

SWISSQUOTE

FINANCE AND TECHNOLOGY UNPACKED

AUTOMOTIVE
Chinese companies
descend on Europe

FLAVOURS
Givaudan
goes
green

STOCK EXCHANGE
All about
tickers



DOSSIER

TECH *THE OLD CONTINENT* *STRIKES BACK*

25 companies under the microscope

ISSN 2296-3278



► ASML ► ZALANDO ► DARKTRACE ► BLUE PRISM ► ALLEGRO ► SPOTIFY ► ADYEN ►

COLLECTION

Fifty Fathoms

The Fifty Fathoms collection embodies Blancpain's passion for the underwater universe that was originally expressed in 1953 with the creation of the first modern diver's watch.

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TRANSMIT OUR PASSION,
HELP PROTECT THE OCEAN

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Wake-up call



By Marc Bürki,
CEO of Swissquote

It wasn't that long ago. Until 2010, the Finnish firm Nokia reigned supreme on the global cell phone market. And now? A mere decade later, Europe is unable to build a state-of-the-art smartphone from scratch. It can't produce any of the most powerful electronic chips, such as the A14 processor in the iPhone 12, which is manufactured by the foundries of Taiwanese giant TSMC. And most of the applications we all use are made by US companies.

For the Old Continent, never more befitting in name, this realisation is distressing. Nine out of the world's 10 biggest companies are technology firms, and none of them are European. Faced with US and Asian behemoths, is the digital war a foregone conclusion? Not so fast... The pandemic has awakened European governments to their cumulative lag.

p. 34 As our **special report** shows, Europe is already home to some fantastic success stories, such as the Swedish audio streaming platform Spotify or the relatively unknown Dutch giant ASML. But the Old Continent especially boasts top-notch universities, researchers and research labora-

tories to develop the technologies that will dominate our future lives.

The famous Times Higher Education World University Rankings 2021 placed seven European universities in the world's top 20 for computer science. Two of these institutions are Swiss: ETH Zurich (4th) and EPFL (17th). In an interview featured in this issue, **Alexandre Pauchard**, CEO of CSEM, explains how these excellent skills entitle us to be optimistic, to dream of a Europe that is less dependent on foreign solutions for its digital services.

To achieve that, we will need to further improve access to financing for the highest potential startups. And why not set up a European Nasdaq, where European tech companies can raise the hundreds of millions of dollars they need to grow and build world-class winners, like Nokia with cell phones? The failed pan-European electronic stock exchange Easdaq in the 1990s should not deter us. Times have changed, and digital technology is now what drives the entire economy. For European tech, this can serve as a wake-up call.

Enjoy!

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HAPPY SPORT

Chopard

THE ARTISAN OF EMOTIONS – SINCE 1860

SCANS



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AUTOMOTIVE



22

DOSSIER

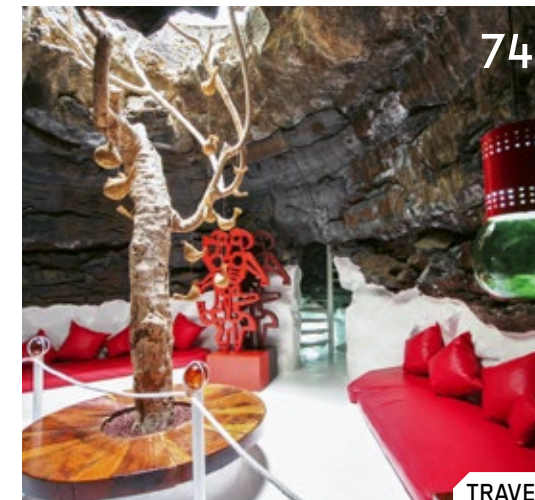
DIGITAL AWAKENING IN THE OLD CONTINENT

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Polestar 1

A collector's item

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SCANS

reinsurance

SWISS RE SAVES THE DAY... AND THEN SOME

The reinsurance sector remained profitable in 2020 despite the pandemic, and the situation is expected to improve further in 2021. The performance of Swiss Re or Belgian Ageas in the first quarter of 2021 highlights this trend. The Swiss reinsurer has recorded a net profit of 333 million Swiss francs, compared with a loss of 225 million Swiss francs for the same period in 2020. Meanwhile, the Belgian firm announced profits of €296 million, but down 34% compared to the previous year. With the exception of the French insurer SCOR, the other European giants Hannover Re and Munich Re also delivered good performances for the beginning of this year.

— SREN — AGS — SCR — HNR1 — MUV2



+30%

Increase in the amount spent on video games in the United States in the first quarter of 2021, compared with the same period in 2020.

tech

WAR IN AUGMENTED REALITY



US Army soldiers wearing Microsoft's AR headsets.

Microsoft will supply the United States Army with 120,000 augmented reality (AR) headsets, a contract worth \$21.9 billion over the next 10 years. Microsoft's share price jumped 3% after the announcement in late March. The headsets feature the tech firm's HoloLens technology, which delivers a range of information superimposed in the users' field of view. HoloLens is mainly sold to businesses: architecture firms, hospitals, universities, car manufacturers, and even the US space agency, NASA. This change in strategy is followed by other manufacturers such as Google and Snapchat, whose products (Google Glass and Snapchat Spectacles) are now aimed at businesses rather than individuals. Facebook is also ramping up its efforts in this market. The social network says that nearly one-fifth of its employees are currently working on virtual reality and augmented reality projects.

— MSFT — GOOGL — SNAP — FB

certification

THE LUXURY GOODS INDUSTRY EMBRACES BLOCKCHAIN



FABRICE COFFRINI / AFP

The advantages of traceability and certification offered by blockchain technology are gradually coming into the conversation over the noise of pure speculation related to cryptocurrencies. Traceability projects are the hot topic in food items and other consumables, such as the milk project in Ireland or the coffee project developed by the Swiss startup Farmer Connect. The technology

is now waltzing into the luxury industry through the front door with the launch of a consortium around the Geneva-based Aura blockchain. Led by the three rivals LVMH, Prada and Richemont, the consortium plans to develop a common certification standard for the entire luxury industry that will allow buyers to track the provenance of and authenticate their purchases. — MC — 1913 — CFR



“In the future, Swiss will become smaller”

Dieter Vranckx, new CEO of Swiss, in an interview with *Le Temps* newspaper.



\$2.75 bn

The amount of the antitrust fine imposed by China on Alibaba, equivalent to 4% of the company's revenue in 2019.

RANKING

ANNUAL SPENDING ON APPS

(average per active iPhones in the United States, including in-app purchases)

2015	\$33
2016	\$47 (up 42%)
2017	\$58 (up 23%)
2018	\$79 (up 36%)
2019	\$100 (up 27%)
2020	\$138 (up 38%)

Source: SensorTower

COUNTRIES WITH THE MOST BILLIONAIRES IN 2021

1. UNITED STATES	724
2. CHINA	698
3. INDIA	140
4. GERMANY	136
5. RUSSIA	117

Source: Forbes

EUROPEAN COMPANIES WITH THE BIGGEST IPO VALUATIONS

(first quarter 2021)

1. ARRIVAL (electric vehicles, London)	\$13 BN (NASDAQ)
2. DELIVEROO (food delivery, London)	\$10.4 BN (LSE)
3. TRUSTPILOT (online review platform, Copenhagen)	\$1.5 BN (LSE)
4. IMMUNOCORE (biotechnology, Abingdon)	\$1.1 BN (NASDAQ)

Source: Crunchbase

SCANS



\$465 m

How much Amazon will invest in the first season of its *The Lord of the Rings* series – a record high. To compare, season 8 of *Game of Thrones* is reported to have cost \$240 million.

A computer generated image of Toyota's "Woven City" project.

TOYOTA



smart cities

TOYOTA CREATES CITY OF THE FUTURE

At the foot of Mount Fuji in Japan, Toyota has begun construction on the "Woven City", its connected city presented as a living laboratory of innovation. The 175-hectare site of a former Toyota factory will be the setting for life-size experiments of new technologies in fields such as self-driving, personal mobility, robotics and artificial intelligence. The Woven City will eventually be home to more than 2,000 residents, mainly Toyota engineers but also elderly people and families with children. The smart city project is part of a larger strategy, which Toyota hopes will help it catch up in the self-driving segment through its new subsidiary Woven Planet Holdings. The 800 employees of this subsidiary will soon be joined by the 300 employees from the self-driving unit ("Level 5") of the American ride-hailing platform Lyft, which Toyota bought for \$550 million in late April.

— 7203

pharma

BASEL-BASED ROIVANT SCIENCES TO ENTER INTO A SPAC

Roivant Sciences, a biotech company operating out of Basel, plans to list on the Nasdaq in the third quarter via a Special Purpose Acquisition Company, or SPAC, an option rarely used by Swiss companies. It hopes to raise \$611 million to reach a valuation of \$7.3 billion. Founded in 2014, the company acquires pharmaceutical compounds that other companies cannot or will not use and develops them with a dedicated team. Roivant Sciences currently has 12 separate entities that employ 800 people. The money raised via the SPAC will go to funding operations through 2024.

— SIOX

Vivek Ramaswamy, founder of Roivant Sciences, at the 2015 Forbes Under 30 Summit in Philadelphia.



LISA LAKE / GETTY IMAGES



"Next year there is going to be way too many vaccines for people on the planet"

Stéphane Bancel, Moderna CEO, speaking at a virtual event for vaccine manufacturing on 23 April.

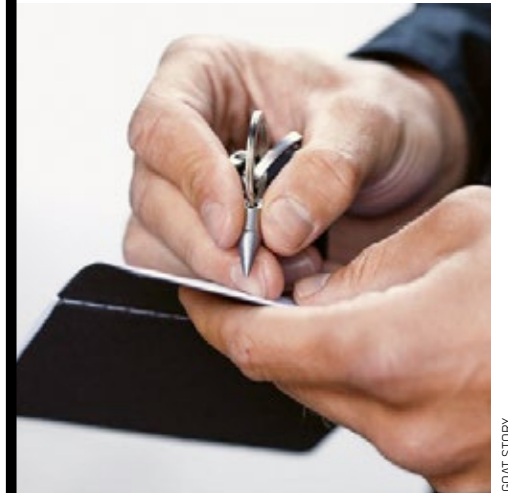
semiconductors

EVER THINNER

IBM announced that it has created the first 2-nanometre chip. Until now, the record of 3 nm was held by TSMC, the Taiwan-based world leader in semiconductors (see *Swissquote Magazine* 3/2020). IBM says that this new architecture could quadruple the battery life of devices currently built with 7 nm chips (or offer 45% more performance for the same energy use). But the US firm did not specify any dates about when it would launch mass production. Meanwhile, TSMC plans to start production of its 3 nm and 4 nm chips as early as next year, which should further strengthen its global dominance. Despite the semiconductor shortage, TSMC even forecasts growth of 20% in 2021, well above the 16% expected for the industry as a whole.

— IBM — 2330

KICKSTARTER



GOAT STORY

FOREVERPEN

A MINI-PEN (ALMOST) FOR LIFE

Foreverpen is a tiny pen measuring just under 2.5 cm that lets you write on any surface and lasts practically forever. The team at the Manchester-based World's Tiniest says its design was inspired by a tool used in the Renaissance period to draw illuminations on parchments. Made from silver composite, the tip creates permanent, clearly legible strokes on paper, plastic or even wood, but leaves no marks or stains on the fingers. Foreverpen is water-resistant, and the tip can also be used to cut tape off packages or pry open lids. However, using it in these ways can reduce its lifespan. Foreverpen is available in three colours (titanium, copper, brass) and comes with a pass-through so that it can be attached to a key ring or zipper and taken anywhere.

FUNDS RAISED
£344,396

AVAILABILITY
AUGUST 2021

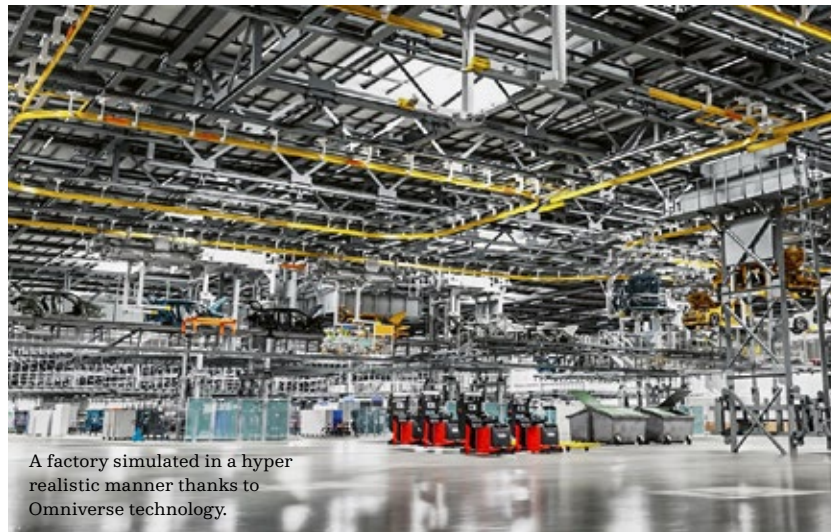
SCANS



“We have a couple of years until we catch up to this surging demand across every aspect of the business”

Pat Gelsinger, Intel's new CEO, commenting on the global semiconductor shortage in an interview on CBS.

virtual reality
OMNIVERSE:
NVIDIA'S ULTIMATE SIMULATOR



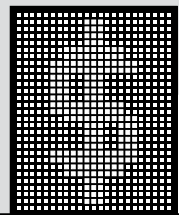
A factory simulated in a hyper realistic manner thanks to Omniverse technology.

NVIDIA

The US company Nvidia has unveiled a new platform that accurately recreates real-world environments in 3D. The Omniverse solution is used to create simulations that can optimise manufacturing processes. For example, the software can simulate changes to the supply chain at a factory without disrupting site operations or performance. German automaker BMW is using a beta

version of Omniverse and has referred to the simulation as a “virtual twin” of its factory. The experiments conducted using the simulator have reportedly improved productivity by 30%. And the applications don't stop there: Omniverse can also simulate the journey of an autonomous car to train artificial intelligence in realistic conditions.

— NVDA — BMW



\$69.4 m

The amount that the first digital work of art sold for at a Christie's auction. *The First 5000 Days* is a collage by British artist Mike Winkelmann, aka Beeple.

THE FLOP

Archegos plummets, others profit

The bankruptcy of the American hedge fund Archegos Capital Management has made headlines as the biggest financial scandal of 2021. Its over-exposure to media conglomerate ViacomCBS, whose shares fell at the end of March, cost it dearly, and several banks lost billions. Aside from the many losers, one Chinese investment fund managed to come out a winner with a 120% gain in the first quarter, thanks in part to the collapse of Archegos. Seahawk China Dynamic

Fund was founded in 2017 by Henry Liang, then 27, who was touted by Bloomberg as a Chinese finance genius. The performance was undoubtedly due to bold bets on two Chinese internet platforms (FinVolution Group and 360 Digitech) but also against overvalued Chinese companies, such as the education technology company GSX Techedu, whose share price fell dramatically after Archegos' brokers massively sold off its shares.

— VIAC.O — FINV — QFIN — GOTU

ANDREAS CAMINADA
3 MICHELIN STAR CHEF

HUBLOT

T H E A R T O F F U S I O N

**BIG BANG UNICO
BLACK MAGIC**

Boîtier en céramique noire. Mouvement chronographe UNICO manufacture.

HUBLOT

SCANS

hydrogen
FILL'ER UP WITH H₂ CANISTERS



SEGWAY

Since its 2015 acquisition by Ninebot, a subsidiary of the Chinese firm Xiaomi, Segway has been exploring all areas of electric mobility, from motorcycles in 2019 to buggy-quads in 2020. Now, in 2021, the US firm has unveiled the APEX H2, the first motorcycle featuring a hydrogen-electric hybrid powertrain. On top of its cyberpunk design, Segway has come up with a charging system

in the form of changeable and refillable hydrogen canisters at a dedicated station, although the battery could also be charged normally – by plugging it in. Priced at less than €10,000, this futuristic motorcycle reaches speeds of 150 km/h and goes from 0 to 100 km/h in 4 seconds. Production is set to launch in 2023 and pre-orders are already open.

— 689009 — 1810



\$1,981 bn

Total amount of military expenditure worldwide in 2020, up 2.6% from 2019 despite the pandemic, the highest amount since the end of the Cold War, according to a report from the Stockholm International Peace Research Institute.



“A tough period and hard decisions lay ahead of us. There are no miracle quick fixes nor such things as infallibility”

Antonio Horta-Osario,
new chairman
of Credit Suisse.

THE IPO

COUPANG, SOUTH KOREA'S AMAZON

South Korea's e-commerce giant Coupang (pronounced “coopong”) boasted the largest IPO in the United States for the first quarter of 2021. Its shares rose 40% on its first day, rising from \$35 to close at \$49.25, valuing the company at \$84.47 billion, up from an estimated \$9 billion in 2018. Alas, the euphoria was short-lived, and the stock dipped back down to below \$35 in mid-May, opening an attractive investment window.

With 24.6% market share and 90% additional revenue in 2020, Coupang is still the largest e-commerce site in South Korea, and analysts agree that its model remains robust. Its 15,000 delivery drivers and more than one hundred logistics centres spread across more than 30 South Korean cities form infrastructure that will be difficult to replicate for several years.

— CPNG

Salt.



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Salt.
Business

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BIG PILOT'S WATCH 43

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For the first time, IWC's most essential aviator's watch is available in a 43-millimetre case, combining the purity of the original cockpit instrument design with superior ergonomics and pronounced versatility.

“ONCE I DREAMED TO BECOME
THE FASTEST DRIVER.
TODAY, I AM A DRIVER OF CHANGE.
I AM A BIG PILOT.”

LEWIS HAMILTON, 7 TIME FORMULA 1™ WORLD CHAMPION

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TRENDS



personality

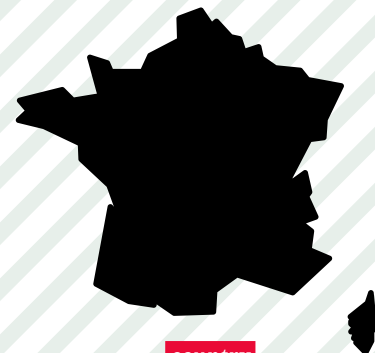
BELEN GARIJO

History being made at Merck

Position
CEOAge
61Nationality
Spanish

Appointed as CEO of the German biopharma Merck KGaA in early May, Spaniard Belen Garijo is making history. She is the first woman to head one of Germany's 30 largest DAX-listed companies. Garijo studied medicine at the University of Alcalá de Henares in Madrid and then practised as a physician in clinical pharmacology before a career move

into the pharmaceutical industry in the late 1980s. Over a period spanning about 20 years, she held management positions at different companies: Abbott, Rhône-Poulenc, Aventis Pharma and Sanofi Aventis. In 2011, she became COO and then CEO of Merck Serono and in 2015, CEO of Merck Healthcare. In 2020, she was appointed member of the Merck Group Executive Board, while still serving on the boards of L'Oréal and BBVA. An ardent supporter of Real Madrid, she is also a mum. Her husband was the first doctor in Spain to take unpaid leave to care for their two children, so that she could pursue her career. — MRK



country

FRANCE

The country is coming back to life

In the first quarter of 2021, France's GDP grew 0.4% compared to the previous quarter, while GDP contracted in other European countries during the same period (-0.6% for the euro zone as a whole). With the lifting of COVID-19 restrictions, the upward trend is expected to continue in the second half of the year, and the OECD even forecasts 5.9% growth

in 2021. Supporting this rebound will be the €100 billion French stimulus package, of which €40 billion will come from Brussels. Of that €40 billion, 37% is to be allocated to fighting climate change and 20% to the digital transformation of the economy (see our report on p. 34 to 58). Meanwhile, the government is planning to introduce a set of particularly unpopular reforms, including revisions to the pension system and unemployment insurance. And that could bring the French back into the streets.

Population
67,400,000
(2020)GDP per capita
€ 30,480 (2020)Growth
-8.3%
(2020)Main economic
sectors (2018)
services (76.1%),
manufacturing
(13.3%),
construction
(6.7%) and agri-
culture (2.5%)

innovation

DISNEY'S PROJECT KIWI

Manufacturer
DisneyRelease
not disclosedPrice
not disclosed

Get your own Baby Groot

Disney's R&D division has recently unveiled an autonomous robot version of everyone's favourite dead tree character from the film *Guardians of the Galaxy*, Baby Groot. Although still just a prototype with a battery life of 45 minutes, the result is incredibly realistic. The robot can dance, box and even stand on one foot. Its face is packed with

small motors to produce human expressions to a tee. The father of this adorable baby is engineer Scott Christopher LaValley, designer of the biped robot Atlas, which Disney got from Boston Dynamics. Disney's intentions are not (yet?) to sell the robot to the general public, but to integrate it into its theme parks. Westworld – a park populated by

android robots – remains a long-term prospect, as Disney engineers still want to improve Groot's interactions with his environment and let him react to unexpected situations, for example, in the presence of children.

— DIS

ANALYSIS

THE VIEWPOINT OF SPECIALISTS

FOCUS

ETFs, the success story

Since first hitting the market three decades ago, Exchange Traded Funds have become more widespread, more diversified and more complex. As they allow investors to diversify their portfolios simply and at a low cost, ETFs remain an incredibly popular option.

BY ANGÉLIQUE MOUNIER-KUHN

As soon as the regulatory authorities gave the green light, State Street Global Investors created a sensation by launching the first Exchange Traded Fund (ETF), the SPDR S&P 500 ETF Trust (pronounced “spider”) on the American market on 22 January 1993. What was novel about this investment fund, which aims to replicate the performance of the S&P 500, was that it was traded on the stock market. That sparked the passive investing revolution on financial markets. It reached Europe in the early 2000s, and nothing could stop it.

Three decades later, the original ETF from the Boston-based investment management company remains the most popular in the world, with more than \$360 billion in capitalisation, roughly equivalent to half of Switzerland’s gross domestic product. Over that period, the SPDR family has grown to include dozens of new funds, enabling State Street to hold on to its position as a top ETF issuer, even though giants Blackrock

and Vanguard have far outstripped it in the United States. On the European market, iShares (Blackrock), Xtrackers (DWS) and Lyxor (Société Générale) – which is about to be acquired by its competitor Amundi – hold the top spots.

Why are they so popular? Simple: there is nothing not to like about ETFs

Few other financial innovations have experienced a planetary success similar to that of ETFs. The research firm CFRA counted 8,500 ETFs worldwide as at the end of February. Many of them are listed on several markets to make them more readily available. Together, they totalled nearly \$7.74 trillion in 2020, with the United States representing by far the largest market with almost 70% of

assets under management, ahead of Europe (17%) and Asia (13%). The Swiss stock exchange lists several new ETFs every week, adding to the 1,500 funds already listed.

The success of ETFs can also be measured by their weighting in portfolios. The Boston Federal Reserve estimates that passive funds (ETFs and mutual funds) accounted for 41% of total assets under management in the United States in March 2020, compared with only 14% in 2005 and 3% in 1995. In Europe, passive funds held 20% of the market share in 2020, according to Morningstar.

Why are they so popular? Simple: there is nothing not to like about ETFs. “They are easy to access, affordable and transparent. Plus, their investment universe has expanded considerably, offering investors a broad selection,” says Marlene Hassine Konqui, expert in portfolio construction and active and passive fund allocation.

Initially limited to replicating the performance of stock indices weight-



ed based on the market capitalisation of their components, ETFs have gradually ventured into bond markets, then into commodities and precious metals markets, disrupting the way things were done each time. For example, when physical gold ETFs emerged about 15 years ago, investors were given the opportunity to enjoy the security of the yellow metal, without having to worry about storage issues. These days, ETFs are sector- or theme-based; some are based on cryptocurrencies, and a growing number focus on social, environmental and governance (ESG) considerations.

ETFs have also become more complex. Now we have synthetic ETFs, which use derivatives; leveraged ETFs, which replicate a multiple of an index’s performance; short ETFs, which replicate the inverse trend of an index, and so forth.

Recent years have seen the emergence of Smart Beta ETFs, an “enhanced” passive management strategy that takes into account fac-

tors other than the simple weighting of securities in an index, and actively managed ETFs, which aim to reduce risk or improve performance.

In fact, fund regulations seem to be the only thing that can inhibit the imagination of ETF creators. Could they possibly lose sight of the very simplicity that built their initial success? Marlene Hassine Konqui, former head of ETF research at Lyxor, one of Europe’s leading issuers, believes that widening the selection gives investors the advantage of capturing new trends. “The development of actively managed ETFs is particularly interesting,” she says, “because it brings the best of both worlds, the low cost of ETFs and the outperformance potential of active funds.”

Due to the volumes they generate and their flexibility to buy and sell, investors, particularly active managers, have long been concerned that ETFs could accentuate bullish and bearish market trends. ETFs are also suspected of distorting the price of underlying assets away from their

intrinsic value, as decisions to buy or sell an ETF are unrelated to the fundamental characteristics of the securities in which it is invested. “However, research shows that they play a role in price discovery (the process of determining the price of an asset) and over the long term do not add noise or instability to the market,” says Hassine Konqui. In the corporate bond market, ETF holdings even appear to reduce price volatility. Finally, “other studies have shown that ETFs do not impact underlying markets, especially in times of crisis, any more than other equity market players, namely active funds,” she adds.

During the last major financial market crash in February and March 2020, when the S&P 500 fell by more than a third in less than a month, the expert still found that active funds significantly outperformed their passive counterparts. That is a good reason to believe that these two management styles are complementary, not contradictory. And each has its legitimate place in portfolios. ▀

FOCUS

Chinese companies set up in Europe

China is steam rolling into the electric car market. Big automakers should be worried. And experts blame decisions handed down by Brussels.

BY LUDOVIC CHAPPEX

This time, the wave is coming. More than a dozen Chinese electric vehicle brands will hit the European market by the end of the year, according to the business information firm IHS Markit. And the new competition has been carefully sharpening its arguments. Forget the reputation of poor quality that has long plagued Chinese products. Just as Huawei or Xiaomi smartphones have been steadily moving upmarket to now appeal to a Western clientele, Chinese cars have made a quantum leap in the space of a few years. And now they are forcefully attacking the European market.

The most obvious example is probably MG Motors. The mythical brand, whose heyday in the British car industry was post-World War II, was bought by the Chinese giant SAIC (Shanghai Automotive Industry Corporation) in 2007. Now it has risen from its ashes in the form of electric vehicles marketed in 14 European countries, but not Switzerland. The company an-

nounced that it exported 230,000 MG-stamped models last year.

34% of French people say they are ready to consider a Chinese vehicle for their next purchase

In the French business newspaper *Les Echos*, German analyst Matthias Schmidt reported that SAIC-MG sold 4,459 electric and hybrid vehicles in Western Europe in the first quarter. A modest figure compared to the 30,500 Teslas that flooded the region over the same period, but the onslaught has only just begun. In 2021, MG plans to open 200 new points of sale in Europe, including 80 dealerships in France, a country serving as a laboratory and test market. What's surprising – in addition to its

financial position – is the fantastic reviews these vehicles have received from both the general public in Europe and industry media outlets. A case in point, journalists and readers of the specialised French automotive journal *La Revue Automobile* have named the MG ZS their benchmark electric SUV for 2021. And that's something! The editorial team comments on its website: "It's not because it's the most modern, or the most sensual... no. Its rationality and its price-performance ratio made it our winner. Its ultra-competitive price and plethora of features convinced us all." Compared to European models with comparable features and components, the MG SUV comes out €5,000 to €10,000 cheaper.

"It's a quality product sold at a very competitive price," says Flavien Neuvi, director of the Cetelem Automotive Observatory, a business intelligence unit of the BNP Paribas Group. The expert adds, "The model also achieved



Not quite the same spirit, but MG Motors is back, now under the control of the Chinese giant SAIC. The brand's models, such as the MG EHS hybrid SUV, have received an enthusiastically warm welcome from both the general public and industry media outlets. Vehicles are already on sale at dozens of dealerships across France and 13 other European countries.

five stars, the highest possible rating, in the Euro NCAP crash test, which brings reassuring value for European customers. And our various studies show that the fact that it's a Chinese brand is not deterring anyone from buying it. The value for money is the deciding factor."

This analysis was confirmed by the annual barometer study "The French and the automobile" published by the site Aramisauto and the market research firm Kantar, which asserts that sales price is the most important criterion for 65% of people surveyed. More striking is that 34% of French people say they are ready to consider a Chinese vehicle for their next purchase.

Positioned to expand, Chinese manufacturers work within an ecosystem that is already highly

developed at home. China is the world's largest manufacturer of EV batteries. The International Energy Agency (IEA) estimates that 2.58 million electric vehicles were on Chinese roads in 2019, compared with 0.97 million in Europe and 0.88 million in the United States. Charging infrastructure is also much more developed in the country than elsewhere, with China home to more than 80% of the world's fast charging stations.

GOVERNMENT BACKING

Chinese brands largely owe the cushy position they currently enjoy to Beijing's support and determination. Electric vehicles have been a recent focus in the Chinese government's industrial strategy. "The electric car is a key objective charted in the Made in China 2025 plan, which aims to impose certain Chinese technology sectors in the global arena,"

says Bernard Jullien, former director of Gerpisa (Permanent Study and Research Group on the Automobile Industry and Employees). Is that tactic used to distort competition? "The content of Chinese electric vehicles has clearly not been designed and produced according to competition rules that prevail in Europe," the French economist says. "China has made a point of building up a complete industry, with companies abundantly financed by banks – and therefore indirectly by the government."

In contrast, the European industry is a relative newcomer. Old World manufacturers have barely begun their transition to electric vehicles. But ever stricter anti-pollution standards are already pushing them to move away from the combustion engine. >

The experts we interviewed do not speak kindly of the political decision-makers and their strategy. Bernard Jullien: “Brussels’ decision to heavily promote electric vehicles is like giving up to Chinese firms. The bar has been set too high with targets that European companies cannot meet.” Flavien Neuvy concurs, practically in the same terms: “European regulations favour the entry of Chinese manufacturers

into the European market.” These criticisms should be taken with some perspective, as European automakers have indeed long refused to tackle the ecological transition head on. The first to overtake them was Tesla, not a Chinese group. Then came the Dieselgate scandal, which sent a shock wave through the industry and convinced legislators to take a harder line (see our September 2019 issue on electric vehicles).

In this fast-changing industry, the Old Continent’s manufacturers will have to carve out a way forward. Neuvy concludes: “An electric car takes far fewer people to produce. Thousands of jobs will disappear at European automobile firms. It’s already happening at Volkswagen, which is expected to cut 5,000 jobs by 2023 in its transition to electric vehicles. Has Europe truly grasped the consequences of its choices?” ▲



1



2



3



4

1 Europeans are not completely unfamiliar with Polestar. The Chinese group Geely bought Volvo in 2010 and, by extension, also owns its performance division. The new Polestar 2 electric sedan is moving into the territory of Tesla’s Model 3, and deservedly so.

2 Freshly arrived in Europe, Aways has pulled off a sweet deal by partnering with car rental company Hertz in Corsica. The Chinese manufacturer supplied hundreds of its U5 electric SUVs to the platform on the Mediterranean island last summer, as part of its mission to “Electrify Corsica”.

3 Lynk & Co, also owned by Geely, is hitting Europe, bringing its disruptive concept: rental cars shared by members to drastically reduce monthly payments. The Lynk & Co 01 is actually a revamped Volvo XC40, with a hybrid version available.

4 Norway, a country fond of electric vehicles, has been used since last May as a test market for NIO, one of China’s largest electric car manufacturers. Although the information is not yet official, several sources suspect that the brand, with its sights set on the high-end market, will move into Germany next year.

Louer au lieu d’acheter: nouvelle offre Corporate E-Bike

cff.ch/corporate-ebikesharing

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INTERVIEW

Those tempting convertibles

As rates continue to climb, convertible bonds come out looking like a great trade-off between security and performance.

BY BERTRAND BEAUTÉ

The year 2020 will forever stand out as memorable for convertible bonds. This hybrid asset class – halfway between stocks and bonds – has managed to fare well and limit fallout during phases of stock market correction, while taking advantage of bull markets. As a result, over the whole of 2020, the leading convertible index (Refinitiv Global Convertible Index) shot up 32%, while the global equity index (the MSCI World Net TR) only rose 12%. Can that impressive performance be replicated in 2021? Analysis by Quentin Philippe, Global Portfolio Manager at Schelcher Prince Gestion.

In this period of rising interest rates, are convertible bonds an attractive financial product?

Everyone will be talking about interest rates for the entire year in 2021. After hitting a low during the pandemic, rates have been climbing for more than six months and are likely to continue upwards. If the trend continues, it could adversely impact growth stocks, especially technology stocks. By analysing periods of rising interest rates over the past 20 years, we observe that convertible bonds are the preferred asset class in this case, both in the United States and in Europe.

Does this mean that investors should allocate more of their portfolio to convertible bonds?

For now, equities are still rising, despite the surge in interest rates. Investors who feel that this trend will continue don't need to change their strategy. However, those who fear that the strong market growth will end are well advised to switch to convertible bonds. These financial products are truly

attractive in times of uncertainty because you can benefit from the upside while limiting the downside. In other words, convertible bonds help to smoothen market volatility. Personally, I don't think we're in a bubble yet. I believe equity growth will continue. In fact, central banks continue to flood the world with cash that is pouring into stocks and cryptocurrencies, pushing up their valuation. And so far, we haven't seen any alarming valuation levels in the financial markets.

Which companies are issuing convertibles?

Forty per cent of the global convertible bond pool (Europe, Asia, North America, Japan) now consists of growth companies, including technology stocks, such as the online retail company Zalando and the e-commerce pharmacy Zur Rose. New convertible issues also include companies that have been hit hard by the health crisis, including the tour operator TUI and the travel retailer Dufry. Convertible bonds are a popular solution both for growth companies that need cash to finance their development and for companies experiencing temporary difficulties. They therefore create a diversified portfolio. ▲



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Crypto Chronicles

Bitcoin in eco-friendly clothes

Accused of being an environmental disaster,
Bitcoin tries to go green.

BY LUDOVIC CHAPPEX

Pressure has cranked up a notch in recent weeks. Bitcoin is increasingly criticised for being an energy drain, and in May it was the target of yet another jab, this time from Elon Musk. After announcing that Tesla was preparing to accept payments in BTC two months earlier, the entrepreneur changed his mind, pointing to Bitcoin's energy-hungry operations. The next twist came on 13 June, when Musk in the end decided that his firm would accept Bitcoin payments if miners used a reasonable proportion of renewable energy, i.e. about 50%.

The problem is nothing new. Mining BTC requires an indecent amount of electricity. That currently equals about 0.6% of the world's electricity consumption, which is more than the annual consumption of a country like Argentina, according to a Cambridge University index updated every 24 hours.

Most of the highest potential cryptocurrencies have worked around this shortcoming by using a much less energy-intensive method called

Proof of Stake (PoS), which does not use super-powered machines to validate the blocks in the blockchain. Basically, Bitcoin's reputation is not going to improve if nothing is done.

The mining industry is in the hot seat and starting to react. Major industry players, including Argo Blockchain, Blockcap, Galaxy Digital, Hive Blockchain and Riot Blockchain, have banded together to form the Bitcoin Mining Council. Their objective is to promote transparency and best practices, including establishing an energy reporting standard. This project echoes the Sustainable Bitcoin Standard (SBS) initiative launched in April, a Swiss not-for-profit foundation that aims to promote carbon-neutral Bitcoin mining by 2025.

In terms of concrete applications, Agro Blockchain announced in late March in a release that it was partnering with DMG Blockchain solution to launch "the first Bitcoin mining pool powered exclusively by clean energy", mostly generated by hydro-electric resources.

The eco-friendly hype around cryptocurrency mining has led to some amusing situations. An article in the UK's *Metro* newspaper via the Binance Wiki explains that a growing number of British farmers who produce electricity from manure – by converting methane into electricity – are now using it to power their own carbon-neutral crypto mining operations. The energy source, which they used to sell to the UK electricity distributor National Grid, is now earning them up to \$50 a day – mostly from Ether mining.

Even better: after becoming the first country to adopt Bitcoin as a legal tender on 9 June, El Salvador announced that it would use the energy from its volcanoes for mining the currency! Its young 39-year old president Nayib Bukele has been all over Twitter about this. "Our engineers just informed me that they dug a new well, that will provide approximately 95MW of 100% clean, 0 emissions geothermal energy from our volcanoes," he tweeted on 9 June. "Starting to design a full #Bitcoin mining hub around it." ▽

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An archive photo of a Givaudan laboratory, from 1989. The Swiss firm, founded at the end of the 19th century, is now at the forefront of the ecology field.

Givaudan goes green

IN NUMBERS

\$27.9 BN

Expected market value for plant-based meat alternatives by 2025, more than double its current value – growth to feed Givaudan's appetite.

CHF 6.3 BN

2020 revenue of the firm based in Vernier, in the canton of Geneva.

+4–5%

Givaudan's forecast annual revenue growth by 2025. The flavours division alone is expected to generate additional sales between 750 million and 1 billion Swiss francs by then.

15,852

The number of people employed by the company, spread over 181 sites.

STAFF PHOTOGRAPH / SOMP / NEWS.COM

The Swiss flavour and fragrance giant outshines its competitors by focusing on plant-based proteins and organic manufacturing processes. The story of a technological powerhouse.

BY JULIE ZAUGG

Givaudan is getting ready to open an innovation centre in Singapore where it will develop plant-based protein alternatives. Created in collaboration with the St. Gallen group Bühler, the 400 square metre facility will include a demonstration kitchen, meeting rooms, visitor area, along with its Swiss partner's extrusion machines, which are used to process plant protein into fibrous material that resembles meat or fish. The centre – open to the region's startups and university researchers – will eventually produce 40 kilos of animal protein substitutes per hour.

"In the past few years, Givaudan has been focusing on environmental technologies, which include plant-based meat and fish," notes Jean-Philippe Bertschy, an analyst at Vontobel who has been covering the company for about 20 years. The firm specialises in flavours and co-lours that reproduce the experience of eating animal protein.

This is a real challenge. "Eating is an experience that combines oral, visual and auditory sensations, such as the sound of bacon sizzling in the pan," says Joseph Puglisi, professor of structural biology at Stanford University. "Each note must be perfectly in its place, or the end result will be inedible, much like how a classical

music symphony can be ruined by the sound of a single electric guitar."

To reproduce the taste of meat or fish, Givaudan works on identifying the thousands of chemicals they contain – including both volatile chemicals related to smell and chemicals expressed in the mouth in the form of taste – using chromatography and mass spectrometry. "The company draws on its vast portfolio of compounds to identify the most appropriate chemicals and combines them to produce the desired aroma," Puglisi says.

"Meat and fish change colour and consistency when cooked. An alternative plant-based protein has to behave in the same way"

Julian McClements, professor in the Department of Food Science at the University of Massachusetts

Sometimes, that takes searching for new ingredients in nature. "For example, the myoglobin that gives raw meat its red colour can be reproduced with leghemoglobin, a protein found in the root of soybeans," says Julian McClements, a professor with

the Department of Food Science at the University of Massachusetts. But many challenges remain. "Meat and fish change colour and consistency when cooked," he says. "An alternative plant-based protein has to behave in the same way. It must also be adaptable to different ways of preparing it, as some people like their steak well done and others rare." Plus, the soy and pea proteins used to make artificial meat and fish have a slightly bitter taste that needs to be masked.

But solutions are being found to address these issues with new plant-based protein flavours developed by Givaudan, which leads the industry along with Firmenich, based in Geneva, and the American firm IFF. "In the last three or four years, the quality of alternative plant proteins has improved drastically," says Puglisi.

Founded in 1895, Givaudan has come up with solutions to improve the taste of these preparations, cover up the bitter taste of the plant-based proteins, optimise their visual appearance and reduce the sensation of dryness that they can cause in the mouth.

The global leader in flavours and fragrances, whose concoctions are used in perfumes, laundry products, personal care products, cosmetics, >

ANALYST ADVICE

“GIVAUDAN IS WELL POSITIONED FOR FURTHER GROWTH”

Virtually unaffected by the pandemic, Givaudan saw its sales grow by 7.7% in the first quarter to 1.67 billion Swiss francs, up from its 4% revenue growth in 2020 to 6.3 billion Swiss francs. Segments affected by lockdowns, such as food service and fine fragrances, did suffer, but this was offset by higher sales in food sold in supermarkets, personal care products and cosmetics sold online. The Asia-Pacific region was another growth region, with revenue up 10.2%. “Thanks to its financial strength, the diversity of its offering and its broad geographic exposure, Givaudan is well positioned for further growth,” said Jean-Philippe Bertschy, who covers the firm at Vontobel and points out that it has been outperforming its competitors for several quarters. He issued a Buy recommendation.

GIVN

beverages and food, is not only innovating in plant proteins. This environmental shift is also taking place in scents. “One of the major projects under way is to replace some of the ingredients extracted from nature or produced synthetically with compounds generated through biotechnology,” Jean-Philippe Bertschy says.

Basically, there are two ways of doing that. The first is to cultivate plant cells in a bioreactor by adding bacteria or yeast that will serve as a growth factor, allowing them to multiply rapidly, explains microbiologist Hans-Peter Meyer, a professor at the University of Applied Sciences and Arts Western Switzerland. For example, in 2019 Givaudan released an amber scent called Ambrofix produced by fermenting sugar cane.

The second process, biocatalysis, transforms a chemical to give it properties identical to those of the plant one wishes to imitate. “It is different from traditional catalysis as it uses an enzyme – a natural product – as the transformation agent,” explains Hans-Peter Meyer. Using this process, the Swiss firm has created a floral woody fragrance called Akigalawood™.

The Swiss flavour giant is keen to go greener with its product range and manufacturing processes in order to meet the demands of its clients and, by extension, consumers. “The plant protein market is booming,” says Stanford’s Joseph Puglisi.

Consumer demand also explains why Givaudan is turning to natural manufacturing processes

“Beyond Meat has been a pioneer in pushing for meat substitutes to be sold alongside meat on supermarket shelves, and that has lifted demand for these alternatives.”

After starting in the US, the movement has spread to Europe and is beginning to catch on in Asia, particularly in China, which accounts for 28% of global meat consumption, and in Buddhist countries such as Thailand, where eating animal protein was already frowned upon.

Sam Brunschweiler, Givaudan’s senior development chef, presents a pea protein burger at the company’s innovation centre in Kempththal, canton of Zurich (29 October, 2020).



ARNO WIEGMANN / REUTERS

“The eating habits in these countries are very different from those in the West,” the expert says. “They are already used to eating more pork and less steak or burgers.”

This need to adapt to local preferences is why the Innovation Centre focused on plant proteins was created in Singapore, to serve the Asia-Pacific region. Several Asian startups, such as Omnipork, Zhenmeat or Whole Perfect Food, have already begun developing meat or fish substitutes in line with local tastes, such as steamed ravioli, meat-on-the-bone pieces or pork meatballs braised in sauce, a Chinese speciality called “lion’s head”.

For Givaudan, this is a huge market to capture. The plant-based protein segment currently only accounts for 2% of its sales, but it is growing fast, says Bertschy of Vontobel.

Consumer demand also explains why Givaudan is turning to natural manufacturing processes, such as

bioreactor cell culture and biocatalysis. “Tolerance for cosmetics with synthetic or chemically produced ingredients has decreased dramatically in recent years,” notes Hans-Peter Meyer. “People want natural products.”

In addition, sourcing some of the raw materials typically used to produce flavours and fragrances has become increasingly difficult due to climate change, over-farming and deforest-

ation. Hans-Peter Meyer points to the case of agarwood. “When this Southeast Asian tree is infected by a certain fungus, it generates a pleasant scent to defend itself, but it takes about 20 years for a tree to reach maturity,” he says. Other raw materials that have become rare include sandalwood, extracted from a tree that grows in India and the Pacific, or ambergris, extracted from the intestinal secretions of the endangered sperm whale.

To focus on these new operations, Givaudan has divested some of its more traditional divisions, such as its pectin (gelling agent used as a thickener in the food industry) business and its processed and grated cheese business, both sold in 2020. Givaudan has also made deals to strengthen its capabilities in enzymes and bioengineering, such as the cooperation agreement with Denmark’s Novozymes and its acquisition of France’s Alderys.

Additionally, in 2020 Givaudan invested 536 million Swiss francs in research and development. The Geneva-based group spends an average of 8% of its revenue on research and development, more than its main competitors, including IFF and the German company Symrise, which continue to rely on more conventional technologies. “This strategy, combining internal innovation and strategic acquisitions, has given them a real head start over their competitors,” says Jean-Philippe Bertschy. And he expects that gap to widen.

TRANSLATING SCENTS INTO COLOURS

Givaudan is also innovating in the field of marketing. In April, the Swiss firm acquired French startup Myrissi. Launched in 2014, Myrissi has developed an artificial intelligence solution and a database containing more than 25,000 consumer tests that translates fragrances into colours, patterns and images (and vice versa). Givaudan

hopes that the acquisition will enable it to offer its clients advertising strategies with imagery that is perfectly tuned into the emotions created by its fragrances. This innovation makes sense in the age of e-commerce, as customers have to rely entirely on online promotional material to make their choice.



START

DOSSIER

DIGITAL AWAKENING IN THE OLD CONTINENT

Lagging behind in digital technology, Europe became fully aware of its dependence on US and Asian digital tech firms during the pandemic. It's time for revolt.

BY BERTRAND BEAUTÉ

- 39.** Is the Union too soft?
- 40.** Infographic: The United States, by far the number 1
- 42.** Interview with Alexandre Pauchard, CEO of CSEM
- 46.** Can deep tech companies rescue Europe?
- 50.** 25 high-potential European startups

|| In just a few months, the world's digital transformation has advanced several years." These simple words uttered by analyst Brice Prunas from Oddo BHF Asset Management sum up an opinion unanimously shared by his peers. His colleague Jack Neele, head of the Robeco Global Consumer Trends Equities Fund, agrees, "The coronavirus has led to an unparalleled boom in the use of digital services." >

Dossier prepared by:
Bertrand Beauté and
Stanislas Cavalier

While remote working is probably the most obvious facet of this shift, almost all human activities have been swept up in the digital wave, from education to healthcare, to manufacturing, retail, leisure and culture. The numbers are spectacular. In 2020, online sales for example jumped by 59% in Australia, 46.7% in the United Kingdom and 32.4% in the United States, according to a report by the United Nations Conference on Trade and Development (UNCTAD) published on 3 May.

Video conferencing solution Zoom, meanwhile, has seen its number of daily users soar from 10 million in early 2020 to more than 300 million today. Netflix, the world's leading video streaming service, saw its subscriber base shoot up from 167.1 million at the end of 2019 to 203.7 million at the end of 2020. "As stores, restaurants, cinemas and the rest of the economy reopen, the growth of some services will slow," says Thomas Coudry, head of Tech Equity Research at Bryan, Garnier & Co. "However, things will never go back to the way they were. People have developed habits during the pandemic that they will not break."

For the Old Continent, this accelerated digital transformation brings a frightening realisation: not one European company ranks among the world's tech elite (see infographic on p. 40). "The Americans have GAFAM (Google, Amazon, Facebook, Apple, Microsoft). The Chinese have BATX (Baidu, Alibaba, Tencent, Xiaomi). And Europe? We have the GDPR (General Data Protection Regulation)," French President Emmanuel Macron said ironically last December, criticizing the Old Continent's propensity to create regulations rather than global leaders.

It would be wrong to think that the problem is limited only to GAFAM and BATX. "Digital technology is a winner-takes-all market," says Cyrille Dalmont, associate researcher at the

Thomas More Institute. "When a new service is developed, a new player emerges and monopolises the entire market, like Google, which holds more than 90% of the global search engine market." And that case is no exception. Uber dominates private transportation; Netflix for series; Airbnb for property rentals; TripAdvisor for restaurant reservations, and so on.

"The picture is bleak," says Cyrille Dalmont, author of the report "The Impossible European Digital Sovereignty" published in April 2021. "The world's top five hardware firms do not include a single European company. The same is true for operating systems, cloud computing, data cen-

tres, smartphones, semiconductors, chips and microprocessors. Europe has become a digital colony, dependent on American and Asian giants."

Even though Europe fell far behind in the digital race long ago – dating back at least to the 2000s – the health crisis has pushed the Old Continent back even further. "Europe woke up from the pandemic with a hangover, bitterly aware of its cumulative lag" says Thomas Coudry. "People now seem to be becoming truly aware of the problem."

"The pandemic has exposed how crucial digital technologies and skills are to work, study and engage – and

where we need to get better," Ursula von der Leyen, president of the European Commission, stated in March 2021, adding, "We must now make this Europe's Digital Decade."

With that in mind, Brussels plans to set aside about €150 billion for the digital transition by 2027, i.e. 20% of its post-COVID recovery plan, Next Generation EU. The goal is to develop Europe's "digital sovereignty". And to get there, Europe has defined a set of specific targets for 2030 and will arm itself with a new regulatory arsenal in the form of the Digital Market Act to fight the excesses of giant American tech firms due to their dominant positions. ▶

"Europe woke up from the pandemic with a hangover, bitterly aware of its cumulative lag"

Thomas Coudry, head of Tech Equity Research, at Bryan, Garnier & Co



Finally something concrete!

In March 2021, the European Commission published its roadmap for the digital economy. Here are some highlights of its main targets.

STARTUPS

Double the number of unicorns between 2021 and 2030 to almost 250.

ELECTRONIC CHIPS

Double its share of semiconductor manufacturing on the global market in terms of value from 10% in 2020 to 20% by 2030.

DEEP TECH

Build its first quantum computer by 2025, to be on the cutting edge of quantum technology by 2030.

DIGITAL TRANSFORMATION OF SOCIETY

All essential public services must be available online by 2030.

TRAINING

Eighty per cent of adults must have basic digital skills by 2030.

INFRASTRUCTURE

All European citizens should have gigabit connectivity by 2030, versus 59% in 2020.

JOB

The information and communication technology sector should employ 20 million people in 2030, up from 7.8 million in 2019.

BUSINESS TRANSFORMATION

Three out of four companies should be using cloud computing services, big data and artificial intelligence.

Too little, too late? Experts are not in agreement. “These are steps in the right direction,” says Brice Prunas, Global Equity Fund manager at Oddo BHF Asset Management. “But I’m afraid it’s not enough.” By comparison, the world’s largest chipmaker, Taiwan-based TSMC, will invest \$100 billion alone over the next three years to expand its production capacity, according to a Bloomberg article published in April.

Eric Baissus, CEO of the key French tech firm Kalray, which designs next-generation processors, is more confident. “I’m pretty optimistic. Europe has made tremendous progress in recent years, especially in terms of funding. And people are more aware now. If we believe in ourselves, we have real reasons to stay hopeful.”

Although Europe is coming from far behind, it is not starting from scratch. As we highlight in our report, the Old Continent features some digital superstars, such as the Dutch company Adyen (payment services), Sweden’s Spotify (music streaming), German firm Zalando (e-commerce), Poland’s Allegro (e-commerce) and the British delivery company Deliveroo (see company profiles on p. 50 to 58), which could benefit from the European recovery plan to grow.

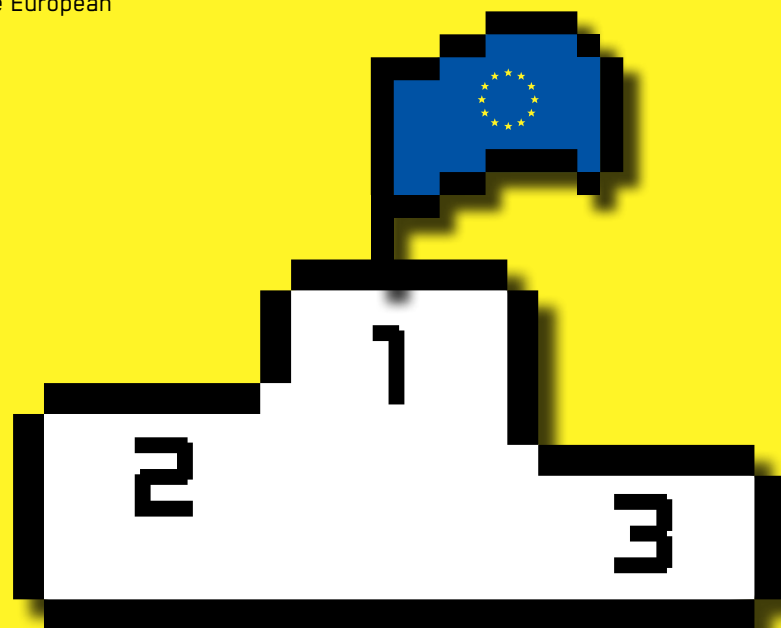
In a sector that is less visible to consumers, “Europe, and Germany in particular, also has core competencies in the industrial digital economy,” says Dimitri Kallianiotis, a technology investment expert at Union Bancaire Privée (UBP). Europe is actually a leader in this field of developing smart factories and automating industrial processes (Industry 4.0), with flagships such as the Swiss ABB, France’s Dassault Systèmes, the Swedish firm Hexagon and Germany’s SAP, Bosch and Nemetschek. However, the digitalisation of factories is expected to pick up with the deployment of 5G infrastructures, a field also dominated by Europe with Finland’s Nokia and Sweden’s Ericsson.

“Europe has missed out on the first digital revolutions”

Eric Baissus, CEO of Kalray

“We must remain cautious about 5G infrastructure,” says Kallianiotis of UBP. “It is true that Nokia and Ericsson dominate the global market due to their skills, but also due to a combination of circumstances. If the US had not torpedoed Huawei, these two companies wouldn’t be where they are today.”

But Europe is looking further ahead. To get back into the game, it is focusing on disruptive technologies known as “deep tech” (see article on p. 46). For example, it plans to develop a first quantum computer by 2025, to edge out on the forefront of quantum capabilities by 2030. “We are entering a new era of innovation, in which European companies can make their mark,” says Jack Neele, head of the Global Consumer Trends Equities fund at Robeco. Eric Baissus agrees. “Europe has missed out on the first digital revolutions,” Kalray’s CEO says. “But as far as deep tech is concerned, the battle is not lost and we are well positioned on the starting line.” ▲



IS THE UNION TOO SOFT?

Faced with the economic interventionism of large nations, the European Union appears vulnerable. The story of a decline.

BY BERTRAND BEAUTÉ

“Europe is a continent, not a country,” says Jack Neele, head of the Global Consumer Trends Equities fund at Robeco. “It encompasses several languages and as many cultures, to the point that a service that is successful in Germany, for example, is not sure to be successful in France or Spain. Conversely, American or Chinese companies benefit from a large local market. This strength gives them an advantage when it comes to exporting abroad.”

And the common market has come nowhere near solving the problem. “The EU is not a nation. It’s an international organisation made up of 27 countries that are trying to reach agreement,” says Cyrille Dalmont of the Thomas More Institute, a conservative think tank. “And like any international organisation, its main function is to develop standards that are binding for all countries that have ratified its treaties. But that overabundance of standards makes it difficult for a European GAFAM to emerge.”

A great defender of free trade, European law is based on principles

of fair treatment between companies (prohibiting subsidies), non-discrimination (opening access to the European market to all foreign organisations) and antitrust rules that prevent the formation of European giants. “European law is not extra-territorial. That means companies from outside the EU do not have to comply with its legislation in their home countries, which therefore favours foreign operators,” Cyrille Dalmont continues, “especially since China and the United States use all the tricks they have at their disposal to assert their domination.”

“European law favours foreign operators”

Cyrille Dalmont,
associate researcher at
the Thomas More Institute

By blocking Amazon, Uber and Google in China, Beijing has fuelled the emergence of BATX (Baidu, Alibaba, Tencent, Xiaomi). Meanwhile, the

United States does not hesitate to support its national big shots, either by putting up hurdles for foreign players, for example banning Huawei, or via public funds. “GAFAM and BATX all have orders from their home governments, such as Microsoft which signed a \$22 billion contract with the US Army in April,” says Dalmont. These practices would be difficult, if not impossible, to introduce in the EU, because of antitrust rules. “Europe has been very naive,” says Eric Baissus, CEO of Kalray. “It has long looked the other way, rather than recognise that China is a closed market, and that the United States is somewhat as well.”

But things seem to be changing. “European competition law was designed to favour the consumer, rather than encourage the formation of national or continental champions,” points out Thomas Coudry, an analyst at Bryan, Garnier & Co. “Nevertheless, this doctrine is evolving.” This is evidenced in the interventionist policies announced by the EU last autumn to support two “key technologies”, i.e., batteries and semiconductors. Other programmes are expected to follow. ▲

THE UNITED STATES, BY FAR THE NUMBER 1

Lagging behind, the Old Continent currently has no world tech champion. Europe must act in order to reduce its dependence on the American and Asian giants.

BY STANISLAS CAVALIER

THE UNITED STATES

TOP 10 TECHNOLOGY COMPANIES BY REGION (capitalisation in billions of dollars, May 2021)

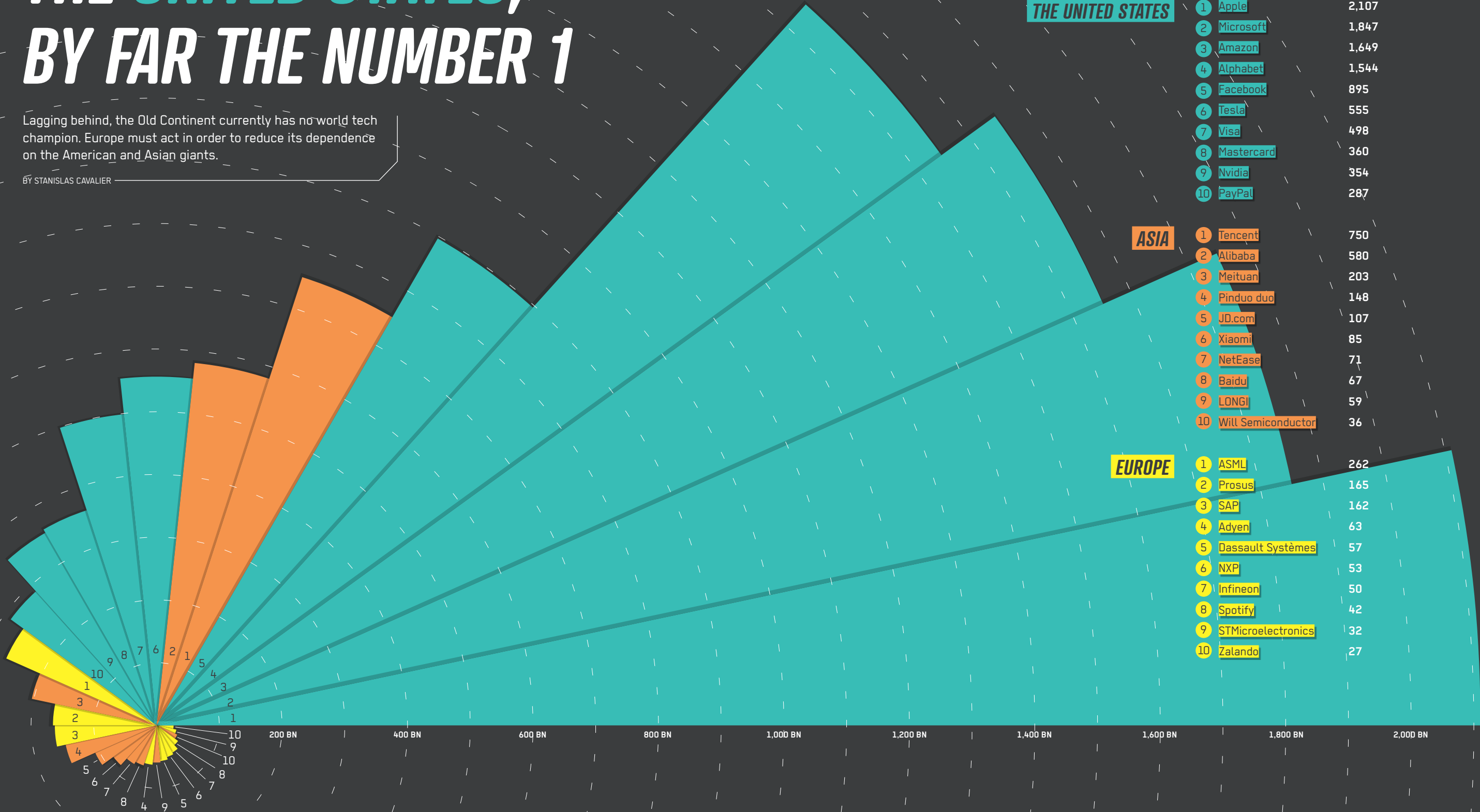
1	Apple	2,107
2	Microsoft	1,847
3	Amazon	1,649
4	Alphabet	1,544
5	Facebook	895
6	Tesla	555
7	Visa	498
8	Mastercard	360
9	Nvidia	354
10	PayPal	287

ASIA

1	Tencent	750
2	Alibaba	580
3	Meituan	203
4	Pinduoduo	148
5	JD.com	107
6	Xiaomi	85
7	NetEase	71
8	Baidu	67
9	LONGi	59
10	Will Semiconductor	36

EUROPE

1	ASML	262
2	Prosus	165
3	SAP	162
4	Adyen	63
5	Dassault Systèmes	57
6	NXP	53
7	Infineon	50
8	Spotify	42
9	STMicroelectronics	32
10	Zalando	27



Alexandre Pauchard, the new CEO of CSEM (Swiss Centre for Electronics and Microengineering), shares his perspective on the Old Continent's weaknesses in digital technology, while being optimistic about the future.

BY BERTRAND BEAUTÉ

INTERVIEW

"EUROPE CAN CATCH UP"

AN ECLECTIC AND INTERNATIONAL PROFILE

On 18 January, Alexandre Pauchard, age 50, succeeded Mario El-Khoury at the helm of CSEM. Before joining CSEM, this Fribourg-native spent 10 years as head of R&D at Bobst, the Swiss machine builder for the packaging industry. Pauchard holds a degree in physics from ETH Zurich and a doctorate in microtechnology from EPFL. In addition, he worked as CTO for a Silicon Valley startup specialised in optical components, then at ID Quantique in quantum cryptography and at Synova in laser cutting. He also worked as a consultant for six years with the Californian firm Intel.

It was high time. For too long, most of *Swissquote Magazine's* interviews were held by video conference, as the traditional out-of-office interviews were replaced by discussions led on Zoom, Microsoft Teams and Google Meet. The episode, in itself anecdotal, exposed a more alarming underlying issue: Europe's almost total dependence on foreign digital solutions.

It was exactly to discuss this issue that we had the pleasure of going to Neuchâtel to meet Alexandre Pauchard, the new CEO of CSEM (Swiss Centre for Electronics and Microengineering). Bobst's former R&D director takes an uncompromising look at Europe's current tech situation, while hoping for a recovery. Find out more in this interview.

The pandemic has accelerated the digital transformation of society. But most digital services are provided by US companies. Why are there no European players to compete with GAFAM (Google, Apple, Facebook, Amazon, Microsoft)?

Europe is not a digital desert. We do have some very good success stories, such as the e-commerce platforms Zalando and Asos, or the music streaming service Spotify. In the field of business software, we also have world leaders such as SAP, Sage and Dassault Systèmes (ed. note: see company profiles on p. 50 to 58).

But we clearly trail behind the Americans. Not surprisingly, as the US has dominated the digital sector since computing was born. Computer chips were created in Silicon Valley. Microsoft and Apple were pioneers in operating systems and office software, and then they made the transition to the cloud. As for search engines, online commerce or social networks, they

also emerged in the United States with Altavista (acquired by Yahoo!), Google, Amazon, eBay and Facebook. In short, American firms have been pioneers in all fields and are now massively reaping the benefits.

"Europe generates a lot of promising startups. However, the most interesting ones are frequently bought by big foreign players"

But similar services have been created in Europe. Why haven't they succeeded in breaking through internationally?

Europe generates a lot of promising startups, often resulting from research. However, the most interesting ones are frequently bought by big foreign players. Skype, for example, was founded in Europe, before being acquired in 2011 by Microsoft for \$8.5 billion. That's what we call the gravitational effect: the big firms get bigger and bigger because they have immense resources to absorb technologies developed by others.

In the field of digital services, US giants also benefit from a snowball effect. These companies feed off the data they collect. The companies that started early have a competitive advantage that increases with time: the more users you have, the more data you have, the more you have to feed your algorithms, and therefore to create new services. That in turn attracts even more users who generate more data.

Finally, in the software sector, there is also a phenomenon of captivity: once installed in an ecosystem, it is difficult for users to change their



CSEM's
headquarters
in Neuchâtel.

CSEM

environment. This high barrier reinforces the status quo and prevents the emergence of new players.

Despite this, China, unlike Europe, has been able to create its own heavyweights...

Beijing has taken an extremely interventionist approach, especially with the Great Firewall (ed. note: an Internet censorship system, named after the Great Wall of China, which bans access to certain foreign content), thereby blocking GAFAM's access to the Chinese market. This strategy has protected the emergence of local solutions, and then the international development of BATX (Baidu, Alibaba, Tencent and Xiaomi). As in other areas, China has been able to protect its long-term interests.

How is Switzerland positioned?

Thanks to its excellent skills, Switzerland is participating in the development of America's tech giants. For example, IBM, Google, Oracle and Microsoft have very important research centres in our country. In addition, an entire ecosystem of local software companies exists in Switzerland, with companies such as Doodle, Nextthink,

Mindmaze, Netguardians and GetYourGuide, to name just a few.

What will it take for these Swiss companies to grow?

To do better, Switzerland needs to strengthen access to venture capital for companies in the scale-up phase. Even though startups can more easily access venture capital than they could 15 years ago, it is still very difficult in Switzerland and more generally in Europe to raise funds between 10 and 100 million Swiss francs to enable startups to grow.

"Europe must react swiftly"

The current shortage of electronic chips has also highlighted Europe's dependence on the key semiconductor sector... What role does Europe play in this arena?

Not enough of one. Europe represents about 10% of the world's production of electronic chips. Not only is it lagging behind, but the gap is widening every year. Today, the most efficient factories

for producing chips in volume are all in Asia: Taiwan, South Korea, China and Japan. Taiwan's TSMC alone has 56% of the global market for foundries that produce semiconductors for third parties, ahead of Samsung at 18%.

Even the United States is now lagging behind. Its market share has fallen from 27% in 1990 to 12% today, according to the Semiconductor Industry Association (SIA). Despite Silicon Valley being the birthplace of the industry, Washington must now invest heavily to catch up. Joe Biden has announced that he wants to invest \$50 billion in US factories to manufacture semiconductors. Europe must also react swiftly to avoid being left out of this key growth driver in our increasingly digital world.

At the end of March, the European Commission announced its plans to invest in stepping up semiconductor production on the Old Continent, by developing an "Airbus of chips" to ensure its digital sovereignty. Is that idealistic?

We absolutely need to create an Airbus of chips, because semicon-

ductors will fuel future growth. Europe seems to have become aware of this necessity following concerns about the supply of electronic components. The shortage shows how important it is to maintain local production, as is the case in Switzerland with EM Marin, a subsidiary of the Swatch Group.

The Brussels plan aims to increase Europe's share of the semiconductor market from 10% to 20% of global production by 2030. This is a step in the right direction. But we must be careful: success is not always the consequence of investment. The know-how involved in such cutting-edge technology must be built over time: an entire ecosystem must be established, from production plants to customers, including subcontractors and student training.

If Europe's announcements are followed up with action, and if these efforts continue over the long term, I'm still optimistic. We can reverse the trend and catch up within 10 to 15 years.

To achieve that, the EU is also trying to convince Intel and TSMC to build factories in Europe. Isn't it counter-productive to call on foreign companies when you're trying to build your own sovereignty?

It's pragmatic. These firms are where the expertise is. So it's worth it to bring them here, so they can create highly skilled jobs, which will develop opportunities for students who want to get into these fields. To be honest, I'm not sure that Europe can reverse the trend without these big companies. The United States knows how it works. In June 2020, it convinced the Taiwanese company TSMC to invest \$12 billion to build a factory in Phoenix, which will create 13,000 high value-added jobs.

CSEM's mission is to transfer innovation from research to the industrial sector and especially

to help companies in their digital transition. But isn't CSEM itself lagging behind in the digital sector?

Not at all! CSEM is renowned worldwide, especially for its Bluetooth Low Energy (BLE) chips, which are used in wireless headsets. Many companies, including Fujitsu, are asking us for this expertise. Another example: in machine learning, a CSEM spin-off called ViDi Systems was acquired in 2017 by Cognex, the world leader in machine vision. It's a good sign when big names like Fujitsu and Cognex are interested in you. It means you're on the cutting edge. That said, digital technology is a vast industry. CSEM cannot cover all digital fields. For example, we are not going to start developing apps for iPhones. We try to focus on our strengths.

What are those strengths?

CSEM focuses on three sectors: precision micro-manufacturing, which is its core expertise; renewable energy, with internationally recognised know-how; and digitalisation. In digitalisation, we excel in miniaturisation, precision and low-energy use. These are key aspects in certain digital applications, such as the Internet of Things, Industry 4.0,

quantum technologies and energy management.

What concrete applications has CSEM developed in digital technology?

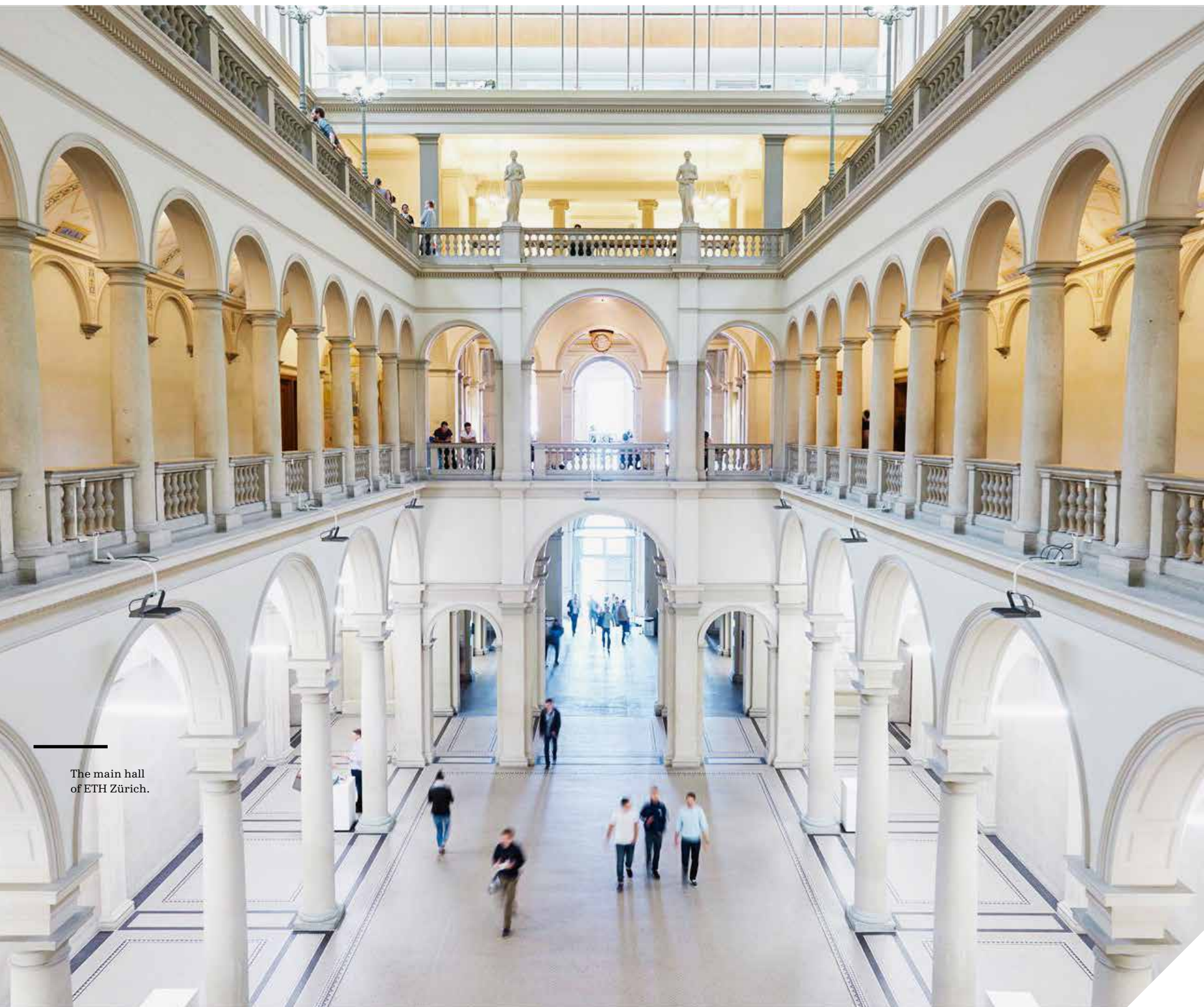
We are highly active in the digital industry. For example, the Zurich-based company Ava, an offshoot of CSEM, has launched a fertility monitoring bracelet developed in collaboration with the Centre. All data is transmitted to a smartphone via Bluetooth. An application can then visualise the best time to try to conceive a child. This startup has recently made news by showing that its bracelet can also track COVID by detecting the infection in patients two days before the first symptoms appear.

Still in the medical field, startups Aktiia and Biospectal have launched wearable bracelets that measure blood pressure. Compared to other tools already on the market, all these products developed in collaboration with CSEM stand out in that they are medically validated. They are not gadgets like those found on smartwatches and smartphones. These medical devices are currently attracting keen interest. ▲

CSEM, BRINGING RESEARCH AND INDUSTRY TOGETHER

With locations in Basel, Zurich, Graubünden, Central Switzerland and Neuchâtel, CSEM (Swiss Centre for Electronics and Microengineering) was created in 1984 from the merger of three separate entities: the Centre Electronique Horloger (CEH), the Laboratoire Suisse de Recherches Horlogères (LSRH) and the Swiss Foundation for Research in Microtechnology (FSRM). The purpose of the Centre is to serve as a bridge between research and industry. In addition to watchmaking, its core field, CSEM has gained expertise in numerous high-tech fields such as photovoltaics (the institution works with Meyer Burger, among others), medical technology,

life sciences, space, automation, semiconductors and transportation. Among its achievements, CSEM developed the first mouse with an optical reader, which was later commercialised by Logitech. The Centre is a non-profit organisation and employs nearly 540 people. Its budget totalled 89.2 million Swiss francs in 2020, with 42% of the funds coming from industrial projects and Innosuisse funding, and the rest from public contributions and research funds. Last year, CSEM collaborated with 225 companies. For the next few years, Alexandre Pauchard's objectives are to support CSEM's growth, accelerate its digital transformation and raise its profile.



The main hall
of ETH Zürich.

ETH ZÜRICH

CAN DEEP TECH COMPANIES RESCUE EUROPE?

Europe is in a strong position to develop the digital technologies of the future. But it will have to protect the startups that create them.

BY BERTRAND BEAUTÉ

Recall January 2020: at the time, few people knew about BioNTech. Not surprisingly. This German company, founded in 2008, had never brought a product to market and for the most part skewed off the radar outside scientific circles. A year and a half later, the company is raking in billions of dollars. With its partner Pfizer, it is reaping the rewards of the phenomenal success of its messenger RNA vaccine against COVID-19. In business circles, BioNTech is the perfect example of a “deep tech” company.

Deep technology is an umbrella term for startups focused on scientific development. They draw on disruptive innovation requiring a prolonged R&D phase before reaching the market. But the technology they develop could eventually revolutionise the way we do things. For example, before the pandemic,

messenger RNA technology had never received unanimous approval and remained only a concept. But now mRNA could turn the tables for many therapeutic applications (see *Swissquote Magazine*, March 2021).

Although deep tech firms are active in various industries (healthcare, energy, materials, etc.), it seems to hold the greatest promise in digital technology through artificial intelligence, quantum computers, drones and virtual reality. Experts speculate that, following the internet and cloud computing, these technologies could bring about a third tech revolution. “We are entering a new era of innovation,” says Jack Neele, head of the Global Consumer Trends Equities Fund at Robeco. Enjoying a key position in these areas, Europe could re-route this pivotal moment to its advantage and make up for its all-round lag in digital technology. ▶

The Old Continent is home to a range of deep tech companies. Some are already listed on the stock exchange, such as Kalray in semiconductors, Darktrace in artificial intelligence, and UiPath and Blue Prism in robotic process automation (see company profiles on p. 50 to 58).

These companies have prospered because deep tech, by definition a high-risk undertaking, no longer deters investors. “Ten years ago, a company like ours never would have found funding in Europe. The word semiconductor was taboo among investors,” says Eric Baissus, CEO of Kalray. But attitudes have changed over the last two or three years.”

Disruptive innovation is now attracting European investors. This is the main conclusion of “2021: the year of Deep Tech”, a report published in January by Dealroom.co, a data platform on startup ecosystems, and specialised media website Sifted. The study shows that the amounts invested by venture capitalists in European deep tech companies has exploded in the past 10 years, reaching an estimated €9.4 billion in 2020. That sum is well below funding raised in the United States last year (€33 billion) but exceeds investment in China (€6.1 billion), barring government grants.

The “2021: the year of Deep Tech” report also theorises that Europe’s main strength lies in its world-class academic research. The fact is, deep tech often starts in laboratories. For example, BioNTech is an offshoot of the University of Mainz; Darktrace established at the University of Cambridge; and Kalray was spun off from France’s Atomic Energy Commission (Commissariat à l’Énergie Atomique). When it comes to technology, engineering and mathematics, Europe is at the forefront. The Times Higher Education 2021 (THE) World University Rankings placed seven European universities among the top 20

institutions worldwide in computer science (see infographic on p. 49). Dealroom.co points out that 35% of German students study science, with 28% in France and 26% in the United Kingdom. These rates by far outpace the United States (18%).

“Cities like Berlin, London and Amsterdam have managed to build complete ecosystems that are conducive to developing disruptive startups”

Jack Neele, head of Global Consumer Trends Equities Fund at Robeco

Twenty years ago, Silicon Valley was the place to be if you wanted to innovate, because the entire ecosystem was there – the technology, the money, the research,” says Jack Neele from Robeco. “Today, that’s not so much the case. The internet has decentralised innovation and new digital services are cropping up all around the world, especially in Europe. Cities like Berlin, London and Amsterdam have managed to build complete ecosystems that are conducive to developing disruptive startups.”

Now we have to protect them. “The top European companies are too often bought by foreign firms or decide on their own initiative to relocate to the United States,” says Dimitri Kallianiotis of UBP. For example, world travel booking leader Booking.com, founded in the Netherlands in 1996, was acquired by the US group Priceline in 2005. Skype had a similar fate. The internet phone service created in Luxembourg in 2003 was swallowed by eBay in 2005 and then acquired by Microsoft in 2011. Romania-based deep tech firm UiPath opted to move its

headquarters to the United States before going public on the New York Stock Exchange in April 2021.

The “State of European Tech 2020” report estimates that 14% of European unicorns – unlisted companies valued at more than \$1 billion – are bought by US companies and 8% by Chinese firms (see infographic on p. 49). These takeovers weaken European leadership. To break the cycle, in March 35 European unicorns, including France’s Blablacar, Italy’s FacilityLive and Spain’s Cabify, pushed for the creation of a €100 billion European fund to support high-potential startups. This European Sovereign Tech Fund, currently under review at the European Commission (EC), would channel public and private cash into long-term equity investments.

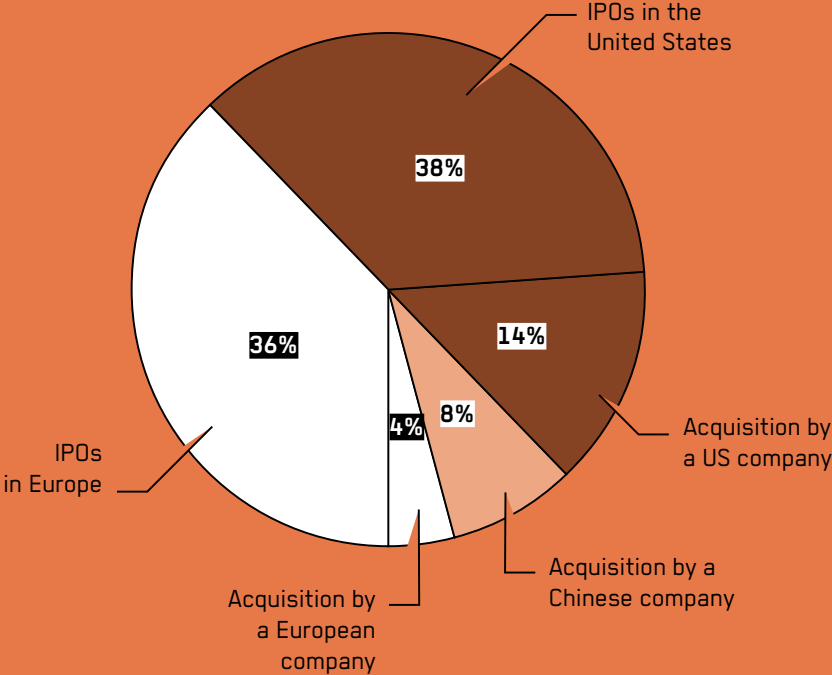
For now, the EC has already deployed a first fund. The EIC Fund is a vehicle for investing directly in startups working on breakthrough technologies. An initial €178 million in equity investments went to 42 startups in January of this year.

But Cyrille Dalmont, associate researcher at Thomas Moore Institute, believes that is not enough. “Europe needs to protect its companies the way China and the United States do. When Washington is not happy with an acquisition, there is no hesitation to block the deal. For example, in 2018 Donald Trump issued a presidential decree to prevent the takeover of the US microprocessor giant Qualcomm by its then-Singaporean competitor Broadcom.”

Europe seems to have taken note and is determined to defend itself. The Digital Market Act (DMA), introduced last December and set to enter into force in a year at best, will require foreign digital tech giants to inform the EC of any takeover of a European firm with a high value but low revenue. That will give the EU grounds to block acquisitions if it wants. ▲

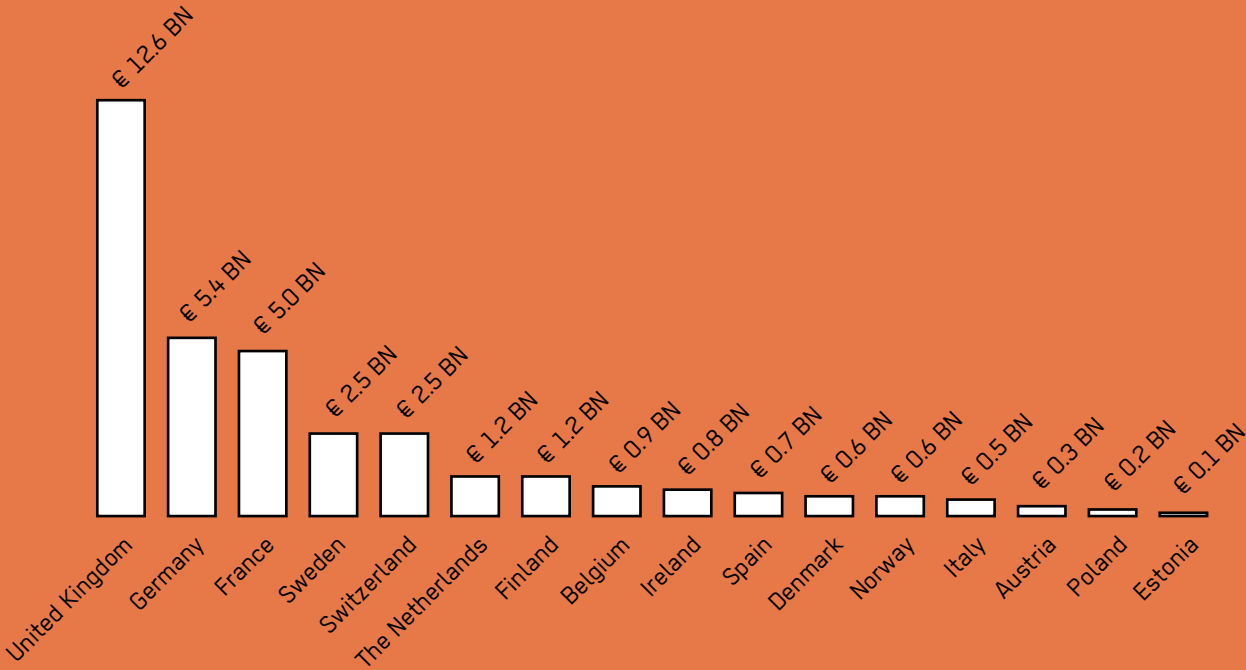
EUROPEAN TECH LOOKING TO STAND ON ITS OWN

Nearly 20% of European unicorns are eventually bought by foreign companies.



BROAD DISPARITY

The United Kingdom clearly dominates the deep tech industry in Europe, with €12.6 billion invested in UK deep tech startups between 2015 and 2020.



Sources: Times Higher Education 2021 / The State of European Tech 2020 (Atomico) / 2021: the year of Deep Tech (Dealroom.co et Sifted)

THE TOP EUROPEAN UNIVERSITIES IN COMPUTER SCIENCE*

1. University of Oxford (UK)
2. Stanford University (US)
3. Massachusetts Institute of Technology (US)
4. ETH Zurich (CH)
5. Carnegie Mellon University (US)
6. University of Cambridge (UK)
7. Harvard University (US)
8. National University of Singapore (SG)
9. University of California, Berkeley (US)
10. Imperial College London (UK)
11. Princeton University (US)
12. Tsinghua University (CN)
13. Georgia Institute of Technology (US)
14. Cornell University (US)
15. Technical University of Munich (DE)
16. University of California (US)
17. EPFL (CH)
18. Nanyang Technological University (SG)
19. UCL (UK)
20. University of Illinois (US)

* According to the Times Higher Education World University Rankings 2021, Computer Science category, which ranks 827 universities worldwide based on different criteria such as research quality, peer judgment and attractiveness.

25 high-potential European startups

In these days when digital technology is taking over the world, Europe can no longer depend on turnkey services provided by the United States. And its companies are ready to step up to the challenge. Here is our selection.

BY BERTRAND BEAUTÉ

STREAMWIDE

WhatsApp, but secure

Inspired by WhatsApp, in 2013 Streamwide launched a solution similar to the US instant messaging service, but designed for and emphasising data security. The French company provides two flagship apps: the ultra-secure “team on mission”, used for example by the GIGN (an elite French military unit), and “team on the run”, aimed at more traditional customers such as EDF. With the tailwinds of the pandemic, the company’s share price has risen by more than 200% in one and a half years (between January 2020 and June 2021).

Registered office: Paris (FR) / Workforce: 190 /

Revenue (2020): €13.9 million

— ALSTW

KALRAY

The French touch in deep tech

Kalray, a small company in the semiconductor world, dreams of becoming the future Nvidia (see *Swissquote Magazine*, July 2020). To make it there, the French tech leader is working towards the next revolution in the sector: embedded artificial intelligence. What does that mean? Artificial intelligence is currently hosted in data centres, but in the future it will be stored directly in objects, including autonomous cars. This new era known as “edge computing” requires purpose-designed electronic chips. After coming out with several prototypes, Kalray is launching mass production of its edge computing processor this year. The goal is to sell 100,000 of them in the next two years, which should generate sales of €100 million by 2022. Along the way, Kalray will be competing with industry leader Nvidia, but also other star players including the UK company Graphcore.

Registered office: Montbonnot-Saint-Martin (FR) /

Workforce: 100 / Revenue (2020): €1 million

— ALKAL

DELIVERY HERO

The Berlin-based delivery service

Delivery Hero has benefited significantly from the pandemic. The meal delivery specialist doubled its revenue in 2020 (up 95%) to €2.8 billion. Compared to its competitors (Uber Eats, Deliveroo, TakeAway), the company is unique in its firm positioning in emerging markets, with 2020 revenues of €257.4 million in South America, €386.3 million in the Middle East, and €667.7 million in Asia. The German delivery company prefers to leave mature markets where competition is too fierce. That is why Delivery Hero has moved out of Germany (its home country), Italy, the Netherlands, France and Australia. This strategy appeals to analysts, with most recommending buying shares. However, Delivery Hero has never been profitable since its creation in 2011, with a net loss in 2020 of €1.4 billion.

Registered office: Berlin (DE) / Workforce: 35,528 /

Revenue (2020): €2.471 billion

— DHER

ALLEGRO

The Polish Amazon

It was the event of the year, if not the decade, for Polish investors. On 12 October 2020, online retail specialist Allegro debuted on the Warsaw Stock Exchange, immediately seizing the top spot on the WIG20, the index of the nation’s 20 largest capitalisations. Founded in 1999 in a cellar in the western Polish city of Poznań, Allegro now controls nearly 50% of online commerce in a country of 40 million people. Although the firm’s revenue is paltry compared to that of US or Chinese giants (PLN 3.997 trillion in 2020, or €900 million), it is impressive for a company active in only one country. But beware! After years of vacillating, Amazon finally hit Poland in March 2021. The new competition may affect Allegro’s unbridled growth (54.2% in 2020).

Registered office: Poznań (PL) / Workforce: 3,150 /

Revenue (2020): €898 million

— ALE

LOGITECH

Forty and fabulous

Logitech is probably one of the firms to have benefited the most from the health crisis. Turning 40 this year, the Swiss computer peripheral manufacturer saw its revenue soar 74% for its financial year ended 31 March 2021. This performance is a result of the pandemic, as consumers worked and played more at home and bought hardware accordingly. "Fiscal Year 2021 was our best year ever," Bracken Darrell, the company's US CEO, proudly stated. And the trend is expected to continue. Analysts believe that the growth of remote working and the advent of e-sports, a field where Logitech enjoys strong positioning, should continue long after the crisis.

Registered office: Lausanne (CH) / Workforce: 6,000 / Revenue (2021): \$5.25 billion

— LOGN

Assembling the latest generation EUV machines from the giant ASML takes 4-5 months. Each unit costs \$ 175 million.



ASML

The invisible giant

Car manufacturers Audi, Renault and Stellantis all announced temporary factory shutdowns in 2021 due to the semiconductor shortage. This crisis highlights European industry's dependence on Taiwanese foundries (TSMC and UMC). But behind these giants is another giant, and it is European: ASML. The little known Dutch company is the biggest success story in European tech. In comparison, ASML has a higher valuation on the stock exchange than Volkswagen, Siemens or Novartis. The company is the world's only manufacturer of EUV

HEXAGON

Driving Industry 4.0

"Data is in Hexagon's DNA." Hexagon's sleek website immediately sets the tone. The Swedish company is a data expert. But not just any data, industry data. The firm delivers a range of sensors and software to drive factory automation (Industry 4.0), but also the development of smart cities. On top of these core businesses, Hexagon has in recent years added machine learning and artificial intelligence. For example, the company works for manufacturers Daimler, Volkswagen and PSA (now Stellantis). Most analysts recommend holding shares.

Registered office: Stockholm (SE) / Workforce: 20,000 / Revenue (2020): €3.764 billion

— HEXA-B

SILTRONIC

The wafer expert

Silicon wafers are the base material required to make any electronic chip. Only a handful of suppliers manufacture these wafers: the Japanese companies Shin-Etsu and Sumco, the Taiwanese group GlobalWafers, the Korean SK Siltron and the German Siltronic. Together, the five of them control 90% of the market, estimated at \$11.2 billion, with 13% for Siltronic. Analysts recommend holding its shares.

Registered office: Munich (DE) / Workforce: 3,800 / Revenue (2020): €1.207 billion

— WAF

ZALANDO

The German model

Zalando is going shopping in Switzerland. Last October, the German online fashion giant announced the acquisition of the Zurich-based startup Fision, which specialises in virtual fitting rooms. This will expand the features available on the platform, which experienced a banner year in 2020 with revenue up 23% to €8 billion. Fuelled by the pandemic, Zalando is still thinking big. The company hopes to triple its business volume to €30 billion by 2025, aiming to capture 10% of the European online fashion market, versus its current share of 2.4%. To do that, the German company will enter six new markets this year (Croatia, Estonia, Latvia, Lithuania, Slovakia, Slovenia), and two more in 2022 (Hungary and Romania). And to offset the growth of the Lithuanian unicorn Vinted (not listed on the stock exchange), Zalando launched a second-hand platform in late 2020. Most analysts recommend buying shares.

Registered office: Berlin (DE) / Workforce: 14,194 / Revenue (2020): €7.982 billion

— ZAL

DARKTRACE

AI-powered cybersecurity

Darktrace is a pioneer in applying artificial intelligence to cybersecurity. This particularly innovative system is designed to stop unknown computer attacks autonomously, unlike antivirus software and other traditional firewalls that are built based on past events. Its potential convinced Microsoft. In May, the US tech giant signed a partnership with Darktrace to secure its cloud services, including Microsoft 365 and Azure. The firm went public on 30 April, 2021. Its shares are trading at around €350, 40% higher than its IPO price of €250.

Registered office: Cambridge (UK) / Workforce: 1,500 / Revenue (2020): \$199.1 million

— DARK



Poppy Gustafsson, Darktrace co-founder and CEO

BLUE PRISM

The RPA pioneer

Will humans soon be relieved of the most repetitive computing tasks? That is what UK deep tech company Blue Prism has set out to do. Founded in 2001, it has developed a technology called Robotic Process Automation (RPA), a term that has since been embraced by the entire sector. RPA software identifies the most repetitive human tasks and then reproduces them by itself – for example in finance, insurance and services. Big names such as Pfizer, Coca-Cola or Sony use Blue Prism software.

Still in its infancy, the RPA market is expected to reach \$13.74 billion by 2028, according to a report by the California firm Grand View Research published last April, representing growth of 32.8% per year over the period. Most analysts recommend buying shares in Blue Prism, an industry pioneer. But to impose itself the young startup will have to face other startups: the Californian Automation Anywhere, the French Contextor (bought by the German giant SAP in 2018) and especially UiPath. Founded in Romania, UiPath would have placed high in this ranking if it had not moved to the United States.

Registered office: Warrington (UK) / Workforce: 1,000 / Revenue (2020): £ 141.4 million

PRSM

SAP

The SaaS giant

In the world's top 10 cloud infrastructures, there is only one European player: the German software company SAP, which Synergy Research places at number 10, far behind the American giants Amazon Web Services, Microsoft Azure and Google Cloud. SAP is best known in cloud services for software as a service, or SaaS, a segment where it ranks fourth globally, behind the US developers Microsoft, Oracle and IBM. Most analysts recommend buying shares, which should benefit from the boom of the cloud: the European market of the sector should more than quintuple from €53 billion in 2020 to between €300 and €500 billion by 2027-2030, according to a report by KPMG published in May 2021.

Registered office: Weinheim (DE) / Workforce: 102,400 / Revenue (2020): €27.34 billion

SAP



TeamViewer's CEO Oliver Steil (left) and CFO Stefan Gaiser (right), with Joerg Rockenhaeuser (centre) of Permira fund, at TeamViewer's IPO in Frankfurt in 2019.

RALPH ORLOWSKI / REUTERS

TEAMVIEWER

The all-in-one remote working solution

The German state of Baden-Württemberg, bordering Switzerland, is known for being home to some of the biggest names in German manufacturing, such as Mercedes-Benz, Porsche and Bosch. But the region is also home to a company that one might instead imagine in Silicon Valley. Founded in 2005, TeamViewer develops features to supervise remote work, including remote support, video conferencing and industrial site monitoring. The sector took off phenomenally during the pandemic. With more than 1,880 corporate customers, the German firm saw its revenue jump 42% in 2020. TeamViewer's competitors include big names such as Zoom for video conferencing, Slack for project management and Chrome Remote Desktop (Google) for the remote desktop functionality.

Registered office: Göppingen (DE) / Workforce: 1,256 / Revenue (2020): €460 million

TMV

ADYEN



ADYEN

Rivalling PayPal

Adyen's capitalisation is more than twice that of Crédit Suisse: €57 billion. Quite impressive for a company founded in 2006. The payment systems expert is enjoying the benefits society's digital transformation, which means more payment methods: bank cards, of course, but also digital wallets (Apple Pay, WeChat Pay) or Pay by Link, a tool for sending a secure payment link by email, chat or SMS. To manage all these systems, merchants turn to so-called "omnichannel" payment specialists such as Adyen.

This Dutch star boasts a portfolio of prestigious clients including Uber, Spotify and Booking.com. Driven by the pandemic, Adyen's revenue grew 28% in 2020, to €684.2 million. Most analysts recommend holding shares. Although Adyen has a head start, the competition is tough with giants the likes of the French company Worldline, and US firms FIV and Stripe. The risk is that large customers switch to the enemy. In 2018, for example, eBay left PayPal for Adyen.

Registered office: Amsterdam (NL) / Workforce: 1,700 / Revenue (2020): €684.2 million

ADYEN

NOKIA

The patient Finnish company

The pandemic has not helped. Nokia is still struggling. The Finnish equipment manufacturer went through a difficult year in 2020, racking up losses of €2.4 billion, against a small profit of €7 million in 2019. Now, time for shock treatment. In March, Nokia announced that it would be shedding 5,000 to 10,000 jobs over the next two years. The world's third-largest 5G network is lagging behind its rivals Huawei and Ericsson. Even so, analysts recommend buying shares, which they currently consider undervalued.

Registered office: Espoo (FI) / Workforce: 92,000 / Revenue (2020): €21.9 billion

NOKIA

JUST EAT TAKEAWAY

The food delivery giant

Raging hunger? After merging with its UK competitor Just Eat in 2019, the meal delivery leader Takeaway.com bought the US service Grubhub in 2020 for \$7.3 billion. Today, the company claims to be the "world's largest online food delivery company outside China". With business fuelled by the pandemic, Just Eat Takeaway delivered 588 million orders in 2020, up 42% from 2019. Most analysts recommend buying shares.

Registered office: Amsterdam (NL) / Workforce: 9,000 / Revenue (2020): € 2.4 billion

TKWY



BLOOMBERG / GETTY

Demo of the *Cyberpunk 2077* video game at the E3 Electronic Entertainment Expo in Los Angeles, June 2019.

CD PROJEKT

The studio punk

It was a genius move. In the mid-2000s, the small publisher CD Projekt bought the rights to adapt the *The Witcher* novel series by Polish writer Andrzej Sapkowski, very popular in his country, into video games. And then? Its success went far beyond Poland's borders. Released in 2015, *The Witcher 3* sold more than 30 million copies, making CD Projekt a worthy contender against the world's big four video game companies (Ubisoft, Activision, Electronic Arts and Take-Two Interactive). Instead of further developing its game suite, CD Projekt set aside its star game – and only franchise

– to focus on a new project, *Cyberpunk 2077*. It was the most hotly awaited video game release in 2020. Many of them would be disappointed due to the many bugs on the console versions. In December, Sony even removed the blockbuster from its PlayStation Store platform. And that is a rare decision in the industry. Since then, CD Projekt's share price has lost more than 60% of its value (between December 2020 and June 2021) and analysts cannot agree on what to do next.

Registered office: Warsaw (PL) / Workforce: 1,111 / Revenue (2020): €478 million

CDR

SPOTIFY

The exception from the north

In tech, companies founded after the year 2000 valued at more than \$50 billion are referred to as "Titans". One of Europe's problems is that it has too few Titans to compete with US and Chinese tech giants. Spotify stands out as an exception in this category. In June 2020, the Swedish platform became Europe's first Titan, since joined by Adyen (see p. 55).

Although its valuation has since fallen back below the symbolic \$50 billion mark, Spotify can boast of being the world's number one music streaming service, ahead

of giants Apple Music and Amazon Music. At the end of 2020, the Swedish company counted 345 million users (up 27% in one year), far ahead of Amazon Music and its 55 million subscribers (Apple stopped reporting its number of users in 2019). The bad news comes from its financial results: last year, Spotify made a loss of €581 million, versus €186 million a year earlier. Even so, most analysts recommend buying shares.

Registered office: Stockholm (SE) / Workforce: 6,554 / Revenue (2020): €7.88 billion

SPOT



ERICSSON

The 5G leader

The setbacks experienced by Huawei, whose 5G infrastructure is banned in several countries, including the United States and the United Kingdom, are creating business for Ericsson. Several operators have left the Chinese company for the Swedish telecom equipment manufacturer, for example, Telefónica in Germany, British Telecom in the United Kingdom and Bell in Canada. As a result, Ericsson now holds 35% of the global 5G market (excluding China), far ahead of Nokia (25%) and Huawei (20%), according to Dell'Oro. Most analysts recommend buying shares.

Registered office: Stockholm (SE) / Workforce: 100,000 / Revenue (2020): €23 billion

ERIC

NEMETSCHEK

The architect from Munich

The German publisher is developing a range of 3D visualisation, modelling and animation software, covering the entire life cycle of buildings. An approach called "Building Information Modelling", or BIM, is spreading fast in the building and public works sector. BIM is used by various professionals involved in a project to share information and therefore manage costs better. Nemetschek boasts 6 million customers worldwide. Most analysts recommend buying shares as the company is expected to benefit from the post-pandemic stimulus plans.

Registered office: Munich (DE) / Workforce: 3,000 / Revenue (2020): €596.9 million

NEM

THE HUT GROUP

The beauty expert

With 10.7 million new customers in 2020, The Hut Group (THG) has been able to expand as a result of the pandemic. Specialising in online cosmetics, the UK company has become a major player in the beauty sector in just a few years. The group offers nearly 1,000 brands on its platform, including L'Occitane, Nuxe, L'Oréal and MAC, as well as its own products. To extend its range, THG buys promising small brands, including Eyeko in 2018 and Illamasqua in 2017.

Registered office: Manchester (UK) / Workforce: 7,000 / Revenue (2020): €1.61 billion

THG



Michal Salát, Threat Intelligence Director, at Avast.

AVAST

The Czech antivirus software

Some time ago, private ownership was banned in the Czech Republic. In 1988, Alwil was founded as a cooperative, which was later renamed Avast. After the fall of the Berlin Wall, the cooperative formed a company in 1991 and moved into antivirus software. The company was quite successful in its local market when the second turning point in its history took shape: in 2001, the American antivirus giant Symantec attacked the Czech market. To survive, Avast completely changed its strategy and adopted a freemium model: its antivirus software became free for individuals, and the company made money off a more complete premium version. Thanks to this visionary choice, the company nibbles away at market share worldwide. Today, Avast claims more than 435 million users, or 12.69% of the global market for Windows-based antivirus software, just behind the number one Symantec (13.16%), according to Statista. Most analysts recommend buying shares.

Registered office: Prague (CZ) / Workforce: 1,700 / Revenue (2020): \$922 million

AVST

Auto1's co-founder and CEO Christian Bertermann (centre), CFO Markus Boser (left), and co-founder Hakan Koç (right) celebrate Auto1's IPO in Frankfurt in February 2021.



AUTO1

The online car dealer

Founded in 2012, Berlin-based startup Auto1 Group bills itself as Europe's largest online used car sales platform. And for good reason: since its founding, Auto1 has experienced spectacular growth. Its revenue rose from €128.5 million in 2014 to €3.476 trillion in 2019. The platform, which buys vehicles from individuals and then resells them to professionals throughout Europe, uses artificial intelligence to dig up the best deals available. However, the firm's tremendous growth has slowed with the pandemic, leading to an 18% drop in revenue last year, to €2.8 billion. But that's not enough to turn investors away. In February 2021, it made a spectacular debut on the Frankfurt Stock Exchange. Most analysts recommend buying shares.

Registered office: Munich (DE) / Workforce: 4,165 / Revenue (2019): €2.830 billion

AG1

STMICROELECTRONICS

Apple's supplier

Tesla, Apple, or SpaceX. STMicroelectronics, the Franco-Italian chip design champion based in Geneva, flaunts an impressive array of customers. And the company is taking full advantage of the current context, marked by increased demand against the backdrop of a global semiconductor shortage. In April 2021, STMicroelectronics announced its target of reaching \$12 billion in revenue by 2021, an 18% jump compared to 2020, i.e. two years ahead of its previous plan. The forecast pleased analysts, who recommend buying shares.

Registered office: Plan-les-Quates (CH) / Workforce: 46,000 / Revenue (2020): \$10.22 billion

STM

DELIVEROO

Diversifying deliveries

Deliveroo's IPO was supposed to be one of the success stories of the year. Unfortunately, the go-to home delivery service had a troubled start on the London Stock Exchange in March, tumbling more than 25% on its first day of trading. How did that happen? New labour rules threaten its business model. Some countries, such as Spain, have adopted laws requiring delivery workers to be company employees. This is a difficult burden for a company that reported a deficit of €9.6 million in 2020. Deliveroo plans to diversify through new revenue streams. The company has partnered with retail giant Carrefour to offer delivery of consumer goods in France, Belgium, Italy and Spain. Most analysts recommend holding shares.

Registered office: London (UK) / Workforce: 2,300 / Revenue (2020): €4.1 billion

ROO

AND ALSO...

DASSAULT SYSTÈMES

French software developer for industrial applications.

DSY

ELMOS SEMICONDUCTOR

The German company supplies integrated circuits for the automotive industry.

ELG

NXP SEMICONDUCTORS

Dutch semiconductor manufacturer, the world's second-largest producer of car chips.

NXP

NFON

German leader in cloud PBX solutions.

NFN

UBISOFT

French video game developer.

UBI

TRUSTPILOT

Danish consumer review platform.

TRST

HENSOLDT

German company specialising in defence electronics.

HAG

INFINEON

World leader in auto chips, the German firm is a supplier for Tesla.

IFX

PVA TEPLA

German manufacturer in the semiconductor industry.

TPE

AMS

Austrian semiconductor company.

AMS

X-FAB SILICON FOUNDRIES

Belgian semiconductor foundry.

X-Fab

ASOS

UK e-commerce platform.

ASC

Themes Trading



A STEP AHEAD OF THE RISING PRICES

Protect your portfolio and diversify your assets.

In recent years, the consumer price index has stabilised while prices have increased. Thanks to the "Inflation Trade" Certificate (available on the SIX Swiss Exchange), Swissquote enables you to invest in assets known to perform well in inflationary environments and thus protect your portfolio.

Certificate
Inflation Trade

ISIN
CH0587306967

Symbol
INFLTQ



swissquote.com/inflation

 **Swissquote**

Grab

Local wins

A delivery man from GrabFood, a subsidiary of Grab Holdings, picks up an order in a restaurant in Jakarta, Indonesia, in April 2021.



DIMAS ARJIAN / GETTY IMAGES

The Singapore-based ride-hailing and food delivery giant has overtaken Uber in Southeast Asia with solutions designed to fit the needs of each country.

BY JULIE ZAUGG, IN HONG KONG

It could be monumental. This April, Singapore's giant Grab, aka the "Asian Uber", announced its plans to list on Wall Street in the next few months by merging with the investment fund Altimeter Growth. Expected to close by the end of July, the deal estimates the value of the company at nearly \$40 billion, making it one of the largest stock market listings ever by a Southeast Asian group.

How did the company, founded in 2011, become such a powerhouse in just a decade? It all began back at Harvard between two Malaysian students, Anthony Tan and Tan Hooi Ling. "At the time, everyone swore by Uber-like business models," recalls Frank Cespedes, the Harvard Business School professor who supervised the pair's project. "The implicit assumption was that if a company got to a market first, it would have such a competitive advantage that it could immediately expand into adjacent markets."

Unlike the US giant Uber, which applies the same formula wherever it goes, Anthony Tan believes in taking

into account the cultural diversity of Southeast Asia and chose to concentrate initially on Malaysia. With \$25,000 in funding from Harvard and a loan from his mother, he launched a ride-hailing app called MyTeksi. "He wanted to create a platform where passengers – especially women –

"This initial experience in the Malaysian market taught the company valuable lessons from the field, which later helped it expand into the rest of Southeast Asia," Cespedes says. Shortly afterwards, MyTeksi moved its headquarters to Singapore and earned the support of Japan's Softbank, which injected \$3 billion into the company in 2014.

The company's next step was growth beyond Malaysia's borders, first in the Philippines, then in Singapore, Thailand, Vietnam, Indonesia, Cambodia and Japan. Since renamed Grab, the firm has a well-oiled MO: it recruits cab drivers at airports and depots, lending them a smartphone so that they can immediately access the app.

Every time it moves into a new market, Grab adapts to local conditions. "The realization that Southeast Asia is made up of a multitude of very diverse contexts – from large, ultra-developed megacities to remote rural areas – has been key to Grab's success," says William Bao Bean, a partner from the venture capital firm SOSV. ▸

"In Indonesia's big cities, you need motorcycles instead of cars to avoid getting stuck in traffic for three hours"

Varun Mittal, emerging markets fintech leader in Southeast Asia at Ernst & Young

could find a licensed cab driver who wouldn't risk assaulting them," says Chua Kee Lock, CEO of the Singapore investment fund Vertex Holdings, which first invested \$15 million in the startup in 2013.

IN NUMBERS

25 M

The number of unique users on Grab, i.e. customers who have bought at least one service on its platform.

+42%

Expected annual increase in sales between 2021 and 2023. The company's net revenue grew 70% last year.

200 M

The number of Southeast Asia's unbanked residents who could benefit from Grab's financial services.

\$39.6 BN

The forecast valuation of the company when it is listed on the New York Stock Exchange in July.



Founded in 2011, Grab operates in Singapore, Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Thailand and Vietnam. Here, a Grab delivery man in Hanoi, Vietnam, in May 2021.

“In Indonesia’s big cities, you need motorcycles instead of cars to avoid getting stuck in traffic for three hours,” says Varun Mittal, emerging markets fintech leader in Southeast Asia at Ernst & Young. “And if we had chosen only to accept card payments, we would have cut ourselves off from nearly 75% of the market.” Grab therefore allowed its customers to pay in cash and relied on *ojek*, those motorcycle taxis that slalom between cars in Indonesia and Vietnam.

A new milestone was reached in March 2018, when Uber gave up in Southeast Asia and sold its operations to Grab, with which it had been competing since the startup was created. “This shift in fortune gave Grab technologies and know-how beyond its historical on-demand taxi-focused business model,” notes Robson Lee from Gibson Dunn, an expert in Southeast Asian industrial operations.

The takeover of UberEats then gave Grab the opportunity to launch into

food delivery. Its customers can also have their groceries delivered and subscribe to a private concierge system, which allows it to optimise the activity rate of its drivers: 59% of the motorcycles working for Grab cover both deliveries and passenger transport.

BANKING LICENCES

Its most recent foray is into financial services. The GrabPay mobile wallet, launched in late 2016, can now be used to make purchases, even out-

side the Grab ecosystem, similar to China’s WeChat Pay and Alipay. The company has also developed loan and insurance solutions. In December 2020, Grab was one of the four companies awarded a digital banking licence in Singapore.

“Grab created an original model of selling its financial products first to the restaurants and drivers in its network, that were struggling to get this type of service from banks,” Chua Kee Lock says. Fees are automatically deducted from their earnings on the app.

Although it is now considered to be Southeast Asia’s leading superapp, Grab is not without competitors. “China’s ride-hailing market is dominated by Didi Chuxing, and in Indonesia, Gojek is a strong competitor,” Robson Lee says. “Then there are local delivery specialists and taxi companies.” In Vietnam and Thailand, Grab has had run-ins with some of these local operations, forcing it to suspend some of its services. By expanding its delivery and financial services, the company also risks treading on the turf of e-commerce groups Shopee and Lazada.

“Southeast Asia today looks much like China did 15 years ago”

William Bao Bean, a partner from the venture capital firm SOSV

NEW ALIBABA IN THE MAKING

Varun Mittal, however, believes there will be room for everyone. As he points out, “Southeast Asia is home to 670 million people, i.e., half of China’s population. Seven out of 10 people still don’t have access to financial services.” With a young population of smartphone users, the region also has many underserved



Grab’s Singapore offices where the company moved its headquarters in 2014.

areas in terms of transportation and food delivery, especially in secondary cities in Indonesia, the Philippines and Vietnam, he says.

Food delivery sales in Southeast Asia are expected to double to \$21 billion by 2025, while on-demand taxi revenue should triple in value to \$16 bil-

lion. Bain & Co forecasts that the digital economy as a whole will grow three times in size to \$309 billion. “Southeast Asia today looks much like China did 15 years ago,” says William Bao Bean. If Grab plays its cards right, it has the potential to become the WeChat or Alibaba of the continent’s southern region. ▲

ANALYST ADVICE

“THE ON-DEMAND TAXI SERVICE IS ALREADY PROFITABLE”

Grab expects its sales to triple from \$12.5 billion in 2020 to \$34 billion within the next three years. But the company is still generating losses, totalling \$800 million last year. Both Moody’s and S&P expect that to continue until at least 2023. However, some segments are already profitable. “The on-demand taxi service broke even last year, and food delivery, which saw revenues sky-rocket during the pandemic, is expected to do so by the end of the year,” says Chua Kee Lock, CEO of the Singapore investment fund Vertex Holdings. He believes that the \$4.5 billion raised through the IPO should also enable Grab to expand its financial services, a segment with the highest potential for profitability. — GRAB

SWISS STARTUPS IN THIS EDITION

BY GRÉGOIRE NICOLET

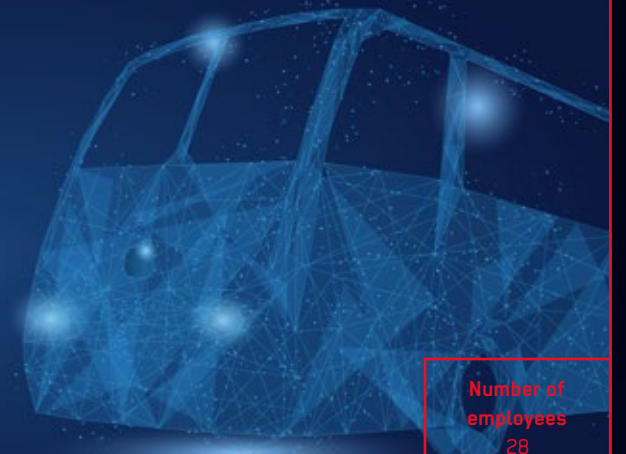


MYCAMPER

AIRBNB FOR MOTORHOMES

Camping has become tremendously popular in this period of reduced mobility, and that popularity is not about to wane. MyCamper.ch, a platform that lets private individuals rent out their leisure vehicle, is one of the startups benefiting from it the most. This success was confirmed as the website slid into 51st position in the *Financial Times* ranking of Europe's 1,000 fastest growing companies (March 2021).

Its founder and CEO Michele Matt is optimistic about the post-pandemic outlook: "Camping meets people's needs for local, sustainable travel. This market already had annual growth of 10% to 15% before the coronavirus." And the Basel-based startup has high ambitions, having recently invested 550,000 Swiss francs in its Swedish counterpart Housecar. It aspires to build the largest leisure vehicle sharing service in the Scandinavian countries, the region where *flygskam*, or flight shaming, all began.



Number of
employees
28

Founded
2015

PRIVATEDEAL

NEGOTIATE YOUR HOTEL BOOKINGS

PrivateDeal attacks major online reservation websites such as Booking.com head on. The Lausanne startup goes against the grain by offering hotels a solution that they can integrate directly into their website to negotiate prices with their guests in real time. How does it work? Customers have access to a dashboard, where they register the maximum price they are prepared to pay for a room. The hotel can then try to adjust its offer based on occupancy rates. With its solution on the market since 2017, the company's customers include the Swiss Deluxe Hotels alliance and the HotelREZ group, which covers marketing for more than 1,500 hotels.

Operating out of the Innovation Village within the École Hôtelière de Lausanne hospitality management school, the startup won a prize for digital solutions organised by the Valais-based programme Digitourism. Its booking solution also received a favourable nod from the European Patent Office, and international approval is expected for 2022. Already active in nearly 35 countries, PrivateDeal does not plan to stop at hotels. "We're thinking about how to adapt our solution to other business sectors, for example luxury goods and airlines," says co-founder Isabelle Maugin.

Number of
employees
14

Founded
2017

NEUROSOFT BIOELECTRONICS

NEXT-GENERATION NEURAL IMPLANTS



Thanks to modern science, electrodes can be implanted in the body to stimulate the nervous system. This technique can be used to relieve chronic pain or treat epilepsy. But Neurosoft Bioelectronics has taken the technology a leap forward. The EPFL spin-off develops more flexible, elastic implants to interface better with human tissue and integrate more smoothly into the body. These electronic devices can be placed on the surface of the brain or spinal cord without risk of damage.

Having already taken home several awards, the start-up is one of five finalists for the Strategis 2021 prize (HEC Lausanne). The winner will be announced in September. Next year will be pivotal, confirms CEO Nicolas Vachicouras, "In Switzerland, we plan to launch clinical trials on humans at Geneva and Lausanne University Hospitals in early 2022, and clearance from the US Food and Drug Administration is expected in the second half of the year." The young company is currently finalising its manufacturing line for medical implants at Campus Biotech in Geneva and hopes to raise 12 million Swiss francs by the end of the third quarter.

Number of
employees
6

Founded
2020

36.2 (-4.8%) SCMN ▼ 351.5 (-0.8%) SLHN ▼ 58.3 (-6.7%) SYNN ▲ 219

All about tickers

These symbols, sometimes obscure in meaning, stand for listed companies and are essential to any investor trading on the stock market. We take a closer look.

BY MARTIN LONGET

AAPL. NESN. TSLA. Stock symbols are ubiquitous in business and financial news. These unique series of letters, numbers, or a combination of the two are assigned to identify a publicly traded stock. The combinations are not chosen haphazardly; they follow a few rules. Below are three questions for further clarification.

HOW DID STOCK SYMBOLS START?

Stock tickers emerged with the use of the telegraph. Abbreviating company names made it easier to communicate their share prices in real time. The symbols were used for the first time in the United States in 1867, by an employee of the American Telegraph Company, and Thomas Edison standardised the process in 1871. To send information faster, and save money, the most commonly traded stocks were assigned a single letter, such as T for AT&T and F for Ford. These US giants are still

referred to by the same ticker, giving them a certain allure of dominance. Although computer systems made telegraph communication of stock values obsolete in the 1960s, stock symbols have remained the universal way of identifying shares listed on the stock exchange.

HOW ARE THEY ASSIGNED?

The exact procedures for choosing symbols differ on each stock exchange, but tickers are generally left up to their issuer, i.e. the company preparing to list its shares. Their proposals are then approved by the stock exchange where the share will be listed. Sometimes a company already listed on the stock exchange changes its symbol, most often when it changes its name or at the time of a merger or acquisition.

For companies listed on the Swiss stock exchange, "SIX informs the issu-

ing company of the maximum symbol length and possible combinations," says Julian Chan, deputy head of media relations at SIX. SIX then checks the availability of the chosen symbol. The number of letters used varies depending on the exchange and the country: between one and four letters in the United States, while in Europe it is three or four. On Asian exchanges, symbols are often composed only of numbers, to avoid the many problems inherent in transcribing local alphabets into Latin letters.

DO SYMBOLS INFLUENCE PRICES?

Choosing combinations that are easy to remember, or even meaningful, often pays off in the long run. Studies have shown that fun or trendy symbols tend to perform better than series that are abstruse or difficult to pronounce. For example, a 2019 study by *Barron's* business

magazine showed that on-trend or easily memorable stock symbols such as PZZA, YUM or LEVI appreciated by an average of 17.5% per year over five years, compared to only 3.7% for single-letter companies.

In 2006, researchers at Princeton University had already pointed to this psychological bias, which was particularly noticeable in the days following an IPO. They found that, out of \$1,000 invested during an IPO, the 10 companies with the most palatable names to pronounce raised \$333 more than the 10 companies with the most unpronounceable symbols.

And companies are well aware of this bias. In fact, the SEC finally had to take action in the United States and create a special body in 2008, the Intermarket Symbols Reservation Authority, thereby stopping speculators from reserving and buying high-potential symbols. ▲

TO READ, TO DOWNLAOD



McGraw-Hill
Education, 2021
CHF 45.-

MADOFF TALKS UNCOVERING THE UNTOLD STORY BEHIND THE MOST NOTORIOUS PONZI SCHEME IN HISTORY

By Jim Campbell

With the passing of the orchestrator of the largest fraud scheme of all time this April, at age 82 in a North Carolina prison, *Madoff Talks* comes at a perfect time to try to solve the mystery surrounding Bernie Madoff. Based on exclusive conversations with close relations and family members of this figure of New York finance, the book delves deep into the inner workings of the Madoff affair, as well as the circumstances that led to the notorious crook operating for decades unchecked right under the nose of SEC inspectors.



Public Affairs, 2021
CHF 30.-

SUPER FOUNDERS WHAT DATA REVEALS ABOUT BILLION-DOLLAR STARTUPS

By Ali Tamaseb

What sets successful tech startups apart from other companies? How can we explain why some make it and so many others don't? To get an answer, the author of *Super Founders* compiled and compared a broad dataset covering diverse factors: number of competitors, market size, founder age and education level, and type of investor. And the findings are astonishing, often contradicting commonly held beliefs. For example, most unicorn founders had no previous experience in the tech industry. Also, more than half of the startups were up against long-standing competitors in their industry before starting operations, meaning that the business did not emerge from a novel concept.



App Store,
Google Play,
Free

NETFLIP TINDER FOR MOVIES

Netflix lets couples that can't decide what to watch on Saturday night swipe through films and series. Each suggestion made by one partner and liked by the other is a match. Therefore, a selection, and an evening, both partners can enjoy.



Google Play,
Free

SAMOURAI WALLET ULTRA-SECURE BITCOIN WALLET

Samourai Wallet is probably the most complete mobile bitcoin wallet on the market. Users concerned about protecting their data will love this privacy-focused app and its wide range of security features, such as anonymity by carrying out transactions through Tor or a VPN.



Google Play,
Free

WATERIA FOR PLANT LOVERS

As the weather warms, people return to their balcony gardens until they get bored or tired, and their neglected new plants end up dying due to insufficient care or water. Wateria helps users stay focused, offering care tips suited to each type of plant and regular watering reminders.



App Store,
Google Play,
Free

BIRDNET SHAZAM FOR BIRDS

What on earth is the name of that bird we always hear singing through the summer season? What species produces that melodious, repetitive warble, which gets a bit annoying after a while? Chances are BirdNET knows, thanks to its database of more than 3,000 bird species from the Northern Hemisphere. Just send your query by playing a recording of the birdsong you want to identify.



ORDER HERE
AND CHEERS!

BY **tannino
gallo**

yuh

INTERVIEW

“WE NEVER EXPECTED SUCH AN OVERWHELMING RESPONSE”

Yuh, the app co-designed by Swissquote and PostFinance celebrates its successful launch at the end of May. In just a few weeks, Yuh has surpassed the 15,000 subscriber mark. CEO Markus Schwab presents an initial assessment and the app's key features.

Find all information at
YUH.COM

SCAN TO DOWNLOAD THE APP



Yuh was officially launched in May. What feedback have you received from the first users?

The feedback has been very enthusiastic – from the media, influencers and customers alike. People consistently find it easy to use, and appreciate its original concept and low fees. Three weeks after its launch, the app already had more than 10,000 users. It's a remarkable performance compared with other neobank launches from our competitors. It took them a lot longer to reach that threshold.

Were you surprised by the reaction?

To be honest, we never expected such an overwhelming number of people to register so soon after the launch. This confirmed our belief that the app reflects genuine customer demand and truly meets the expectations of today's world. This initial success motivates us to continuously enhance and improve our product. And I'd like to take this opportunity to thank and congratulate all the people who were involved on the project.

What advantages does Yuh have over traditional banks?

Our 3-in-1 model (pay, save, invest) makes it a unique solution on the Swiss financial market. But also, the interface is simple and user-friendly. Not to mention the low-to-no-fees concept: low or even no fees whenever possible. When fees apply, we explain why as clearly and simply as we can.

A new cryptocurrency, Swissqoin, was launched at the same time as Yuh. How can we take advantage of that?

You can get Swissqoins by using Yuh. Each action (first deposit of 500 Swiss francs on the account, referral, trading, etc.) earns you a set number of Swissqoins. Users can also trade the tokens with one another. And that's not all: Yuh will regularly invest a percentage of its revenue in the cryptocurrency, so the value can go no other way but up. It's a way of sharing the app's success with the community.

What do we have to do to become a Yuh customer?

Yuh can be downloaded from Apple's App Store, Google Play or Huawei AppGallery. It's very easy for Swissquote and PostFinance customers to open an account. It only takes a few minutes, and no additional documents are required. The procedure is also very simple for new customers, and you do it from the app. You need a form of identification, electronic signature and an initial deposit to activate the account.



MARKUS SCHWAB
CEO
YUH

YUH, THE 3-IN-1 APP



Pay

- Free multi-currency debit Mastercard
- 12 currencies pre-installed
- Instant payments between app users



Save

- Create custom saving projects to reach your goals
- Set up standing orders or make occasional deposits
- Money available 24/7



Invest

- 100+ stocks to choose from
- Thematic investment alternatives
- 13 cryptocurrencies available 24/7



AUTO

Electrical setbacks

The German SUV ticks most of the boxes to come out a winner, but its perfectible ergonomics and software bugs keep it from taking home the gold. Our test drive.

BY LUDOVIC CHAPPEX



VOLKSWAGEN ID.4

MOTOR:
ELECTRIC 204 HP – 150 KW
BATTERY:
77 KWH
RANGE:
520 KM (WLTP)
TRANSMISSION:
PROPULSION
PRICE:
CHF 63,300.- (MAX)

We had no intention of saying anything bad about the 2021 World Car of the Year. But here is how it is. Its teething problems made our experience behind the wheel a bit risky.

In all honesty, we were annoyed before we even got going... Finding a function as basic as navigation – because we couldn’t find the access to the interface menu – was a feat from the start. Volkswagen’s new SUV doesn’t shine in terms of ergonomics, mixing touch technology (via a centre screen) with

vestiges of physical buttons. Most of these buttons offer haptic or touch functionality, but unfortunately they are not very responsive. Ah, that cursed steering wheel full of asthenic controls that we rarely (and often unintentionally) press!

Once we got used to the ID.4, we thought that the best was yet to come. Unfortunately, our test model, haunted by a recalcitrant gear selector, was stuck for long minutes at a red light in the middle of Geneva, among other places. A later internet search revealed that

drivers of the ID.3, Volkswagen’s electric compact car, had experienced similar mishaps. On forums, we also discovered an endless list of software problems encountered at the beginning of the year by new ID.4 users, including bugs in the infotainment system and navigation, malfunctions in the driver assistance system, problems when charging, and even black screens while the car is running.

A few days after our test, Volkswagen explained to us, through its slightly embarrassed PR manager for Switzerland, that the workshop had checked the car and found a defective part (the famous selector), and that “so far on the ID.4, they’ve only heard of isolated cases of damage”. In a second message, we were told that the press car “did not have the latest software update”, assuring us however that, “all new vehicles delivered in Switzerland today are automatically updated.” Volkswagen is also planning regular software updates – which is a good thing. One might almost forget to mention

the qualities of this vehicle, such as its silhouette, which is truly elegant. The ID.4 scores high on many criteria that are important to families. As with most models with 100% electric genes, the vehicle features a generous interior and lovely feeling of spaciousness on board, an impression enhanced by the glass roof on our test model. The exterior dimensions remain reasonable (462 cm long), allowing it to weave through the city effortlessly.

Focus has been more on comfort, soundproofing and a smooth ride

The 520 km range is decent for an SUV of this size, although this obviously does not apply to a motorway-only trip, which sucks up much more power on an electric vehicle.

Unlike a famous Californian brand, Volkswagen does not make acceleration capabilities a priority. The 204 hp delivered by the single rear axle is enough to move the vehicle vigorously, without causing a shudder (a GTX sports version with two engines, four-wheel drive and a total of 299 hp has been presented and will be available in the autumn). Focus has been more on comfort, soundproofing and a smooth ride, and successfully so. Without quite reaching the level of a BMW iX3 in these registers, the Volkswagen SUV gives the impression of a mastered score.

The ID.4 includes all the driver assistance features that a model of this calibre should offer in 2021. And it does that quite well. More unusual is that some of the information on the head-up display is displayed several metres in front of the driver’s eyes, making it possible to provide real-time navigation assistance, truly superimposed on the decor. Nice and practical, provided that the navigation works... See you in a few months? ▲

THE ALTERNATIVES



AUDI Q4, THE PREMIUM OPTION

One of the strengths of the Volkswagen group is that it can use the same production platform for several brands. The Audi Q4 thus inherits the same technical base as the ID.4, but is packaged to Audi standards. The finishings go a notch higher, featuring more custom options. A 299 hp 4WD model is available, as well as a Sportback version. Skoda’s electric SUV is the Enyak iV. From CHF 47,800.-



FORD MUSTANG MACH-E, THE ECCENTRIC AMERICAN MODEL

While the Tesla Model Y SUV is still not available in Europe, Ford has decided to occupy the spot. Available for order on the Swiss website, the new Mustang Mach-E is a solid proposal, in two- or four- wheel drive versions. Ford states a range of up to 610 km. From CHF 49,560.-

TRAVEL

César Manrique's Lanzarote

The Canary Islands are notorious for being overrun with tourists. Not Lanzarote though. This volcanic island owes the preserved natural beauty of its lunar landscape to an environmentalist artist.

BY SALOMÉ KINER

Spain

LANZAROTE

The seven gems that make up the Canary Islands, an archipelago off the coast of Morocco, include one that has long been considered the black sheep: Lanzarote. Nicknamed the “stone raft” by Portuguese writer José Saramago, this island carved out of volcanic lava has a population of 150,000 scattered across less than 900 square kilometres. Today, Lanzarote is an example of an astutely balanced land use policy that respects its environment. This exceptional history is the culmination of the dream and aura of one man. A painter, sculptor and visionary architect, who devoted the last 20 years of his life to reshaping Lanzarote.

Born in 1919 in Arrecife, the capital of Lanzarote, César Manrique first studied urban planning before attending the Royal Academy of Fine Arts in Madrid. He joined the non-figurative art movement, showed his works all over the world and settled in New York City. Close to Spanish artist Antoni Tàpies and the informalists, at the age of nearly 50 he decided

to move back to the island that never left his heart, and haunted his childhood memories. He was an environmentalist before that was a thing. It was 1966. From then on, his life work became completely intertwined with the heritage of his native land, Lanzarote, recognised by UNESCO as a “Biosphere Reserve” in 1993.

César Manrique's plan was simple, but audacious back in the day. The early 1970s was when the first complexes were being designed to accommodate mass tourism. A lover of the natural profile and volcanic landscape of his island, the artist sensed the potential devastation the budding industry could wreak. That is when he developed his motto of arte/naturaleza: art in nature, nature in art. He would continuously work around that concept to encourage politicians and inhabitants to take action. By the time he passed away in 1992, he had accomplished his task. Lanzarote had preserved its captivating charm, sculpted out of the rough, dramatic beauty of its rugged terrain. ▶



The César Manrique Foundation, housed in the spectacular home where the artist lived for 20 years.

and which appeared hostile to any human activity.

As he approached, Manrique noticed that the tree had grown in a volcanic cavity formed by a gas bubble. He soon discovered four other similar formations, and decided that he wanted to build his house there. Convinced that his project was impossible, the landowner gifted Manrique with the three hectares that he wanted. Two years later, he unveiled his installation: an upper floor in line with the island's traditional architecture, but featuring a few modern touches, such as the generous windows for endlessly daydreaming while overlooking the amazing panorama. On the lower floor, Manrique connected the volcanic bubbles to each other through tunnels dug into the lava. Visitors stroll through this extraordinary space, struck by the sharp contrast of the basalt against the whitewash and bougainvillea flowers, to stumble upon the swimming pool, dance floor and the artist's studio. The latter has since been converted into an exhibition space.



TARO DE TAHICHE

To appreciate how much Lanzarote owes to César Manrique, you should start by visiting the place he lived for 20 years, Taro de Tahiche, which in English means the "Hut of Tahiche". Today it is home to the

César Manrique Foundation. Legend has it that the fragrant scent of a fig tree and its vibrant green leaves drew the artist's attention to this lava field, formed from eruptions that date back to the 18th century



CACTUS GARDEN IN TEGUISE

The cactarium in the north of Lanzarote is the last work by César Manrique. The garden is a perfect example of his keen sense of detail and desire to blend his creations into the local landscape. Located in a former quarry, this amphitheatre-shaped garden features more than 4,500 specimens from around the world. Their incredible shapes and sizes provide a surreal walk to the last windmill on the island. A shout out to the gargantuan agaves and aloe veras. Take the opportunity to visit the Teguise market, the most popular on the island, which takes place every Saturday morning.



The cactus garden, north of the island.



JAMEOS DEL AGUA

Only 10 kilometres separate the botanical garden from the spectacular site of Jameos del Agua. White, azure, green and black come together to honour César Manrique's favourite mix of colours, and his artistic genius that never ceased to bring

man closer to being one with nature. It was also here that, drawing on the volcanic formations dating back millions of years, he built a restaurant, a bar, and further on a concert hall with rare acoustics.



La Cueva restaurant designed by César Manrique.



HOUSE-MUSEUM IN THE PALM GROVE

Also in the north of the island, in the middle of volcanic fields that stretch as far as the eye can see, stands the green oasis of Haría, a village bordered by a palm grove where a new tree was planted every time a child was born there. This is where César Manrique fell for a farmhouse in ruins, spotted in the 1970s and refurbished 15 years later. We find there his trademark, his taste and his talent for anachronistic combinations: embellishing traditional local techniques by adding a touch of modern architecture, noble materials and quality furniture. ▲



César Manrique

César Manrique (24 April, 1919 – 25 September, 1992) was a Spanish painter, architect and sculptor. A defender of the nature of his native island, Lanzarote, he decisively influenced its image.

GETTING THERE

Direct flights from Zurich from 400 Swiss francs round trip.

WHERE TO EAT

El Diablo

Nestled in the heart of "The Mountains of Fire", otherwise known as Timanfaya National Park, this restaurant with its circular design by César Manrique offers breathtaking views of the geysers. Some dishes are still cooked using the natural heat from the rock on the site.

La Puerta Verde

In the palm grove of Haría, this is the last village where César Manrique lived, with many of his works still located within the perimeter.

WHERE TO STAY

Melia Salinas

This hotel rounds out the total immersion into the work of César Manrique, as the artist designed its 1,800 square metre seawater pool complex.

Starting at 200 Swiss francs per night for two people.
melia.com

Buenavista Lanzarote

To carry on the environmentalist spirit of César Manrique, this ecolodge offers five luxurious but simple and tastefully decorated rooms in the heart of the Géria biosphere reserve.

Starting at 200 Swiss francs per night for two people.
buenavistalanzarote.es

COVID UPDATE

The César Manrique Foundation has been closed since the beginning of the pandemic. To find out when it will reopen, go to femanrique.org or turismo-lanzarote.com.

BOUTIQUE

INFLATABLE SAILBOAT

Tiwal 3 is a two-seater inflatable sailboat with an aluminium exoskeleton and a carbon mast. Developed by French designer Marion Excoffon, the curious vessel is adapted for use at sea. What's so special about it? It can be assembled without tools in 20 minutes flat and, once deflated, it fits in two bags that fit in the boot of a passenger car.

tiwal.com
From CHF 6,300.-



KEEPING YOUR SNEAKERS CLEAN

For fashionistas and other collectors, Philips has come out with Sneaker Cleaner, a device specially designed to care for your sneakers. Sold with three brush heads suited to different materials (leather, rubber, suede, PVC or fabric), the device takes up hardly any more space in the closet than a manual brush and makes little noise.

philips.ch
CHF 33.-



CONNECTED SOLAR WATCH

Tissot's T-Touch Connect Solar watch uses solar power to charge via photovoltaic sensors under the dial. In addition to the usual functions (calendar, stopwatch, chronograph, weather, altimeter, etc.), this tactile timepiece features an activity tracker and notifies its wearer of messages and calls.

tissotwatches.com
From CHF 995.-



SMART BOTTLE

Winner of the 2020 Red Dot Produce Design Award, LIZ, the Noerden smart bottle, does so much more than keep coffee warm or water chilled. This isothermic bottle features a UV sterilisation system that destroys 99.9% of bacteria and harmful viruses. The touch responsive lid activates this function and displays your drink temperature as well as reminders to stay hydrated.

noerden.eu
From CHF 75.-



CARRY-ANYWHERE BED

For a bit more comfort while camping, the English brand Bundle Beds has designed a compact sleeping bag that includes a self-inflating mattress, pillow, hydrophobic duvet, along with a pillowcase and sheets. Weighing 6.5 kg, this portable bed can be folded and unfolded in no time. Notably, the different parts are attached to each other to keep your feet from poking out in the middle of the night, but they can be separated for easy maintenance.

bundlebeds.com
CHF 279.-



FARMING TOWER

Do you want to grow herbs, green vegetables and fruit on your balcony, while optimising your floor space? The French startup Home Potager has created a vertical garden, which includes 12 to 18 growing pots. The solution provides automatic watering with added nutrients and water level notifications based on the needs of each plant. The connected garden is self-sufficient for up to four weeks and can produce 50 kg to 100 kg of vegetables per year.

homepotager.fr
From CHF 537.-



SUSTAINABLE SWIMMING

The young Lausanne-based label Shark Rebellion has taken up the challenge of designing swimwear that combines eco-responsibility and performance. Developed and tested by elite swimmers from top Swiss clubs, Shark Rebellion's swimming costumes are made entirely from fishing nets recovered from the oceans by the NGO Healthy Seas, to which the startup donates a portion of its profits.

sharkrebellion.com
From CHF 35.-

TRIED AND TESTED

MINING CRYPTO-CURRENCY

BY GÉRARD DUCLOS

With sky-rocketing cryptocurrency prices, is cryptocurrency mining profitable for individual investors? Our columnist tried, and then tested it, for you.

Until very recently, everyone unanimously agreed that for the private individual, mining cryptocurrencies in Switzerland was a wasteful venture, as the cost of machines and electricity far exceeded any potential rewards.

That was before crypto prices soared in recent months. So what is really going on when the price of Ether has multiplied 3.5 times since the beginning of the year (value at end-May 2021)?

From a practical point of view, nothing has fundamentally changed. For individuals, the only valid option remains to mine Ether with the most powerful graphics cards possible. On the other hand, profitability has shot up in the last few months. A powerful graphics card can now bring in between \$10 and \$15 per day, and the most powerful cards up to \$20. However, the cost it takes to power the system 24 hours a day should also be factored in.

Furthermore, the profitability of mining remains extremely volatile and can collapse at any time depending on the price of Ether and the number of transactions on the Ethereum blockchain, from which the fees are paid to miners. Not to mention that Ether is expected to transition to

proof of stake in coming months, a method of mining based on stakes, which will make the current proof-of-work mining method through calculations impossible. To get everything you need to mine Ether in May 2021 entails a considerable financial risk, and the return on investment is far from guaranteed.

We managed to negotiate two Nvidia RTX 1080 Ti GPU based cards, which should generate between \$7 and \$10 each per day

Let's say that despite all that, you have made the decision to try it out and buy a mining device. However, there is one problem. There is currently a global shortage in the graphics cards industry, and it is practically impossible to get new ones. Or you can, but at insane prices.

So we started looking around second-hand websites, where we managed to negotiate two Nvidia

RTX 1080 Ti GPU based cards, which should generate between \$7 and \$10 each per day, according to whattomine.com, a reference site for calculating the profitability of mining. All that was left to do was to order a motherboard that could accommodate multiple graphics cards and a high power supply.

A few days later, we had finally put the beast together, ready to work relentlessly. The soft hum of the graphics cards – two large blocks covered with fluorescent LEDs and cables – is now our ever-present background noise.

Technically, it is a matter of downloading a mining software and joining a "pool" on the internet, i.e. a group of miners who combine their strengths and pay their members in proportion to their contribution. As we are purists, we also opt for a specialised Linux distribution to optimise the returns and the power consumption of our rig.

After a few hours of configuration and fine-tuning, the system is finally functional and running at full power. On the screen, the mined Ether thousandths are slowly but surely accumulating. Now all we have to do is wait 170 days at the current rate to make the purchase profitable... ▴

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yuh.com

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