

02/04 Digital Happiness In Code We Trust

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In this report

It has been said that data is the new oil and that data organizations are the new oil barons. It is telling that we call the companies that trade data "barons". The word "baron" expresses the balance of power between those companies and the individual user. The five largest organizations - Apple, Alphabet, Amazon, Facebook and Microsoft - are even called "The Frightful Five". With half of the world's population online, the spiritual father of the WorldWideWeb, Tim Berners-Lee, now wonders whether it is wise to connect the second half of the population. What is going on here?

Tensions about the further course of the digital revolution are rising sharply. The current reason for this is the manipulative practices of Cambridge Analytica. The company is accused of data theft and unlawful interference in democracy through psychographic influence on voters. That they were able to do this is partly thanks to Facebook, which saw it all happen right in front of them. "It is a trust issue", says Mark Zuckerberg. But there are many more trust issues. The old institutions and brands are also experiencing a trust crisis. For years on end, trust in organizations and governmental bodies has been dropping. There is, however, a glimmer of hope on the horizon: blockchain is now used to organize trust differently.

Key takeaways

Three trust models

Trust expert Rachel Botsman calls trust "a confident relationship with the unknown". The greater the uncertainty and the unknown, the greater the trust gap. There are three ways to organize trust and all three are in competition with each other: 1 hierarchically (centrally), 2 in platforms (decentrally) and 3 on blockchain (distributed). We are seeing the organization of trust shift from the institutes and brands and the central model to decentralized and distributed.

Three trust issues

In order to enter into relationships in personal life and in economic activity, we must trust the other person. The issue of trust that is now being addressed is whether the relationship with the other person is still balanced. This imbalance is accompanied by manipulation of the facts and loss of control over one's own digital identity. These are the three issues of trust that are now emerging: abuse of monopoly power, manipulation with fake news, and the lack of sovereignty over one's own data and identity.

Perfect blockchain storm

A great deal of money is being invested in blockchain, use cases are abundant, and the crisis of trust is playing into the hands of blockchain. Blockchain can play an important role on all three fronts of the crisis. 1 Hierarchically (centrally) Trust is a Brand



2 In Platforms (decentrally) Trust is a Rating



3 On Blockchain (distributed) Trust is a Protocol



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We would like to thank all the experts we spoke to for their insights and inspiration, in particular Andrew Keen (author of *How to Fix the Future*), Aviv Ovadya (Chief Technologist at the Center for Social Media Responsibility), James Williams (co-founder of Time Well Spent, author and technology critic), Joseph Pine (co-founder of Strategic Horizons LLP), Ray Wang (founder and chairman of Constellation Research, Inc.), Luciano Floridi (Director of Research, Professor of Philosophy and Ethics of Information), Claudi Senik (Professor of Economics of Happiness at Paris-Sorbonne University), George Colony (CEO of Forrester Research), Gerd Leonard (Humanistic Futurist). The aforementioned persons are not responsible for the contents of this report.

Digital Happiness

In Code We Trust is the second report, in a series of four, on our new research theme "Digital Happiness". Trust is one of the six key variables that have been found to support wellbeing according to the World Happiness Report of 2018¹. Trust and happiness are closely related. For instance, societies that show high corruption rates, lose their trust and are amongst the unhappiest countries in the world. For our wellbeing and happiness, the trust we can put in friends and families, organizations and institutions are key. And since trust has become such an important part of the current tech-debate, we decided to investigate the concept more in depth. "Who can we trust?" and "How do we organize trust?" are the leading questions.

On Happiness

In our first report in this series, "The Happiness Advantage", we set the stage for Digital Happiness. Happiness in itself has become a major trend ever since Martin Seligman and other psychologists turned existing psychological insights into a new context: how to improve life for all. Old schools in psychology tended to focus solely on treatments for certain mental diseases. This new school that Seligman is leading, Positive Psychology, investigates topics such as positive emotions, engagement, relationships, purpose, and accomplishments. The existing gap between this move in psychology and the current thinking in Information Technology is now closing. A new school called Positive Computing, led by Rafael Calvo, has taken the work of modern psychology and turned it into an Enterprise Design context. Both schools are



riding the waves of the societal trend of a more human-centered ambition for the future. Some even call it a humanistic revolution, like the Israelian historian Yuval Harrari does in his book Homo Deus. Others, like Luciano Floridi, Oxford professor in Philosophy and Ethics of Information simply frames it like this: the 21st century is a human project.

It seems paradoxical that a human project is the consequence of years of automation, digital disruption and hyper-digitization. But despite, or better yet thanks to, the current state of technology, we tend to focus more on the purpose and the desirability of what these tools create, because technology-wise there are almost no limitations anymore. Financially speaking, the ROIs are there. If these two conditions are fulfilled, social desirability becomes the differentiator and the guiding principle. The question "What do we want?" should lead your organization's digital transformation.

Ethically aligned organizations are the guardians of customers' digital happiness. They are the ones that are best prepared to take advantage of the current technological shift. The great Mark Weiser, former Chief Scientist at Xerox Park, envisioned technology serving our wellbeing and economic lives without being seen or noticed. He called that idea *Calm Technology*. We have drifted away from that aspiration. Technology isn't always serving us, it isn't calm, isn't always directed to our wellbeing. We can't trust the code itself to do what is best for us. We need to design it intentionally.

1 The genie is out of the bottle

"This is a major trust issue"

Mark Zuckerberg

At the beginning of the year, Facebook's founder and CEO Mark Zuckerberg has a number of new year's resolutions, just like so many others. However, Zuckerberg's intentions are a little more extreme than what we are used to from ordinary citizens. The tradition began in 2009, when he imposed himself to wear a tie every day. In the following years he committed himself to eating only meat from an animal he had killed himself, to reading 25 books, to running 365 miles, to learning Mandarin, to meeting new people every day, to building a digital assistant and to visiting all states in the US. His personal challenge for 2018 is not at all personal, but commercial, and it is called Facebook. This year, as CEO, he has to start solving the problems the company is now struggling with.

Last year, his company came under heavy attack, mainly because of the Cambridge Analytica affair, the spread of fake news, Russian attempts to influence the American presidential elections of 2016, tax evasion, the addictive effect of the platform and the advertising problems of Facebook. "The world is concerned and divided," Zuckerberg writes in his post, where he elaborates on his good intention for 2018. "Facebook has a lot of work to do - whether it's protecting our community from abuse and hatred, defending against interference by foreign powers, or making sure that the time you spend on Facebook is well spent [...]. A lot of us got into technology because we believe it can be a decentralizing force that puts more power in people's hands. (The first four words of Facebook's mission have always been "give people the power".) Back in the 1990s and 2000s, most people believed technology would be a decentralizing force. That fairy tale has turned into a nightmare. "With the rise of a small number of big tech companies - and governments using technology to watch their

citizens – many people now believe technology centralizes rather than decentralizes power."

Zuckerberg ends his post with a provocative statement: "There are important counter-trends to this - like encryption and cryptocurrency". These counter-trends are a possible solution for this far-reaching form of centralization. "They take power from centralized systems and put it back into people's hands. But they come with the risk of being harder to control. I'm interested to go deeper and study the positive and negative aspects of these technologies, and how best to use them in our services."² The rumor has started that Facebook is working on its own cryptocurrency. David Marcus, the former head of Facebook Messenger, is currently running a complete blockchain team with the aim of gaining experience with the technology.

Zuckerberg has his hands full with the trust crisis that is exploding in front of his eyes. His reaction to the Cambridge Analytica scandal came late. He remained silent for days and explained to two journalists from The New York Times on



Mark Zuckerberg in the dock. This iconic image of the interrogation by the American Congress leaves its mark. Can he repair the damage?

The day before WhatsApp's boss quit, thousands of people took to the streets in Russia to stand up for WhatsApp competitor Telegram.

March 21st, 2018 that this was a "major trust issue". And with "this" Zuckerberg refers to the unwanted and unsolicited use of data with people with whom you did not want to share and for whom the system should not have given permission. On May 1st, 2018, Jan Koum, leader of WhatsApp, which is part of Facebook, quits. It is said that there was a dispute about privacy. As is well known, Koum is a great advocate of privacy. Another privacy advocate is Pavel Durov who is - with Telegram - a direct competitor to Facebook. Durov has just raised \$1.7 billion from private investors to connect Telegram to Blockchain. Blockchain trust and Zuckerberg's reputation have now become direct competitors. The fact that Russia wants to pull the plug from Telegram without much success, because it refuses to share data with the government, confirms once again that Durov really means it.

A cascade of events followed after it became known that Cambridge Analytica used data from 87 million Facebook accounts to influence citizens in their choice of Brexit and Donald Trump. We see similar practices in India, where Indian Prime Minister Narendra Modi is accused of sharing data from his own NoMa app (5 million downloads) with an American company CleverTap. Without permission, telephone numbers, email addresses and photographs of Indian citizens have been shared with the U.S. company for profiling and micro targeting purposes. Meanwhile, Grindr - the dating app for gay men – announces to stop sharing HIV data with the companies Localytics and Apptimize. And when Dutch health insurers come into the news because they share search behavior on their own websites with Facebook, the general public becomes familiar with the word "Facebook pixel". Thanks to tracking pixels, Facebook knows which condition somebody has been searching for and is now able to put a message in the timeline in a targeted manner. Half of the health insurers have installed such pixels. These are worrying stories. At a time when trust in the old institutions, governments and brands was

already under fire, we are seeing a growing distrust of digital platforms that regard data as the new oil in the economy.

Call for action

We live in a society that is becoming increasingly digital. We are on the eve of the introduction of self-propelled cars and of smart bioinformatics that combines DNA techniques with artificial intelligence. Limits of what we thought IT was or is will be shifted; players like Google, for example, are plunging into digital bio-engineering.³ If we are already in a crisis of trust, what about a much higher digitization rate in the future? Facebook is merely the driving force behind this debate about our digital future, the same Facebook that made Regina Dugan responsible for developing so-called brain interfaces. It should be possible to convert ideas directly into text within ten years. Science fiction? Maybe the Alter Ego (presented to the right) will change your mind.

But any ambiguities about what the underlying code does and whose data it is (the data behind our thoughts) must first be removed. What is certainly also no longer science fiction is the possibility of manipulating images and sounds in such a way that we really can no longer distinguish them from counterfeiting. Aviv Ovadya, one of the scientists we interviewed for this report, warns of a real Infocalypse: the collapse of the information society thanks to so-called deepfake technologies. Counterfeiting is indistinguishable from real, and that will only increase. More people are concerned about the possibilities of data manipulation on the Internet. The spiritual father of the WorldWideWeb, Tim Berners-Lee, even wonders out loud whether the rest of the world, which is not yet on the internet, should join in. The internet has weaponized itself, he says, we have to fight for the future of the web.⁵



This "Alter Ego" is a brain interface developed by MIT MediaLab. It can turn thoughts into actions. It will be possible to give instructions to the computer purely by thinking. Check it for yourself or read the research paper.⁴

According to the German tech critic Yvonne Hofstetter, the current internet even heralded the "end of democracy". In her book of the same name,⁶ published in 2016, she warns against a society in which the programming language takes over and democracy perishes.

The structure of this report

The crisis of trust that has manifested itself is not an isolated one. Facebook is now in the news, but the crisis of trust in the old economy, the institutions and brands, has been smoldering for a long time and is reaching a climax. PR agency Edelman, who has been researching the state of trust in the world for 18 years, talks about a "Total Meltdown" of trust. At the same time, blockchain has the wind in its sails.

These ingredients lead us to take a closer look at the situation. To this end, we make use of the insights that came to the table in the forum discussion that took place at the World Economic Forum on January 23rd, 2018, in





Davos. This crisis situation was discussed at length by leaders from the platform economy, such as Alphabet's CFO and Uber's CEO, as well as Rachel Botsman. She is the author of *Who Can You Trust?*, a book about how trust is organized on platforms such as Airbnb. In anticipation of what exactly took place at the World Economic Forum, we report the conclusion in advance. The use of blockchain technology should be the ambition to tackle the crisis of trust. This is in line with Mark Zuckerberg's suggestion that encryption and cryptocurrencies should be investigated this year to put, as he says, "far-reaching centralization of the power of systems back into the hands of people". Of course an ironic statement by a man who had 2.2 billion active users on his platform in the first quarter of 2018. In any case, blockchain technology has the potential to play an important role in the crisis of trust: more truth guarantees, more data sovereignty and less monopoly power (egality).

2 Blockchain revisited: the perfect storm

Three years ago we published our report on the blockchain. The situation was very different at the time. Hardly anyone had heard of the blockchain and we were explaining how miners solve their cryptopuzzles to deliver their proof of work. During our lectures we often didn't get any further than the second slide before the questions erupted. Bitcoins and altcoins are now a popular topic of discussion at birthdays and parties, and every organization has one or more blockchain or cryptoplatform initiatives. "It's either adopting the blockchain or undergoing disruption," says Fred Smith, CEO of FedX. Fritz Jousen, CEO of TUI, says that blockchain will break Airbnb's and Expedia's monopolies. CEOs, too, are becoming increasingly adamant about the impact of the blockchain.

The blockchain is being proposed as a solution to the current crisis of trust. Three years ago, that crisis theme also played a role, but not as prominently as today. When we talked about the blockchain, we mentioned the "trust protocol" and called it "a cryptoplatform for a frictionless economy". Plenty of frictions by now, though: Trump, Brexit, Cambridge Analytica, Dieselgate, alternative facts and the interrogation of Mark Zuckerberg by the American Congress.



Civic's "Zero Knowledge" age check enabled visitors to a conference to pay for their beer without having to show their passport through a "Proof of Age".

We had to search diligently for use cases for our report three years ago. The concrete examples we could give at the time remained at the level of Airbnb houses that you could open with a digital blockchain key and pieces of land that you could capture on the blockchain in countries where corruption is rampant. Smart contracts and DAOs, Digital Autonomous Organizations, appealed to the imagination: a Coke machine that could make its own orders, wow! It was a sign of organizations in which man could eventually disappear completely. We presented these ideas under the title "CryptoFantasia". These fantasies are now being overtaken by reality. For example, Civic, a company that guards the identity of people on the blockchain, launched a beer dispenser during the Consensus conference in collaboration with Anheuser-Busch InBev. Through a "Zero-Knowledge-Proof-of-Age", visitors to the conference could pay for their beer without having to show their passport.

But what is wrong with showing a passport? The answer should be "a lot", because the feeling of no longer being the boss of one's own data is growing and what should (and does) a beer dispenser do with all the other data on my passport? This can now be organized differently. The state of the art of blockchain is different today and there are plenty of use cases. The issues of trust play a role, and money is cheap. Perhaps the latter is the most important thing for this "momentum". On the bank money hardly yields anymore. A crisis of trust, cheap money, and an abundance of use cases: a perfect storm to help the blockchain on its way. And for the sake of convenience, we add that the bitcoin is at \$6,500 today and three years ago at \$600.

Perfect Storm

- A crisis of trust
- Cheap money
- Abundance of use cases
- Bitcoin seems to have settled down.

Last year, \$5.6 billion was invested in so-called ICOs,⁷ in the first three months of 2018, according to an ICO rating report⁸, 412 new ICOs raised some \$3.3 billion. A lot of money, but the number of investments is decreasing. This is due to regulation by the authorities.

ICO: Initial Coin Offering

Initial Coin Offerings are a way to raise money through crowdsourcing in order to carry out blockchain projects. It is a bit similar to the better-known Kickstarter platform. The difference is that with ICOs a value is paid out immediately through a digital currency or token, and with Kickstarter one gets the product later, when it is developed.

Research by *The Wall Street Journal* showed for example that 217 of the 1450 analyzed projects cannot be trusted.⁹ It is striking, however, that the money no longer only comes from private individuals, but that institutional investors in particular are also investing money in these new



they account for more than 50 million addresses.



Top 10 Industries by Funds Raised During Q1 2018

The graph shows the top 10 industries by funds raised through ICOs during Q1 2018.

initiatives. Regulation therefore clearly has two effects: on the one hand, the number of ICOs is significantly decreasing, and on the other hand, investor trust is increasing. ICOs are increasingly becoming serious business.

The hundreds of millions of euros in crowdsourced funding are being used for numerous new initiatives. Here are a few examples:

- Medichain, a blockchain that contains medical data in which anyone can participate (opt-in) but in which the data is anonomized and which can be used (paid for) by the pharmaceutical industry, among others.
- ySign, a communication platform that ensures that no data is stored, so that there is no need to worry about what might happen to any data.

 And Armchain, a self-regulating blockchain that remotely keeps track of who owns weapons and whether the person in question has had the necessary background checks.

There are now hundreds of such projects, all of which are described in detail in white papers, which seem mandatory when a so-called ICO is carried out. On icotracker.net you can already get some inspiration. For this report, we have selected promising blockchain solutions to deal with the current crisis of trust. The three examples we gave here are already moving in the right direction. Less chance of resale of data and a better guarantee of anonymity can already help to create more trust.

YouTube Blockchain course: Level 1 to 5

Are you looking for a good explanation of how blockchain works? WIRED Magazine challenged political scientist and blockchain researcher Bettina Warburg to explain blockchain technology to 5 different people; a child, a teen, a college student, a grad student, and an expert. Watch YouTube for a very good explanation at each level. https://tinyurl.com/ya95ooxf



You can also read our SogetiLabs report "Blockchain: cryptoplatform for a frictionless economy" https://tinyurl.com/ybvzad6q





The Truth Machine (2018), The Trust Machine (2015) and Blockchain: Trust Companies (2017). More trusted versions of the same organizations are, according to the book Blockchain: Trust Companies, formidable competitors.

A more trusted version of yourself

The titles of books and covers of magazines present the ultimate effect of the technological panacea. E.g. the two Wall Street Journal journalists Paul Vigna and Michael Casey call it "The Truth Machine" in their book from early 2018. It is a reference to the article from The Economist from 2015: "The trust machine: the promise of the blockchain". The truth is sometimes farfetched and trust is under fire. Here is the recipe, a machine that solves the problems. It sounds appealing and it even may make sense: the machine is indeed up and running. It is a combination of venture investors, crowdsourcing, increased knowledge and recognition that trust has ended up in a crisis. Therefore, the relevance for organizations is now greater than ever. Professor in blockchain management Richie Etwaru's book Blockchain: Trust Companies, comes up with the warning:

"Every company is at risk of being disrupted by a trusted version of itself"

The question you can ask yourself is whether your customers and trading partners trust you sufficiently. Can you organize things digitally in a slightly different way so that more trust is created? Would you suffer from competitors, if you decide to continue on the same footing?

3 Meltdown of the old system

For 18 years now, the American communications marketing agency Edelman has been measuring the temperature of global trust. Every year, the agency interviews around 30,000 respondents from 25 countries about the extent to which they trust companies, media, governments, non-governmental organizations, managers and "the system". The trend has been downwards for years, but last year Edelman's trust barometer showed an all-time low. The 2017 report speaks of "Trust in Crisis", a total meltdown of global trust.¹⁰ No less than 85 percent of those surveyed indicated that they had completely lost their trust in the system. Two thirds of all countries are now in the Edelman category of "distrusters". A year earlier it was a little more than half. The American research agency Gallup, which measures people's trust in leading institutions such as the army, the court, the congress and the banks, shows a similar picture.¹¹ We are experiencing a global crisis of trust in the organizations and institutions that have laid the foundations for today's prosperity.

At the beginning of 2018, Edelman published his new figures. Global trust remains at crisis level. Remarkable figures come from the United States, where trust in the government has declined further. Richard Edelman, the CEO of the PR agency of the same name, is not afraid to use superlatives. This time he's talking about The Implosion of Trust in the United States. Never in a country has trust declined so much in a year as it has in America. He has identified three trends this year: 1) there is no restoration of trust, 2) America is sinking further, and 3) the media as an institution is at an all-time low. Of all the institutions, the latter is now at the bottom of the ladder of trust. That's not surprising when we consider everything we've experienced with fake news. The Edelman study shows that almost 7 out of 10 world citizens fear that fake news will be used as a weapon. Edelman's research also asked what is meant by "media". Both the platforms and the publishers are included.

There are some glimmers of light as well. When asked about the trust they have in certain sectors, technology is at the top of the list. In other words: there is trust in a technological future. (As a technology industry we better make sure that this trust is deserved.) Another positive point is the confidence that people have in so-called experts. They are doing well in the trust polls. These could be computer programmers, academics or journalists, for example. Another category that does well is "the employee". Strikingly enough, it is mainly people who score higher and organizations and institutes a lot lower. People are also at the heart of trust in platforms such as Airbnb, Deliveroo, Uber and many others. Bringing people into direct contact with each other and letting them assess each other's performance is even the essence of what platforms do.



The Edelman studies cover the period 2001-2018, an era characterized by the emergence of Internet media. Last year the focus was on the "meltdown", this year the fight for truth broke out.

Trust in Retrospect

Confusion abounds

In recent years, several leaders have fallen off their pedestals: cheating software from Volkswagen, Audi and Mercedes, bribery scandals at FIFA, the Brexit of the European Union, the spread of fake news by renowned media, child abuse within the Church, abuses at Uber, the massive hacking of credit card data at Equifax and Yahoo, the fall of Harvey Weinstein and #MeToo, the fall of the "man"



institute, the Panama and Paradise Papers and the sex scandal of the Nobel Prize of Literature. The crisis of trust launched by the financial sector in 2008 has continued in other areas.

Are the media the cause of the confusion?

In the triangle of transparency, truth and trust, media and media entertainment play an important role. From this perspective, the question is whether we will really overcome the crisis of trust or whether the steady state of distrust will be the new normal. After all, if we go back a little, we will see that the television era has already been the starting point. "We're amusing ourselves to death" warns media critic Neil Postman in his 1985 book Amusing Ourselves to Death. Postman is a contemporary of Marshall McLuhan, another famous media philosopher, who is best known for his statement (and book) "The medium is the message". The question here is whether the medium is also the messenger of the meltdown. Postman used his variant "the medium is the metaphor". Each medium has a different relationship with information and knowledge. He was extremely critical of television's influence on knowledge, information and the truth: "It is in the nature of this medium that the substantive aspect is completely subordinate to the visual and that, in other words, the norms and values prevailing in the show business are all-determining". Postman observes that, for serious news, people no longer read the newspaper, but simply turn on the television. Complex stories are cut into pieces by this medium and presented in digestible chunks. News turns into a soundbite. "Television turns our civilization into an amusement park". The consequences are disastrous. When news turns into entertainment, Postman observes, it deprives us of "a coherent understanding of our world." At the heart of his argumentation is the word "trivia": "When people are distracted by trivia, when cultural life is redefined into a constant round of entertainment, when a serious public conversation becomes a form of baby talk, when, in short, people become an audience, and its government becomes a circus act, then a nation is at high risk: cultural death is a real possibility." Internet is now the new television¹² and we see Postman's doom scenario repeat itself.

4 The rise of platform trust

So we seem to have less and less trust. All the more remarkable is that we seem to trust people we have never met before. We all go for it when we rent a house on Airbnb or take an Uber taxi. The new book by Rachel Botsman, *Who Can You Trust*?, focuses on this question: Why do we distrust large companies and institutions, but do we get in the car with a random stranger to share a ride? As a child, have we not learned from our parents not to go with a stranger? We even invite strangers to our bedroom via Airbnb. Why do we trust one thing and not the other? Botsman's observation is in line with the Edelman studies. Technology is enabling new forms of trust. The trend is that trust over time is shifting: from local trust to institutional trust to distributed trust. Due to digital technology we are now moving away from centralized institutions and brands towards decentralized and networked individuals. Maybe we should be a little less concerned about the meltdown; it's a shift.

Botsman is called an "expert in trust", especially in the relationship with new business models in which trust is organized differently. Earlier she published a book on the sharing economy entitled *What's Mine Is Yours*. Sharing valuable assets via online platforms has become extremely popular in a short period of time.

However, the idea that we are dealing with complete strangers on platforms is incorrect. The so-called unknown person has already signed up and logged into a platform. Their credit card details are stored. Previous business relations have given a score. We see a photo, and deduce the persons reputation from the scores and reviews. The social code exchanged between people on digital networks creates the trust to buy, rent or seek advice. And the will (or the guts) to go along is a prerequisite for an economic transaction. After all, trust is the lubricating oil that keeps the economic engine going. Botsman uses a different metaphor. She calls it a "remarkable force" that will win you over and make you take the step to the unknown. Botsman defines trust as follows:

Trust is a confident relationship with the unknown.

The important question is what the shift in trust means for organizations, although there is more to it than that. The subtitle of Botsman's book – How technology brought us together and why it might drive us apart – points to a dichotomy. The platforms that bring people together so beautifully are now seen in a bad light. But, as we read in the Edelman report, we trust the expert. The person we meet, the taxi driver or the landlord of an apartment can be such an expert. "Platforms" themselves do not score very high in the Edelman study, and that was even before Zuckerberg had to bow to the American congress.

Organizing platform trust

Platform trust takes advantage of the timehonored principle of word-of-mouth advertising. Digital platforms score products and services and have automated word-of-mouth advertising.



In the centralized model, we trust the brand or institute and the central regulation of the same brands and institutes. Blockchain trust lies in the distributed network. Trust is a protocol and the data is visible to everyone and therefore trust is implicit in the end, it is no longer an issue. These are basically the three ways of organizing trust in a market: trust as a brand, trust as a rating, and trust as a protocol.

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5 Crisis analysis and the blockchain

In order to get to grips with this situation, a number of the leaders on the crisis of trust were questioned during the World Economic Forum. Under the direction of Andrew Sorkin, editor at large of *The New York Times*, we see five people take the stage in Davos. Ruth Porat, the CFO of



Alphabet (Google), Marc Benioff, CEO of Salesforce, Dara Khosrowshahi, the new CEO of Uber, Martin Sorrell, CEO of WPP, (who invests billions in online advertising as owner of advertising agencies such as Ogilvy and Mather, Young and Rubicam and Grey) and finally Rachel Botsman. Sorrell has since been dismissed by WPP for alleged unethical behavior. Of course, that puts his comments in retrospect in a different perspective.

Andrew Sorkin opens the session by saying that the current crisis of trust has many faces. He expresses his hope that everything will be taken into account in the discussion. With Uber at the table, we immediately know that it will also be about Susan Fowler. She is the whistleblower who addressed the systematic sexism within the taxi company, which ultimately led to the #deleteuber action. A variant of #metoo, with immediate financial repercussions.

On stage in Davos, Marc Benioff explains what Uber did wrong: "If anything trumps trust, you're in danger," he says. Organizations that do not have trust as their highest asset, but ease of use, profit, growth, are guaranteed to get into trouble according to Benioff. The first blow in the discussion is struck: the crisis is the result of the typical Silicon Valley culture in which trust comes second or third. During the discussion, Uber is targeted for a while, until Botsman explains what is wrong with platform trust, the trust that a passenger has in the driver with whom he is in contact. According to Botsman, things are going too fast and too easy on platforms. She calls it Trust on Speed, the Tinder model. One swipe will get you a date. Building trust takes less than three seconds. But

Susan Fowler on the cover of *Time Magazine* (2nd from right) as one of the leaders of the #MeToo movement. *Time Magazine* has chosen the "silence breakers" – as they call these women – as



person of the year. Silence has been broken; the genie is out of the bottle. Fowler's blog post, which put her on the map, is called "Reflecting on a very, very strange year at Uber". Being chosen person of the year is not just about the scale of scandals and the deep-rooted sexism in society. It's also about the power of the hashtag. Social media as a watchdog will continue to play a role in building trust. the right model should be slow trust, adding a little more friction to the process. She clarifies her point with a tragic event.

A mad Uber taxi driver from Michigan, Jason Dalton, caused a bloodbath on February 20, 2016, when he started shooting at people randomly. In the meantime, he continued his taxi rides. Because the news could be followed live, the customers in the back seat of his car asked if he was perhaps Jason Dalton, the serial killer. Uber CEO Khosrowshahi responds to the anecdote. According to him, Uber was not to blame for sending a serial killer to customers. There are a lot of lunatics in the world. He explains that the rating in the Uber app is only about his driving behavior, not his shooting behavior. This is where the third point, introduced by Martin Sorrell, comes in. Trust comes with responsibility, which is lacking on these platforms.



Jason Brian Dalton is on trial for the so-called Kalamzoo shootings, named after the place in Michigan where the tragedy took place. Six people lost their lives and two others were badly injured. Uber says they did carry out background checks, but concluded that he had a clean slate. Sorrell takes the floor and straight away points his arrows at Facebook and Google. He mentions figures that clarify how much power Facebook and Google have together. They operate 75 percent of the global digital advertising market. Sorrell states that it is time for them to admit that they are media companies and not social platforms. These media companies, also known as attention merchants, need to take the accompanied responsibility seriously.

The power of attention merchants



Top Global Ad Spend

Note: Google includes YouTube, Microsoft includes LinkedIn. Chart: Andrew Witherspoon / Axios.

Facebook earns around 36 billion dollars a year in advertising money, Google more than double: around 80 billion dollars. Google's advertising revenue is roughly the same as all global printed advertising revenue, and Facebook's advertising revenue almost equals all global radio advertising revenue. Google controls almost 90 percent of the search ads market and Facebook almost 80 percent of the mobile social media traffic. Three companies in China – Alibaba, Baidu and Tencent – control more than 60 percent of the Chinese advertising market and now account for 15 percent of all global advertising. This year, two-thirds of all global advertising dollars will go to Google, Facebook, Tencent, Baidu and Alibaba, according to PriceWaterhouseCoopers' Entertainment and Media Global Outlook (2017).¹³ Concerns about the growth of the power of these five companies are described in detail in Franklin Foer's book World Without Mind (2017). Foer is extremely worried about the threat they pose. He warns against the extent to which we have become dependent on their machinery. According to him, we will not only become one with their machines, but we will also merge with the companies that operate these machines. Their algorithms, their filters, increasingly determine the way in which we perceive the world. The norms and values of these companies become the norms and values of our society. We are becoming dependent on these companies in a way that we have never been dependent on before. Our free will loses it from the regime that imposes artificial intelligence on us, and so the survival of mankind is directly threatened.

Back to Davos. Sorrell accuses platform companies of not accepting their responsibilities. He says the fake-news eruption and the following Brexit is due to a lack of responsibility. Failing to check facts, failing to thoroughly check drivers; platforms just don't seem motivated to check. Sorrell says he knows what they are looking for, namely the centuries-old best recipe for good sales: word-of-mouth advertising. Platforms have found a way to give a modern look to what has worked best in advertising for centuries. He refers here to the likes and ratings that are an alternative to old-fashioned storytelling.

For centuries, word of mouth advertising has been the best recipe. It is how trust moves from A to B. In the meantime we see the camera zoom out. On the first row we spot Neelie Kroes. Kroes is the former European Commissioner for Competition, who was succeeded by Margrethe Vestager. In June 2017, the latter fined Google \$2.42 billion for misusing the power of their search engine. (Kroes is now on the Uber Advisory Council and on the Salesforce board.) When asked whether Google could also become too big by discussion leader Sorkin, Alphabet's Ruth Porat answers that this is an impossible question, but does add that Google is in favor of quality growth. By this Porat means, among other things, Google's activities in the life sciences, aimed at reducing diseases and making better diagnoses. It seems that Google is looking ahead, exploring new areas for digital (quality) growth. In view of the nature of the data health data - the responsibility resting on Google's shoulders will therefore increase even further. But at this time questions about their future responsibility are not being asked. Khosrowshahi comes up with another example to clarify that people are fighting an unequal battle when they have to deal with platform organizations. The word that sticks from this part of the forum discussion is "asymmetry". What companies know about you versus what you know about the company is no longer in balance. Quality growth or not, these issues aren't solved just like that. Khosrowshahi calls it an unequal fight.

The climax in the discussion comes with questions from the audience. A journalist asks if the companies are prepared to share the data that makes them so powerful. Khosrowshahi can score some points for a while. Uber shares data with cities about traffic jams and congestion. It is a warm-up to the last question from the audience. Don Tapscott, expert in the field of Blockchain technology, is hidden in the back of the room somewhere. Tapscott starts explaining that there is an alternative to organizing trust, and that it is called blockchain. He is curious how the panel looks at this, but initially addresses his question to Rachel Botsman. Botsman just explained how difficult it is for regulators to avert the crisis of trust, precisely because they are based on top-down structures. But if users are the product, and there is no center where regulation can interfere, then that is a huge challenge. Don Tapscott's suggestion comes at the right time for Botsman. She agrees, but it will not be easy, she adds.

"This is what we should be aiming for. Even if it is a hard goal. It should be the goal."

Rachel Botsman

Trust problem	Design principle	
Monopoly power. Inequality. Too much power in the hands of platforms that exploit network effects. Companies can become too big. Asymmetry.	Egality. Breaking of monopoly power. Network effects that do not only affect platform owners.	
Uncontrolled data trade. Information can be passed on to third parties without you being able to influence them. Manipulation of behavior on the basis of insights from this is lurking.	Sovereignty. Self-determination about what happens to your data and identity. Being in control.	
Fake news. Selling lies as facts. Clickbait as a basis to get attention and sell advertisements.	Reality & truth guarantee. Fighting fake news. One single source of the truth. Fact checking and platform governance.	

6 Deconstruction of trust

Without trust there can be no agreements, without agreements there can be no business. It is therefore not surprising that the concept has been researched frequently within disciplines such as organizational science, marketing psychology, and humancomputer interaction. Rachel Botsman calls trust "a confident relationship with the unknown": the greater the uncertainty and the unknown, the greater the trust gap. This trust gap shows that risk, dependence and uncertainty are part of the trust process. In order to trust, one should have positive expectations and be willing to be vulnerable. Trust is therefore referred to as "an unreserved credit". When someone has complete control or insight, then there is no vulnerability, uncertainty or gap in trust, and therefore no need for trust. This is exactly why blockchain applications are also called trustless systems. The more insight and control an application provides, the less trust is needed. In case of complete transparency – whereby everything is visible, known and knowable – there is no unknown. To use Botsman' words: there's a confident relationship because of the known. You know exactly where you stand.

A matter of being **able or willing** to trust?

How many versions of trust do you want to include in the report? That was the question that Frans van der Horst put to us when we interviewed him about trust in the banking sector. Van der Horst is Managing Director of Retail Banking at ABN AMRO. In his own words, there are at least two types of trust: able or willing to trust. To clarify the difference, he put a dollar banknote, a bankcard and a phone on the table. Which one do you trust, and why, were his questions. He then explains: the American banknote is a matter of wanting to trust, because America is as bankrupt as it can be and there is no way out of that huge debt burden. You trust the bankcard because the bank has a track record. Bank behavior is not always trusted, but studies show that people do trust its data security very much. With Facebook it's the other way around. And you also trust the app on the phone with which you can quickly transfer money and of which you don't immediately know who is behind it. Why? Because it is very convenient. You just want to trust it. There is a difference between able and willing. Convenience plays an important role here.



In the "Integrative Model of Organizational Trust" there are three phases to achieving trust:

- 1 the credibility of the other person, both in terms of feeling and services rendered,
- 2 the willingness to be vulnerable and the level of estimated risk and trust, and
- 3 the actual step at which risk is taken.

Marc Benioff warned that nothing must take precedence over trust. But an app can tempt us to do something of which we don't really know if we can trust it. And if there is now also a cheaper alternative or even money paid for the use of an app – as we will see shortly in our blockchain cases – in which place on the ranking list is trust?

Money trumps trust? Convenience trumps trust? Nothing trumps trust?

We seem to be moving further and further away from home as we know more about the concept of trust. This was also Van der Horst's point: trust is far from being objectifiable. This is all the more clear when we consider that trust can be both a feeling and a more or less certain fact based on a proven track record or skills present. This is in line with the thinking of Daniel J. McAllister, Associate Professor of Singapore's NUS Business School. He uses a classic dichotomy of ratio and feeling:

 cognitively based trust: based on cognitive judgments about a person's reliability and competence. • affectively based trust: based on affective ties between individuals.

These cognitive and affective forms are reflected in the trust model of – among others – Roger C. Mayer, Professor of Management, Innovation & Entrepreneurship at North Carolina State University.¹⁴ This model explains that we are moving from "no trust" to "trust" in three steps.

As you can see in the model, trust is a continuous feedback loop, in which trust is both a cause for and a consequence of action. Trust is therefore the sum of the performances delivered over a certain period of time, which is evaluated afterwards, and of which the following conclusion may be drawn: this company or person can be trusted. But it is also possible that the intention is trusted. A "Blockchain inside" company can make clever use of this because of its supposed good intentions and integrity. An organization using a confidentiality protocol ... ought to be trustworthy, right? That's what intuition says.

Liquid trust

Mayer's model is a brave attempt to create an objective atmosphere of trust. How liquid the concept of trust is (literally and figuratively), only becomes clear when we look at the substance oxytocin, the so-called cuddle hormone. Various scientific studies have shown that this hormone increases people's trust in each other.¹⁵ The origin of this can be explained evolutionarily. Oxytocin is indispensable for the production of contractions and breast milk. Brain scientist Dick Swaab also calls it the binding hormone;¹⁶ it binds the mother-child relationship based on blind trust, or motherly love as a basis of trust. It has been shown that women who have had a caesarean section are less alert when, for example, a child starts to cry at night. Experiments in which the substance is administered to a certain group, shows that oxytocin

makes you trust other people. In this case a third person was asked to invest the administered group's money. Even though one investment blunder follows the other, the group continues to trust the person who is investing. A control group that did not receive oxytocin is much more likely to sound the alarm bell. The substance is also released during human contact, massage and sex. It is an interesting fact that somewhere in this people-to-people relationship, a hormone can play an important role in creating trust. It is speculation, but perhaps the production of oxytocin is one of the success factors of platform trust, which is mainly based on people-to-people relationships. But we need to muffle our enthusiasm for oxytocin a little, because the studies also show that it also promotes ethnocentricity and xenophobia. It increases trust within one's own group and stimulates hostility towards "the other".



Liquid Trust is for sale at Amazon. The oxytocin contained in the bottle can be used by salespeople, applicants or people who are going on a date. In all kinds of situations where the bond of trust plays a crucial role, Liquid Trust is said to be performing miracles.

7 Tackling the crisis with blockchain

On January 19, 2018, Matt Peterman and Tom Volk started to raise money for their new startup. In a short space of time they managed to raise 18 million dollars in initial capital. They did so by introducing a new currency, the IPL (InsurePal), on the ethereum network. The name says it all: a combination of friends and insurance. We interviewed Peterman in London, where he had just been on stage at a blockchain conference to explain where the idea came from. Peterman was a fraud expert at an insurance company. "At the time," he explained to us, "we used to search social media to check whether the story of the insured who made a claim was correct. Now this is no longer possible with the new European legislation (GDPR)." Peterman explains that with InsurePal he ultimately wants to realize a "zero knowledge proof system". A system whereby you know that you can trust the other person without having to see the data (zero knowledge) to check whether the trust is justified. First he explains the basic principles of his product:

Someone who takes out an insurance policy at the same time invites his friends who want to stand up for his reputation. As a reward for this trust, the friends of the insured receive a sum of money on their account. InsurePal calls this concept "Distributed Social Proof Insurance". The insured receives a discount, as a reward for concluding the social contract with his or her friends. Your social identity becomes a currency, as it were. In the event of a claim through their own fault, the circle of friends is informed and they have to pay a fine. The founders assume that this will reduce the number of claims because the insured will better handle his belongings now that he knows that his friends' eyes are on him. InsurePal records this so-called "Proof of



Social" in the blockchain. One of the advantages of this is that they are not stuck with a central database like Facebook. The rules of the social contract are laid down and take effect automatically when an insurance policy is taken out or a claim is made.

Peterman and his InsurePal colleagues have a clear vision of how they want to conquer the market. There may be nothing better than trust, but at the top of their plans is ease of use. He has enough interest from the insurance world. According to his own statements, fourteen insurers and four companies from the so-called Gig economy have already come forward and they had a successfull ICO. When asked what the advantage is of this form of financing, Peterman was very clear: "Not only are you collecting money, you are also working on putting your product on the market."

The design principles

InsurePal is one of many new initiatives that organizes trust with blockchain technology. Among other things, it ensures that personal data does not simply fall into the hands of large parties (thanks to zero knowledge proof). InsurePal does more: they create more egality – less asymmetry in the relationship between individual and organizations, and more sovereignty, freedom of action in the hands of the individual. Also more truthfulness, the possible manipulation of the truth by the insured is stopped by this clever construction.



Let us take a closer look at these three design principles and the blockchain. How can we better guarantee the truth, break the monopolies and place sovereignty more in the hands of the individual?

A Blockchain as a guarantee of truth: Fake news fighter

More than half of all Americans think Donald Trump used fake news to get to the White House.¹⁷ And if we're not careful, the fake content in society will only get worse and we will be heading for a real Infocalypse. What is true or what isn't, is then no longer traceable. Advanced new techniques to get us on the wrong track are becoming commonplace and are coming into the hands of the general public. These so-called "deepfake technologies" manipulate image and sound. What can the blockchain do to prevent this?

The bizarre state of fake news becomes clear when Instagram influencers Bermuda and Lil Miquela get together in April this year. Bermuda had hacked Lil Miguela's Instagram account. Miguela has more than a million followers. Bermuda refused to return the account unless Miguela would admit that she is a so-called CGI influencer: a computer-generated influencer. The story gets even crazier. Bermuda is also a CGI, a so-called "brandfluencatar", which is a combination of the words brand, influencer and avatar. When we read these kinds of messages, we're confronted with a diabolical future scenario. Technology is becoming so lifelike that we can no longer make a distinction; it becomes the ultimate

means of influencing our opinions. The fact that there will be more robot influencers seems to be a given. The marketing industry is responding positively to these kinds of opportunities. Why, you might ask? Simply because this is how one has a much better grip on the (unpredictable) behavior of real-life influencers.

It turns out that behind the two identities lies the same company that has staged everything. The company is called Brud and consists of a group of Los Angeles based problem solvers that specializes in robots and Al. No doubt the media attention will lead to more followers and more followers will automatically mean more advertising revenue.



Bermuda (left) and Lil Miquela (right). Both are computer-generated influencers. Foreboding marketing new style, where we no longer know whether someone really exists or not and whether the lives they lead contain any kind of truth.



A warning video placed on Buzzfeed. Oscar winner Jordan Peele puts words in Obama's mouth without you noticing that it's fake. A professional team worked 56 hours on the end product, but deepfake tools are already in the hands of the general public. For example, Adobe's VoCo works as a "photoshop for voice" and Tensorflow, an open-source Al tool, produces deepfake videos (celebrities placed in porn movies).

Making something out of nothing, like the virtual advertising stunt above, is the essence of fake news. In his book *Trust Me, I'm Lying* author Ryan Holiday explains how this works. Holiday is the former marketing director of American Apparal, a Canadian retail chain. Here he learned the tricks of the trade. *Trust Me, I'm Lying* is a fake news cult classic, a workbook to master the dark side of media manipulation. In a video trailer at the launch of his book, Holiday explains how to create fake news. First you post a message on an insignificant blog and then the game starts to get the message posted in more and more important media, until fake news becomes real news.

The real trolling has only just begun. Aviv Ovadya warns of a complete collapse of truth.¹⁸ Ovadya is the chief technologist for the Center for Social Media Responsibility at the University of Michigan. The doomsday scenarios presented by Ovadya are extremely worrying. From hobby propagandists to government-led disruption of reality, this can lead to situations where no one can really distinguish real from fake. It can lead to a collective reality-apathy that is very characteristic of totalitarian regimes, and to extreme forms of phishing in which you no longer know whether it is a known person who asks for your password or a robot variant.

Trust Me, I'm Lying

If you are interested in media manipulation, here's one way. Start small. Send your story to a tiny personal blog with an alias email. They get an exclusive, you get an outlet. You then take that exclusive link and send another fake email to an even larger site. Like links in a chain you move your story along to larger and more influential sites. Your original idea builds momentum with each link until finally your story becomes the story. This is one way unreal news becomes reality. This information is dangerous. It's up to you how you use it. My name is Ryan. Trust me I'm lying.

When asked why he gives out his secrets, Ryan Holiday explains:

Because I'm tired of a world where trolls hijack debates, marketers help write the news, opinion masquerades as fact, algorithms drive everything to extremes, and no one is accountable for any of it. I'm pulling back the curtain because it's time the public understands how things really work.

Can blockchain make its contribution?

For trust in the world we prefer to have one version of the truth. Can the blockchain play a role in this? Wired Magazine suggests it can in *The Blockchain Solution to Our Deepfake Problems.*¹⁹ The blockchain company that is presented as a solution in this article is called Factom. For video recordings, Factom serves as a 'truthfulness recorder'. Determining whether an image comes from a particular camera is crucial for safety cameras, for example.



A striking example is that during border control, cameras are sometimes hacked and broadcast images that have been recorded in advance. With the hashing of images on the blockchain infrastructure, that would be a thing of the past. Although these are not deepfake videos as mentioned above, they are image manipulations that threaten the maintenance of law and order and security. American Homeland Security has since joined forces with Factom. Many of the blockchain solutions to prevent the existence of false information can be traced back to verifying identity. This may be an image, a document or a person. Let's look at two more blockchain solutions: Terciv and PUBLIQ.

Terciv guarantees authenticity

"Like links in a chain you move your story along to larger and more influential sites." Anyone who has just read this quote by Ryan Holiday may have immediately thought of the blockchain. Tracking information from one link to another is what the blockchain can do very well, obviously. Brandon Kostinuk, spokesman for blockchain consultancy Vanbex, is convinced that blockchain will play an important role in the fight against fake news. He emphasizes the important



role that the blockchain can play in capturing the path that an article follows in the news chain. Making it clear to the general public that is involved in making the news also plays a role. And thirdly, he mentions the necessary checks and balances on media platforms. Before messages go out, they can be checked and the checkers are paid for that. Such self-sufficiency in the media system is also important for advertisers. Unilever threatened to stop advertising on Facebook in February this year for exactly this reason. "We can't keep pumping money into digital channels that are sometimes not much better than a swamp in terms of transparency," said marketing director Keith Weed²⁰, when he announced his threat. Instead of setting up a centralized solution that constantly has to keep an eye on everything, a peer network that operates on the blockchain via smart contracts can serve. Terciv, for example, takes a different approach. It indexes articles and sources to authenticity. They counter the lack of transparency with an index architecture that also makes use of machine learning and natural language processing. The founders started their blockchain algorithm in 2015, which has now been tested by five major news organizations, such as CNN and BBC.

PUBLIQ rewards the truth

What we see in the visual below is a graphical representation of a platform that at first glance does not differ much from other media platforms. Authors on the one hand, readers on the other, reviews for the articles and a database.

PUBLIQ says that you cannot leave it to the private market (Facebook, Google) to determine what is okay and what isn't, and therefore places all the authority with the reader:

"It is naturally risky to rely on private companies to tell us what is true or not. We think that only readers should determine whether content is or isn't authentic, compelling, or simply well articulated."

A graphical representation of the



Differences can be found in the way funding is provided and revenue is made. A coin of its own, the PBQ token, is the lubricating oil in this system.²¹With smart contracts, the incoming money is distributed. Advertiser money flows directly to the authors and no data is resold to third parties. The blockchain must guarantee this, because data transactions are transparent and can be viewed by all participants on "The Foundation". PUBLIQ also focuses on the importance of a lifelong reputation score that can only be built up by readers. In this way, cheating with valuations is eliminated. The question is whether fake news can be completely contained by this solution.

The four pillars of the PUBLIQ blockchain service.



Secure Protocol

The blockchain infrastructure allows content creators, readers and other participants to build a **trusted relationship**. The use of smart contracts guarantees the safe allocation of rewards and payments.



Independence

The ecosystem is intellectually independent and free from arbitrary censorship. Readers can have access to an unlimited free source of information while authors are free to express their minds.



Lifetime Reputation

In PUBLIQ, every single post, view and feedback is recorded, immutable and traceable into the blockchain. The reputation (PUBLIQ Score) built by authors is transparent and calculated by a proprietary formula.



PUBLIQ Community

PUBLIQ Foundation introduces a mechanism of community governance to make sure readers are protected from undesirable contents. The community members have a trusted reputation and the ability to warn and intervene whenever a content raises flags limits.

In conclusion

- We live in a time when it is becoming increasingly easy to create fake news. Advanced techniques
 are simple and can be used by a large audience. It is no longer possible to find out what is "real"
 and what isn't.
- Blockchain can contribute to the solution by enabling identification and traceability of news and by means of reputation systems that determine the reliability of the makers.
- A prerequisite for such solutions is that they are designed in such a way that it is possible to rely on the technology without having technical skills.
- As long as Factom, Terciv, PUBLIQ and others do not reach the general public, the situation will not change very much. An alternative would be for existing dominant platforms to adopt these new principles and apply them themselves.



B Egality. Blockchain as monopoly breaker

What should have been a decentralized, open network has developed into a place of centralist strongholds. Capitalizing on our free data, companies such as Amazon, Facebook, Google and Netflix, as well as Asian Alibaba and Tencent, have cleverly used network effects to create winner-takes-all markets. Platforms grow exponentially thanks to network effects and may even potentially become de facto monopolies. The self-regulating effect of Adam Smith's invisible hand does not work in these "winner takes all" markets.

Why do we have data monopolies?

Network protocols – such as TCP/IP, HTTP, SMTP and FTP – are extremely suitable for distributing data, but particularly bad for storing the same data. On top of these so-called "stateless" or "thin"²² protocols, the above compa-



nies have developed all kinds of applications and services that generate an enormous amount of economic value for them. Their digital platforms are capable of collecting, storing, filtering, combining, analyzing and consulting astronomical quantities of Big Data that connect highly efficient creators, providers and consumers of goods, services and information. These protocols have fallen prey to the theory of the "Tragedy of the Commons", in which the pursuit of maximum returns for individuals does not lead to collective prosperity as would be expected from the economic effect of the invisible hand.

The blockchain protocol, in this sense, is the antidote to this form of surveillance capitalism, a term coined by Shoshana Zuboff, former Harvard professor. It may break the monopoly position of the large platform companies because, unlike other network protocols, it is not a "thin" protocol but a "fat" protocol. The blockchain protocol can tilt the winner-takes-all model. Of course, all kinds of applications can also be built on this layer, but it does not offer the makers the advantages that the aforementioned platform companies have, because the potential value of the data does not leave this system, it continues to belong to the creators of the data. Data network effects therefore also end up with them. So if we are going to look at a blockchain alternative, all this can be traced back to a fundamental design error in the architecture of the Internet.

The economy that turns out not to be working

Jean Tirol is also called the founding father of the platform economy. In 2014 he won the Nobel Prize for Economics for his research into the operation of platforms. His most important observation is the fact that economic laws on how prices are set do not apply to platforms (many of them are "free"), and that platforms facilitate monopolisation. He argues that we should be vigilant and ensure that dynamic competition is given a chance to attack platforms on their position. Power and abuse of power can go hand in hand with monopoly effects, which is a great risk. The unequal battle seems to focus on what the platforms know about you and what they do with it and what you know about them. This asymmetry was mentioned in Davos by Uber CEO Dara Khosrowshahi as something underlying the crisis of trust. Khosrowshahi knew what he was talking about, because as a former boss at Expedia, he experienced how easy it is to manipulate users' click behavior by using psychological insights. He experienced that spreading fear - in this case by showing scary photos on the website - had a positive effect on the turnover.

A new invisible hand is a necessity

Blockchain strives to compete with the dominant platforms. In his book *Virtual Competition* (2016), Professor of Competition Law Ariel Ezrachi of Oxford University states that the idea that the Internet is a sanctuary where parties can move freely, the customer is king and competition authorities can stay away is an illusion. The invisible hand of the market, which automatically corrects everything, does not function in the digital economy. Here, the digital hand reigns, and with the help of (non-) transparent algorithms it can easily be manipulated and turned into new forms of domination. "Not only in the economic field, [...] but in many areas of existence. After all, the Internet has become part of the infrastructure of our entire world: from news to friendship and from art to science. The Internet will only bring real freedom if it is for everyone. Just as a market is only truly free if everyone can participate. Such freedom cannot exist without rules, especially when it comes to vital provisions for people and society."23 The British economist Kate Raworth draws the same conclusion in her book Doughnut Economics (2017). The twentieth-century economic models, in which the equilibrium between supply and demand determines the price, no longer work. They need to be fundamentally revised. An economy based on the utopia of eternal exponential growth is pre-programmed to destroy itself. Value should not be redistributed a posteriori, but it should be determined from the outset how it is distributed. She does not, therefore, say: "gone with capital", she only criticizes the dominance of the parties with a lot of capital.

Copycats of existing services introduce other business models

Blockchain makes a world possible in which transactions take place automatically – without the intervention of third parties – and network effects are distributed among the users. The decentralized web it is called, a web 3.0 containing distributed applications (DApps). The aforementioned PUBLIQ is a good example of this. Further examples of blockchain companies that copy existing services and introduce a different business model are given on the next page. Satoshi Nakamoto, the inventor of bitcoin, has – by issuing the cryptocurrency bitcoin – come up with a way of compensating network users for activities without these people being on the official payroll of a company or owning shares in a legal entity. Instead of setting up a company, you can now create a new protocol based on blockchain technology. The value of this protocol is then not expressed in profit or dividend, but is directly linked to the issue of a token, one on one linked to the protocol. So people create value by improving the underlying protocol, by helping to maintain the distributed general ledger (as in Bitcoin mining), or by writing apps on top of the ledger, or simply by using the service. (Apps on the blockchain are also called DApps, decentralized apps.) This makes the dividing lines between founders, investors and customers much more blurred than in traditional business models; all drivers are explicitly designed to stay away from the winner-takes-all models. We conclude with eight block alternatives to the existing digital services.



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BitClave

Alternative for YouTube

Video content creators can use the DTube platform. They do not earn money through advertisements, but through viewer donations. DTube runs on the blockchain network Steem and users can pay creators and commentators with digital tokens.

Alternative for Facebook

Steemit is a social network that also exists on the Steem blockchain network. Here, too, content creators are dependent on the favors of the users. "Thanks to blockchain, people finally get the chance to be rewarded for their time, attention and data. Their valuable data is no longer controlled by a few giant companies."²⁴

Alternative for Google

Why give away something for free? That's where BitClave's campaign starts, a Google alternative to the blockchain. They call it "the Next Generation search", in which the next generation itself earns from personal data, instead of the platform (Google in this case). Your data is safe on the blockchain. We are all on our way to "Moving towards a better internet and a better world". The search engine desearch.com is powered by BitClave, so you can try it out right away. "Also available in China" they quickly add, and without annoying ads.



Alternative for Airbnb

The startup Bee Token, set up by a few former Uber programmers, dares to attack Airbnb. They hurry to say that the interface is as easy and attractive as that of Airbnb itself. You could leave that to developers of Uber, you would think. They have a few improvements in mind, all of which have to do with distributed ownership. They take the so-called middleman, in this case Airbnb, out of the system and allow the profits made by such an intermediary to flow back to the market.

"Any network that can be decentralized, and gives the money back to people, will have an attractive reason to sign up"

John Chou, CEO Bee Token

Instead of the 15 percent Airbnb charges for each transaction, Bee Token takes 0 percent. The condition is that transactions must be made in the Bee Token, the company's own currency. In this way, the value of the currency and the platform behind it increases. You can also pay with other crypto-currencies, the fee is then 1-2 percent. If there is a dispute between the tenant and the landlord, 5 members of the platform will be asked to resolve the dispute. The compensation they receive for this is again paid out in Bee Tokens. There are three protocols that run on this platform: a payment protocol, an arbitration protocol and a reputation protocol. Bee Token insists that the identity of individuals is stored unambiguously and safely on the underlying ethereum platform and that the reviews after they have been "hashed" can no longer be tampered with. It all needs to increase trust in this platform over Airbnb's. They are now focusing on bringing in the so-called super hosts operating on Airbnb, starting with San Francisco. The goal is go live very soon with 50 houses in this city.



Bee Token: From left to right. A house to be booked for € 560 per night on Airbnb and the same house for 11988 Bees, but with no extra transaction costs. The value of the network effect goes back to the users and the value of the network increases.



Alternative for WhatsApp

WhatsApp competitor Kik launched its own cryptocurrency, the Kin, in the summer of 2017. In total, the company has sold 90 percent of all its coins, raising 125 million euros in investment money. The remaining 10 percent of the coins are used to reward developers when they build an app that can be used within the ecosystem of the Kik app. Buyers of the currency can use it within the app to carry out all kinds of transactions.



Mastodon - Alternative for Twitter

The social media channel Mastodon was designed in 2016 by the 24-yearold German-Russian software developer Eugen Rochko. His favorite heavy metal band inspired him to name the platform after them. Mastodon can best be compared to the Twitter platform. On Mastodon you also publish a short message, only here it is not called a tweet, but a toot. You can adjust the privacy settings per toot to determine who can see the message. The biggest difference between Mastodon and Twitter is the way the networks function. Mastodon is a non-commercial blockchain platform. Users are responsible for what their timeline looks like. Sponsored messages and "things you missed" are a thing of the past. The main timeline, a collection of all timelines, can be found on mastodon. social, which is managed by Rochko himself. Each user has the possibility to add his own server, a so-called instance, to the network. Each instance has its own rules. For example, in some cases it is forbidden to make sexist jokes, in others it is allowed. Some instances, like Mastodon.social, do not have a clear focus, but others are very specific. There is an instance for animal lovers, one for fans of Minecraft, but also porn and politics can be found on the network. Mastodon's code is open source, which means that other developers can view it and modify it if they wish. The network is not controlled by a company, but depends on the commitment and willingness of the users.

Hiveway takes a different approach. They forked Mastodon's open source software. Their initial coin offering should bring the resources needed to challenge Twitter more successfully.





Hiveway's whitepaper²⁵ explains the plans. Hiveway is a Twitter copycat that also aims to copy and integrate the best features from other social media (such as LinkedIn and Facebook). The following four pillars form the basis of the platform.

1 Decentralization and data protection

All data on the network is located on different network nodes (run by miners) and does not have a central authority that has access to the data.

- 2 Anti fake account measures Identities are established and behavior is constantly monitored for the detection of fake accounts run by malicious parties.
- 5 Fair marketing Exposure to advertising is financially compensated by payment in "Way Tokens", the currency of the network.
- 4 "True democracy"

Among the users of the network candidates are selected who carry out work to be able to control the platform properly. In the white paper this is called "virtual company management" and should lead to "true democracy".

In conclusion

- Large companies that use our free data to make money dominate the digital world in winner-takes-all markets. The Internet has not had the democratizing effect we ever expected it to have.
- Blockchain can ensure that this development is given a new direction. This is because blockchain creates networks that do not rely on the processing of large amounts of data by monopolists to generate value, but on the internal value of their own tokens.
- We are going to do business worldwide and digitally with each other, one on one, by using this technology. As platform suppliers, the Frightful Five are no longer required.

C Sovereignty. Blockchain restores your control

Alessandro Acquisti is a pioneer in research into the behavioral economics of privacy and information security. As a professor at Carnegie Mellon University he has been doing research for many years into the effects of the reduced control individuals have over their personal data. His studies show that reduced access and control over personal data by individuals is bad for our wellbeing. In experiments from 2013 he showed how relatively simple it is to use Facebook data to eventually find out what a person's social security number is.²⁶ Acquisti warns against a Brave New World scenario, the world order described in Aldous Huxley's book of the same name. In this ironically intended utopia, free will has disappeared and there are ten world leaders who, under the slogan of community, identity and stability, literally and figuratively lull the population to sleep.

Modern world administrators are no longer our friends

In his book Move Fast and Break Things (2017), special professor of communication sciences at the University of Southern California, Jonathan Taplin warns of the fact that Apple, Alphabet, Microsoft, Amazon and Facebook are influencing and controlling an ever-increasing proportion of our daily behavior. Journalist David Streitfeld headlines in The New York Times: "Tech Giants, Once Seen as Saviors, Are Now Viewed as Threats".²⁷ And in his book The Know-It-Alls author Noam Cohen simply states that Silicon Valley is not our friend.²⁸ Scott Galloway, a marketing professor at NYU Stern Business School, goes one step further. In his book The Four he even compares Google, Apple, Facebook and Amazon to the Four Riders of the Apocalypse from the New Testament.



In Huxley's Brave New World, sleep education (knowledge transfer during a state of hypnosis) deprives man of his individuality. This leads to a society based on consumerism, where free will is far from being a reality. According to Acquisti, this loss of control over one's own life also hangs over us. His remedy is called "head and hands". Use your head and don't surrender to the data dealers on the Internet and use your hands wisely when clicking on the Internet. But in addition to the head and hands, the underlying technology for digital self-determination obviously also plays an important role.



Brave's Brave New World

From Huxley's Brave New World to the new web browser "Brave" is just a small step. This technology should help us to stay out of the hands of modern world leaders. The principle is simple. Instead of being lulled to sleep by advertisements and cookies that create your user profile in the background, you gain full control. Brave's pitch is well constructed. Did you know, for example, that some ad blockers secretly pass on data to advertisers? And did you know that all this advertising data makes browsers unnecessarily slow and expensive? After all, you pay with your data subscription. In other words: Brendan Eich thought about it carefully. He is the inventor of JavaScript, co-founder of open source company Mozilla, and now also the spiritual father of Brave. On ethereum he launched his own currency: the BAT (Basic Attention Token). The 1 billion tokens were sold in a total of 24 seconds; he raised 35 million dollars with the company. Brave positions itself as "the browser of today's Internet". Instead of the "sneaky annoving adds" Brave introduces a so-called New Deal: you get paid for your attention to the opt-in media you choose.

Present ecosystem	BAT token ad payments
User frustration over loading time	Fast loads
Walled gardens	Free software, open- source infrastructure
Bandwidth wasted	Low bandwidth overhead
Screen clutter	Uncluttered screen
Irrelevant ads	Ads tuned to user interests
Security issues	No malware
Viewability problems/attribution	Secure attribution / attention score
Advertiser uncertainty about delivery	Perfect delivery certainty
CPM/click-based	Attention-based
Reader attention not valued	Reader is paid for attention
Publisher revenues lowering	Larger publisher revenues
Expensive ad buys due to middlemen	Efficient ad buys
Complex/expensive viewability metrics	Simple/free viewability metrics
User's privacy violated	Perfect user privacy

This list fits in seamlessly with the rules as they are defined in the General Data Protection Regulation (GDPR). This so-called control over data also brings back control over one's own identity. In this model, it is no longer a company or other form of authority that determines who you are, but you have this influence yourself. With the new architecture and open source, everyone can create their own digital identity, after which market parties and governments on the blockchain can confirm that the created identity is legitimate. In this way, a single identity is becoming increasingly reliable from several sides and fraud is becoming more and more difficult. Ultimately, the value of all this security, and therefore trust, is placed around an identity under the direction of the owner and the individual can decide for himself whether and how his or her data is used and exchanged.²⁹

In the near future, the BAT should serve as a means of payment between advertisers, publishers and visitors to a website. This is how part of the advertising costs flows to visitors in the form of BAT tokens. One advertisement a day, Eich promises, and only opt-in. Users are paid for the attention they give to an advertisement. In other words: all parties earn money with this new way of online advertising.



Sovereignty, identity and attention

Technologists Evan Prodromou³⁰ and Manuel Araoz³¹ both experiment with their own currency. Via the EvanCoin and the ManuCoin, people can hire their services. A coin is equivalent to one hour of their time. The buyer gets an hour of their attention, which represents a value of about 45 dollars. Far below its normal rate, says Prodromou, but people can also trade in the coins and his expectation is that the value of his currency will increase over time.



Digital self-determination

Christopher Allen is a pioneer in Internet cryptography and principal architect of blockchain company Blockstream ("We believe in a programmable trust for all"). He is also the security adviser to ID2020, which is a partnership between IT players such as Microsoft and Hyperledger and the UNICC, the ICT branch of the United Nations. ID2020 is committed to improving the 1.1 billion people who do not have an officially recognized identity.³² All drew up an inventory of numerous existing studies and activities in the field of digital sovereignty (self-sovereign identity). He concluded that the right to self-determination over digital identity and digital data is always defined differently. He presented the great common denominator in a long-read on his blog and on Github, where he hopes to achieve a better definition together with the open source community. He drew up a list of ten principles of self-sovereign identity.³³

Ten principles of Self-Sovereign Identity

- Existence. Each self-sovereign identity must be based on the "I" of Identity. It is, as it were, the kernel of yourself, your identity, a small part of which can always be made public for public access.
- 2 Control. Users must have control and ultimate authority over their identities and be able to refer to, update or hide them.
- 3 Access. Users must have access to their own data and be able to easily find out what is being said about them. This does not automatically mean that they can also modify all information.
- 4 Transparency. Systems and algorithms must be transparent. Systems that register identities must be open about how they function and how they are managed and updated. Everyone should be able to check how they work.
- 5 Persistence. Ideally, identities should be forever, or at least for as long as the user wants it. A "right to be forgotten" should always be respected.
- 6 Portability. Identities may not be held by a single third party, even if it is a trusted third party that acts in the user's best intention. The problem is that such entities can also disappear again. Movable identities must ensure that the user is in control at all times.
- 7 Interoperability. Identities must be as widely deployable as possible, including across national boundaries. It doesn't make much sense if they only work in niches.
- 8 Consent. Users must give permission to use their identity.
- 9 Minimalization. If information is released for public access, it must be the minimum amount of data necessary for the question or task in question.
- **10 Protection.** The rights and freedoms of the individual must always take precedence over those of the network in the event of a conflict. Users' rights must be protected. To ensure this, identity and authentication must be done through independent algorithms that are immune to censorship, able to withstand external forces and run in a decentralized manner.



Refugees paying with "Eye Pay": iris recognition on the blockchain.

Sovereignty is crucial for refugees

In the Syrian refugee camp Za'atari just accross the border in Jordan, the 100,000 residents pav with "Eye Pay": pay by iris recognition on the blockchain.³⁴ Looking into the camera to pay is super modern, but according to the inventor IrisGuard especially super handy, cheap and reliable. People are able to bypass corruption. There is no need for local banks or local authorities, the money goes directly to the refugees and they can pay for it immediately thanks to the United Nations cash-for-food program. Hamman Houdad, the man behind the blockchain program has great plans, but he is also criticized. In fact, the UN is now playing bank itself, but the identity of this bank account cannot be moved. Ideally, you can travel with it to other countries or apply for a work permit. But now the UN owns the digital identity of a large group of vulnerable people. It would really be brave if the UN were to also take the next step: to make the digital identity work according to the ten principles of the sovereignty that Allen has drawn up. There is still a great deal of work to be done in this regard.

In conclusion

- We live in a world where data about our identity is managed by governments and large companies. You have little influence on it and often don't even have access to it.
- Resistance is growing. There is an increasingly negative sentiment when it comes to Silicon Valley and these data practices.
- Blockchain can restore control through applications where "free" platforms that collect unlimited data about you make way for systems where you choose what you want to buy, what you want to pay for and what you want to be paid for.
- You regain control of your own identity. And more importantly: the control over who is allowed to use what part of it.
- It remains to be seen what the consequences will be of getting paid for the digital attention you give as an individual. Perhaps financial compensation will persuade people to switch platforms.

8 In Code We Trust: past, present, future

Democracy and our sovereignty are under attack. Trust is declining. This report is based on the fact that a great deal is at stake. There is no easy solution to this crisis. The idea that technology can solve all of this is, of course, an illusion. It is always the human factor that determines the course. The most important question is how we want to restore trust and how we want to organize it. In this concluding chapter we would like to answer a few important unanswered questions. Not by summarizing and presenting our key findings, but by introducing new concepts that can help to put things in perspective. These concepts are from the past. Things we've learned from the famous economist Joseph Schumpeter, from the American activist Ralph Nader and from Nobel Prize winner Ronald Coase. We'll end with a look into the future as an echo of ancient times, a scenario that is called "middle ages on steroids".

Is the blockchain here to stay?

Three years ago, we published our first report on this subject. At that time, it was not at all clear whether the blockchain would still exist three years later. Now, things are different. The idea of a "perfect storm" that we introduced isn't about perfect blockchain solutions, it's about money. The ICOs alone stand for \$12 billion investments in one year. This money will be invested in blockchain infrastructures and blockchain competences. In the end we will have more capable people and a better infrastructure (and a lot of disappointments of failed projects and money that has been burned). There was a time when we truly doubted whether the internet economy itself had a future. The dotcom hype that ended at the beginning of this century made us turn back to the old economy. Bricks-and-mortar companies were cool again. Newspapers headed "Old



economy buys new economy". We all know what happened since then. From the moment we (and the stock markets) didn't trust the internet economy anymore, things really took off. Twitter, Facebook, LinkedIn... all these social media companies are post-bubble products. People started to adopt the internet en masse.

Hypes are good. Our society is built on hypes.

Canals, railroads, steel, cars, the internet, the whole infrastructure that runs our economy has been hyped. It happened five times in recent history of the industrial revolution. This is what we learned from the school of neo-Schumpetarians, led by professor Carlota Perez. We referred to her work in many of our reports and worked with her on several occasions. It's an important reminder: over-investments and failures in infrastructure technologies are historical common practices. Because of the hype, railroads, canals and internet could be built. So if you doubt blockchain has a future because it is overhyped, the answer would be that this actually is a sign the blockchain has a future.

When will the trust crisis be solved?

Google is only 19 years old at the time of writing this report, Facebook 13 and Twitter only 11 years old. When you compare the development of the Internet with that of cars, it becomes immediately apparent that, after 20 years of digitization, there are still no safety belts, airbags, emission controls or compulsory crumple zones for the Internet. In the book *Unsafe at Any Speed* (1965), the young lawyer and activist Ralph Nader at the time denounced the rogue practices of car manufacturers. The highlight of Nader's book was the Chevrolet Corvair, a road hazard in all areas.

Unsafe at any speed

After Ralph Nader criticized The Chevrolet Corvair in his book Unsafe at Any Speed, things started to change.

In order to save costs, no adjustments were made to make the car safer. In summary, Nader criticized car emissions, design details that were dangerous for



pedestrians (large fins and bumpers sticking out), poor occupant safety in the event of an impact, shiny interior parts (could dazzle drivers) and non-standard switching patterns (manufacturers all used different layouts). Less than a year after publication, US President Lyndon Johnson signed the National Traffic and Motor Vehicle Safety Act, which led to the establishment of the Department of Transportation and the National Highway Traffic Safety Administration.

The internet is not a car, but the analogy is clear. The negative consequences of technologies are in many cases just afterthoughts. It takes a while to solve the issues. But we shouldn't have to wait until someone writes the book "Unsafe at any click". The issues are clear and well defined. Distortion of reality and our human lives in the hands of attention merchants will not lead to digital happiness. The 21st century as a human project could fail. The trust crisis can be solved when people and governments start taking action. Now is the time.

Why would consumers choose blockchain?

This is an important question, because if there's no blockchain adoption, there is no blockchain future. And although trust might be important, other things like convenience can easily trump trust. So the first requirement would be that blockchain works at your convenience. Secondly, chances that consumers will embrace blockchain are bigger if there is a financial gain. If the Airbnb blockchain alternative lets you pay less for the same apartment for instance, then blockchain has a strong competitive edge. Therefore blockchain alternatives should find ways to lower their costs.



Ronald Coase's economic theory of transaction costs addresses this issue. He identified three cost drivers: communication, management and contract costs. Seen through a blockchain lens it creates opportunities; meaning there's an efficiency gain when blockchain is used. But how do you com-

pete with a service (like Facebook) that is free? An alternative for free is getting paid. If you get paid for using a browser, watching TV, chatting with friends on social media, it can trigger you to go to alternative platforms. The least that could be said about the new blockchain startups that are entering the market is that they are not ignorant. They know against whom they are fighting. They know that if they don't have a perfect user experience for instance, they don't stand a chance. They know it is about efficiency gains. Three years ago many of the blockchain use cases were still technology freak shows.

The future: history on steroids

We want to end here with a future scenario coming from management (and Taylor) expert Niels Pflaeging³⁵. The underlying question is "what does the future look like?" If we forget what we've said about trust in this report, but just look at it from an organizational standpoint, we are seeing a shift from forms of economic cooperation to a different economic model. The future will be defined by highly dynamic markets because "complexity is back". Something like we've seen in the middle ages. Localized markets with a high portion of customization. Something unlike we've been doing during the Tayloristic revolution. Complexity was reduced by the Tayloristic machinery. The Taylor period wasn't very humanistic, but the new era is, since value creation becomes more man-driven. From 1970 on we see the return of man creating value, marked by the success of Toyota management. Decentralized and agile decisionmaking combined with highly customized products. According to Pflaeging, 1970 was the year that management died. Management today still exists, but they are as Pflaeging calls it "undead"; they are zombies. As complexity kicked in again, hierarchies are in danger. The picture on the next page - the so-called Taylor bathtub - reflects this development.

In the intervening period, that of Taylorism, value creation by machines increased enormously. Today, the platforms, the gig economy and the blockchain add a new chapter to that. People's value creation on platforms and in blockchain economies with their own currencies reminds us of the guilds of the Middle Ages. Back then everyone did their small and big jobs, now it's called – with a trendy term – the Gig Economy. It all adds to the idea of a more agile and dynamic future in which the Tayloristic and hierarchical ways of organizing value becomes obsolete.



The Taylor bathtub represents a future scenario in which man becomes the main driver of value. Market dynamics that dominated the economy before the industrial revolution are back. But this time in a different, digitized form: on steroids.

Only time will tell whether this reflection on the future will become a reality. But what we do know for sure is that things have been shifting and tilting for some time now. Whichever way the developments go, a new foundation under our economy for organizing trust between the various actors, in media, in trade, in the relationship between government and citizens, is not a future fantasy, but a necessity.

Notes

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About VINT labs.sogeti.com

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

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SogetiLabs is a network of over 120 technology leaders from Sogeti worldwide. SogetiLabs covers a wide range of digital technology expertise: from embedded software, cyber security, simulation, and cloud to business information management, mobile apps, analytics, testing, and the Internet of Things. The focus is always on leveraging technologies, systems and applications in actual business situations to maximize results. Together with the Sogeti trend lab VINT, SogetiLabs provides insight, research, and inspiration through articles, presentations, and videos that can be downloaded via the extensive SogetiLabs presence on its website, online portals, and social media.

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