a long process, but it's essential. It's the only way to go from being a fossil to being a digital company.

"If this is all so clear, how do you explain the fact that financial markets have not yet bought into this? When will they?" **Philip Lader**—Senior Advisor for Morgan Stanley and trustee of the Bankinter Innovation Foundation—asks. Lawson replies: "We've been under the constraints of the financial markets, meaning quarter by quarter we're supposed to hit certain numbers. Our CEO has been criticized for not pushing the numbers further, but, quite frankly, our leadership team is playing the long game, and Wall Street doesn't necessarily appreciate that."

This technology expert considers that GE is creating a new reality in the industry that won't necessarily pay off in the next four months. "That's a problem. We might get heavily punished by an impatient financial market. This impatience works against us, and that's one of the main drawbacks of being a big company," she concludes.

The platform economy

2.2.

Platform, P2P, on-demand, access, sharing, gig economy... All these terms are often thought of as synonyms, but they are actually quite different. They are new platform-based or app-based on-demand business models which usually digitize an activity, for-profit or not, that was formerly conducted in an analog form. They remove the middleman from the equation: the company that used to play this role is now replaced by a platform that matches the user with whoever is providing the service or selling the product.

In what ways do they differ from one another? The Spanish Digital Economy Association (Adigital) defines the sharing economy as: "a series of production, consumption or funding models based on the interaction between supply and demand—be it peer-to-peer, business-to-business or individual-to-business—through digital platforms that don't provide the core service themselves" in their report '*The sharing on-demand models in digital platforms*', drafted jointly with the Sharing España association.

Philip Lader
Senior Asesor at Morgan Stanley.

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According to the report, due to its very nature, the sharing economy "fosters an efficient, sustainable use of existing, untapped goods and resources, and enables users to utilize, share, exchange or invest in resources and goods, with or without remuneration." Some successful, well-known examples are Airbnb (accommodation between private individuals) and BlaBlaCar (private ride sharing or carpooling), but there are many more platforms of all kinds across many different sectors.

Adigital points out that the difference between the sharing economy and the on-demand economy lies in the fact that the latter "entails a commercial relation between the users" and "it's a for-profit activity performed in exchange for remuneration". Deliveroo (takeout delivery) or TaskRabbit and the Spanish platform Etece (micro-tasks like cleaning or plumbing services) are perfect examples of the on-demand model.

The access economy, on the other hand, consists of "a company which makes a series of goods available to the users on a temporary basis and for commercial purposes." It encourages access over ownership, and in this case the digital platform does provide the core service, according to the report. Some examples are car sharing (car fleets for shared used, such as Car2go) or coworking spaces (shared working environments).

The gig economy cuts across the first two models (sharing economy and on-demand economy). It offers temporary jobs to people who work as independent contractors. Some examples are the aforementioned Deliveroo and TaskRabbit or Uber (private-hire cars with a driver, which operates under the sharing model in the U.S. and the on-demand model in Europe) and others such as Spanish platform Glovo (peer-to-peer errand-running).

In some platforms, different activities coexist, often in an improper way. With Airbnb, for instance, apart from private individuals who share their homes, we can also find real estate agencies renting out their property. Therefore, as much as we like to focus on the platforms, the defining factor is actually the core activity.

These new models have given rise to tech unicorns and they have disrupted sectors like transport or accommodation, causing alarm bells to start ringing in established companies—be they hotels, taxi companies or transport companies. These large players have started to put untapped individual assets to use in an efficient way, trying to innovate by capitalizing on their unused or excess capacity, as Chris Meyer explains.

However, **Lisa Gansky** believes that these models' main contribution—especially in the case of the sharing economy—is not only related to business models, but also to a company's ethos (their behavior). "The business models are evolving from something like a massive hotel that has around 700 rooms and a 10 billion dollar market capitalization after five years of business to Airbnb, which has four million rooms and a 35 billion dollar market capitalization after eight years. Really, the most interesting part is what it entails: this activity generates a kind of biological network comprised of self-organizing networks. This very powerful concept has already poured itself in business models and value captured," writer, entrepreneur and sharing economy expert Lisa Gansky states.

Somehow, tradition has shifted from us buying a fish, to being taught how to fish and respond to opportunities. The relative value of properties and the ways in which we put assets to use, including the time factor, have become more important and more visible. We're getting a glimpse of a very efficient ownership model, capitalizing on the performance of goods, based on enjoying things rather than owning them and having access to talent, services and goods. This is the point highlighted by Ganksy, founder of Mesh Ventures, a firm that focuses on the intersection of business and urban innovation and the sharing economy.

Lisa Gansky y Vincent Rosso

The trajectory of Sharing Economy

Lisa and Vincent talk about Sharing Economy and its trajectory. They claim that we have gone from ownership to access to talent, goods and services.

17:08min

Lisa Gansky
Founder of
Instigating+Co.

+INFO

Vincent Rosso
Cofounder of
BlaBlaCar España.

+INFO

This is a more human economy, shall we say, which encourages mutual relationships. Gansky mentions BlaBlaCar as an example. This platform allows users not only to share the expenses of a car ride and capitalize on empty seats, but also to meet new people. It stemmed from a real need: to reach locations that transport systems didn't cover, and to share expenses. The platform enables these people to find one another and talk, and there are already 45 million users around the globe, according to official data provided by **Vincent Rosso,** co-founder of BlaBlaCar Spain and founder of Seedpot Capital.

Rosso admits that one of the main challenges they faced when creating the platform in 2006 was to gain people's trust. After all, this is only a digital version of an activity that we've always called "hitchhiking", a venture reserved for the reckless. Technology proved to be of great help in creating a system which reliably matches supply and demand. The solution was to implement a rating system in which users—both drivers and passengers—receive public reviews, have access to relevant information and can choose who they travel with.

In short, we're talking about new combined ways to create value and to self-organize. "Technology provides access to goods and services, and reliability systems help shape it", **Javier Creus** adds. The sharing economy expert and founder of Ideas For Change thinks that perhaps we should expand our definition of "value"; that humanity as a whole should focus on the impact, by introducing new agents and new ways of measuring it.

"Technology provides access to goods and services, and reliability systems help shape it"

The decentralized model

2.3.

One of the main niches of the PSP model is crowdfunding: peer-to-peer financial contributions. There are several types: donations, rewards (the recipient decides on a reward for the person paying), equity crowdfunding (investment) or crowdlending (loans). These models are part of the fintech revolution threatening the banking sector. They eliminate the middleman and decentralize the process, so no financial entity is needed (although you do need a platform).

What innovations will they bring about for business models, beyond the obvious? According to the FTF experts, there are three types of disruption. First of all, network disruption, as crowdfunding redefines connections. Secondly, product disruption: having people involved in the process makes it easier to identify strong and weak spots and then fix them. Thirdly, customer participation and retention disruption, because you're no longer just selling something to people, you're interacting with them.

But in the context of *fintech* and decentralization, the real disruption will come from blockchain (we discussed this technology in the previous chapter). At least, that's what almost all experts are saying, with a few exceptions. Among all the innovations for business models brought about by this technology, Eyal Hertzdog highlights the sale of digital tokens, an investment-related innovation that he considers to be greatly disruptive. It entails initial coin offerings (ICO) that can be exchanged for products and services in the future, or act as company shares. It allows early-stage companies to acquire public capital, thus making early-stage investment available to

Javier Creus
Founder of Ideas for Change.

+INFO

Trebor Scholz
Professor at The New School in New York City.

+INFO

all (same as equity crowdfunding does) and giving people the chance to be a part of the projects they believe in.

Big banking institutions have been exploring and investing in this technology for years now ("if you can't beat them, join them"). BBVA is a member of the international blockchain research consortium R3, along with many other financial and technology multinationals such as ING, HSBC, Barclays, Wells Fargo or Intel. In 2017 in Spain, the Alastria network was born: a multisector consortium which encompasses around twenty companies, some of which are BBVA, Banco Santander, Bankia, Cepsa, Iberdrola, Banco Sabadell, Correos, Endesa, Everis, Garrigues, Gas Natural Fenosa, Grant Thornton, and Comillas ICADE.

Among other projects, Alastria is working on a digital identity system for people and businesses which they intend to have up and running in just a few months. After all, digital identity is one of the applications of blockchain that has drawn the most attention from private and government projects. Estonia intends to be the first country in the world to issue its own cryptocurrency tokens and ICO. Kaspar Korjus, director of Estonia's e-Residency Program, wrote in his blog that creating "estocoins" could hugely benefit Estonia and its international e-residents (people with a digital identity document approved by the country, who can use its digital services from anywhere in the world).

In Switzerland, a pilot project has been implemented for the creation of a blockchain-based sole digital identity. It would enable all kinds of secure interactions and transactions, including electronic voting. The Swiss government has announced its intention to hold the first electronic elections in 2018.

For **Trebor Scholz**, academic activist and Professor of Culture & Media in The New School (New York), this is an "extremely brilliant idea that could change the Internet and society forever." He wonders what the latter's role will be in the dissemination of global digital identities. Greg Kidd provides a possible solution: establishing technical standards, as was done in many other fields (for instance, the DNS, "Domain Name System"; a domain naming system on the Internet and in other networks). He suggests that identity could be another one of these fields, and that a strong stakeholder or a country introduces it, taking all other stakeholders into account.

As an example, Greg Kidd, a digital identity expert, mentions Aadhaar: India's national biometric identification system, the largest in the world. It doesn't have to be the only standard, but Kidd suggests it could complement a global ID system which would allow access to sites all over the world without having to use a username and password or provide any additional data.

Nevertheless, as we mentioned in the previous chapter, when it comes to cryptocurrency technology, all that glitters is not gold. Apart from the issues with access to blockchain mining—and other technologies, such as Ethereum—, its level of decentralization and the fact that, although safe, it's not impregnable (it can be attacked), people are questioning if decentralization is desirable, or if it always is. "If we leave things to work by themselves, without a central authority to control free will, how can we prevent inefficiency?" skeptics ask.

The answer to this is another question: should efficiency or effectiveness be the top priority? "25 years ago, Craigslist disrupted the newspaper industry by taking over classified ads. But then they got disrupted by Airbnb, which offers users an effective way to find short-term rentals, and on top of that, the possibility to check the reputation of both the owner and the tenant, and an integrated payment platform which makes the transaction safer. It might not be as efficient as Craigslist, but it's effective, and it generates a successful market place where the whole transaction can take place," Greg Kidd argues.

The closing thought is that the truly important part of this, the core of it, is that the definition of value in the economy is being brought into question, and it now goes beyond GDP. These are value-creation models for people and organizations which accurately reflect and fuel a healthy society and mutual trust. Or maybe a disruption of what value means.

George Overholser
CEO y Cofounder of Third Sector Capital Partners.

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The pop-up economy and superfluid markets

2.4.

Founding a startup in just one day, setting up a temporary, "take-away" shop (pop-up), running tests and analysis in real time... All of these actions are faster, cheaper and incredibly easier than they were a decade ago. "The world is experiencing a turning point. The new technologies are creating superfluid markets and transforming—disrupting—companies as we know them," **Andrea Potter,** director of the EY think tank, believes. They flow without encountering resistance or friction.

In the pre-Internet world, the main aim of a company was to have access to and participate in the markets. They were efficient, multidisciplinary organizational structures designed to reduce inherent frictions. The Internet and e-commerce changed everything. The Internet democratized access to information, narrowing the information gap that used to exist between sellers and buyers. Intermediaries were eliminated and replaced by a new digital intermediaries where transactions are faster and easier. Now, new technologies are converging to reduce, or even eradicate, markets' inefficiencies and frictions even further.

"The world is experiencing a turning point. The new technologies are creating superfluid markets and transforming—disrupting—companies as we know them"

George Overholser's experience is proof of this. He's an investor, entrepreneur and the co-founder of non-profit investment fund Capital Partners. He's very aware of all this due to—among other reasons—his involvement in two mass customization companies, Capital One and Vistaprint, which started from scratch and became billion-dollar companies. "Both took a great deal of time and capital to create and consolidate, but now it's increasingly faster and easier to try out an idea and found a company. We can do in days what used to take years," he asserts.

There has also been a dramatic decrease in the need for recruitment. "When you want to check what works better on a website or extract statistics, you don't need a team of engineers anymore. You can just a tool like Unbounce, which makes the changes, analyzes them in real time and gives you a view of conversion rates, and all kinds of data. This all takes 15 minutes: the time it takes to sign up," Oversholser states.

Another example of technological intelligence is Anodot, an AI-based, big data, real-time analysis company co-founded by **David Drai,** who is also the CEO. Anodot extracts exceptions from data. It detects anomalies and turns these abnormal values in chronological series of data into business ideas. Customers like Eugene Kandel claim that it can predict any disruption that might affect a business, now or in two years' time.

"Once you start using these technologies, there's no turning back. People shouldn't fear them, they should pay attention to them and use them carefully," Drai believes. This AI expert puts emphasis on advances that wouldn't have been possible without them, such as self-driving cars, car-accident prevention apps or accurate company rating systems which use intelligent algorithms to remove emotional bias from the calculation.

David Drai
CEO and Cofounder of Anodot.

+INFO

Another element of AI that fuels the superfluid markets are machines that can create other machines, with all the repercussions that it entails for manufacturing optimization. Drai mentions Elon Musk as an example. Musk has designed a production system with no human involvement whatsoever to manufacture Tesla Model 3. According to Drai, it was implemented because the model's number of requests exceeded what humans could produce in the given time. And he proved it could be done.

These are examples of the interoperability between the links of the value chain which makes innovation in businesses easier. Companies can now try out their ideas, explore new models and all potential solutions, no matter how crazy they may be.

How can all of this be explained? There are several factors involved in the process. First of all, transaction costs drop because of the network's coordination skills. If you want to go out to eat, you just look a restaurant up in Yelp, and you can ask it directly with your own voice. It's so much easier than it used to be. We also have blockchain technology which makes the negotiation and contract-signing phase much more agile and effortless. We could mention decentralized institutions as well or, logistics-wise, drones that take care of shipping, or bots who handle customer service. A myriad of applications are making the process much more effective.

This also means that obtaining the information you need and making decisions is easier than ever. When artificial intelligence is making the decisions, the process becomes automatized. Potter predicts that a time will come when everything will be connected to everyone. Machines will autonomously carry out transactions with other machines or with people, automatically requesting services, activating restocking or bidding for energy. Supply will better meet demand. Everything will be provided as a service, including robotics and manufacturing equipment, and surplus capacity will disappear.

Transformation is already here, and it is as immense as markets can be. How to react? Potter recommends:

- **Constantly reassessing** which activities must remain within the company and which ones should be outsourced.
- **Prioritizing innovation and creativity:** "Unique products and tailor-made experiences will be the X-factor, the only thing that matters."
- **Changing the management style:** take managers out of operations so that they can focus on strategy and on ways to navigate uncertainty instead.
- **Becoming a dynamic learning community** so as to attract and retain the best talent, and building network partnerships with companies which can nurture this community in the most suitable way.

George Overholser

It is getting faster and easier to try an idea

George, based on his own experience, concludes that at present the time, money and talent to create a company has been drastically reduced thanks to technology.

9:09min

"Once you start using these technologies, there's no turning back. People shouldn't fear them, they should pay attention to them and use them carefully"

Impact and implications

3.0.

Introduction

Esko Kilpi

Esko Kilpi is the founder of Esko Kilpi Company, a group that consists of researchers and strategists laying the intellectual foundations for Post-Industrial Work. Esko's research interests have lately been with post-blockchain smart contracts, networked value creation architectures and social complexity. He is frequently invited as a keynote speaker in management and technology conferences globally. As an international speaker, author and adviser he works with both public sector organizations and leading multinational companies. He has been a member of the advisory board of the World Bank on Knowledge Management. Currently he serves as an advisory board member for a select group of high tech start-ups. Esko Kilpi is a founding member of the Entovation Group. Esko is a Taos Institute Associate, Intentac fellow and a faculty member at the Adianta School for Leadership and Innovation in New Delhi.

Gregory Bateson wrote that the major problems in the world are the result of the difference between how nature works and how people think. Mainstream economics still sees the economy and society as ultimately predictable and controllable rational processes, although the repeated crises have shown how deeply flawed this view of the world is.

Today, more and more scholars see organizations as being analogous to complex networks. There, it is not about predictions and controlled outcomes, but about uncertainty, perpetual co-creation and fundamental interdependence. Their claim is that we should study links and interactions. Many aspects of our social and economic world would start to look completely different from this complex network perspective.

Knowledge work is understood as creative work we do in interaction. Unlike the repetitive business processes we know so well, where inputs are acted on in some predictable, structured way and converted into outputs, the inputs and outputs of knowledge work are problem definitions and exploration for solutions. Even more, there are no predetermined task sequences that, if executed, would guarantee success.

Knowledge work is characterized by variety and exception rather than predictability and routine.

It is thus impossible to separate a knowledge process from its outcomes. Knowledge work is about human beings being more intensely present for each other. Thus, a post-industrial business today needs to be human-centric by definition. But people still tend to see their work and personal lives as two separate spheres.

Although this conflict is widely recognized, it is seen as an individual challenge, a private responsibility to manage. It is now time to challenge this and see the conflict as a systemic problem. It is a result of the factory logic, which saw human beings as resources and interchangeable parts of the main thing, the production machinery. The employee gave her time and skills for the employer for certain duration in exchange for money. The context and logic of work are dramatically different today. In knowledge work we need to create an explicit, new connection between work and personal life. We talked earlier about balancing work and life. Here we are talking about connecting work and life in a new way, with a new agenda. Human beings in interaction are the main things, not the processes of production.

Traditional management thinking sets employee goals and business goals against each other. The manager is free to choose the goals, but the employee is only free to follow or not to follow the given goals. This is why employee advocates mainly want responsible employers, nothing else, and the employers want committed employees who come to work with enthusiasm and energy.

Must we then choose between the goals of the people or the goals of the business, or can the two sides be connected? As we know, passion and commitment are best mobilized in response to personal aspirations, not financial rewards. The aim, however, is not to have a single set

Esko Kilpi
Director of Esko Kilpi Company.

of common goals, but complementary goals and a co-created narrative for both!

Linking personal lives with corporate issues may seem like an unexpected, or even a strange connection. But if we don't learn from psychology and cognitive neurosciences, and continue to try deal with each area separately, both individuals and organizations will suffer.

The lack of a connecting agenda may also be one of the big challenges facing the emerging post-industrial society.

We need to study the intersection of business strategy and personal narrative and use the new agenda to challenge our industrial age practices and flawed ways of thinking. Knowledge work needs whole human beings. People, who are more fully present, people with responsibility and ownership. We are accustomed to taking work home, but what would the opposite be?

We need an approach to work that appreciates whole human beings, their passions and voluntary participation. Rather than focusing on accountability, community design should concentrate on energizing, enriching participation.

The new structures of work and new designs for value creation are about communities continuously organizing themselves around shared information, shared interests and shared practices.

Post-industrial business is about doing meaningful things with meaningful people in a meaningful way.

Tyler Cowen
Professor of Economics at George Mason University.

+INFO

If we want to understand the implications and the impact of technological disruption and new business models, there's one question we cannot avoid: how is this affecting the system? "Throughout history, we've seen how disruption brings along a new equilibrium. But right now, it's bringing along a new model where equilibrium is no longer relevant. Everything moves so fast that models can't keep up. A company might be on top of the world one day and disappear the following", **Eugene Kandel** maintains.

Together with the equilibrium model, the relevance of some traditional indicators is also being challenged, according to **Esko Kilpi,** founder of Esko Kilpi Company, a team of researchers and strategists who are trying to establish the intellectual foundations of post-industrial labor. Kilpi believes that we might soon start to use a new indicator: return on networks. "Most business models nowadays are based on the idea that corporations work with their internal assets. We're talking about indicators such as return on capital, return on capital employed, return on assets... But tomorrow's business models will be based on what happens in the networks surrounding the company", he explains.

Productivity is another notion that's falling apart. At least, that's the opinion of **Tyler Cowen**, author and professor of Economics in the George Mason University (U.S.). He claims that, contrary to the general view, startups as a percentage of total business activity have been declining in the U.S. since the 80's. The same thing is happening with mobility and productivity growth rates, which—in the U.S. and many other countries—have been falling since 2004, the expert says. More data: "If you look at the inflation-adjusted average wage, it was higher in 1969 than it is now. Investment growth has been very weak as well."

Due to this, Cowen emphasizes how important it is to take the general overview into account. "It's not like these figures are the end of the world, but they do show that maybe the productivity era has come to an end," he states.

So, if we examine the different social, economic and political stakeholders more closely, and how these are affected, what will we find? Let's find out in the following sections.

Tyler Cowen

The productivity of today's economy

Tyler Cowen is based on different data and statistics to say that global economic change is slowing in almost all its forms.

7:14min

Individuals as workforce

3.1.

As we saw in the previous chapter, digital disruption is determining new winners and losers in the business sector; but not only in this context. A digital divide has broken society into two categories: those who have access to the necessary tools, training and skills to keep up with changes, or at least survive them, and those who do not.

As ICT continues to grow at a staggering speed and its costs continue to decrease, machines are taking over the workload. Wealth is increasing, whereas employment rates and income average are becoming stagnated, as Erisk Brynjolfsson—director of the MIT Initiative on the Digital Economy, researcher and professor at the MIT Sloan School—suggested back in 2011 in '*Race Against the Machine*', a book he co-wrote with Andrew McAfee. "Digital technology has changed very rapidly, but organizations and workers' skills are failing to keep up. Therefore, millions of people are lagging behind, their jobs and sources of income are being destroyed and they are left worse off than they used to be. It's the digital revolution," Brynjolfsson explains.

In this context, new ways of working are emerging and painting a new landscape. A landscape in which 20 to 30% of the working-age population in the U.S. and Eu-

rope earn part of their of income through independent work. And 15%—and growing—of the independent workforce use digital platforms to obtain revenue, according to McKinsey's report '*Independent work: Choice, necessity, and the gig economy.*' Is self-employment the future?

It might be for some people: those who have the tools they need to capitalize on the new opportunities stemming from the gig, on-demand economy. Theoretically, these jobs are characterized by freedom, flexibility and independence. But under what conditions? Uber drivers' protests and their demands to be considered employees instead of independent contractors was a much talked-about topic. In Deliveroo, as well as other take-out delivery platforms, workers are making similar demands, such as a minimum guaranteed number of work hours.

On top of all that, the boss is not a person anymore: it's an algorithm. A joint study by the New York University and the Data & Society Research Institute, published in the *International Journal of Communication* in 2017, sheds some light on the topic. After nine months of analyzing Uber drivers' experiences, the authors concluded that the app "leverages significant indirect control over how drivers do their jobs."

The study has a twofold conclusion. On the one hand, "the information and power asymmetries produced by the Uber application are fundamental to its ability to structure control over its workers". On the other hand, "the rhetorical invocations of digital technology and algorithms are used to structure asymmetric corporate relationships to labor, which favor the former."

Gregory Clark believes that this constitutes a return to the past, rather than a leap into the future. These new business models remind him of the pre-industrial world: lots of professionals worked independently and sold their services through markets organized by the capitalists. "Surprisingly, it seems that we're returning to old ways of life," he maintains.

In the face of these new realities, a need emerges to reconsider the social contract and even to reinvent unions, as **Greg Kidd** suggests. There is also a need to create new, intermediate figures between the employee and the independent contractor who meet the needs of both employers and employees. There are already some initiatives related to these new models, such as *Riders for rights* in Barcelona (Spain). In the next chapter, we will examine the regulators' role in this.

Albert Cañigueral
Founder of OuiShare Barcelona.

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Citizens and consumers

3.2.

How are users adapting to these new business models? "We consumers welcome anything that entails better prices, accessibility, comfort, efficiency... But we also demand social values," Amaya Apesteguía claims. She's head of Ethical & Collaborative Consumption at the Consumers and Users Organization (OCU) and Sharing Economy attaché for the European Association for the Coordination of Consumer Representation in Standardization (ANCE).

Apesteguía speaks of the general distrust towards companies, whose claims are perceived to be social marketing strategies rather than good intentions. OCU, the Complutense University of Madrid and OuiShare make ten recommendations to platforms in their study *'Collaboration or business. Collaborative consumption: from value to the user to a society of values'.* Among them:

- To have rules which are visible and easy to understand.
- To improve and clarify consumer protection
- To develop and implement adequate complaint procedures.
- To increase transparency and accountability of their economic, social and environmental impact.

Data protection and privacy is another area where insecurity is prevalent among consumers. This gave rise to initiatives like DECODE, a new project funded by the European Commission which aims at developing pragmatic alternatives to manage our information on the Internet. Its cornerstone is the development of new, blockchain-based tools for a decentralized data ecosystem owned by the citizens, thanks to which individuals

can exert more control over their data. Everyone should choose what they want to keep private or disclose for the sake of the public good.

The premise behind the project is that the main channels we use the Internet through have been monopolized by a group of big companies that don't always serve individuals and communities fairly. In turn, data that could benefit society is often locked up in silos, and individuals have limited control over them. In order to prove its usefulness on the ground, the project will implement four public pilot tests: two in Barcelona (Spain) and two in Amsterdam (the Netherlands), within the framework of a consortium made up of organizations like Eurecat, the University of Catalonia, Amsterdam's Town Council, the Nesta Foundation, the Polytechnic University of Turin (Italy) and France's CNRS.

These tools are meant to empower citizens, who are also consumers, exactly like P2P platforms, which allow users to operate without any intermediaries. This is changing the very definition of what a consumer is. On-demand platforms, including the sharing economy platforms, blur the line between consumer and provider: you can be both at the same time. A person who shares their home on a home sharing platform in exchange for payment might then be a guest at someone else's home through the same platform. You can be sharing your car one day, and riding someone else's car the next. Anyone can offer products and services.

"Our constitutional framework differentiates between the right to be an entrepreneur and an employee, but BlaBlaCar users are neither: they don't fit in the current model"

Javier Creus, founder of benchmark blog Consumocolaborativo.com, and **Albert Cañigueral,** connector for the OuiShare network, have a name for it: "the citizen producer", who obtains income from underused assets. It is not a recognized legal concept yet. "Our constitutional framework differentiates between the right to be an entrepreneur and an employee, but BlaBlaCar users are neither: they don't fit in the current model," Creus says. They are not recognized as what Creus and Cañigueral consider them to be: empowered citizens who are independent economic agents. Franchises of one, as Tim O'Reilly described them back in 2015 in his article *The rise of networked platforms for physical world services.*

Trebor Scholz thinks that a key lesson we can extract from all this is that "in a world in which 28 million Europeans have obtained revenue from these platforms

Gregory Clark

Will the information revolution produce the decentralization of the economy?

Gregory Clark wonders whether in the modern economy it will be possible to return to a more decentralized production model.

5:39min

last year (2016), and 24% of working-age Americans as well, it's increasingly important for Internet-users and workers, who are often the same people, to have a say in these environments they spend so much time in: reading, consuming content, creating content or working." Let them have an influence and governance capacities over these platforms.

Scholz believes that the only realistic way to change the situation is through ownership. This is where the budding platform cooperatives model comes in: cooperatively-owned, democratically-governed platforms. A reaction against the current control that a few large players like Google, Amazon or Facebook exert over the Internet. "That's not what the inventors of the Internet or the creator of the World Wide Web, Tim Berners-Lee, had in mind in 1989. Their original idea looked nothing like the profit concentration we see nowadays," he claims. "We don't have any say whatsoever about what happens in those platforms," he adds.

He is of the opinion that this change is due to the cooperative business models that have emerged over the past three years: around 200 companies, Scholz estimates. He describes it as a Uber owned by the workers themselves, or a stock photography site owned by hundreds of photographers. "We're seeing the emergence of a new paradigm in which the ownership of a platform can change what happens in it, and give voice to the people who take part in it," he maintains.

The notion of "community as a service" also emerges here, with platforms which enable the creation and organization of communities understood as a resource.

This model encompasses the maker movement, facilitated by the improved access to digital manufacturing technologies provided by Fab Labs in the cities. These establishments, **Peter Hirshberg** says, are public manufacturing—citizen manufacturing—areas which anyone can use, where any citizen producer can create a product for themselves or for someone else. A local manufacturing ecosystem. This idea has prompted the creation of many platforms, such as Enablingthefuture.org, a community of volunteers who help print devices, prosthesis and other 3D objects for themselves or for others.

Arantxa Balson
Chief talent and Culture office at Accor Hotels.

+INFO

Arantxa Balson
Finding disruptive leaders

Arantxa Balson highlights the need to find the right leaders to bring disruption to big companies.

9:06min

Incumbent businesses, startups and investors

3.3.

Many industries in the financial, insurance, transport, automotive, hospitality and aerospace sectors are completely surrounded by the new startups, who are threatening their businesses and speeding up an unavoidable transformation (as we saw in chapter 3 with the example of GE). But to what extent are new agents really a threat? Shouldn't established players have better defenses?

To try and find an answer to these questions, the Global Center for Digital Business Transformation at IMD and Cisco interviewed around 1000 executives from 15 different industries back in 2016. They found that, in general, executives saw a bigger threat from established firms than they did from new companies, but this difference varied substantially by industry. Sectors such as media and entertainment, consumer packaged goods, telecommunication, and retail sectors feared new agents the most. In contrast, new agents were seen as a much smaller threat for companies within the healthcare, utilities, oil and gas, and pharmaceuticals sectors, perhaps due to high entry barriers in these industries, as Michael Wade, director of the Center and professor of Innovation and Strategic Information Management at IMD, points out.

The opinion of experts like Kandel is in line with the latter's perception that the current situation still benefits large companies, which "won't stop growing and competing to grow even more." Such is the case in the hospitality industry, for example. While it's true that, in certain market segments, companies like Airbnb compete head-to-head with hotels, the hotel sector has proven to be extremely resilient in the face of this shift. According to a study on the travel and hospitality industry conducted by Deloitte, industry forecasts project continued success, estimating a 4.3 percent gain in revenues for 2017

Nonetheless, the report also points out that one of the biggest challenges hoteliers will face in 2017 is sustaining growth as online private accommodation aggregators flood the marketplace with new inventory. Some of this business may be additive, but private accommodations have altered consumer expectations on a fundamental level—by redefining what and where a hotel is.

It is therefore unsurprising that operators such as French group Accor are trying to innovate the way they provide services in the private rental sector. "We want owners to be able to offer services, to have our customers 's experience go beyond the accommodation itself, and we want the local community to be the one who does that," Arantxa Balso, HR manager at Accord, claims.

What Balson intends to do is quite similar to what Airbnb is already doing with their new "Experiences" service. This is a feature that has been introduced in some cities by the platform which, on top of sharing their homes, allows owners to suggest cultural immersion activities, which can range from a few hours to several days long. But even unicorns like Airbnb aren't safe. Disruptors can be disrupted themselves. **Greg Kidd** explains that P2P on-demand platforms are currently in trouble, especially micro-tasking platforms. "Once people found a cleaner through the platform, they didn't go through the platform to keep interacting with her; they just interacted with her directly." He believes this will involve a leap to a world in which models focus on direct interaction.

The real issue, Kidd says, is how a market organized directly between consumers and providers, with no mediation, with no central authority, is perceived. Can we imagine an Uber without Uber in the middle? Where would it lead us? "There's technology that can match us with one another, with public review systems that guarantee that the provider is trustworthy, and blockchain-based payment systems that don't need a central authority to function," the expert says.

"We want owners to be able to offer services, to have our customers 's experience go beyond the accommodation itself, and we want the local community to be the one who does that"

Uncertainty goes hand in hand with disruption, and that proves uncomfortable for investors, who are also not keen on the long-term view required for digital transformation in big companies such as GE. However, their job is now easier thanks to technology like AI, which can help them make decisions. In a highly-competitive market, where investment research departments strive to be the first to hand in their research to close transaction fees before their competitors, these tools can constitute a significant advantage.

Political actors

3.4.

Just like all other actors, politicians must—if they haven't yet—prepare for disruption by anticipating technological advances and their impact in society and face something that already exists. "The next big disruptive business model will involve better governance, better institutions, internalizing externalities in the market, and in general just better decision-making," Cowen believes.

New technologies and new models give rise to new economic opportunities and create new jobs (while destroying others), but countries will only reap their benefits if they carefully plan the social and economic changes they will bring about. Technological progress will continue to open up new markets, but they will only benefit those countries and individuals who are truly ready.

Facing the process in a rushed, ineffective way can be really damaging, so it's crucial to take all factors into account. For instance, it's essential to understand where

investments should be made, a topic that is analyzed in Accenture Strategy and Oxford Economics' paper 'Digital disruption: The growth multiplier'. The report finds that high-performing economies could realize better returns from the optimal combination of investments in digital skills, digital technologies and digital accelerators. For example, business and policy leaders may have invested heavily in digital technologies, but have neglected to prepare for the workforce of the future.

"The power to connect digital size, scale and outcome lies with businesses, industry sectors and governments. With smarter investments, digital resources, technologies and assets can have a positive influence on competitiveness and help economies and industries drive greater, more sustainable value". Building on this idea, the report suggests three key actions:

- To prioritize digital investments based on value opportunities , through an optimal combination of improvements in areas such as skills or technology.
- To compete using an industry-specific digital strategy.
- To create the right environment for digital transformation, which requires changing some of the rules.

Mariana Mazzucato, Professor in the Economics of Innovation and Public Value and Director of the Institute for Innovation and Public Purpose at University College London (UCL), has a few clarifications to add. First, it's essential for public agents to have an economic presence along the innovation chain. "In Israel, the Startup Nation program provides early-stages companies with high-risk public capital. In the U.S., DARPA invests government funds in research that's appealing for the public sector. We have nothing of the sort in countries like Spain. That's why we have so many SMEs, which is not good because small is not appealing," she points out. That's why she maintains that the idea that the State is stronger in Europe than in the U.S. is wrong.

Mazzucato considers that the government should make use of a visionary, strategic approach, allocating funds to the initiatives that have a bigger potential for impact. "Its investment should have a mission, for instance, supporting companies like Tesla which are suggesting new solutions to the clean energy challenge." This links with the notion of public innovation procurement as a tool to foster development in innovative markets in the sectors where each country can excel. The expert advocates inclusive, bi-directional growth. "The State should give and it should receive. Let it invest in R+D and receive part of the returns. Public invested money should become public expenditure in Education or Health. That would be a way to avoid austerity policies," she claims.

However, local governments and administrations should examine how to tackle the arrival of disruptive models which are unregulated, which don't fit in current rules, which compete with traditional agents who criticize their favorable position and which create friction in the market and the employment model. Striking a balance without resorting to the prohibition and prosecution of technology is a complicated process. We'll discuss this in the next chapter.

The next big disruptive business model will involve better governance, better institutions, internalizing externalities in the market, and in general just better decision-making

Peter Eckersley
Chief Computer Scientist
at Electronic Frontier
Foundation.

Five key challenges

4.0.

Introduction

Peter Eckersley

Peter Eckersley, serves as Adviser of 3Scan, as Technology Projects Director for the Electronic Frontier Foundation. He keeps his eyes peeled for technologies that, by accident or design, pose a risk to computer users' freedoms-and then looks for ways to fix them. He explains gadgets to lawyers, and lawyers to gadgets. Mr. Eckersley work at EFF has included privacy and security projects such as Panopticlick,HTTPS Everywhere, SSDI, and the SSL Observatory; and running the first controlled tests to confirm that Comcast was using forged reset packets to interfere with P2P protocols. Mr. Eckersley holds a PhD in Computer Science and Law from the University of Melbourne; his research focused on the practicality and desirability of using alternative compensation systems to legalize P2P file sharing and similar distribution tools while still paying authors and artists for their work.

Artificial intelligence and machine learning (ML) are rapidly progressing fields that will create profound economic opportunities and challenges, including both consolidation in some business areas and new business model opportunities in others. There is a small group of companies and research labs that are driving the progress in this field, and that group will be hard for new entrants to join. But there are numerous niches and opportunities for other businesses that figure out how to apply established ML techniques well in specialised problem domains.

There will also be numerous challenges in strategy, politics and policymaking around AI. The privacy and computer security issues raised by the technology, for instance, look profoud. The potential for automation of large numbers of jobs, along with associated labour displacement, look very plausible. This will be true both of "blue collar" vocations like truck drivers, as well as professions like medicine and law. If technology begins the Protestant work ethic obsolete, how should our societies respond?

Entrepreneurs and investors looking for new business model opportunities should be thinking both about the extraordinary opportunities created by AI and ML, and also about how to design businesses that are well-positioned to contibute constructive solutions to the policy questions that societies and governments will face as a result of AI.

All disruptions face obstacles, limits and challenges in their development phase. On the one hand, it is true that the potential of disruptive innovations as growth multipliers is gaining recognition. However, on the other hand, some business models are being questioned, handling the reforms necessary for their development isn't easy, and they are threatened from several fronts. Therefore, the situation calls for an in-depth analysis of the challenges that disruptive innovations entail, so that we can deal with them successfully.

The most significant challenges have come to light in the previous chapters: barriers for entry and discriminatory bias, leadership and talent attraction, regulatory barriers, security and privacy issues and vulnerabilities or the struggle to gain sufficient trust. In this chapter, we will delve into all of them.

Inequality and bias

4.1.

"There isn't a law of Economics dictating that technology must help everyone. Technological advances have been helpful for some segments of the business world, but not for other parts of the economy", Erik Brynjolfsoon claims. The cake is bigger, but not everyone gets a bigger slice. According to a 2016 report by Oxfam, the richest 1% of the world population owns more wealth than the other 99%.

Some people, on top of not becoming richer, are left with less purchasing power (work and wage cuts), poorer job quality (precarious conditions that turn employees into fake contractors) or even with no job at all. It should be pointed out, however, that this is not caused exclusively by disruption and technologization. These phenomena, combined with globalization, "have fostered prosperity all over the world, except the working class in the Western world", as Jonathan Haidt, psychologist and Professor of Ethical Leadership at New York University's, explains.

We're once again discussing the winners and losers of digitalization, and the social divide between the old and the new. "How to create a society where these two economies, which need different capital, regulation, talent and knowledge, can coexist, all while preventing the world from being split in two?," Tyler Cowen wonders.

We've already discussed some possible ways to tackle this: redistributing income (through universal basic income, for instance); redefining the social contract; promoting local manufacturing areas to foster citizen manufacturing and new skills; encouraging platform cooperatives and similar platforms that are owned by all the participants; giving legal recognition to the figure of the citizen producer, who optimizes and capitalizes on the opportunities stemming from digital platforms and the new economy to sustain him or herself; or agreeing on protection measures to safeguard the rights of independent workers in the gig economy, to keep them from becoming the digital version of the precariat.

On the other hand, the growing use of technologies such as artificial intelligence brings about—apart from automation-related job loss—biases that work against certain groups. We already brought it up in the introduction to this paper, thanks to **Peter Eckersley**. The racial discrimination cases unveiled by ProPublica that we mentioned in chapter 2 are joined by studies—such as the one published in April 2017 by the scientific journal *Science*—that bolster a self-evident truth: machine learning algorithms assimilate the human biases and prejudices present in the language of their training texts. According to the article, they "contain recoverable and accurate imprints of our historic biases."

More recently, in July 2017, Vicente Ordóñez, researcher at the University of Virginia (U.S.), issued a warning. In an article published in *Wired*, he warned us about the biased pattern he found in an image-recognition software he was creating himself. More often than not, the software associated pictures of kitchens with women, instead of men. The most notorious mistake of this sort was made by Google Photos' smart facial recognition system when it tagged computer programmer John Alcine and a friend, both African-American, as gorillas.

"How to create a society where these two economies, which need different capital, regulation, talent and knowledge, can coexist, all while preventing the world from being split in two?"

The growing use of technologies such as artificial intelligence brings about —apart from automation-related job loss —biases that work against certain groups.

Racial and gender-based discrimination (which in some cases could be extended to other features, such as age or purchasing power) is not the only problem artificial intelligence is facing. According to AI Now's report *The Social and Economic Implications of Artificial Intelligence Technologies in the Near-Term,* this technology goes hand in hand with inequality and barriers to entry for new competitors. "Developing and deploying AI systems requires significant infrastructure and data resources. This limits the opportunities for AI innovation and derived insight to those with access to such resources. It also limits competition if costs are prohibitive for new entrants", the document says.

The report suggests a few measures that could be taken: for instance, diversifying and broadening access to the resources necessary for AI development and deployment, such as datasets, computing resources, education, and training, and focusing especially for populations that currently lack such access. With the aim of fighting discrimination and bias, they propose to increase efforts to improve diversity among AI developers and researchers, and to broaden and incorporate the full range of perspectives, contexts, and disciplinary backgrounds into the development of AI systems. In this regard, **Lisa Gansky** mentions Melinda Gates' statements during a conference. She claimed that the AI and computer programming sector is a "sea of dudes". This is a problem we need to tackle if we want a diverse environment for creating AI and tech tools and everything we are all're going to use.

Another relevant contribution comes from Sandra Watcher, lawyer and Researcher in Data Ethics and Algorithms at the Oxford Internet Institute and the Alan Turing Institute. She suggests that we hold artificial intelligence accountable and that we force it to explain itself. It should be something that can be audited, is highly transparent and we should never let it make the final decision. **Peter Eckersley** agrees. He thinks "we have the chance to think where we want to be living in 10 years' time. We have the opportunity to establish principles for the development of AI and our relationship with algorithms, and to determine in which cases a human should decide instead of them."

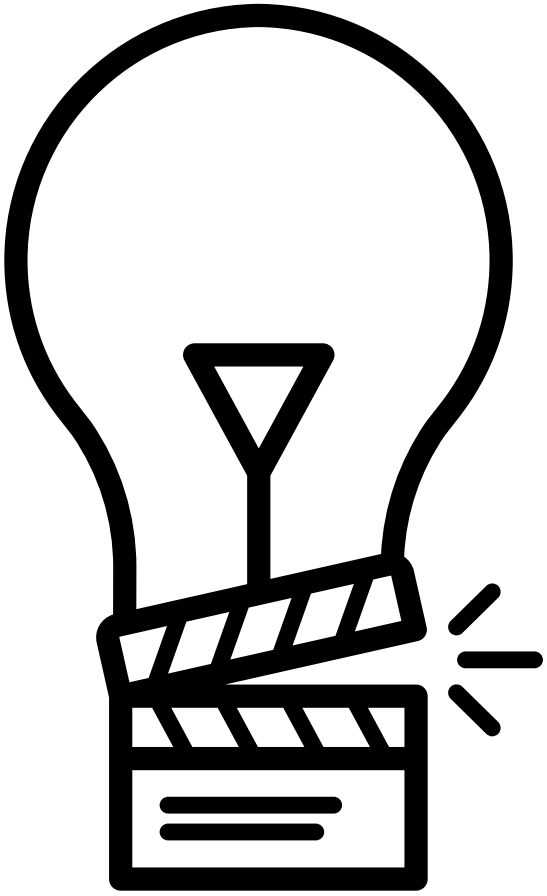
Leadership and talent

4.2.

What does it mean to be an effective leader in an environment marked by a growing digital and technological disruption? A study by the DBT Center at IMD and the Human Resources consulting firm metaBeratung seeks an answer to that question. The analysis identifies four key competencies of leaders who thrive in these environments, "agile leaders" as they call them. They are humble: they are able to accept feedback and acknowledge those around them as experts. They are adaptable: they accept that change is constant. They are visionary: they have a clear sense of long-term direction, even in the face of short-term uncertainty. And they are engaged: they have a willingness to listen, interact, and communicate with internal and external stakeholders combined with a strong sense of interest and curiosity in emerging trends.

IMD also highlights some key behaviors these leaders exhibit, such as hyperawareness (they are cons-

"We have the chance to think where we want to be living in 10 years' time. We have the opportunity to establish principles for the development of AI and our relationship with algorithms, and to determine in which cases a human should decide instead of them"



tantly scanning internal and external environments for opportunities and threats), informed decision-making and fast execution, often valuing speed over perfection. **Arantxa Balson** stands out, though, with her vision of a more disruptive leadership profile "that a headhunter is never going to find." People who are not worried about frameworks or rules, who are truly connected with life, who dream big for themselves and society, who learn from the future and not the past, who are not obsessed with customers, because they are the customer and they enjoy what they do.

Balson also admits that these profiles—she brings up Elon Musk as an example—make the lives of other people in the organization extremely uncomfortable. "They are difficult to deal with, but they make us learn. That's important because they are pushing us out of our comfort zone." They can structure, but in a way that is different from what corporations are used to. They are patient and care about the people around them, about society, about the planet... That's why they're successful. And on top of that, they're able to find balance in their lives.

Accor's HR manager highlights all these qualities, and explains that people like this are hard to find. Even when you find them, it's hard to engage them and keep them with you, because "they don't care about what you offer them, they don't care about contracts, they just want to create value and share it. They want to be free, and it's hard to keep them by your side," she says.

Peter Hirschberg thinks that the search for one's own path lies at the heart of the rural exodus. "We're moving to the cities because we need to surround ourselves with people with whom we can share ideas and creativity. That's why innovation districts are undergoing such an intense development. People go to the cities because you earn more there, and that's true for New York and for Kibera, the largest slum in the world." The expert explains lays down how the creation of the Internet brought about the growth of cities, and how this process is only going to speed up.

Hirschberg believes that the next big business model disruption will disrupt our assumptions about human talent. Like **Tyler Cowen** in chapter 4, he maintains that productivity has dropped in the Western world in the last few years. "If we look at the things that drive talent, that allow people to do useful things, we can see that they're not inexpensive." In his opinion, the biggest disruption is that we know how to fix that. "We know how to train people so that they can do a trade in half a year. In a way, what will really make a difference is our expectations of what people can do", he concludes.

Regulation

4.3.

In section 1, we took a look at some suggestions on how to regulate artificial intelligence and prevent, or at

least correct, its bias. The voices in this section seem to agree. Differences of opinion arise when it comes to digital platforms, however. The conflict between established players and new actors is evident in the lobbying efforts to persuade the Administration.

In Europe, on June 2, 2016, the European Commission published a communication called 'A European agenda for the collaborative economy'. In it, they advocated for the elimination of any prerequisite that can constitute a barrier to entry into the market, as **Rosa Guirado** explains. This lawyer and economist is the founder of Legal Sharing, a law firm which specializes in startups and sharing economy issues.

Guirado points out that competition authorities have made similar proposals (at least, Spanish entities CNMC and ACCO). However, local governments have turned a blind eye to them. "They don't allow platforms to operate normally, and they impose regulations on them that contradict other national or European regulations," she claims. It is worth stressing that in May 2016, the CNMC won an appeal which forced Madrid's regional government to repeal a decree establishing a minimum tenancy period of five days for vacation rentals (limiting users in platforms such as Airbnb).

"I think the problem lies in the fact that some regulations are not legal. For instance, the public administration must regulate respecting European legislation, on the one hand, and Spanish legislation and the Constitution, on the other. So when they say an accommodation service is illegal because it does not comply with an illegal regulation, that's lying, in my opinion," she maintains. She demands that governments comply with existing European and Spanish legislation instead, especially competition laws.

The OCU is asking legislators and the public administration to preserve market unity and compliance with tax obligations and prevent the creation of monopolies and oligopolies; to approve clear laws stating who is responsible in cases of conflict; not to stifle consumers with too many regulations; to acknowledge "prosumers" as a new kind of economic actor and to establish simple rules to define their fiscal and administrative duties; to assess the triple impact (economic, social and environmental) that the sharing economy has on society; and to fix parameters that separate private activities from professional activities, among other things.

This last issue leads us to a point of contention: platform workers. Companies are demanding legal security through new legal concepts that enable people to work for them as independent contractors and receive benefits without having the status of employees. They are also asking for a mixed model where they would have both employees and independent workers.

Service providers, on the other hand, are demanding assurances such as a minimum guaranteed number of working hours, coverage in case of an incident, etc. They often demand to be considered employees as well. Back in October 2016, in controversial ruling of the Aslam & Farrar v. Uber case, a UK court forced Uber to grant the claimants the status of employees. Uber argues that this is just one lost case among a myriad of favorable rulings in this regard.

The line is very blurry, and the need for legal security is a pressing matter for both platforms and users. In line with that idea, Spanish public policy lab GoVup has drafted a document called *'Working in digital platforms: analysis and proposed regulations'*. In the report, they gather proposals by the European Parliament and relevant court rulings about this issue and make a few recommendations, like setting up cooperation systems between public bodies and platforms, making it easier for the latter to choose mixed labor models or establishing a minimum wage and other healthcare and social benefits.

Regarding barriers to entry and the aforementioned issue of the prosecution of technology, what we urgently need is intelligent regulations, instead of bureaucracy and hyper-regulation. To meet that need, the OCU is asking digital-platform legislators to safeguard the right to technological innovation, "even if it challenges the way business activities were traditionally conducted, especially when we take into account that new technologies can improve efficiency and be favorable to consumers." Current legislation needs to be revised, they add, to make room for technology-driven improvements.

"If we look at the things that drive talent, that allow people to do useful things, we can see that they're not inexpensive"

"We're displaying ourselves in a shop window, putting our freedom at risk and facilitating social control. We need a system which can generate a balance, and we need to discuss this now, not when disaster strikes and it's too late"

Security and privacy

4.4.

Can we really trust computers when it comes to high-risk activities such as robotic surgery or autonomous driving? Have the Internet and social media triggered conspiracy theories all over the world? How can we protect ourselves from increasingly cunning cybercriminals? These are some of the questions posed by the University of Cambridge in their report 'Spotlight on digital society', which deals with new technologies and security in a connected world.

The contradictions and dilemmas stemming from this are numerous. We consider our privacy to be a basic right. But the digital world - with geolocalization, app-addiction and the habit of sharing everything on social media - makes us wonder if this right is being eroded. And if it is, are we all responsible for letting it happen? Who is to blame? How far can data protection go?

We want security and privacy at the same time, but these two concepts are often not easily compatible. The fact that people don't generally trust modern institutions to keep our data safe only causes the problem to grow. Some recently unveiled cases have contributed to the general feeling of distrust, such as the breach on an information exchange platform used by over 3,500 judicial bodies belonging to the Spanish Ministry of Justice. On July 27, 2017, thousands of documents and lawsuits filled with sensitive information were available for everyone to see until the threat was neutralized.

Two months before that, on May 12, 2017, a cyberattack on Telefónica's internal network, as well as many other companies and organizations throughout the world, spread panic. 60,000 computers were infected in over 180 countries. The list goes on and on with more instances of leaks or illegal access to information. For example, the data breach in 1 billion Yahoo accounts, the leak of a LinkedIn database containing over 167 million alleged credentials, or the leak of 1.37 billion River City Media accounts. These are just some of the most well-known attacks.

Cyberattacks and data breaches are increasingly common and they worry government agencies, companies and citizens alike. According to the study 'Americans and Cybersecurity' by Pew Research Center, most Americans (64%) have been victims of a significant data breach, 41% have found fraudulent charges in their credit cards and 35% have been notified that the security of sensitive information has been compromised, among many other incidents.

The easier it gets to create automatic, viral cyberattack systems, the most menacing the threat becomes, **Peter Eckersley** warns. Nonetheless, he plays down the issue of companies and third parties managing our data. "Luckily, companies don't really know much about you right now, even if tons of them are using and selling your data", he claims.

Letting machines control certain tasks is another disturbing security-related idea. There's a tendency to believe they could turn against us. Or at least, that they could not work correctly, causing severe repercussions. Regarding the first concern, Eckersley doesn't think we'll see AI that can be considered an intelligent species in the next 30 years. The second scenario is more likely, though (as we've seen with the example of discriminatory bias). Humans are still needed for the process. Among other reasons, to solve errors that hadn't been taken into account when programming, as Eduardo Castelló, a researcher for the Human Dynamics Department at MIT Media Lab, says.

Nevertheless, smartphones and social media can provide digital evidence for crimes, even from unwilling witnesses who record and share the time of the events and contribute to the efforts of the criminal justice system. But how can we tell apart what is fake and what is

real? How can we verify the authenticity of digital evidence? Can a WhatsApp conversation be presented as evidence in a court of law? Many open questions, very few definitive answers.

Trust

4.4.

As we mentioned in the previous section, institutional trust has been greatly diminished over the past few years. There's also a prevalent feeling of distrust towards the media: it is undergoing a time of uncertainty and digital crisis, bolstered by the fake news phenomenon (fake news going viral). The Internet used to be completely open, with unrestricted access and use, based on the notions of community and trust. But the rapid growth of spam and censorship, the blocking of websites and automated bots have obstructed that path. "So, who or what can we trust? Which media can we use? **Lisa Gansky** wonders.

Like we saw in previous chapters, a response to this reality lies in online reputation systems. Rankings, rating systems and reviews are transforming our relationships and our consumption patterns. "We are witnessing the revolution of platforms as a social and economic agent. They act as intermediaries between different user groups, and their role is to match them. The idea of trust lies at the heart of this, it is crucial for these platforms to work", Liliana Arroyo states in an article published in El País Retina. She's a researcher and author of the study 'Confiados y confiables. La fabricación de la confianza en la era digital' ('Trusting and trustworthy. Creating trust in the digital era') published by the ESADE Institute for Social Innovation and the EY Foundation Spain.

Trust has become objective and measurable on the Internet, but this system isn't perfect. Arroyo highlights some biases, such as the validity and reliability of data, the blurry line between transparency and privacy, the reinforcement of racial or gender-based discrimination or the perversion of a system in which platforms are the ones who deem something reliable enough or not if it suits them.

There's a risk that reputation will become a dictatorship—as the ESADE study maintains—and constant rating, instead of reinforcing good practices, will end up rewarding the ability to look good in the established system. "We're displaying ourselves in a shop window, putting our freedom at risk and facilitating social control. We need a system which can generate a balance, and we need to discuss this now, not when disaster strikes and it's too late," Arroyo claims.

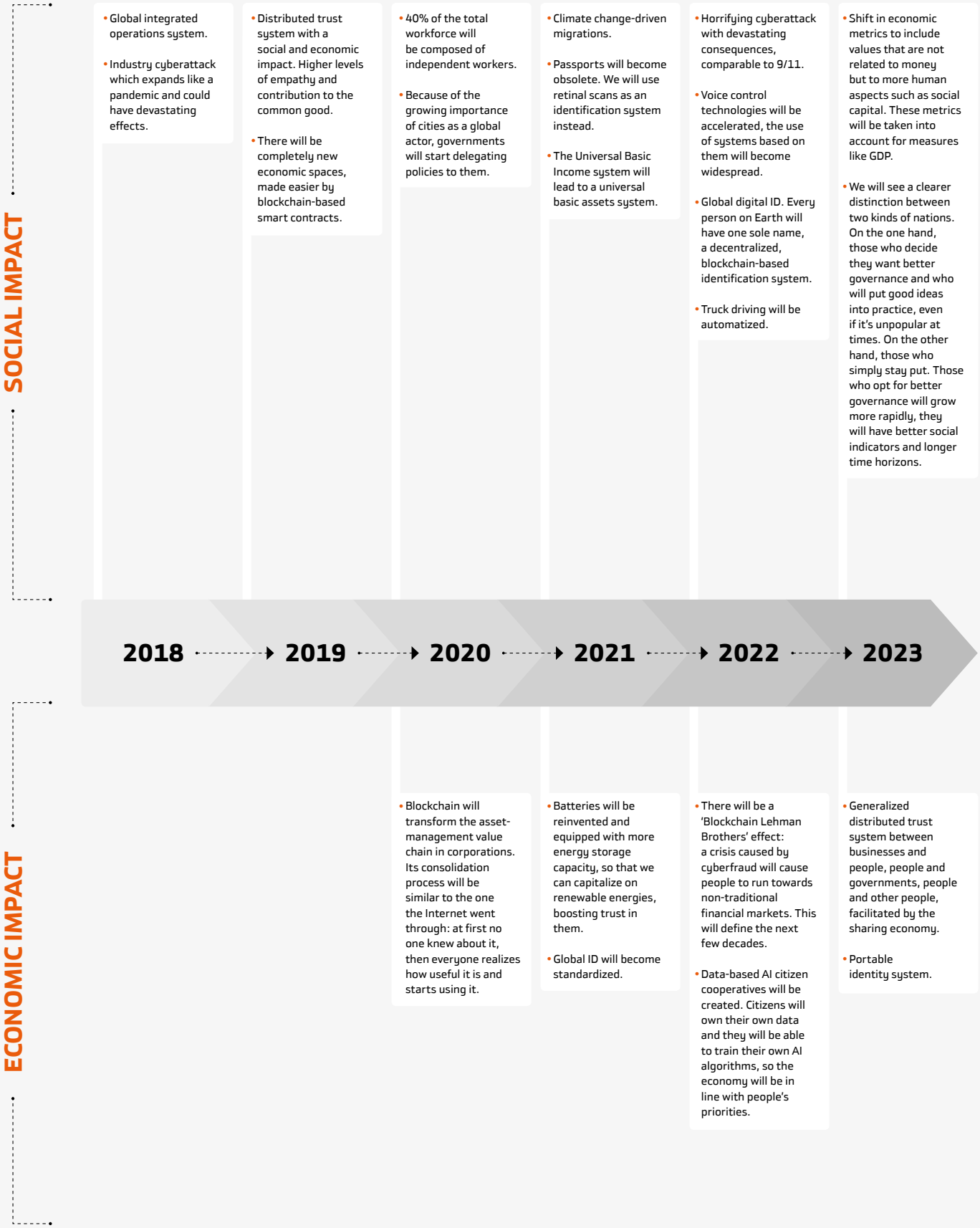
Could blockchain provide an answer to this? Gansky thinks it can: not only at a technological level, but also "as anthological version of what is possible, so as to create an organization-free system which can connect us, using parameters like reputation and facilitating transactions". Traity constitutes a model of best practices in this regard. This startup has created a reputation system based on each person's digital print. This data is stored in the blockchain database, it belongs to the user, not the platform, and he or she can take it with them wherever they go.

Rebecca Lawson thinks that distributed trust is "the Topic" with a capital T, because "when trust is distributed, the value equation integrates not only one person, but both of the people involved". In line with this, Chris Meyer believes that emerging notions like distributed trust and micro-pricing of risk are perfect examples of how the sharing, platform economy creates value. "Brand-new ways to assess risk, trust and small-scale value are emerging", Gansky adds. She believes this will bring about more democratic opportunities for value distribution: not only financial value, but also the value of protecting the commons.

"We are witnessing the revolution of platforms as a social and economic agent. They act as intermediaries between different user groups, and their role is to match them. The idea of trust lies at the heart of this, it is crucial for these platforms to work"

Future scenarios. 2018-2023

5.0.



Future scenarios. 2024-2029

5.0.

SOCIAL IMPACT

2024

- People will organize into consumer protection groups, probably of a local, sustainable, social and flexible nature.
- Pop-up business platform which can connect all links of the chain in just a few days, just like in a LEGO game where you just need to connect the pieces to start functioning.
- We'll be half humans, half machines. Smartphones will become chips that are part of our bodies. We will have to live in two realities at once: on the one hand, the network society; on the other hand, an offline society to feed the human half of our bodies and minds, based on a return to the origins of Earth.

2026

- A lifelong learning project will displace the current concept of school (a legacy of the 19th century). We'll learn useful information while we have fun, as if we have a lifetime subscription to learning.
- We'll look at the community as a service: a mixture of virtual and human entities, of people and robots, who provide services. This combination will allow many companies to expand their market and their economic behavior.

2027

- New modes of transport will include flying self-driving cars.
- Healthcare and social care won't be provided by the market or the government, but by communities. We'll have a completely decentralized medication production and distribution system, based on open-source health solutions and connected medical devices.
- The unskilled workforce will be replaced by robots.
- The P2B model (people-to-businesses) will become consolidated.
- University education will collapse. A third of all the universities will have to close their doors.
- Gender role reversal in several fields, like the professional world. Doctors and lawyers will be predominantly female, and men will shift towards other things.

2028

- A cure for the common cold will be found.

2029

- UN's Sustainable Development Goals will be updated to include a Universal Basic Income system to end poverty.
- Most value creation infrastructures are based on asymmetrical relationships. Employers and employees, managers and workers. In the future, relationships will become much more symmetrical. In a way, it will be a manifestation of a new kind of democracy. We ourselves will be responsible for our value in society and our value for other people. Work will always consist of solving others' problems.

ECONOMIC IMPACT

2024

- A DNS protocol for connected devices (Internet of Things or IoT) will be standardized.

2025

- Completely self-driving cars will become widespread. They will improve connectivity, bring about new options and change the concept of vehicle ownership. This will have a significant economic impact and it will probably cause social upheaval.
- First semi-smart, self-created and self-improved malware, based on an autonomous platform.

2026

- Tax Coordination Treaty between countries will be a prerequisite for all those that are dealing with unemployment issues and facing the challenges of the new global economy. Hiring will take place there where they have less taxes.
- We'll be talking about the "zebra economy" instead of the unicorn economy. This system will include big companies, but also platform cooperatives.

2027

- Fair payment system for roads.
- Automatic identification systems will bring about the end of disruptors, including those who are now displacing established agents.
- Access to energy will be widespread for all.

2028

- World ID system. Digital ID will be the most popular ID system, and it will lead to the creation of a global passport.
- Unlimited, almost-free solar energy will become a basic-access necessity for every person on Earth.

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