

2/17

# RED

The Magazine  
from SIX

Focus

## Cybersecurity

Combating Cybercriminals  
with Cognitive Computing

Page 14

eBill

## The New Digital Bill for Switzerland

Page 24

Cashless Events

## When Speed Is the Need

Page 26




Impulse Interview

# Playfully Successful

Game designer Philomena Schwab  
proves that computer programing  
doesn't have to be a man's realm.

Page 6



***Starting 2018,  
Liliane can pay with***



**Introducing eBill**

Starting 2018, you can benefit from a simple, secure and easy-to-use way to pay your bills - eBill. Sign up today by going to your e-banking portal, select the current e-bill section, set up your bills to be paid automatically and - come 2018 - you can benefit from a whole host of new features!

For more information, visit [www.ebill.ch](http://www.ebill.ch)

***eBill - The Swiss way to pay.***



## Announcement

# SIX is realigning

SIX was founded ten years ago and represents the joint, successful commitment of Swiss banks as well as a strong Swiss financial center. Since its foundation, the entire environment has undergone fundamental change. SIX is now preparing for the next decade.

In November 2017, the Board of Directors passed a resolution approving strategic and organizational changes. This realignment will strengthen the competitiveness of SIX and the Swiss financial center. SIX will focus consistently on infrastructure services for shareholders and the financial center in securities, payments and financial information, which are the core business areas of SIX.

Overview of the fundamentals of the realignment:

**Securities** One key element of the realignment is the sustainable strengthening of competitiveness in the securities business. SIX will merge the exchange trading and post-trading areas into one organizational unit. In future, SIX will offer all securities-related services from a single source.

**Payment services** SIX is creating a competence center for operations, development and greater innovation in Swiss payments. This will include the infrastructure for interbank payments, for connections to the SEPA region and for card-based and mobile payments. Together with PostFinance, SIX will further standardize and bundle together the infrastructure for e-bills and direct debits. SIX will hive off the card business (national and international acquiring) from the core organization and continue developing this as part of a strategic partnership.

**Data business** SIX will consolidate its strong market position in the data business, in particular in international reference data. SIX intends to utilize the resulting synergies to provide even better solutions to meet the demand from banks for high quality at attractive conditions.

**Innovation unit** Aside from bundling its own innovation projects, SIX will also be establishing a CHF 50 million venture fund aimed at promoting innovation within Switzerland's financial center. SIX will use the new innovation unit to develop specific services for interested customers. In conjunction with the respective shareholders, these services can later be positioned in the market as independent solutions.

**The realignment is due to be fully implemented in the second quarter of 2018. Until then, SIX will continue to operate with its current organization and business models.**



**New CEO**  
**Jos Dijsselhof**

The Board of Directors of SIX has appointed Jos Dijsselhof CEO with effect from 1 January 2018. He succeeds Urs Rügsegger, who announced in May 2017 that he would be retiring. A Dutch citizen, Jos Dijsselhof, 52, holds degrees in computer science and business administration, and has a long track record in international management in the financial sector. He has previously held positions at ABN Amro Bank, Royal Bank of Scotland and ANZ Australia & New Zealand Banking Group in various countries, including Hong Kong and Singapore. His most recent role was Chief Operating Officer (2014–June 2017) and CEO ad interim (2015) for Euronext in Amsterdam. During his career, Jos Dijsselhof has successfully headed several change projects and gained a wealth of experience in securities and financial data, as well as the payments business, so he is fully familiar with the business models of SIX.



# Rooms to meet every need



Whether you need a room for an exclusive meeting, an intensive workshop or an important congress – the SIX ConventionPoint has the right solution for every event. [www.six-conventionpoint.ch](http://www.six-conventionpoint.ch)

14 **Focus**

## Cutting-Edge Cybersecurity

In recent years, banks have had to be far too preoccupied with the issue of cybersecurity. That's why SIX is opening Switzerland's first security operation center built on a cognitive computing platform.

- 6 **Impulse Interview: Women Programing**  
Successful game designer Philomena Schwab advocates for interdisciplinary education programs
- 12 **Caught in the Act**  
Group CFO SIX Daniel Schmucki on the way to Warsaw
- 20 **Sideshow**  
New equipment for artistic cyclist Chiara Canzani
- 22 **How does ...**  
... a stock index work?
- 24 **eBill Is Digitalizing Switzerland**  
How bills will be issued and paid in the future
- 26 **Cashless Events**  
Skiing fast and paying fast at the Hahnenkamm race
- 32 **Future Talk: Crowdfunding & Co.**  
Stock-exchange executive meets investment platform founder



## Takeaway

The Magazine in 30 Seconds

Page

### 24 eBill

The new way of issuing and paying bills relieves consumers of tiresome paperwork. But businesses benefit as well – from greater cash flow control and end-to-end digitalization. Banks get more ways to interact with clients and streamline their IT processes.

Page

### 26 Cashless

Making cashless payments is practical and prevents waiting lines from forming, which is crucial to the success of highly attended events like the Hahnenkamm ski race in Kitzbühel, Austria. SIX supplies the entire cashless infrastructure and provides special service teams for a growing number of events across Europe.

Page

### 32 Crowdfunding

Stock exchanges will long remain an important venue where enterprises raise capital. At the same time, though, more and more private equity capital is becoming available. New platforms give start-up companies that are not ready to go public access to this off-market capital.



**Philomena Schwab**

After earning a degree in game design from the Zurich University of the Arts, Philomena Schwab, together with Micha Stettler, founded the Stray Fawn game design studio in Zurich. After successfully raising crowdfunding, she earned 400,000 francs with the beta version of Niche – A Genetics Survival Game and landed on Forbes's "30 under 30 Europe: Technology" list.

→ More information:  
[strayfawnstudio.com](http://strayfawnstudio.com)

# Out of the Niche

## Impulse Interview: Women Programing

With the worldwide success of Niche – A Genetics Survival Game, game designer Philomena Schwab has proven that computer programming doesn't have to be a man's realm. Today she is a prefigurative role model, but interdisciplinary education programs and a societal change in thinking will hopefully soon make her the norm.

Interview **Matthias Bill**

*You're one of 11 women on Forbes's "30 under 30 Europe: Technology" list. Were you flooded with job offers?*

**Philomena Schwab** Yes, there were offers, even from Silicon Valley, but hopefully not just because I'm a woman. I wouldn't find that respectful. Personal abilities and achievements should be what matters. That's the only way to earn the respect of co-workers. And it's the only way that women will become the norm also in technology firms. Anyway, I didn't take any of those job offers. After finishing my degree in game design at the Zurich University of the Arts (ZHdK), I founded my own company, Stray Fawn Studio. At the moment it's important to me to be responsible for my own successes and failures. Aside from that, my company's commitment to operating out of Zurich is aimed at strengthening the gaming industry in Switzerland.

*What does "game design" mean exactly?*

In a small team like ours, I do a lot of different jobs as a game designer. I program and create graphics needless to say, but I also think about the objective and the mechanics of the entire game and its individual levels. What motivates the gamer? How do I move the game character? What happens when I click there? What happens if I click here?

*You work at the interface between art and technology. Did the one lead to the other?*

I initially wanted to illustrate children's books. Later, comics led me to computer games, which in my opinion offer more possibilities – animation with sound and interactivity – than almost any other medium can. I'm able to push the limits of those possibilities because I also began to grapple with the technological aspect. When I started my studies, I was still intimidated by it. ➤

# “Interdisciplinarity helps to shed diffidence toward technology.”

## Lexicon

**Let's Play** The most-subscribed channel on YouTube is operated by the Swedish vlogger Felix Arvid Ulf Kjellberg. Never heard of him? He is better known by his alias PewDiePie. Still haven't heard of him? That might be because the 57 million subscribers to his web videos are mainly computer game fans. Instead of playing themselves, they prefer to watch him do it.

The phenomenon is called Let's Play and has since become an integral part of gaming culture. The sometimes very entertaining live commentaries by PewDiePie and other Let's Play stars only partially explain their success. The videos also give their viewers some relaxation and take the place of gaming when viewers are too tired to play themselves. They also help viewers decide whether to buy a new game and stoke excitement for it. The videos are both free advertising and a feedback channel for the game producers like Philomena Schwab's Stray Fawn Studio. The live commentaries by the Let's Players and the online comments from viewers both deliver valuable suggestions that can be used to further develop a game.

I hadn't the slightest idea of how a game works behind the screen. I could visualize how a children's book comes into being. But a video game? And there were others in the same boat. The other women in my class – there were six of us out of a total of 15 students – also found themselves at a loss when it came to source codes. Three of us work today, though, as programmers, one even outside the gaming industry.

*What explains your and your colleagues' change of heart?*

Many design academies make you choose between a creative or technical degree course right from the outset, so a typical gender role division takes place there. I, too, would have opted for the creative route under such a setup. Fortunately, ZHdK takes a different approach. Every student does both sides of the curriculum. And many a student ends up finding enjoyment in a field that initially hadn't been on his or her radar, or that he or she originally wouldn't have dared to try out. ZHdK's interdisciplinary approach, by the way, is also the reason why women and men are represented pretty evenly across the Swiss-German gaming industry. Internationally, women make up 15% to 20% of the gaming industry's headcount, so we have some catching up to do.

*Women also make up only an average of 14.6% of the employee headcount in Switzerland's IT sector (EU: 16.1%).*

*What has to happen to get women more interested in programming?*

The example set by ZHdK shows that interdisciplinarity can encourage young women to shed their diffidence toward technology. But alongside broad interdisciplinary education, it will also take unprejudiced discussions with parents, unbiased career counselors, and balanced media coverage to move our society away from thinking in career stereotypes.

*What, in your opinion, are the benefits of educational offerings aimed specifically at women?*

Such offerings have their justification as long as young women still face psychological barriers. A programming course for girls, for example, provides a protected environment in which no one need expose herself. In my industry, promotional programs like Women in Games are showing good results.



## “The game Niche is liked by both sexes.”

But I’m confident that the next generation of women will be even less timid toward technology than mine was and that such gender-specific initiatives will soon no longer be necessary. The daughters of today’s women programmers, at any rate, will certainly never think that technology is not a field for women.

### *Can games like Niche also inspire young women to take up programming?*

Niche is a strategy game based on the laws of genetics. It’s basically about nurturing one’s species and safeguarding it from extinction [see box]. We therefore expected – not free from stereotyped thinking ourselves – that the game would particularly appeal to the female target group. In fact, though, Niche is equally liked by both sexes. We are also seeing that in the Let’s Play videos [see box on page 8], where men and women commentate live on games while playing them. I do believe that games can arouse technical curiosity, in both sexes. It sometimes is only a small step from being fascinated with a game to wanting to create one yourself. And whoever has programmed one game already has a foot in the doorway to the IT industry.

### *Also, the era of teachers, parents, and politicians sweepingly demonizing video games is over.*

Thank goodness. There are so many games out there today that have educational value. Teachers have begun to use the video game Minecraft to explain processes to their students. We ourselves are planning an educational version of Niche to license to schools for biology classes. Simulation and hands-on learning offer a huge advantage over chalk-and-talk teaching, in my opinion. US schools in particular have already recognized that. ■

### Niche – A Genetics Survival Game

## Manage to survive, and you’re a winner

Niche – A Genetics Survival Game is a strategy game that simulates the life cycle of a species. The goal is to survive. The player starts off with two randomly generated fox-like creatures that live on a randomly generated game board-like island. The player combats hunger, climatic changes, diseases, and predators by exploring the island and leveraging the laws of genetics. Before one generation of animals dies out, the next one must already be capable of survival and endowed as much as possible with better genes.

Philomena Schwab began developing Niche when she was a student at the Zurich University of the Arts. The final version of Niche debuted for download on September 21, 2017. Stray Fawn Studio is currently raising crowdfunding for Nimbatus, a space drone simulator created by Philomena’s business partner, Micha Stettler.

→ Watch Philomena Schwab play and explain Niche in a video: [six-group.com/niche](https://six-group.com/niche)



## The Head / The Count



**Oliver Engelbrecht**  
Head of Procurement,  
SIX

# 1,700

## Suppliers

A Code for Suppliers went into force in September 2017 for all of the SIX Group's roughly 1,700 suppliers and their sub-suppliers. It applies world-wide and encompasses rules regarding business ethics and compliance (e.g. corruption, handling of trade secrets) as well as employment standards (e.g. human rights, discrimination) and environmental protection. Head of Procurement Oliver Engelbrecht views the code as an essential element of a sustainable value chain. SIX for many years now has pledged a commitment to high ethical standards of business conduct and expects the same from its partners. By continually verifying suppliers' adherence to the Code for Suppliers, Engelbrecht and his team safeguard the present and future success of SIX.

## The Date

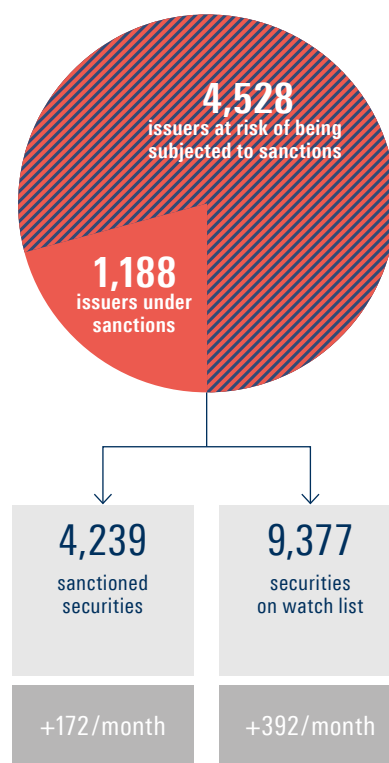
# Jan. 13, 2018

## Payment Services Directive 2 (PSD2): National Laws Enter into Force

The European Union's PSD2 directive has written new game rules for all players involved in the payment transaction services space. One core element of the PSD2 directive is "access to account", or XS2A for short, which requires banks to give third parties access to their clients' account information free of charge if directed to do so by account holders. The resulting additional competition should ultimately benefit consumers. As a key technology partner, SIX wants to help banks meet PSD2 compliance requirements. SIX also wants to supply new services for the increasingly dynamic payment ecosystem.

## The Problem

Identifying securities linked to companies or persons under sanctions is a laborious and complex task for banks' advisory and compliance teams. Sanctions often apply to specific countries. Certain companies based in Venezuela, for example, have been subject to US sanctions since August 30, 2017.



Status as of May 2017

## The Solution

SIX prepares a daily revised list of securities linked to companies or persons under sanctions. The **Sanctioned Securities Monitoring Service** from SIX also identifies and describes the sanction regimes applicable to those securities. This enables the customers of SIX to avert reputational damage and costly fines without having to collect and analyze data themselves.

→ More information: [six.swiss/about-ssms](https://six.swiss/about-ssms)



**The Picture** At the invitation of the ETH Zurich's Entrepreneur Club and with support from SIX, five students contemplated the stock exchange of tomorrow on occasion of InCube. The idea they came up with after spending three days and nights enclosed in a glass cube in Zurich's Paradeplatz was a platform for values-based investing.



Caught in the Act

SIX Group headquarters  
Zurich, Switzerland

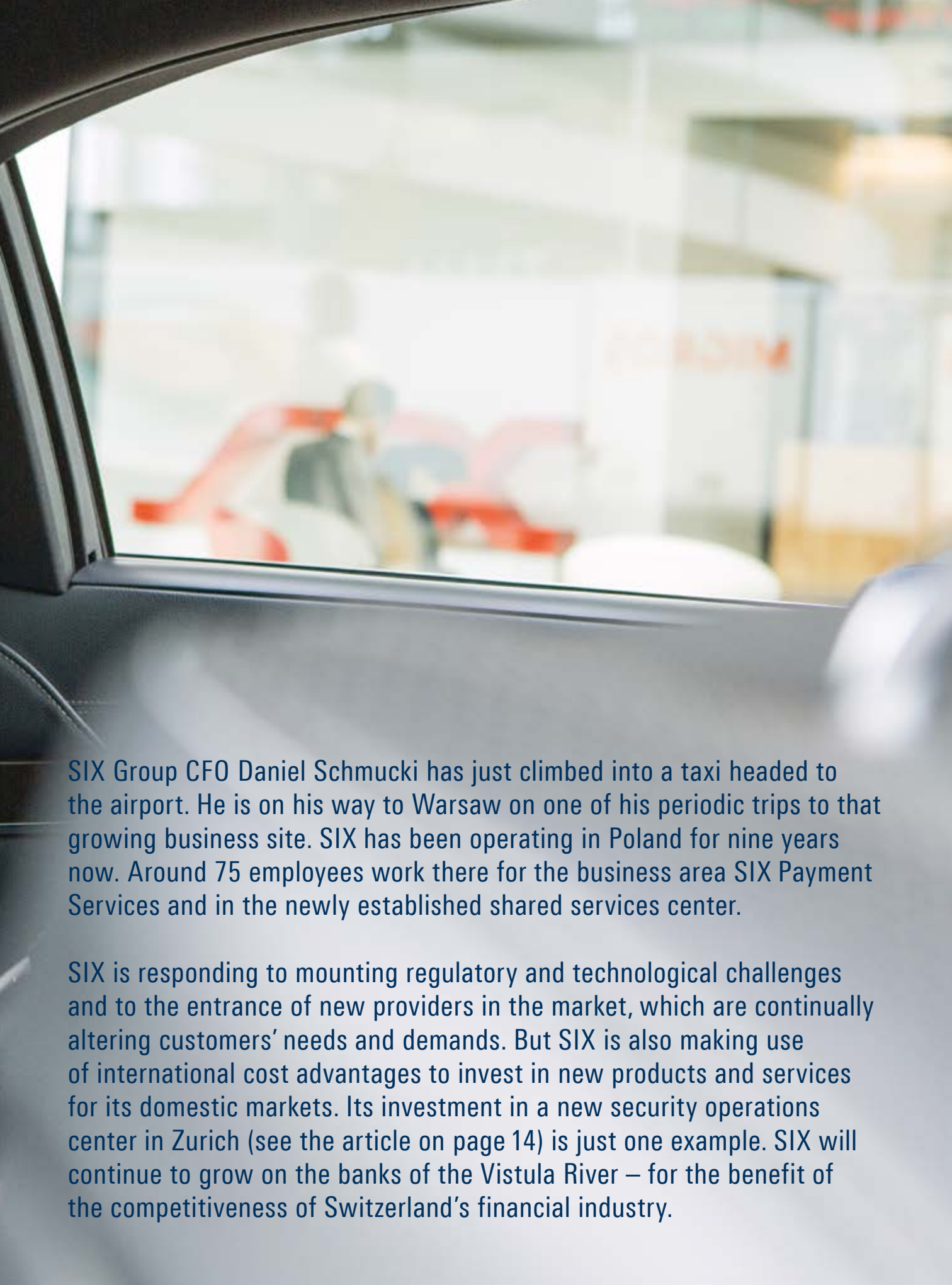
August 17, 2017  
10:05 am

21°C  
Humidity 75%  
Sunny, scattered clouds

Daniel Schmucki  
Group CFO SIX







SIX Group CFO Daniel Schmucki has just climbed into a taxi headed to the airport. He is on his way to Warsaw on one of his periodic trips to that growing business site. SIX has been operating in Poland for nine years now. Around 75 employees work there for the business area SIX Payment Services and in the newly established shared services center.

SIX is responding to mounting regulatory and technological challenges and to the entrance of new providers in the market, which are continually altering customers' needs and demands. But SIX is also making use of international cost advantages to invest in new products and services for its domestic markets. Its investment in a new security operations center in Zurich (see the article on page 14) is just one example. SIX will continue to grow on the banks of the Vistula River – for the benefit of the competitiveness of Switzerland's financial industry.

## Focus: Cybersecurity

```
7949772926405558      0.6721106275136832      0.9098244938253814      0.9025848801940389      0.621812288965756
506370810030305 0.300730039400420 0.0630281442410563
```

```
r -xzf Data Structure
```

```
iting for response...
```

```
3229045623492519      0.406327760043700058      0.78315962751      0.930033404488
6499674122537216      0.0000471000855060710231217646      0.583200360815
8599764116955942      0.000087580621503215009620305      0.512293055
683656016306455      0.100060110086800000506094478      0.00008114870038
2752936768315347      0.90003871009954000060555604052      0.9000109190073
5065954148795679
```

```
questing Authorization From : http://wwjd.com?au&2
```

```
tering Security Console...
```

```
lculating Space Requirements
```

```
mpilation of Data Structures Complete..
```

```
tering Location http://wwjd.com?au&2
```

```
23326907589418355      0.4346860183139070058      0.78315962751      0.930033404488
3176934746116984      0.2343704941047856060710231217646      0.583200360815
5185581992011481      0.654967300369072403215009620305      0.512293055
2718524007952672      0.344429462345264060058      0.78315962751      0.930033404488
2169589716608189      0.382334662597809108355911553405243
2108443807696031      0.482771655632959203621492942097868      0.32726546340695883
023753822123509516      0.3224739026317633407514584902540031      0.43541074240990796      0.07086274626972922
32506878415025175      0.126159299291769501461040957680576
```

```
2111731272268329 0.9671432036708776
```

```
ccess Granted..
```

```
ccess Granted..
```

```
mpressing TPS Reports
```

```
tering Security Console...
```

```
mpression Complete.
```

```
0.146060305303250 0.8306555041030607 0.000100547074070705 0.7511047000500340 0.7510747000760451
19182808247715277 0.37052917198798885 0.37024311935196097 0.14403360677506494 0.02404694219373127 0.8217967559636706
.5654574359269482 0.6941327538963253 0.010423639718077471 0.14622535471036446
.7418517051321895 0.4449573973398191
08904456765320079 0.471667657266319760.26915808968728194
6409188181644693 0.9070753068774994 0.9357110792179828
808632033688447 0.9130363082550552
781324927212523 0.4309162695001495 0.985951061666297 0.
```

```
856706909930452 0.34641707977638403 0.4572141916312954 0.6752567063897205 0.9527898520957762 0.6618673936184086
```

```
et -a -t .... Searching ...
```

```
questing Authorization From : Data Structure
```

```
lculating Space Requirements
```

```
iting for response...
```

```
lculating Space Requirements
```

```
19536386848183218 0.2552881864612896 0.0879589210049796
```

```
tering Location .... Searching ...
```

```
mpilation of Data Structures Complete..
```

```
00837920315520968 0.9353483019328135 0.5551703002499007 0.664191288012764
5350457191922022 0.0550165678250879 0.9553104988948488 0.7820464809287596 0.3970784404929997
9651983544413323 0.599103703371482 0.08119475157420941 0.18012421103598797 0.783018356462444 0.3697088942115835
6620306688630446 0.10696345370636706 0.7463829440925086
```

```
7099162059520919 0.057675170282836974
```

```
5490023019423116 0.
```

# Too Deft for Data

Cyberattacks on corporations are increasing sophisticated. Corporations are accordingly Digital security is a USD 86 billion annual SIX and IBM Watson will deploy a new cogni-protect Switzerland's financial sector against

Text: Simon Brunner

0.6843736742270685

0.7906092239403089  
 0.43060379225346535  
 0.47824538022641727  
 0.8630730133118502  
 0.09330525352467633

# Theft

6871 41 875  
 9333 1013  
 0.2303562678493899  
 0.5210170197193796  
 0.178134286530925  
 0.30655417974565735

and becoming evermore  
 stepping up their defenses:  
 market today. In January,  
 tive computing system to  
 hackers.



This past summer, the entire world was speculating about how dangerous North Korea is. Does Kim Jong-un have atomic bombs? Are they deployable? Will he use them?

While the world trembled, a voice from Silicon Valley sounded off on Twitter: "North Korea should be low on our list of concerns for civilizational existential risk." There is something far more dangerous, read the Twitter post: "Competition for artificial intelligence superiority at the national level will most likely be the cause of World War Three."

Those words of warning came from Elon Musk, the inventor of the Tesla electric car. He may be an eccentric, but other commentators see it the same way. Russian President Vladimir Putin, for instance, recently said that the country that becomes the leader in artificial intelligence technology will be "the ruler of the world." Such visions of state-driven cyberwar smack distinctly of Hollywood and its Terminator and Matrix science fiction movie franchises. Hacker attacks on individuals and corporations, on the other hand, are very real indeed.

## The Year of the Mega Breach

Even though hackers do not yet employ any artificial intelligence in the sense that Elon Musk and Vladimir Putin envisage, the damage they cause is devastating, and the list of crimes is long. From online fraud and phishing scams, it extends to a major wintertime electrical grid shutdown in Ukraine and to a ransomware

--&gt;&gt;&gt;&gt;&gt;

# "Cybercrime is the greatest threat to every company in the world."

Ginni Rometty, CEO and Chairwoman, IBM

attack that infected 200,000 computers across 150 countries. Presidential elections in Kenya and the USA were even affected.

Two years ago, Ginni Rometty, the CEO and chairwoman of IBM, was already calling cybercrime "the greatest threat to every company in the world." In two separate virtual robberies from Internet firm Yahoo, hackers stole one billion data records in 2013 and then another 500 million in 2014 (see the graphic on page 17). In 2016, hackers purloined a total of more than four billion data records worldwide, more than in 2014 and 2015 combined. IBM thus dubbed 2016 "the year of the mega breach." And just recently a data breach at Equifax was made public. Although "only" 143 million data records were compromised in that incident, they contained some highly sensitive information because Equifax, the USA's largest credit-reporting agency, maintains a vast database of personal financial information on consumers. Equifax's stock price immediately plunged by a third.

## Cognitive Computing: Quick and Precise

Virtual thefts don't just hurt stock prices, they also strain budgets. IBM estimates the average cost per data breach at USD 3.62 million, which equates to USD 141 per data record stolen. That's why corporations are spending more and more on protecting data. US market research firm Gartner projects that USD 86.4 billion will have been invested in data security solutions in 2017 alone.

The good news is that in contrast to hackers, the data defenders are already employing forms of the aforementioned artificial intelligence today – like SIX, for example. In early 2018, SIX will open Switzerland's first security operations center (SOC) built on IBM's Watson cognitive computing platform. That platform, by the way, has nothing to do with Sherlock Holmes; it is named after IBM's first CEO, Thomas J. Watson.

IBM Watson solves tricky cases nonetheless. In 2011, it defeated two previous champions on the US television quiz show "Jeopardy!". Ever since then, IBM Watson has been put to work widely. For example, it reportedly diagnoses cancer more quickly

and precisely than conventional procedures and produces more accurate weather forecasts. A Hollywood film studio even recently employed IBM Watson to edit a movie trailer. Using other trailers as models, it condensed two hours of film material down to six minutes, shortening the work for the film cutter many times over. This illustrates the power of cognitive computing. A system like IBM Watson assists users in an advisory capacity and supports them by constantly acquiring new knowledge on its own.

## A Billion Network Accesses per Day

SIX operates a network that interconnects the players in Switzerland's financial sector. Each act of accessing this network can pose a security issue. To properly protect the network, SIX operates a security center that continually monitors and logs all network access activity. The network is accessed more than a billion times per day and over 30,000 times per second during peak moments.

An individual access event says little. Correlations first emerge in the aggregate. The security center detects them and alarms the security analysts of SIX if there is suspicious access activity that potentially poses a security issue. The analysts are on standby around the clock. Their job is to understand and judge access activity. -->>>>>>

1. 683656016306455  
1. 8630730133118502  
9030610919152873

1. 23326907589418355 0.4  
6871769041154875 0.518  
1. 2303562678493899 0.21  
4827716556329592 0.362  
0.7514584902540031 0.4  
0.1461040957680576

79497729  
0982449  
2181228  
5037081  
06302814

c -xzf D  
tting fo

32290456  
3911334  
5514716  
3060379  
8215041  
0206601  
7529367  
9330525

questing  
tering S  
culatin

apilatio  
tering L

24670733  
37068906  
3335971  
33559115  
17813428  
0655417

21117312  
cess Gra

cess Granted..

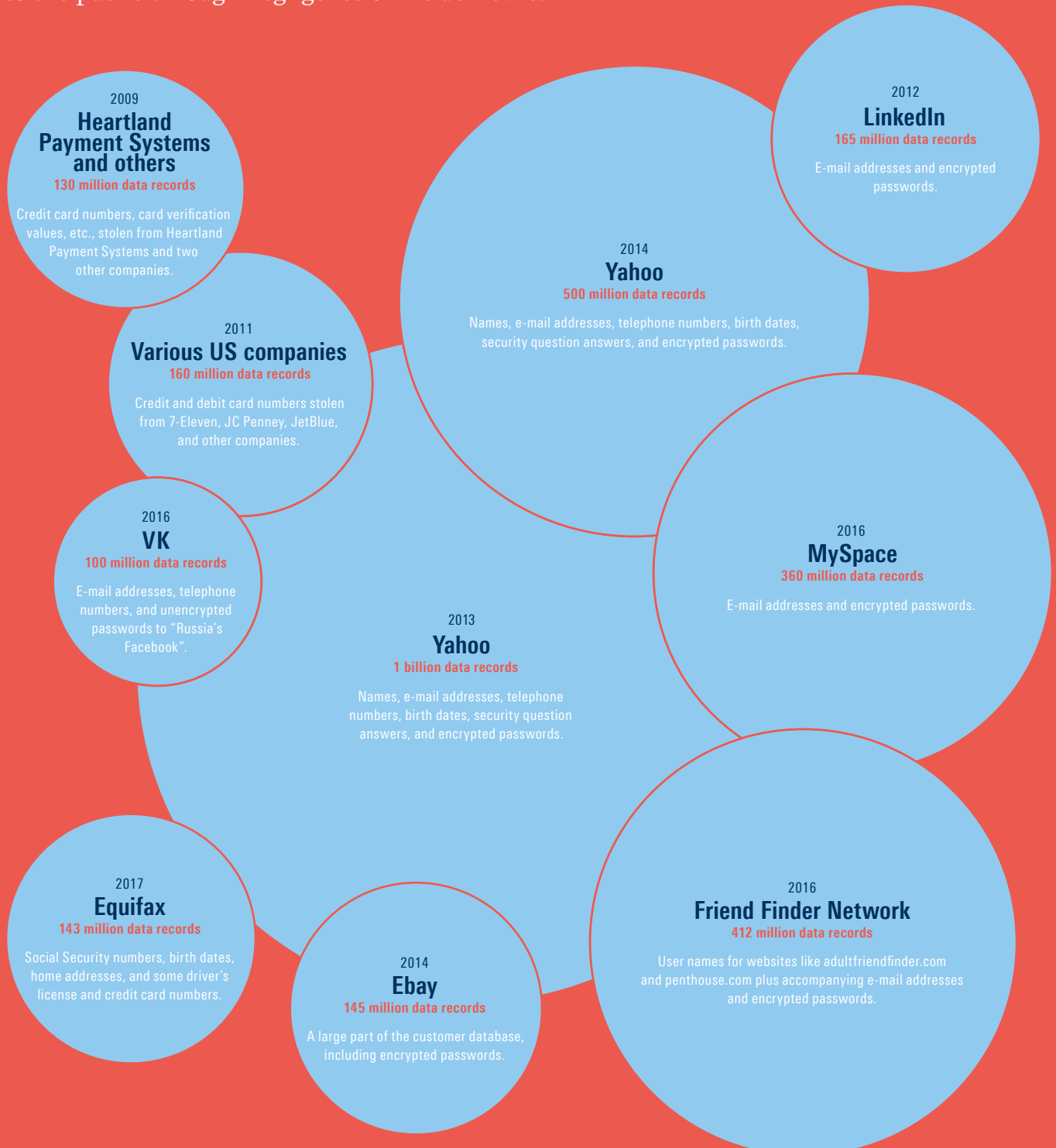
mpressing TPS Reports



The Ten Biggest Data Breaches of All Time

# Record Losses

Hackers' biggest heists – measured by the number of data records stolen – have been pulled off over the last few years. The statistics do not include information divulged to the public through negligence or insider leaks.



# "The cognitive computing IBM Watson enable us more accurately and with

A cluster of failed login attempts could stem from a hacker or merely from a smartphone that doesn't yet know the new WiFi password.

Here's where the new IBM Watson system comes into play. It compares suspicious access activity with external data. Is the login attempt coming from a suspicious IP address? Does it match a known attack pattern? Does a prior offender's name pop up? Where an analyst heretofore has had to manually consult databases for this information and spend precious time checking the history of an IP address, IBM Watson now does that automatically. It also combs through and analyzes unstructured data such as content from websites, blogs or news archives, for example. This way IBM Watson continually learns and expands its knowledge, and it even imports knowledge from other companies.

## With a Few Clicks

Another benefit is that IBM Watson graphically depicts access activity and thus makes hidden correlations visible. "That enables us to judge attacks faster, more accurately and with fewer resources," says Thomas Rhomberg, Head of Security Transformation, SIX. As the man in charge of setting up the new SOC explains, "a work step that otherwise would take a half hour to complete can now be performed by an analyst in just a few clicks."

IBM Watson's intelligence today provides assistance in judging suspicious access requests. An analyst then decides how to best orchestrate a defense. But in the near future, IBM Watson may also learn how to devise defense recommendations by itself.

Setting up an SOC and operating it 24 hours a day is a costly endeavor, and it takes time to find the analysts needed to

run it. The job profile is new, and there are only a few qualified specialists on the market so far. That's why SIX is setting up its new SOC not just for itself. "It's almost gotten to the point where a single company can no longer safeguard its digital security on its own," Rhomberg says, adding that SIX will offer use of the new SOC to other companies as well.

## Banks in the Spotlight

In recent years, banks particularly have had to be far too preoccupied with the issue of cybersecurity. In early 2015, hackers blackmailed the Banque Cantonale de Genève, and an attack by Bosnian cybercriminals on a "big bank" based in Zurich came to light last summer. "The banking sector is the preferred target of cybercriminals," writes industry portal finews.ch, and the Swiss Financial Market Supervisory Authority (FINMA) says that Switzerland's banking sector exhibits deficiencies in identifying potential threats and in its defense mechanisms. "We would like to enable banks to refocus on their core business, thereby making our contribution to the security of Switzerland's financial sector," Rhomberg expands.

This past spring, an edition of the renowned British business and politics magazine The Economist bore the title "Why computers will never be safe," and rightly so because computers, like the humans that use them, will always pose a security risk. This makes it essential that companies be able to quickly detect and immediately react to threats. ■

→ More information: [six-group.com/cybersecurity](http://six-group.com/cybersecurity)

0305  
117033868  
7529367683:  
5065954148'

0.24670733532  
76934746116984 0.234  
0.34442946234526406  
0.48277165563295

1  
9  
5  
85  
383  
269  
1563

15962751  
2537216  
25346535  
32551476  
16094478  
713379954

23326907589418355 0.43468601831390763 0.3706890649735547 0.3176934746116984  
0.3549673003690724 0.9333597101392856 0.2718524007952672 0.34442946234526406  
0.303562678493899 0.2169589716608189 0.3823346625978091 0.8355911553405243 0.5210170197193796 0.2108443807696031 0.4827716556329592  
0.521492942097868 0.32726546340695883 0.178134286530925 0.023753822123509516 0.32247390263176334 0.7514584902540031  
0.3541074240990796 0.07086274626972922 0.30655417974565735 0.32506878415025175 0.1261592992917695 0.1461040957680576

capabilities of  
to judge attacks faster,  
fewer resources."

Thomas Rhomberg, Head of Security Transformation, SIX

621812288965756 0.6843736742270685  
756899486269 0.063071442410563  
Waiting for response...  
17 0.8630730133118502  
.09330525352467633  
Requesting Authorization From : http://wwjd.com?au&2  
Entering Security Console...  
Calculating Space Requirements  
Compilation of Data Structures Complete..  
Entering Location http://wwjd.com?au&2

Research Alliance for Greater Information Security

## The New Internet

SIX, in collaboration with the Swiss Federal Institute of Technology in Zurich (ETH Zurich), is ambitiously exploring new avenues in information security. In an initial joint project with other partners, they aim to do nothing less than revolutionize the Internet.

Success has many fathers. Was the Internet invented by CERN in Geneva, or was it the US Defense Department or actually UCLA in California that brought it to life? Whoever typed the first e-mail or entered the first URL, that happened a long time ago. The bulk of today's Internet architecture came into being in the years between 1967 and 1994 and is now outdated. Innovations since then have been little more than band-aid solutions.

So the Internet needs to be reconceptualized from the ground up, Professor Adrian Perrig says. The Network

Security Group he heads at ETH Zurich is conducting research on creating a secure, dependable Internet architecture that prevents hacker attacks and unwanted eavesdropping. The approach is called SCION, an acronym for "scalability, control, and isolation on next-generation networks."

Here's the idea behind SCION in a nutshell: Today a protocol determines the path that data take through the Internet. The protocol directs data streams like a traffic cop by assigning them to specific pathways and nodes. "With SCION, in contrast, the transmit and return paths are chosen by the sender of the data packet," Perrig says. In practical terms, this means that the sender can bypass distrusted Internet service providers or countries. SCION consists of a complete set of building blocks "akin to Lego blocks that can be deployed modularly in accordance

with the need at hand," Perrig explains further. Network administrators can install the system piece by piece. Aside from requiring special routers, SCION is undemanding with regard to hardware. However, network administrators have to learn how to optimally utilize the SCION building blocks.

That's precisely the rationale behind the partnership between SIX and ETH Zurich's Information Security and Privacy Center (ZISC), for which Perrig's group also works. ZISC's objective is to bring the research community and industry closer together in order to jointly master future information security challenges. "We see enormous potential in SCION. Right now, SIX is in the process of gaining initial experience in using this new technology," says Christoph Bösch, Security Business Partner, SIX. "At the same time, we are examining potential future uses for SCION. We hope that the key role we play in the financial market will enable us to give the project additional impetus."

Although it remains to be seen whether posterity will one day speak of Adrian Perrig in the same breath as "Internet inventor" Sir Tim Berners-Lee, the ETH team has already founded a promising start-up firm called Anapaya Systems to commercialize SCION technology.

→ More information: [zisc.ethz.ch](http://zisc.ethz.ch), [anapaya.net](http://anapaya.net)

# Investment Cycle of a Different Kind

Swiss national Chiara Canzani is only 15 years old, but had recently outgrown her sporting apparatus. A new, larger bicycle was thus needed – an artistic-cycling bike, to be more precise, because Chiara doesn't ride on the open road or in a velodrome, and doesn't climb any mountain passes, nor does she tear off on any sprints. For eight years now she has been performing spectacularly graceful gymnastics routines between a bicycle's handlebars, saddle, and forks.

Artistic-cycling bikes feature special tires to ensure floor traction and have a 1:1 gear ratio to facilitate quick stopping and starting. The fixed-gear bikes also enable backward pedaling.

SIX co-financed Chiara's new bike and is looking forward, along with Chiara, to her future training progress and to her coming competition achievements together with the Radfahrerbund Brugg cycling association. The bicycle, which Chiara chose on her own, is now big enough to accompany her throughout her entire sports career.

→ Watch Chiara Canzani perform on her new bike in the video: [six-group.com/cycling](https://six-group.com/cycling)



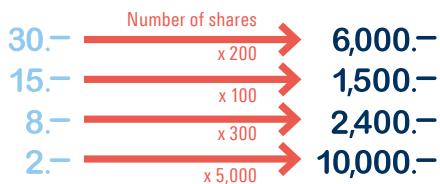




## How Does a Stock Index Work?

Stock indices have been tracking the financial market and rendering it more transparent for more than a century. An index contains multiple stocks. The individual stock prices affect the overall index level over time.

### Weighting by ...



#### ... Share Price

All stocks flow into the index with identical share unit quantities. The higher the share price, the greater that company's weighting in the index. Today weighting by share price is considered outmoded.

**Examples:** Dow Jones Industrial Average, Nikkei 225

#### ... Market Capitalization

Stocks flow into the index based on their number of shares outstanding. The higher the total market value of those shares (market capitalization), the greater that company's weighting in the index.

**Examples:** SMI, SPI, S&P 500, Hang Seng, Nasdaq Composite, FTSE 100, DAX, EURO STOXX 50

## THE STOCK INDEX

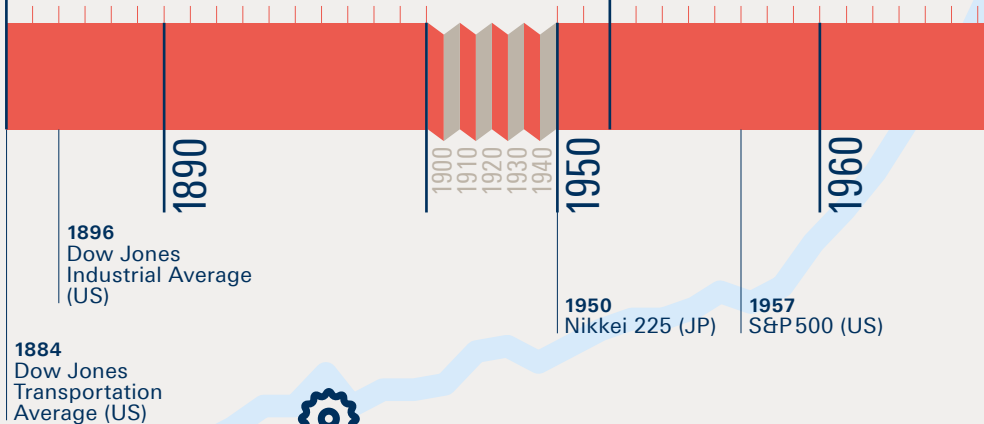
1884

→ Publisher Charles Dow wishes to provide his readers with an overall picture of the equity market. His Dow Jones Railroad Average index (today the Dow Jones Transportation Average index) for the first time enables forecasts to be made on how the economy will develop. It has since been joined by countless other stock indices that provide information on the state of an entire market, an individual sector, etc.

1952

→ In his seminal paper on portfolio selection, Harry Markowitz attaches greater weight to the risk aspect than to the price aspect. Portfolio managers thenceforth use their own prognostications to earn a higher return and thus beat the stock index (active portfolio management).

Selected international indices Selected SIX Swiss Exchange indices



### Blue-Chip Indices

Blue-chip indices track only those companies with the highest market capitalizations. Blue chips are generally well-established, financially stable companies that are considered representative of an entire market. The Swiss Market Index SMI is Switzerland's blue-chip index (see box). Other blue-chip indices well known from the news are the USA's Dow Jones Industrial Average, Germany's DAX, Japan's Nikkei 225 and the Euro Stoxx 50 index for the euro zone.



### Thematic Indices

Thematic indices track companies within a specific sector or companies that share specific attributes. SIX Swiss Exchange, for instance, publishes the SXI Life Sciences index for the pharmaceutical sector and the SXI Real Estate index, and its SXI Switzerland Sustainability 25 index comprises companies with particularly high sustainability scores.

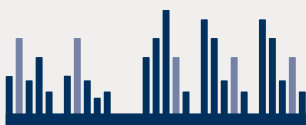
# AS ECONOMIC INDICATOR

# THE STOCK INDEX AS BENCHMARK

## THE STOCK INDEX AS UNDERLYING FOR INVESTMENT PRODUCTS

1976

→ John Bogle pioneers the concept of investing in an index through a mutual fund that tracks the S&P500. Replicating an existing index makes diversified investing inexpensive because there is no need for a portfolio manager (passive portfolio management). More recently index investing received another boost from the advent of exchange-traded funds.



### Alternative Indices

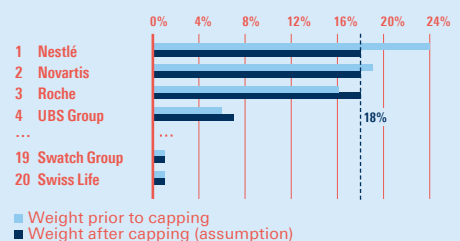
Alternative indices track shares of companies that exhibit specific statistical attributes, such as the high-dividend-yielding stocks in the SPI Select Dividend 20. Those attributes frequently also serve as weighting criteria (in place of market capitalization). The SPI Multi Premia indices published by SIX Swiss Exchange single out very inexpensive or very safe stocks, for example. Investment products based on alternative indices attempt this way to simulate active portfolio management.

### Broad SPI, New SMI

The Swiss Performance Index SPI is Switzerland's broad market index. It contains nearly all of the stocks traded on the SIX Swiss Exchange, encompassing 205 companies at present. The Swiss Market Index SMI, in contrast, contains only the 20 largest Swiss companies, making the blue-chip index the most important stock index in Switzerland. The SMI captures 80% to 85% of the Swiss equity market's total capitalization and thus serves as an underlying for investment products such as options, futures, structured products and exchange-traded funds. To enable the SMI to be used as an underlying also in the European Union, SIX Swiss Exchange adjusted the

index's weighting rules on September 18, 2017, to bring them into line with EU guidelines. This means that even megacap companies like Nestlé and Novartis now carry a maximum weight of only 18% in the index (see graphic below). By the way, since its inception the Swiss Leader Index (SLI) of the 30 largest Swiss companies caps the weighting of each of the four largest stocks at 9%.

#### SMI Constituent Weights





# Digitalization That Pays Off

## eBill Is Digitalizing Switzerland

SIX will roll out a new service for electronic bills during the course of 2018. eBill will bring the way that bills get invoiced and paid in Switzerland into the digital age, to the benefit of everyone.

Text **Klaus Werle**

**S**o, what have we here this time? The bill from the handyman for the new skylight. A payment slip from your daughter's piano teacher. The payment notice from the garage for the new snow tires. Oh, and of course the fine for the parking violation the other night – plus all of the usual monthly bills for health care insurance, electricity, telephone service, and other utilities.

Hundreds of thousands of households in Switzerland go through the same ritual each month, fishing bills out of envelopes, entering them in the e-banking system, searching for PINs and TANs, authorizing payment, and neatly filing the bills in the right folders.

### Paperwork That Robs Time

Bill by bill, the average Swiss household receives eleven individual invoices each month. It optimistically takes three minutes per invoice to pay them all. Three minutes per bill times eleven invoices per month works out to the “family bookkeeper” having to spend a whopping 6.6 hours on paying bills over a full year, which is valuable time that she or he could spend on other,

**The average Swiss household spends 6.6 hours a year on paying bills.**



more pleasurable pursuits. Is all that time spent on bill paying necessary? Can't businesses, as billers, relieve consumers of part of the time-consuming process? They can, indeed, with electronic bills. No more paperwork – just speed, orderliness, and simplicity. To achieve this, SIX will make a new service available starting in 2018: eBill.

### The Speed Accelerates and Costs Decrease

What consumers want also helps businesses. With the use of eBill, they can further advance their digitalization, keep their cash flows under control, better foresee incoming payments, and more easily dispatch overdue payment reminders. The speed of billing accelerates, and costs decrease.

Furthermore, eBill strengthens customer retention because they enable a business to present a seamless, uniform face to customers from the moment of initial buyer interest to payment settlement. “We look forward to supporting more and more companies on their way to digitalization,” says Tomas Kindler, Head Financial Services, SIX Securities Services.

### Safe, Reliable, and Convenient

Despite its Internet penetration rate of 91% and mobile phone user penetration rate of 85%, Switzerland is an invoice country in big need of digitalization. Some 80% of consumer purchases from Swiss e-stores get paid for on account via invoice. The bulk of those 400 million invoices per year are delivered to consumers by post.

More than a million people in Switzerland use electronic bills today, and approximately 12,000 more join their ranks each month. “As is the case with many innovations, the technology involved fades into the background,” explains Daniel Berger, Head Business Support, SIX Paynet. “The critical factors for gaining wide consumer acceptance are availability, a positive, uncomplicated user experience, and, above all, trust.”

The trust factor, for example, includes the fact that an electronic bill provides better protection against hackers and phishing scams than an e-mailed bill. Authentication of the participating billers works like a spam filter and enhances security. Moreover, in the near future eBill will start sending automated push notifications whenever payment notices roll in so that bills no longer get overlooked or forgotten. “eBill is safe, reliable, and



convenient,” Mr. Berger says in summarizing their advantages for consumers.

#### A Central Element of Everyday Life

But eBill also benefits banks by giving them new ways to interact with their clients. By combining them with other digital services, banks will become a central element in their clients' everyday lives. Moreover, eBill facilitates leaner internal processes and lower financial institutions' IT costs. “Paper invoices are still the standard today, but printing bills, sending them, and recording payments are time- and cost-consuming burdens for everyone involved. So, we are doing our utmost to help electronic

**80% of  
purchases  
from  
Swiss  
e-stores  
are  
made on  
account.**



billing achieve a breakthrough and to digitize as many bills as possible,” reaffirms Nicolas Cramer, Head Card & Payment Solutions, UBS.

Switzerland's payment transaction ecosystem comprises half a million enterprises, 6.6 million consumers and more than 200 banks. The goal of SIX is to grasp this ecosystem in its entirety and to transform it in its individual parts to prepare it for the digital future. The clear vision of SIX is to get consumers to pay 80% of their invoices via eBill by the year 2027.

#### SIX Is Promoting the Swiss Digitalization

But eBill is more than just a farewell to paper. It is a catalyst for the digitalization of Switzerland. Wide acceptance of electronic bills will generally improve Switzerland's degree of digitalization and will strengthen national initiatives such as “Digital Switzerland.”

Bills are a part of everyday life. Their transformation is directly linked to consumers' well-being and sense of security. As the center of the ecosystem, consumers will be the arbiters of the success of electronic bills, as they are for all digital innovations.

eBill certainly won't be to consumers' disadvantage. The time gained through them can be used in better ways, such as playing with their children, going to see a movie or finally getting around to ordering a new photo camera, the bill for which would be definitely paid in a snap. ■

#### → eBill for consumers

Register today on your e-banking portal in the current e-bill section and benefit from all of the new innovations in 2018. More information: [ebill.ch](http://ebill.ch)

#### → eBill for businesses

Get better control over your cash flow. More information and contact details: [six-paynet.com](http://six-paynet.com)

#### The Benefits of eBill

### From 2018 onward, electronic bills will deliver ...



#### ... greater convenience for consumers:

- No having to enter data, no typing errors, no media disruptions
- No forgetting of bills thanks to automation and push notifications
- Less spam and even greater security thanks to biller authentication
- Efficient filing and archiving



#### ... greater efficiency for businesses:

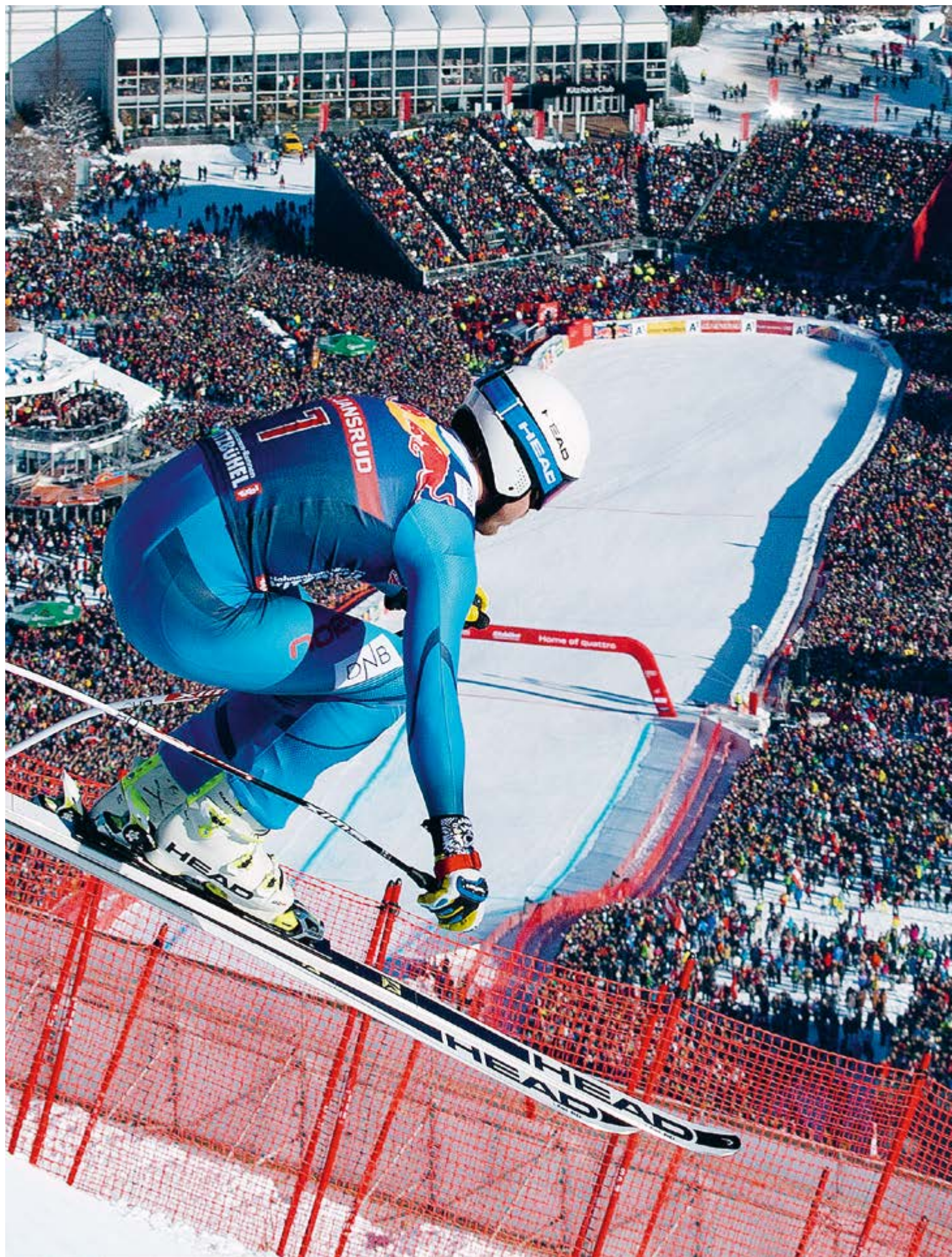
- Greater payment reliability and simple controlling (e.g. overdue payment notices)
- Predictable cash flow
- Uniform face toward customers through integration across various channels such as e-commerce
- Continuous digital processes
- Customer centering without media disruptions



#### ... more service options for banks:

- Possibilities for new services such as archiving on e-banking platforms or managing working capital for corporate clients
- Additional ways to establish contact with clients (e.g. in the area of account administration)
- Streamlined internal processes, lower IT expenses







# High Speed on the Final Slope

**Cashless Events** The Hahnenkamm ski race is one of the many major events for which SIX makes it quick and convenient for spectators to pay without cash. A place like Kitzbühel poses special topographic and climatic challenges for the requisite infrastructure.

Text **Matthias Bill**

**R**esplendent Alpine weather. 50,000 ecstatic fans lining the slope. A magnificently prepared race course. Everything is ready for the men's downhill, the highlight of the Hahnenkamm race weekend in Kitzbühel, Austria. Everything is ready for Kjetil Jansrud (see photo). As the winner of the downhill at Val d'Isère, the Norwegian racer is the odds-on favorite to ski to victory on the Streif course. He starts seventh and crosses the finish line with the slowest time thus far. He ends the day in 36th place out of 53 finishers, yet only two seconds separate him from Italy's Dominik Paris, this year's victor.

Most races on a World Cup course are decided by hundredths of a second. And speed is king also along the fences. The steep final slope, for example, where ski racers hurl themselves toward the finish line at speeds of up to 140 kilometers per hour, is lined by a number of beverage stands. For thirsty fans, hundredths of seconds quickly feel like minutes, and seconds seem like hours when you're waiting in line to pay. SIX wins the race against queues with its cashless payment services.

For the second time, spectators at the 2017 Hahnenkamm race could preferentially purchase tickets, food, and beverages by cashless payment at more than 80 terminals provided by SIX – not just around the final slope, but also in the fan zone in the center of Kitzbühel. The three-day race weekend drew 98,000 ski fans, an attendance figure surpassed only once, in 1999. "At an event with so many spectators, it's crucial that cashless payments function flawlessly, because paying cashlessly is simply faster and more convenient for both guests and vendors," says Manuel Kramer, who oversaw the Kitzbühel project for SIX Payment Services. In the specially segregated cashless area, the full array of advantages was put on display. There, guests paid exclusively by card or smartphone. Vendors thus needed fewer personnel and didn't have to keep change on hand in safe storage, nor did they have to count up change to calculate the day's earnings.

The number of events for which SIX has devised and supplied cashless payment solutions has tripled over the last three years. SIX is the market leader in this field. "Even the initial distrust toward completely cashless events has faded away by now," affirms Roger Niederer, Head Merchant Services, SIX Payment Services. In fact, contrary to skepticism, he says, cashless is becoming a lifestyle factor today. Hence, alongside sporting events like the Hahnenkamm race, the Formula 1 Grand Prix in Spielberg, Austria, and the White Turf horse races in St. Moritz, Switzerland, the roster of events that completely or partially eschew cash thanks to SIX also particularly includes renowned European music festivals (see box on page 28).

## With Crampons and Gaffer Tape

The Streif course is considered one of the world's toughest and most dangerous racing slopes, and the terrain at Kitzbühel also posed a challenge for SIX. To connect all the terminals, SIX laid 1,396 meters of network cable in the center of town and set up 20 proprietary WLAN hotspots. The aforementioned beverage stands around the final slope area functioned entirely wirelessly via a GPRS signal. "Besides the topography, weather conditions also place special demands on the equipment," Manuel Kramer explains. "Our terminals



**Each SIX  
employee  
on average  
trekked  
three times  
the length  
of the Streif  
course  
each day.**



must be capable of easily withstanding double-digit subzero temperatures. Under fantastically clear weather conditions like the ones that prevailed in 2017, the temperature can quickly plunge to  $-20^{\circ}\text{C}$  in exposed locations.”

Kjetil Jansrud and Dominik Paris had each won the Hahnenkamm downhill once prior to 2017. Jansrud’s victory in 2015, though, was on a shortened course. Dominik Paris skied to his first Hahnenkamm victory and his win again this year over the full distance of 3,312 meters. Was it perhaps superior stamina that enabled him to win anew this year? Whatever the winning factor was, you definitely have to be an endurance athlete to work in Kramer’s team. Seven employees of SIX provided round-the-clock service throughout the week of the races in Kitzbühel. Their work included training and supporting the volunteers manning the terminals, as well as manually repairing the infrastructure.

“We employed upward of a half-kilometer of extra-strength gaffer tape,” Kramer discloses. “And we had to strap crampons onto our shoes again and again because the batteries for the terminals along the final slope unfortunately don’t climb the mountain on their own.” His team logged a total of 467 kilometers on foot, or in other words, each worker on average trekked three times the length of the Streif course each day.

#### Let’s Do It Again in 2018

SIX already began its preparations for the 2018 Hahnenkamm race this summer, but nonetheless will have to sprint in the end. Since the concession stands and other transaction points have to be in place first, the SIX employees are

always among the last to be able to begin their work on site. Yet everything has to function properly before the event grounds open. Which brings us back to those hundredths of seconds. ■

→ 98,000 visitors over three days?  
Get an impression of the 2017 Hahnenkamm race fan zone in Kitzbühel from the time-lapse video: [six-group.com/hahnenkamm](http://six-group.com/hahnenkamm)



▲ Who here is thirsty? When 55,000 fans are lining the course, concession transactions need to be handled swiftly. Paying cashlessly is the fastest solution.

**2018**

## Cashless Calendar

SIX is making cashless payments possible at more and more events throughout Europe. Many of those events are eschewing cash entirely (cashless only\*) and employing reloadable wristbands, for example.

January 17–20, 2018  
**Eurosonic Noorderslag\***  
Noorderslag, the Netherlands  
→ [eurosonic-noorderslag.nl](http://eurosonic-noorderslag.nl)

January 14–21, 2018  
**Hahnenkamm race week**  
Kitzbühel, Austria  
→ [hahnenkamm.com](http://hahnenkamm.com)

February 4–18, 2018  
**White Turf**  
St. Moritz, Switzerland  
→ [whiteturf.ch](http://whiteturf.ch)

June 2, 2018  
**Life Ball\***  
Vienna, Austria  
→ [lifeplus.at](http://lifeplus.at)

June 14–16, 2018  
**Nova Rock\***  
Nickelsdorf, Austria  
→ [novarock.at](http://novarock.at)

July 5–7, 2018  
**Electric Love\***  
Salzburg, Austria  
→ [electriclove.at](http://electriclove.at)

August 16–18, 2018  
**FM4 Frequency\***  
St. Pölten, Austria  
→ [frequency.at](http://frequency.at)

June 29–July 1, 2018  
**Formula 1 Grand Prix of Austria\***  
Spielberg, Austria  
→ [fia.com](http://fia.com)

August 10–12, 2018  
**Motorcycle Grand Prix of Austria\***  
Spielberg, Austria  
→ [motogp.com](http://motogp.com)





Payment Services

# When two heads are better than one.

A successful business runs on a combination of passion and flexibility. This is why an efficient payment service that you can rely on at all times is essential. It leaves your hands free to concentrate on more important matters: your business. **Because quality matters.** [six-payment-services.com](https://six-payment-services.com)

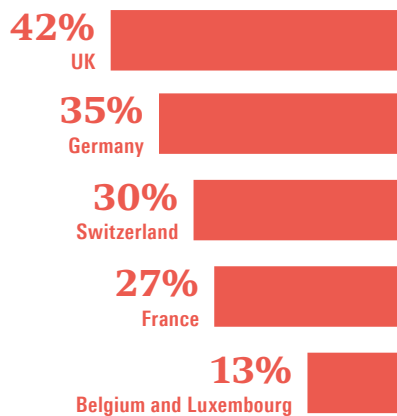


## The Statistic

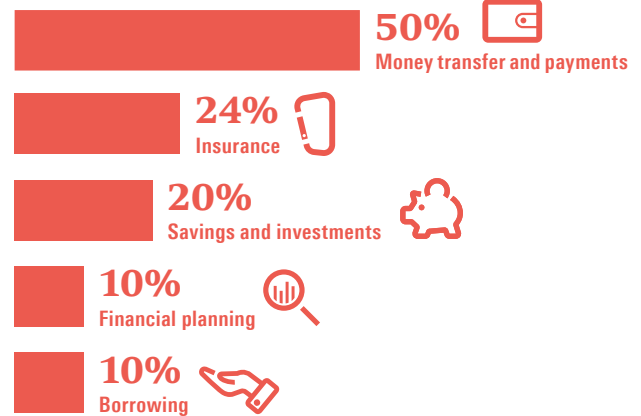
# Fintech Finally Gets Going

When EY published its first FinTech Adoption Index report in 2015, only one out of seven digitally active people was using fintech applications.\* Today that figure is already one out of three among the 22,000 people surveyed in the 20 countries examined. Even though emerging economies like China (69%) and India (52%) contribute to that finding, it appears that after having been embraced by early adopters, fintech has now been discovered by the “early majority”.

## Fintech Adoption Rate among the Digitally Active Population



## Fintech Adoption Rate by Application Category



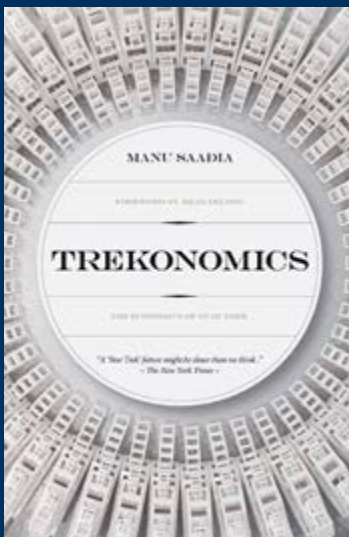
\*EY's definition of the fintech industry includes not only early-stage financial tech start-ups, but also established financial IT firms and even companies outside the financial sector that are flocking into the market. A “fintech user” is defined as a person who has used two or more digital services over the prior six months in one or more of the following areas: money transfer and payments, financial planning, savings and investments, borrowing, or insurance.

## The Find

## A Book about Captain Kirk's Credit Card

Do you find a world without cash utopian? For the makers of Star Trek, it wasn't utopian enough. In their universe, no medium of exchange exists at all. Captain Kirk doesn't need a credit card. Replicators create any desired good at the touch of a button. Star Trek fan and start-up consultant Manu Saadia has written a book about economic practices aboard the USS Enterprise. He inquires into how a society freed from food concerns and devoid of status symbols functions. In “Treconomics,” it also becomes clear that an absence of greed and envy creates a dramaturgical headache for screenwriters. And that's why there will still have to be species like the Ferengi, whose supreme creed remains maximizing profits.

→ More information: [pipertext.com](http://pipertext.com)



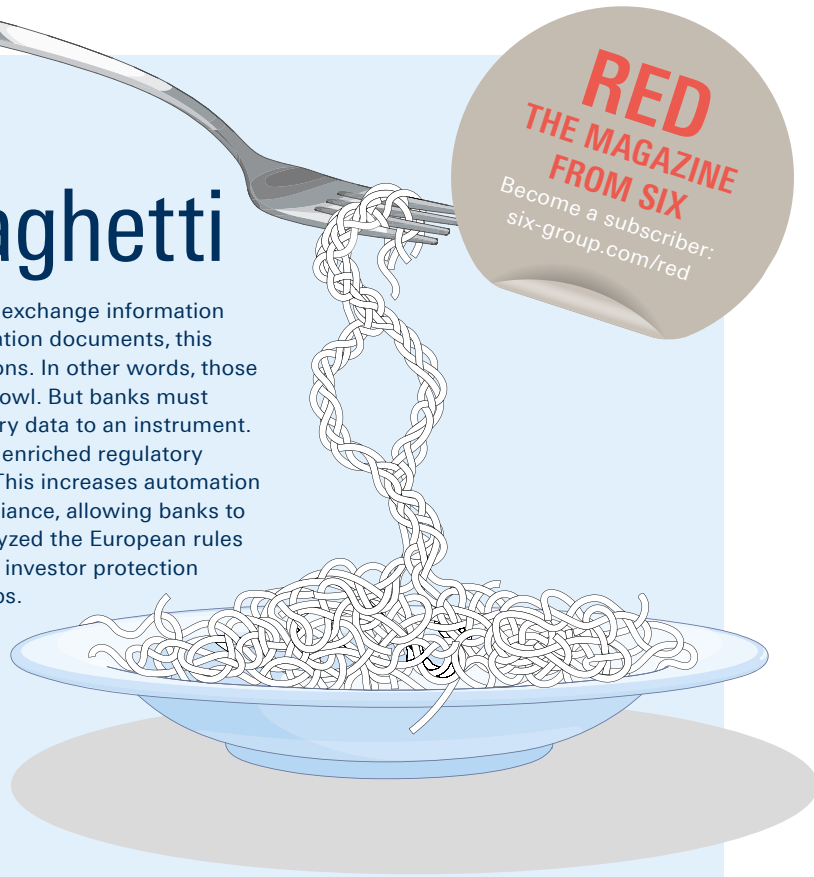
## The Glossary

# Regulatory Spaghetti

When different players in the financial marketplace exchange information such as prices, terms and conditions, or key information documents, this can trigger obligations under multiple new regulations. In other words, those regulations are intertwined just like spaghetti in a bowl. But banks must still be able to easily and accurately link all regulatory data to an instrument. By cross-referencing instruments in its database to enriched regulatory content, SIX helps banks unravel this pile of pasta. This increases automation and reduces the significant cost and effort of compliance, allowing banks to focus on their core business. SIX, for example, analyzed the European rules for complex retail investment products (PRIIPs) and investor protection under the MiFID II directive and found many overlaps.

A regulatory hub serves up data for PRIIPs and MiFID II, at the right level of detail, for each individual regulation. Buon appetito!

→ Download the Regulatory Navigator for more information: [six.swiss/regulatory-navigator](http://six.swiss/regulatory-navigator)



## The Quote

*“Please help.  
I’m stuck in here  
and I don’t  
have my phone.  
Please call  
my boss!”*

An automated teller machine in Texas ejected this hand-scrawled plea for help complete with telephone number instead of a receipt. It came from the service room behind the ATM. A mechanic had repaired a broken door lock there – so well, in fact, that he had locked himself inside.

**RED – The Magazine from SIX**

Published in German and English in a combined circulation of 5,000 copies.

**Publisher**

SIX Group Ltd  
P.O. Box  
8021 Zurich, Switzerland  
[six-group.com/red](http://six-group.com/red)  
[RED@six-group.com](mailto:RED@six-group.com)

**Editorial staff**

Claudia Holfert (SIX, Overall Direction);  
Matthias Bill (SIX, Editor in Chief);  
Ralph Schreiber (SIX); Simon Brunner;  
Klaus Werle

**Publication design**

C3 Creative Code and Content  
(Switzerland) AG, Zurich,  
[c3.co/switzerland](http://c3.co/switzerland)

**Picture credits**

Thomas Eugster (cover, pp. 6, 12, 13);  
Nils Sandmeier (p. 3); Kyeni Mbiti  
(pp. 10, 31); Alessandro Della Bella (p. 11);  
Anne Morgenstern (pp. 20, 21, 32, 34);  
GEPA pictures, Harald Steiner (p. 26);  
zVg (p. 28); GEPA pictures, Andreas  
Pranter (p. 28); [pipertext.com](http://pipertext.com) (p. 30)

**proofreading**

Text Control AG

**Translations**

Mark Rabinowitz, Robin Scott (editor)

**Printer**

linkgroup, Zurich, Switzerland





**Valeria Ceccarelli**  
cites many reasons for a  
company to go public.

**Lukas Weber**  
showcases start-up  
companies.



# “Stock Exchanges Don’t Belong in a Display Case”

**Future Talk: Equity Crowdfunding & Co.** Valeria Ceccarelli, Head Issuer Relations, SIX Swiss Exchange, and Lukas Weber, the co-CEO and co-founder of *investiere.ch*, talk about the future of capital markets, the benefits of communities, and the limitations of crowds.

Interview **Matthias Bill**

*We’re holding this conversation in the Swiss Finance Museum in Zurich. Will stock exchanges soon be relegated to historical artifacts by new ways of raising capital such as equity crowdfunding?*

**Valeria Ceccarelli** Stock exchanges are far from obsolete. They perform a prime function for an economy by connecting providers and users of capital. But they’re more than just capital markets where companies raise external funding. Their uniqueness lies in the fact that they’re also efficient trading venues where securities can be bought and sold at any time. Every stock exchange has rules and regulations based on the principles of fairness and transparency that protect investors and listed companies alike. In addition, stock exchanges supply the financial community with high-quality financial information.

**Lukas Weber** First of all, we at *investiere.ch* shun the term “crowdfunding.” It suggests that anyone with a handful of francs can invest in a company. But that’s certainly not the case on our platform. We seek quality, not just among the companies we present to investors, but also among the investors themselves, who we view not just as bankrollers, but also as a pool of know-how. They make entrepreneurial investments to the tune of CHF 10,000 and upward. We have amassed a community of approximately 12,000 people. Most of them aren’t full-time investors, but rather well-networked entrepreneurs, current or former CEOs, etc. Our community’s expertise is an immensely important asset that we contribute as investors. After all, we are competing primarily against traditional venture capitalists, ➤



not against stock exchanges, which don't belong in a display case, in my opinion.

**C** We cultivate a community as well. Once companies have gone public we provide network opportunities. We offer education and trainings in conjunctions with experts, for instance best practice workshops for investor relation professionals or talks on relevant topics.

*Let's take a step back. Where will companies raise capital in the future?*

**C** As already mentioned in my first answer, I believe that stock exchanges will remain one of the primary venues where companies raise capital even though there are other ways to do that and new ones might develop in the future.

*Isn't it true that fewer and fewer companies are going public?*

**C** The five listings on SIX Swiss Exchange over the first nine months of 2017 already match the yearly average seen recently. Looking at a longer time frame it is true that globally the number of IPOs in more developed countries has been decreasing. Compared to 20 years ago more private equity capital is available. The private equity sector and its alternative sources of capital today give companies increased flexibility in how to finance growth or innovation during certain stages of their life cycle.

**W** I agree with you, there's a greater availability of off-market funding. But in the private equity space, only a small, elite circle of investment funds are capable of providing companies with very large amounts of capital. In this very interesting market, we want to give a larger sphere of investors access to companies before they go public.

**C** Let's not forget though that private equity funds play a major role themselves in IPOs, which create an exit option for them. Half of the entire European IPO volume from 2014 through 2016 was backed by private equity. The 2016 IPO of

VAT and the 2015 IPO of Sunrise on SIX Swiss Exchange are two examples.

**W** However, smaller companies, and especially companies in the start-up or development stage that are not yet ready to go public, need alternative sources of funding. We at [investiere.ch](http://investiere.ch), for instance, enable select privately held companies to efficiently access capital and a network of investors via our platform.

*“Stock exchanges will remain one of the primary venues where companies raise capital.”*

Valeria Ceccarelli

#### Valeria Ceccarelli

In her role as the head of issuer relations for SIX Swiss Exchange, Valeria Ceccarelli encourages new companies to go public and cultivates relationships with those that have already done so. She has headed the Issuer Relations team of SIX Swiss Exchange for a year now. Prior to joining it in 2013, she worked for eleven years in the investment banking division of Morgan Stanley in London and Milan, and spent three years in a private equity fund. She holds a degree in management engineering from the Polytechnic University of Milan.

#### Lukas Weber

The co-CEO and co-founder of [investiere.ch](http://investiere.ch) studied computer science at the Swiss Federal Institute of Technology in Zurich, and at the Ecole Nationale Supérieure des Télécommunications in Paris. He started his career at Goldman Sachs in London, and subsequently held various positions as a management consultant. On [investiere.ch](http://investiere.ch), Lukas Weber, who has founded a number of different companies himself, tries to inspire private investors to team up to invest in start-up companies that are seeking capital.

*So, is the choice of means primarily determined by the amount of capital needed?*

**C** Yes and no, because raising capital is only one of the reasons why companies go public. An initial public offering is much more than just a one-time opportunity to raise capital. A company that is already listed on a stock exchange can easily raise additional capital. A listed company's stock also gives companies a liquid currency that can be used to fund inorganic expansion. Listed companies are able to attract leading talent, for example by offering employee share plans. Another reason for going public is publicity. A stock exchange listing can strengthen a brand, and make



a company appear more open and credible in the eyes of customers and suppliers. That can help a company to stand out from competitors or to enter new markets.

**W** We obviously can't keep pace with a stock exchange where publicity is concerned. Nevertheless, we do influence the visibility of start-up companies when we add them to our portfolio. There are important trust factors in the search for venture capital: Who has already invested? Who is investing in the current financing round? The credibility of the investment increases with each new investor. After seven years in operation, we've built a good reputation with *investiere.ch*. We have strict rules that determine who we want to join forces with. We examine more than 1,000 companies each year, but present only 15 to 20 of them to our community. A commitment from us builds confidence and may attract other investors.

**C** We also are committed to enhance the visibility of small and mid-sized companies – and thus potentially enhance their trading liquidity on the market – through special programs like Stage [see box].

#### *Which brings us to liquidity.*

**W** Venture capital is very illiquid. Our investors want to shepherd a company over a lengthy period. In contrast to classical investment funds that are captive to their cycles, we remain flexible. It's not about flipping shares that have just been acquired. From a company's perspective, the possibility of trading shares would actually cause considerable uncertainty. How can additional financial backers be enticed on board if some shareholders are already selling their stakes, perhaps even at sharply reduced prices? That would also harm the aforementioned reputation of our community.

**C** Stock exchanges, of course, have always allowed securities to be bought and sold, also after the initial raising of capital. And they are open

*“A commitment from us builds confidence and may attract other investors.”*

Lukas Weber

to everybody, regardless of one's budget. There's a touch of irony in the fact that stock exchanges remain the measure of all things in the democratization of stock ownership.

**W** That's true. We at *investiere.ch*, though, are not striving for a complete democratization, but we are, for instance, thinking about reducing the current minimum investment amount of CHF 10,000 by half, albeit primarily also to enable our investors to better diversify their holdings. The bottom line is that we address different investors than stock exchanges do.

**C** Just like your platform looks for companies with a different profile and at a different stage of their life cycle. That makes SIX Swiss Exchange and *investiere.ch* interesting for companies at other points in time. So, in that sense, I'm looking forward to the first occasion when a company that once raised capital via your platform debuts on SIX Swiss exchange. ■

#### **Stage Program**

### **An Eye for the Small Companies ...**

One of the prime reasons for listing a company on a stock exchange is to raise capital. But in order to continue growing after going public, shares of exchange-listed companies need to have at least a minimum of trading liquidity. Shares of small or mid-sized companies often lack trading liquidity for a number of different reasons such as insufficient visibility in the market.

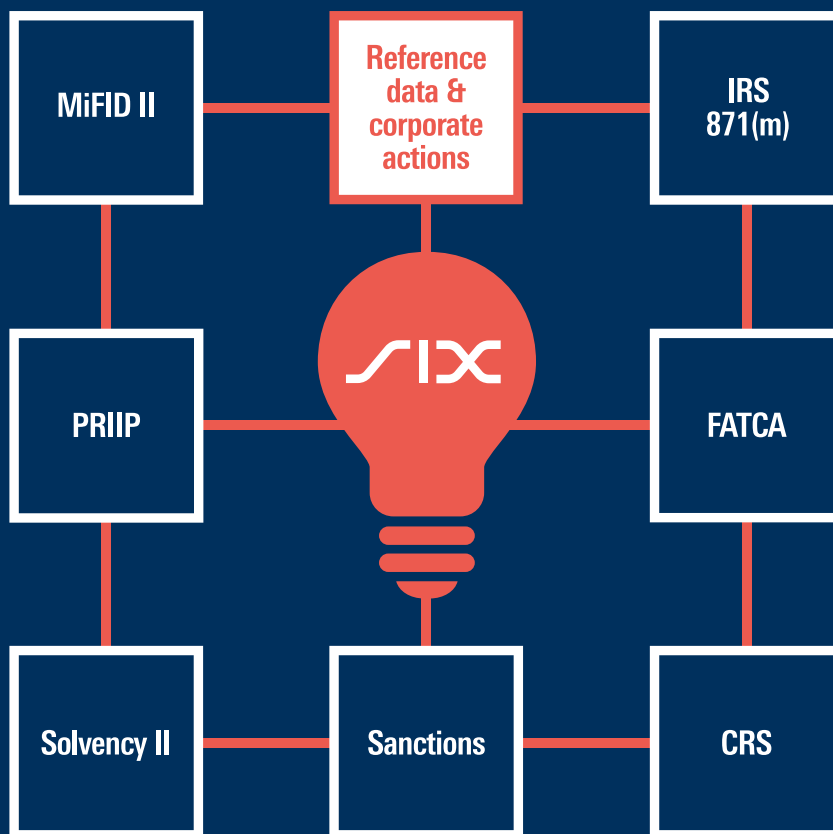
With its Stage Program, SIX Swiss Exchange helps companies to increase their visibility and thus attain an appropriate valuation. The Stage Program includes regularly updated fact sheets from Morningstar and research reports from banks, which both boost the flow of information to potential investors. Education, workshops and networking events are also part of the program.

Stage has been up and running for a good year now and has seven listed companies on board, so far. Andrea von Bartenwerffer, Issuer Relations, SIX Swiss Exchange in charge of the program, comments: “The numbers so far correspond to our expectations. But far more important is the fact that the program's provisions are already exerting notable impacts here and there.”

→ More information: [six-swiss-exchange.com/stage](https://six-swiss-exchange.com/stage)



# Powered by Innovation.



Our reference data fuels our innovation. Based on award-winning corporate actions and enriched regulatory content, our data services simplify the complexity of compliance. From developing new rulesets to simplifying delivery mechanisms, our innovative approach will help you respond to new regulations with ease and confidence. [www.six-financial-information.com](http://www.six-financial-information.com)



Financial Information



# Close to the big ones.



There is a simple reason why the SMI® enjoys a global reputation: no other index is so close to the successful Swiss big players like ABB, Geberit, Nestlé, Novartis or Swatch. But not just the special selection makes the SMI® so appealing. On 18 September 2017 the SMI® has also been adapted to the EU-Guidelines. It therefore comes as no surprise if investment products on the SMI® are getting increasingly popular in Europe. With the SMI® you will stay close to the big ones. You can count on it: [www.six-swiss-exchange.com/smi](http://www.six-swiss-exchange.com/smi)

SMI  
INDICES®