

RED

The Magazine
from SIX

Focus

Understand Data – For Real Now!

How Big Data Will Become
a Success After All

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Best Execution

“All Sufficient Steps”

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Regulatory Compliance 2.0

I’m Also a Bot

Jacob Gertel from SIX is not only
the namesake, but also the soul of JACOB
the automated compliance bot.

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1831

DIE MÄHMASCHINE THE GRAIN MILLER

Die erste funktionierende Mähmaschine in der Geschichte. Sie wurde von James O'Rourke erfunden und 1831 in der Stadt New York in Betrieb genommen. Sie war eine revolutionäre Erfindung, die die Landwirtschaft revolutionierte.

The first working reaper was invented by James O'Rourke in 1831 in New York. It was a revolutionary invention that revolutionized agriculture.

1866

DIE DYNAMOMASCHINE THE DYNAMO ENGINE

Mit der Erfindung der Dynamomaschine von Werner von Siemens im Jahr 1866 konnte elektrische Energie in grosser Leistung produziert werden. Die erste Dynamo wurde in der Fabrik der Siemens & Halske in Berlin in Betrieb genommen.

The invention of the dynamo engine by Werner von Siemens in 1866 made it possible to produce electric energy in large quantities. The first dynamo was put into operation in the factory of Siemens & Halske in Berlin.

**DISCOVER THE HISTORY
OF THE SWISS FINANCIAL
CENTER.**

www.finanzmuseum.ch

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Smart Data Rather than Big Data

Data analysts are searching for a way to “understand” completely random and unstructured data, and to sensibly edit it for calculation purposes. If they succeed in finding one, big data could end up fulfilling the high expectations riding on the technology after all.

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The Head IT & Operations at PostFinance meets the Head Bank-driven Innovation at SIX



Takeaway

The Magazine in 30 Seconds

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Two chatbots are making it easier to reach customer service at SIX. At the same time, SIX is gaining hands-on knowledge with forms of artificial intelligence. Gianna in post-trading and Mia for financial information answer standard queries autonomously, allowing customer service specialists to concentrate their attention on complex issues.

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24 Automated Compliance

JACOB will help clients of SIX to automate their compliance processes. The regulatory service from SIX makes fluorescent markers and Post-it notes obsolete. The highlighting and annotating of regulatory texts happen digitally. Through that mechanism, JACOB creates knowledge that can benefit an entire community.

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30 Cloud Services

Banks like PostFinance want to utilize cloud technology to develop, test, and present new business models. The solution in the planning by SIX is based on a secure Swiss cloud that can be combined with a scalable global cloud.



Diversity Helps Immensely

Impulse Interview: Diversity Mixed teams make sense for more than just the sake of equal rights and opportunities. Dame Vivian Hunt, the managing partner for McKinsey & Company's United Kingdom and Ireland offices, vividly demonstrates that companies with richer human resource diversity also perform better financially.

Interview **Matthias Bill**

Dame Vivian Hunt

The managing partner for McKinsey & Company's United Kingdom and Ireland offices is a leader within the firm on leadership and diversity and has co-authored publications such as *Why Diversity Matters* and *Delivering through Diversity*. She has been named one of the top 10 "most influential black people in Britain" by the Powerlist Foundation, and *The Financial Times* identified her as one of the "European Women to Watch" and more recently as one of the 30 most influential people in the City of London. Vivian Hunt is an alumna of Harvard College and received her MBA from Harvard Business School. In 2018, Vivian Hunt was appointed Dame Commander of the Order of the British Empire for services to the economy and women in business.

*In 2015 you published your seminal report **Why Diversity Matters**. What has changed since then?*

Dame Vivian Hunt We have seen growing awareness of inclusion and diversity in business more broadly. Our report seems to have influenced policy-setting and transformation efforts by companies and institutions. While social justice, legal compliance, or maintaining an industry-standard employee environment are typically the initial impetus behind these efforts, companies are increasingly regarding inclusion and diversity as a source of competitive advantage.

This sounds promising.

Yes, but progress has been slow. By 2017, the 346 companies in our 2015 report – mostly based in the USA and the UK – had increased average female representation on their executive teams by only two percentage points, to 14%, and ethnic and cultural diversity by one percentage point, to 13%. What's more, many companies are still uncertain as to how they can most effectively use inclusion and diversity in a business case to support their growth and value creation goals.

*Is this why you released the follow-up report **Delivering through Diversity in 2018**?*

The motivation for the update was to give a clearer view of the status, but also of what approach and interventions really work. We are increasingly seeing companies building their own business cases, and looking at more precise performance metrics across productivity, innovation, and customer retention. The new report tackles these business cases from inside the organization and provides a perspective on how to take action to impact growth and business performance.

Similar to 2015, we defined diversity as a greater proportion of women as well as ethnically and culturally diverse individuals. We looked at a larger data set of over 1,000 companies covering 12 countries. We measured likelihood of financial outperformance using two measures – profitability using average EBIT margin, and value creation using average profit margin. We then studied 17 companies representing all major regions and multiple industries to have a more granular view of where in the organization diversity matters most. Crucially, we also focused on how leading companies have successfully harnessed ➤

the potential of inclusion and diversity to help meet their growth objectives, and what lessons there could be for other organizations.

So, your latest research reaffirms the correlation between diversity and business performance?

That's right. The statistically significant correlation between a more diverse executive team and financial outperformance demonstrated four years ago continues to hold true on an updated, enlarged, and global data set. Companies in the top quartile for gender diversity on executive teams were 21% more likely to outperform on profitability and 27% more likely to have superior value creation.

“Inclusion of highly diverse individuals can be a key differentiator among companies.”

But it's not just gender diversity, is it?

Companies in the top quartile for ethnic and cultural diversity on executive teams were 33% more likely to have industry-leading profitability. That this relationship continues to be strong suggests that inclusion of highly diverse individuals – and the myriad ways in which diversity exists beyond gender, including neurodiversity, sexual orientation, age, or international experience – can be a key differentiator among companies.

Despite this, we found ethnic and cultural diversity on executive teams to still be relatively low. And in the case of women on executive teams, they were twice as likely to be in staff roles than in line roles, for example those most closely associated with revenue-generation, and most likely to lead to CEO.

What happens to companies that don't try to change this?

Our updated data shows that the penalty for bottom-quartile performance on diversity

persists. Overall, companies in the bottom quartile for both gender as well as ethnic and cultural diversity were 29% less likely to achieve above-average profitability than were all other companies in our data set. In short, not only were they not leading, they were lagging.

The relationship between diversity and profitability seems to be there. But what is the reason behind it?

Our data revealed that having more women on executive teams correlates the strongest and consistently positively with the likelihood of financial outperformance. The research points to a small number of important ways to explain this correlation, including improved talent access, decision-making, innovation and consumer insight, and employee engagement. The talent argument instantly resonates: A diverse and inclusive workplace is central to a company's ability to attract, develop, and retain the talent – particularly high-performers – which it needs to compete.

Academic research shows that diverse and inclusive groups make better-quality decisions, often faster, in a more fact-based manner, avoiding “group think.” They bring different experiences, perspectives, and more creative approaches to solve complex problems. They are also often more innovative and can better serve diverse customers. Another benefit is implied by recent highly publicized issues with gender and racial discrimination, highlighting that, for many companies, diversity and inclusion are about preserving their license to operate.

With profitability at the core of the equation, shouldn't the financial industry be the first to realize the importance of inclusion and diversity?

Financial services players as a whole showed the highest average representation of women on executive teams in our data set. This is also an industry in which whole-company representation of women is among the highest, providing a solid starting point to achieve higher representation at more senior levels. However, the sector also had the slowest growth in representation of women on executive teams, suggesting a plateauing effect and the need to accelerate efforts.

We see quite some variability in the pace and scale of companies' progress with inclusion and diversity. There are industry-specific as

well as geographic and cultural differences which mean different starting points. But we also find that across industries and in different parts of the world, companies that are making rapid progress share certain traits, the primary one being that they treat inclusion and diversity as a core business priority.

Isn't it difficult to make inclusion and diversity a core business priority since they are often undermined by unconscious decisions?

That's why much of our firm's research has been about building the fact base around these areas. We have seen executives and managers change their viewpoints completely when we show them data on how performance ratings, manager support, experience of daily micro-aggressions, or sponsorship differ between men and women.

I think companies will continue to work on understanding the benefits that diversity and inclusion bring to them. This will lead to building a truly inclusive culture. Culture is one of the critical building blocks we have identified to driving a successful inclusion and diversity agenda. The other vital components are visible leadership commitment, alignment with business strategy, and measuring the effectiveness of interventions. ■

“We have seen executives and managers change their viewpoints completely when we show them the data.”

Women in Technology and Data Awards 2019

SIX Employee Honored

Tamsin Hobley, from the business unit Financial Information of SIX, was named Vendor Professional of the Year at this year's Women in Technology and Data Awards hosted by WatersTechnology. The jury annually honors women from the technology and data vendor community who personify innovation and outstanding service within their companies. In her 10 years at SIX, Tamsin Hobley has advanced from Sales Executive to Head Sales UK&Ireland. Throughout that time, she has successfully helped clients master regulatory and data governance challenges.

WatersTechnology's aim with the awards is to purposefully promote the involvement of women in technological and data-driven industries.

The Question

Why Will Paper Bills Still Be Needed in the Future?

“By 2027, SIX is aiming to dispatch over 80% of all billing invoices in Switzerland digitally via eBill. But there are people who prefer to pay their bills at the post office or who do not have access to e-banking. To accommodate them, Switzerland’s financial industry is rolling out the QR bill as a successor to the standard payment slips currently in use, thus building a bridge to digital bill paying.”

Andreas Schöni, Head Account & Partner Management, Banking Services, SIX

Did you know? Invoice recipients in Switzerland must be capable of paying with QR bills as of 30 June 2020. The video viewable via the URL below shows billers where they need to take action and how QR bills benefit them.



→ More information: six.swiss/qrbillready

→ Send us your question: red@six-group.com

The Insight

The Contribution from SIX



Many investors and stakeholders no longer value companies solely on the basis of their financial performance. This means that companies are well advised to do business not just with profits in mind, but also in an ethical, ecological, and socially responsible manner.

For the year 2018, SIX published a fully integrated annual review of its achievements track record for the first time. The brochure titled *Drive!* illustrates the value of SIX and the value the company creates not just in financial terms, but also explains how SIX functions as the central infrastructure for Switzerland’s financial center. SIX, for example, enables companies to raise capital on a securities exchange and, in doing so, facilitates economic growth. But the role played by SIX also includes training around 60 young IT and commercial specialists each year, as well as operating a cyber security center to enhance data security in Switzerland’s financial sector.

SIX intends to continue and expand its integrated reporting so that it can better measure its performance over the years.



→ Order the integrated annual review *Drive!* from SIX or download a PDF version: six.swiss/drive

The Head/The Count

18-fold

euroSIC connects banks in Switzerland with the eurozone financial market, and vice versa. This “cross-border traffic” is constantly increasing. The number of transactions conducted through euroSIC is 18 times higher today than when the system was launched in 1999. After 20 years in existence, the birthday celebrant doesn’t betray its age at all. Michael Montoya, who has been involved with euroSIC from the outset in a number of different functions, knows why. In 2015 euroSIC underwent a rejuvenation with its seamless migration to the SIC⁴ platform. At the time – still with UBS – he was the chairman of SIX Interbank Clearing. As its current managing director, he has had the honor of announcing another milestone achievement: SIX now owns a 100% equity stake in the Germany-based Swiss Euro Clearing Bank (SECB), the “central bank” and system manager of euroSIC.



Michael Montoya

Managing Director
SIX Interbank Clearing



The Picture Design thinking is an iterative, interdisciplinary process used to create solutions that serve the users. The methodology is an integral element of the innovation process at SIX. That's why Falk Uebernickel, at the invitation of the business unit Innovation&Digital, spent a day in March 2019 teaching the underlying principles to all interested employees in Zurich. The adjunct professor at the University of St. Gallen and visiting scholar at Stanford University is a prominent opinion leader in the current discourse about design thinking.

Caught in the Act

SIX ConventionPoint
Zurich, Switzerland

29 January 2019
12:30 pm

2° C
Humidity 60%
Overcast

Dr. Maneesh Wadhwa
Head Innovation Field
Financial Service Utility, SIX





Maneesh Wadhwa synthesizes the key findings of *The Future of the Securities Value Chain* white paper for you.

To see and listen to him, download Xtend, a free augmented reality app, to your smartphone (from the Apple App Store or Google Play) and scan the left half of this double-page spread with it.

pto Valley

The Crypto Valley Association presents:
Worlds of ExChange
29 January 2019

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The Worlds of ExChange conference is set to open its doors to the audience in half an hour. Maneesh Wadhwa, Head Innovation Field Financial Services Utility at SIX, is still alone in the auditorium of the SIX ConventionPoint. He is using the time left to rehearse his speech. The Crypto Valley Association has invited him and others to discuss the opportunities and challenges associated with securities and exchanges in the age of blockchains, cryptocurrencies and digital assets. The topic meshes well with *The Future of the Securities Value Chain* white paper that Maneesh Wadhwa is about to present as one of the conference's speakers.

The white paper is the first in a series called Picture of the Future. SIX intends to publish it with the aim of unraveling the complexity of the world around us, providing a differentiated look at scenarios, and initiating discussions.



→ Read the full white paper or a summarized version (PDF):
six.swiss/pictureofthefuture

Focus

Big Data: Big Disillusion?

Hyped, condemned, reprieved. On the tumultuous history of big data and four misconceptions about it.

Text **Simon Brunner**

The headlines blare it loud and clear: “Big Data, Big Problems” was the title run several months ago by the renowned business daily *The Wall Street Journal*, a newspaper not known for being hostile to innovation. Shortly thereafter, the Swiss business magazine *Bilanz* led with an even more explicit headline: “The Big Data Lie.” The journalists were further supported by the iconic newsletter published by CB Insights. The market research institute had analyzed how often startups used the terms “big data” and “artificial intelligence” during teleconferences with investors. It found that “artificial intelligence” dethroned “big data” as the dominant term in mid-2016 and has now become the conversation topic three times as often.

The euphoria over big data has definitely faded since the days around a decade ago when the magazine *Wired* proclaimed that this technology would render conventional research superfluous. *Wired*, the bible of Silicon Valley geeks, wrote that theories and hypotheses would henceforth no longer be necessary; computers would now discover correlations entirely on their own. In 2011, McKinsey & Company predicted that big data would enable the public sector in Europe to save EUR 250 billion annually, an amount greater than Greece’s gross domestic product. Five years later, the consultancy firm re-

viewed the state of play and acknowledged that only 10 to 20% of that cost-saving potential, at the most, had been realized.

So what’s the truth? Is big data making the world a better, more efficient, and more knowledgeable place? Or is it the new technology and not conventional research, contrary to the prophecy, that has turned out to be superfluous?

Misconception #1: Big Data Means Oodles of Data

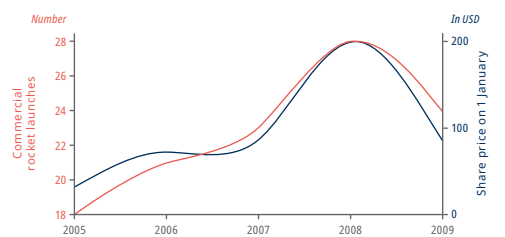
The difficulties start with the definition: The description of what big data really is remains awfully vague. Dan Ariely, an acclaimed psychology professor who specializes in the study of irrational behavior, drew parallels between big data and the intimate love lives of adolescents in a widely publicized tweet: “Big data is like teenage sex: Everyone talks about it, nobody really knows how to do it, everyone thinks everyone else is doing it, so everyone claims they are doing it.”

The common definition of “big data” encompasses four terms that all start with the letter V: “Volume” means that enormous quantities of data are involved. “Velocity” refers to the fast speed with which data accrues and is processed. “Variety” expresses the fact that data can be of very different natures ranging from simple tweets to complex traffic data, and “veracity” means that the data must be truthful.

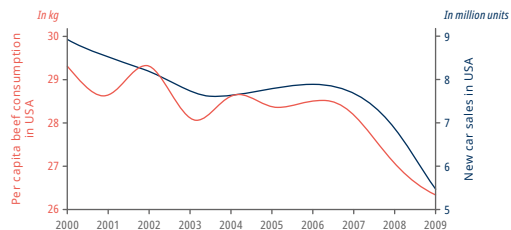




The more countdowns,
the higher Apple's stock price?



The smaller the appetite for meat,
the fewer radiator grills?



Misconception #2: Computers Are Intelligent

Computers are perfectly suited to performing a vast array of different tasks, but are simply too underdeveloped to handle other, more sophisticated jobs. Computers are still “remarkably dumb,” says John Giannandrea, the former head of artificial intelligence at Google and the new AI chief at Apple. He compares computers’ current stage of development to that of a “four-year-old child.” Users of smart speakers from Apple, Amazon, or Google know just what he means. A study revealed that smart speakers understand almost every question asked of them, but answer correctly only around 75% of the time.

Urs Hölzle, arguably the most prominent Swiss citizen in Silicon Valley, who joined Google as the company’s eighth employee, likewise said in an interview that he was “surprised how little computers can do” and cited an example. With enormous effort, a computer can be taught to recognize a zebra in a photo, he explains, but “it’s possible to modify a small number of pixels so that the computer will think it’s a race car.”

Misconception #3: Scrap Iron Can Turn Into Gold

“Big data initially aroused completely false expectations,” says Gregor Kalberer, Head Innovation Design & Technology at SIX. “The prevailing belief was that you could feed a supercomputer with immense amounts of entirely unstructured data and it would extract amazing insights and knowledge from that.” But an old saying among computer scientists holds that if you feed computers with bad input, you get bad output, or stated more pithily: “Garbage in, garbage out.”

Big data set out to disprove this “law of nature” in the field of software programming. Gregor Kalberer, who holds a doctorate in computer science from the Swiss Federal Institute of Technology in Zurich, explains

that “the infrastructure for big data is indeed capable of very rapidly processing enormous volumes of data that were previously inconceivable, but the principle that scrap iron can’t turn into gold remains inviolable.”

The current holy grail of data analytics is finding a way to “understand” completely random and unstructured data and to sensibly

“I’m surprised how little computers can do.”

Urs Hölzle, Google

edit it for actual calculation purposes, Gregor Kalberer continues. This step must take place with the least possible effort, he says. “If I have to elaborately format the bulk of the data manually, I don’t gain any efficiency, regardless of how powerful the computers doing the subsequent calculating are.”

Misconception #4: Eating Cheese Promotes Golfing

An imprecise definition, the slow development of intelligent systems, low-quality input: These factors are delaying big data’s breakthrough. Moreover, big data specialists are in short supply in many places. But yet another obstacle to overcome often gets overlooked. In order for big data to produce truly useful output, computers would have to be capable of distinguishing correlation from causation. They would have to be able to determine whether or not a relationship between two variables exists purely due to random chance.

But how are computers to know, for example, that cheese consumption and golf course revenue in the USA correlate almost perfectly, but do not have any actual cause-and-effect connection? Or something a bit less trivial: How are they to know that ski-pass sales correlate with slopeside food and beverage consumption, yet the true causal variables are other ones such as the weather or the amount of snow on the ground?

One oft-cited example illustrating this shortcoming of big data is the failure of Google Flu Trends. The idea was to use Google search queries to predict flu epidemics faster than before. It turned out, though, that many people who actually weren’t ill googled terms like “coughing” or “fever” because they had just, for instance, watched a TV health

Causation or correlation?

Big data doesn’t automatically also mean more knowledge. It sometimes even means the opposite. It’s easy to find correlations when you’re sifting through mountains of data. Tyler Vigen entertainingly demonstrates that there’s not always a causal connection behind them. The US native’s blog, *Spurious Correlations*, and his book by the same name were the inspiration for this article’s photo sequence.



→ More information:
tylervigen.com



program on those symptoms. Google discontinued the service a couple of years later.

What Took Hours to Fail Works in Seconds

With Flu Trends, Google impressively demonstrated where big data doesn't work, but it has also convincingly shown where and how the technology is actually capable of delivering astoundingly good results: The Google search engine can scan billions of websites simultaneously and is additionally able to rank search results. "If we employ big data the right way, it will be a game changer," Gregor Kalberer says with conviction. "Through multiple tests at SIX, we have demonstrated that computing processes that previously broke down after several hours can now be executed successfully by us in a matter of a few seconds."

Success stories of that kind can be found in almost every company, industry, and country, which is why the big data market continues to expand. Research firm MarketsandMarkets estimates its growth rate at 17.6% annually and sees big data becoming an 80-billion-dollar market by 2023 (up from almost USD 30 billion in 2017).

There indeed is additional evidence that big data is on the cusp of reaching adulthood. Pharmaceutical giant Roche last year bought

"If we employ big data the right way, it will be a game changer."

Gregor Kalberer, SIX

Flatiron Health, a New York-based tech startup that analyzes patient data on a massive scale. Roche expects the acquired company to give it enormous research-and-development advantages in the field of oncology. The music on the other bank of the Rhine in Basel sounds the same: Novartis never tires of repeating the mantra that data analytics could lead to a "productivity revolution" in the pharma industry. With the help of digital technologies, the cost of clinical trials could be reduced by up to 25%, Novartis CEO Vasant Narasimhan says.

Artificial Intelligence Is Being Revived by Big Data

Nevertheless, "big data" isn't the buzz term of the moment; "artificial intelligence" is. Blame that in part on big data itself. In the early days of artificial intelligence, AI applications were often able to process only small amounts of data within a useful time frame. The infrastructure for big data helps to remove that limitation. With the advent of the Internet of Things (the network of interconnected devices) and the rollout of 5G wireless communication technology (which has many times more bandwidth capacity and is much faster than the 4G technology now in widespread use), data volumes and the number of possibilities for using that data will increase even further.

However, Gregor Kalberer says that some conditions must first be met to allow the technology to fully live up to its promise. "First, the use case must be clearly defined. Second, the pertinent information must exist in the original data. And third, the data must be computer-processable." Data formatted for further processing is referred to as "smart data." Such data isn't smart in itself, but it does contain pertinent information in a form that enables actual knowledge to be gained. "This way, artificial intelligence isn't even needed to derive added value from big data." Traditional reporting and modeling would already suffice. ■

Big Data Startups

To Make It Big

Big data is a popular stomping ground, particularly for startups. So it's no surprise that the F10 FinTech Incubator & Accelerator has recurrently accepted big data startups into its program, such as Brainalyzed in 2017. The firm based in Hamburg, Germany, is seeking to harness the power of artificial swarm intelligence to enable better portfolio decisions. Another startup involved with big data will be in the F10 accelerator until the end of May 2019. From operation sites in Zurich and San Francisco, advAlsor AG is aiming to leverage socio-cultural, behavioral, and organizational data to make corporate culture measurable.



→ SIX is the originator and co-founder of F10. More information: six.swiss/about-f10



The bigger the cheese platters,
the more holes played?



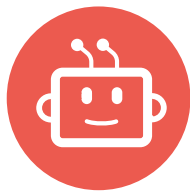


The Floor Is Ours

SIX is conquering new territory at its headquarters in Zurich. It is turning a heretofore vacant floor into a new collaboration workspace. User representatives Luca Casuscelli (left) and Sabrina Schenardi are delighted that their Innovation & Digital business unit will be moving into its new home here in summer 2019. What's being built is a place for encounters of all kinds, and a showcase for SIX that emblemizes an open culture of innovation and intrapreneurship, they explain. Employees will hold workshops here and conduct sprints applying agile methodology. However, they will also be able, for instance, to receive outside guests in this venue. Irfan Gasser (right), Project Manager for Real Estate Management of SIX stresses that it aims to serve as an inspiration to the employees in all of the company's business units: "A large part of the floor space consists of flexible workspaces that are ideal for project groups assembled for the short to medium term."



INNOVATION



Hello, I'm Gianna

Chatbots in Customer Service Everyone's talking about artificial intelligence. But where can companies already deploy technologies like this sensibly? With two chatbots, SIX is gaining initial hands-on knowledge about using artificial intelligence in routine business operations while improving the client experience.

Text **Hrvoje Tkalec**

Gianna has been working for SIX since November 2018, but has yet to take a lunch break. Gianna is a chatbot. She resolves clients' post-trading queries autonomously. Gianna is an alternative to conventional telephone support, and she creates a win-win situation for SIX and its clients.

Tino Hellmund, Head Client Service Management in the business unit Securities & Exchanges of SIX, ticks off the specific benefits of the innovation: "The chatbot autonomously answers standard queries very well and allows our customer service specialists to concentrate on complex issues. It enables them to apply their expertise more to the kinds of queries that require manual intervention, further clarification, or in-depth knowledge to resolve." Clients benefit doubly: from better customer service in demanding matters, and from faster responses to simple questions about market guides, forms, or contact persons. "A chatbot responds imme-

diately and can even resolve multiple queries simultaneously. Gianna makes it significantly easier for our clients to reach us."

At the same time, the use of a chatbot improves analysis of clients' needs. Customer queries are important touch points for any business. "They can serve as a basis for devel-

"The chatbot allows our customer service specialists to concentrate on complex issues."

Tino Hellmund, SIX

oping new products or enhancing existing ones," Tino Hellmund explains. Gianna therefore is much more than just an answering machine for standard queries, because she is capable of learning. Artificial intelligence enables her to continually improve the quality

of her responses and to thus enhance the client experience. SIX also plans to connect Gianna with SECOM, its platform for processing and settling securities transactions. Clients, for example, could then directly query the status of their transactions themselves.

With Gianna, SIX has taken a first step in employing an innovative technology in its interactions with clients. The second step will follow soon: Mia, the next chatbot, is already in the starting block. Like Gianna,

Mia is based on technology from Enterprise Bot, a startup company that went through the F10 FinTech Incubator & Accelerator founded by SIX.

Mia is to financial information what Gianna is to post-trading. Mia's job in the future is to answer standard queries – such as for price information on specific securities – swiftly, accurately, and courteously. “With Mia, we are able to improve turn-around time, client experience, and the quality of our information. That is essential in our business with financial data,” comments Frank Iller, Head Integration Management in the business unit Financial Information of SIX, on the planned rollout. “Precisely understanding each query is the challenge.” That's why, for starters, Mia is to be tasked with providing information mainly on structured data. “Structured” in this context means that each bit of information has been meticulously labeled and categorized. This way, Mia can match the client's questions and give the corresponding answers.

Chatbots Have Gained Acceptance

A number of studies on the deployment of chatbots have shown that machine-generated responses have gained acceptance. Clients appreciate the fast response times and, especially, a chatbot's ability to answer a wide range of simple questions. “One benefit for our clients that shouldn't be underestimated is the possibility of getting questions answered any time of the day or night,” Tino Hellmund says. Gianna and Mia don't take lunch breaks, nor do they ever sleep. ■



Type any question you have.



I need the instruction format for the German market.



Please give me the chapter number or subject and I will provide a direct link to the relevant chapter. Note: For some countries, not all chapters apply.



To ask another question, please type “cancel”.

Chapter 1 – Overview

Chapter 2 – Country Profile

Load more

...

Compared with the
next best competitor,
the bid/ask spreads
on the Swiss stock exchange
are narrower by

0.4
basis points.

The Swiss stock exchange
provides the tightest bid/ask
spreads for all SMI shares as
well as the best prices during
more than 90% of official
trading hours.

What Does “Best Execution” Mean?

In the securities trading business, the customer is king. The revamped version of the Markets in Financial Instruments Directive (MiFID II) has further tightened regulatory requirements in Europe. Barring a specific instruction from a customer, financial institutions now must not only take “all reasonable steps,” but “all sufficient steps” to obtain the best possible result for that customer when executing an order (best execution policy). MiFID II specifies a number of criteria that financial institutions must observe when executing client orders. The introduction of the Swiss Financial Services Act (FinSA) has further increased the importance of those criteria also in Switzerland.

4.2 mn

francs investors saved
through the non-displayed
liquidity pool SwissAtMid
in 2018.



**“As the operator of the Swiss stock
exchange, we supply a multitude of
relevant building blocks that investors
can use to construct their own best
execution policies.”**

Christian Reuss, Head Sales, Securities & Exchanges, SIX

The average latency time
on the Swiss stock exchange is

14
microseconds.

The Swiss stock exchange boasts one of the fastest, most modern, and most stable trading platforms worldwide. It experienced zero downtime throughout all official trading hours in 2018.

In 2018, the Swiss stock
exchange increased its market
share in SMI shares to

around **70** %.

The average size of transactions in SMI shares is more than twice as large as on alternative trading platforms.



Price
of Security



Implicit and Explicit
Costs



Speed
of Execution



Likelihood
of Execution



Size and Nature
of Order

Criteria for Best Execution of Orders

In addition to explicit costs (e.g. brokerage fees), factors such as inadequate liquidity can cause implicit costs. On the Swiss stock exchange, a unique mix of private banks, brokers and proprietary trading firms provides natural liquidity. SIX is additionally helping to lower implicit costs with SwissAtMid, Europe's largest non-displayed liquidity pool for Swiss equities.

Compared to the
largest competing
trading venue, the market
depth for SMI blue chips
on the Swiss stock exchange is

5×
greater.

Over 80% of the time the Swiss stock exchange offers the largest tradable volume of SMI shares at the best price. This large order book (the deep market depth) increases the likelihood of order execution, and fosters price stability.

Links Supplanting Markers

Regulatory Compliance 2.0 With JACOB, a SIX startup of the same name is aiming to help compliance officers and others better understand the meaning of regulations and their associated data. JACOB is named after Jacob Gertel, the contentual conscience and soul of the automated compliance bot.

Text **Matthias Bill**

Startups aren't just for young people. Anyone visiting the F10 FinTech Incubator&Accelerator (see box) these days will see this preconception clearly refuted. The members of the core creative quartet behind JACOB have an average age of 48 years. Thibaut Rouquette, the senior innovation manager in charge, is nearly half the age of the oldest team member. That fits perfectly, though, because the corporate startup from SIX aims to combine new technology with decades of in-depth experience in regulatory compliance and business processes. The new technology is developed by Géza Mihala, a software engineer in the business unit Innovation&Digital of SIX, among others. The decades of experience come from Jacob Gertel. He is a senior content manager in the Financial Information business unit of SIX and has been extensively involved with regulatory compliance matters for more than a quarter-century. But that's not the sole reason why he's the project's namesake and figurehead.

Knowing Your Data

JACOB, which stands for Jacob's Automated Compliance Bot, was originally intended to ease the flesh-and-blood Jacob's everyday work. SIX supplies high-quality data on

“The number of regulations has continually increased in recent years.”

Jacob Gertel, SIX

over 70 regulations and tax codes with countless different country-specific peculiarities. Many of the documents underlying that data pass across Jacob Gertel's desk. “The number of regulations has continually increased in recent years, and existing regulations can change at any time. I thought to myself that new technologies like artificial intelligence could help to keep our data always in line with current regulatory standards.” Almost as soon as he gave voice to that thought, he became test user number one.

Since Jacob Gertel's everyday routine resembles that of every compliance officer in the financial industry, he identified a problem that clients commonly face. They, too, fight their way through a regulatory jungle armed with fluorescent markers and Post-it notes. They diligently highlight, annotate, and jot comments to gain an understanding of what a regulation means for their business and to become better acquainted with their data and the associated processes. “Today, knowing your data is just as important as knowing your customer,” Alexander Dorfmann says. The senior product manager in the business unit Financial Information of SIX leads the team developing JACOB and is in charge of matters that include setting its strategic focus. “Every company should ask itself what it wants to achieve with its data, what it's doing with it.”

“Post It!” instead of Post-its

JACOB will help to answer those questions as a regulatory service and allow clients of SIX to further automate their compliance processes. For starters, it makes fluorescent markers and Post-it notes obsolete. Highlighting and annotating happen digitally. When compliance officers highlight a term or sentence in a regulatory document, JACOB provides them with a link to a field in his database. From the second highlighting of a text fragment onward, JACOB has learned, and can thus refine its responses. It then already knows the appropriate regulation.

Let's say, that data on a structured product classify it as a “complex instrument” in accordance with the MiFID II regulation. Highlighting that term links the marked data field with the corresponding paragraph of the regulation. That link makes it easier for banks to analyze why they are only allowed to sell this product to a restricted set of private investors. But JACOB can also answer ➤

VAY TO THE FUTURE



Being member of a startup
isn't age-related. The average
age of the JACOB team
members is 48.



Rarely seen separated: Jacob Gertel, Alex Dorfmann, Géza Mihala and Thibaut Rouquette (left to right) pool the knowledge they've gleaned from their daily work at SIX in the corporate start-up JACOB.

questions in the opposite direction, such as: What data of ours does MiFID II affect?

JACOB creates knowledge, and since that knowledge doesn't exist solely in the form of Post-it notes, it can benefit a community. Besides digitizing regulatory knowledge, publishing and sharing it constitutes a second important facet: "Compliance officers aren't all interested in the same aspects. They don't even all have the same documents. We can complement each other and quantitatively take things to a new level," Jacob Gertel explains. "Qualitatively as well," Alexander Dorfmann adds. "The clamoring for standards is unmistakably clear. JACOB can contribute to uniformly interpreting regulatory texts."

Here's where commenting comes into play. JACOB allows text to be input during the setting of links. The community can then consult and discuss them. A TripAdvisor-style rating system is still a long way off, but highlighting, annotating, commenting, and analysis will already work in an early version of JACOB. It will make its debut in late May 2019 when the startup's time in the F10 comes to an end. Early adopters on the client side will be testing JACOB extensively until then. By that time we'll find out just how astutely Jacob the human recognized the challenges facing his colleagues in the financial sector, and how reliably JACOB the bot masters them. ■

"JACOB can contribute to uniformly interpreting regulatory texts."

Alexander Dorfmann,
SIX

SIX Startups in F10

From Prototype to Product

With JACOB, SIX has sent yet another internal startup into the F10 FinTech Incubator & Accelerator. Each year, 30 startups from around the world, split into two batches, get a chance to participate in the F10 accelerator program. With the support of in-house coaches and external mentors, they work for six months on a minimum viable product (MVP). An MVP, in contrast to a prototype, is a product or service that already offers enough functionality to provide added value for prospective customers. The time spent in F10 enables founders of internal startups at SIX, like the team surrounding Jacob Gertel and Alex Dorfmann, to bring their ideas to fruition away from day-to-day business exigencies.



→ SIX is the originator and co-founder of F10. More information: six.swiss/about-f10



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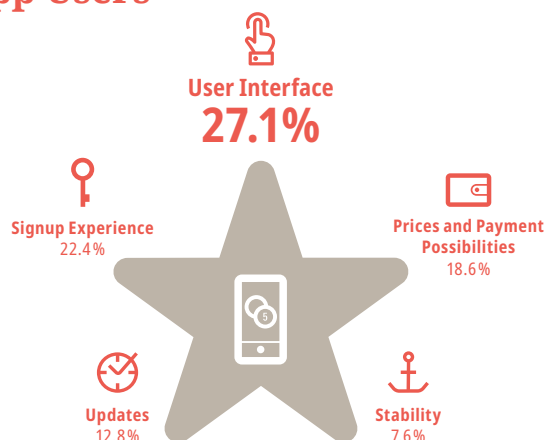
The Statistic

Developers Have to Face the Interface

A good interface is the most important feature for users of finance apps on mobile devices. “User interface” is what they most frequently cite by far in their remarks on Google Play Store’s review pages, appearing in 27.1% of commenters’ sentences. That figure was calculated by data scientist Remo Frey, Senior Open Innovation Manager at SIX, and Johannes Huebner, a mentor in the F10 FinTech Incubator&Accelerator founded by SIX, together with three colleagues from the Swiss Federal Institute of Technology in Zurich. They machine-analyzed a total of more than 300,000 sentences in user reviews on 1,610 different finance apps – mainly banking, payment, and trading apps, but also lending and insurance apps, for instance. Their analytical paper titled *What People Like in Mobile Finance Apps* unearthed important insights for businesses and app developers.

They found, for example, that users punish apps with bad interfaces by awarding them far fewer stars. However, the reward for improving a mediocre user interface is marginal. The same goes for other “must-have” features in an app. The signup experience, for instance, must be fast and smooth and the app must run stably. Additional efforts put into must-haves, though, do not result in above-average app ratings, unlike efforts put into “satisfier” features such as optimum resource use or multiple language versions. Satisfier features likewise knock off rating stars when they’re defective or missing, but they have a positive rating impact when they’re well executed. The latter gives them something in common with “delighter” features such as tutorials or push notifications besides the app price and payment possibilities. Users, though, don’t seem to miss such delighter features when they get forgotten in app development.

What Matters Most to Finance App Users



The List



Try Searching Differently!

1. Greatest Hits

Dogpile returns search results from multiple search engines in response to a single query.

→ dogpile.com

2. A Private Matter

DuckDuckGo respects privacy and doesn't track its users.

→ duckduckgo.com

3. Tree Nursery

Ecosia uses revenue from the search ads to plant trees. It takes 45 search queries on average to finance a tree. Through the initiative of an apprentice, SIX has installed Ecosia's browser extension company-wide as an alternative to mainstream search engines.

→ ecasia.org

4. A Family Affair

Swisscows likewise doesn't surveil its users, and it blocks pornographic and violence-glorifying search results to boot.

→ swisscows.com

5. Neatnik

Yippy automatically arranges its returned search results into categories.

→ yippy.com

The Glossary

CLARA

After a trade has been executed (matching), but before it is settled, the clearing takes place. As the central counterparty, SIX manages the inherent risks. Since acquiring Oslo Clearing ASA from the Oslo Stock Exchange in 2014, SIX has been operating a second clearing platform called CLARA alongside SECOM. In addition to clearing large volumes of shares, exchange-traded funds, and bonds denominated in Swiss francs via SECOM, CLARA serves the Oslo Stock Exchange, the NASDAQ Nordic exchange, and a number of multilateral trading facilities in Europe. SIX is now combining the capabilities of CLARA and SECOM onto a new platform that is scheduled to go live in late 2020.



→ More information on the clearing platforms of SIX:
six.swiss/clearing-platforms



The Quote

“By introducing tokens as a new legal element, Liechtenstein is creating an instrument with which any right from the analogue world can be represented digitally.”

Liechtenstein Prime Minister Adrian Hasler on the principality's new Blockchain Act in a January 2019 guest commentary in the *Neue Zürcher Zeitung* newspaper. The new law, for example, regulates the ownership right to a motor vehicle within a digital transaction system.

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A full-page photograph of two men in suits standing in a modern office with large windows overlooking a city. The man on the left is gesturing while speaking, and the man on the right is listening. A pillar with graffiti is on the left, and a speaker is on the right. Sunlight streams in from the windows.

Henrik Czurda
sees a cloud ecosystem
on the horizon.

Markus Fuhrer
envisages a community
cloud.

“The Crucial Element Is Trust”

Future Talk: Cloud Technology A cloud presents opportunities, particularly for business models in the financial industry. But the clouds aren't where Markus Fuhrer, Head IT & Operations at PostFinance, and Henrik Czurda, Head Bank-driven Innovation at SIX, have their heads; they have their feet on the ground and are putting cloud technology to a reality test.

Interview **Matthias Bill**

We're conversing in the restaurant Clouds, at the top of Zurich's tallest building. And that's what we're also looking at through the window: clouds. They're constantly changing shape. A cloud is pretty capricious and unreliable, wouldn't you say?

Henrik Czurda What might be true of clouds in the sky doesn't apply to the eponymous technology. It should be generally well known by now that data in a cloud is stored securely. Every day I experience just how routinely people in my personal sphere utilize cloud technology. They don't have any qualms about storing or sharing personal photos or even sensitive documents there. Skepticism toward cloud adoption often seems more prevalent to me in the business context.

Markus Fuhrer I see it similarly, and yet banking and healthcare are two areas where people are leery of new technologies, particularly with regard to the storage of data. We arguably still need to bang the drum for cloud technology, especially in rather conservative-minded Switzerland.

So let's get started.

C In my opinion, a cloud is usually more secure than a classical server environment in a data center. Cyber security tasks can be performed by a multitude of specialists rather than by just a handful of people on-site.

Another common misunderstanding is even worse, in my view: A cloud isn't merely a secure storage location. A cloud enables businesses to react quickly and flexibly to customer needs, for example. Companies potentially also being able to save costs in the process is more a secondary aspect.

F Saving costs is always a good thing, of course, but it's primarily about being able to try out something different because it, for instance, surpasses the capabilities of one's own data center and applications. In addition to providing storage capacity, a "proper" cloud also puts computing power at your disposal and enables you to utilize artificial intelligence, deep learning, and related technologies on demand – billed per usage and infinitely scalable in principle.

C Other banks, as well as companies like insurance firms or health insurers likewise operating in regulated industries, also want to take advantage of these benefits. That's why the solution that we at SIX are planning is based on a secure Swiss cloud for sensitive data managed from Switzerland. It can be combined with a scalable global cloud, for instance to process non-sensitive data with the aid of computing-intensive applications like artificial intelligence.

F To begin with, a Swiss cloud helps all businesses that wish to keep their or their customers' data on Swiss soil. PostFinance ➤



has a clear stance on that: We will never store any client-identifying data outside Switzerland. PostFinance currently is still storing all of that data in its own data center.

C It in fact isn't always clear where a global cloud provider, especially a public cloud provider [see box on page 34], stores and processes data. If the cloud isn't managed from Switzerland, that can significantly facilitate outside access. The US CLOUD Act is a good example of how protection of sensitive customer data could be endangered. Would the US federal government want to, and be able to, access data in case of hardship? No one can conclusively rule that out today. A lot of banks find that unsettling.

Markus Fuhrer

Markus Fuhrer has served as the head of IT (CIO) and as a member of the executive board of PostFinance since 2014 and additionally became the company's chief operating officer in 2017. He has worked for PostFinance for almost 30 years, rising through all managerial levels and heading different IT departments during his career. From 2013 through 2015, he additionally was the program manager in charge of PostFinance's core banking software transformation. Markus Fuhrer holds a degree in business informatics and an SKU Advanced Diploma (AMP-HSG) in corporate management.

Dr. Henrik Czurda

Henrik Czurda, Head of Bank-driven Innovation at SIX, has more than a quarter-century of experience at the interface between strategy and technology. He started his career as a consultant at companies including PricewaterhouseCooper and the Boston Consulting Group. He held management positions at Bank Julius Baer and Swiss Re, and was an executive board member and the CFO of a mid-sized Swiss high-tech industrial company for several years. Prior to joining SIX, Henrik Czurda was a partner at Boydak Strategy Consulting.

F That's why US-based cloud providers are taboo to us. If we were to move data to cloud storage, we would do it in partnership with a reliable Swiss provider like SIX. It isn't just about security; it's also about our reputation. The customer admittedly can only have limited knowledge of where his or her data is actually located. But since data protection is an omnipresent topic, we have to take a stand on that. The Swiss label helps us to do that.

C This makes a Swiss cloud attractive not just for Swiss companies. The stability of our country and our legal system is a genuine asset abroad. I personally have started to think more broadly ever since I've received multiple inquiries along this line.

Mr. Fuhrer, you are already accumulating experience with cloud technology.

F Of course. We at PostFinance are open to cloud technology. We have been operating a private cloud, an enterprise cloud, for quite some time now. It offers us practically all possibilities. Already as an internal cloud it helps our developers, for example. We agilely toggle back and forth between development and operation, and are faster onto the market with new products. As our new infrastructure platform, it will take over hosting from the incumbent platform sometime in the medium term.

C If you don't mind me asking, where do you stand with this build-out?

F We created a good starting point with our migration to a component-based core banking software. However, one has to convert or newly develop applications, in the direction of microservices for example, to optimally utilize cloud technology. This applies regardless of whether one wishes to use a private cloud or a public cloud.

PostFinance is constantly adapting proprietary applications and those from its partners in small steps wherever it makes sense to do so. But we are deliberately taking our time and are working on demand. We take

“We want to use cloud technology to develop, test and present new business models.”

Markus Fuhrer, PostFinance

up applications that were already being revamped anyway. They then end up in our private cloud alongside our new products like the independent mortgage brokerage platform Valuu.

C Can a public cloud also help you toward your goal of becoming a digital powerhouse?

F We want to use the advantages of cloud technology to develop, test, and present new business models. A private cloud may perhaps not be capable of supporting that ambition in the long run. But it's important to us to be able to have a say.

So, instead of a public cloud, what I have in mind is a community cloud that is linked with our private cloud via standardized interfaces in the sense of a hybrid model. The crucial element of such a community cloud like the one that SIX is in the process of building is trust, in my view. Trust is imperative to persuading all participants in a community cloud to subordinate their own interests for the benefit of a larger whole. If a community cloud for banking takes root, we would certainly consider joining.

C The benefits of a Swiss cloud in fact don't come primarily from the technology, but from this new way of working together. SIX, which is ➤

owned by banks in Switzerland, would be ideally suited to creating an ecosystem in which players in the Swiss financial industry can organize themselves more efficiently. They would be able to influence the evolution of the cloud at any time through a board of directors.

Moreover, the long-term character of SIX is a key element in instilling trust. Young FinTechs can't provide that. Every bank wants to work with them, though, to profit from their innovative prowess. By incorporating FinTechs into the ecosystem technologically and economically, we allow our fundamental stability to rub off on them. That, by the way, is an important aspect when I think about protecting banks' investments.

F PostFinance is confident that business models in the future will be integrated through networks facilitated by open banking and easy FinTech tie-ins. The vision of a cloud ecosystem sounds alluring, but we still have a long way to go to get there. As I said, I believe in a hybrid model. Companies will want to put business models into practice that consist of a mix of applications in private clouds at proprietary data centers combined with services in a community cloud.

But how would that function in concrete terms in the solution that SIX envisages? At the moment, many so-called cloud services are nothing more than repackaged monoliths that offer too little leeway for a bank to differentiate itself. Supplying storage and computing capacity isn't complicated, but many of the various services from the multitude of different providers are complex. You talk about an ecosystem. How do you find a common denominator for that?

C It can start with a nucleus of three to four like-minded participants. Some of them already bring cooperation partners – including FinTechs – with them. That can then turn into something bigger, fostering trust. Maybe it's better to speak of multiple such ecosystems co-existing in parallel and perhaps coalescing into one

over time. Advising and connecting the participants throughout this process would be a role tailor-made for SIX.

F Standardized interfaces seem crucial to me under such a scenario. But as a non-EU country, Switzerland is not obligated to implement the Second Payment Services Directive (PSD2) to the letter. However, the PSD2 is exactly what's encouraging open banking.

C Regardless of that, there are initiatives, for example, by the Banking Industry Architecture Network (BIAN)

and Afinis Interoperability Standards [formerly the IFX Forum] that could lead to standards. We at SIX, by the way, will soon be able to handle exchanges of data between banks and outside parties, such as suppliers of accounting software, for example, via our standardized platform Connectivity.

The more that companies want to ply the same market with similar services, the more important standards become. Elemental to our cloud is an open platform that admits a variety of different suppliers – even with redundant functions. That requires a layer that orchestrates the different suppliers' services. This kind of service-oriented architecture also prevents vendor lock-in, a dependence on a single supplier. This way, banks can use some services collectively while continuing to differentiate themselves – maybe even better – through other services.

F Exactly. We need to have close control over strategically important differentiating products on the client front. But all supporting processes that we have in common with others are ideal for pooling, which is where the greatest economies of scale lie. I think that SIX enjoys the full confidence of the market when it comes to putting such a solution into practice. ■

“Elemental to our cloud is an open platform that admits a variety of different suppliers.”

Henrik Czurda, SIX

Lexicon

Cloud Technology

A cloud is far more than just virtual memory. An externally provided **public cloud** also offers computing capacity and services that businesses can use flexibly only when needed. A cloud thus not only relieves businesses' own infrastructures and corresponding budgets, but also enables rapid product development or experimentation without risk. Sometimes, cloud technology is what makes services involving artificial intelligence or big data affordable for many businesses in the first place. But there are also companies that operate a **private cloud** for their own use in their internal network, often-times but not necessarily in their own data center. A **hybrid cloud** combines a public cloud with a private cloud. Businesses frequently keep sensitive data in the private cloud and perform large-scale calculations with non-sensitive data in the public cloud. A **community cloud** pools services for a group of like-minded businesses. Community clouds are an attractive option for companies such as banks, insurance firms, or health insurers operating in regulated industries.

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