SIKA
The Swiss chemicals group is booming

TRANSPORT
Roads of the future

HEALTH
The renewal of medical imaging

DOSSIER

BLOCKCHAIN INVESTOR'S DIGEST

Companies to watch | Affected industries
The Swiss vanguard

GLOBAL BLOCKCHAIN TECHNOLOGIES | SPECTRA 7 | BLOCK ONE | ETHEREUM | RIPPLE
Behind the elegance of every Master Chronometer timepiece is the highest level of testing: 8 tests over 10 days, to ensure superior precision and anti-magnetic resistance. We’ve raised our standards. You can too.

GLOBEMASTER 39 MM
How ironic it is to feature a special report about the promises of blockchain technology, at the very time when the market for cryptocurrencies is experiencing one of the most spectacular collapses of its young existence.

In the spring of 2018, the astute IT consulting firm GP Bullhound was one of the rare industry observers to express a clear, detailed account of the extent of the imminent collapse, predicting a 90% correction. We’re not there yet, but many digital currencies – even the leading ones – have suffered a 90% drop since their peak in January.

Should we be concerned? Quite the opposite. The market is still immature, and this purge offers a much-needed clean-up. It can then move forward, stronger. Once the dark hour for cryptocurrencies has passed, the survivors could very well experience unprecedented growth. The current downturn must not be misconstrued; market fundamentals are healthy. Blockchain, the technology on which cryptocurrencies are based, will eventually emerge as the leader, but we must be patient. That is the unanimous conclusion drawn by the experts we interviewed in preparing this report.

Its concrete applications seem nearly infinite. The technology offers numerous solutions in finance, where blockchain is expected to enhance efficiency and provide significant savings. For example, it would eliminate fees charged by intermediaries for international money transfers. Large banks, which fear being “Ubered” out of the market, closely track these innovations when they are not already conducting their own experiments behind the scenes.

Until these technologies are widely adopted, the current transition period is the perfect time for implementing standards and a more rigorous regulatory framework. That is where Switzerland could play an important role. The country is already a hubbed for blockchain technology and initial coin offerings (ICOs). These ICOs are a new way for businesses to raise money.

As for Swissquote, adopting the latest innovations is ingrained in our DNA, and we are pioneers in cryptocurrency trading. The service has been available on our platform for almost a year now, and we are the only bank in Switzerland to do so, with FINMA approval to boot.

We also contributed to founding a new organisation, Capital Markets and Technology Association (CMTA), which began operations this summer. It aims to develop the use of blockchain technology on financial markets, mainly within the context of ICOs.

This issue’s special report provides the opportunity to expand the spectrum available for investors a bit further, by presenting listed companies that use blockchain technology. Our analysts have also developed a certificate dedicated to the sector...to complete the story.

Happy reading!
TABLE OF CONTENTS

3. EDITORIAL
   by Marc Bürki

8. SCANS
   Economic survey

14. TRENDS
   Personalities, nations, innovations

16. PORTRAIT
   Sika, solidifying its future

20. FOCUS
   The renewal of medical imaging

22. Data protection: Europe’s turning point

24. TRANSPORT
   Roads of the future

30. DOSSIER: BLOCKCHAIN INVESTOR’S DIGEST

34. Infographic: the blockchain explained in 60 seconds

36. Zurich: a hub for Swiss blockchain technology

44. Party’s over for ICOs!

48. Interview with William Mougayar, author of The Business Blockchain

60. 5 sectors under the microscope

62. Energy: blockchain’s hidden secret

64. Digging for Bitcoins

66. SWISSQUOTE
   Blockchain and cryptocurrencies: two house certificates

68. “Options and Futures aren’t just for speculators”

72. TRAVEL
   Vélovoyage: see Basque country by bicycle

76. CARS
   City SUVs

80. TRIED AND TESTED
   Qubes: the operating system for the paranoid

PUBLISHER
Swissquote
Chemin de la Crétaux 33
1196 Gland – Switzerland
T. +41 44 825 88 88
www.swissquote.com
magazine@swissquote.ch

Manager
Brigitta Cooper

EDITORIAL

Editor-in-chief
Ludovic Chappex

Associate editor
Bertrand Beauté

Design director
Natalie Bindelli and Caroline Fischer

DNM atelier graphique
Route de Jussy 99 – 1220 Thônes
www.ateliercana.ch

Editorial staff
Bertrand Beauté, Doris Buges-Violier, Stéphanie Cavaler, Ludovic Chappex, Désiré Duclos, Salomé Krier, Martin Longet, Salëla Simnasassy, Julie Zargaj

Layout
Natalie Bindelli, Caroline Fischer, Canalà Medier (DNM atelier graphique)

Cover
Stock

Photography
Nicolas Righetti, AFP, Keystone, iStockphoto, Newscom, Reuters

Editing (English version)
Ose Ayewoh, Marco Simon

Translation
Technicis Finance

PRINTING, BINDING AND DISTRIBUTION
— Stämpfli Ltd.
Wölflistrasse 1 – 3001 Bern
www.staempfli.com

ADVERTISING
Infoplus AG
Traubenweg 51, CH-8700 Küsnacht
hans.otto@i-plus.ch

REMP 2018: 52,335 ex. Print run: 60,000 ex.

PRINTED IN SWITZERLAND
www.swissquote.com/magazine

SUBSCRIPTION
CHF 40 FOR 6 ISSUES
www.swissquote.ch/magazine
The Breitling Jet Squad
Jacques Bothelin
Christophe Deketelaere
Paco Wallaert

NAVITIMER 8
LAND
SEA
AIR

#SQUADONAMISSION
France Télévisions, TF1 and M6 have come together to create a streaming platform called Salto. It will offer shows available on its channels as well as never-before-seen content. The monthly subscription is expected to cost less than €5 per month. The goal of this collaboration is to take back market share from US-based Netflix, which already has 3.5 million subscribers in France. This strategy has already been attempted by others. In the United States, Hulu allowed Disney, 21st Century Fox, Comcast and AT&T to join forces. In the UK, Freeview is a product of the BBC, ITV, Channel 4 and Sky.

Coca-Cola is pulling out all the stops to reach consumers who want to avoid unhealthy sugary drinks. In recent months, the US group launched Coca-Cola Plus in several Asian countries. This no-calorie version contains five grams of dextin, a fibre that can help fat absorption, especially when consumed during a meal. In Japan, the brand has also launched a coffee-flavoured type of Coca-Cola Plus, which has less sugar, as well as a version with a hint of lemon. The new bubbly drink contains none of the artificial colours that create the traditional caramel tint.

The pet market is a gold mine. Mars is well aware and just acquired veterinary clinic chains AniCura, Linnaeus and VCA. It also created a $100 million fund to finance pet-related start-ups. But it’s not the only company looking to make a profit in this market. General Mills recently acquired animal food expert Blue Buffalo and Nestlé purchased shares of Tail's.com, a dog food delivery service. The Swiss company also wants to acquire Canada-based Champion Petfoods for more than $2 billion.

For some time now, I have been deeply concerned about our country – the growing division at home and our standing in the world" Howard Schultz, former CEO and Chairman of Starbucks, furthering rumours of a future presidential candidacy.

The top five richest entrepreneurial families (based on their fortunes, in billions of US dollars)
1. THE WALTON FAMILY (WALMART) $151.5
2. THE KOCH BROTHERS (KOCH INDUSTRIES) $157
3. THE MARS FAMILY (MARS) $89.7
4. THE VAN DAMME, DE MEVIUS AND DE SPOELBERCH FAMILIES (ANHEUSER-BUSCH INBEV) $54.4
5. THE DUMAS FAMILY (HERMÈS) $49.2

Sources: Bloomberg, Statista and CLAL.
Supercars are looking to counter the growing e-commerce monopoly by increasing their home delivery services. In France, the Carrefour chain entered into a partnership with Google. Starting in 2019, Carrefour products can be ordered through “Home”, Google’s virtual assistant. It has also partnered with its UK-based vacuum manufacturer Dyson – which is developing an electric car – to supply insulation materials for the new vehicles. It also just signed a contract with Chinese auto group Geely. But a contract with Iranian company Auyeh to produce Peugeot and Citroen cars in Iran fell through, following the US pulling out of the nuclear deal.

$21 BILLION

The total value of US agricultural products imported by China in 2017. Soy makes up two-thirds of this amount, alongside beef and corn. The figure demonstrates the scope of trade between these two countries, that have been in a relentless trade war over the past few months.

€25.5 BILLION

The revenue generated by European football during the 2016-2017 season, according to consulting firm Deloitte. The majority of this amount comes from the sale of broadcasting rights. Sky and BT alone have spent €4.5 billion to broadcast English Premier League matches.

“Harley-Davidson should stay 100% in America, with the people that got you your success”

US president Donald Trump, following the motorcycle company’s decision to outsource some of its production.

MOON POD

A BEANBAG THAT SIMULATES WEIGHTLESSNESS

Float therapy, in which a person immerses themselves in a hermetically sealed chamber filled with very salty water in complete darkness, is one of the most efficient forms of relaxation that exists. Moon Pod creators tried to emulate the sensation of being completely weightless, which is normally only found in space. Weighing in at barely 6 kilos, this beanbag is filled with thousands of little balls that have a very high friction capacity. This allows the beanbag to perfectly surround the contours of the person laying or sitting on it, and they will get the feeling they are floating. According to its founders, the Moon Pod is particularly useful for people suffering from stress, insomnia, post-traumatic stress disorder and circulation problems.

THE FLOP

Lukewarm reception for the S9

Samsung’s S9 and S9+, the flagship models of the Korean brand, went on the market in March. But they generated little enthusiasm among consumers. In the first month after launch, only 8 million devices were sold. Several resellers also started to lower prices. At AT&T, an S9 costs no more than $570, compared to $790 in March. The smartphone is struggling to generate buzz because it is very similar to the previous S8 model. Only the camera was improved slightly; it takes better photos in darkness and now has a Super Slow Motion feature. Furthermore, the S8 was already less popular than its predecessor. Sales totalled 41 million phones, compared to 48 million for the S7.

GLENCORE TARGETS ELECTRIC CARS

Auto parts supplier Autoneum saw slumping sales in North America, where the number of cars built fell 8% last year. This led the Winterthur-based group to seek new avenues for growth. In particular, it is in talks with UK-based vacuum manufacturer Dyson – which is developing an electric car – to supply insulation materials for the new vehicles. It also just signed a contract with Chinese auto group Geely. But a contract with Iranian company Auyeh to produce Peugeot and Citroen cars in Iran fell through, following the US pulling out of the nuclear deal.

SWISSQUOTE SEPTEMBER 2018

Fun

GLENCORE BOUNCES BACK IN DRC

Glencore has seen the light at the end of the tunnel in the Democratic Republic of the Congo (DRC). The Zug-based group agreed to cancel $5.6 billion in debt contracted by co-company Kamoto Copper Company (KCC) that it founded with state-owned company Gécamines. Gécamines threatened to close KCC if its balance sheet didn’t improve and accused Glencore of causing the debt by granting unjustified loans to KCC. The DRC is the primary source of copper and cobalt for the Swiss conglomerate. As cobalt is used to make batteries for electric vehicles, its value has jumped significantly in recent months.

KICKSTARTER

$1,271,724

Funds raised

NOVEMBER 2018

 AVAILABLE

FUNDS RAISED $1,271,724

NOVEMBER 2018

AVAILABLE

MOON POD

A BEANBAG THAT SIMULATES WEIGHTLESSNESS

Float therapy, in which a person immerses themselves in a hermetically sealed chamber filled with very salty water in complete darkness, is one of the most efficient forms of relaxation that exists. Moon Pod creators tried to emulate the sensation of being completely weightless, which is normally only found in space. Weighing in at barely 6 kilos, this beanbag is filled with thousands of little balls that have a very high friction capacity. This allows the beanbag to perfectly surround the contours of the person laying or sitting on it, and they will get the feeling they are floating. According to its founders, the Moon Pod is particularly useful for people suffering from stress, insomnia, post-traumatic stress disorder and circulation problems.

SCANS SEPTEMBER 2018

SCANS SEPTEMBER 2018

SCANS SEPTEMBER 2018
“Harder, better, faster, stronger”

Toyota is developing a smart car that can be safely driven by older people. With a slew of cameras and sensors, it is equipped with artificial intelligence sensors that collect and analyze data in order to correct errors that a driver, who is tired or whose reflexes are slower, might make. For example, the system will be able to spot a pedestrian crossing the road at the last minute or notice an involuntary lane change and correct the vehicle’s trajectory. In Japan, Toyota’s domestic market, one-quarter of the population is over the age of 65.

XIAOMI, THE CHAMPION OF LOW-COST TECH

Chinese smartphone manufacturer Xiaomi went public on the Hong Kong exchange in late June, raising $4.7 billion. The company is now valued at $53.9 billion. Founded in Beijing in 2010, Xiaomi manufactures low-cost devices that sell extremely well in China and India. It also sells close to 300 smart products such as automatic rice cookers, toothbrushes and lamps. The goal is to create a complete ecosystem that can be controlled via a smartphone. But this diversification leads investors to fear that the company is scattering, especially since its margins are already low. Its smartphone margins are only 8.8%, compared with 64% for Apple’s iPhone X.

ARYZTA RESTRUCTURES

Zurich-based ArYZta isn’t doing well. The frozen baked goods company saw sales drop 6.3% in the first half of 2018. The Swiss company, which notably provides buns for McDonald’s, has already sold off its US brand Cloverhill, and Irish brand La Roseau Foods. It is also looking to sell off its 49% market share in French company Picard. But that may not be enough, according to Credit Suisse, which recently downgraded ArYZta shares and indicated that the company would have difficulty bouncing back.

XIAOMI IPO

Chinese smartphone manufacturer Xiaomi went public on the Hong Kong exchange in late June, raising $4.7 billion. The company is now valued at $53.9 billion. Founded in Beijing in 2010, Xiaomi manufactures low-cost devices that sell extremely well in China and India. It also sells close to 300 smart products such as automatic rice cookers, toothbrushes and lamps. The goal is to create a complete ecosystem that can be controlled via a smartphone. But this diversification leads investors to fear that the company is scattering, especially since its margins are already low. Its smartphone margins are only 8.8%, compared with 64% for Apple’s iPhone X. CEO Lei Jun announced in early 2018 that he would voluntarily keep margins under 5% to focus on the revenue generated from Xiaomi apps.

HARER, BETTER, FASTER, STRONGER

Daniel Ek, creator of Spotify, quotes Daft Punk the day before the company went public on the Nasdaq.

Of course it has to be led by a man, because it is a very challenging position.”

Akbar Al Baker, CEO of Qatar Airways, regarding his position.
Brazil is making a comeback after a difficult recession in 2015 and 2016 that led to a loss of eight growth points. In the first quarter of 2018, the GDP of this immense South American country increased 0.4%. It is the fifth quarter of consecutive growth. Over the year, the GDP is expected to increase close to 2.5%. This recovery is driven by domestic spending, encouraged by historically low interest rates and inflation. Agricultural exports, which were up 1.4% in the first quarter, are also doing well. Soy is expected to take off in the coming months, as China – embroiled in a trade war with the United States – is looking to diversify its supply sources. But the economy of this country – with a population of 209 million – remains fragile. Unemployment is at 13%. Government debt is so high that the state has allocated one-fifth of the budget to pay interest only. Buying power for Brazilian consumers is also suffering due to the extremely high import tariffs imposed by the government. Some car models cost twice as much in Brazil as they would in the US.

### Plastic made from wood

Approximately 8% of oil extracted around the world is used to make plastic, either as a direct ingredient or as fuel for production. This waste of resources led Finnish group Stora Enso, specialised in making pulp and paper, to develop a green plastic made of wood fibres. The material is known as DuraSense and the granules look a bit like popcorn. It is just as solid and durable as wood but can be shaped using an injection mould, just like plastic. It can also be combined with recycled polymers and other green materials. Some potential uses of this eco-friendly plastic include car interior paneling, kitchen utensils, garden furniture and PET bottle caps. Stora Enso will be able to produce 15,000 tonnes of DuraSense per year in its Swedish factory. At the end of its lifecycle, this material can be recycled up to seven times.
Sika, solidifying its future

With exceptional growth year after year, the Zug-based firm has become the global leader in concrete admixtures and adhesive products for the construction and automotive industries, thanks to its ability to constantly innovate.

Imagine dozens of drones flying around a construction site, like a hive of bees that never sleeps. They are patiently constructing a building, one stone at a time... Enthusiastically discussing this futuristic method is Dominik Slappnig, head of Corporate Communications & Investor Relations and member of Sika’s senior management. This technology is still in the prototype stage and is currently being tested in partnership with EPFL. But it perfectly demonstrates Sika’s obsession with innovation; the company has filed 217 new patents since 2015 and half of its 19,000 employees have an engineering degree.

Sika was founded in 1910, when Austrian engineer Kaspar Winkler marketed “Sika-1”, an additive that made concrete waterproof for use in the Gotthard Tunnel. The Swiss company based in Baar quickly expanded to four continents to meet growing demand. Starting in the 1930s, it opened branches in Europe, the United States, South America and Japan. Now present in 101 countries, Sika continues to develop new solutions for gluing, waterproofing, reinforcing and sound-proofing. It now has over 20,000 different products used in all aspects of the construction industry, as well as in the automotive industry. >

IN FIGURES

649,000,000
Sika’s 2017 net profit in Swiss francs.

905
The number of Sika employees dedicated solely to Research & Development.

101
The number of countries in which Sika does business.

The increase in Sika’s revenue in 2017, up to 6.2 billion Swiss francs.
“Sika has an excellent business model, it is both simple and effective,” said Félix Brunotte, an analyst at AlphaValue. “The products it offers (e.g. to dry concrete much quicker while saving water), generate a very high added value for its clients at a very low total cost, representing less than 1% of the final product.”

“Clearly an interesting company”

“With double-digit growth in earnings per share, Sika is clearly an interesting company for investors.” Like most analysts, Bernd Pomrehn from Vontobel has a very favourable view of the cement giant. “Sika has a double-digit EBIT, very strong organic growth and excellent results which is used to make very smart acquisitions,” Pomrehn believes this situation will continue, as the 12-month target price for Sika shares is at 158 Swiss francs.

“One of the company’s biggest threats, the court case with Saint-Gobain, ended this spring and all parties were satisfied. The management’s conflict resolution plan was successful, despite the initial backlash.” Furthermore, the recent split of Sika shares in June 2018 (60 against 1) should generate more interest among potential investors, as the share price has become more affordable. “Currently, the only factors that could disturb the company’s growth plans are external, such as a rise in raw materials prices or restless emerging markets. But Sika’s management is well aware of these difficulties,” said Pomrehn.

These products are often patented and adapted to the local market, and therefore difficult to copy. “Sika’s experience and long-standing presence, as well as the patents and low costs that protect some of their technologies, make it such that their products are practically indispensable and therefore not up against much competition,” said Brunotte, who adds that the chemical products market for construction is still very fragmented (while Sika is the global leader, it has less than 10% of the market), and could likely head towards consolidation in the years to come.

Another one of Sika’s advantages is that it offers a range of products covering all construction needs, regardless of the maturity and the technological level of the market in question. “It’s a sort of assumed cannibalism, in a positive way. Sika first sells basic products and then moves up its range to offer more complex solutions that have more added value for Sika,” said Brunotte. The Swiss group’s product range is suited to very specific needs. Sikaflex, for example, is a maximum-strength glue used to construct boats and certain buildings. It can attach windows directly onto the structure of a building without screws. This solution was used in the London skyscraper 30 St Mary Axe, which is commonly known as the Gherkin.

The automotive sector also increasingly makes use of Sika products. This market already makes up one billion in revenue for the group, compared to 5.3 billion generated by the construction industry. Sika’s adhesives are used by automakers to bond composite materials that cannot be soldered. Sika is the global leader in this market, with 40% of windscreen glass set with its products. The company expects that demand will continue to increase as this type of material becomes more widely used. “A major trend in the auto industry is using adhesives instead of screws, which allows for incredible productivity gains for the industry,” said Brunotte. “And Sika is very well-positioned to benefit from this transition.”

With annual revenue growth of 5% to 13% since 2011 (9% in 2017), Sika can confidently look to the future and continue its global expansion particularly through acquisitions (17 since 2015). The purchases are to acquire technology, of course, but especially contacts and access to emerging markets. “We’re taking a very local approach when it comes to our development strategy. When we open up shop in a country, we hire, produce and sell locally. And we still have much room for improvement in emerging markets, where our penetration rate is currently only 30%,” explained Slappnig, who said that Sika is planning to open 20 new factories around the world by 2020. “Sika has a very good capital allocation policy,” declared Brunotte. “Until now, its growth was two-thirds organic and one-third external. We expect the proportion of external growth to increase soon.”

But the speed of acquisitions has slowed down in recent years following the hostile takeover bid by French company Saint-Gobain, which was amicably settled in the spring of this year. Saint-Gobain gave up taking control of Sika and still made a profit from selling some of its shares in the Swiss company. As for Sika, a shareholder vote in June decided to create a single share class, getting rid of the registered share that offered six times more voting rights than regular shares.

“It’s a solid company with extraordinary value creation for its industry,” Brunotte assessed, seeing nothing in the near future that could harm Sika’s positive results. “The only current concerns are associated with the prices of oil and derivative products that Sika depends on to make its products. But Sika brings so much added value to its clients that doing away with Sika as a supplier would be unlikely, even if prices go up or there is a serious crisis.”

Sika’s 50th anniversary of its factory in Fribourg was celebrated in May 2018.
Medical imaging takes advantage of longer life expectancy

Four multinationals dominate 75% of medical scanner sales. But new products and challengers are now emerging in this promising industry.

BY DORIS BUGES-VIOLIER

The imaging sector has a bright future. Its prosperity seems to be a safe bet, given the necessity of renewing equipment as well as, most importantly, an ageing population seeking care. According to the World Health Organization (WHO), the sexagenarian population will increase from 12% to 22% by 2050. The imaging sector has a bright future. Its prosperity seems to be a safe bet, given the necessity of renewing equipment as well as, most importantly, an ageing population seeking care. According to the World Health Organization (WHO), the sexagenarian population will increase from 12% to 22% by 2050.

While major industry players have much to be excited about, other companies are challenging them by taking advantage of producing very costly devices. But new products and challengers are now emerging in this promising industry.

According to the latest outlooks, the industry as a whole is expected to generate at least $4.6 billion in revenue by 2023 and achieve average annual growth of 5.5%. In parallel, the growth for the software to read images could be twice as high as the growth for the equipment itself, according to Frans van Houten, CEO of Philips, in an interview with French magazine Les Échos. Equipment maintenance also generates a significant portion of revenue for these large companies.

Groundbreaking innovations

In this attractive context, several small companies are trying to make a name for themselves in niche markets by developing groundbreaking innovations. The company, based at the Innova
duction Park in Ecublens, has developed a portable echograph to a smartphone to display images. This innovation has been used by American soldiers in combat zones where space and cost are restricted.

Regarding innovative solutions, Reto Meuli, head of Lausanne University Hospital’s medical radiology department, said that portability is ideal for ultrasounds in particular. “Now it’s possible to attach a portable echograph to a smartphone and have it display images. This innovation has been used by American soldiers in combat zones where space and cost are restricted.”

But these small companies still need to expand internationally, which is very expensive, or be acquired by other companies. This is because the global market is still largely dominated by multinationals that can financially weather the hardship of producing very costly devices.

“One portable ultrasound device developed by Philips: This market has a bright future in developing countries.”

In this attractive context, several small companies are trying to make a name for themselves in niche markets by developing groundbreaking innovations. The company, based at the Innova
duction Park in Ecublens, has developed a portable echograph to a smartphone to display images. This innovation has been used by American soldiers in combat zones where space and cost are restricted.

Regarding innovative solutions, Reto Meuli, head of Lausanne University Hospital’s medical radiology department, said that portability is ideal for ultrasounds in particular. “Now it’s possible to attach a portable echograph to a smartphone and have it display images. This innovation has been used by American soldiers in combat zones where space and cost are restricted.”

But these small companies still need to expand internationally, which is very expensive, or be acquired by other companies. This is because the global market is still largely dominated by multinationals that can financially weather the hardship of producing very costly devices.

“One portable ultrasound device developed by Philips: This market has a bright future in developing countries.”

A portable ultrasound device developed by Philips: This market has a bright future in developing countries.

At Geneva University Hospital, Martin Walter, head of the nuclear medicine and molecular imaging department, sees innovation cropping up in a different domain: contrast agents and tracers – substances injected into patients before an exam to make the image clearer. “Imaging techniques are progressing but the benefit of patient care isn’t increasing proportionally,” said Walter. “So even if we are able to detect more metastases with a better machine, the treatment and chances for success are essentially unchanged.” For Walter, the new tracers from pharma companies will make it possible to closely identify metastases that respond to treatment. The health-care division of General Electric is currently allocating significant R&D efforts in this field, according to analyst Holley Lewis from IHS Markit.

“These imaging techniques will tell us the chances of success of a certain chemotherapy, which could then be chosen as a treatment.”

In my opinion, that’s where the next paradigm shift is: making predictions using imaging and no longer just the diagnosis.”

Walter considers this an irrefutable argument as healthcare systems move increasingly towards reimbursing treatment based on effectiveness.
It’s everywhere: over the past few months, every internet user from a European Union country – and Switzerland – has been constantly bombarded by messages asking for consent to accept cookies or to use personal data.

This is due to the implementation, on 25 May 2018, of the General Data Protection Regulation, or GDPR. While the general public may still not understand all the details, the GDPR applies to all companies (or individuals) that host, gather or process data belonging to EU residents.

Personal data – such as a name, identification number, location data, online identifier, etc. – can now only be collected with the explicit consent of the data subject, who could require that their data be deleted at any time. This is the end of the infamous “opt-out”, the biased practice that assumes an individual agrees to the data collection. Non-compliance penalties are severe: the regulation states that companies could be fined up to 4% of their global revenue.

“It’s an unprecedented reinforcement of individual and data protection,” said Christoph Bauer, founder and CEO of ePrivacy, a German company that specialises in data protection. “The entire online advertising industry, which until now gathered and stored massive amounts of data and sold them, has to now seriously rethink the way it operates in Europe.”

AN ALIBI FOR FACEBOOK?

Facebook, which already lost one million active daily users in Europe, attributed this brutal drop to the implementation of the GDPR during the presentation of its Q2 2018 results. Twitter did the same. But subject experts aren’t convinced: “Big American companies like Google, Apple, Facebook and Amazon were expecting this legislative change, which was announced in 2016; their considerable wealth made it possible for them to comply with the GDPR, both from a legal and technical standpoint, although they may have had to revise their terms and conditions,” said Bauer.

In preparation, Facebook announced in April this year that its 1.5 billion non-European users were being placed under US jurisdiction (Facebook Inc), even though they were for the most part covered by Irish legislation, as the network is headquartered in Ireland. LinkedIn made a similar move in May. It was a way to free its users from the restrictions of the GDPR, as US laws on personal data use are much more lenient than those in Europe.

Other (often smaller) companies have even decided to stop working with personal data from the European Union. This was the case, for example, for many US media companies such as the Los Angeles Times, the Chicago Tribune and the Baltimore Sun, which block European visitors from accessing their website.

Despite the inconvenience it causes for companies, the GDPR is unlikely to turn into the predicted disaster. According to many experts, the regulation is a valuable update of the technology and ecosystem surrounding data collection, as well as an opportunity to clean up an industry left unregulated for far too long. The upcoming adoption of the ePrivacy law will regulate a few remaining grey areas, such as cookies, once and for all, since their interpretation still differs between EU members.
Roads of the Future

Road infrastructure has begun its technological revolution. WiFi sensors in asphalt, pavers that produce electricity, heated tarmac... We take a look at the latest innovations.

BY BERTRAND BEAUTÉ

G is over. It’s time for 5G. No, this isn’t another article on the next mobile telephone network. We’re talking about 5G in terms of fifth-generation roads that all the companies in the industry are working on. “People think that road infrastructure isn’t evolving, but that’s because technological progress in this field is often invisible,” said Nicolas Hautière, 5G road project manager at IFSTTAR, the French institute of science and technology for transport, special planning, development and networks. “But in reality, this industry is quite innovative. Roads are being reinvented with new features in preparation for the massive arrival of electric and self-driving cars.”

According to experts, the asphalt of the future won’t simply bring cars from point A to point B. It will actually produce energy. Road markings will update upon request. And roads will interact with cars via a communication protocol using WiFi radio waves and minuscule chips set in the asphalt. This isn’t just a futuristic fantasy; these technologies have already been tested in various regions around the world.

Approximately 400 kilometres outside of Beijing in the Shandong province, cars drive on a portion of experimental motorway that produces electricity. How does it work? Photovoltaic pavers installed by Qilu Transportation Development Group were placed under a layer of transparent material, which allows light to pass through while simultaneously protecting the panels from passing cars. The two-kilometre installation was inaugurated in January this year. It is designed to produce 1,000 megawatt hours (MWh) of electricity per year, according to the manufacturer. This is enough electricity to power 800 homes in China.>

“Roads are being reinvented with new features”
Nicolas Hautière, project manager at the French Institute of science and technology for transport

Roads of the Future

Road infrastructure has begun its technological revolution. WiFi sensors in asphalt, pavers that produce electricity, heated tarmac... We take a look at the latest innovations.
It isn’t the only experiment of this type. US company Solar Roadways has been working on a similar concept since 2014. But Colas, the global leader in road construction, is the most advanced company in this field. For more than two years, the French group has tested its photovoltaic roads, dubbed Wattway, in approximately 30 locations around the world.

“We’ve attained a certain technical maturity,” said Étienne Gaudin, director of Wattway. “After two years of testing, 95% of our photovoltaic panels have withstood repeated shocks from passing cars and 85% of our electricity production goals were met.” The electric current that the road generates can then be used to power road infrastructure (road lighting, traffic signals, etc.).

The current is improving technologies: in Normandy, where the first section of Wattway was installed in 2017, the speed limit had to be reduced for that portion of the road because of the noise of cars driving over the panels.

“We still need to perfect our product,” said Gaudin. “But I am confident. Prices will drop as volume increases. As for the noise, we’re now targeting secondary roads, where speed limits aren’t above 50 km/h, or use in car parks, which solves the speed problem.”

In Japan, retail giant Seven & I Holdings installed Wattway in a car park in order to use the electricity to power one of its stores. According to Colas, a 100-sq. metre surface installed in a car park can generate between 10% and 20% of the electrical use of a convenience store.

**HEAT STORAGE**

“In niche markets, solar roads could be a profitable approach,” said Hautière. “But we’re still far from the day when all roads will be solar.” In the meantime, other companies are working on more mature technologies. Eurovia, a subsidiary of the Vinci group, has been selling a system called Power Road since 2017. The principle is simple: since roads are black, they naturally retain heat. Via a thermosensitive fluid that runs through tubes under the roadway, the thermal energy is collected and stored in geothermal probes that are placed up to 80 metres under the roadway.

“The advantage of this technology is that we can stagger when we actually use the thermal energy,” said Maxence Naouri, spokesperson for Eurovia. “So the heat can be collected in summer and then used in winter.” This is what happens in France on the A10 motorway at the Saint-Arnoult-en-Yvelines toll gate, where 500 sq. metres of Power Road is used to heat a building. According to the Vinci subsidiary, a mere 25 sq. metres (the equivalent of two parking spaces) can provide enough thermal energy (heat and hot water) for a 70-sq. metre building.

Snow removal in public spaces is another avenue for this technology. In the French commune of Pontarlier, 50 kilometres from Yverdon-les-Bains, Eurovia installed 3,500 sq. metres of Power Road. Inaugurated in February 2018, the system removes snow naturally from a car park. “We’re studying about 50 projects around the world. They should be up and running in a few years,” said Naouri. Future clients include airports, which are interested in the technology to reduce the costs of de-icing runways.

**R5G, WHAT’S THAT?**

“Fifth-generation road,” or R5G for those in the know. The term, invented in 2010, sounds like a marketing team is looking to spread information about one of its innovations. But what were the previous generations? In order: mule road, Roman road, tarmac, then motorway. Unlike its predecessors, the R5G must handle three challenges: the first is sustainable development. Companies such as Eiffage and Eurovia are working on designing roads that are built entirely from recycled materials. Second, preparing for the massive arrival of electric and self-driving cars by making the road “smart”. Finally, the R5G has new features such as energy production from dynamic vehicle recharging.

With these results in mind, Colas expects to market the Wattway system in 2019. But it won’t be easy to sell this solution to regions. “These innovative systems are still very expensive for a limited amount of electricity,” warned Hautière. “In the short term, the challenge is reducing costs.” Another challenge is that we can stagger when we actually use the thermal energy,” said Maxence Naouri, spokesperson for Eurovia. “So the heat can be collected in summer and then used in winter.” This is what happens in France on the A10 motorway at the Saint-Arnoult-en-Yvelines toll gate, where 500 sq. metres of Power Road is used to heat a building. According to the Vinci subsidiary, a mere 25 sq. metres (the equivalent of two parking spaces) can provide enough thermal energy (heat and hot water) for a 70-sq. metre building.

Snow removal in public spaces is another avenue for this technology. In the French commune of Pontarlier, 50 kilometres from Yverdon-les-Bains, Eurovia installed 3,500 sq. metres of Power Road. Inaugurated in February 2018, the system removes snow naturally from a car park. “We’re studying about 50 projects around the world. They should be up and running in a few years,” said Naouri. Future clients include airports, which are interested in the technology to reduce the costs of de-icing runways.

**HEAT STORAGE**

“In niche markets, solar roads could be a profitable approach,” said Hautière. “But we’re still far from the day when all roads will be solar.” In the meantime, other companies are working on more mature technologies. Eurovia, a subsidiary of the Vinci group, has been selling a system called Power Road since 2017. The principle is simple: since roads are black, they naturally retain heat. Via a thermosensitive fluid that runs through tubes under the roadway, the thermal energy is collected and stored in geothermal probes that are placed up to 80 metres under the roadway.

“The advantage of this technology is that we can stagger when we actually use the thermal energy,” said Maxence Naouri, spokesperson for Eurovia. “So the heat can be collected in summer and then used in winter.” This is what happens in France on the A10 motorway at the Saint-Arnoult-en-Yvelines toll gate, where 500 sq. metres of Power Road is used to heat a building. According to the Vinci subsidiary, a mere 25 sq. metres (the equivalent of two parking spaces) can provide enough thermal energy (heat and hot water) for a 70-sq. metre building.

Snow removal in public spaces is another avenue for this technology. In the French commune of Pontarlier, 50 kilometres from Yverdon-les-Bains, Eurovia installed 3,500 sq. metres of Power Road. Inaugurated in February 2018, the system removes snow naturally from a car park. “We’re studying about 50 projects around the world. They should be up and running in a few years,” said Naouri. Future clients include airports, which are interested in the technology to reduce the costs of de-icing runways.

**R5G, WHAT’S THAT?**

“Fifth-generation road,” or R5G for those in the know. The term, invented in 2010, sounds like a marketing team is looking to spread information about one of its innovations. But what were the previous generations? In order: mule road, Roman road, tarmac, then motorway. Unlike its predecessors, the R5G must handle three challenges: the first is sustainable development. Companies such as Eiffage and Eurovia are working on designing roads that are built entirely from recycled materials. Second, preparing for the massive arrival of electric and self-driving cars by making the road “smart”. Finally, the R5G has new features such as energy production from dynamic vehicle recharging.

**HEAT STORAGE**

“In niche markets, solar roads could be a profitable approach,” said Hautière. “But we’re still far from the day when all roads will be solar.” In the meantime, other companies are working on more mature technologies. Eurovia, a subsidiary of the Vinci group, has been selling a system called Power Road since 2017. The principle is simple: since roads are black, they naturally retain heat. Via a thermosensitive fluid that runs through tubes under the roadway, the thermal energy is collected and stored in geothermal probes that are placed up to 80 metres under the roadway.

“The advantage of this technology is that we can stagger when we actually use the thermal energy,” said Maxence Naouri, spokesperson for Eurovia. “So the heat can be collected in summer and then used in winter.” This is what happens in France on the A10 motorway at the Saint-Arnoult-en-Yvelines toll gate, where 500 sq. metres of Power Road is used to heat a building. According to the Vinci subsidiary, a mere 25 sq. metres (the equivalent of two parking spaces) can provide enough thermal energy (heat and hot water) for a 70-sq. metre building.

Snow removal in public spaces is another avenue for this technology. In the French commune of Pontarlier, 50 kilometres from Yverdon-les-Bains, Eurovia installed 3,500 sq. metres of Power Road. Inaugurated in February 2018, the system removes snow naturally from a car park. “We’re studying about 50 projects around the world. They should be up and running in a few years,” said Naouri. Future clients include airports, which are interested in the technology to reduce the costs of de-icing runways.
DYNAMIC BATTERY RECHARGING

As roads begin to produce energy, other players are already looking further ahead. "The rise of electric and self-driving cars will boost innovation," said Wattway Director, Étienne Gaudin. "For example, currently, a self-driving car at the entrance to a crowded roundabout cannot go anywhere. The goal is for the road to communicate with the car so as to provide help in tricky situations."

To develop this, the University of Michigan has built Mcity, a ghost city in the United States, which large companies such as Intel, Ford, GM, Microsoft and Honda work on protocols and standards that will allow self-driving cars to communicate with infrastructure safely. The chips embedded in the road will also allow infrastructure departments to monitor asphalt deterioration in order to better plan renovation work. Chips can also be used to detect passing cars in real time, in order to regulate traffic or announce alerts if there is an accident.

These prospects are quite interesting for governments. In March, a young company called Integrated Roadways signed a $2.75 million agreement with the state of Colorado to build 800 metres of smart roads that can detect accidents using pressure sensors and automatically call emergency services in the event of an accident.

US group Qualcomm has a more futuristic goal: the company specialises in mobile technologies, it is working on recharging electric vehicles through induction. Concretely, coils placed under the road generate a magnetic field that can be picked up by cars passing through and then converted to electricity. Qualcomm, which sponsors Formula E races, has dubbed its system "Halo", which can charge a vehicle driving at 60 km/h. In time, this solution could help solve two problems electric vehicles currently have: autonomy and long recharging times. "Induction charging is interesting, but it’s definitely not a mature technology," said Hautière of IFSTTAR. But that doesn’t stop many companies from taking an interest. France’s Alstom, acquired by Siemens, and Canada’s Bombardier, for example, are working on dynamic recharging solutions, inspired by their respective tramways without overhead lines.

Less ambitious but more pragmatic, Scania, Siemens and Volvo have begun testing an elighway system in Germany, the United States and Sweden. The Elighway provides electricity for hybrid lorries through pantographs – a tried and true solution that is already used in the railway industry. But regardless of the technology that is chosen, there is still an economic component to consider. According to a study conducted by the British government, constructing a roadway with an induction charging loop would cost €19 million per kilometre over 20 years (30% for construction and maintenance, the rest for the electricity supplier).

"For large-scale development of these new technologies, China will certainly pave the way, and other countries will follow in its wake," said Hautière. "The political will to develop fifth-generation roads is very real in China, while in Europe, governments are mainly thinking of limiting costs.

ROAD MARKINGS ARE BECOMING SMART

In south London, UK software company Umbrellium, in partnership with insurance company Direct Line, is currently testing a pedestrian walkway that only appears when a person wants to walk in the area. The system has LEDs inserted into the asphalt that are controlled by a computer, as well as a network of cameras monitoring both people and vehicles. Consequently, the configuration of the path can be modified in real time.

Colas is also working on smart road markings that can be changed with just one click. "It’s a variation on the solar road,” said Gaudin, director of Wattway. "In this scenario, we replace some photovoltaic cells with yellow or white LEDs that can light up or turn off based on who is managing the infrastructure." For example, a solid line can become a dotted line depending on the circumstances, or illuminated arrows indicating a lane shift could blink in order to become more visible. Once deployed, this type of smart road markings can better road safety.
Like the internet revolution, blockchain technology is capable of transforming all aspects of the economy. It’s time to benefit from it.

BY LUDOVIC CHAPPEX

It was outrageous. Share prices skyrocketing, profits doubling, tripling, quadrupling in just a few weeks... The December 2017 enthusiasm for cryptocurrencies – and Bitcoin in particular – left quite an impact. But the subsequent fall was even more significant. Long weeks of agony, punctuated by a murderous month of August. As summer comes to a close, the market is more hesitant than ever. It has reached a point that even “day traders” no longer know which virtual currency to choose. Was this phenomenon just a flash in the pan?

Not quite. Bitcoin and altcoins have certainly generated lots of buzz recently due to their extreme volatility, but the underlying architecture – blockchain – is actually their most solid, promising characteristic.
What is blockchain, you ask? In short, it is a technology that can store and transmit information in a transparent, secure and – last but not least – decentralised way. “Imagine a very large notebook that anyone can read for free, whenever they want. Anyone can write in it, but it is impossible to erase what is already there and the notebook is indestructible,” said French mathematician Jean-Paul Delahaye, whose metaphor is often used when teaching about blockchain.

It's understandable, since blockchain is often described in many articles and reports as a revolution by those who can master its inner workings. It is still difficult for the general public to understand all the subtleties of this technology, but its practical applications are much easier to understand. And there are many of them, as described in this issue's dossier (see p. 48 to 59). Almost all industries can be affected by this technology, including public authorities in many countries that have begun to adopt blockchain. Switzerland is one of them.

Almost all industries can be affected by this technology, including public authorities

It’s understandable, since blockchain is often described in many articles and reports as a revolution by those who can master its inner workings. It is still difficult for the general public to understand all the subtleties of this technology, but its practical applications are much easier to understand. And there are many of them, as described in this issue’s dossier (see p. 48 to 59). Almost all industries can be affected by this technology, including public authorities in many countries that have begun to adopt blockchain. Switzerland is one of them.

THREE OBSTACLES TO OVERCOME

There is much to be excited about. But it’s better to keep your feet on the ground, according to Claire Balva, CEO of French consulting firm Blockchain Partner: “Listening to certain speeches, it may seem that blockchain will disrupt all industries in the next six months. But the reality is more nuanced. It’s an extremely promising technology but for the time being, we’re still in the experimentation phase.” Indeed, the experts we contacted all believe that large-scale implementation will take time. William Mougayar, author of bestseller The Business Blockchain, agreed with this in an interview for this issue (p. 46). Christine Hennebert, blockchain expert at the French Alternative Energies and Atomic Energy Commission (CEA) also agrees: “We won’t see large-scale blockchain adoption until 2025. It has immense potential but it’s still lacking maturity, and appropriate regulations must be implemented.”

Three challenges to overcome

Regulation is what everyone’s talking about. “The lack of clear legislation is currently the main obstacle, which is keeping away professional investors and pension funds,” said Demelza Hayes, fund manager at Incrementum, who also brings up a second issue – the platforms are not at all user-friendly: “The interfaces and user platforms, even just for investing in cryptocurrencies, are very complex and impede mass adoption. The technology needs to be accessible for all.” Finally, a third and serious challenge for blockchain: successfully moving to a large scale, i.e. demonstrating its ability to increase in volume and manage millions of transactions quickly. This is what specialists call scalability. Currently the volumes invested with blockchain are still low and projects are small in scope.

Betting on the right horse

Once scalability is achieved, the discussion over the short-term value of cryptocurrencies will be less significant. And the constant debate over choosing whether newer or older cryptocurrencies such as Bitcoin will become less fervent. The question is no longer simply whether or not the forefather of cryptocurrencies is a store of value (time will tell rather quickly, as Bitcoin-based ETFs are on the table in the United States, waiting for approval from the SEC. But it is hard to tell whether these players will be swept aside by future newcomers... From this perspective, the blockchain market is similar to the internet 20 years ago, when Facebook and Google didn’t exist.

If the US regulator approves, money from institutional investors could flood in and settle the debate. No, the actual issue is anticipating which companies and cryptocurrencies will be the main players in this market over the next 10, 15 and 20 years.

Betting on the right horse

Current projects seeking to provide concrete solutions are naturally preferred. We have selected a few (p. 48 to 59). But it is hard to tell whether these players will be swept aside by future newcomers... From this perspective, the blockchain market is similar to the internet 20 years ago, when Facebook and Google didn’t exist.

If the SEC approves, money from institutional investors could flood in and settle the debate.
Paul wants to send money to Jeanne. A transaction is announced to the network and awaits approval in a new block. Some members of the network, known as miners, create a new block that approves the pending transactions. The block is sent to each member of the network. The block is added to the chain, creating a transparent, permanent record of the transaction that cannot be falsified. Jeanne receives the money from Paul.
Bahnhofstrasse. The legendary Zurich street, often ranked among the top 10 most expensive streets in the world, is now home to a new tenant. In April, Trust Square – a non-profit hub dedicated to blockchains – opened at number 3, between Lake Zurich and the prestigious Paradeplatz. In total, the 2,300-square-metre space has 220 workspaces on three floors. “For us, it’s the best space we could possibly have,” smiles Daniel Gasteiger, one of the five founders of Trust Square. “We’re right in the heart of the Zurich financial district. Although our work isn’t solely focused on finance, it was important to be close to that industry.”

Inside, the Trust Square offices could be mistaken for a traditional bank. That’s because the former tenant was no other than Liechtenstein company VP Bank. Opposite the front desk is a strange digital sculpture symbolising a blockchain, the only décor that has been added to the former bank. Now, the technology that underlies Bitcoin is right in the middle of Bahnhofstrasse.

Currently, 40 start-ups that all specialise in blockchains have joined the hub, occupying the 220 available workspaces. Trust Square has just opened on Bahnhofstrasse. The hub, which brings together start-ups, researchers and industry players, showcases Swiss-made blockchains. We take a look.
Blockchain

A PIONEER COUNTRY

Every blockchain expert in the world knows about Zürich. The canton of 800,000 residents, where Ethereum was created, is home to a blockchain ecosystem called Crypto Valley that has welcomed dozens of start-ups since 2014. The city is also a testing environment for “e-government”: starting in 2018, it has been testing electronic voting powered by blockchain, the first of its kind in the world.

Furthermore, as of September 2017, Zürich residents can obtain a digital identity using blockchain technology. Is the city competition for Zürich and Trust Square? “Absolutely not,” said Daniel Gasteiger.

Geneva isn’t out of the loop either. The incubator Fotion received support from the canton of Geneva, another incubator Fongit and several private partners to launch the Swiss Blockchain Association and a blockchain lab in January 2018. In May 2018, the canton of Geneva was even the first administration to publish a guide to better handle initial coin offerings (ICOs) in the canton. On a federal level, the financial market supervisory authority FINMA has already created its own framework for ICOs, publishing its guidelines in February 2018 (see p. 44). On 6 July, the operator of the SIX Swiss Exchange introduced the SIX Digital Exchange, a trading platform for blockchain-enabled assets. The idea is to expand the market for digital assets, which is expected to launch in mid-2019, allows traders to exchange cryptocurrencies, as well as other products that are currently non-marketable on the SIX, such as tokens.

Among the 40 start-ups in the Zurich hub, more than half are active in financial services, such as Lykke Switzerland, which is creating a trading market for financial assets via blockchain. Others work in various industries. B3i, for example, is in insurance, Verum Capital works in ICO and blockchain advisory (see p. 44), and ScienceMatters is developing a new platform for scientific publications. The Chinese company BItmain (see p. 64) also has a Swiss branch in the building.

CONFERENCES AND BARBECUES

In addition to start-ups, Trust Square also reserves workspaces for researchers from partner universities (ETHZ and the University of Zurich, in particular). “The idea is to concentrate all of Switzerland’s blockchain expertise in one place,” said Gasteiger.

“ar promote discussion and collaboration between start-ups and the academic world, we regularly organise events, conferences and even barbecues. And the more informal spaces, such as the terrace and cafeteria, make it possible for everyone to meet each other and talk.”

However, to “avoid conflicts of interest”, large and established companies won’t be granted residency at Trust Square, according to Gasteiger. “But of course, they are welcome to organise events or conferences with us.”

Beyond Swiss borders, the Zurich hub is attracting interest. “People from around the world come to see us. And we are happy to welcome them. We designed Trust Square to be an open house and anyone who is interested in blockchain technology can come visit. There is such a need for information. When the internet started in the 1990s, no one could predict that social networks were coming. Today, we’re in the same situation with blockchain. We need time to develop and explain this technology.”

Indeed, while the boom of cryptocurrencies in 2017 and the associated...
"Switzerland is among the global leaders"

Author of Crypto Nation Switzerland, available at the end of the year, former banker Alexander Brunner wanted to understand how a small country such as Switzerland could become a global blockchain leader. Interview.

“Before I was a student, everyone wanted to work in finance. That’s no longer the case today. Young people want to launch their blockchain start-ups. Banks are boring to them.”

Being a very versatile person, Alexander Brunner followed this path. After working for hedge funds, he left the finance world to pursue blockchain technology. With an office in the canton of Zug (a term practically branded since 2014), then Trust Square in Zurich. Together, they created an ecosystem conducive to blockchain development in Switzerland.

Switzerland is often seen as one of the top three countries in the world for blockchain. Is that correct?

There is no doubt that something significant is happening in our country. The larger public only recently started hearing about cryptocurrencies and blockchain technology, with the Bitcoin surge in late 2017. But the blockchain Ethereum, which is the basis for the cryptocurrency Ether, was started in Zug as early as 2014. Since then, we have seen the arrival of the Crypto Valley Association in the canton of Zug (a term practically branded since 2014), then Trust Square in Zurich. Together, they created an ecosystem conducive to blockchain development in Switzerland.

As a result, 40% of the 15 biggest ICOs overall, since 2016, took place in Switzerland. Given the size of our country, this is pretty remarkable. It puts us among the world leaders in blockchain. Now, experts from all over the world come here to see what we’re doing. I believe politicians – and I am one as a member of parliament in the city of Zurich – have a good understanding of the challenges and the importance of blockchain, because they have supported and encouraged this phenomenon. In January 2018, for example, federal councillor Johann Schneider-Ammann declared he wanted to make Switzerland a “Crypto nation”. How do you explain Switzerland being at the forefront of this industry?

Luci! (Laughs.) One thing is certain: it’s not a political initiative. At the beginning, pioneers such as the Dane Nikolaj Mikkelsen, founder of broker firm Bitcoin Suisse, decided to settle in the canton of Zug as early as 2013. They came here motivated by the political and fiscal stability of our country, as well as the presence of a strong financial centre. These pioneers then convinced Russian-Canadian genius Vitalik Buterin to also choose Zug as the place to launch his Ethereum project.

All of this created a first ecosystem: Crypto Valley. The city of Zug itself played a role. The local government encouraged this phenomenon by welcoming it from the very beginning. I think the fact that Switzerland is one of the global blockchain leaders is because chance led the right people to the same place at the right time.

Will Switzerland’s advances last?

No one knows. Several countries such as Liechtenstein, Malta, Cyprus and Estonia are making a lot of progress. In comparison, Switzerland has many advantages, notably because it is one of the early adopters and has a strong economic community. Furthermore, the regulatory body became involved quite early. The financial market supervisory authority (FINMA) was the first in the world to publish guidelines to oversee ICOs in February 2018 (see p. 44). So we’re in a very good position. But at the same time, we must remember that Switzerland is a small country. If giants such as the United States really make progress with blockchain, they will quickly outpace us.

It’s also kind of a shame that the big Swiss banks aren’t more interested in the technology. For the moment, they have a “wait-and-see” approach, as they are concerned by potential US reactions. Indeed, Switzerland is part of a global financial system that is dominated by the United States. The US has a very strict security law regarding all ICOs as security offerings. Therefore, for Swiss banks with a strong US presence, it could be risky to dabble in cryptocurrencies without an in-depth review of US law. Faced with this threat, Swiss banks prefer to wait. I think that’s a shame.

Speculation put blockchain in the spotlight, the media hype also had a negative effect. “The media turned everything into headlines. Speculation, Ponzi schemes, manipulation. People simplified and reduced blockchain technology to just cryptocurrencies,” said Gasteiger. “These approximations could potentially have a negative impact, since they stall investments. Of course, there are people who abuse the system, especially when it comes to ICOs, but we mustn’t view this technology solely through the negative cases. We need to make people understand this technology.”
markets. It is crucial for society to be aware of these challenges so that critical debate can be conducted."

"Many countries such as Cyprus, Malta and Liechtenstein are quickly picking up speed in the industry."

Daniel Gasteiger, co-founder of Trust Square

In front of a miniature satellite, Ozan Polat, another co-founder of Trust Square, tries to explain the questions that this technology will raise. "Let’s imagine a self-driving taxicab that uses blockchain. Customers pay using cryptocurrency and the vehicle uses cryptocurrency for its electric recharging and repairs. It is completely self-sufficient and can even run its own business. But what happens if the vehicle acquires itself and becomes very rich? How will it be taxed? Who is responsible if there is an accident? We don’t have a fixed position for these types of scenarios; instead, we allow people to think it over." To lead the discussion, Trust Square also calls upon philosophers, artists and freethinkers.

Beyond Zurich, the blockchain phenomenon is spreading in Switzerland. The industry pioneer region of Zug also has its own hub called Crypto Valley Lab, and in French-speaking Switzerland, an incubator known as Fusion launched the Swiss Blockchain Association in Geneva in January 2018, as well as a blockchain lab (see inset on p. 38).

So is Switzerland a world leader in the industry? "For the time being, we’re in a great position," said Gasteiger. "Singapore and the United States are bigger markets for ICOs, but we’re a close third. However, we need to pay close attention. Many countries such as Cyprus, Malta and Liechtenstein are quickly picking up speed in the industry."

The potential expansion of Trust Square in the coming months should reinforce Zurich’s spot as an epicentre for blockchain innovation. "But we cannot stay on Bahnhofstrasse indefinitely," said Gasteiger. "It’s a temporary solution, because the building will be renovated. The planning and building permissions are ongoing for now." By 2020, the hub is expected to have left the legendary avenue for its new location. Where, you may ask? "The future is wide open," said the former banker. "Blockchain is here for the long haul."

"Many countries such as Cyprus, Malta and Liechtenstein are quickly picking up speed in the industry."
PARTY’S OVER FOR ICOs!

A new way for companies to raise funds, ICOs boomed in 2017. But the speculative bubble is about to close as the market starts to come under regulation.

BY BERTRAND BEAUTÉ

It is the latest chapter in a book that is still on everyone’s lips. On Thursday, 26 July, the Swiss financial market supervisory authority (FINMA) announced that it had initiated proceedings against Envision. The young, Zug-based cryptocurrency mining company launched an initial coin offering (ICO) in late 2017. This new fundraising option, half-way between an initial public offering (IPO) and crowdfunding, landed the company nearly 100 million Swiss francs from 30,000 people in one day.

The case is hardly exceptional. For example, in Vietnam, the founders of the company Modern Tech vanished after pocketing more than $600 million via two ICOs. In the United States, Dominic Lacroix, a former CEO of PlexCoin, is behind bars following a court ruling of more than 2.5 billion euros. It is likely that these cases were not the only ones.

"A variety of unprofessional deals were conducted in 2017" says Matthias Weissl, co-founder and CEO of Verum Capital, a Zurich-based ICO and blockchain advisory firm. "Many cases around the globe have raised millions, but turned out to be scams."

How could that be? To answer that question, we have to understand how the issuer’s services are used by buyers to enjoy the issuer’s services. The other 90% are kept purely for speculation in a totally unregulated market, the perfect setting for deception.

SWITZERLAND PAVING THE WAY

Many ICOs took place worldwide, bringing in $5.5 billion, compared with $256 million raised by ICOs in 2016. In February 2018, FINMA published a guide explaining how it deals with ICOs, thus confirming that oversight and sanctions do apply to this nascent business sector.

"Having clear rules will reassure investors deterred by the many scandals in 2017" says Weissl. "Fortunately the bubble is over. The market is being cleaned up, in part thanks to FINMA’s efforts. It’s a bit too early to give a signal for the future. This year, we have noticed that the projects are more viable than before, and that lots of ideas are rejected in the first stages of ICOs."

However, could FINMA’s regulations stifle the Swiss-made ICO before it really gets off the ground, sending deals to places that make less of a fuss, such as Malta or Gibraltar? "On the contrary," Llamas says. "Switzerland remains particularly attractive, and having clear rules will reassure investors deterred by the many scandals in 2017."

"A new way for companies to raise funds, ICOs boomed in 2017. But the speculative bubble is about to close as the market starts to come under regulation."
regulations

We need new regulations

“A globally respected leader, William Mougayar outlines the steps towards massive blockchain adoption.”

By Ludovic Chappex

Interview

Blockchain will revolutionise the world, but not right away… This is the credo of William Mougayar, who readily compares blockchain’s current state to that of the internet in the 1990s. We take a closer look.

William Mougayar, who readily compares blockchain’s current state to that of the internet in the 1990s. We take a closer look.

Which economic sectors will be disrupted by blockchain technology first? Since the blockchain is primarily and natively about the movement of digital money, it is first going to affect the financial services industry. Initially, the impact will be small, in relative terms, because the financial services industry is a huge market. But you can’t just apply simple market share analysis to the blockchain’s penetration record. You need to remember that the blockchain is creating a new parallel system that has no equivalent today. It’s easier to create a new system than to attack the current one head-on.

Are there examples of big companies making large-scale use of blockchain technology? We are still on the hunt for truly visible blockchain technology implementation. The reality is that large companies take a long time to conceive, approve, fund, test and roll-out big projects. Furthermore, they don’t want to disrupt their business models, which the blockchain could easily do. So for the time being, they end up tinkering with the blockchain and clamping down on its real potential. If you want to look for real blockchain innovations in the short term, I expect it will instead come from the thousands of start-ups that are emerging in this space.

Which listed companies active in the blockchain industry are the most promising in terms of investment? The most promising companies and projects in the blockchain space are the ones that are delivering on their promises, with actual users, and not just making promises.

I look for those that are exhibiting visible outcome metrics such as the number of active users, the number and value of transactions, the value of contracts, the way in which users are compensated, etc.

“Blockchain’s influence will become significant between 2022 and 2025”

In terms of obstacles to blockchain development, the legal aspect is often discussed. I’ve always said that the blockchain’s full potential will only be realised when these three aspects meld together: business, technology and legal. On the business side, it depends on our ability to innovate and implement new business models. On the technology side, we are still developing the blockchain. On the legal side, we haven’t yet come to terms with the fact that we need new regulations. Unfortunately, we are still trying to apply existing regulations, which is like trying to fit a square peg into a round hole.

How long do you think it will take before blockchain will really be at the core of the economy? The blockchain economy will become more significant in the 2022-2025 time frame. There will be a long gestation period, just like the internet. Many of the blockchain technology pieces need to mature and evolve before widespread consumer adoption can set in. We are still in the early days of blockchain technology developments. We are probably 65% into the infrastructure build-out, 30% into middleware availability (ed. note: middleware is software that links two separate applications together) and at best 10% into applications.

Why are the share prices of various cryptocurrencies still tied up with Bitcoin’s share price? Today, most cryptocurrencies rise and fall together like a herd. The lack of discrimination between good and bad coins exists because there is too much dumb money in the system that is chasing momentum. People are not looking at real usage metrics for tokens. In theory, smart money will find the better coins, because their information signals are better. But when the majority of investors are from the dumb money category and generating a disproportionate amount of trade activity, the supply/demand dynamics are messed up.

The decoupling of altcoins’ performance from Bitcoin will happen when two factors come into play: firstly, when smarter investors take an interest, and secondly, when visible metrics from these projects become available.

William Mougayar

A founder of various IT start-ups, William Mougayar immersed himself in blockchain technology starting in 2013. He is the author of best-selling book The Business Blockchain, published in 2016. As a blogger, conference speaker and advisor, he has an excellent international reputation in the industry. His expertise is also appreciated on Twitter, where he has more than 25,000 followers. Mougayar is currently based in Toronto, and planning to live in Geneva. He is the Managing Partner and Chief Investment Officer at JM3 Capital, part of a division of Jahre Capital Partners SA.
 Kodak, Boeing, Telegram are among the growing number of companies that have announced – with great fanfare – that they will be starting to use blockchain technology. Since Bitcoin took off in December 2017, it does appear that the term is in fashion. Just mentioning it can send a stock price soaring. In January 2018, for example, the Kodak share price rose 300% following the announcement of the creation of the KodakCoin cryptocurrency. The phenomenon is affecting all sectors, from finance to food, music and healthcare.

According to the experts, the main markets concerned will certainly be finance and insurance, as blockchain will enable faster transactions. If projects have been multiplying across all sectors, it is because companies are afraid to miss the switch to digital. “Industrial groups have not forgotten the 1990s,” says Grégoire Revenu, managing partner at the investment bank Bryan, Garnier & Co. “The ones that missed the switch to digital are now finding themselves in a situation like Toys “R” Us. No one wants to take the risk of going through that. However, while blockchain will disrupt many areas of activity, not all applications will work. Some weeding out will have to be done.”

Less than one year after unveiling it, Kodak’s project fell through and its share price fell back to its previous levels. In this context, investors are wondering how to find their way through the jungle of announcements, many of which are simply marketing actions. “Cases where there is real use need to be identified, where blockchain provides added value,” is the answer provided by Christine Hennebert from the French Alternative Energies and Atomic Energy Commission (CEA).

“This technology has become a real ecosystem”
Claire Balva, CEO of Blockchain Partner

This is proving to be an arduous task: “This technology has become a real ecosystem, with its aficionados and schools of thought. It is difficult for novices to form a clear-cut opinion, especially as a mainstream blockchain today could very well have disappeared in one year,” highlights Claire Balva, CEO of Blockchain Partner. “Over time, dominant blockchains will emerge, but until then, I think that we shouldn’t get attached to one particular chain.”

To minimise the risks, Grégoire Revenu believes that investors should avoid betting on applications (see the companies to watch on p. 49 onwards).

“As in any gold rush, the ones making money are the ones selling the picks,” underlines the analyst. “At the beginning of the internet, for example, Cisco experienced a huge success in selling routers. With blockchain it will be the same. Companies offering access to services, such as suppliers of microprocessors and wallets, and manufacturers of mining infrastructures, are good investments. I think that the Cisco of blockchain already exists.” They could be companies that are not yet listed, such as Bitmain, CoinBase, Basiss or Bittury, and which are already generating significant revenue. Or players that are already publicly-traded, such as GMO Internet.
Concerned by the possible uberisation of banking, the sector is preparing for an upcoming technological upheaval.

The experts are convinced: the blockchain will disrupt finance. And the industry is taking these predictions very seriously, with 90% of large banks in North America and Europe currently exploring blockchain solutions to prepare for the upcoming disruptions. “Bank of America alone has filed 43 patents relating to blockchain technology,” says Demelza Hays, fund manager at Incrementum. “Central banks are also taking a strong interest in this technology, especially in the United States, the United Kingdom and Singapore.”

While the entire financial industry is on the alert, it is transactions that will likely be affected first: “Tokens will prevail as a payment method,” says William Mougayar, chief investment officer at JM3 Capital: “While Ripple’s solution can accelerate transactions, it is up against an extremely conservative industry that has a strong risk aversion in terms of marginal gains. To be successful, XRP would have to be massively adopted, and I think the barriers to that are too high to overcome.”

And banks are also on the war path, seeking to master these technologies by developing their own systems using private blockchains. For example, since 2015, the New York consortium R3, a group of some 100 companies including BNP Paribas, Credit Suisse and UBS, is working on a blockchain network that is “fully interoperable” for facilitating information exchanges between banks. The older SWIFT – the interbank transfer network founded in 1973 – is also trying to safeguard its hegemony. The door seems to be closed tight, for now.

At the end of the day, stock exchange platforms could be the Trojan horse for virtual currencies such as XRP, as they would contribute to their large-scale adoption.

And here once again, Switzerland is at the forefront. In June, the financial market operator SIX announced the launch of SIX Digital Exchange (SDX), an infrastructure dedicated entirely to digital asset trading, subject to supervision by FINMA and the Swiss National Bank. The first services are set for launch in mid-2019.
Governance

At the service of citizens

Blockchain will simplify many administrative services.
A boon for developing countries.

When talking about the blockchain revolution, we immediately think of the economic sectors that could be disrupted by this new technology. But the impetus could come from the public sector, where there are a growing number of innovations. “Governments could move faster than businesses,” says Vincent Pignon, CEO of WeCan.fund. “Governments could move faster than businesses,” says Vincent Pignon, CEO of WeCan.fund.

But the applications do not end there. As blockchains can be used as a bulwark against fraud and corruption, several countries are currently testing this technology for voting processes. In March 2018, during the last presidential elections in Sierra Leone, the Agora blockchain was tested in some polling stations.

The canton of Geneva has linked its trade register to a blockchain

In Switzerland, the start-up Procivis is also working on an e-voting platform using blockchain and, more generally, digital identity technology. “Looking at the level of digitalisation of the Estonian public services, I was deeply impressed,” says Daniel Gasteiger, co-founder and CEO of Procivis. “Blockchain can contribute hugely in this area, but this will take time, as voting and digital identity are extremely sensitive subjects for democracies.”

Pending this, projects are multiply- ing on a local scale. Since 2018, the town of Zug has experimented with electronic voting based on blockchain technology. And in Geneva, the canton has linked its trade register to a blockchain. The decentralised listing is now accessible and can be used by anyone, at any time.

This investment fund has signed prestigious partnerships, such as the Hyperledger foundation, to be able to work with the major sector players such as Stellar, NEO, Ethereum or Graphene. Among Global Blockchain’s main investments is Spectral, a company that is achieving more and more success.

The Japanese miner

This internet services provider in Japan has recently got into cryptocurrencies. For the time being, the group generates just 5% of its revenue thanks to mining, but this booming market is set to make it 11.7 billion yen (105 million Swiss francs) in 2018. A new machine containing a latest-generation ASIC chip, the GMO Miner B3, was launched on the market in July, and should boost revenue.

The new miner

The Canadian company Hive Blockchain Technologies linked up with Genesis Mining to operate two farms that mine Ethereum, Zcash and Monero. One is in Iceland and is powered by a low-cost geothermal current. The other is in Sweden. In September, it will set up a second farm in Sweden, dedicated to mining Bitcoin. This company has an impeccable balance sheet and no debt. It could experience strong growth.

Note: The table contains financial data and company details that are not directly relevant to the main narrative and can be disregarded.
The first offers are already operational

With the aim of automating their reimbursement services, insurers have begun to set up platforms using blockchains.

Banks do not have the monopoly on blockchain technology. Insurers could even be the first to implement it on an industrial level – with an epicentre in Zurich. Indeed, it is in the offices of Trust Square (see our article on p. 36) that one of the most promising companies in the area resides: B3i, which stands for Blockchain insurance industry initiative. "We plan to offer our first blockchain-based smart contracts in January 2019,” Paul Meeusen, CEO of B3i, tells us proudly.

Everyone will have the same version of the truth

To understand the importance of this event, we need to go back to the origins of the company. Created in October 2016, B3i was initially a consortium grouping together 13 insurers, including Allianz, Munich Re, Swiss Re and Zurich Insurance Group, which joined forces to explore the potential of blockchain. In 2017, after the launch of the project, a first prototype was completed and underwent a market testing by 38 companies, including heavyweights such as the US company All4. "Many blockchain initiatives have popped up in various sectors, but few have succeeded in bringing together such a large group," highlights Meeusen. “This does not guarantee its success, but it does maximise its chances.”

B3i worked on developing a blockchain platform that would enable insurers to share their data in a secure and automated way. “We focused on B2B, and particularly the area of natural catastrophes. This is a sector that tends itself to experimenting, as it is significant in value with fairly low volumes of transactions and little data privacy concerns,” continued Paul Meeusen. But what can blockchain contribute to this type of transaction? According to Meeusen, “This type of contract is renewed once a year, and data is often dispersed among the different players. Blockchain will give all participants access to the same information at the same time, and thus avoid unnecessary friction, thereby accelerate transaction settlement and increase contract certainty. In other words, everyone will have the same version of the truth.”

The stakes are high. After the terrorist attacks of 11 September 2001, it took several years of legal battles before an agreement could be reached between seven insurance companies, including Swiss Re, and the developer of the buildings that were destroyed, Larry Silverstein. Improved contract certainty via a distributed digital platform could have helped prevent such anomaly.

Initially, B3i tested the Hyperledger blockchain technology, before setting its sights on Corda, which according to the company is better suited to its business, due to its strength in scalability, network and privacy management. After a year of successful tests, B3i changed status, becoming a company in its own right, in April 2018. “There were several possible options”, says Meeusen. “B3i could have remained a consortium, or become a foundation. In the end we decided it would be best to operate as a commercial company, which measures its success by the adoption of its network, and generates its revenue from usage. This will fund ongoing maintenance and continued development of the network.”

The platform will thus be operational from January 2019. “We will move forward step by step. At the start, the blockchain will coexist with paper versions of the contracts,” explains Paul Meeusen. “Then, gradually we will cover different product areas from reinsurance to commercial to primary insurance. Ultimately, I think that blockchain platforms will gradually become available for end customers (B2C).”

With its platform “Fizzy”, AXA made the opposite choice, by testing blockchain technology directly with individuals. In concrete terms, when a customer buys flight delay insurance on Fizzy, this transaction is recorded on the Ethereum chain. As this smart contract is also connected to the global airline databases, as soon as a flight is delayed by more than two hours, compensation is automatically triggered. In addition to eliminating intermediaries, customer reimbursement is accelerated.

Axa is currently testing the Ethereum blockchain for its delayed flight insurance. Customers are automatically and immediately compensated when the contract applies.
Since human intermediaries are fallible and corruptible, the traceability of commercial products is rarely 100% guaranteed. This lack of transparency is particularly striking in the food industry. The far-reaching consequences of counterfeiting, as was previously the case. It is remarkable progress. So much so that Walmart’s head of food safety has declared this technology to be the “Holy Grail” of the supply chain. In Europe, Carrefour announced last month that its Auvergne chicken will now be traced using blockchain. If they wish, customers can access the entire supply chain and the animal’s life cycle via a QR code.

For health reasons, the agri-food industry is a particularly convincing case study, but the use of blockchain in logistics can apply to other industries as well. In fact, almost all commercial sectors can benefit from the technology, particularly industries with complex supply chains such as automotive, aeronautics, sea transport and real estate. But it can also be useful for sectors extremely affected by fraud: “We’re seeing blockchains being used more and more often in the luxury industry. Products are rare and expensive and there is rampant counterfeiting,” said Vincent Pignon, CEO of WeCan.fund. “For example, Canadian parka retailer Goose provides a certificate with each jacket to prove its authenticity. In the watchmaking industry, several brands are implementing similar systems. We also see this in the fine art and diamond markets.”

Lastly, blockchain could markedly improve the traceability of pharmaceuticals. According to the World Health Organization (WHO), between 10% and 30% of medicines used in developing countries are fake, which could lead to close to 700,000 deaths each year.

Since 2016, Walmart, in partnership with IBM, has tested blockchain technology to trace the transportation of products.

Food, luxury, pharmaceutical, automotive...almost every industry can use blockchain technology to better monitor and follow their products.

“*We’re seeing blockchains being used more and more often in the luxury industry*”

Vincent Pignon, CEO of WeCan.fund

Since human intermediaries are fallible and corruptible, the traceability of commercial products is rarely 100% guaranteed. This lack of transparency is particularly striking in the food industry. The far-reaching consequences of counterfeiting, as was previously the case. It is remarkable progress. So much so that Walmart’s head of food safety has declared this technology to be the “Holy Grail” of the supply chain. In Europe, Carrefour announced last month that its Auvergne chicken will now be traced using blockchain. If they wish, customers can access the entire supply chain and the animal’s life cycle via a QR code.

For health reasons, the agri-food industry is a particularly convincing case study, but the use of blockchain in logistics can apply to other industries as well. In fact, almost all commercial sectors can benefit from the technology, particularly industries with complex supply chains such as automotive, aeronautics, sea transport and real estate. But it can also be useful for sectors extremely affected by fraud: “We’re seeing blockchains being used more and more often in the luxury industry. Products are rare and expensive and there is rampant counterfeiting,” said Vincent Pignon, CEO of WeCan.fund. “For example, Canadian parka retailer Goose provides a certificate with each jacket to prove its authenticity. In the watchmaking industry, several brands are implementing similar systems. We also see this in the fine art and diamond markets.”

Lastly, blockchain could markedly improve the traceability of pharmaceuticals. According to the World Health Organization (WHO), between 10% and 30% of medicines used in developing countries are fake, which could lead to close to 700,000 deaths each year.
Sell the energy produced by your own solar panels to your neighbours? Such projects are emerging in different parts of the world. Here, employees of the company Innogy, on a roof at Bottrop, in the Ruhr (Germany).

As Romain Bonenfant of the firm Emerton, reminds us, “The energy sector is currently undergoing a profound transformation. We are switching from large and very powerful plants, such as nuclear reactors, to smaller generation units such as solar panels on the roofs of houses and wind turbines.” Blockchain appears especially suited to supporting this decentralisation, an underlying trend that is changing the sector. “Up until now, the large groups in this sector have remained somewhat sceptical with respect to this technology, but many start-ups are working on innovative experiments.”

As a result, pilot projects are emerging across the globe. The most emblematic are in the US. In 2016, Siemens and LO3 Energy set up “Microgrid” in a Brooklyn neighbourhood, a system by which inhabitants owning solar panels can sell their surplus energy to their neighbours, via peer-to-peer transactions made using blockchain. What is the point of this system? “Up until now, micro electricity producers could not resell their surplus, as it was not profitable due to the weak volumes,” explains Bonenfant. “Blockchain enables all transactions to be automated, and thus, by eliminating intermediaries, makes trading more efficient and effective.”

In concrete terms, the 150 housing units participating in the Brooklyn Microgrid can inject their surplus energy into the local grid. They receive tokens in exchange that they can use locally, as a sort of local money, that works in a similar way to Bitcoin.

“The 150 housing units participating in the Brooklyn Microgrid can inject their surplus energy into the local grid,” and Innogy and Co-Tricity in Germany. In France, Bouygues Immobilier is developing a similar experiment with Microsoft in the Confluence neighbourhood in Lyon.

The development of new renewable energy is driving the sector towards blockchain technology, which is better suited to electricity trading.

As Romain Bonenfant of the firm Emerton, reminds us, “The energy sector is currently undergoing a profound transformation. We are switching from large and very powerful plants, such as nuclear reactors, to smaller generation units such as solar panels on the roofs of houses and wind turbines.” Blockchain appears especially suited to supporting this decentralisation, an underlying trend that is changing the sector. “Up until now, the large groups in this sector have remained somewhat sceptical with respect to this technology, but many start-ups are working on innovative experiments.”

As a result, pilot projects are emerging across the globe. The most emblematic are in the US. In 2016, Siemens and LO3 Energy set up “Microgrid” in a Brooklyn neighbourhood, a system by which inhabitants owning solar panels can sell their surplus energy to their neighbours, via peer-to-peer transactions made using blockchain. What is the point of this system? “Up until now, micro electricity producers could not resell their surplus, as it was not profitable due to the weak volumes,” explains Bonenfant. “Blockchain enables all transactions to be automated, and thus, by eliminating intermediaries, makes trading more efficient and effective.”

In concrete terms, the 150 housing units participating in the Brooklyn Microgrid can inject their surplus energy into the local grid. They receive tokens in exchange that they can use locally, as a sort of local money, that works in a similar way to Bitcoin.

“The 150 housing units participating in the Brooklyn Microgrid can inject their surplus energy into the local grid.”"
ENERGY: BLOCKCHAIN’S HIDDEN SECRET

Bitcoin, the first blockchain on the market in 2009, has a dirty secret: it uses a significant amount of energy. But other more environmentally-friendly blockchains exist.

BY BERTRAND BEauté
An environmental disaster”, “a danger to the planet”, “an energy-consuming monster”. Bitcoin is booming on the markets but it is also on the receiving end of criticism from environmental organisations. For more than a year, an increasing number of articles criticise the fact that the world’s most well-known cryptocurrency uses an incredibly large amount of energy. According to the media, Bitcoin uses more electricity each year than countries such as Ireland, Morocco or Lebanon. Is it the truth? “Well, there aren’t any serious studies on the subject,” said Claire Balva, CEO of Blockchain Partner. “The numbers aren’t any serious studies on the subject.”

For more than a year, an increasing number of articles criticise the fact that the world’s most well-known cryptocurrency uses an incredibly large amount of energy. According to Digiconomist, Bitcoin’s electricity consumption reached 13 TWh by the end of 2017, which is just half of its current energy use. “Today, energy is a major obstacle that hinders the implementation of this blockchain technology in other industries,” said Romain Bonenfant from the firm Emerton. “That’s why all the players are working to develop more energy-efficient systems.”

For example, Ethereum, the blockchain used for cryptocurrency Ether, already consumes less energy than Bitcoin (10 TWh per year in 2017) while still using the same proof-of-work system. But in order to reduce its electricity consumption, the transaction verification protocol would have to be changed. “There are already many alternatives to proof-of-work,” said Christine Hennebert, blockchain expert and cybersecurity researcher at the French Alternative Energies and Atomic Energy Commission (CEA). “With Ripple’s XRP system, for example, all the tokens already exist; they are pre-mined, so to speak, which reduces energy use. But Ripple is a closed system that sets up a system against blockchain’s decentralised philosophy.”

Other economic systems are used, such as “proof of stake”, by blockchains such as Peercoin or Ora. In these cases, only users who have a certain amount of crypocurrency can claim to validate additional blocks and therefore receive the reward. This drastically reduces the number of competing miners and, as a result, lowers energy consumption.

The idea piqued the interest of Ethereum developers, who are currently experimenting with a “proof of participation” consensus mechanism called Casper. But the problem is that this system goes back to a plutocracy, where only the richest have power. This is incompatible with the libertarian origins of crypocurrency. Other variations exist such as “proof of importance”, which rewards the oldest miners, or “proof of activity”, which rewards the most active members.

“Each of these systems has its own advantages and disadvantages. While they consume less energy than proof-of-work, they are seen as less secure,” said Bonenfant. “That’s not necessarily a problem, because based on the usage of the new technology companies would need either more or less security, which means it would consume more or less energy.”

This is the key point: a blockchain’s energy consumption must be adapted to its function and equal to the value it creates. “People can’t stop criticising Bitcoin for its energy use. But it’s a hypocritical argument, because absolutely everything consumes energy,” said Balva. “Watching cat videos on YouTube uses an enormous amount of energy but no one complains about that. And one Google search uses as much electricity as if you leave a light on for one hour! At the end of the day, Bitcoin’s impact isn’t that high, given its price (approximately $8,000 currently). How much energy would it take to mine gold with the same value?”

“The numbers aren’t any serious studies on the subject.”

We will soon have chains whose energy efficiency will be adapted to their functionality.

Romain Bonenfant, from the firm Emerton.
DIGGING FOR BITCOINS

A handful of companies and groups of individuals are experts at mining virtual currencies in abandoned industrial locations in northern countries where electricity is cheap and abundant.

BY JULIE ZAUGG

They are miners. But they don’t have headlamps or pickaxes, and they don’t work several hundreds of metres underground. Instead, these miners work on gigantic farms filled with servers.

They spend their days solving complex mathematical problems, which requires significant computing power. The goal? Be the first to find the solution, so as to mine a new “block” that will validate new transactions in virtual currencies and add them to the blockchain, the register of every past transaction.

For their efforts, miners collect a commission on the transactions they validate and receive the coins that they mined. With Bitcoin, for example, each block created is worth 12.5 Bitcoins. “Commission varies based on supply and demand for miners’ services,” said Charles Hayter, co-founder of analytics firm CryptoCompare. Since about 114 blocks are added to the blockchain each day, mining generates nearly $11 million per day. Almost all currencies can be mined, but the ones that are the most popular are Bitcoin, Ethereum and, to a lesser extent, Litecoin and Monero.

In 2009, when only a few connoisseurs were interested in cryptocurrencies, mining was done by individuals using their personal computers to extract new Bitcoins. It was easy work. But not anymore. Since only the first person to solve the equation is compensated, miners quickly began a technological race to have the fastest, most powerful computer.

Hardware manufacturers rose to the occasion, developing specific chips optimized for mining called ASICs (Application-Specific Integrated Circuits). These quickly surpassed individuals’ efforts and devices, which could no longer handle extracting cryptocurrency. So Bitmain, a Chinese company founded in 2013 and based in Hong Kong and Iceland, is another big player, along with Canada’s Hive Blockchain.

Currently, the vast majority of Bitcoin mining (more than 70%) is occurring in China. “Certain provinces such as Sichuan and Inner Mongolia, which have lots of hydroelectric power, are home to gigantic mining farms in abandoned industrial hangars,” said Emin Gün Sirer, Bitcoin expert and professor at Cornell University.

The Chinese firm Bitmain faces a wall of challenges – resisters in the company’s mining farm in Inner Mongolia.

Since only the first person to solve the equation is compensated, miners quickly began a technological race to have the fastest, most powerful computer.

“The material becomes obsolete very quickly, sometimes within just a few months,” said Charles Hayter. “New generations of machines and chips keep coming out.” Given that each machine costs between $800 and $1,100 and an average-sized farm has approximately 1,000 machines, it becomes very expensive rather quickly.

Mining therefore becomes the business of large companies that are able to make colossal investments. Once again, Chinese company Bitmain (currently not listed) is a global leader. Genesis Mining, a company founded in 2014 and based in Iceland, is another big player, along with Canada’s Hive Blockchain.

Currently, the vast majority of Bitcoin mining (more than 70%) is occurring in China. “Certain provinces such as Sichuan and Inner Mongolia, which have lots of hydroelectric power, are home to gigantic mining farms in abandoned industrial hangars,” said Emin Gün Sirer, Bitcoin expert and professor at Cornell University.

The Chinese firm Bitmain faces a wall of challenges – resisters in the company’s mining farm in Inner Mongolia.

The Chinese firm Bitmain faces a wall of challenges – resisters in the company’s mining farm in Inner Mongolia.

“Surviving in such a difficult climate is not for the faint-hearted,” said Campbell. “The current context is favourable to big players and is leading to a concentration of the industry.” Some estimates say China’s Bitmain would monopolise nearly 45% of Bitcoin’s mining power or “hashrate”. This is rather ironic, since the idea behind cryptocurrencies was an ideal decentralisation of society.

“It is not a good idea for one single player to hold more than 25% of all resources,” said Sirer. “That player could decide to mine some blocks and not others, which would lead to the death of certain links in the blockchain, or even of the entire cryptocurrency altogether.” Furthermore, if a player holds more than 51% of the hashrate of a blockchain, the blockchain’s security is no longer guaranteed – for example, this player may force the network to accept fraudulent transactions.

With this risk in mind, certain blockchains have modified their protocol. Monero, for example, has a mining algorithm that is open to all types of processors and ASIC-resistant, in order to encourage as many miners to participate as possible. A
PROFILE OF SELECTED FIRMS

- Business model associated with blockchain
- Significant correlation with the cryptocurrencies market

ADVANTAGES OF THE BLOCKCHAIN PORTFOLIO

- Increased growth potential
- Risk diversification (but high exposure to cryptocurrency evolutions)
- Traded on the SIX Swiss Exchange
- 9 CHF flat transaction fee

PROFILE OF SELECTED CRYPTOCURRENCIES

- 100% decentralised cryptocurrencies
- Available on the Swissquote portal
- In the top 10 largest capitalisations

ADVANTAGES OF THE MULTI-CRYPTO ACTIVE CERTIFICATE

- Weekly reallocation of funds
- Automatic management via algorithm
- Minimised risk
- 9 CHF flat transaction fee

It is indeed possible to take advantage of the advent of blockchain without directly investing in cryptocurrencies. Many public companies decided to take the next step and adapt their business models to this new technology.

The “Blockchain Portfolio” certificate, created by Swissquote and traded on the SIX Swiss Exchange, is made up of international companies that have taken this strategic approach. The portfolio focuses on companies whose potential success is strongly tied to the boom of the blockchain economy. But it also includes some large companies – which are underweighted – that have more diversified revenue and have decided to participate in the crypto adventure, such as Intel and Nvidia.

Given that the industry is relatively young and therefore highly volatile, the portfolio is reallocated quarterly in order to capture the industry’s latest developments.

Many investors are tempted by cryptocurrency trading but are hesitant to actually participate due to fear or lack of time. For these investors, Swissquote has created a multi-cryptocurrency certificate. This product includes four cryptocurrencies: Bitcoin, Bitcoin Cash, Ethereum and Litecoin. Our teams developed an algorithm that automatically manages the portfolio by ensuring an optimal diversification of the funds invested based on market fluctuations.

Fund reallocation occurs once a week. The objective is to limit risk for the investor, notably by reducing the probability of major losses. The algorithm is based on statistical models and is powered by machine learning technologies.

Please note that investors do not need to open an account solely for cryptocurrencies in order to invest in this certificate.

A CRYPTOCURRENCY WALLET IN JUST ONE CLICK

Invest in Bitcoin, Bitcoin Cash, Ethereum or Litecoin while minimising risk and controlling volatility.

SWISSQUOTE.COM/CRYPTOS

SWISSQUOTE.COM/BLOCKCHAIN

Invest in blockchain technology – it’s easy and accessible.
“Options and Futures aren’t just for speculators”

Jürg Schwab, Head of Trading at Swissquote, describes the advantages of these derivative products for portfolio management.

**What are Options and Futures?**
They are leveraged derivative products that make it possible to manage investments in a more active and timely manner. An “Option” is a contract that gives the holder the right to purchase or sell an underlying product at a given price and a maturity date set beforehand. A “Future” is a forward contract that constitutes a commitment to purchase or sell an underlying asset. All products available on Eurex and the US market can be traded online via our platform. On these markets, Swissquote has the only offer of this kind in the Swiss banking sector.

**Who are these products for?**
They can be for anyone, not just speculators. They have multiple functions based on individual needs. That is why they can be used both by wealth managers and institutional investors, as well as by private clients.

**What are the possible uses for Options and Futures?**
There are three main uses. These products can be used to optimise a portfolio, for hedging, and most commonly for speculation.

**How can investors optimise their portfolios with these products?**
Investors can obtain an additional yield on shares held in trust with no risk involved via what we call a covered call. For example, if you have 200 Nestlé shares in your portfolio, you could sell two calls against these shares – as each option has a leverage of 100 – by choosing a maturity and a strike price.

The other strategy is the sale of a put in order to purchase a security at a lower price than its current value or in order to cash in a premium. In these two examples, clients improve the performance of their investment portfolios.

**What are speculators?**
There are two ways to go about it. First: clients can purchase a call or put option, expecting that the market will rise or fall significantly. In this situation, the only risk is losing the premium paid for purchasing the option.

Second: clients can sell options. This approach is also very advantageous and popular among many speculators, big and small, but it is imperative that clients understand the implied high risks that go along with it. Sellers could lose an unlimited amount if market fluctuations run counter to their expectations. That’s why in this case, the bank requires clients to have a certain amount available in their account. And a margin is held by the bank. If the market goes against the client’s expectations, the required margin increases. As such, the bank does what we call a margin call, following the rules of the exchanges, and asks the client to provide additional funds to guarantee their position.

**And what about the hedging method?**
If for example the market is strongly bullish and there are fears surrounding a geopolitical event that could lower prices, a Future lets you hedge your risk. In such a short-term context, investors would generally prefer to hedge their potential losses for the given period rather than sell off their portfolio. A portfolio with European equities worth €100,000 could, for example, be hedged by selling three Eurostoxx Futures, since one Eurostoxx Future is worth approximately 3,400 Swiss francs, with a leverage of 10.

**How to take advantage of this offer?**
As a rule, all Swissquote clients can trade Options & Futures. However, they must first accept the conditions on the risks related to these products and answer an online questionnaire.

www.h-moser.com  1888  bucherer.com
THE POPULIST TEMPTATION: ECONOMIC GRIEVANCE AND POLITICAL REACTION IN THE MODERN ERA
By Barry Eichengreen
(Oxford University Press, 2018)

Trump’s election as president is the result of a populist wave spreading across the Western world, according to Barry Eichengreen, professor of economics and political science at the University of California, Berkeley. Retracing the history of this political movement and its characteristics, The Populist Temptation unveils the constants that encourage populism: a divergence of interests between the people and elites, and particularly a government bailing out elites during financial crises. Without providing a definitive answer to this modern-day challenge, the author argues that the lack of an effective social safety net and government’s abandonment of the masses affected by crises systematically lead to the rise of populism and even its ascendancy to power.

COACH’S TIP
FOR THE LOVE OF THE GAME
Posture, force, quick execution in every sport, there are certain technical movements that are particularly difficult to master. Especially when athletes have learned bad habits in the past. This app makes it possible for athletes to film themselves and watch a slowed-down video of the movement in order to compare and improve, to finally achieve the perfect swing or ace.

TRIP
TRAVELLING ON A WHIM
Trip is the essential app for travellers with or without a set plan, whether they find themselves at the tip of Bolivia or hiking around Lake Lucerne. It is like a pocket Routard guide, but with less filler content and more interactivity. Trip suggests nearby activities based on user interests, as well as restaurants, hotels, bars and nightclubs. All recommendations include comments and reviews from other Trip users.

EUROTRAGEDY
A DRAMA IN NINE ACTS
By Ashoka Mody
(Oxford University Press, 2018)

What if the origins of the euro crisis could be found in the very idea of the creation of the euro? This is the intriguing theory from Ashoka Mody, professor of international political economics at Princeton University. In describing this currency project from its beginnings to its fruition, Mody seeks to demonstrate that the pursuit of the euro was jeopardised from the very start by ideals and biases that ruined its effectiveness—and led to the economic crisis of today. Instead of uniting all Europeans, the adoption of the euro has widened the gap between rich and poor nations while simultaneously and permanently mortgaging younger generations.

WICKR ME
COMMUNICATION UNDER TIGHT SECURITY
Designed for security buffs and all sorts of paranoids, this app can be used to share content and make phone calls in a completely secure way. A self-destruct function deletes messages and calls automatically after a period of time set by the user. Communication is encrypted end-to-end and uses perfect forward secrecy.

CHATTERBABY
BABY CRIES DECRYPTED
Here’s an app to solve one of the oldest mysteries of all time: what are babies trying to tell us when they cry, yell or whine? At least, that’s what ChatterBaby, the app developed by researchers at the University of California, Los Angeles, tries to do. By recording the sounds of your baby and comparing it to thousands of other examples in the database, ChatterBaby claims to be able to decipher the meaning and cause of the baby’s cries with 90% precision.

BABY CRIES DECRYPTED
Here’s an app to solve one of the oldest mysteries of all time: what are babies trying to tell us when they cry, yell or whine? At least, that’s what ChatterBaby, the app developed by researchers at the University of California, Los Angeles, tries to do. By recording the sounds of your baby and comparing it to thousands of other examples in the database, ChatterBaby claims to be able to decipher the meaning and cause of the baby’s cries with 90% precision.
The Vélodyssée definitely lives up to its name. Connecting Roscoff in Brittany to Hendaye on the Spanish border, this 1,200-km cycle route is a magnificent trek along the Atlantic Ocean by bicycle. The route winds through forests in Brittany, pines in the Landes, salt flats and sandy beaches. Unfortunately, we didn’t have enough time for the entire trek, so we decided to focus on the last beautiful stretch from Arcachon to Hendaye. This three-part trip takes cyclists between the swaying peaks of stone pines along the magnetic blue-grey of the ocean. Here’s our travel guide.

Might as well start with the most difficult part! With a length of 98 km, the first bit is the longest of the three and likely the most difficult as well. This is because the route from Arcachon to Contis passes through the Dune of Pilat. After climbing Europe’s tallest dune at 110 m high, you are rewarded with an exceptional panoramic view. This maritime landscape shimmers with the tides, shadows and changing seasons. It is an excellent way to experience the region before heading to the Landes.

When going around the Sainte-Eulalie-en-Born lake headed towards Biscarrosse – the military base is a must – you may see grey herons perched on branches. The route goes past the marshy regions and heads to the Landes forest. The dedicated cycling routes are extremely safe and cyclists can appreciate the quiet beauty of the maritime pines.

The last leg from Mimizan – the gem of the Silver Coast – to Contis, its best kept secret, is a fairytale voyage over sandy paths covered with bronze prickles and tousled ferns. The scenery is straight out of a children’s storybook; you almost expect to see friendly creatures peering at you from behind silver rocks.

Arriving in Contis is a relief, especially for your calves. Get a massage for your tired legs at Maeva (www.maeva-spa.fr), before celebrating the day’s achievements at Chez Dan with a pint of craft beer and some fried smelt.

WHERE TO STAY

L’Hôtel de la Plage

With its bike storage, adorable alcove balconies to watch the waves and complimentary breakfast, Hôtel de la Plage is an ideal spot to rest before getting back in the saddle.

From 145 Swiss francs per night for two people.
Far from boring, the Landes forest shows off its impressive colors and density as you make your way to Hossegor. Known worldwide for its “wave” (the biggest in Europe), this pop town is teeming with surfers. Boards and shorts dry on every balcony and restaurant patios are brimming with festive summer sport.

Leaving Bayonne, head towards the Spanish border along the beaches of Anglet and the craggy coastline. The route is not flat; steep uphills are followed by enjoyable downhill. Stop for cool drinks as you pass through pretty Biarritz, close-knit bourgeois Getthary and Bidart’s central square.

Hendaye is the best place on the Basque coast to try surfing, as the waves are reasonable and there is reduced wind exposure. In the off-season, the city reminds us of a deserted Patrick Modiano novel, as if Hendaye is haunted by its own ghosts. Tapas – or we should say pintxo – lovers should take the ferry to Hondarribia. Only seven minutes away by boat, the Spanish coast is a true change of scenery.

WHERE TO STAY
L’Hôtel La Caravelle
In Ciboure, Hôtel La Caravelle’s retro façade looks out onto the ocean and Saint-Jean-de-Luz bay. From 115 Swiss francs per night for two people.

WHERE TO STAY
Hôtel des Basses Pyrénées
We love the Gallo-Roman architecture of Hôtel des Basses Pyrénées, located on the Vauban ramparts in the heart of Bayonne. The suites, nestled in a stone tower, are a true indulgence for people who love beautiful rooms. From 125 Swiss francs per night for two people.

Where to stay in Bayonne

Bicycles come in handy to wander the streets of the original city centre.

From 70 Swiss francs per person per week. Reservations recommended; call +33 5 33 48 13 86.

Reserve a bicycle and panniers:
COOL BIKE, 77 Quai des Chartrons, Bordeaux.
Rent a bicycle and panniers:
Reservations recommended; call +33 5 33 48 13 86.

Information about the route:
www.lavelodyssee.com

Getting here:
Flights to Bordeaux from Zurich and Geneva.
Regional TER train from Bordeaux to Arcachon.

From Arcachon to Hendaye, the Vélodyssey route isn’t difficult and doesn’t require any special equipment. An all-terrain bicycle and two 20-litre panniers are all you need to cycle comfortably.

If you want to pack lightly, the easiest thing to do is to fly to Bordeaux, rent your equipment and then take the train to Arcachon. Camping isn’t mandatory at all, because many bike-friendly hotels can be found along the route. What to pack? Cycling shorts, sports t-shirt, helmet, water bottle, waterproof clothing and comfortable shoes.

From Arcachon to Hendaye, the Vélodyssey route isn’t difficult and doesn’t require any special equipment. An all-terrain bicycle and two 20-litre panniers are all you need to cycle comfortably. The route is not flat; steep uphills are followed by enjoyable downhill. Stop for cool drinks as you pass through pretty Biarritz, close-knit bourgeois Getthary and Bidart’s central square.

Hendaye is the best place on the Basque coast to try surfing, as the waves are reasonable and there is reduced wind exposure. In the off-season, the city reminds us of a deserted Patrick Modiano novel, as if Hendaye is haunted by its own ghosts. Tapas – or we should say pintxo – lovers should take the ferry to Hondarribia. Only seven minutes away by boat, the Spanish coast is a true change of scenery.

But you must spend the night in Saint-Jean-de-Luz. Unfortunately, the coastal road isn’t specifically tailored to bicycles (it is not part of the official Vélodyssey route). But several lookout points provide the opportunity to stop and stare in amazement at the sharp cliffs jutting into the sea.

While Saint-Jean-de-Luz has beautiful beaches, a casino, espadrille stops and Basque gastronomy perfect for tourists, the popular Cibourne village offers a more authentic experience. The aperitif takes place on large wooden tables. But don’t spoil your appetite, because no trip would be complete without a dinner at Chez Mattin. This no-frills family restaurant has been around for 50 years. Try the ttoro, a local bouillabaisse, or order the chef’s specialities, which are bold but remain faithful to regional traditions. Make sure to make a reservation.

From 115 Swiss francs per night for two people.

How to pack:
Cycling shorts, sports t-shirt, helmet, water bottle, waterproof clothing and comfortable shoes.

From Arcachon to Hendaye, the Vélodyssey route isn’t difficult and doesn’t require any special equipment. An all-terrain bicycle and two 20-litre panniers are all you need to cycle comfortably.

If you want to pack lightly, the easiest thing to do is to fly to Bordeaux, rent your equipment and then take the train to Arcachon. Camping isn’t mandatory at all, because many bike-friendly hotels can be found along the route. What to pack? Cycling shorts, sports t-shirt, helmet, water bottle, waterproof clothing and comfortable shoes.

From Arcachon to Hendaye, the Vélodyssey route isn’t difficult and doesn’t require any special equipment. An all-terrain bicycle and two 20-litre panniers are all you need to cycle comfortably.
Volvo seems to have found its perfect style. With each new model, the Swedish auto manufacturer’s image gets a facelift. This is particularly true for the XC40, which received much critical acclaim and was just ranked the car of the year. Last year, we test drove its big brother, the XC60. This year’s model has similar design elements, technical solutions and interior layout. It is more compact (4m 42 in length) and only slightly less luxurious.

Our fully-equipped test model comes in at just over 70,000 Swiss francs. At that price, the vehicle better have some advantages over German premium models. To win a place in the big leagues, Volvo decided – and rightly so, we believe – to refine its traditional strengths, rather than try at all costs to challenge leading brands at what they do best. In other words, the brand focused once again on ride comfort and safety, particularly with a wide range of driving aids. The XC40 seems perfectly designed to give urban and highway trips a sense of tranquillity, but at a fast pace. The silence in the interior is quite remarkable for its class. Of course, drivers who prefer speeding through switchbacks will probably prefer sportier brands. BMW, Alfa Romero and Porsche offer many good alternatives.

Volvo’s “small” SUV also stands out due to its many practical aspects, such as its customisable boot, in which drivers can hang shopping bags. It’s a simple but very clever feature. Excellence is also in the details.
BOUTIQUE

MECHANICAL SMARTWATCH
You no longer have to choose between a smartwatch and a mechanical watch: Frédérique Constant’s new Hybrid model brings together smart features and mechanical movement in one timepiece. With a 42-hour power reserve, adjustable date and second time zone feature, the two-in-one watch uses Bluetooth to connect to an app and even offers precise monitoring of the wearer’s activity and sleep.

www.frederiqueconstant.com
From CHF 3,250.–

FOLDABLE ELECTRIC SCOOTER
Five seconds is all it takes to fold and unfold the Immotor Go. Its dashboard-like handlebars display the time, battery charge, speed and mileage. Connected via Bluetooth, the three-wheeled scooter has an integrated GPS and external speakers for riders to listen to music or take calls. There are three speeds to choose from: 6 km/h, 20 km/h and 25 km/h with a 350-watt hub motor.

www.immotor.com
CHF 1,489.–

ENDLESS WINE
With its chic design similar to a Nespresso machine, the Plum Wine Preserver will win over legions of wine lovers. This gadget can store two open bottles of wine for several weeks until they are ready to be served, all at an ideal temperature. How does it work? The device pierces the cork with a fine needle, then injects argon into the bottle to stop the precious nectar from oxidizing. A touchscreen provides information about the varieties, including tasting notes, and even offers a virtual visit of certain wine cellars.

www.plum.wine
CHF 1,990.–

APARTMENT VEGETABLE GARDEN
A garden in the middle of your living room – Quebec start-up Ogarden has designed a chic, simple indoor vegetable garden. Indoor gardeners can grow up to 90 vegetables or herbs at the same time, including kale, lettuce, coriander and Swiss chard. The garden is easy to use and equipped with a growing wheel that has an automatic lighting and watering system that can hold 10 days’ worth of water.

www.ogarden.org
CHF 760.–

POCKET PROJECTOR
Thanks to its light weight (700 g), you can take the new ViewSonic M1 projector everywhere you go. Its integrated battery lasts up to six hours, which makes it ideal for giving PowerPoint presentations on a business trip. The only downside is its limited light (only 250 Lumens) which means the room has to be completely dark.

www.viewsonic.com
CHF 330.–

BIRD DRONE
The Bionic Bird is more than just a bird-shaped drone: using biomimetics, it flaps its wings and effortlessly changes direction in the air. Developed by Marseille-based start-up XTM, the lightweight drone (weighing in at 9 grams) can reach altitudes of up to 100 metres and fly at speeds close to 20 km/h. With a battery life of 8 minutes, it is controlled via a smartphone and can be recharged up to 10 times remotely using its powerbank egg.

www.bionicbird.com
From CHF 90.–

A SMART AUDIO HELMET
Not just another pair of headphones for cyclists, the Coros Omni uses open-ear bone conduction technology so that riders can be better aware of noises around them. With two LED lights that automatically turn on at night and a handlebar remote, this smart helmet has an internal collision sensor and automatically sends a text message to emergency services in the event of a crash.

www.coros.com
CHF 199.–
Our computers are sieves. Whether you use Windows, macOS or even Linux, new vulnerabilities are uncovered almost every day. Not to mention the "spying" in which commercial operating systems openly engage. While many of us are content to simply install anti-virus software – which is sometimes worse than the viruses themselves – and cross our fingers every time we bank online, the most paranoid users are seeking alternative solutions. The most radical of these is undoubtedly Qubes.

"If you are seriously interested in security, QubesOS is the best operating system on the market today." As publicity goes, it’s hard to top this tweet from Edward Snowden himself, who has also confirmed on several occasions that he uses Qubes for his regular IT needs. Taking up his recommendation, I downloaded the OS (which is completely free and open source) and began the installation process. Let’s begin by saying that users do need some minimal IT knowledge to successfully complete the process, which consists of copying the image on a USB drive, starting the computer using this device, and then installing the operating system on a dedicated hard drive (or a USB drive) that is completely encrypted, of course. It took me several attempts to install owing to various technical problems.

Once installed, the OS doesn’t have any baffling features for average users, with a virtual dashboard and a few drop-down menus. But there are no applications for an internet browser, text editor or multimedia player. In fact, all useful functions are launched via dedicated virtual machines that are specific to their particular function. This is the fundamental principle of Qubes: security via compartmentalisation. Rather than try to fix the vulnerabilities of traditional operating systems, the developers of Qubes (the majority of whom came from the Polish company The Invisible Things Lab and are led by the famous IT security researcher Joanna Rutkowska) designed a system in which users separate their activities in dedicated domains that are completely independent from one another. Therefore, potential vulnerability from one virtual machine does not affect any other activities. The base domain, “dom0”, which manages all the other frameworks, doesn’t even have access to the internet. Users access the web through a virtual firewall!

So that’s how it works in theory. In reality, I open “Qubes Manager” and create my first domain for internet browsing through a Linux “template”. After that, I can finally launch Firefox, which opens in a window framed by the colour of my choice. I repeat the same process for each specific function: one domain for e-banking, another for social media, and even a virtual domain with no internet access to store sensitive information. It is also possible to use templates that route all internet traffic via Tor. Advanced users could also try installing domains under Windows.

Obviously, using Qubes for daily computing isn’t extremely intuitive and requires a certain level of organisation in order to not get confused with all the domains. In the end, Qubes reminds us that security always comes at a price. In this case, it is usability. This is decidedly not an OS to spontaneously install on your mother-in-law’s computer, but the most paranoid among us will certainly find it useful.
TO BREAK THE RULES, YOU MUST FIRST MASTER THEM.

The Vallée de Joux. For millennia a harsh, unyielding environment; and since 1875 the home of Audemars Piguet, in the village of Le Brassus. The early watchmakers were shaped here, in awe of the force of nature yet driven to master its mysteries through the complex mechanics of their craft. Still today this pioneering spirit inspires us to constantly challenge the conventions of fine watchmaking.