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FINANCE AND TECHNOLOGY UNPACKED

N° 3 JULY 2023 | CHF 9.- | [WWW.SWISSQUOTE.COM](http://WWW.SWISSQUOTE.COM)

## DUTY FREE

Interview with  
Xavier Rossinyol,  
CEO of Dufry

AI  
ChatGPT,  
the new  
financial  
advisor

PATENTS  
Pharmas in  
need of new  
compounds

D O S S I E R

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internet... Companies  
on the launch pad

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**C**rash! It all came hurtling back down to Earth. All of a sudden, the stars, the Milky Way and dreams of space travel were hidden by dark clouds. Over the past few months, most of the young companies active in the space industry have seen their share prices plunge on the stock market. Companies whose shares were worth a few dozen Swiss francs just two years ago have now become penny stocks, if not gone bankrupt, like Virgin Orbit. Oddly, this stock market collapse has occurred just as the general public is realising the industry's extraordinary potential.

For example, on an almost daily basis since 24 February 2022, media outlets worldwide have been broadcasting satellite images showing the horrors of war with stunning precision. Meanwhile, the Starlink satellite internet terminals have proved their usefulness to the Ukrainian army.

These examples are just a sliver in the galaxy of the space economy. As our report shows, applications derived from this industry have increased significantly in the past decade or so. With the drastically reduced cost of access to space, myriad small companies have launched their own satellites enabling them to offer new services. One example is the Swiss company Astrocast, which is active in the Internet of Things via satellite. For this issue, Astrocast's CEO Fabien Jordan spoke with us in an interview.

What this all amounts to, according to a Bank of America

## New Space, new hope

study published in January 2023, is that the global space economy is expected to double over the next few years, reaching \$1.1trillion a year by 2030.

The current stock market slump in the sector can therefore be viewed as an opportunity, explained by the fact that these young companies sold a dream at the time of their IPOs but forgot a little too quickly that the space industry requires heavy investment and remains highly speculative. Bankruptcies and mergers will no doubt continue over the coming months, but they will help to streamline the market.

The space industry should then flourish, especially through companies that can deliver real services fast, without having to lay out heavy investments. In this issue's special report, we have selected the most promising companies, those that may well be shooting for the stars in the future.

We hope you enjoy reading!



BY MARC BÜRKI,  
CEO OF SWISSQUOTE



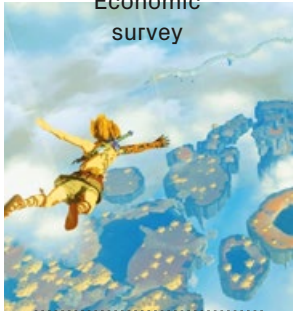
c o n t e n t s

5

Editorial  
by Marc Bürki

8

Scans  
Economic  
survey



16

The crypto  
gazette

18

Interview  
Xavier Rossinyol,  
CEO of Dufry



DOSSIER  
Space,  
a ruthless  
universe

24



30

Infographic:  
An explosive  
dynamic



32-45

10 companies  
shooting for  
the stars



36

Interview:  
Fabien  
Jordan, CEO  
of Astrocast



46

A lawless  
space

48

Interview:  
Emmanuelle  
David,  
executive  
director  
of EPFL's  
Space Center

51

Mining  
asteroids?

52

Patents



Pharmas  
in need  
of new  
compounds

58

A brand,  
a story  
Tupperware:  
is the party over?



60

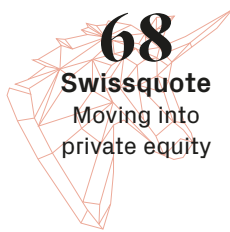
AI  
ChatGPT,  
the new  
financial advisor

64

Swiss startups  
in this edition

68

Swissquote  
Moving into  
private equity



72

Auto  
Testdrive: Alfa  
Romeo Tonale

74

Travel

Menorca's dancing  
horses



78

Boutique

80

A look  
inside the lab  
Meditate to  
invest better



i m p r e s s u m

**Publisher**  
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magazine@swissquote.ch

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**Design director**  
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**Editing (English version)**  
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**Photography**  
AFP, Keystone,  
Getty images,  
iStockphoto, Theispt,  
Unsplash

**Cover**  
Harry Campbell  
  
**Printing, Binding  
and Distribution**  
Stämpfli Ltd.  
Wölflistrasse 1  
3001 Berne  
www.staempfli.com

**Translation**  
Acolad  
  
**Advertising**  
Infoplus AG  
Traubenweg 51  
CH-8700 Küsnacht  
hans.otto@i-plus.ch

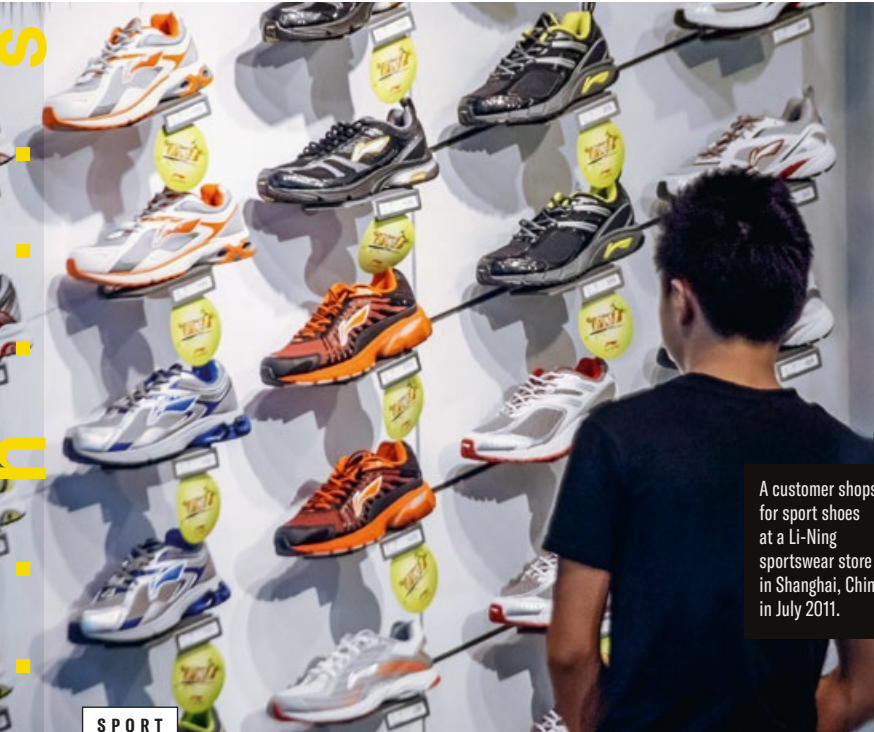
**Wemf**  
REMP 2022: 82,521 Ex.  
Print run: 108,400 ex



printed in  
switzerland

**SUBSCRIPTION**  
CHF 40 for 6 issues  
www.swissquote.ch/magazine





SPORT

## Chinese brands putting their best foot forward

Anta Sports and Li-Ning, two Chinese trainer brands, have nothing to fear from their Western competitors when it comes to design, and this is starting to become quite apparent in their results. Last year, Anta's shoe sales exceeded Nike's in China for the first time ever. Anta, which also owns Fila, Salomon and Peak Performance, is now the third-largest athletic

wear brand in the world. Li-Ning's profits have also taken off. The two brands owe their success to their growing popularity among Chinese consumers, as well as a rebuke of the two industry giants, Nike and Adidas, which are ostracised in China for denouncing the treatment of Uyghurs in Xinjiang, particularly by refusing to use cotton from that region. → 2020

## RANKING

**Top 5 listed US companies with the fastest growth**  
(based on their 2022 revenue)

1. AXONICS  
+87,037%
2. COHERUS BIOSCIENCES  
+30,480%
3. CARA THERAPEUTICS  
+14,728%
4. ULTRAGENYX PHARMACEUTICAL  
+10,276%
5. PULMATRIX  
+3,671%

Source: Financial Times

**Top 5 electric car manufacturers**  
(based on number of cars registered in 2022)

1. BYD  
1.86 million
2. TESLA  
1.3 million
3. VOLKSWAGEN  
831,800
4. SAIC-GM  
724,900
5. GEELY-VOLVO  
606,100

Source: Auto Dealer Today



**“Partially because of the Brexit idiocy, the image of London has suffered a lot in the international community”**

**Hermann Hauser**, co-founder of UK tech company ARM, explaining why the company is listed on the New York exchange and not in London.



ECOLOGY

## The rise of green fertilisers

Producing nitrogen-based fertilisers generates significant CO<sub>2</sub> emissions, while their use also contaminates the soil and waterways. And since the start of the war in Ukraine, buying fertilisers has become more costly and more difficult, as Ukraine is one of the world's top producers. Given this context, Swiss company Evolva partnered with Israeli

group Grace Breeding to produce organic fertilisers. Made up of plant molecules from a fermentation method developed by Evolva, the fertilisers allow crops to capture nitrogen from the air rather than add it artificially. Trials have already been conducted in Brazil and Israel on corn and wheat fields. This method should also work for rice. → EVE

54 t

The quantity of nickel that bank JPMorgan thought it purchased on the London Metals Exchange for \$1.3 million. But the transaction was a bust: the bags, located in a warehouse at the Port of Rotterdam operated by Access World, a logistics company owned by Swiss group Glencore, only contained regular stones.



**“AI is going to create more jobs that it takes away”**

**Arvind Krishna**, CEO of IBM, in an interview with the weekly Barron's.

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## THE IMAGE

Released on 12 May, the latest addition to the hit Zelda saga is a tremendous success. With 10 million copies sold in just three days, *The Legend of Zelda: Tears of the Kingdom* has become the best-selling game in the saga, according to Japanese brand Nintendo.







**“I’ll say what I want to say, and if we lose money, so be it”**

**Elon Musk**, CEO of Tesla, on his controversial tweets and statements, in an explosive interview with CNBC on 16 May 2023.

**315**

The number of unicorns in China at the end of 2022. Five years ago, the country had fewer than 150 start-ups worth more than \$1 billion. The industries with the most unicorns are software and corporate services, healthcare, computer chips and robotics, which reflect the priorities of the government.



## INDUSTRY

### The real estate crisis weighs on Schindler

The Chinese real estate market is in crisis: several large developers have defaulted on their debt, bringing all work on site to an immediate halt. The situation is hardly better in Europe and the United States, where high interest rates on real estate loans are hindering new construction projects. This market contraction affects Schindler’s balance sheet, as the company generates a significant portion of its revenue by installing lifts and escalators in new buildings. The Lucerne-based group is particularly exposed to the Chinese market, which makes up 18% of its revenue. Last year, its operating profit fell 22.5% to reach 904 million Swiss francs – the first time in a decade it has dropped below the 1 billion mark. Schindler is expecting less than 5% growth in 2023. → SCHP

## RAW MATERIALS

### Lithium: highs and lows

Between 2020 and 2022, the price of lithium, a crucial component of batteries for electric vehicles, increased by a factor of 12, reflecting the high demand for green vehicles. But slowed consumer activity in China, the primary market for these vehicles, as well as several new mines in

Australia and Chile, have resulted in an excess supply of lithium. The price has since fallen by two thirds between November 2022 and April 2023. This decline has affected the share prices of mining groups SQM (Chile) and Albemarle (Australia) and led to a wave of acquisitions. → SQM → ALB



A lithium mine in the Atacama Desert in Salar de Atacama, Chile on 25 October, 2022.



## FOOD

### Emmi focuses on goat’s milk

Goat’s milk is now all the rage. Containing more protein than cow’s milk, it is easier to digest for newborns because its fat molecules are smaller and it is closer to human milk. It is also ideal for people with allergies, as it contains less lactose. Looking to capitalise on the increased demand for goat milk, Swiss company Emmi created

a new dedicated division, Emmi Nutritional Solutions, and launched the brand Darey, the result of a merger of US companies Redwood Hill Farm and Jackson-Mitchell, acquired in 2015 and 2017. The group has also invested 40 million Swiss francs to build a new production facility for goat’s milk powder in Etten-Leur in the Netherlands. → EMMN

**1/5**

The share of flights in Europe operated by ultra-low-cost airline Ryanair, which saw revenue soar in the post-pandemic landscape. This summer, it will operate 3,000 flights per week.

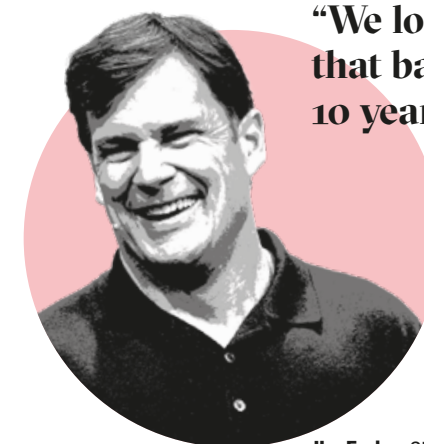


## DIABETES

### Cut-price insulin pens

US company Civica RX, a philanthropic pharmaceutical group whose mission is to improve access to medicine for people living in poverty, called upon Switzerland’s Ypsomed. The Bern-based group, which specialises in injection systems, will supply the US firm with insulin pens of the kind used daily by people with diabetes. Marketed at \$55 per box of 5 pens, the syringes will contain a generic form of insulin and will be available from 2024.

→ YPSN



**“We lost that battle 10 years ago”**

**Jim Farley**, CEO of Ford, on the superiority of car entertainment systems Apple CarPlay and Android Auto.

## THE QUESTION

**In the post-COVID era, China’s recovery is slower than expected. Which multinationals will be most affected by this?**

“Initially, when China declared the end of its zero-COVID policy, the economy experienced a strong bounce. But the recovery weakened after Chinese New Year in March and April 2023. Consumer confidence is now at its lowest. During long periods of isolation, consumers had to dig into their savings. Even as people are starting to go out again and travel, they’re spending less than they did before the pandemic. For companies with significant exposure to the Chinese market, this is the start of a difficult period. Companies in the mass market industry, such as Starbucks, Nike and Siemens, will suffer the most. In addition to the sluggish Chinese economy, these companies are up against growing competition from domestic brands that are appealing to consumers because of lower prices and patriotic sentiment. Companies that operate in high added value sectors, such as green energy, high-end industrial production and financial services, are less affected. Demand remains high for their products, because there is often no Chinese equivalent. The other exception is luxury goods, which are a social status symbol and not easily replaceable.”

**Bin Xu**, professor of economics and finance at China Europe International Business School in Shanghai.





**“If you said, even last year, that we could see real competition in online search and an alternative to Google, who would have thought it?”**

**Satya Nadella**, CEO of Microsoft, emphasising the impact of ChatGPT on search engines, in an interview with CNBC on 16 May 2023.

## IPO

### Johnson & Johnson dividing up

Kenvue, a spin-off of Johnson & Johnson dedicated to consumer brands, went public on the New York exchange in early May, raising \$3.8 billion – the largest IPO in the United States since 2021. Kenvue will sell consumer brands such as Band-Aid, Tylenol, Listerine, Neutrogena and Aveeno, as well as talcum powder, which was launched in 1894 and is the subject of several

lawsuits due to its carcinogenic properties. Johnson & Johnson will concentrate on pharmaceuticals and medical devices. This division of labour is the most significant restructuring in the American giant's 135-year history. In 2022, Kenvue's sales reached \$14.95 billion and net revenue was \$1.46 billion. By 2025, the new company is expecting 3% to 4% growth per year. → KVVUE

# \$10.5

The value of Beyond Meat shares in mid-May. One year ago, they were worth \$36. The vegan meat alternative company owes this decline to inflationary pressures on consumer wallets, which encourage buyers to turn to cheaper products.

## TECH

### Uniqlo: a champion of automation

At Uniqlo, there are fewer and fewer checkouts. Each article of clothing now contains a mini-chip that is scanned by a terminal that identifies the price and automatically bills customers. The Japanese fast fashion company has also partnered with robotics companies Mujin, Exotec Solutions and Daifuku to automate its warehouses. At one of its Tokyo locations, the number of employees was reduced by 90%. Automation-related savings have allowed the company to boost its profits (which rose by 48% in Q1 2023), as well as increase salaries. Some employees saw their salary increase by 40% in March. → 9983

Exotec's Skypod system automates Uniqlo's warehouses.

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ALCOHOL

Bud Light: a woke controversy in the United States



It's less than one minute long. The video – filmed by transgender influencer Dylan Mulvaney and posted to her Instagram account – is an advert for Bud Light. And in the United States, it set off a culture war. Several far-right conservative figures, including musicians Kid Rock and Travis Tritt and Republican Governor Ron DeSantis, called for a boycott of the brand, which caused sales to plummet. Beer giant Anheuser-Busch, which owns Bud Light, backtracked and fired two marketing executives who were involved, promising that in the future, marketing campaigns would focus on “sports and music”. → ANB

Ni  
RAW MATERIALS

A rush for Indonesia's grey gold

Indonesia has the largest nickel reserves in the world. Each year, the archipelago produces 37% of the world's nickel, a metal used to make batteries for electric vehicles, for a total value of \$30 billion. This has sparked interest from both local and international companies. Domestic miners Merdeka Battery Minerals and Harita Nickel both had successful IPOs this spring. Brazilian company Vale has partnered with German group Volkswagen, Chinese group Zhejiang Huayou Cobalt and US group Ford to build a nickel refinery on the island of Sulawesi. German group BASF and French company Eramet have similar projects in the works. Korean group LG and Japan's Hyundai have teamed up to build an electric battery production facility worth \$1.1 billion near Jakarta.

→ MBMA → NCKL

BUST

Bed, Bath & Beyond closes up shop

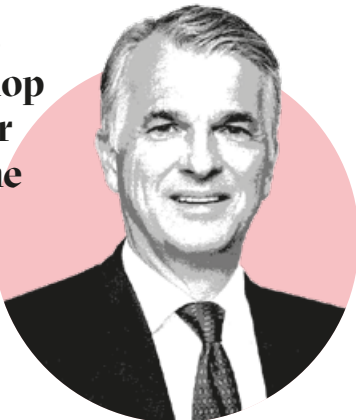
Bed, Bath & Beyond is an American staple. But the home goods chain declared bankruptcy in late April after sales dropped drastically over the last three years. Founded in 1971, the group has always stood out by selling branded products chosen by store managers based on demand from local customers. But when new CEO Mark Tritton arrived in 2019, he put a stop to this approach. Tritton, who came from Target, a competitor, tried to replicate a strategy that worked well for his former employer: replacing branded products with more profitable “private label” products. But Bed, Bath & Beyond customers didn't like that at all and turned instead to Amazon.

150  
M

The number of active users of the social network TikTok in the United States, according to new figures provided by the company, which is owned by Chinese group ByteDance. Facebook has slightly more users and Instagram slightly fewer, which demonstrates the growing influence of TikTok – which has more than 1 billion users globally – in the Western world.

“It is crystal clear, this situation did not develop in the last six weeks or six months but over the course of the last six, seven years”

Sergio Ermotti, CEO of UBS, on the problems with Credit Suisse.



© DR



Chopard

HAPPY SPORT



crypto express

Binance and Coinbase attacked by the SEC

The United States Securities and Exchange Commission (SEC), the country's financial market regulator, launched a crackdown on the altcoin market in early June, announcing that it was suing the crypto platform Coinbase, just a few days after initiating legal action against Binance. US, the American division of Binance. In short, the SEC is accusing the two crypto giants of violating US securities laws. In response, Binance.US has temporarily suspended US dollar deposits and withdrawals on its platform. Coinbase, however, represented by its CEO Brian Armstrong, rebuked the allegations, announcing that it was prepared to go head to head with the SEC (following the example of the California-based firm Ripple, which is currently fighting a lawsuit with the Commission).

Ripple acquires Lausanne-based Metaco

The Californian company Ripple, which developed the XRP native token for cross-border payments, announced on 17 May that it acquired the Swiss fintech firm Metaco for \$250 million. Founded in 2015 in Lausanne and now with over 100 employees, Metaco specialises in secure digital asset storage for institutional clients. The deal makes Ripple the sole shareholder of the

Lausanne-based company, strengthening its international presence with this customer base. However, Metaco will continue to operate as an independent brand. The current founder and CEO, Adrien Treccani, will remain head of the Swiss company.

Transform your old Game Boy into a crypto wallet

Attention crypto nerds! Based on the principle that devices with no internet connection are inherently more secure, a talented developer has decided to dust off his old Game Boy, Nintendo's legendary handheld console released back in 1989, and use it as a cold wallet for his cryptos. This comes at a time when Ledger, an established brand of hardware wallets, is looking for alternatives to true cold storage. The inventor in question, a certain Joseph Schiarizzi, aroused the ire of purists, saying he viewed this as even more reason to offer his solution to the general public, in the form of free software. His project, called "The Game Wallet", is available on GitHub. Basically, how it works is that users flash a physical Gameboy cartridge that randomly generates mnemonic phrases for cryptocurrency wallets (the famous seed phrase), and all 100% offline. The seed phrase is generated through a mini-game, with randomness introduced by the player as they wander around the world and complete quests.

Crypto spotlight



HBAR

Eccentric at heart

Competing with blockchains such as Ethereum and Cardano, the Hedera Hashgraph network stands out for its unrivalled speed (more than 10,000 transactions per second) and low transaction costs. Technically, the platform uses an alternative technology to the traditional blockchain called a directed acyclic graph (DAG), which gives it its incredible transaction speeds. HBAR is the native token on this network, launched in 2018, which allows individuals and businesses to create decentralised applications (dApps).

The token is firmly established in the top 50 cryptocurrencies in terms of capitalisation (currently ranked 33<sup>th</sup> on CoinMarketCap) and has a large following on forums and social networks. The crypto data analysis firm Messari reports that the Hedera network recorded a 170% increase in daily active addresses in the first quarter of 2023, with transaction volume increasing 40 times. At the end of May, the HBAR foundation announced that it had hit the milestone of 10 billion transactions.

Bitcoin in the heat of the US presidential election

Republicans stand as the champions of BTC against apparent reluctance from the Biden administration.

BY LUDOVIC CHAPPEX



The only reason these people in Washington don't like [Bitcoin], is because they don't control it." Now, that sets the tone. Catering to the conservative fancy of his electorate, Florida's current governor Ron DeSantis spoke at length about cryptocurrencies when, on 24 May, he announced his bid for the Republican nomination in the 2024 US presidential election. The event was streamed on Twitter – along with some technical glitches – with Elon Musk inviting himself to the party for a conversation with Donald Trump's main rival on the red side of US politics.

"I think that the [Biden] regime clearly they have it out for bitcoin, and if it continues for another four years, you know, they'll probably end up killing it," DeSantis said, criticising the Biden administration's stated intention to further regulate the cryptocurrency sector. "As pres-

ident, we'll protect the ability to do things like Bitcoin," he added.

"I think that the [Biden] regime clearly they have it out for bitcoin, and if it continues for another four years, you know, they'll probably end up killing it"

Ron DeSantis, governor of Florida

Others are going further, putting their money where their mouth is. American entrepreneur Vivek Ramaswamy, who has joined the race in the Republican primary, announced on 20 May that he was accepting donations in bitcoin to finance his campaign. During his speech, he flashed a QR code

that people could use to make donations via the Atlanta-based payment service BitPay.

He was following in the footsteps of the pioneer in this field, Robert F. Kennedy Jr. Incidentally, the pro-bitcoin, dissident Democratic candidate is supported by Twitter co-founder Jack Dorsey. Kennedy announced his candidacy on 19 May at the Bitcoin 2023 conference in Miami, calling on his supporters to turn the next elections into a vote on the future of the currency.

So it could be that bitcoin, and more broadly cryptocurrencies, actually swing the next US presidential election. But the opposite is just as plausible. What if, as analyst Edward Moya from the platform Oanda wrote in a report on 26 May, the key to Bitcoin's success in the United States depended on the forthcoming elections? ▲

↑ Florida Governor Ron DeSantis, Donald Trump's announced challenger for the Republican ticket. Here at a speech in Orlando, 24 February, 2022.



# “AS WE EMERGE FROM THE PANDEMIC, PEOPLE CAN'T WAIT TO TRAVEL”

XAVIER ROSSINYOL



**Dufry, based in Basel, is the world's largest travel retailer. After its struggle through the past couple of years due to the COVID-19 crisis, travellers are now returning to the airport, Dufry's CEO explains.**

BY JULIE ZAUGG, PHOTOS: BERTRAND REY

**D**ufry is flying high. In the first quarter of 2023, the Basel-based company specialising in duty-free shops saw its revenue shoot up by 113% to 2.35 billion Swiss francs. Earnings were boosted by a rebound in the travel industry and an ambitious merger with the Italian food and beverage company Autogrill. We interviewed its CEO, Xavier Rossinyol.

**In the spring of 2020, air travel came to a sudden halt with the spread of COVID-19. Has it returned to pre-pandemic levels?**

Global air travel has seen a strong recovery in the past year. And it keeps getting stronger every month. This shows in our business volumes: April 2023 was our 13<sup>th</sup> consecutive month of growth. The only downside is Asia, where air traffic has still not returned to pre-COVID levels. Some larger countries, in particular China, have only recently reopened their borders. We'll have to wait a little bit longer before citizens from these countries start travelling again. Not many flights are available yet, and these passengers often have to obtain a visa or passport to leave their country. All that takes time.

However, I believe that by the second half of 2023 – or by the last quarter of the year at the latest – Asian travellers will be back.

**Which segments have seen the most vigorous recovery in travel?**

The rebound has been strongest in the leisure sector. As we emerge from the pandemic, people can't wait to travel. Paid time off and savings accumulated during the lockdowns give them the possibility to do that. We have noted a sharp increase in travellers to tourist destinations such as the Caribbean islands, Central America and the southern Mediterranean. Domestic air traffic in the United States has also jumped back up.

**What about business travel?**

Two years ago, everyone thought that business travel was over and that video conferencing would replace it. But in actual fact, more and more people are travelling for work again. Activity is not quite back to 2019 levels, but it's on the rise. Companies have realised that maintaining human interaction is crucial, that people need to see each other to do business, and that executives need to visit their teams scattered throughout the globe. However, business travel has changed in nature. People try to combine different types of travel intelligently, in order to avoid multiple flights in a concern for the environment. And in general, lines are increasingly blurred between business and leisure. For example, a businessman will more frequently travel to his second residence, knowing that he can work from home at the beginning and end of the week.

**You operate in 75 countries with some 5,500 stores. How do you decide to move into a new market?**

It depends on two factors. First, we analyse existing volumes and expected growth in a particular location. Then we have to wait for the airport owner to organise a call for tenders or ask us for a proposal. Before we can open a new store, we first have to convince the airport owner that we are the best duty-free, duty-paid or catering operator for their airport. →

## IN NUMBERS

**5,500**

Number of Dufry shops worldwide, located in 75 countries.

**Over 60,000**

Number of employees.

**13**

Number of consecutive months of company growth.



**Your presence is small in China, despite it being a fast-growing market. Is that due to laws in the country, which prohibit foreign operators from selling duty-free goods other than via a partnership with a local company?**

We have retail outlets selling duty-paid goods and food and beverage services at four airports in mainland China. We also have a presence in Hong Kong and Macau, and in Hainan through a local partner. As long as this legislation is in effect, it is difficult for us to extend our network too much in China. That said, we continue to expand into new destinations, including the recent contract won at Chongqing International Airport. And we do target Chinese tourists when they travel outside their country. In the rest of Asia, Europe and North America, they generate a substantial share of our revenue.

**What are the current travel consumption trends?**

We have observed that travellers increasingly go for luxury goods, i.e., premium cosmetics and spirits brands. They are also drawn to products in the health and wellness arena, as well as more locally produced goods for sustainability reasons. In addition, these passengers have little time to spare and want access to a wide range of products and services in one place. Based on these trends, we are adapting our range and rethinking the way we present our brands.

**In what way?**

Airports can be stressful places. You are in a hurry. You have to queue up to go through security. In these conditions, it is important for our shops to provide entertainment. This could be a short face massage, a play area for children or staged sets that could be a backdrop for a TikTok video. We are still in the early stages of this consumer revolution, but we have already started to implement it. Some retailers offer skin analysis machines for personalised skincare product recommendations. Others use a “whisky finder”, which makes recommendations based on personal taste preferences.

**“Air travel has seen a strong recovery and it keeps getting stronger every month”**

BIOGRAPHY

**SUCCESSFUL COMEBACK**

One short year ago, in June 2022, Xavier Rossinyol took over at Dufry from outgoing CEO Julian Diaz, who had held the position since 2004. The Spaniard, age 53, already knew the company from the inside, having served as CFO and then COO for the Europe/Middle East and Asia region between 2004 and 2015. After that, he gained experience as a CEO from 2015 to 2022 at Gategroup, the world leader in in-flight catering services. This background should make him competent to turn the company around in the post-COVID era. Xavier Rossinyol studied business administration and business law in Spain, Canada and Hong Kong. From 1994 to 2003, he worked for Areas, the global travel dining and retail company.



**In February 2023, you completed the acquisition of the Italian company Autogrill. What was the reasoning behind this merger?**

Until now, we haven't provided passengers with any food services. We wanted to enhance our offering through this channel. This gives us a competitive advantage over our competitors. At some airports we will continue to offer only duty-free products, but our long-term aim is to develop hybrid concepts: a champagne bar next to the spirits section, or a café integrated into a shopping kiosk.

Xavier Rossinyol at the Park Hyatt Hotel in Zurich, after the presentation of Dufry's first quarter 2023 results on 10 May.

**In today's e-commerce world, how do you stay relevant when your sales are exclusively through physical outlets?**

These days, consumers want to interact with the stores they visit both online and offline. Our sales may take place when the customer is at the airport, but travel plans are often made months in advance. So it makes sense for us to interact with them before their trip as well as after. We have a loyalty programme that lets members pre-order products and collect them at the airport. They can also participate in online auctions for →



limited edition goods. We have launched a mini-app in collaboration with the Chinese giant Alibaba, which enables Dufry to interact with users on all its e-commerce platforms. The travel retail industry is not ahead of the game when it comes to digital strategy, but we have big plans to develop this area. I will not give more details because I don't want to tip-off our competitors!

**With runaway inflation and the war in Ukraine, the travel industry has its share of challenges. Do you see a risk for Dufry?**

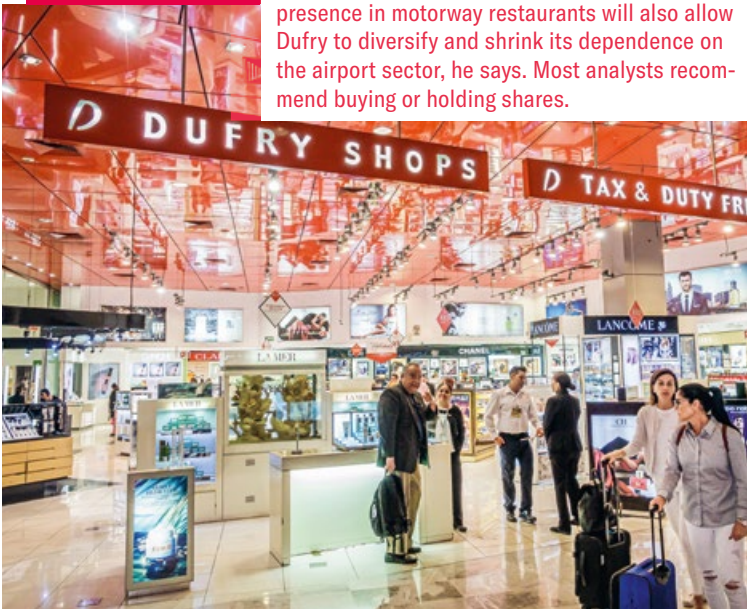
Anything that can lead to a drop in passenger numbers is bad for us. Current inflation is putting a strain on travellers' purchasing power. But people who fly are a little more affluent than the average population. They also usually have money set aside for their trip abroad. So we are more protected than our competitors in the high streets of major cities. Geopolitical instability is certainly discouraging travel, but the war in Ukraine has so far only had a limited impact.

**What do you see in the future for Dufry?**

About 80% of the world population has never taken a plane. This will change as economies develop in the countries where these people are from. Travel retail has huge growth potential. Our goal is to step up our presence in Asia. We are already the travel retail leader in Europe and the Americas, but we would like to become number one in Asia as well. In the longer term, I think air travel will grow in Africa, a continent with 1.5 billion people. One thing is certain: there will be more travellers in the future, not less. ▲

**“Aim is to develop hybrid concepts: a champagne bar next to the spirits section”**

**FOUNDED:** 1865  
**HEADQUARTERS:** BASEL (CH)  
**EMPLOYEES:** OVER 60,000  
**2022 REVENUES:** DUFRY STAND-ALONE, CHF 6.9 BN  
AUTOGRILL STAND-ALONE, € 4.1 BN  
→ DUFN



ANALYST OPINION

**THE MARKET HAILS THE AUTOGRILL ACQUISITION**

Dufry is a travel retail giant with more than 5,500 locations in airports, train stations and cruise ship terminals. Its revenue primarily derives from the airline industry. “Dufry is the world’s largest operator of duty-free shops,” says Jelena Sokolova, a Morningstar analyst who follows the firm. “This critical mass gives it a competitive edge in negotiating with its suppliers and winning concession contracts at airports.” However, Dufry is overly dependent on airport operators. “Airports do not hesitate to impose commissions of up to 25% or 30% on store operators within their scope,” she says. Competition is also fierce. “Despite Dufry’s dominance, the duty-free market is relatively fragmented,” says Volker Bosse, an analyst at Baader Bank. Companies active in travel retail include Gebr Heinemann (Germany), Lagardère (France), DFS (Hong Kong) and Lotte (South Korea). However, Dufry is in a good position to increase its market share in the years to come. “The integration of the Italian firm Autogrill will enable it to expand into food and beverage services,” Volker Bosse says. “This segment is growing fast in airports, especially as low-cost airlines no longer provide meal service.” Asia – China, but also Indonesia and Malaysia – represents another source of growth. “These countries have an expanding middle class and a growing number of airports,” the analyst says. Autogrill’s strong presence in motorway restaurants will also allow Dufry to diversify and shrink its dependence on the airport sector, he says. Most analysts recommend buying or holding shares.

**RADO**  
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MASTER OF MATERIALS



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CAPTAIN COOK HIGH-TECH CERAMIC SKELETON



**30**  
Infographic:  
An explosive  
dynamic

**32-45**  
10 companies  
shooting for  
the stars

**36**  
Interview:  
Fabien  
Jordan, CEO  
of Astrocast

**46**  
A lawless  
space

**48**  
Interview:  
Emmanuelle David,  
executive director  
of EPFL's Space  
Center

**51**  
Mining  
asteroids?

D O S S I E R

# The ruthless universe of outer space

The global space economy could double its current size to clear the symbolic \$1 trillion mark by 2030. But strangely, most space stocks are struggling. Time to invest?

BY BERTRAND BEAUTÉ

© HARRY CAMPBELL / ISTOCK



A

huge convoy heading for Kyiv. Horrors in the streets of Bucha. Destroyed buildings in Soledar. Since February 2022, satellite photos have documented the war in Ukraine in near real time. Images show weapons, buildings and the desolation of the battlefields with minute precision. And they are all stamped with a copyright: Maxar Technologies. This US company created in 2017 is now all over the headlines.

Maxar's new-found fame is no fluke. It points to an important shift in the use of outer space. "For decades, the space industry developed around government-run space agencies (NASA in the US, ESA in Europe and Roscosmos in Russia), which worked with long-standing defence contractors (Boeing, Lockheed Martin, Airbus, Dassault)," says Maxime Puteaux, a space industry consultant with the firm Euroconsult. "But since the beginning of the 21<sup>st</sup> century, a private-sector space industry has emerged,

with a bevy of startups setting out to explore space."

This US-born industry has been dubbed NewSpace, in contrast to the Old Space economy, which is perceived by the newcomers as an ageing and rigid industry. "The plummeting cost of space access triggered the NewSpace movement," says Emmanuelle David, executive director at EPFL's Space Center, in the interview she granted us (see p. 48). "It gave small companies and research laboratories, the opportunity to launch their own satellites, something that was previously reserved for governments before that."

In 2021, SpaceTech Analytics counted more than 12,000 space tech companies. This number has exploded up from only a handful of firms two decades ago. The plethora of new players shows through in the figures.

**In 2022 alone, 180 rockets were sent into space, 44 more than in 2021 – a record-breaking increase**

An article in the journal *Nature* estimated that in 2022 alone, 180 rockets were sent into space, 44 more than in 2021. A record-breaking increase. For more mind-blowing statistics, 2,469 satellites went into orbit in 2022, a 36% increase from 2021 (1,813) and almost double →



## Falling prices have given rise to the NewSpace economy

The emblem and precursor of the NewSpace economy is obviously SpaceX. The firm founded by Elon Musk in 2002 became the world's top satellite launch company in 2017, overtaking the European giant ArianeSpace and the US firm United Launch Alliance (ULA). Its key advantage: unbeatable prices. With its reusable rockets, SpaceX managed to drastically reduce launch costs.

For example, the cost of sending a kilogram into low Earth orbit with Lockheed Martin's AtlasIII rocket in the early 2000s was around \$16,000. Ten years later, the Falcon 9 rocket from SpaceX can do the same for \$2,600 per kilo, according to an analysis by the Center for Strategic and International Studies (CSIS), updated in September 2022. Lowering costs even further, SpaceX's Falcon Heavy rocket, which has been operational since 2018, achieved an orbiting cost of \$1,500 per kilo. Many companies have subsequently followed SpaceX's trajectory by developing their own launchers, such as Astra, Virgin Orbit and Rocket Lab in the United States, thus increasing the number of rockets capable of putting satellites in orbit. This increased competition has lowered prices further.



Satellite image taken by Satellogic of vegetation burnt by wildfire in Argentina.



the number in 2020 (1,272). And that's not all. A Euroconsult study published in December 2022 predicts that nearly 24,500 satellites will be launched between 2022 and 2031, i.e., an average of 2,500 per year. This would bring the global space market to \$1.1 trillion by 2030, up from \$469 billion in 2021, according to a Bank of America report in January 2023.

To accelerate their development and capture a share of this market, many NewSpace firms have gone public, especially in 2020 and 2021. But so far, performance has been bleak, and most NewSpace stocks have crashed. The share price of Astra, a US company listed in 2021, has lost 98% of its value. BlackSky and Satellogic have experienced similar fates, with their shares

falling 90% and 60% respectively since their IPO. The list of disappointments is long.

**“Many companies have cropped up in recent years. The competition is fierce. There won't be room for everyone”**

Thomas Coudry, analyst at Bryan, Garnier & Co

Is NewSpace just a financial bubble bursting in mid-air? “NewSpace has sound fundamentals,” says Maxime Puteaux. “What is happening is a market correction that is weeding out companies that wanted to rush things by entering the stock market via Special Purpose

Acquisition Companies (SPACs), whereas they had no mature products to launch to market. They sold unrealistic forecasts, making small-time investors believe that they could get rich with space. When these companies couldn't deliver on their promises, their shares collapsed.” Sometimes spectacularly, like Virgin Orbit. Founded by businessman Richard Branson, the company that

designs rockets for launching small satellite payloads went public in 2021 via a SPAC and filed for bankruptcy in April 2023. Just one of many in a string of failures.

Thomas Coudry, head of Tech Equity Research and NewSpace

specialist at Bryan, Garnier & Co, believes another reason has caused the stock market debacle: “All tech stocks suffered in 2022 and NewSpace was not spared. The fall was even harder as most of the players in this sector are early-stage companies with huge financing needs to develop. The blow of interest rate hikes has been particularly harsh for these companies.”

However, a few actors have managed to emerge relatively unscathed. Stock of US satellite operator Iridium Communications, listed in New York, has risen by over 80% in a year. “The current period will be tough for the most unstable NewSpace companies,” Maxime Puteaux says. “But those that have the capacity to deliver a product quickly with the lowest possible investment have a clear advantage.”

Given these circumstances, specialists expect a wave of mergers and acquisitions in the sector. “Many companies have cropped up in recent years. The competition is fierce. There won't be room for everyone,” says analyst Thomas Coudry. He recommends closely tracking companies that receive public funding. “Government orders will remain high in the space industry, especially in defence, which will be a key factor over the next few years. The war in Ukraine has heightened awareness of state sovereignty, and defence budgets have augmented sharply. NewSpace companies with exposure in defence will therefore be thrust upwards.” Maxar Technologies' shareholders would not argue otherwise. In December 2022, they agreed to sell their stake in the world's leading provider of space solutions, which works with the US military, to private equity firm Advent International for \$6.4 billion, a 129% premium per share. ▴

→ The Starlink constellation of satellites photographed from New Mexico, US.



## The advent of constellations

Nearly 2,500 satellites went into orbit in 2022, an increase of 36% from 2021 and of 95% from 2020 (1,272). “But this steady and dramatic rise conceals the fact that most satellites are launched by a handful of companies,” says Thomas Coudry, head of Tech Equity Research and NewSpace specialist at Bryan, Garnier & Co. Nearly 70% of the satellites put into orbit in 2022 belonged to a single operator: Starlink. Now it is all about constellations, which are networks made up of a large number of satellites. Starlink, which had around 3,200 functioning satellites at the end of February 2023, aims to operate 42,000 in the long term. OneWeb, a rival project, has 618 satellites in orbit, 110 of which were launched in 2022. By 2027, at least four mega-constellations of satellites will be competing for the internet services market: Starlink, OneWeb,

Amazon Kuiper and O3b mPOWER.

“The need for connectivity is exponential. But competition between operators will be fierce and could affect their ability to get returns on their heavy investments,” explains Thomas Coudry, author of last year's study ‘Sat Wars: A New Chapter.’

If constellations are on trend, it is because the unit price of satellites has fallen drastically in recent years, mostly due to industrialisation. “Building satellites used to be haute couture, but now it's more like H&M. Some companies are even planning to build gigafactories,” says Maxime Puteaux, a consultant at Euroconsult. “But if all the announced projects to build production units actually see the light of day, supply could exceed demand for satellites tenfold by 2030.”



# Satellites and debris: an explosive dynamic

With the democratisation of access to space, more and more satellites are being launched into orbit, causing a staggering rise in space debris.



6,380

Number of rockets launched (excluding failures) since the beginning of the space race in 1957 (as of 27 March 2023).



10,800

In tonnes, the total mass of objects orbiting the Earth.



7,700

Number of satellites currently in operation, out of the 15,430 launched since the beginning of space exploration.



33,680

Number of particles of space junk regularly tracked by space surveillance networks.



130 M

Estimated number of pieces of debris between 1 mm and 1 cm in orbit around the Earth.



640

Estimated number of events (collisions, explosions, anomalies) that have produced debris.



\$1,500

Cost of putting 1 kg into orbit today (with the Falcon Heavy rocket), compared with \$65,400 with the US space shuttles, a decrease of more than 95%.



\$1,100 BN

Estimated value of the space economy by 2030, compared with \$469 billion in 2021.

## Explosion in the number of satellites

With the advent of constellations, the number of active satellites in orbit has soared in recent years.

\* At 27 March 2023

SOURCES: ESA, STATISTA, BANK OF AMERICA

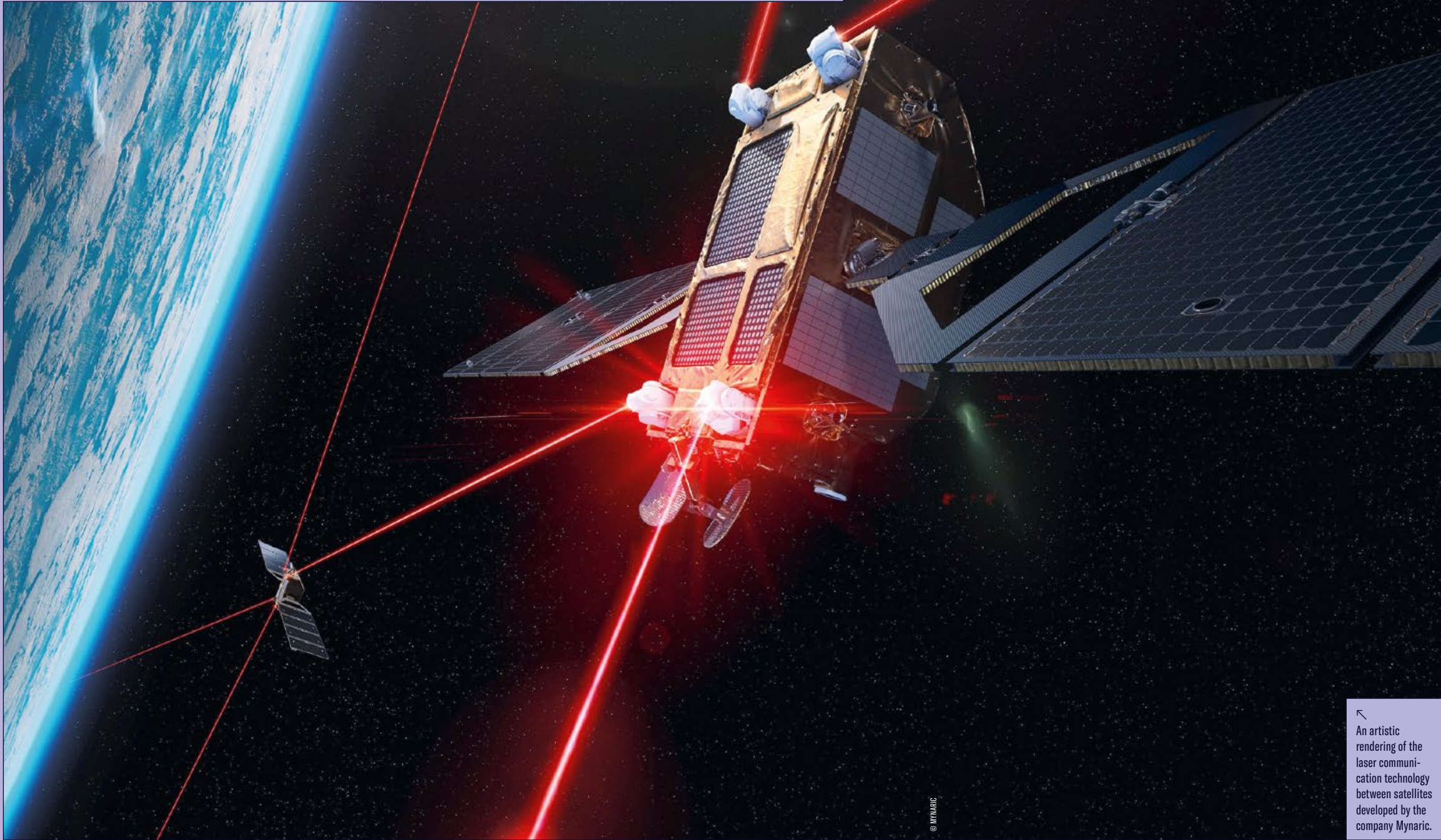


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# 10 companies shooting for the stars

A myriad of small companies have picked up on the NewSpace vibe. Here is our selection.

BY BERTRAND BEAUTÉ AND STANISLAS CAVALIER



© MYNARIC

An artistic rendering of the laser communication technology between satellites developed by the company Mynaric.

## Mynaric The lightsaber

While most NewSpace companies are based in the United States, Europe is also home to a few promising young stars. One of those is the German company Mynaric.

Using laser technology to transmit data increases bandwidth compared with radio links

Founded in 2009, Mynaric sells laser communication equipment that enables satellites in low Earth orbit to communicate with one another. Using laser technology to transmit data increases bandwidth compared with radio links, while reducing power consumption. For example, Mynaric's Condor MK3 terminal can transfer up to 10 Gigabits per second over a distance of 6,500 kilometres. These days, low-orbit satellite constellations are growing fast, and the market for this type of product is booming. For example, in 2021 Mynaric signed an agreement with the US company Northrop Grumman, giving the company a foothold in the huge US market. The two companies "will jointly develop and offer laser communication solutions tailored to the unique needs of specific US government space programs," their press release reads. Since Mynaric's IPO on the Frankfurt Stock Exchange in 2017, its stock has lost more than 50% of its value. But experts see the current share price as an opportunity. All analysts covering Mynaric recommend buying the stock.

FOUNDED : 2009 | HEADQUARTERS : MUNICH (DE)  
EMPLOYEES : 300 | 2022 REVENUE : €4.4 BN | → MYNA





## Rocket Lab

### The small rocket

SpaceX may be the talk of the satellite launch world, but another company is carving out a comfortable spot for itself. Founded in 2006, Rocket Lab developed and operates one of the world's few space launchers designed for small satellites. In 2022, the company generated revenue of \$211 million, up 239% from 2021. Electron, Rocket Lab's vehicle, has completed 37 launches since 2018, deploying 163 satellites into orbit. And with nine launches in 2022 and a 100% success rate, Electron has even become the second most commonly used US launcher each year, behind none other than SpaceX's Falcon 9.

The Electron rocket is much smaller, delivering payloads of up to 250 kg to low Earth orbit (LEO), compared with around 20 tonnes for the Falcon 9. But this smaller size has advantages. An Electron rocket costs a mere \$5 million to launch, substantially less than the \$60 million or so for the Falcon 9. The company has therefore slashed prices in the micro and nanosatellite launch segment. Rocket Lab is now developing a larger

rocket, called Neutron, which will be able to deploy 15 tonnes into low Earth orbit. Furthermore, Rocket Lab announced in May 2023 that it was taking over some of the assets of its bankrupt competitor Virgin Orbit. Most analysts approve the group's strategy and recommend buying Rocket Lab shares, which have lost 60% of their value since going public via a Special Purpose Acquisition Company (SPAC) in March 2021.

**FOUNDED:** 2006 | **HEADQUARTERS:** LONG BEACH (US)  
**EMPLOYEES:** 1,400 | **2022 REVENUE:** \$211 BN | → RKL8

**A rocket costs a mere \$5 million to launch**

© RSAM TOMS, SIMON MOFFATT

# BlackSky

## The eyes of Washington

In April 2022, Elon Musk opened Tesla's new gigafactory in Austin, Texas, laying claim that the facility could manufacture 500,000 Model Ys a year. To keep an eye on the factory and make sure its production rate matches the announced pace, investment funds and financial analysts now turn to Earth and space observation companies such as BlackSky. Its constellation of 14 high-resolution satellites – manufactured by LeoStella, the joint venture between BlackSky and Thales Alenia Space – can photograph the same location 15 times a day. The US company then analyses the images and delivers intelligence based

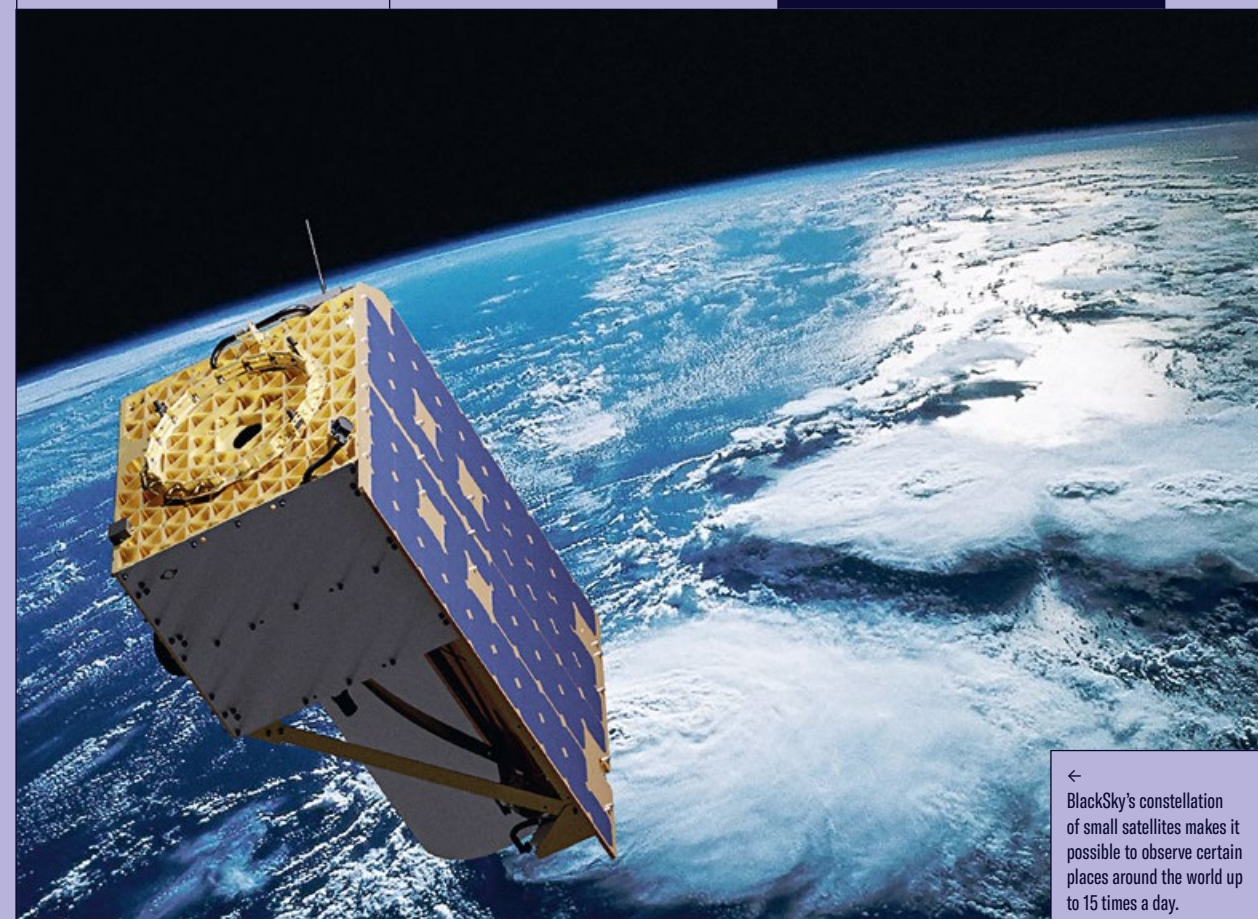
on them using AI intelligence algorithms. With Tesla, BlackSky estimates the number of vehicles produced and the frequency of subcontractor deliveries simply by monitoring the factory car park and surrounding traffic. Just the kind of information investors and Tesla's competitors can use.

**With Tesla, BlackSky estimates the number of vehicles produced simply by monitoring the factory car park**

While BlackSky openly touts this example, private customers actually only account for a tiny proportion of its revenue. In 2022, 82% of BlackSky's revenue was generated by con-

tracts with US government and agencies, 17% by agreements with foreign governments and just 1% from private customers. Governments are big fans of satellite images for all sorts of things, such as monitoring the environment, weather, agriculture or, as the war in Ukraine has shown, defence. In these areas, BlackSky competes with Maxar Technologies, Planet Labs and Capella Space in the United States. In Europe, Airbus Defence and Space is well positioned in this promising market with its Pleiades Neo constellation. But analysts covering the stock remain confident and recommend buying BlackSky, which has lost almost 90% of its value since its IPO via a SPAC in September 2021.

**FOUNDED :** 2014 | **HEADQUARTERS :** HERNDON (US)  
**EMPLOYEES :** 250 | **2022 REVENUE :** \$65.4 BN | → BKSX





# “We are the only Swiss company that operates satellites”

Spearheading Switzerland's NewSpace industry, the Vaud-based company Astrocast is getting in on the action in the fast-growing market of the Internet of Things. Its CEO Fabien Jordan told us more in an interview. BY BERTRAND BEAUTÉ

Sometimes, it is better not to look too closely at a company's share price. In August 2021, the Swiss company Astrocast made headlines when it raised 40 million Swiss francs in its debut on the Euronext Growth Oslo stock exchange (Norway). Amid the euphoria, Astrocast shares rose by more than 180%, from 30 Norwegian kroner (3.15 Swiss francs) to 85 kroner (8.80 Swiss francs) in the company's first day of trading. Two years later, the situation has changed. Astrocast shares are now trading at 3 kroner. But, with its service up and running since the beginning of 2022 as CEO Fabien Jordan explains, this disappointing market performance should not mask the potential of this Vaud-based gem. We spoke to him to find out more...

**Like most NewSpace stocks, Astrocast's share price has collapsed since your direct listing on the Oslo Stock Exchange in 2021. How do you explain that fall?**

We've suffered from the overall slow economic climate. The last two years have been tough for all tech companies on the markets. Astrocast is no exception. In 2021, we were delighted to raise the 40 million we needed to grow via a direct listing on Euronext Growth on the Oslo Stock Exchange. Then market conditions changed, and our share price fell. Another factor penalised our share price: we had planned to launch an IPO on Euronext Paris in the summer of 2022 to raise more capital. But we had to drop our plans due to the bearish stock market, and that sent a very negative signal.

↑  
Artistic rendering of Astrocast satellites.

**Do you think your share price can bounce back?**

Our valuation is currently not very strong. We can't be satisfied with the current share price. However, we should take a step back from our valuation today and look at Astrocast's potential. Unlike many NewSpace companies that are still in the research and development phase, we already have a constellation of 20 launched satellites, including two demonstrators and 18 commercial satellites. This makes us Switzerland's leading and only satellite operator, and the third largest in Europe in terms of the number of active satellites. So we're ahead of the competition, as our service has been up and running since the beginning of 2022. And I think that if we continue to implement our development

plan and raise the additional funds we need, the market will eventually reward us with a valuation that reflects our true worth. So for investors, venture capitalists and dedicated funds, I think Astrocast is a great opportunity now, because we caught the wave at the right time.

**You offer a satellite communication service for the Internet of Things (IoT). How is that useful?**

There is a definite need for global internet communication service. While around 80% of the world's population lives in areas covered by cellular systems, 85% of the Earth's surface has no connectivity. How do you provide these regions with internet service? The only answer is a connection via satellite. With Starlink, Elon Musk is offering an

expensive high-speed broadband solution, which is great for watching Netflix on his yacht in the middle of the ocean. At Astrocast, we're at the other end of the market. Via satellite, we connect objects that send small messages and only need to be online a few times a day. Our miniaturised narrowband solution is much cheaper than Starlink's system, making it ideal for IoT applications.

**Which sectors need this type of service?**

We target several industries. The first is maritime. Supply chain companies can use our device to track their containers as they move. Our main customer in this segment is the Israeli company ArrowSpot. The second industry is agro-tech. More and more sensors are being implemented in agriculture and livestock to optimise the use of water, pesticide and fertiliser. But these devices need an internet connection to work. Our technology makes that possible in areas not covered by the cellular network. For example, we work with companies like Avirtech in Indonesia and Digitalimal in Spain. Other industries offering valuable opportunities include the environment (weather stations, climate change monitoring, fire detection), energy (monitoring and predictive maintenance of installations) and fishing (monitoring of boats on the high seas).

**How big is your addressable market?**

Broadly speaking, IoT is a huge market, and the number of connected objects is expected to explode worldwide. Most of these objects will be connected via terrestrial networks (cellular, WiFi, LoRa, Bluetooth, etc.).

“85% of the Earth's surface has no connectivity”





## “With each sale, we generate revenue for the long term”

Fabien Jordan, CEO of Astrocast

Satellite solutions account for only a fraction of the IoT sector, focusing primarily on sparsely populated and rural areas where connectivity is deficient or non-existent. That means we need to remain realistic and not overestimate this market. The research firm MarketsandMarkets estimates that satellite IoT could reach \$2.9 billion in 2027, from \$1.1 billion in 2022, which comes out to annual growth of 21.9%. But I’m always wary of

projections like that, because it all depends on what is taken into account in the calculations. One thing is certain: opportunities abound.

### **Your service has been operational since the beginning of 2022. When do you plan to break even?**

We’ll generate our first significant revenues in 2023 and we expect to be profitable by 2026. Our business model is fairly traditional. Like mobile phone operators, we sell the hardware (like the SIM card in a smartphone) to our customers at a low margin. They then pay a monthly subscription of a few francs a month per device. The subscriptions are where we make a handsome margin. We’re currently still in the process of bringing our solutions to market, so most of our revenue comes

from hardware sales. But subscriptions will gradually take over and boost our margins. However, unlike with mobile telephones, once a customer joins our system, they don’t change operators overnight. Take the example of maritime transport, where the average lifespan of container tracking equipment is eight years. So with each sale, we generate revenue for the long term.

### **Other companies, such as the US firm Iridium Communications, offer services similar to yours. How can you compete with those giants?**

Unlike other operators, our service was designed for IoT from the outset, which makes it more efficient and much cheaper than the competition. The low manufacturing and launch costs of our nanosatellites keep our

↑ Astrocast employees manufacture satellites, the size of a shoebox, at the company’s site in Chavannes-près-Renens.

monthly data subscriptions at attractive prices, the key to success in IoT. Technically speaking, we operate within the L-band, i.e., the most efficient frequencies for satellite IoT. As a result, we can provide our customers with miniature antennas, which are ideal for the portable devices built into moving objects. Another essential advantage is our very low energy consumption.

And lastly, we are highly agile. We can adapt to our customers’ needs, because we cover the entire value chain. We manufacture both the nanosatellites that we operate in orbit and the electronic chips in ground equipment. We also manage the secure data platform where our customers retrieve their encrypted data from their connected objects. This gives us the opportunity to develop our infrastructure to continuously adapt to our customers’ needs and to the competition.

### **You chose to go public in Oslo, Norway, rather than on the SIX. Is it a disadvantage to be a Swiss company in the space industry?**

We chose Oslo mainly because of Norway’s industrial network. Norway has a lot of companies active in shipping, energy and the environment, which are all potential customers for Astrocast. Also, the Nordic markets were strong in 2021, which is why we were able to raise 40 million Swiss francs.

The main challenge as a space company in Switzerland is the lack of government support. NewSpace is investment-heavy. The respective governments participate in the industry in the United States, Canada, the European Union and Australia, which spreads out the financing and the risk. Without the support of the US government, SpaceX would never have existed! Switzerland does not fund pro-

jects like that. In fact, investors have asked us whether it would be better to transfer Astrocast’s head office to another country. We’re proud to be in Switzerland, and we want to keep this unique

expertise in the region at all costs. But it’s clear that we need more local support. Otherwise, the company could quickly fall into a critical situation and end up in foreign hands. ▲



Astrocast has sky-rocketed since it was founded in 2014. In December 2018, just four years after its creation, the young spin-off from the École Polytechnique Fédérale de Lausanne (EPFL) launched its first satellite into space – the first of many. Today, less than five years on, the Swiss start-up has 20 satellites in orbit, the last four of which were launched in January 2023 from a SpaceX Falcon 9 rocket. But before that, back in August 2021, the Vaud-based company pulled off a stunning stock market debut, raising 40 million Swiss francs on the Oslo Stock Exchange. All Astrocast satellites are CubeSats, a class of nanosatellites with a standard cubic shape measuring 10 cm on each side. The device consists of three units, approximately the size of a shoebox and weighing less than 5 kg. With its constella-

tion of 20 satellites, Astrocast aims to serve the satellite Internet of Things market. As an example, by attaching a small electronic device the size of a matchbox to the door of its containers, a shipping company can track the location of its assets continuously using Astrocast satellites. In October 2021, the investment bank Bryan, Garnier & Co forecast that Astrocast could generate revenue of 145 million Swiss francs by 2025. For the time being, the promising Swiss company is just starting to bring its service to market and expects to generate its first significant revenues in 2023. In terms of development, Astrocast has the advantage of its prestigious partners, such as Airbus and the European Space Agency (ESA).

FOUNDED : 2014  
HEADQUARTERS : CHAVANNES-PRÈS-RENNES (CH)  
EMPLOYEES : 50 | 2022 REVENUE : N/A | → ASTRO.OL



A Eutelsat receiving antenna in Rambouillet, France. ↗



Eutelsat  
The European giant

“The giants of the space industry are not going to disappear due to the emergence of

the NewSpace,” says Maxime Puteaux, a consultant specialising in the space industry for Euroconsult. However, this new competition is forcing some of the old companies to reorganise

their operations. Cue Eutelsat. This French company, founded in 1977, operates 34 satellites used for video broadcasting services. Eutelsat says its network serves 7,000 channels in 150 countries

© EUTELSAT

Eutelsat says its network serves 7,000 channels in 150 countries in Europe, Asia, America and Africa

in Europe, Asia, America and Africa. But the satellite TV market is flailing, as video-on-demand services via the internet, such as Netflix, take over.

To avoid going under, in July 2022 Eutelsat announced that it had signed a Memorandum of Understanding to join forces with the UK company OneWeb, whose constellation of 618 satellites provides broadband internet connectivity from space. This merger makes Eutelsat, for the time being, the only truly operational competitor to SpaceX’s Starlink constellation, which already has more than 2,600 satellites in orbit. However, the deal has not convinced the markets, and Eutelsat’s share price continues its downward spiral. The stock has lost 65% of its value in five years. Most analysts recommend holding shares.

Meanwhile, consolidation continues in the sector, driven by the space internet race. In March 2023, the Luxembourg company SES announced that it was “engaged in discussions” with the American counterpart Intelsat “regarding a possible combination”. Bloomberg says the merger of the two groups would create a European giant valued at around \$10 billion. And at the end of May 2023, the European Commission authorised the proposed acquisition of the UK-based Inmarsat by the US firm Viasat, announced in 2021 for nearly \$4 billion.

FOUNDED : 1977 | HEADQUARTERS : ISSY-LES-MOULINEAUX (FR)  
EMPLOYEES : 1,200 | 2022 REVENUE : €1.14 BN | → ETL

Spire Global  
Space-based big data

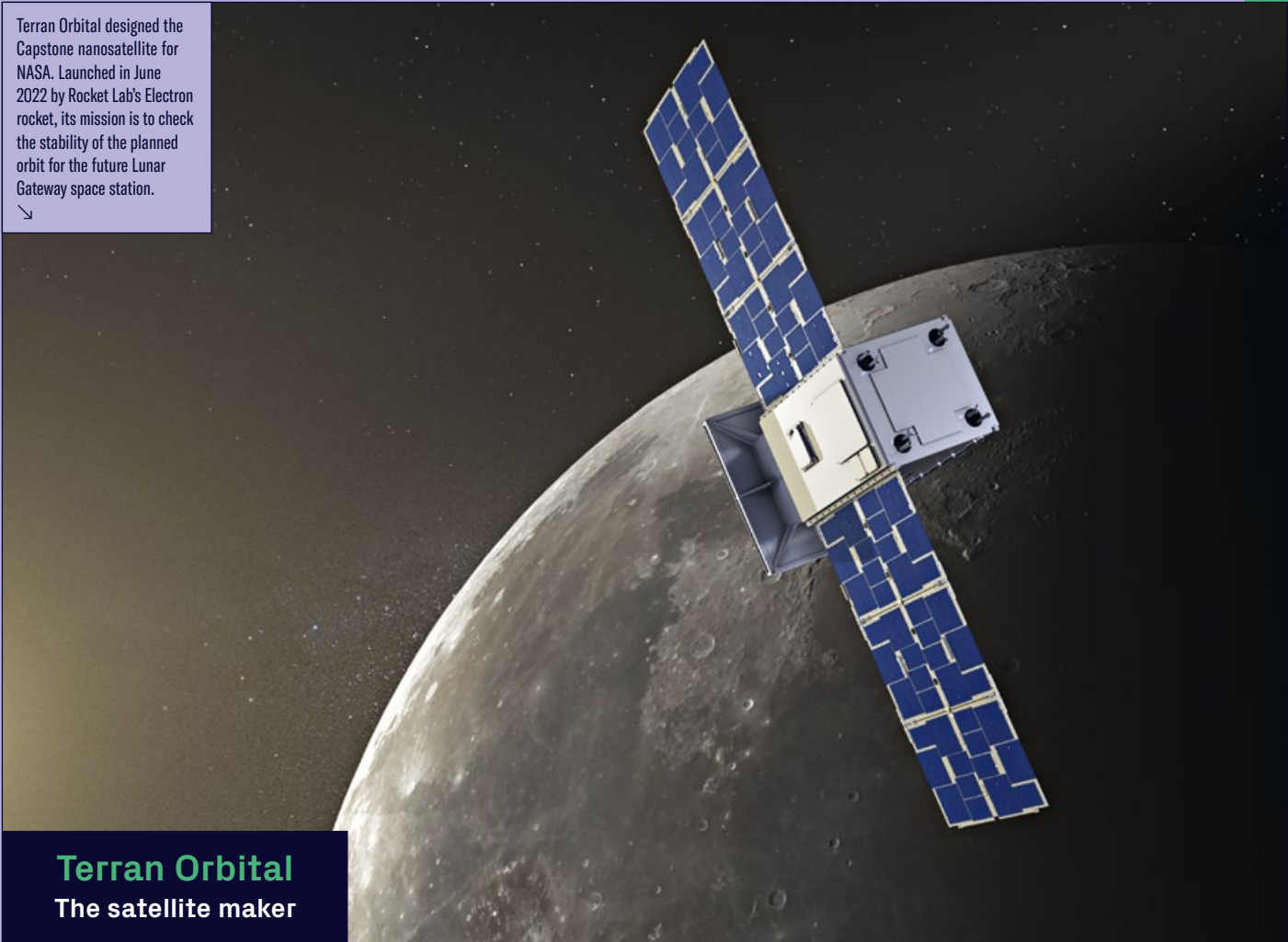
In 2017, *Forbes* magazine named Spire Global in its list of Next Billion-Dollar Startups. A few years on, the company still has a way to go. That being said, in 2022, barely 10 years after its creation in 2012, it posted impressive results with revenue of close to \$100 million, up 41% from a year earlier. The company also forecasts revenue growth of between 30% and 36% in 2023.

The company also forecasts revenue growth of between 30% and 36% in 2023

Spire Global has developed a technology for geolocating radio frequency signals via satellite. With a constellation of 160 nanosatellites that it manufactures and operates itself, the company can track ships and aircraft. While this tracking can also be done with traditional observation equipment, such as the satellites developed by Maxar Technologies and BlackSky, tracking via radio frequency has the advantage of working even in bad weather. Another competing solution is to use a satellite internet connection, such as that provided by the Swiss company Astrocast (see interview on p. 36), but the geolocated object must first agree to be tracked. Spire’s technology can locate any vessel emitting radio frequency waves, whether or not it wants to be monitored. The company says it has 733 customers but did not provide a revenue breakdown between government and commercial customers for 2022. In 2021, the split was 56% and 44%, respectively. Most analysts recommend buying the stock, which has lost 100% of its value since going public via a Special Purpose Acquisition Company (SPAC). in August 2021. The company, however, continues to devour cash, racking up a loss of more than \$90 million in 2022.

FOUNDED : 2012 | HEADQUARTERS : VIENNA (US) | EMPLOYEES : 400  
2022 REVENUE : \$99.4 BN | → SPIR





Terran Orbital designed the Capstone nanosatellite for NASA. Launched in June 2022 by Rocket Lab's Electron rocket, its mission is to check the stability of the planned orbit for the future Lunar Gateway space station.

### Terran Orbital

#### The satellite maker

After a record-breaking year in 2022, with revenue up 130% year-on-year to \$94.2 million, the US company Terran Orbital is off to a flying start in 2023. In February, it announced that it had signed a \$2.4 billion contract to build and deploy 300 satellites for Rivada Networks. Founded in 2013, Terran Orbital provides its customers (military and civilian) with end-to-end satellite solutions, covering small satellite design, production and launch planning.

In 2022, Terran delivered 19 satellites to its customers. An all-

time high. But the company has set its sights even higher. In May 2023, it broke ground on its future factory in Irvine, California, due to be completed in January 2024.

**Terran Orbital provides its customers with end-to-end satellite solutions**

This is expected to boost the company's production capacity to 250 satellites a year. Most analysts recommend buying the stock, seeing the current price

as an opportunity. In March 2022, Terran Orbital ended its first day of trading on the New York Stock Exchange at \$11.80 per share. Now the stock is trading at less than \$1.3, down almost 90% in a year and a half. How did that happen? Terran Orbital remains heavily in deficit. In 2022, the company posted a loss of \$164 million, after reporting losses of \$139 million in 2021. That kind of negative performance is a problem in the context of rising interest rates.

**FOUNDED:** 2013 | **HEADQUARTERS:** BOCA RATON (US) | **EMPLOYEES:** 450 | **2022 REVENUE:** \$94.2 BN | → LLAP

© NASA

### Redwire

#### The space mechanic

“We are the pick-and-shovel provider for the new space gold rush,” said Redwire CEO Peter Cannito at an investor conference in 2021 of his company’s business. As that adage goes: in a gold rush, don’t dig, sell picks and shovels. Since it was founded in 2020, Redwire has grown by buying a string of small companies in less than a year, including Adcole Space, Deep Space Systems, Made In Space, Roccoor, LoadPath and Oakman Aerospace. All of these companies operate in space technology. For example, Made in Space engineers and manufactures 3D printers that work in space. Redwire’s wide range of products include devices that deorbit end-of-life satellites and satellite sensors.

**Redwire already posts significant revenue, which rose 16.7% between 2021 and 2022 to about \$160 million**

In September 2021, the company debuted on the New York Stock Exchange, through a SPAC. On its first day of trading, Redwire’s shares jumped 16.6% to close at \$12.24. Since then, the tide has turned. After plunging nearly 80%, the stock now trades at around \$2.5. All the analysts and experts who follow Redwire

**FOUNDED:** 2020 | **HEADQUARTERS:** JACKSONVILLE (US) | **EMPLOYEES:** 500 | **2022 REVENUE:** \$160.5 M | → RDW

say this is a good time to buy. With good reason: unlike many NewSpace companies, Redwire already posts significant revenue, which rose 16.7% between 2021 and 2022 to about \$160 million. And that’s not all. Redwire forecasts revenue of between \$220 million and \$250 million for 2023.

© ESA, KARIM MELLAB



Developed and manufactured by Redwire on behalf of ESA, the Proba-V satellite celebrated 10 years in orbit in May 2023, whereas its lifespan was originally planned for only two to five years.



### Iridium

The pioneer

On the stock market, Iridium Communications is somewhat of an oddity. While the share price of the vast majority of NewSpace companies has nose-dived in recent years, Iridium Communications’ stock has shot up 285% in five years and 60% in the last 12 months. But the group has come a long way. In August 1999, the company – at the time simply called Iridium – had to file for Chapter 11 bankruptcy protection in the United States. Now let’s back up a bit. The story of Iridium began at Motorola, in the United States, when three engineers envisioned a satellite communication system that would work anywhere on the planet. It was 1987, and the idea was futuristic. The engineers determined that it would take 66 satellites in orbit for their device to work. Iridium was going to be expensive. But no matter, the launches began and the constellation was completed in 1998. One problem that the Motorola engineers did not foresee was that between the end of the 1980s and the end of the 1990s, cell phone technology became widely available. Nobody wanted a clunky, more expensive satellite device. Just nine months after commercial launch, the company went bankrupt, saddled with \$4 billion in debt.

Back from the dead, Iridium has diversified its customer base and now serves the maritime, aviation and humanitarian industries

Was that the end? Not at all. The Pentagon would ultimately step in to save Iridium. The Iridium system enabled GIs to communicate from Afghanistan, Iraq and other areas of conflict where US soldiers were deployed. Since coming back from the dead, Iridium has diversified its customer base and now serves the maritime, aviation and humanitarian industries. In parallel, the company offers services to support the Internet of Things. Most analysts recommend buying shares.

FOUNDED: 2001 | HEADQUARTERS: MCLEAN (US) | EMPLOYEES: 650  
2022 REVENUE: \$721 M | → IRDM

### Planet Labs

Eagle eyes

The incident involving Chinese balloons that flew over US territory in February 2023 demonstrated to the general public what Planet Labs can do. Journalists from the *New York Times* worked with the US-based manufacturer and operator of observation satellites to

Journalists from the *New York Times* worked with the US-based manufacturer


investigate the matter. The article “Tracking the Chinese Balloon From Space” published in March 2023 captivated the American public, providing a step-by-step account of the balloons’ trajectory and altitude, with a trove of information about the balloons. All that shone a spotlight on Planet Labs’ expertise.

Founded in 2010, the company operates nearly 200 satel-

lites, which it built, and claims 30-centimetre resolution imagery. In 2022 (fiscal year 2023), Planet Labs generated revenue of \$191 million, up 46% on the previous year. What is more, the firm expects to make between \$248 million and \$268 million in the current fiscal year, meaning an increase of between 30% and 40%, with operating margin of more than 50%. Despite this performance, the company has

been severely punished by the stock market over the last two years. Since going public via a SPAC on the New York Stock Exchange in July 2021, the share has lost 50% of its value, and is now trading at around \$3.5 per share. A bargain, say the analysts who cover the stock, most of whom recommend buying it.

FOUNDED: 2010 | HEADQUARTERS: SAN FRANCISCO (US)  
EMPLOYEES: 600 | 2022 REVENUE: \$191 M | → PL



Intermittently active since September 2018, the Cerberus volcano in Alaska is closely monitored by Planet Labs satellites. Here, an image taken in May 2022.



# A lawless space

**International space law is still in its very early stages. And at the national level, most countries, including Switzerland, have no legislation governing space policy.**

BY BERTRAND BEAUTÉ

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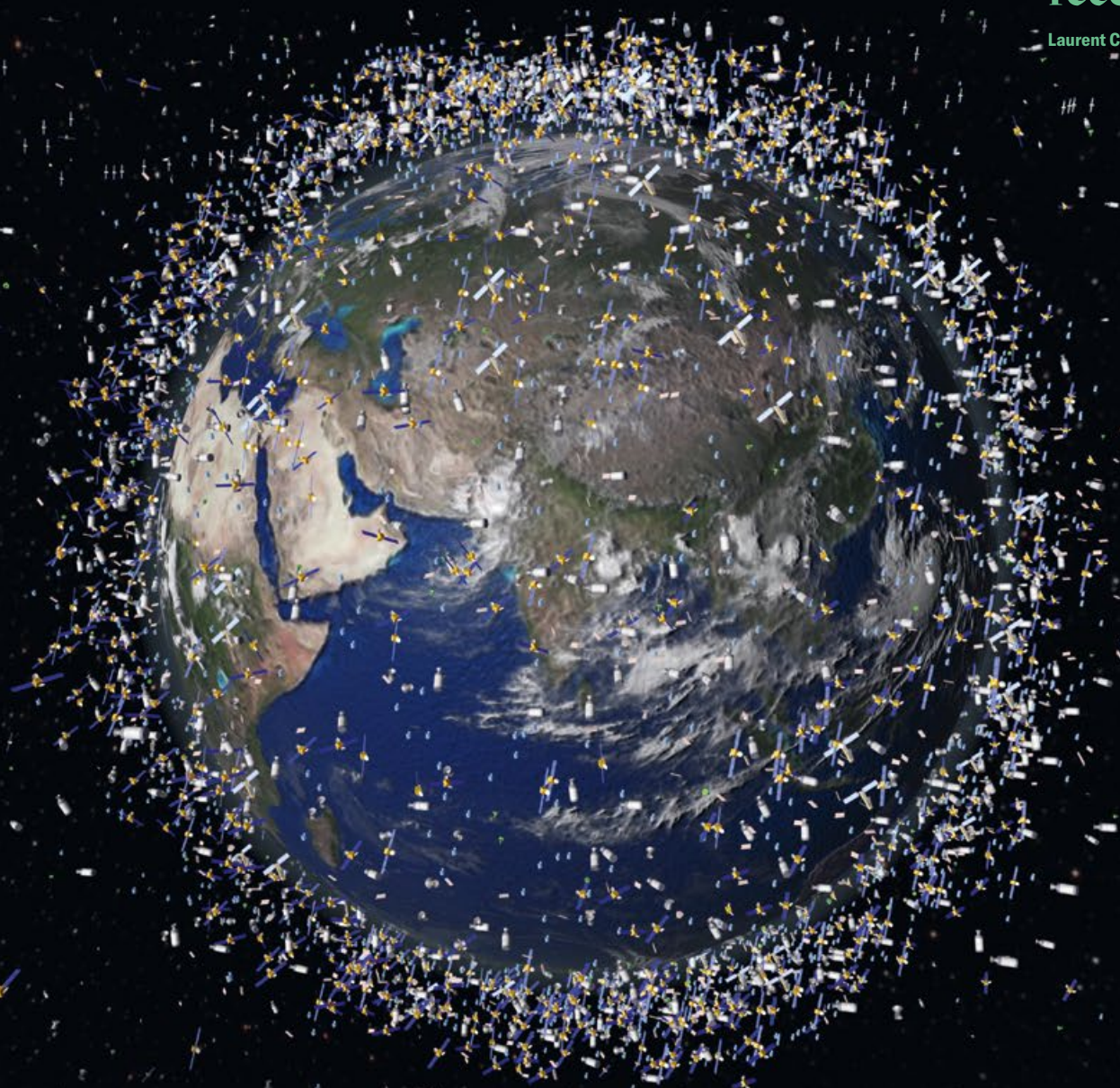
Switzerland is about to adopt a space policy. In February 2022, the Federal Council instructed the Federal Department of Economic Affairs, Education and Research (EAER) to prepare a preliminary draft by the end of June 2024. It was about time. “For now, Switzerland has no legislation on space activities,” says Laurent Chassot, a lawyer specialising in Air & Space at gbf Avocats. “There are no laws in this area. In the past several years, the need for such a law has become apparent in view of the development of space activities in our country.”

Switzerland is no exception. “Apart from the United States, Canada and some European countries (France, Luxembourg,

United Kingdom, etc.), most countries have not yet adopted legislation in this area,” Laurent Chassot says. Is outer space lawless territory? International space law was introduced in 1967 with the United Nations’ Outer Space Treaty. This treaty lays down a number of principles, including the non-ownership of space, a ban on weapons of mass destruction in orbit, and the requirement to provide help to any astronauts when needed.

“The UN text also states that nations are responsible for damage caused by their space objects and activities,” Laurent Chassot adds. “For example, if a rocket crashes into a third country, the launching state is responsible, even if the rocket in question was operated by a private player.” In 2007, the UN also added a non-binding resolution to its treaty specifically concerning the operation of satellites. It stipulates that end-of-life satellites must be de-orbited by their operators and that they must not generate any

debris when they are launched. Switzerland is concerned by this provision, even if it has not launched any satellites from its land. “If a satellite belonging to a Swiss company collides with another, generating debris, Switzerland could be held liable,” the expert says.



↑ Image of space debris (inactive satellites, fragments of craft and equipment lost by astronauts) evolving in low orbit (at less than 2,000 km altitude). This image illustrates the density of the debris, but it is not to scale.

© KERSTINE

## “International law has regressed considerably in recent years”

Laurent Chassot, a lawyer specialising in Air & Space

However, the rules laid down by the UN do have their limits. They are not legally binding, so nations only comply if they are willing to do so. Regulation of space activities thus rests largely on individual countries and their domestic legislation, with the downside of inevitable differences making concerted action difficult. As far back as 1984, the United States adopted the Commercial Space Launch Act, a federal law that facilitates the development of the commercial space industry through private-sector companies. Luxembourg has made its mark more recently. “In 2017, the country adopted a law governing the exploration and use of space resources. It is at the cutting edge in this field,” Chassot says.

Meanwhile, France has had legislation governing launches since 2008. But in practice, companies can launch whatever they want into space via third-party nations that have no specific legislation.

It looks as though the situation will continue, as it is unlikely that all the countries in the world will agree to adopt rules that protect space. “With the questioning of multilateralism, the war in Ukraine and conflict between the United States and China, international law has regressed considerably in recent years,” Chassot explains. “It’s

a delicate situation, especially given the problem of the proliferation of space debris. Space is a common asset that we need to preserve by adopting a regime for the protection of the environment, which could in particular be inspired by the polluter-pays principle.”

In view of the images we are seeing of the war in Ukraine, another thorny question arises: what activities does a private company have the right to carry out from space? Can it, for example, observe any territory, any army, any factory, any private residence, bearing in mind that the resolution of satellite images is now down to about 20 centimetres? “International law does not cover space observation, at least not through precise and binding rules,” says Chassot. “Personal data protection is not guaranteed.” On Google Earth, certain areas – such as allied military bases – are blurred after the images are taken because governments ask the service to do so.

“Considering all these challenges, I believe that Switzerland should not limit itself to bringing its legislation into line with UN rules. It should take the opportunity to adopt a comprehensive space law that addresses the entire spectrum of activities carried out in Switzerland in the space field or likely to be in the future,” Laurent Chassot says. “While some may feel that overly restrictive legislation could slow the economy, we should remember that a legal vacuum in sectors such as aerospace is an equally significant obstacle. Investors prefer predictability to uncertainty. Luxembourg, along with others, has understood this very well. What’s more, with the adoption of an ambitious law, Switzerland could emerge as an important place in the future.” ▲



# “Space should benefit everyone”

Emmanuelle David, executive director of EPFL's Space Center, is keeping a close eye on developments in NewSpace. As fascinating as this nascent industry is, she is concerned about making it sustainable as well. We spoke to her to find out more... BY BERTRAND BEAUTÉ



On 31 January 2023, an incredible event took place at the Vandenberg Space Force Base in California. The SpaceX rocket launched the onboard computer Bunny into space, a machine developed by students from the École polytechnique fédérale de Lausanne (EPFL) working as part of the larger Spacecraft Team. This successful lift-off means that EPFL is back in space. The Lausanne-based university had not deployed anything into orbit since 2009, when it launched the SwissCube, the first all-Swiss satellite designed by nearly 200 students. Despite the almost 15-year gap between the two events, EPFL's Space Center (eSpace) has made a name for itself through its top-notch research, particularly in sustainable space exploration. Emmanuelle David, the Space Center's executive director, spoke to *Swissquote Magazine*.

© SPACEX

**Over the last 10 years or so, people have been talking a lot about NewSpace. Is it an actual thing or more of a marketing concept?**

The term refers to a real entrepreneurial movement. Over the last five to ten years, we've seen an incredible number of startups moving into the space sector. NewSpace began when governments – especially in the United States through NASA – decided that launching rockets into space was no longer part of its strategy. To cut costs and focus

on other missions, they brought in privately owned companies to handle space launch services, such as SpaceX. The cost of space access fell dramatically and spawned a whole new space industry. Suddenly, startups and research laboratories could put their own satellites into orbit. It was a revolution. NewSpace started to boom in the United States, and Europe has been following that lead over the past five years. The context offers loads of opportunities. For example, in April 2022, the Italian

← On Tuesday 31 January, 2023, the Bunny computer, developed by EPFL students, was sent into space from California by the Falcon 9 rocket, during the Starlink 2-6 mission.

company D-Orbit offered EPFL students the chance to deploy their Bunny computer into space. And it finally lifted

off in January 2023. I've never seen a space project materialise so quickly. Things are moving so fast now that some people believe that NewSpace is already over and has given way to the era of Fast Space and its high-speed development cycles. A company has an idea, builds a demonstrator, launches it into space and tests its technology. The whole process only takes a few months.



**“Europe has nothing to be embarrassed about. With resources that are not at the same level as those in the US, we're doing a lot and doing it well”**

Emmanuelle David, executive director of EPFL's Space Center

**Is Europe lagging behind in this race?**

No. Europe has absolutely nothing to be embarrassed about. With resources that are definitely not at the same level as those in the United States, we're doing a lot and doing it well. More and more private investors are taking an interest in space on this side of the Atlantic. For example, the German startup Isar Aerospace, →



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which is developing the mini-launch vehicle Spectrum, raised €155 million in March of 2023. Other high-potential European companies include the French company Exotrail, which manufactures satellite engines and raised €54 million in February of this year, and the Italian company D-Orbit, which specialises in space logistics. In Switzerland, we have the EPFL spin-off Clear-Space, which is working towards the 2025 launch of the first satellite that can capture and deorbit space debris. But return on investment remains a complicated issue, because space operations still require major investment. Government space agencies therefore still play an important role, as they award companies long-term contracts, which helps them to grow.

**Which sectors will benefit from the boom in the space industry?**

Firstly, there's satellite imagery, with the best-known applications being services such as Google Earth. But imagery is used in many other areas, including meteorology, environmental monitoring, tracking the effects of climate change, agriculture, fire-fighting and, as we're seeing in Ukraine, armed conflict. The other major opportunity is internet connectivity via satellite, like Starlink's service in regions without cellular network coverage. That includes the Internet of Things. Satellites will bring a wide range of applications in transport.

Finally, there is space tourism, which is just getting started. But we can expect to see private space stations cropping up within a few years' time. And there will probably be lots of other applications that we can't necessarily imagine today, which will develop as we harness the last frontier.

**As a result, the number of satellites in orbit is exploding. Should we be worried about a potential saturation of near space?**

The space market is accelerating rapidly. It's both amazing and frightening to see what is becoming possible. Like artificial intelligence and the concerns it raises, I think the space industry is at a turning point. We must absolutely avoid the worst-case scenario, in which we would lose access to space. At EPFL, we are working hard to keep space exploration sustainable.

**What is the focus of this research?**

Around 40 EPFL laboratories are active in the space industry. A huge number of projects are under way, in fields as diverse as communication, imaging and materials. In terms of sustainability, we were working in three areas: measurement, analysis and action. For example, when it comes to space debris, we can currently identify objects larger than 10 centimetres, but they cannot be tracked continuously, and we do not always know how they behave. However, for smaller objects, we only have statistical models. It's important to improve these models as well as detection tools. If a one-centimetre object collides with a satellite, it can cause a catastrophic event and trigger a chain reaction, as the destroyed satellite itself can produce debris that will then destroy other satellites.

In another area, we are also studying the impact of the space sector on global warming. For the time being, we have no idea what the carbon footprint of a space mission is. The effect on global warming may be insignificant today, but it won't be in the near future if SpaceX's vision becomes a reality. And it will, because we

can't slow the momentum and we shouldn't stop innovation.

**So how can we make sure near space is protected? Should governments pass laws to protect space, as they have done to combat global warming?**

Currently there are no regulations. For example, if two satellites risk colliding, nothing determines which one should move to avoid an accident. There is no equivalent to traffic rules in space. But it is utopian to think that all governments will agree to pass laws to protect space. So I think Europe should step up, take the lead and set an example.

**"The effect on global warming may be insignificant today, but it won't be in the near future if SpaceX's vision becomes a reality"**

At EPFL, we are also working to teach companies about sustainable space exploration, primarily through the Space Sustainability Rating (SSR). Set up in 2021, this voluntary assessment system provides space industry operators with a simple tool for measuring the sustainability of each mission phase.

**Most satellites are launched by a handful of companies, such as Starlink and OneWeb. Are they receptive to this message?**

The companies that operate large satellite constellations are pushing things forward, because they care about their media image and they want to avoid collisions. That said, access to space should benefit everyone. So we have to make sure that low Earth orbit is not under the full control of a handful of players. ▲

# Mining asteroids?

Some companies dream of asteroid mining. But achieving that is looking complicated, maybe even impossible, with current technology. We take a closer look... BY STANISLAS CAVALIER

← The Minor Planet Center, the organisation responsible for listing asteroids, estimates that there are around 600,000 asteroids in the solar system. Most of them (550,000) are located between the orbits of Mars and Jupiter, in what is known as the asteroid belt.

Luxembourg is seeking to be a pioneer in asteroid mining. In 2017, the Grand Duchy became the first country in Europe to introduce legislation on the issue, passing a law that authorises private companies to use resources contained in asteroids. And the government is giving more than its word. In 2016, Luxembourg invested \$27.6 million in Planetary Resources, an asteroid mining startup that is also backed by Google co-founder Larry Page.

resources are beginning to dwindle, the idea has got a lot of entrepreneurs drooling. Now startups are being founded such as Planetary Resources, Deep Space Industries, Asteroid Mining Corporation and TransAstra Corporation. These space entrepreneurs believe asteroids are rich in rare earth elements and precious minerals that could be essential to industry. An unimaginable fortune just waiting to be mined.

In practice, however, tapping into that wealth is looking tricky. From a business point of view, space mines will hardly be a profitable concern. For example, NASA's Osiris-Rex probe, launched in 2016, aims to bring back 60 grams of asteroid samples to Earth in September 2023... at a cost of over \$1 billion. What is more, we currently do not have the technology to mine and purify metals in a weightless environment, and millions of kilometres from Earth. On top of that is the challenge of

bringing these resources by the thousands of tonnes. Finally, the very composition of asteroids raises questions. While it is assumed that most asteroids contain materials of interest, their exact composition remains a mystery to this day. That is enough to discourage even the biggest entrepreneurial dreamers. In 2022, Planetary Resources and Deep Space Industries were bought by companies that are not at all involved in space mining. These most recent industry players do not want to bring materials back to Earth but use them in space. Some people imagine asteroids to be future in-orbit service stations, where rockets could come and fill up their tanks. How? By using the water in the asteroids to produce hydrogen (and oxygen) for rocket engines through hydrolysis. Technologically, this option would seem more feasible, since, to extract water, all that is needed is to heat an asteroid's surface. ▲

Some people imagine asteroids to be future in-orbit service stations, where rockets could come and fill up their tanks

So could mining these celestial bodies to extract their precious metals be just around the corner? These days, as the Earth's heavily exploited

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## PATENTS

# Pharmas in need of new compounds

**The pharmaceutical industry is about to experience an earthquake, as patents expire on the sector's most lucrative drugs. But it has not run out of solutions.**

BY JULIE ZAUGG

“The expiry of these patents, which will begin in 2023 and peak in 2028, will lead to total losses of between \$300 billion and \$350 billion,” says Arda Ural, a life sciences expert at Ernst & Young. A Moody's report predicts that AbbVie, Merck, Pfizer and Bristol Myers Squibb are most exposed. The first two face threat because they are heavily dependent on a single product. “If we exclude the COVID-19 treatment, Keytruda accounts for 40% of Merck's revenues,” says Michael Levesque, one of the report's co-authors. “But its patent will expire in 2028 in the US and two years later in Europe.” Humira, whose patent protection expires this year in the US, accounts for 37% of AbbVie's revenue.

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he following are the most profitable drugs on the planet. Humira, a monoclonal antibody used to treat rheumatic diseases, made AbbVie \$21.2 billion in 2022. Keytruda, a cancer immunotherapy drug, generated \$20.9 billion for Merck last year. But their patents are about to expire, along with the intellectual property protections on many other biological products developed about 20 years ago. The looming patent cliff is raising fears that the pharmaceutical industry will be hurtled into an unprecedented free-fall.

**“By 2025, Novartis will have lost patents on its two biggest money earners”**

**Michael Nawrath**, a pharmaceutical industry analyst at Octavian

Meanwhile, Pfizer will lose its patent for the anti-inflammatory drug Xeljanz in 2025, for the anti-coagulant Eliquis in 2026 and for the cancer treatments Ibrance and Xtandi in 2027, threatening 40% of its revenue. At Bristol Myers Squibb, its portfolio is exposed to patent losses for Sprycel (2024), Yervoy (2025), Revlimid, Pomalyst (2026) and Opdivo (2028). →



The two Swiss pharmaceutical giants will not be spared. “By 2025, Novartis will have lost patents on its two biggest money earners, Cosentyx and Entresto,” says Michael Nawrath, a pharmaceutical industry analyst at Octavian. Then there are Tasigna, Promacta, Jakavi and Gilenya. Combined, their sales total \$17 billion.

Roche is slightly less exposed. Its patents on four drugs, including Kadcyla and Perjeta, are set to expire between now and 2028. “That’s a risk of losses of around \$5 billion in revenue,” Arda Ural says. Plus, those will be added to the losses from its three oncology blockbusters – Rituxan, Herceptin and Avastin – whose patents have recently expired.

As head of Merck’s pharmaceutical division from 2015 to 2021, Belén Garijo turned around the company, whose patents were expiring, and relaunched research and development efforts. She was appointed CEO of the German pharmaceutical giant in May 2021, becoming the first woman to lead a DAX group. ↓

The financial cliff awaiting big pharma is similar to the dread that permeated the industry around 2012. “Patents on a whole host of drugs developed in the late 1990s, a particularly propitious time for innovation, expired at that time,” recalls Damien Conover, an analyst specialised in the pharmaceutical industry at Morningstar. Top-sellers such as statins and new-generation antidepressants then lost their patent protection,

and tens of billions of dollars were in lost revenue.

This time, the situation is slightly different. “Most of the drugs facing patent expiry are bi-

ologics, which are more difficult to replicate,” says Bill Coyle of ZS Associates. “Their sales erode more slowly than small molecule drugs.” While chemical drugs instantly lose 90% of their sales to subsequent generics, sales of biologics decline more gradually, over several years. For example, AbbVie estimates that, in the United States, only 45% of the revenue generated by Humira will drain off by the end of 2023.

“Biosimilars (generic versions of biologics) are expensive to develop and to get approved,” says Mike Levesque. “As they are made from living material, new clinical trials are needed to prove that they are equivalent to the original product. Manufacturing them also involves a complex

process.” Due to these obstacles, usually only a handful of competitors emerge when a biologic drug loses its patent. In the United States, only 26 biosimilars have been launched to market.

Plus, American pharmacists are not allowed to interchange an original product automatically with a biosimilar. “They must first check with the attending physician,” Bill Coyle says. The European Medicines Agency did away with this requirement in September 2022.

### Major R&D efforts

With the patent cliff imminent, pharmaceutical groups have not been standing idly by. “The amounts invested in research and development have increased significantly over the past decade,” Arda Ural says. “They now account for 16% of the industry’s revenue.” At Roche, the figure is as high as 22%, and at Novartis 20%.

So that should fill the pharma pipeline. “The most promising areas are gene therapies, monoclonal antibody therapies and messenger RNA vaccines,” says Morningstar analyst Damien Conover. “The priority target areas are oncology, immunology, Alzheimer’s disease, obesity and rare diseases,” the analyst adds. He believes that the innovations currently being developed could generate \$90 billion by 2027. The two Swiss pharmaceutical giants are well positioned. For Novartis, growth will come from its two new oncology treatments, Kisqali and Pluvicto, says Michael Nawrath. The firm is also expected to obtain FDA approval soon in the United States for iptacopan, a treatment for rare kidney diseases. “There are not a lot of patients, but the treatment costs 550,000 Swiss francs per year and must be taken for life,” he says. Its subsidiary Genentech

is exploring a messenger RNA oncology vaccine.

“Meanwhile, Roche is focusing on the haemophilia treatment Hemlibra, Ocrevus for multiple sclerosis, and the cancer immunotherapy Tecentriq,” Michael Nawrath says. “There’s also tiragolumab (whose clinical trials in treating lung cancer have been disappointing, but which could find use in other indications), gene therapy for Duchenne muscular dystrophy, and crovalimab for rare blood diseases.”

## Return on investment in pharmaceutical R&D is plummeting

But these in-house efforts will not be enough. Return on investment in pharmaceutical R&D is plummeting. “The obvious therapeutic targets have already been identified and explored,” Arda Ural says. “The only options that remain are mechanisms of action that are complex and not as well understood. As a result, developing a new treatment has become more costly and time-consuming.”

### Boom in mergers and acquisitions

In response to the current situation, pharmaceutical companies are turning to mergers and acquisitions. “They can get compounds that are already in phase II or III clinical trials, or even on the verge of approval, without having to invest in upstream research and development,” says Frank Lichtenberg, professor of health-care management at Columbia →



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## An opportunity for biosimilars

One man’s loss is another man’s gain. “Pharmaceutical companies that have invested in developing biosimilars are poised to take advantage of expiring patents on blockbuster biologics,” says Bill Coyle of ZS Associates. Their cheaper products will gradually replace the originals, and they will gain market share. The US companies Amgen and Viatris and the Swiss firm Sandoz, owned by Novartis, are at the top of the list. Alongside them are specialist companies such as NeuClone from Australia, Samsung Bioepis and Celltrion from South Korea, the Indian firms Dr. Reddy’s, Sun Pharma, Cipla and Glenmark Pharmaceuticals, and Sigmapharm from Austria. Ironically, at a time when Novartis is set to face increased competition from biosimilars, the Basel-based group will be selling Sandoz in the second half of the year to concentrate on its patented medicines.



“There are also plenty of opportunities for investors in small and medium-sized biotechs worth between \$5 billion and \$20 billion”

Business School. Ernst & Young estimates that pharma M&A activity could reach \$275 billion this year, up 75% from last year. That healthy appetite could be

due to the sector's advantageous financial position. “Most pharmaceutical companies have high liquidity, good cash flow and moderate debt,” Damien Conover notes. Merck has a cool \$9 billion in hand since it spun off Organon, its division focusing on reproductive health. Pfizer's coffers are also full, thanks to its

COVID-19 vaccine. And Novartis took in \$20.7 billion from the sale of its stake in Roche. So far, Merck, Pfizer, Bristol Myers Squibb and AbbVie have been the most active M&A players, with the mega-acquisitions of Seagen for \$43 billion, Celgene for \$74 billion and Al-lergan for \$63 billion. However, Roche and Novartis are lagging behind in the M&A market, says Michael Nawrath. “Roche's last major acquisition was Genentech in 2010,” he adds.

Some acquisitions have been ill-timed. “In 2019, Novartis paid \$9.7 billion to snag Leqvio, a drug for cardiovascular disease,” he says. “That price was far too high given the limited potential of this treatment. It competes with statins, and most of those have generic forms available.”

However, most analysts continue to recommend buying shares in Novartis and Roche. Novartis has an ambitious share buyback programme under way that will benefit investors, its balance sheet is strong, and its operating margin rose to 37% in 2022. Roche is considered a safe medium-term investment, with a strong pipeline, sustained growth in revenue (up 36% over the last decade) and earnings per share (up 27% over 10 years). The two stocks are also currently undervalued compared with their pharmaceutical peers.

There are also plenty of opportunities for investors in small and medium-sized biotechs worth between \$5 billion and \$20 billion. Since August 2021, the Nasdaq index of biotech firms has lost a third of its value, suggesting a significant number of attractively valued companies. ▲

Big and small schemes to kill off competition

A drug patent usually lasts 20 years. But in an effort to extend these protections as much as possible, pharmaceutical groups have developed strategies that lie somewhere in a grey area and which are barely permissible within the scope of legality. “They file an avalanche of secondary patents, on the drug's formulation, dosage or manufacturing process,” says Tahir Amin, founder of I-MAK (Initiative for Medicines, Access & Knowledge), a non-profit that has created a database listing all patent applications. “They also get the treatment approved for new indications.” But the innovation for the patient is often minimal.

Humira's patent should have expired in 2016, but the last of its 160-plus patents will run

until 2023 in the United States. “In those seven years, the drug has earned AbbVie more than \$100 billion,” Tahir Amin says. The price of the treatment has risen from \$1,870 to \$3,167 per month. More than 180 patents have been filed for Merck's Keytruda, which is expected to have partial protection until 2040 with a patent on a new subcutaneous form of the drug. In some cases, the initial 20-year period has almost doubled.

Pharmas are also using copyright to fight off the competition. “AstraZeneca trademarked the purple colour of its Nexium pills, knowing that patients would find it hard to trust the generic version if it looked different,” says Graham Dutfield, an intellectual property expert from the University of Leeds.

Another tactic is to sign agreements with companies that produce generics or biosimilars. “A pharmaceutical group will pay a competitor to delay the market launch of its product,” says Robin Feldman, a patent law expert at the University of California, San Francisco. This “pay-for-delay” strategy was banned by the US Supreme Court in 2013, but it is still practised under the radar.

“The generic producer is paid in the form of rights to other drugs; in exchange, it agrees not to enter certain markets,” she says. This would explain why the first biosimilar of Humira, produced by Amgen, has been available in Europe since 2018 but will not be available in the United States until 2023.

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# Tupperware

A B R A N D  
A S T O R Y

## Is the party over?

Although product quality remains intact, the brand that was once a favourite among housewives is now suffering from its outdated image and fierce competition. In Switzerland, hundreds of consultants are perpetuating the tradition of Tupperware Parties.

BY ANGÉLIQUE MOUNIER-KUHN

W

ith sales plummeting to \$1.3 billion in 2022, Tupperware is now in urgent need of cash to pay off its \$700 million mountain of debt and faces the threat of class action suits since accounting misstatements were revealed. The archetype of entrepreneurial success and a vehicle for female empowerment post-World War II, the home product manufacturer is barely more than a shadow of its former self. Floated on the New York Stock Exchange in 1996, Tupperware stock is now trading for a handful of cents, down starkly from the \$95 mark in 2013. The company itself

sounded the alarm on 7 April, announcing that it had “substantial doubt about its ability to continue as a going concern”.

Despite its shaky standing, the multinational based in Orlando, Florida, is not quite ready to bow out yet. By bringing in financial advisors from the investment bank Moelis & Co to assist in seeking additional financing, reviewing its property portfolio and improving its capital structure, its management is doing “everything in its power to (...) address our financial position,” stated CEO Miguel Fernandez.

Whatever fate awaits the company, one thing is for sure: “tupperware” will remain a household name. The word has been used generically in everyday language for far too long, joining the ranks of Kleenex, Thermos, Frisbee and Escalator. Just the sound of it stirs up nostalgia: in the kitchens where we grew up, brightly coloured boxes and lids would be piled high in our cupboards, ready to seal our delicious leftovers that would later be reheated.



© TUPPERWARE

### KEY DATES

#### 1946

The American Earl Tupper developed a polyethylene lid as an airtight seal for food containers. Tupperware was born.

#### 1948

Divorcee and single mother Brownie Wise launched the first Tupperware Parties at home, becoming the architect of the company’s success.

#### 2023

The company announced that it was in serious financial difficulty, raising fears of possible bankruptcy.

Tupperware came about from the boundless imagination of inventor Earl Tupper. In the late 1930s, the New Hampshire native worked for a DuPont-affiliated plastics factory. He took home a waste product from the production process, polyethylene, to try to develop new prototypes. Not only was it cheap, the material also showed some interesting properties. It was non-toxic, odourless, lightweight and durable. In 1946, Earl Tupper took inspiration from paint cans to design an airtight seal for the half-sphere containers he had created to store food and drinks. Tupperware was born. But it was not until Brownie Wise came on the scene two years later that American housewives were convinced to make the containers an essential ally in home economics.

## The brand continues to expand its range. Its catalogue offers hundreds of items

The divorced single mum from Detroit came up with the idea of applying tried and tested direct sales techniques to Earl Tupper’s products. She would organise “home parties” to spread the word and hired other women to step up sales and marketing efforts. Impressed with her success, Earl Tupper made her head of a new division at his company, Tupperware Home Parties, while he remained focused on product development and manufacturing.

By 1954, Brownie Wise reigned over thousands of representatives. In booming suburban America, “Homebound mothers eager to earn extra income and thwart social isolation became

enthusiastic organizers and attendees of... the Tupperware party”, noted design historian Alison J. Clarke in 2001. The home shopping queen became the first woman to make the cover of *Business Week*, which dubbed her the “Prophet of Plastic”. Tupperware was already a multi-million-dollar business by the early 1960s, facilitating its entry into European markets.

Six decades later, while up against unbridled competition in the airtight storage box market, the brand continues to expand its range. Its catalogue offers hundreds of items, including insulated tumblers, freezer trays, gnocchi presses and grills for baking or roasting meat, fish and vegetables in the microwave.

But the marketing strategy has hardly changed in the 70 or so countries where its products are sold. Tupperware has made inroads onto store shelves via partnerships with supermarkets in the United States and Europe. However, while its management promises to develop its online offering, door-to-door remains the preferred sales channel.

Out of an estimated workforce of 284,000 people worldwide, nearly a thousand women – along with a few men – are perpetuating the Tupperware Party tradition in Switzerland, being paid a percentage of their sales. “I immediately loved it,” says Joanie Waelti, who has been a Tupperware consultant in Lausanne for the past four years. She appreciates the product quality and the contact with other staff and her customers. “Tupperware always encourages us to always do more, but everyone does it in their own way. Some people put a lot of energy into it, while others do it more as a hobby,” she adds. But will that be enough? ▲

FOUNDED: 1946 | HEADQUARTERS: ORLANDO (US)  
EMPLOYEES: 10,000 | 2022 REVENUE: \$1.3 BN | → TUP





## ARTIFICIAL INTELLIGENCE

# ChatGPT: the new financial advisor

**This new artificial intelligence tool has made shockwaves in many industries. In finance, ChatGPT could transform market analysis, risk management and customer service.** BY JULIE ZAUGG

© SAM CHIVERS

# “P

retend to be an asset manager and build me a portfolio that includes companies with solid cash flows, sustained growth, attractive valuation, competitive advantage in their sector and low debt.” These are the instructions that Jon Ostler, founder of the UK price comparison platform Finder, submitted to ChatGPT in early March. The AI tool was launched to the public in November 2022 by OpenAI.

“The tool created a portfolio of 38 companies,” says Ostler. “Some were obvious, such as Alphabet, Meta, Netflix, Walmart, 3M and Pepsico, but there were other lesser-known companies such as Thermofisher Scientific, which makes scientific instruments, medical equipment producer Danaher, and Lam Research, which manufactures machines for the semi-conductor industry.”

The performance of this group of assets was compared to the 10 most popular funds in the UK, including funds from HSBC, Fidelity and Vanguard. “After 10 weeks, our AI fund increased 4.32% whereas the others decreased 1.04%,” says Ostler. Over the same period, the US index S&P 500 and →



European index Stoxx Europe 600 both performed worse than the portfolio selected by ChatGPT.

In the finance world, the deployment of this large language model (LLM) tool could cause a mini revolution. “It can very quickly analyse large quantities of data, then provide predictions and recommendations based on that data,” says Alejandro Lopez-Lira, professor of finance at the University of Florida. This ability makes it possible to evaluate the market sentiment on a company or investment.

The professor also tried his hand at ChatGPT. “I submitted 60,000 headlines about companies listed on the New York Stock Exchange and NASDAQ to ChatGPT and asked it to determine if the information provided would be positive, negative or neutral for the market performance of the company,” he says. The next day, the share price of the companies in question had increased 0.1% on average for the companies that the AI favoured, and decreased 0.4% for the companies that the AI found to have negative sentiment.

“AI will save time and produce higher quality reports because more sources will be examined”

Michael Schrage, innovation expert at the Massachusetts Institute of Technology

Most importantly, Professor Lopez-Lira asked the tool to justify its choices. “The responses given all made sense from a financial perspective,” he says. For example, he used a headline announcing a drop in

Does ChatGPT put jobs at risk?

The emergence of ChatGPT has raised many concerns, particularly whether humans will be replaced by robots. These fears are partly justified. Goldman Sachs estimates that 35% of finance jobs could be automated with AI. “Repetitive and routine tasks and work that requires lots of copy-pasting or compiling figures are the most at risk,” says Brian DeChesare, the author of several finance blogs. “On the other hand, client-facing roles will be less impacted.” So junior analysts are more at risk than private asset managers, for example. These changes will not necessarily result in reductions in staff. “We’re going to see two models

emerge: some companies will generate more value with the same number of employees, whereas others will continue to produce the same quality of work with a reduced workforce,” says Nicolas Boucher, author of a guide on ChatGPT and finance. Increasing numbers of LLM tools will also create new needs. “The information we gather on the ground, in interpersonal discussions, will become more important,” says Alejandro Lira-Lopez, a finance professor at the University of Florida. “If everyone is using ChatGPT to read the markets, this ‘soft’ information will help people stand out and gain a competitive advantage.”

revenue for Activision Blizzard. “But ChatGPT decided it was still good news, since the profits exceeded expectations,” he says. Similarly, the tool decided that a share buyback programme by AACORP “was a positive sign for investors, indicating that the company is confident in its financial position and determined to return value to shareholders”.

A similar attempt from two researchers at the Federal Reserve Bank of Richmond in the United States showed that ChatGPT can understand monetary policy press releases from the Fed. It can qualify each phrase

based on its accommodative, restrictive or neutral effect on the markets.

Michael Schrage, an innovation expert at the Massachusetts Institute of Technology, believes

that in time, LLM tools will be able to automate the production of financial analysis reports. “AI will save time and produce higher quality reports because more sources will be examined,” he says.

These productivity gains will be reflected in the work of financial analysts. “While previously analysts could only cover about 20 companies, with AI they will be able to cover dozens,” says Alex Lazarow, who founded venture capital firm Fluent Ventures. The very nature of their work will change. “Analysts will spend less time producing reports and more time on actual analysis, which is a higher added value task,” says Nicolas Boucher, author of the guide *ChatGPT for Finance*.

Boucher imagines a virtual super assistant that could respond in a personalised, precise way to banking clients, compared to the chatbots of today that are limited to stock responses. In a wider sense, ChatGPT

can also play a role in decision-making in the financial industry. “Wealth managers could submit data on a client (risk tolerance, expected returns, overall financial situation) and receive a proposed investment strategy that includes the best opportunities on the market at a given time,” says Schrage, from the Massachusetts Institute of Technology. Aware of this potential, Morgan Stanley has begun launching an LLM tool in its wealth management division.

An employee responsible for compliance or risk management could use ChatGPT to analyse the environment in which the institution operates and generate disaster scenarios. The program’s ability to quickly examine vast quantities of data and find suspicious transactions will make it an ally in the fight against fraud and money laundering.

Venture capital investors will use it to identify startups that are worth investing in. “Currently, one of my biggest problems is actually finding information about companies on the other side of the world,” says Lazarow. “What is the exact size of their market? What is the degree of customer engagement?” He believes that ChatGPT will help him solve that problem and in time, it will democratise access to venture capital.

Far from infallible

Despite their promises, however, LLM tools can be a cause for significant concern. “Financial institutions will be unlikely to share confidential client data with an open-access tool,” says Brian DeChesare, the creator of the platforms Mergers & Inquisitions and Breaking Into Wall Street. “If there was

ever a breach, it would be very serious.”

ChatGPT is also far from infallible. The data it was trained on only goes up to 2021, which means that it bases its conclusions on outdated information. Since AI has access to the entire Internet, it is also not immune to the conspiracy theories, fake rumours and other misinformation that haunt certain corners of the web. Even the way that ChatGPT

“If you ask ChatGPT for a quote from Warren Buffett on Switzerland, it will produce one, even if such a quote never existed, because it will combine Buffett quotes with what’s available online about Switzerland”

Nicolas Boucher, author of a guide on ChatGPT and finance

works, based on predicting words that are most likely to occur statistically, can lead to “hallucinations” – results that seem logical at first glance, but upon further reflection are completely absurd. “If you ask ChatGPT for a quote from Warren Buffett on Switzerland, it will produce one, even if such a quote never existed, because it will combine Buffett quotes with what’s available online about Switzerland,” says Nicolas Boucher, author of a guide on ChatGPT and finance.

Similarly, the tool sometimes struggles to understand the wider context. “For example, if you ask for an opinion on an online betting company whose revenue is up, ChatGPT will recommend

purchasing shares based on its good results, but it will omit the systemic risks involved, such as the fact that online betting is banned in a growing number of countries,” says DeChesare.

Fundamentally, LLM programs are just black boxes, according to Schrage. “They lack transparency: we don’t know how they reach their conclusions, and we don’t know the sources they pull from,” he says.

And in the finance world, mistakes are not taken lightly. “We do business with institutions that are very heavily regulated,” says Jon Ostler, founder of Finder. “They can’t just say whatever they want with no legal consequences.” And that raises the question: “If ChatGPT is wrong, who is held liable: the tool or the bank?”

To avoid this tricky predicament, several financial institutions – such as JPMorgan and Zurich Insurance – have created their own LLM tools. The most ambitious of the bunch is at Bloomberg. The financial information group is currently developing an artificial intelligence program inspired by ChatGPT but based on its own corpus of specialised financial data. In addition to public information, the corpus also includes annual reports, securities forms, transcriptions of conferences with investors and articles from Bloomberg journalists. So far, the tool has been trained on 700 billion tokens (fragments of words) compared to 500 billion for ChatGPT-3. The coming competition will be fascinating... ▲





## Simulands

Fake heart surgery

NUMBER  
OF EMPLOYEES  
30

HEAD OFFICE  
ZURICH

FOUNDED  
2019

How can aspiring cardiologists learn to operate on the human heart? Their options for honing their skill are limited, especially if they do not want to use animals. To address this dilemma, the startup Simulands has developed cardiac simulators to teach these physicians the complex

reality of operating on this organ. Using 3D printing (silicone and metal), the Zurich-based company has not only recreated a life-size model of the anatomy of the cardiovascular system with real-time haptic response sensors, but also modulated the system to mimic different pathologies that can affect patients.

The startup has recently landed €10 million to accelerate the commercialisation of its simulators. Its customers already include big names such as

Abbott Laboratories, Edwards Lifesciences and Boston Scientific, where its devices are used in the continuing education of surgeons. In addition to increasing its foothold in the United States and Asia, the funds will be used to expand its product range, as CEO and founder André Guidotti explains, “We now plan to develop solutions for other medical uses, such as electrophysiological examinations.” Simulands is also targeting academia with simpler and therefore more affordable equipment. In addition, the company is developing software that combines augmented reality and artificial intelligence.

# Swiss startups in this edition

BY GRÉGOIRE NICOLET



## Yeekatee

Posting about your investment strategies

NUMBER  
OF EMPLOYEES  
8

HEAD OFFICE  
SCHLIEREN

FOUNDED  
2021

At the start of the year, Yeekatee, a startup developing a social media platform for investors, closed its first funding round, securing \$1.9 million. The round was led by serial investor Ronald Strässler, co-founder of Avaloq, a provider of wealth management

solutions. With this injection of capital, the application is expected to launch in Switzerland during the summer and in Europe in 2024. Already being tested among a restricted pool of users, the app combines social media with investment tools.

How does that work? Basically, users can aggregate their various bank and trading accounts with the app to have a complete overview of their assets and generate a whole range of statistics. Personal data is always stored by

the partner institutions. The second advantage of the platform is that it encourages users, who can remain anonymous, to share their portfolios and investment strategies. “Eventually, returns will be generated by premium features, such as advanced portfolio analysis and additional financial data,” explains CEO and co-founder Didier Matthey.



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R E A D

All-in on AI

How Smart Companies Win Big with Artificial Intelligence

BY THOMAS H. DAVENPORT AND NITIN MITTAL  
HARVARD BUSINESS REVIEW PRESS, 2023

Organisations that use artificial intelligence improve their operations and products. That is essentially what this book demonstrates through examples of pioneering companies that have already made the deep dive into AI. They include the aircraft manufacturer Airbus, the US insurer Anthem and the US bank Capital One. Designed to be within reach of beginners, the book is filled with a wide range of industries and use cases. The authors impart practical tips for decision-makers on selecting technology, handling data and preparing staff. A must-read to better understand AI's potential to transform businesses.

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L I S T E N

We Study Billionaires

BY STIG BRODERSEN, TREY LOCKERTIE AND CLAY FINCK

With more than 100 million downloads to date, *We Study Billionaires* is the headline show of *The Investor's Podcast Network*. It breaks down how legendary billionaires, such as Warren Buffett, Charlie Munger and Bill Gates, became what they are today. The hosts explore their investment strategies, market viewpoints and entrepreneurial triumphs.

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D O W N L O A D

HomeByMe

Interior designer:  
You

As an adjunct to the HomeByMe website, this app is an immensely practical tool for designing your future home. Its intuitive interface enables you to create accurate 3D plans of your home, add furniture and decorative items, and, most importantly, see it all in real time. The app also offers a wide selection of furnishings and decorations to help fill your space – be it a studio flat or a palace – and provides access to the designs of millions of users. Professionals who use the web version can store their clients' projects or edit the plans together with them.

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# Swissquote moves into private equity

Our clients can now invest in fast-growing privately-held companies, such as SpaceX, Discord and Stripe. We take a closer look...

SWISSQUOTE.COM/UNICORN

Many of the most innovative, high-growth companies are not listed on any stock market. That generally puts them out of reach for individual investors. To allow its clients to tap into the potential of these unicorns, Swissquote has partnered with the Swiss fintech company Stableton, which operates

an investment platform specialising in private markets.

Stableton has created a unique Actively Managed Certificate, the Stableton Unicorn Index AMC, which provides investors with access to 20 privately-held companies that are leading the way in their sector.

Each firm is a unicorn, worth at least €1 billion, including SpaceX, Epic Games, Discord and Stripe.

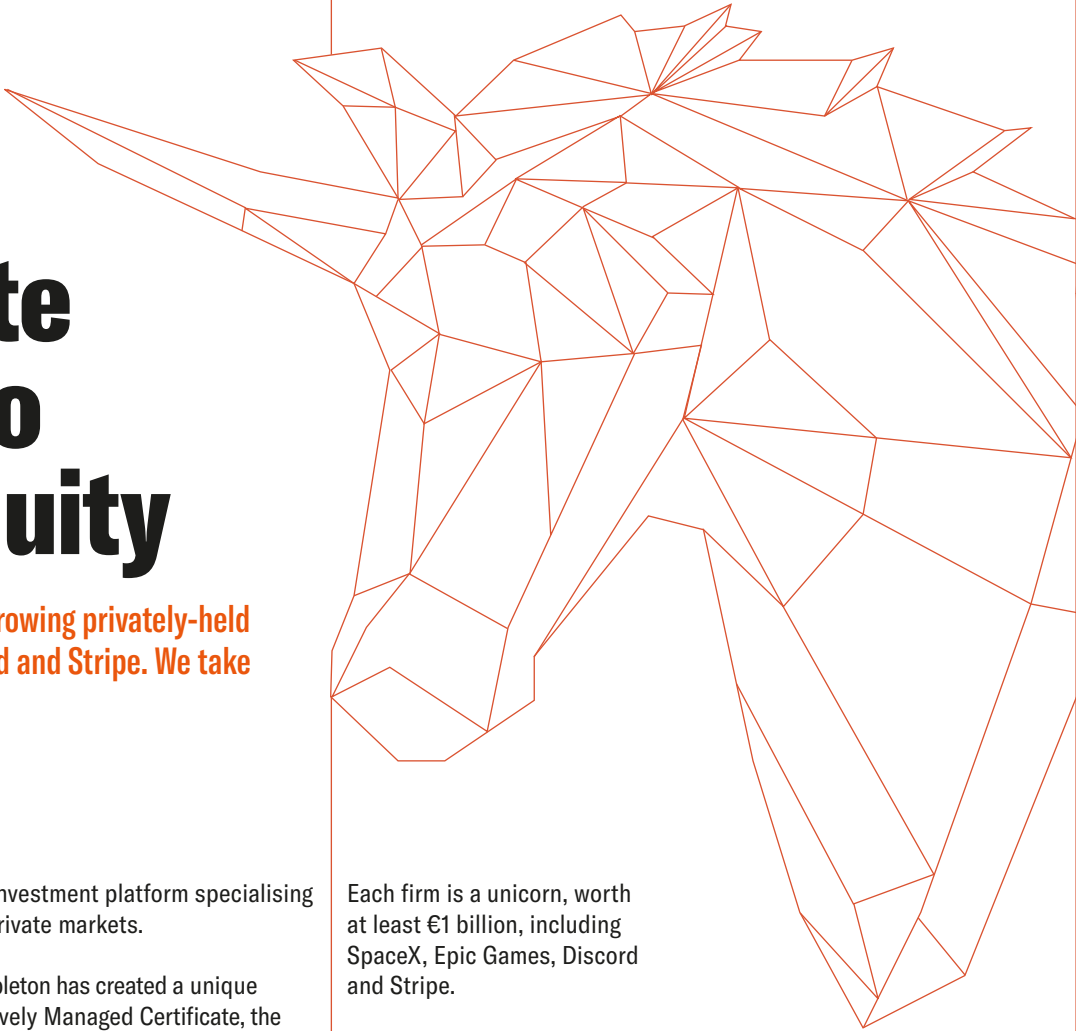
The Stableton certificate is based on the Morningstar® PitchBook® Unicorn Select 20 Index™ and aims to match its performance. ▲

## AMC composition\*

SpaceX	Canva	Epic Games	VillageMD	Blockchain.com
SHEIN	Instacart	Waymo	Gopuff	Plaid
Stripe	Databricks	Chime	CloudKitchens	OpenSea
Checkout.com	Revolut	Miro	Discord	Celonis

→ Minimum investment of \$100

\*The composition can change at each rebalancing.



# “Investing in a unicorn is not just a rational act”

Swissquote has a new partner: Stableton, an investment company specialising in private markets. We interviewed its CEO Andreas Bezner.

## What is the Stableton Unicorn Index AMC?

It's a unique Actively Managed Certificate (AMC) that seeks to mirror the performance of the benchmark Morningstar® PitchBook® Unicorn Select 20 Index™. This product allows retail investors to tap into the potential of privately-held companies, giving them access to a market usually reserved for institutional investors. Our team has built a portfolio containing the 20 companies in the index with a target weight of around 5% each.

## Why invest in privately-held companies?

These unicorns have an excellent track record. Over the past 10 years, the Morningstar® PitchBook® Unicorn Select 20 Index™ has even significantly outperformed publicly traded stocks. But investing in this type of company is not just a rational act. These disruptive firms are exciting, on the leading edge of accelerating positive social change.

Active in areas such as fintech, e-commerce and digital healthcare services, unicorns are transforming our daily lives.

## What happens if a private company in the index goes public?

If a company goes public, it is removed from the index in line with Morningstar® PitchBook® index guidelines. That shows up in the next quarterly rebalancing. The company's shares are then sold on public markets, and we aim to deploy the capital in the new index constituent.

## Does the product have a target maturity?

This AMC has no target maturity. But investors should note that no redemptions are possible in the first year. After that, redemptions will be allowed weekly. This makes our product much more liquid than other private market investments, which can have lock-up periods of more than 10 years. ▲

Founded in 2018 by Andreas Bezner and Konstantin Heiermann, Stableton now employs around 40 people in Zurich, Zug, Berlin and Riga. It is licensed by FINMA as a portfolio manager.



Andreas Bezner  
CEO of Stableton



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ISIN  
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# The four-leaf clover goes green

**The four-wheel drive Tonale “Quadrifoglio” isn’t relying on luck to win over drivers. In addition to stellar physical attributes, it boasts an attractive hybrid component and excellent road performance.** BY RAPHAËL LEUBA

SUVs are spacious but pay the price for their large silhouette in fuel consumption, making them excellent candidates for hybrid technology. A battery in the floor lowers the centre of gravity and an electric motor is easily tucked over the rear axle, with four-wheel drive as a bonus and only a limited reduction in boot space. This is an approach used in the BMW X1 and Peugeot 3008, as well as the Alfa Romeo Tonale Plug-in Hybrid Q4, a “compact” SUV measuring in at 4.53 m, designed for dynamic driving. The front includes six headlights reminiscent of the 1989 SZ (Zagato) coupe, giving it lots of personality. But its full LED headlights hint at its true modernity, including its safety features (lane-keeping assist, adaptive cruise control), comfort (electric tailgate, electronically controlled shock absorbers) and propulsion.



While the base models of the Tonale are a mild hybrid, the Q4 goes big with its 15.5kWh lithium battery (12 kWh net) and 122 hp electric motor, which either supports or replaces the 1.3 L 4-cylinder 180 hp petrol engine. A vehicle worthy of the Lombardy brand’s sporty badge, its total available power stands at 280 hp. It all justifies the price tag of 61,900 Swiss francs, which includes a five-year warranty and maintenance. Moreover, the finish is high-quality and the ergonomics are excellent, despite the bulky central armrest.

The dashboard is a clever mix of physical controls and touchscreen menus, along with a charming digital instrument panel that – for once – doesn’t look like it belongs in a scientific laboratory. Well-established premium brands could learn a thing or two. Despite weighing nearly two tonnes, the Tonale Q4 provides a superb driving experience, with excellent sensations thanks to invigorating acceleration and rigorous yet agile road handling. This model gets another point for the absorption ability of its active suspension, which is really put to the test with the low-profile 20-inch wheels (Premium Velocity pack). The petrol engine and electric motor work together seamlessly and the deep hum of the small 4-cylinder turbo engine provides a bit of background

ambiance alongside the six-speed automatic transmission. The brake pedal is impressively natural for a regenerative system, but the energy regeneration is most notable when in dynamic “d” mode, which strengthens both the steering and the shock absorption. In the standard “n” mode, it’s much less intense, as the car tends to move under its own momentum. It encourages you to downshift using the sumptuous aluminium paddles when going downhill, but the outcome is less of a regenerative effect than in “d” mode. It’s not very intuitive! As well as these two modes, which use both the front petrol engine and back electric motor, there’s also the “a” position, which forces a switch to fully electric mode, offering an actual range of 50 km on fairly flat drives at reasonable speeds.

To the left of the classic gear shifter, the “save” button maintains a certain level of battery charge for when you head into town. Once the battery is depleted, the Tonale Plug-in Hybrid can continue for nearly another 600 km thanks to the 42.2 L tank – perfectly in keeping with the 7.1 L per 100 km we recorded. It’s a car that’s more a stroke of brilliance than a stroke of luck. ▲

**Excellent sensations thanks to invigorating acceleration**

<b>MOTORISATION</b>
4-CYL. 1,332 CM <sup>3</sup> , 132 KW (180 HP)
270 NM + ELECTRIC MOTOR: 90 KW (122 HP) 250 NM
<b>ELECTRIC RANGE</b>
APPROX. 50 KM
<b>PERFORMANCE</b>
0-100 KM/H IN 6.2 SECONDS, TOP SPEED 206 KM/H (ELECTRIC 135 KM/H)
<b>PRICE</b>
STARTING AT CHF 61,900 (TEST DRIVE CAR: PREMIUM VELOCITY, CHF 71,500)



TONALE

PLUG-IN HYBRID Q4



T R A V E L

## MENORCA

## THE DANCING HORSES

The jewel of the Balearic Islands, the Spanish island of Menorca hosts the annual jaleo, a folk festival held from June to September.

BY JULIE ESTÈVE

A horse rears up in the middle of the crowd, during the traditional Jaleo festivals, in Es Castell on the island of Menorca in 2018.

© MATTHIAS DESPERLE



Two *caixers* (riders) cut through the crowd for the "Jocs des Pla" (medieval tournament), at the Ciutadella de Menorca in June 2018.

T

hey are waiting, black and powerful. About a hundred horses are impatiently standing in the procession on the edge of Mahón, capital of the small, wild Balearic island of Menorca. It is September, and everything is set for the celebrations. Brightly coloured pennants wave from lampposts and windows. Protected from the sun by boat sails strewn from tree to tree, the town's ochre-tinged streets are bustling and stalls are piled up with sandwiches filled with the local sausage, as well as litres of *pomada*, a local cocktail made with gin and lemon juice. At 3 p.m., bands scattered about here and there play their repetitive music. They parade between the *Belombras* – monumental old trees whose giant roots burst through the pavement – near the Santa Maria cathedral (home to an impressive organ with 3,210 pipes), and along the red, yellow and blue bow-window palace facades, the architectural heritage of the 18<sup>th</sup>-century British invasion. Crowds of children, parents and elders gather to watch a unique equestrian show: the *jaleo* (tumult). →



The Jaleo brings together a huge crowd in Port Mahón, capital of the island of Menorca. Here, a rider is photographed rearing up her horse in September 2018.

This age-old celebration began 700 years ago. King Jaume II of Majorca formed a war cavalry with fast, agile, vigorous horses. The Menorcan black horse is the result of crossbreeding with the Genet from Spain and Arabian and Barb thoroughbreds. Over time, the horse has become more than a symbol. It is a sacred animal. One of the island's treasures. It is not a rare sight to come across them roaming free through the pine forests, the dunes near the blue sea or on the Camí de Cavalls (horse path), an ancient 186-kilometre path along the coast. The trail served to watch over the island and protect it from the frequent pirate attacks. The most famous of these was Barbarossa's raid in 1535, which devastated Mahón. Declared a Biosphere Reserve by UNESCO in 1993, Menorca's natural environment predates human existence. The air is scented with rosemary groves, the chamomile endemic to the island, and the Mediterranean Sea. All year round, you can explore the landscapes and mysteries on horseback, riding along coastal paths and through isolated coves, red beaches, country roads lined with low stone walls, and Talayotic archaeological ruins.



It is 5 p.m. and Mahón is on fire. Sand has been poured onto the paving stones in the town hall square. Shouts are heard, sentences punctuated with *cabron*, all under the crushing heat. Dressed in black and white, the horsemen, or *caixers*, gaze down over the crowd and the largest natural harbour in Europe, so vast it resembles a lake. The riders represent the different social classes: clergy, nobility, artisans and peasants. The hoards are already drunk, rushing towards the church and encircling it: they're coming! A din rises from the teeming crowd, and a stallion splits the agora in two, forming a sort of figure eight. He stomps on the pavement with his hoof, and his teeth make it look as though he is laughing. The animal rears up, his two legs raised wildly over the countless heads. He dances on his hind legs, held upright by dozens of hands firm on his belly. This is the jaleo, the tumult, a trance that engages horse, rider and the jubilant spectators. The bands continue to play. The show lasts for hours, and the hundred or so black horses, one after the other, brave the drunkenness and elation of the crowd. It is hypnotic, tempestuous, elegant and tender, all at once. Surprisingly, practically no one is injured, as if everyone respects one another in this jaleo which travels from village to village between June and September.



Menorca also offers heavenly beaches, like here in Alcaufar.

Distilled on the island, Mahón Gin is the essential drink for Menorcan parties.



At 8 p.m., the horses leave with their caixers, but the party is far from over. Restaurant and shop owners set up the sound system. Litres of pomada, beers, local gin (iNNAT, Xoriguer) strike up conversations and laughter. Blurred or ecstatic bodies move to the rhythm of Spanish songs, like a wave. With your feet in the sand, you detect an odour of horse manure in the wind. Now 10 p.m., and the light shifts from blue to night. Some go to the port, where there are concerts, ice cream, yachts and large, old sailboats. Others board a shuttle boat for a fiesta on Isla del Rey (King's Island). The small island is home to an old naval hospital, the remains of a 6<sup>th</sup> century basilica and the famous Hauser & Wirth contemporary art gallery – an amazing exhibition space alone in the middle of the water, surrounded by a lush garden designed by Piet Oudolf, the brilliant landscape designer of the High Line in New York.

Menorca blends genres, festive and popular folklore, ultra-hip hotspots, and gorgeous, wild and rugged landscapes. It wields a vital power that penetrates both things and people. ◀



The port town of Es Castell is renowned for hosting the most beautiful port on the island of Menorca.

© MATTHIAS DESTERLE / LAURA VELASCO / TATIANA TAYLOR, ALAMY / ISTOCK

#### GETTING THERE

Flights with a stopover departing from Geneva and Zurich airports.

#### WHERE TO STAY

##### Cristine Bedfor

C/ Infanta, 19. 07702 Mahón, Menorca

A surprising boutique hotel in the heart of the city. This peaceful haven is decorated in English style (tapestries, flowery sofas, elegant tableware). The 21 rooms are designed as an experience: the scent, the embroidered sheets, each object is a get-away. The restaurant offers authentic, local, gastronomic cuisine. Tables are set out near a fountain in the lush, exotic garden. A few more steps and you can cool off with a dip in the pool.

#### WHERE TO HAVE LUNCH

##### Pipet & Co

Plaça Bastió, 10, 07703 Mahón

This mini restaurant run by Eleonor and Nahuel offers healthy, eco-friendly food. Roasted vegetables, homemade salads, spinach and ricotta millefeuille, daily (very often vegetarian) dishes, burrata and mouth-watering homemade cakes can be enjoyed in a warm atmosphere or outside on the large terrace of the quaint Plaça Bastió.

#### WHERE TO WATCH THE SUNSET

##### Cova d'en Xoroi

Carrer de Sa Cova nº 2, 07730 Cala En Porter

This nightclub is nestled in a cave on the cliffs of Cala en Porter. This spectacular spot is unique in the world, featuring several terraces where you can enjoy the sunset while sipping a cocktail.





**Tribute to *The Swimming Pool***

The French fashion designer Simon Porte Jacquemus has teamed up with the Italian brand Exteta to design a chair, sun lounger and garden armchair with sleek, rounded curves and sunny yellow and white striped upholstery. In a nod to film buffs, the line is a re-edition of the Locus Solus collection created by Gae Aulenti in 1964. Pieces from the original line were featured in the film *The Swimming Pool*, starring the legendary couple Alain Delon and Romy Schneider.

[jacquemus.com](http://jacquemus.com)  
CHF 5,830.- (sun lounger)



**Crystal Hulk**

An unlikely collab, but the result is charming. Swarovski's new collection of jewellery and figurines honours Marvel superheroes, featuring Iron Man, Black Panther and of course Hulk. The 578 facets that shape the green monster's 12 cm tall frame show off his shredded physique. A favourite in the superhero series is the Superman pendant, which has already sold out.

[swarovski.com](http://swarovski.com)  
CHF 700.-

**Tennis coach in a bag**

The Slinger Bag is the solo tennis player's new best friend. This portable ball launcher doubles as a sports bag with its multiple storage pockets. Easy to install, the 2-in-1 machine offers several functions to practice different shot types at varying speeds, frequencies and levels of elevation. With a battery life of up to 3.5 hours, the Slinger also has a mobile phone holder for filming sessions and even a smartphone charger.

[slingerbag.com](http://slingerbag.com)  
CHF 1,379.-



**Keep valuables safe on the go**

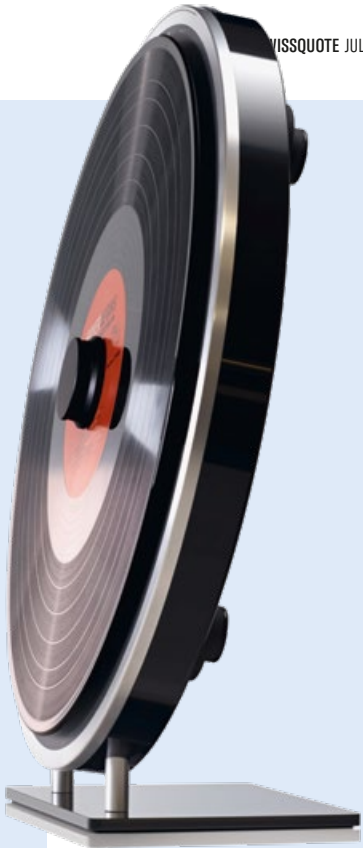
Presented at CES Las Vegas 2023, the UpLock Evolution is a safe that keeps wallets, watches and other valuables protected from thieves, even while you're travelling. Its alarm, which can be heard from up to 100 metres away, goes off if the safe is moved too far from its owner. The contraption unlocks simply with your smartphone. Worth noting is the company's zero-waste philosophy. Its production facility in Toulouse is powered exclusively using renewable energy, with partners located less than 100 km away.

[upfiner.com](http://upfiner.com)  
CHF 98.-

**Glam preserves**

Launched by two 30-something sisters from the Jura, La Boète (meaning "the box" in the Jura dialect) deftly combines the culinary arts with the practical functionality of preserves. On the menu: soups, dishes and spreads prepared with healthy, local and seasonal products, packaged in tins with a sophisticated brand identity. Star recipes include classics, such as papet vaudois and beef bourguignon, as well as more exotic creations including roasted yellow beet hummus and Thai curry pumpkin soup.

[laboete.ch](http://laboete.ch)  
CHF 5.50



**Going vertical**

Dutch brand Miniote is reinventing the turntable. Its Black Wheel model offers audiophile sound and can work upright with its invisible tonearm tucked under the record, inside the turntable. This configuration has emerged as the family company's star product, which is hand built in its workshops to produce 5 to 10 wheels per month. It features an elegant brushed metal finish.

[miniot.com](http://miniot.com)  
CHF 3,719.-



A LOOK  
INSIDE  
THE  
LAB

## Want to invest better? Meditate.

**Mindfulness meditation has already demonstrated its benefits in terms of community life, ageing and mental health. ETH Zurich is now pointing to its benefits for economic decision-makers and investors.** BY BLANDINE GUIGNIER

Researchers call this behaviour “information avoidance”. Consciously or unconsciously, individuals stay away from potentially negative news to spare themselves anguish or regret. Elliott Ash, an economist at the École polytechnique fédérale de Zurich (ETH Zurich), cites the example of an investor who refuses to see the poor performance of a stock. “Being very excited to invest in an area or encouraged by a family member to do so, for example, they do not pick up on the negative signals that are coming their way. To avoid bruising his belief system, he would rather ignore the information. And this leads them to make the wrong decisions.”

But this bias can be alleviated through mindfulness meditation, as the economist and his team have shown. Meditation helps us to regulate our emotions, take a more neutral stance in analysing available information and therefore make better decisions. This effect on behavioural economics adds to a long list of benefits already reported: stress reduction, altruism, improved productivity, and prevention of Alzheimer’s and depression.

In a concrete study, the Swiss-British research team selected 261 people. Half were administered a “treatment” consisting of audio guided mindfulness meditation that they were to do 15 minutes a day. The instructor would ask participants to become aware of the present moment, sitting quietly with their eyes closed. They were then asked to pay attention to their

breath and let thoughts pass through their mind without judgement. Last, they were asked to extend their awareness to their entire body. The other half of the participants were given different instructions, this time involving listening to relaxing music. “Comparing mindfulness practice this way, rather than simply against the absence of practice for some participants, is not yet standard procedure in psychology research on meditation,” Elliott Ash notes. “It reinforces the reliability of our findings.” After two weeks, the participants completed three questionnaires to measure their degree of stress, mindfulness and “informational avoidance”. Those who had meditated were better prepared to receive negative information, such as about their state of health or financial investments.

With practice of 15 minutes a day for 14 days, the programme is relatively short. Christophe André, a French psychiatrist known for his writings on mindfulness meditation, puts the threshold for practice at 20 minutes a day, for at least two to three months. Elliott Ash encourages other researchers to continue these investigations over longer periods. “It would be worth it to examine whether the effect of meditation is significantly greater for longer amounts of time and over longer periods, or whether the progression curve flattens out over time. We could also follow investors and observe how they react, what kind of decisions they make in the long term, after silent retreats lasting several days.” To be continued... ▲

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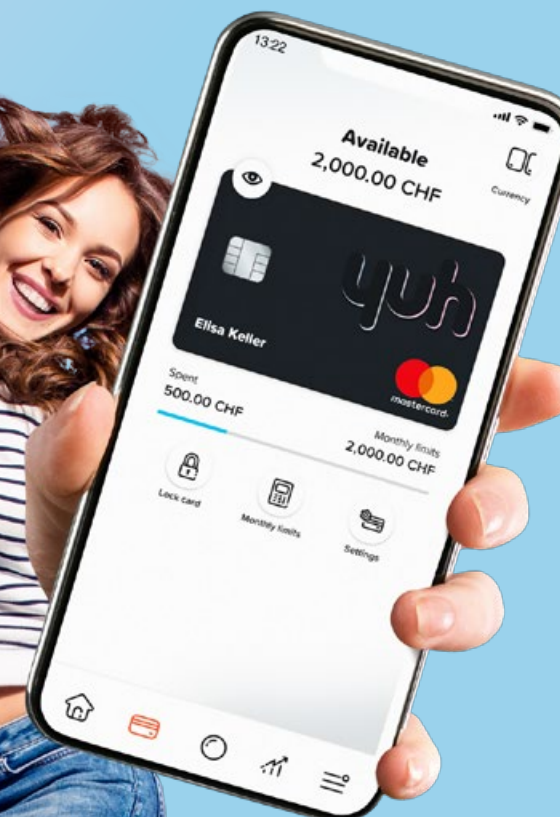
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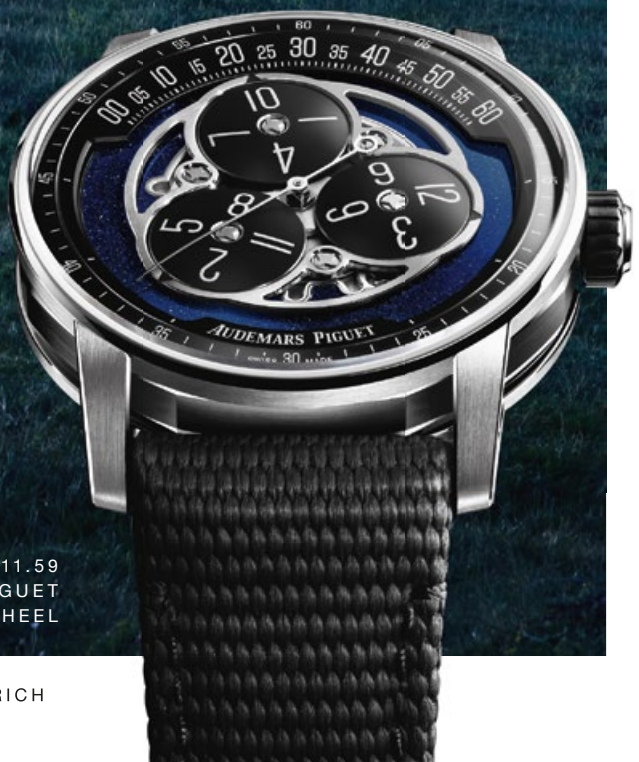
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