EPFL CELEBRATES ITS 50TH ANNIVERSARY

- Fifty alumni who contribute to EPFL’s success
- Half a century of technological and scientific adventures
- A look back at key events

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Dear alumni,

The year 2019 saw EPFL and our network shine brightly on its 50th anniversary to which we dedicate this special issue of the “Alumnist”.

In 50 years, everything has changed and nothing has changed... the more than 1,400 graduates who joined us for the 50th Alumni homecoming celebration on November 9th could witness it.

They were able to (re)discover their favorite campus and its “cult” sites with the help of sections, students and management. A reunion filled with sharing and good humor across generations, nations and faculties, which ended early morning with a great party at the SwissTech Convention Center - just like the old days.

But beyond the fun, our alumni left with great pride. Proud of the science of our school, its education at the forefront, its innovation through the MAKE projects and startups, and its vision for the next 50 years shared by our President Martin Vetterli. Proud to belong to this gold mine of 36,000 talents, illustrated at the conference and through a selection of 50 inspiring and diverse portraits in this magazine.

Our community lives thanks to alumni who engage and we had some amazing examples in 2019 for this 50th anniversary. The China chapter has particularly distinguished itself by offering a magnificent electro-magnetic EPFL logo to the School. Some alumni supported the 50 Fifty fund-raising campaign for Education. Our 27 chapters’ presidents and their committees have been more active than ever with more than 100 events. And 180 alumni enrolled in the Forum mentoring program, helping Master students in their first career steps. And the A3 Foundation has granted 4 interest-free loans to alumni for their continuous learning. Finally yet importantly, your contributions have been instrumental to making this all happen and beyond.

Behind the four beautiful red letters of our new logo stand more than 36,000 alumni who carry EPFL’s DNA and are ready to mobilize for their school to meet the challenges ahead.

So 50 years is really just the very beginning.

The entire EPFL Alumni team joins me in wishing you a wonderful holiday season and a lot of success, health and happiness for 50 years to come!

Leïla Ojjeh (CGC’94),
Head of EPFL Alumni

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THE ALUMNI COMMUNITY WELCOMES ITS 1,028 NEW GRADUATES

A total of 1,028 people, many of them surrounded by friends and loved ones, came to celebrate the end of their studies and the start to a new life, as alumni. The graduation ceremony was held on October 5, 2019 at the SwissTech Convention Center. It was a beautiful ceremony, featuring the attendance of Swiss Federal Councillor Alain Berset. Two Alumni Awards were also handed out – one to Florence Schnydrig Moser (MA'97), CEO of Swisscard, and the other to Nicolas Cudré-Mauroux (MX'85, PhD MX'88), CTO of Solvay (profiles on p. 17). Additionally, 13 alumni took the time to attend as sponsors, share their stories and offer valuable advice to the young graduates from their respective sections. We would like to thank them for their dedication, and congratulations to all the new alumni!

ALUMNI BASED IN CHINA GIFT US WITH A VERY DIFFERENT KIND OF LOGO

EPFL's 50th anniversary is uniting alumni the world over. To mark the occasion, alumni living in China have designed a unique gift – a spinning EPFL logo. The school’s symbol spins using innovative magnetic field technology developed by DeepMag, a company founded by two alumni, Peng Chuyao and Dr Cui Qingwen. The gift was presented to EPFL President Martin Vetterli on November 9, 2019 at the Alumni 50th event. Now it has found its home on campus in one of the school’s management staff meeting rooms.

GRADUATING CLASSES RETURN TO CAMPUS

Alumni from the very first Mechanical Engineering graduating class, of 1969, met on campus in April to celebrate their 50th class reunion. To honour this anniversary, they came with their loved ones and had the opportunity to meet Martin Vetterli, President of EPFL (see photo). A few weeks later, the Materials Science class of 1989 was also back, to celebrate its 30th class reunion. In September, the school had the pleasure of welcoming a delegation of alumni who work at Richemont group. Each occasion provided former students with the opportunity to learn more about research projects and rediscover the campus.

MORE EVENTS IN LAUSANNE AND THE SURROUNDING REGION

Events organised by EPFL Alumni and its Vaud-Vaïais chapter have primarily been held on campus. But now they are beginning to move further afield. In 2019, alumni had the opportunity to participate in several company visits and learn about major urban planning projects, such as the Lausanne–Échallens–Bercher tunnel and the new Riviera-Chablais hospital worksites. More networking events will also be organised, with monthly after-work get-togethers and family-oriented activities, such as visits to the Ferpècle and Mont Miné glaciers in the Val d’Hérens. These types of events will continue to develop in 2020, including visits to the Vaud Parliament building, the new Pôle Muséal museum centre in Lausanne, and many companies.

VISIT TO THE EUROPEAN SPACE AGENCY IN THE NETHERLANDS

In June 2019, alumni based in the Netherlands had the privilege of taking a behind-the-scenes look at the European Space Agency. Of the ESA's several sites in Europe, the European Space Research and Technology Centre in Noordwijk is the biggest. This facility acts as an incubator for European space programmes. In other words, it is the agency’s technical hub, where most of its projects are launched and are guided through their various development phases. The tour was organised by EPFL’s Netherlands chapter, and alumni from ETHZ were also invited.
Dear Alumni,

During 2019, the celebrations of the 50th anniversary of the federalisation of EPFL have played an important role in our daily lives. Numerous events throughout the year have celebrated our research, innovation and education. More than 1,400 of you attended the Alumni 50th on November 9 and more than 40,000 people came to find out more about us during our Open House event in September.

Of course, there are many things for us to be proud of. The campus has changed significantly over the past 50 years, and the older ones among you will surely consider this as putting it mildly. The number of students and departments has considerably increased, and EPFL’s reputation has crossed the border beyond the Vaud region, Switzerland, and even Europe. We can take pride in saying that we train top-level entrepreneurs and researchers, and more broadly, talented individuals with profiles sought after and valued by companies.

There has been a lot of buzz about our anniversary, from us in our communication and in the media, but please do not think we are being pretentious. These celebrations are also, and above all, a way to thank the Confederation and to thank you, because, in addition to being our alumni, you are also often the ones who help us fund this remarkable adventure.

Until this year, we have always been highly ranked and have sometimes even led the annual rankings of the world’s best universities under 50 years old. We now cross this age barrier with our ambition still going strong, not of “always more” but instead “always better”. Rather than trying to increase numbers, we want most of all to continue attracting great talent and contribute to creating, through science, the world of tomorrow. Sustainability is one of the most crucial challenges we face. The subject is everywhere: at the heart of current affairs, one of our key concerns in our everyday life as citizens, but also in EPFL’s laboratories, as you will see in this edition of the magazine.

As the year comes to an end, I would like to wish you a very happy 2020. And, as it’s not quite too late, let’s continue to enjoy this year of celebrations and continue to immerse ourselves in the 50-year history of EPFL, which is also your history.

Martin Vetterli
President of EPFL
A 50th anniversary full of highlights

EPFL's 50th anniversary featured several events to celebrate the institution’s research, innovations and education. Topping the list was EPFL's Open House, which drew 40,000 visitors on September 14 and 15, 2019.

An enticing programme attracted people in droves to EPFL’s 2019 Open House event. Driven by the beautiful weather, nearly 40,000 people, including many children, came to learn more about the treasures that the school, which became a federal institution 50 years ago, has to offer. No less than 300 activities were available throughout the weekend. Many spectacular events took place, such as shows on physics and chemistry, unique events featuring Fred Courant, the “wizard” host of the television show *Esprit Sorcier* (and previously of *C'est pas sorcier*), and Drone Days. And finally, visitors could feel the real heartbeat of the science at EPFL in the laboratories, experimental rooms and prototyping workshops.

Several other events have been organised in 2019 to celebrate the school’s three missions with Education Day in May, Research Day in September, and Innovation Day in November. For each event, workshops or expert talks were open to the public, partners and the scientific community. Equality was also a key issue on March 8. For International Women’s Day, the school celebrated “50 years of EPFL women”, featuring many alumni.

Lastly, several exceptional conferences with renowned international researchers and speakers took place on campus. Guests included Professor Hiroshi Amano, winner of the Nobel Prize in Physics in 2014, mathematician Alessio Figalli, winner of the Fields Medal in 2018, and historian and successful author Yuval Noah Harari.
Magically reuniting at the Alumni 50th

On November 9th, 2019, more than 1,400 alumni and friends returned to their campus to celebrate the 50th anniversary of their alma mater.

The Alumni 50th event was the first of its kind. Never had alums had the chance to come together in this way for a full day on campus. For more recent graduates, the surroundings were familiar. But for others, it was the opportunity to rediscover a campus that they had not seen for 10, 20 or 30 years, sometimes more. Alumni from the classes of 1948 to 2019 made the trip from the four corners of the world, including China, India and the United States. Graduates from all sections attended the event, but an overwhelming number of former students from the School of Computer and Communication Sciences, and the sections of Civil Engineering and Mechanical Engineering were present.

Emotion was high that morning, with everyone reunited with their section, fellow students, Professors and even their amphitheatres. Each section prepared a full programme of talks and demonstrations for its former students. The afternoon featured presentations and stands of EPFL startups, MAKE projects and associations to highlight the different facets of innovation at EPFL and student projects. More adventurous visitors could take part in a treasure hunt concocted by Agepoly, while others preferred to simply settle into their favourite sofa at Satellite.

The celebration closed with an evening event where alumni had the opportunity to see how science and education shine at their school. After a presentation by President Martin Vetterli, who discussed the past and future of EPFL, André Borschberg (profile on p.20), co-founder and pilot of Solar Impulse, and Professor Wendy Lee Queen from the Laboratory for Functional Inorganic Materials offered examples of how science can have a direct impact on climate change. Jacques Dubochet, winner of the Nobel Prize in Chemistry in 2017 and graduate of EPUL (profile on p.21), was not available to attend the event in person but took the time to speak to graduates in a video and offer his view of how EPFL alumni and, more broadly, the scientific community can take action in dealing with these environmental issues.

Marc Bürki and Paolo Buzzi, co-founders of Swissquote (profiles on p.21), along with Anne Mellano (profile on p.20) and Nathalie Brandenberg, co-founders of Bestmile and Sun Bioscience respectively, demonstrated the key role that EPFL graduates can play in innovation and entrepreneurship. Finally, Pierre Vanderbeyn, Vice-President for Education, the EPFLoop team (p.12) and Silvio Napoli (profile on p.28), Chairman of the Board of Directors of Schindler and ambassador of the 50 Fifty philanthropy campaign, emphasised the importance of education in developing EPFL’s impact and influence today and in the future. The evening event that followed, featuring a concert by the EPFL Big Band, wrapped up this unique 50th anniversary celebration on a high note.

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PICTET
Alumni on the cutting edge of innovation with the founders of Swissquote, Bestmile and SUN Bioscience.

Student coaches greet alumni before taking them to their sections.

Alumni settle right back in at Satellite.

EPFL MAKE projects, startups and associations were present at the Rolex Learning Center to meet alumni.

Martin Vetterli speaks about EPFL 50 years ago, today... and in 50 years.

Alumni on the cutting edge of innovation with the founders of Swissquote, Bestmile and SUN Bioscience.

An exciting evening event to celebrate EPFL’s 50th anniversary.
A look back on 50 years of science and innovation

EPFL's 50 years of existence have been filled with innovations. Each one is a story worth being retold. Impressive, decisive and sometimes surprising, these achievements have made EPFL the innovation leader that it is today... and will take us into the future. Here, we take a look back at these stories.

EPFL has been a leading institution in the area of digitisation since 1974. That very year, Professor Jean-Daniel Nicoud (profile on p. 23) developed Smaky, one of the world's first personal computers. The computer was so successful in the early 1980s that it was even competing with Macintosh at schools in French-speaking Switzerland. Professor Nicoud's laboratory also came up with one of the very first mice used with computers. Developed collaboratively with Logitech, it was one of the first products launched by the company, which now has over 9,000 employees worldwide.

In 2001, the Programming Methods Laboratory led by Professor Martin Odersky worked on Scala, a new computer programming language. Scala evolved into one of the most commonly used computer languages, even by tech giants such as Apple, Twitter and Airbnb. Another major innovation came in 2018 when the international group led by EPFL Professor Touradj Ebrahimi finalised JPEG XS, a new image compression standard.

EPFL has also been a pioneer in the shift of education towards digital technology. MOOCs (Mass Open Online Courses) are an excellent example. Since these courses were launched in 2012, EPFL has become a higher-education leader in Europe, with over 100 classes available and nearly 2.5 million students registered. Thymio, the robot developed in 2008 to teach children about computers and digital technology, is now used in many classrooms. Lastly, since 2017, the EPFL Extension School has been offering online courses at a low cost, without requiring any previous degrees. The courses focus on fields in demand on the job market, such as programming, web application development and data analysis.

Education. Research. Innovation. EPFL remains and will continue to stay on the cutting edge of digitisation.

Text:
Arnaud Aubelle
Emmanuel Barraud

1974
Smaky, one of the first personal computers, is designed at EPFL

1981
The Swiss mouse is developed, and Logitech is founded

2012
The first MOOCs at EPFL open

2017
The EPFL Extension School opens

Moving towards the world’s digital transition

I Alumnist II

01
Digital security has become a key concern, but the technology. Professors and students at EPFL have been focusing on the issue for several years now. In 1996, Marc Bürki and Paolo Buzzi, two EPFL alumni, founded Swissquote (profiles on page 21 and Alumnist 9). This online banking pioneer became, in 2017, the first bank to offer cryptocurrency trading services.

EPFL student Frédéric Jacobs began learning about cryptography in 2012 and started working with Signal, the encrypted messaging service used by Edward Snowden. Even before getting his degree, his skills landed him a job in digital security at Apple in 2016.

In 2012, EPFL Professor Arjen Lenstra and his team proved that the RSA encryption key, used to protect bank transactions and reputed as inviolable, is not infallible. In 2014, he managed to generate the power of 8,000 computers by interconnecting more than 200 PlayStation 3 gaming consoles and create a digital certificate that slipped past web browsers undetected. This experiment highlighted the need to change automatic data encryption protocols.

To enhance trust in digital systems, Laurent Balmelli, a graduate with a PhD in communication sciences, co-founded the startup strong.codes in 2016 and developed an innovative digital protection solution. The startup was bought by Snapchat, and Laurent Balmelli was appointed director of Snap Switzerland, a division of the company focused on security issues. Similarly, the startup ID Quantique, specialised in quantum-safe cryptography, was bought in 2018 by the South Korean telecoms operator SK Telecom for CHF 61 million. Grégoire Ribordy, who graduated from EPFL with a Physics degree in 1995, founded the company in 2001.

In late 2017, EPFL announced the opening of the Center for Digital Trust in collaboration with institutions such as Lausanne University Hospital (CHUV) and the International Committee of the Red Cross (ICRC). Companies such as Elca and Swisscom have also joined the initiative. Its objective is to develop cybersecurity, digital transparency and privacy protection. In 2019, EPFL and ETHZ announced the new joint Master’s programme in cybersecurity.
EPFL is a breeding ground for visionary projects in the field of mobility. In the 1970s, a group of EPFL Professors led by Marcel Jufer came up with a crazy idea for nationwide high-speed transportation. Dubbed Swissmetro, the futuristic train was meant to link Bern to Zurich in 12 minutes at a speed of nearly 600 km/h. A company was created in 1992 to complete the project, but the programme was abandoned five years later due to lack of support.

In 2003 and 2007, EPFL scientists collaborating with Bertrand Cardis, who graduated from the School of Mechanical Engineering in 1981, were in charge of building Alinghi boats. With funding from businessman Ernesto Bertarelli, these boats were designed to race in the America’s Cup, one of the world’s most prestigious sailing competitions. Alinghi won the race both years, a first for Switzerland. This was a feat in more ways than one, as it was the first time a landlocked country won the competition. Alinghi was reliable in ways that its competitors were not. Both victories highlight EPFL’s expertise in a range of areas, such as composite materials and the mathematics used to simulate wind resistance before the race.

Advances in sailing continued in 2009 with the Hydroptère. This boat designed by EPFL researchers and students beat the world speed record, reaching an average speed of 51.36 knots (95 km/h) for 500 metres and maxing out at 103 km/h.

In 2018, the Swissmetro dream re-emerged in the form of the EPFLoop. This pod propelled through a vacuum tube is expected to bring about a new means of transportation. Participating in the challenge launched by Elon Musk, the founder of Tesla and SpaceX, the EPFL capsule took a top spot in both the 2018 and 2019 Hyperloop Pod Competitions.

1970s
The Swissmetro project is launched

2003 and 2007
Alinghi wins the America’s Cup

2009
The Hydroptère beats the world sailing speed record

2018 and 2019
EPFLoop wins third place in the Hyperloop Pod Competition
EPFL opened its School of Life Sciences in 2002 as a way to bring together engineering, medicine and biology. The first alumni celebrated their graduation in 2008.

Building on this new fusion of fields, the school launched the Human Brain Project in 2009, which aimed to reconstruct and simulate the human brain for research. The project was selected by the European Commission and benefits from substantial financial support.

In 2013, the EPFL spin-off Nanolive began developing a revolutionary microscope to see inside living cells. In 2016, the startup MindMaze, operating out of EPFL and founded by alumnus Tej Tadi (PhD SV’11), was valued at over $1 billion, making it the first Swiss unicorn. The young company develops a neurorehabilitation tool that uses virtual reality to help victims with brain injury.

Also in rehabilitation, Professor Grégoire Courtine helped three paralysed patients to walk again in 2018. He achieved that by using electrical stimulation integrated by a wireless implant on the patient’s spinal cord. After a few months of training, these people managed to control the muscles in their legs, until then paralysed, even without the electrical stimulation.

Many other EPFL startups, often founded by alumni, have been pioneers in fields such as genetic testing and diagnostics. Examples include Lunaphore, which develops tissue diagnostics technology, and Sophia Genetics, which has designed genomics testing to detect cancer and hereditary diseases. In the past few years, both companies have made the Top 10 list at the Swiss Startup Awards.

In 2018, Professor Grégoire Courtine helped three paralysed people to walk again.
Acting on climate issues

In 1988, Michael Grätzel co-invented the dye-sensitized solar cell. These Grätzel cells were hailed for their many advantages, being transparent, low-cost and efficient, even in conditions of little sunlight. This innovation sparked extensive research in solar energy, earning him the top spot in Stanford University’s 2019 ranking of the 100,000 scientific researchers based on accurate, standardised citation metrics.

Meanwhile, Professor Lyesse Laloui has come up with an innovative, sustainable way to use geothermal energy by recovering ground heat to supply new structures. This technology was used to build the SwissTech Convention Center.

In 2016, alumnus André Borschberg flew the solar-powered plane designed by Solar Impulse on the first trip around the world using energy exclusively from the sun. EPFL students won the 2017 Solar Decathlon, the prestigious international competition of sustainable construction projects based on renewable energy. In 2019, EPFL was recognised by the World Wildlife Fund (WWF) as one of the most sustainable universities in Switzerland. Today, more than ever, sustainability is a key issue at EPFL (see report on p. 40).

The Reconfigurable Robotics Lab led by Professor Jamie Paik develops “origami” robots that can fold and change their shape. Meanwhile, soft robots are inspired by human muscles. These machines are used to handle fragile objects and protect the user. In 2019, the lab is developing 10-gram robots inspired by ants, which can also communicate with one another.

Self-driving cars and exoskeletons used to support and guide the steps of people with a disability are some of the robotics applications tackled by EPFL and which, in the decades to come, will be helping humans in several ways.
In 1978, EPFL opened the first buildings on its new campus in Ecublens.

The first building in the EPFL Innovation Park opened its doors in 1993. The park was one of the first of its kind in Switzerland, offering collaboration opportunities between the school and businesses, support for scientists in the transfer of technology and in the creation of startups. Today, about 20 young companies are founded on the campus every year, and 2,200 people work at the Innovation Park. EPFL startups raise between CHF 200 and CHF 400 million in funding every year.

In 2009, EPFL began expanding to new sites with the opening of Microcity in Neuchâtel, followed by EPFL Valais Wallis in Sion and the Smart Living Lab in Fribourg (2014), and finally Campus Biotech in Geneva (2015). Its various sites are centres of excellence in their respective fields and promote the school throughout Switzerland.

The Rolex Learning Center, home to libraries, workspaces and food services, opened in 2010. Designed by the Japanese architecture firm SANAA and spanning a single 20,000 sq. m area, the building is now the campus emblem worldwide.

With its gentle slopes and almost invisible beams supporting its curved roof, the architectural structure earned its designers the Pritzker Prize.

The SwissTech Convention Center, inaugurated in 2014, is frequently referred to as one of the most modern, best equipped convention centres in the world. One of its façades is covered with 300 sq. m of photovoltaic solar sensors, drawing on the technology developed by Professor Michael Grätzel.

Year after year, the campus continues to expand with new, cutting-edge buildings. For example, the new ME building was designed by French architect Dominique Perrault, also known for the Bibliothèque Nationale de France in Paris. The building is designed to optimise the management of the energy resources used to power it. Another project is ArtLab, which unites the world of science and humanities. The two buildings opened in 2016. ||

1978
EPFL opened its doors on its current campus

1993
First building opens at the Innovation Park

2010
The Rolex Learning Center is inaugurated

2014
The SwissTech Convention Center opens
Fifty alumni who contribute to EPFL’s success

There is no better testament to the quality of EPFL’s education than the careers of its 36,000 alumni. For this anniversary edition, we wanted to take a closer look and highlight 50 examples among the myriad of inspirational careers. Featuring entrepreneurs, researchers, and CEOs, all working in a multitude of industries all around the world, these 50 varied career profiles clearly demonstrate the multidisciplinary dimension of the school and the impact that its alumni are having on the world today.

Text:
Arnaud Aubelle
Carole Extermann
Corinne Feuz
Erik Freudenreich
Robert Gloy
Blandine Guignier
Tiago Pires
GC'40
Maurice Cosandey
Founding father of EPFL
Maurice Cosandey graduated in Civil Engineering in 1940 and died in October 2018. He was the President of EPFL from 1963 to 1978. Founding father of the EPFL of today, it is thanks to him that the school gained its federal status. In 2019, it celebrated its fiftieth anniversary as a federal institute.
When asked by the State Councillor Pierre Oguie what his strategy would be when he was appointed head of the EPUL (Ecole polytechnique de l’Universite de Lausanne), Maurice Cosandey replied: “The only thing I can tell you is that I will do everything I can to make the Ecole polytechnique de Lausanne a federal institute of technology.” In 1963, he developed his vision of federalising the school, similar to that of ETH Zürich. Under his leadership, EPUL finally became EPFL on January 1st, 1969, changing its status from cantonal to federal. He was the first President of this new federal institution until 1978.
In May 2018, he looked back on certain milestones, notably the first loan which had been requested to build … sports facilities. “It wasn’t easy. Politicians found it hard to understand why sports equipment should come before teaching and research. We told them that the students also needed to be physically active.” There was no bragging in his remarks: the man was simply modest, generous and down-to-earth. It is also under his presidency that EPFL moved to its current site. It left the city centre of Lausanne for Ecublens in 1977 and gained several new departments, such as mathematics, materials science and microtechnology.

MA'97
Florence Schnydrig Moser
Major figure in Swiss finance
When Florence Schnydrig Moser joined EPFL in 1992 she took on a doubly difficult challenge. Originally from the German-speaking part of Valais, she needed to learn French in addition to studying for her courses. This was just the first step in a journey that would take this student with a passion for mathematics to the highest ranks of Swiss finance.
After starting her career at UBS, Florence Schnydrig Moser joined Credit Suisse in 2000. In 2007, she went on to develop the bank’s product offering in Australia, then in Hong Kong from 2010.
It was during this period that she had her children, proof that it is possible to combine great professional responsibilities with family life. In 2015, she returned to Europe and took over as head of the Products, Investments and Marketing section for Credit Suisse in Switzerland, simultaneously becoming a member of the bank’s national Executive Board. She also joined the Boards of Directors of Swisscard and Twint.
In 2018, Florence Schnydrig Moser was appointed CEO of Swisscard, managing 700 people and more than 1.5 million credit cards. In 2019, she received an Alumni Award. At the ceremony, she stressed the importance of “staying curious, continuing to learn and not forgetting to have fun”. These are goals she is successfully achieving every day, while also showing an aptitude for innovation in a banking environment undergoing digital transformation.

MX'85 PhD MX'88
Nicolas Cudré-Mauroux
At the forefront of chemistry and materials
What is the relationship between a bobsleigh world champion and an EPFL student? Answer: the study of materials.
It was in reading an interview with Silvio Giobellina, a bobsledder seeking to improve the performance of his equipment, that Nicolas Cudré-Mauroux decided to contact him. The result was a 10-year collaboration, resulting in a bronze medal at the 1984 Olympic Games for the athlete and a doctorate in 1988 for the student.
An experience that was testament to Nicolas Cudré-Mauroux’s expertise and passion. For 27 years, he put these two qualities to good use at the DuPont chemistry group, specialising in polymer materials. It was a career that, in addition to Geneva, took him to the United States, Canada and Denmark, filling positions ranging from R&D to acquisitions and Europe Regional Business Director for Advanced Fibers and Nonwoven. His career took on a new dimension in 2015 when he was appointed as Chief Technology Officer (CTO) of Solvay, a world leader in specialty chemicals. His mission is to align the structure of Solvay’s R&D with the group’s priorities and, for example, to develop innovative and sustainable solutions in areas such as high-performance batteries and composite materials. Nicolas Cudré-Mauroux is in charge of more than 2,000 people worldwide and manages a budget of €350 million. He received an Alumni Award in 2019 and is a member of the Board of Directors of the French National Centre for Scientific Research (CNRS), an associate member of the Royal Academy of Belgium, and a member of the Board of Governors of the Argonne Laboratory, one of the largest research laboratories dedicated to energy in the US.
Claudia de Rham
Interstellar researcher
She nearly became an astronaut, but in the end Claudia de Rham became an international expert in cosmology. She has received several international prizes for her research, as well as an Alumni Award.
Claudia de Rham’s horizons have no limits. Having grown up in Peru and Madagascar, Claudia de Rham studied at EPFL before working in the United States, Canada and the United Kingdom. And our planet isn’t enough: she is always looking towards space.
Following an internship at NASA in 2000, in 2008 she tried to become an astronaut by taking the European Space Agency’s selection tests. She got to the final 40 out of more than 8,000 applicants, but finally lost out after the final medical tests. However, it didn’t matter, as instead she went on to conquer space from Earth. Her fundamental research has led to a new theory to explain why the expansion of the universe is accelerating. Her work shows that the graviton, the quantum of gravity, could have a mass, and therefore shows why gravity works in unexpected ways at the cosmological scale. This theory challenges aspects of Einstein’s theories, according to which the graviton does not have mass.
Today she is a full Professor at Imperial College London where her research inspires many other researchers. Since 2017 she has also been the Principal Investigator for the European Research Council’s Massive Gravity and Cosmology project, as well as for the Simons Foundation’s Origins of the Universe programme in the United States – two highly prestigious positions. In 2019, her work on gravitational waves was recognised by the journal Nature. She has been awarded many distinctions for her work, including the Adams Prize 2018 for her mathematical contributions in cosmology, and of which she is one of only three female recipients in 150 years. In the same year, she was awarded the Blavatnik Award for Young Scientists in the UK.
SV’12
Déborah Heintze
Revolutionising medicine through diagnostics
Déborah Heintze founded Lunaphore in 2014 with Ata Tuna Ciftlik (PhD MT’13) and Diego Dupouy (PhD MT’16), and is now COO. The startup’s machines, which came onto the market in 2019, reduce the time required to analyse cancerous tissue from several hours to several minutes. This medical revolution was recognised when the company won second place in the Swiss Startup Awards 2019 for the most promising startups. Heintze was also one of Forbes’ 30under 30 in Germany, Austria and Switzerland in 2018. She received an Alumni Award the same year.

IN’05
Mark Kornfilt
Major competitor for YouTube
From Geneva, Mark Kornfilt is a celebrity in the United States. He graduated in computer science in 2005, then moved to New York (to work on his Master’s thesis) where he founded the video streaming service Livestream in 2007. Without knowing it, he would thrive in online video services, much like YouTube. His clients include major media names, including Associated Press, and production companies such as Warner Bros, 20th Century Fox and HBO. The company was so successful that the young entrepreneur sold it to Vimeo in 2017, and joined the operational structure of the video viewing giant.

SY’12
Déborah Heintze
Revolutionising medicine through diagnostics
Déborah Heintze founded Lunaphore in 2014 with Ata Tuna Ciftlik (PhD MT’13) and Diego Dupouy (PhD MT’16), and is now COO. The startup’s machines, which came onto the market in 2019, reduce the time required to analyse cancerous tissue from several hours to several minutes. This medical revolution was recognised when the company won second place in the Swiss Startup Awards 2019 for the most promising startups. Heintze was also one of Forbes’ 30under 30 in Germany, Austria and Switzerland in 2018. She received an Alumni Award the same year.

MA’01
Camille Vial
The master-mind of Geneva finance
Following her studies in mathematics, in 2001, Camille Vial joined the Geneva-based private bank Mirabaud, where she represents the seventh generation of the founding family. She climbed the career ladder and became a managing partner in 2011, before becoming the first female President of the Executive Committee in 2019, the year of the bank’s bicentenary celebration. The group has 700 employees and is present in the world’s biggest financial centres, from Geneva, London and Paris to Dubai, Montreal and São Paulo.

AR’93
Philippe Rahm
Architecture and global warming
Based in Paris, Philippe Rahm is an architect and theorist in an era of global warming. He is a pioneer in “meteorological architecture”, which incorporates climate concepts into the choice of materials and in the layout of rooms and ventilation systems. There is an aesthetic dimension to his approach, with the aim being to re-establish a strong link between man and the space he occupies. In Taichung, Taiwan’s second-largest city, he put this theory into practice with Jade Eco Park, a 70-hectare urban green space. It reinforces natural microclimates using shade, mist and a variety of tree species. Its features make the park a haven in a humid and polluted environment. In 2017, he was chosen to design the agora of Maison de la Radio (headquarters of Radio France) in Paris and its 1,500-seater auditorium. In 2019, he won the competition for his plan to renovate the Farini and San Cristoforo districts in Milan. His original approach has earned him many awards. In 2002, he was chosen to represent Switzerland at the Venice Biennale. In 2009, he was among the finalists of the Ordos Prize. At the time, it was the only international prize in China for architecture. The artistic dimension of his work has often been a main feature in exhibitions, such as the San Francisco Museum of Modern Art in 2002, the Pompidou Centre in Paris in 2003, and the Grand Palais in Paris in 2009.
GM’81
Bertrand Cardis
Sailing through the skies
Bertrand Cardis is an exceptional yachtsman who participated in the 1984 Summer Olympics in Los Angeles. In the same year, he co-founded Decision SA, specialised in manufacturing structures using composite materials. The company collaborated with EPFL to build the Alinghi boats, which won the America’s Cup in 2003 and 2007, and the structures of the Solar Impulse, which, in 2016, became the first solar-powered aircraft to successfully complete a round-the-world flight. He received an Alumni Award from EPFL in 2007 and has been vice-president of the Alumni Council since 2014.

GM’77
André Borschberg
The clean aviation visionary
In 2016, Solar Impulse made aviation history by successfully completing the first solar-powered flight around the world. Its co-founder and pilot, André Borschberg, talks about the groundbreaking journey which has paved the way for tomorrow’s aviation industry.

How did Solar Impulse come about?
My passion for aviation began when I was just a child: I used to spend hours reading about the adventures of great pioneers. I started flying when I was 15 years old and received my pilot’s licence two years later. Studying at EPFL allowed me to explore the world of technology. Thanks to Patrick Aebischer, I met Bertrand Piccard in the early 2000s and I was very excited about his idea of flying around the world without fossil fuels. In 2003, Solar Impulse was born, with the goal of promoting clean technology. At the time, electric vehicles didn’t exist and we felt the need to develop a more efficient world in terms of energy consumption.

What is Solar Impulse’s legacy?
It took us six years to train the team, find our financial partners, develop the first prototype, Solar Impulse 1 (with EPFL as our scientific advisor) and carry out test flights. The flight around the world, which Bertrand and I took turns flying, allowed us to demonstrate the potential that this technology has to offer. With this project we have created a new paradigm; it is the first step towards clean aviation. It is both an ecological and technical revolution because solar energy will enable us to provide unlimited duration flights.

What are your goals for your new company, H55?
We are developing electric propulsion solutions for clean and silent aircraft. Our first client is an aeroplane manufacturer for pilot training. The first prototype completed its first flight in June 2019. The medium-term goal is to transform urban transport, using our technology to create the first flying taxis.
Jacques Dubochet
From the observation of water to a Nobel Prize

The first Swiss Francophone to receive the Nobel Prize for Chemistry in 2017, Jacques Dubochet is also a scientist committed to the fight for the environment.

As a child, Jacques Dubochet was fascinated by astronomy. "For me, understanding nature was a real necessity", he recalls. "I was also inspired by my father who had trained as a civil engineer." From Aigle, he was the first student officially diagnosed as dyslexic in the canton of Vaud. After obtaining the Swiss high-school maturité certificate, he entered EPUL. "I particularly enjoyed the training I received. Engineering has a practical dimension, being based on construction, and this helped me to understand the more abstract aspects of physics." Upon graduating in 1967, he decided to specialise in molecular biology by pursuing further training in Geneva.

His research was centred around the observation of water. In order to accurately analyse the molecules contained in this element, the biophysicist developed a rapid freezing method: vitrification. The researcher and his team developed this technique at the European Molecular Biology Laboratory in Heidelberg, Germany, a technique which would later become the cornerstone of cryo-electron microscopy. His research resulted in a Nobel Prize in Chemistry in 2017, becoming the first Swiss Francophone to obtain the prestigious distinction in chemistry.

"We made a few mistakes too" says Jacques Dubochet. "Another research project, different to the one that led to vitrification, led us to believe that, at an even lower temperature, the damage caused by electrons to delicate biological specimens is considerably reduced. It was wrong! Luckily, we realised that."

Alongside his scientific research, Jacques Dubochet is actively involved in environmental protection efforts. He is a member of the “Climate Grandparents Switzerland” association, has participated in multiple climate strikes, and spoken at the Lausanne climate summit “Smile for Future” alongside the young Swedish activist Greta Thunberg.

Pioneers of online banking

Marc Bürki
Marc Bürki and Paolo Buzzi first met at a party at EPFL. Together, they went on to launch Swissquote in 1996. A pioneer in online banking, the company now has 662 employees and in 2018 made a net profit of CHF 44.6 million, the highest in the bank’s history. The company also funds the EPFL Chair in Quantitative Finance. Marc Bürki, the company’s CEO, has been a member of the Conseil des EPF, the council of Switzerland’s polytechnical schools, since 2017 and received an Alumni Award in 2007.

Paolo Buzzi
Paolo Buzzi co-founded Swissquote with Marc Bürki and is now the company’s CTO. He is also a member of the EPFL Strategic Council. A real EPFL success story, in 2017 Swissquote became the first bank in Europe to provide trading in cryptocurrencies. With 2 million visitors per year, their site is one of the principal financial portals in Switzerland. Paolo Buzzi received an Alumni Award in 2007.

Patrick Hertzog
Employees at the heart of IT

In 2004, Patrick Hertzog co-founded Nexthink that helps IT support teams deliver on the promise of the modern digital workplace by offering a unique combination of real-time analytics, instant remediation, automation and employee feedback. With global headquarters in Lausanne and Boston, Nexthink has expanded into 10 countries, has over 1,000 customers such as BlackRock and Tiffany & Co. In 2018, Nexthink raised $85 million from investors, and will soon reach over 600 employees.
Igor Perisic
Data master at LinkedIn

A passionate graduate in mathematics, Igor Perisic is currently the Chief Data Officer and VP of Engineering at LinkedIn. He ensures the network runs smoothly for the 645 million users.

How does a Swiss native become a major figure of LinkedIn?

It has always been my goal to put my passion for mathematics to good use in concrete applications. At the time, the term “data science” didn’t exist, but it is what I already had in mind. After a PhD at Harvard, two unsuccessful startup experiences and a product manager experience at Microsoft, I joined LinkedIn in 2007. The company was still young. When I took the lead of an engineering team, there were just two of us in the department. Today, my teams count 1,300 people.

What are your responsibilities?

Initially, the structuring elements of the network were key: search engine, newsfeed and user connection graphs. Other networks, like Friendster for example, did not survive inadequate technology. Today, my job is centred around data and the artificial intelligence that processes it.

This data can suggest job offers, contacts and content relevant to users. It is also essential for identifying what is working well and what could be improved, and therefore making strategic decisions.

What are the future challenges for your profession?

LinkedIn is a global digital network, which has evolved with the professional world and increasingly mobile careers. The challenges faced by data sciences and artificial intelligence will increase with the number of users. In addition, the legal dimension is playing a bigger role, with the entry into force of the California Consumer Privacy Act (CCPA) and the General Data Protection Regulation (GDPR). The main challenge is ensuring the system remains flexible and easy to use, without losing sight of the ethical aspect.

Daniel Borel
The pioneer of IT for everybody

Without Daniel Borel, our use of computers may not have evolved in the same way. In 1981 on a family farm in Apples (canton of Vaud) the co-founder of Logitech was part of the teams that developed the computer mouse and helped fuel its widespread use in the late 1980s. That is when the company signed contracts with digital giants such as Hewlett-Packard and Apple.

Logitech went on to continuously innovate and lead the way in developing information technology tools, including inventing the laser mouse in 2004. From 2013, the firm successfully redirected its strategy by branching out into areas such as video game accessories, earphones and portable speakers. Active in the United States since 1982, the company’s turnover is CHF 3 million per year. It employs 7,000 people worldwide, including 300 at EPFL, where it has maintained its international headquarters.

But Daniel Borel did not plan for any of this. He came to EPFL in 1968 to study theoretical physics. “Studying physics gave me a solid base and a really open mind,” he remembers. This open-mindedness led him to the University of Stanford where he obtained a master’s degree in information technology in 1977.

Borel continued to maintain close ties with EPFL. As such, he was one of the major sponsors contributing to the construction of the Rolex Learning Center in the late 2000s. Through his two foundations, Defitech and SwissUp, he also financed the creation of three chairs at the university. Today, following his retirement in 2016, Borel is realising his dream of sailing around the world!
Alexandre Chorin
The researcher winning awards in the United States

Being awarded the National Medal of Science by the former US President, Barack Obama, is just one of Alexandre Chorin’s memorable achievements. Born in Poland, Chorin grew up in Israel and studied Physics at EPFL. He went on to do a PhD at New York University before attending University of California, Berkeley. His speciality? Differential equations. Chorin translates them into arithmetic so that computers can process them. His research is predominantly used in cardiology and aviation. Aside from receiving the most prestigious award in American science, Chorin was also awarded an honorary doctorate by EPFL in 2005.

Leila Schwery Bou-Diab
An exemplary career in the pharmaceutical industry

Leila Schwery Bou-Diab joined Novartis in 2003 and has held various positions in production and operations in Switzerland, Ireland and Germany. In 2015, she was appointed Vice-President of Global Quality at Elanco (Eli Lilly and Company) in the United States. In 2017 she returned to Switzerland and became Vice-President of Value Chain Management at Janssen (Johnson & Johnson). In charge of the pharmaceutical portfolio, she oversees the entire production chain, from development to marketing, and nearly 85 people around the world.

Jean-Philippe Fricker
Pioneer of artificial intelligence processors

Jean-Philippe Fricker is an electrical engineering graduate (1993) and the creator of the biggest computer chip in the world. Co-founder of Californian company Cerebras Systems (2016), he specialised in artificial intelligence systems based on artificial neural networks. Through his company worth more than $1 billion, he co-developed the largest chip ever (the size of a tablet computer), where all the processors run on the same board.
IN’90
Noufissa Kessar
A corporate woman in Morocco
Since she returned to Morocco, Noufissa Kessar has worked her way through the ranks in the world of finance to land right at the top. After earning her computer engineering degree with a specialisation in Operations Research in 1990, she worked briefly at Nestlé in Vevey before returning to her home country, where she joined AttijariWafa Bank Group (formerly BCM). “At first, I thought I would just gain a bit of experience in banking, a sector where I could develop genuine insight into Morocco’s entrepreneurial landscape before choosing my career path, but I’ve ended up spending most of my professional career.” Indeed, she has spent over 20 years in banking, overseeing various corporate finance operations as Morocco’s capital markets rapidly took shape. First was investment banking, where she coordinated some of the country’s biggest IPOs, along with strategic mergers and acquisitions for large local and international groups. Next, she moved into project finance, arranging structured finance schemes for large-scale projects that would boost Morocco’s economy, such as power plants and telecommunications services. Finally she went on to private banking, which was being structured and implemented in line with international standards. In 2009, she was appointed Executive Director and member of the Executive Committee of AttijariWafa Bank, a leader in the financial sector in Morocco and throughout Africa. In 2015, she was appointed executive director of the holding company Al Mada, the leading shareholder of AttijariWafa Bank. As part of her mandate, she is a member of the board of directors of several companies of Al Mada’s portfolio, including Marjane, Optorg, Managem, Ametys, Sopriam and Renault Maroc.

PH’67, PhD’75
Mougahed Darwish
An expert in watch microelectronics
Since 1979, Mougahed Darwish has led a career in advanced microelectronics and put his skills to use at Swatch Group, where he has been a member of the executive management for nearly 15 years. From 1985 to 2007, the Egyptian-born businessman headed EM Microelectronic, a company within the watchmaking group that manufactures semiconductors used in watches and mobile devices. “When I became CEO of the company, it was making huge losses. By focusing on reducing the energy consumed by integrated circuits, EM Microelectronic managed to multiply its revenue by 20 to CHF 200 million.” In 2010, Mougahed Darwish moved on to become head of another Swatch Group company, the battery developer Belenos, until 2018. “It’s an exciting challenge with high potential for mobility.” On top of his position with the executive management of Swatch Group, he is also a member of the Board of Directors of Belenos and still participates in technical development.

PH’82, PhD’85
Laure de Trentinian
A woman of influence at Airbus
After starting her career as an engineer, Laure de Trentinian has since made a name for herself in marketing at Airbus Group. She began working for the aircraft manufacturer in 2012 as marketing director for satellite imaging, and now oversees one of the marketing departments in the Defence & Space division. “As Head of Regional Marketing, I’m responsible for defining and implementing our regional marketing plans for all regions worldwide. That means listening to our customers – which range from governments to private companies such as Google – and defining and coordinating local marketing activities with the sales and marketing teams. The idea is to generate sales opportunities while optimising customer loyalty. I also manage an academic and innovation division, which aims to improve employees’ sales and marketing skills.” On top of all that, Laure de Trentinian is active in promoting the field of engineering among women. For example, she spoke at EPFL Alumni’s event for International Women’s Day in 2019. She received an Alumni Award in 2014.

GM’85
Pascal Kiener
CEO of the top listed cantonal bank
Pascal Kiener started off working in IT, then joined McKinsey & Company, where he was made partner and a member of the Management Committee of McKinsey Switzerland. He joined BCV in 2003 and was appointed CEO in 2008. BCV is the top listed cantonal bank, with total assets of CHF 47 billion, CHF 93 billion in assets under management (as of 30 June 2019), and around 2,000 employees. Under Pascal Kiener’s leadership it has received an AA rating from leading financial services company Standard & Poor’s, further proof of its high quality. Pascal Kiener also sits on the EPFL Advisory Board.
Magdi Batato joined Nestlé in 1991 after completing his studies in mechanical engineering and a doctorate in the energy of the human body. He is today the Executive Vice-President, Head of Operations at the food giant, a position in which he oversees 170,000 people and more than 400 factories, as well as the group’s purchases. Under his leadership, the company has committed to being carbon neutral by 2050 and will be announcing intermediate objectives during the coming months. Magdi Batato also plays an active part in meeting Nestlé’s commitment to making 100% of its packaging recyclable or reusable by 2025.

Yves Auberson has made chemistry his life, having graduated in chemical engineering in 1986 followed by a PhD in organic chemistry. In 1992, after a two-year post-doctoral fellowship in the United States, he joined Ciba (which later became Novartis) where he was head of chemistry and neuroscience until 2012. He then created his own group within the Basel-based group for developing clinical imaging agents. Alongside this, in 2014, he became President of the Medicinal Chemistry and Chemical Biological division of the Swiss Chemical Society. In 2018, he became President of the European Federation for Medicinal Chemistry (EFMC).

Erna Hamburger may well have invented the concept of career woman. In the late 1920s, at a time when female engineers were extremely rare, she studied at what was then the Engineering School of the University of Lausanne. She had the highest marks in her class when she graduated in electrical engineering in 1933, before completing her doctorate in 1937. After beginning her career in industry, she returned to what was by then EPUL as a researcher and then as a visiting Professor. In 1967, she became the first female to be named full Professor at what would become EPFL two years later.
Figurehead of Drone Valley

After starting a career as a consultant, Patrick Thévoz founded the startup Flyability with Adrien Briod (MT’09, PhD MT’14). With more than 350 clients worldwide, this EPFL spin-off is a leader in building drones for the safe inspection of dangerous sites in the nuclear, energy and chemical industries. The startup has received several awards, such as the Drones for Good Award, in 2015, winning the company a CHF 1 million. In 2019, the Top 100 Swiss Startup Awards dubbed it the most promising young company in Switzerland.

Guiding self-driving cars

Although relatively unknown in Switzerland, Raquel Urtasun Sotil is leading the way in the North American self-driving car market. Her expertise in artificial intelligence has led to her taking over Uber’s self-driving car department, where she and her team of 50 researchers are looking at self-driving vehicles’ perception and predictive analysis of their surroundings, as well as how they plan their trips. The young Spaniard is also an associate Professor in the department of Computer Science at the University of Toronto.

Leader in Swiss construction

Having graduated in 1992, Pascal Bärtschi spent a decade accumulating various experiences in engineering firms. In 2001, he joined Losinger Marazzi, owned by the French group Bouygues, where he climbed the ladder until being appointed as CEO in 2015. Among the works of this leader in construction and real estate development are the Rolex Learning Center and the Prime Tower in Zurich. Pascal Bärtschi manages approximately 820 employees and also plays the role of ambassador and coordinator of the Bouygues Construction entities in Switzerland.

Léonard Gianadda

When an engineer becomes a humanist

Engineer, impresario, restorer, photographer … It is difficult to summarise the many facets of Léonard Gianadda’s impressive life. We can, however, see two sides to this figure. One is the civil engineer, who graduated in 1960 and co-founded his company with classmate Umberto Guglielmetti. Over a period of 40 years, the two men built more than 1,500 apartments together in Martigny.

On one construction site, in 1976, they discovered a Gallo-Roman temple. In the same year, in an unfortunate turn of events, his brother Pierre died in a plane crash. These two events inspired him to create a cultural foundation on the site of the temple remains, as a tribute to his deceased brother. In its 40-year existence, the cultural foundation has attracted over 10 million visitors through musical concerts, exhibitions featuring the major works of Picasso, Van Gogh and Chagall, and special events. That’s almost 700 curious people a day. “It’s a real source of pride,” he says. “Because since my trip to Italy with my mother and brothers in 1950, I have opened myself up to all art forms.”

Through this cultural adventure, Léonard Gianadda has collected various prizes, such as the Europa Nostra 2019 award in the “exemplary contributions” category, and the Alumni Award in 2008. In his speech, he expressed his delight at receiving this distinction and his pride at having been a member of the EPFL cultural committee alongside Claude Nobs, among others. Today, Léonard Gianadda is resolutely focused on others. In 2009, he created a social foundation in the name of his wife, Annette, which helps people with financial difficulties in Martigny. Yet another institution in his name that will continue his philanthropic actions.
Philippe Petitpierre is the chairman of the Boards of Directors of the 17 companies in the Holdigaz group, which specialises in the distribution and use of natural gas, building techniques, and renewable energies. With more than 400 employees, it is the leading Swiss group in the sector. He is also the chairman of Gaznat, Petrosvibri, Unigaz and Fingaz. Vice-President of Swissgas and the Swiss Gas Association, he also sits on the international boards of EuroGaz and the International Gas Union. Philippe Petitpierre initiated donations from Petrosvibri and Gaznat which made it possible to establish three chairs in natural gas and geo-energies at EPFL. He received an Alumni Award in 2010.

Marie Ivorra Grosse, A major figure in the space industry and Swiss innovation. From 2002 to 2014, Marie Ivorra Grosse was CEO of Mecanex, the space equipment production entity and subsidiary of the Swiss giant Ruag. The company supplies many satellites in orbit with slip rings. Since 2016, she has been using her experience to help startups like Insolight, which designs new-generation solar panels, and Advanced Sport Instruments with its sensors that improve sports performance. She received an Alumni Award in 2007.

Liu Shaoming, A Chinese success story. Liu Shaoming received his PhD in Microtechnology in 1990, and is now a successful Chinese entrepreneur. He started his career in 1992 at Shenzhen Tiante CNC, which developed control systems for machine tools. "It was tough transitioning to practical application from the theory I learnt at university, but it was also rewarding as I learnt more about production processes and industrial automation." Four years later he joined Shenzhen Kaifa Technology, a company working on hard drive production automation.

Grégoire Ribordy, A genius of quantum cybersecurity. A recognised leader in the area of quantum physics, Grégoire Ribordy puts his knowledge to work at ID Quantique. Founded in 2001, the company has distinguished itself in the area of cybersecurity. Rather than using mathematics, it uses quantum physics and photons to protect data. In the case of an attack, the photon stops all activity, a type of security used by governments and banks. In 2018, the South Korean operator SK Telekom invested $65 million in the company.

In 2001, the engineer founded Shenzhen Colibri Automation, named after the miniature “Colibri” robot on which he wrote his EPFL thesis. The aim was to capitalise on opportunities in industrial automation. With 16 employees at the beginning, he specialised in developing and manufacturing production equipment, and making mechanical parts for mobile phones, lithium batteries, the automotive and medical industries, hard drives, and more. A real success story, the company now has over 2,000 employees across several plants, most of which are in China. Its turnover for 2018 was over CHF 270 million. At 62, Shaoming is hoping to continue his company’s growth for a few years yet.

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Silvio Napoli was born in Rome in 1965. Since 1994, he has led a brilliant career in the Schindler Group, a leader in the field of escalators and lifts. In 2014, he was appointed as Chief Executive Officer of the company and then Chairman of the Board of Directors in 2016. He is a member of EPFL’s Strategic Council and an ambassador of the 50 Fifty Campaign, a student support programme. He also participated in the opening of the Schindler Lab on the school’s campus in 2018. He received an EPFL Alumni Award in 2016.

Olivier Glauser plays a major role in negotiations. Together with his Chinese wife, he is the co-founder of Shankai Sports, a company managing sports rights, ticketing, sponsorships and sports merchandise on Chinese e-commerce platforms. Most notably, it helped Alibaba become a sponsor for the IOC, and Hisense to become a Global Partner of the UEFA European Championship 2016.

Kamila Markram and her husband created Frontiers, a publishing house specialising in open access scientific articles. While users still have to subscribe to view scientific journals, Markram wants to change the entire evaluation system.

Why did you decide to found Frontiers?
It all began with my own personal frustration. During my PhD at EPFL, I published an article on autism-related brain functions in a paid journal. When I wanted to download it to view it, I had to pay for it myself because my school didn’t have a subscription. If I wasn’t able to read my own publication, I thought that other researchers would surely be finding themselves in the same position. So my husband Henry and I decided to start working towards the dream: to make all science open access.

Frontiers has published over 100,000 articles to date. What does this figure mean?
To be precise, we have made 130,000 articles available online. It’s been a real success! Imagine: we have 600 employees who work every day of the week to make science open access. Half of our workforce is in Lausanne, and we have two other big offices in London and Madrid. We’ve also got people in the United States. Over 3,000 texts are published each month, and validated by over 19,000 scientists. Frontiers is the fifth most-cited site in academia, and the twelfth most-viewed. But we want to go even further.

How?
At the moment we cover 600 different scientific fields, but we want to reach 3,000 by the end of 2020. To do that though, the whole system needs to change. Currently, researchers are funded according to their reputation and number of citations. This system is no longer viable. We need to change the paradigm so that we have one that focuses on study impact instead.
in 1951. The shift towards video, data logging, and encryption systems for TV started in the 1980s. After finishing my degree in Physics at EPFL in 1984, I joined the company with two of my university classmates. We went into a new department working on pay TV which, after six years of investment, brought new momentum to the company. That was fortunate, because the companies that stayed working in professional sound recorders all went through some tough times.

What is the company's legacy?
Its ability to reinvent itself. It has always been able to refocus and head in a new direction. First into analogue pay TV, then digital, and now towards cybersecurity and the Internet of Things (IoT). We are developing in fast-moving sectors. Our ability to adapt and the expertise we have accumulated over more than 30 years in digital security give us a long-term competitive edge. We now have around 3,500 employees, including 700 in Cheseaux and 800 in the United States, as well as teams in over 30 countries and more than 500 million users worldwide.

What challenges does the future hold?
Several years ago we made the choice to invest heavily in cybersecurity and IoT security, which were sectors with potential for the future. We also have some promising work going on in big data and artificial intelligence. Parallel to that we are building on a strong presence in the United States, including with a second headquarters, as well as taking a sustainable approach to our future-proof solutions, which use cutting-edge technology and can extend the lifespan of end clients’ devices. Our main centre of technological excellence and innovation is in Cheseaux. It enjoys all the benefits of the Kudelski Group’s DNA, as well as being close to EPFL.
Perspectives on EPFL: A photographic book to celebrate EPFL’s 50th anniversary

Books had already been published on EPFL, its history, and its success. The idea was not to rehash what had already been done. A photography lover, Martin Vetterli dreamt of creating a beautiful photo book. This photographic book, or book of photographs, captures what EPFL is today.

Published by EPFL Press, Regards sur l’EPFL (Perspectives on EPFL) is the resounding culmination of the fantastic collaboration between EPFL and the Musée de l’Élysée. The museum’s director, Tatyana Franck, supervised the scientific committee in its choice of photographers, then of photographs. Three photographers were given free rein to present the school’s present and future. Like a snapshot, except that the three photographers explored, roamed and delved into the campus throughout 2018. The book contains 30 selected photographs by each photographer. The Lausanne-based photographer Catherine Leutenegger was invited to capture the scientific aspect of EPFL. Bogdan Konopka photographed the campus architecture. And Olivier Christinat was tasked with presenting campus life and its people.

The book is available in bookshops or on the Presses polytechniques et universitaires romandes website www.ppur.org.
Thanks to his research, Professor Grégoire Courtine enabled paralysed patients to control the muscles of their legs.

Les Halles de Mécanique, opened in 2016.

The amphitheatres and their enormous tables, and the formulas that have marked every generation of students.
EPFL history through its archives

ArtLab is presenting temporary exhibitions on campus to build a bridge between the world of science and humanities. As a follow-up to the exhibition Infinity Room I, which featured an augmented staging of a selection of photographs from the book Perspectives on EPFL, this second edition shines the spotlight on a collection of photographs, drawing on archives, documents and assemblages. These images reveal sequences from EPFL’s rich history through different installations. To document the countless events that have marked the school’s history, from all the issues of EPFL Magazine and its ancestors – Flash and Polyrama – a full 50 years of history have been captured. This gives alumni a beautiful opportunity to renew contact with the school, and what it was at the time they studied here.

Infinity Room II Exhibition, ArtLab building, EPFL campus. Open from Tuesday to Sunday from 11 a.m. to 6 p.m. Free admission.

Inauguration of the first phase of construction of EPFL’s campus as we know it today, July 20th, 1978.

The 1990 Graduation ceremony. Things have changed. And so has the school’s logo!
Amphitheatres bring back many memories for everyone. Here a vote by a show of hands to elect Agepoly representatives in 1996!

Before MOOCs, teaching could take place via video conferencing. Here, the very first video conferencing experiment in 1995 with Professor Jean-Pierre Hubaux.

The EPFL ETH Challenge in 1995, with President Jean-Claude Badoux (left).

Vivapoly in 1994. The opportunity to rediscover the Esplanade and, further on, Place Maurice Cosandey, as they were 25 years ago.
The associations that are the heartbeat of EPFL

For the past 50 years, and even before the days of EPUL, associations brought their spark to everyday life at EPFL. A look back at the history of four of them who set the pace on campus and are the spice of life at EPFL.

Agepoly, the big sister of EPFL associations

The General Students’ Association of EPFL, better known as Agepoly, needs no introduction. It has been guiding campus life since 1951. The beginning of the school would not be the same without PolyNite, the first event of the academic year, bringing together all students, from first-year newcomers to PhD students. More examples follow throughout the year. From the chalet set up on the Esplanade in the winter to bring a bit of warmth to students as they study hard for exams, to blood drives, to the Graduates’ Ball on the evening after the graduation ceremony, along with many others.

Agep’ – as students affectionately refer to it – has kept up with the times without ever losing an ounce of its drive to lead students towards new horizons. From 1985 to 1999, the association held Aquapub, a whopping three-day sports competition in Vidy. “You have to imagine 500 participants from all over Europe, and even Canada,” says Marianne Jenny Nguyen, secretary of Agepoly since 1986 and living memory of the organisation. “They could participate in multiple activities, such as hot air balloon rides, paragliding and water jousting. One year, we even offered bungee jumping.

As alumni, you probably have many memories about these associations. You may even have been on the committee of one of them. But do you know the history behind these organisations that you felt so passionate about back in the day? Do you remember what could motivate students to devote time and energy to the aim of an association while not doing homework or studying for exams? To refresh your memory, we met with four of the highly active organisations on campus.

Whatever the period, Welcome Day has always been the opportunity for organisations to recruit new students.

I think it was the only time in the history of Lausanne.” Another highlight from that period was the Antique Vehicle Exhibition held from 1988 to 2007 on the Esplanade. An elegance competition in period clothing was also a key event in those days. “Presidents Bernard Vittoz and Jean-Claude Badoux never missed a single one,” Marianne Jenny Nguyen remembers.

And of course, there are tons of little anecdotes. Like the night when EPFL President Bernard Vittoz was awakened by a call from the police, which had just arrested members of the Agepoly...
committee. They were guilty of putting up posters to promote Aquapub without authorisation in the city of Lausanne. The President personally went to the station in the middle of the night to confirm that they were students at the school and get them out of their predicament. “There was also that day of tension release, when the task of taking down the vehicle exhibition was transformed into a massive ketchup fight.” The next day, early risers were able to catch a glimpse of the Esplanade repainted in red, before the committee could clean up the mess urgently before class started.

These days, Agepoly is also the big sister organisation that oversees 19 committees, or sub-associations, that fulfil very specific roles, providing logistics support and financial security. Among them are other institutions. For example, the Challenge, a ski competition, which, since 1991, has pitted EPFL students against ETHZ students in a friendly face-off. Another is PolyLAN, the official gaming tournament, or PolyJapan and its Japan Impact event. Art and culture are also promoted with the Club Photo, Ciné-Club, DanceSquare, Musical, chess and go clubs, and much more. There is something for everyone.

“In addition to the activities and events, we also have an important role to play in the decisions made at the school,” says Delphine Zihlmann, student in communication systems and current president of Agepoly. “One of the missions that Agepoly takes on is to represent students and defend their interests.” Agepolytique is the pole in charge of relations with the school. Working with 150 representatives from all sections, this team is involved in various issues, such as school fees or the teaching evaluation system. Representing all students is also the role of the President of Agepoly. Whether it is in answering questions from Darius Rochebin on the RTS news or speaking in front of 3,000 people at the graduation ceremony, heading the most famous organisation on campus comes with its own life experiences.

Between holding exciting events and defending their rights, Agepoly has supported students for generations. That has been going on for 69 years, and it is not about to stop!
Balélec marks the rhythm

Imagine having to build five stages, welcome 15,000 concert-goers, and manage dozens of performers. It is a hard job that only professionals in the music business can handle. Right? Well, that is also the challenge that Balélec and its student volunteers have set for almost 40 years. “It’s a unique case in Europe. No other festival on the continent calls on so many resources or hosts such a large audience for a single evening,” says Vincent Tournier, student in computer science and current president of the association.

The story begins back in the early 1980s on EPFL’s former campus in the city centre of Lausanne. Professors from the electrical engineering section came up with the idea of organising an evening of concerts. The first Balélec took place in a friendly atmosphere, which felt more like a village party than the festival of rock, electro and hip-hop concerts that we know today. But it was a success, and the event was repeated; its reputation grew. The association was officially created in 1986, and the responsibility was passed on to students. Balélec went from being a section dance to a music festival bringing together the entire school. In 1989, the milestone of 10,000 people attended the event.

And it continued to develop over the years. Crowds topped the 15,000 mark in the 1990s, with headline artists performing at the festival, such as Alpha Blondy in 2010 and Radiohead in 1994. The UK group was already known, but their famous album OK Computer hadn’t yet come out. The festival-goers could not have hoped for better. Even though Balélec has all the outward signs of a major music event, its budget is very small compared with other festivals. “Two years later, Balélec never could have afforded to have Radiohead play. It’s the perfect example of the flair we have to have. Picking out high-potential artists before they become out of our reach,” says Clélia Liebermann, vice-president of promotion.

Backstage, the figures are dizzying. The committee has 45 members, while 400 people work on the evening of the event. A passion for music is often what the students share, but the festival has not forgotten its roots. For example, it recently collaborated with the EPFL spin-off Technis, using its system of ground sensors to count the number of attendees. Another key issue is sustainability. “In 2006, we were the first music festival in Switzerland to serve reusable cups,” Vincent Tournier says. A quality manager, focused on sustainable development, is now an integral member of the committee.

Balélec shakes things up as it gets people moving. The 2020 edition is set to be as vibrant as ever. It will be Balélec’s 40th anniversary.
Forum EPFL, 37 years of helping people find jobs

The SwissTech Convention Center is teeming with thousands of students, who have come with the hope of building the beginning of their career. No doubt about it. This is the Forum EPFL. An important association at the school, it probably best symbolises the passage from student to alumnus. The event is traditionally held the day after the graduation ceremony.

The Forum began in 1982. While his fellow student Marc Weill was preparing to found Junior Entreprise, Marc Gandar, who has since earned a computer science degree, came up with the idea of creating a business fair to help finance the association. With support from his friend Antoine Wasserfallen, an architecture graduate, he launched the project. “At the time, we had no idea how companies worked,” says Marc Gandar. “After hesitating whether to invite them free of charge, we ended up setting reasonable prices.” It turns out that 40 companies participated in the first-ever Forum, and the event netted a 16,000 Swiss franc profit. This established the event’s long-term viability, without reliance on any other organisations.

The number of companies in attendance has since exploded. In 2010, 150 companies participated, and in 2019, 196 companies. With its 18,500 visitors, the Forum has become one of the largest professional events in Europe. “As a student, getting involved in this type of association is an extremely formative experience,” says Manon Poffet, the Forum’s President at the time of the 2017 edition. “From negotiations to legal aspects and administrative management, a wide range of tasks need to be done. You also learn how to act with the different types of people you’re dealing with. And how to manage your stress.”

Through all this, the organisation itself is a challenge. “Taking care of an organisation like the Forum is a first experience in management,” says Stanislas d’Hérouville, vice-president of the 2015 edition. “The volunteering is fully dependent on the willingness of students to participate. So we have to be sure to recruit loyal, dedicated people.” These are real-life issues.

In addition to the success of the event itself, its viability is also at stake. The Forum is entirely funded by business services, such as space rental and workshops.

Over the years, the association has developed and now provides services to students in partnership with the career centre. The idea is to get them ready for the big day of recruitment. That involves mock interviews and workshops on salary negotiation, along with brochures to better understand what the companies present at the Forum are seeking in candidates. On top of all that is the mentoring programme implemented with EPFL Alumni since 2018 as a way that students can benefit from advice from graduates. And it pays off, according to Thibaud Muffat-Jeandet, current president of Forum EPFL, “Based on the most recent survey conducted in 2017, more than 10% of students found their first job at the Forum.”
Satellite – still in orbit after 35 years

Throughout its history, Satellite has brought together 350 volunteers, organised a thousand parties, selected 120 board games, sorted and conserved more than 5,000 comic books, planned 11 Sat Rocks Festivals, held 75 jam sessions and 380 concerts, invited a number of young actors to participate in 180 café-theatre events, and brewed and served countless litres of beer. Basically, after 35 years, Satellite is still going strong. Without any sign of slowing, the association is moving forward!

In 1983, under the supervision of Agepoly, students were thinking about creating spaces where they could come together to relax. At the time, the Spongiflex committee threw in the towel when its idea for a discotheque did not pass. That was good news for Marc Dikötter, who now holds a computer science degree. He took over the project and came up with the idea for a bar where people could meet for coffee in the morning and have a beer in the evening while reading comic books. It took him a year to develop his idea, buy CHF 2,000 worth of comic books in France with a loan granted by Agepoly, and find all his furniture at Ikea. “It’s funny, because the thing I created that will last the longest is not a professional achievement, but a student bar.”

For many students, Satellite presents a wonderful opportunity to see what goes on behind the scenes when organising events. Andreas Jaggi, who graduated in 2009 with a computer science degree, was literally fascinated with organising concerts. “There were stressful times, but everyone was helping each other out, supporting one other. That experience creates strong bonds within a team.” Andreas has kept wonderful memories of Sat and, even though he now works in Zurich, he makes sure to come back regularly and see his friends. He also often sees these friends at major festivals in the region, “Paleo, Montreux, Caribana, etc. There are always people I know from Sat working there, either with the technical crew or managing the performers.”

As with others before him, it was his love for this unique place that convinced Nicola Montanarella. After coming for several years to relax and play chess, he made the move and got involved in the organisation, first as treasurer and now as president. Having former students who are still involved offers a greater sense of continuity. “Many people have stayed close to the organisation and occasionally stop by the bar,” he says. “It’s a bit cliché, but Sat is a real family.” As the only real student bar on campus, Satellite aims to be a festive place but also set an example with the school, which provides the space free of charge. “At times the bar has been seen as a bit of a nuisance at the school, but now relations with the management staff are very good. Satellite has gradually gained recognition from EPFL. That’s really rewarding.” The thousands of students who have spent time here won’t contradict that. Long live Sat!
Attract the best students

Do you want to make a difference in the life of a student and shape the future of EPFL?

Get involved with the 50 Fifty campaign!

How to be involved: go.epfl.ch/50Fifty

EPFL – Philanthropy – campaign@epfl.ch – 021 693 83 53
EPFL SCIENCE TAKES ON THE ENVIRONMENTAL CHALLENGE
In response to climate change and the deterioration of our ecosystem, EPFL draws on the innovation and talent of its researchers to build technological solutions that meet the challenges we face in this century. Here we present an overview of the most important initiatives.

Jean-Christophe Piot

Can we strike a sustainable balance between economy, development and the environment? How can we meet people’s expectations while taking action to address increasingly urgent environmental issues? Claudia Binder says that energy could be the answer to everything. A Professor with Human Environment Relations in Urban Systems (HERUS), she presented the conclusions of a research group concerning sustainability to EPFL’s management at the school’s most recent Scientific and Educational Days event. These researchers say it clearly: “Having clean, affordable energy is a key factor for guaranteeing a sustainable future.” As long as they don’t take it as an isolated issue: “Technological development and innovation alone are not enough to meet Switzerland’s Energy Strategy 2050 or the CO2 reduction targets. Only an interdisciplinary approach, combining sociological, ecological and technical aspects, can effectively address such deeply interrelated issues as climate change and sustainability.”

Going forward from that perspective, “EPFL has a major responsibility,” says Julia Binder, head of Tech4Impact under the Vice Presidency for Innovation, an initiative that formally sets out the school’s commitments in this area. “We must make this unique technological expertise available to society as a whole.” EPFL’s wide range of expertise – including sustainable energy production, reducing consumption, buildings, product life cycles, ecology, and ecosystem analysis - gives it a key role in shaping the future. In each field, EPFL has the capacity to make a significant impact and drive the technological transfer from the research lab to business organisations.

Moving towards more efficient, clean energy The heart of the problem is energy. Whether we are talking about clean methods to generate it, store it, distribute it or to reduce its consumption, laboratories are working to cover all these issues. “Electricity cannot be used to power everything, starting with long-haul flights,” says Professor Sophia Hausser, head of the Laboratory of Renewable Energy Science and Engineering (LRESE). With her team of 18 researchers, she studies different photoelectrochemical processes to convert renewable energy into fuel, materials or storable products.

EPFL’s research in solar energy has long been recognised worldwide. A case in point is the far-reaching impact made by Professor Michael Grätzel. Known around the world as the inventor of the dye-sensitized solar cell (“Grätzel cells”), he took the top spot in a Stanford University list of the 100,000 top scientists across all fields. His research has led to over 80 patents.

Already manufactured on a scale of several megawatts, his photovoltaic sensors could take over the market in the near future, mainly thanks to research by Professor Mohammad Khaja Nazeeruddin’s teams. “About 85% of the world’s energy needs are met by fossil fuels, and the energy demand worldwide is expected to double by 2050,” the researcher says. To maximise the use of solar energy, he focuses on perovskite solar cells, which already feature record 25% efficiency. Research is also moving in the direction of heterojunction at the Photovoltaics and Thin-Film Electronics Laboratory headed by Professor Christophe Ballif at Microcity (EPFL).
Founded in 2015 at the EPFL Innovation Park, Insolight works on improving the performance of solar panels. “Silicon-based technologies have a yield of 18% to 20%,” says one of the three co-founders, Laurent Coulot. “Insolight’s solution achieves 29%.” Its optical technology concentrates light beams and is embedded into standard panels, without any major extra cost. “We try to establish partnerships with existing manufacturers so that they can distribute their products where installation costs are high to compete with leaders from Asia.”

Insolight caught the attention of the European Union and secured €10.6 million in funding. That investment enabled the company to demonstrate the capacity of its idea by setting up a pilot assembly line in Neuchâtel with a 16-member consortium. The first sales are planned for 2022.

Given the high yield produced by the solar cells developed there, they could be industrialised at a low cost.

Further advances lie ahead, to build on the winning position taken by the Swiss Living Challenge teams at the 2017 Solar Decathlon, an international competition held in the United States that challenges students to come up with sustainable housing solutions. With their partners from three top schools, the 250 students, 150 supervisors and 50 partners involved shone bright with their NeighborHub solar house.

But the problem with energy is not just about how it is generated, but also how it is distributed and monitored. Distribution and monitoring are the core focus of the Smart Grid Campus Project, coordinated by Professor Mario Paolone. The researcher highlights that EPFL has the key advantages of having its own campus, 12,000 users and two solar power plants. “This is an opportunity for us researchers to turn our own low and medium voltage grid into a sort of life-size laboratory.”

In addition to inspection solutions, the site can also test its own cybersecurity systems. As a result, EPFL has developed innovative monitoring infrastructure that checks the physical condition of part of its grid every twenty milliseconds. This world first led to the creation of Zaphiro Technologies. This successful startup has developed a solution to manage and optimise medium voltage electricity grids called SynchroGuard. This system is already being tested in Switzerland by Romande Energie and in China by China Light and Power.

Construction, materials and uses: taking us closer to virtual buildings

The research conducted by Professor Lyesse Laloui zeroes in on another aspect of the energy issue. As director of EPFL’s Civil Engineering Section, he coordinates studies on geothermal solutions. “The point of our work is to use underground infrastructure – car parks, tunnels, building foundations – to recover heat or cold and store them in the ground. This system would make buildings self-sufficient or almost in their energy needs, as 80% of their energy spending is on heating or cooling the space within them.” For Lyesse Laloui, who is currently involved in the work led by the Grand Paris programme to develop 13 future metro lines, one key point will be the impact of new European directives, which require all new buildings to have their own sources of renewable energy.

Another way of limiting the environmental impact in construction is in the choice of materials used, an area studied by the research teams at the Laboratory of Construction Materials (LMC) led by Professor Karen Scrivener. The main culprit is cement, which produces 8% of the world’s CO₂ emissions. Since she founded Nanocem, the world leader in research on cementitious materials, in 2002, Karen Scrivener has been exploring

Perovskite solar cells are used in the research of Professor Mohammad Khaja Nazeeruddin to maximise the use of solar energy.
the properties of a new product, LC3. This blend of limestone and calcined clay can reduce CO₂ emissions by up to 30%. As it is more durable and resilient, this material alone could contribute to reducing the world’s CO₂ emissions by 1% to 2%, the equivalent of the impact of a country such as France.

Meanwhile, Professor Corentin Fivet from the Structural Exploration Lab (SXL) in Fribourg studies the reuse of materials. “We’re interested in structural design to facilitate the reuse of load-bearing systems in buildings,” the researcher explains. “Today, these structures are demolished to build something else in their place. That is both a financial and an environmental loss because the slabs and columns have not lost any of their utility.” Designing a reversible construction system would require study in areas such as building design methods and ways that new structures could be reused 50 or 100 years from now.

Other work in sustainable architecture includes the exploratory research led by Professor Emmanuel Rey from the Laboratory of Architecture and Sustainable Technologies (LAST). For example, the Working Space project focuses on developing modular wooden systems designed to raise existing buildings rather than further extending the coverage of built structures on the ground. “To respond to urban densification, we create comfortable workspaces by making use of local resources and drastically minimising the impact on the environment,” Emmanuel Rey says.

“ELECTRICITY CANNOT BE USED TO POWER EVERYTHING, STARTING WITH LONG-HAUL FLIGHTS”

Professor Sophia Haussener, head of the Laboratory of Renewable Energy Science and Engineering (LRESE).

LAST’s interdisciplinary approach resembles that of the Smart Living Lab. This research centre is created by EPFL with the University of Fribourg and the School of Engineering and Architecture of Fribourg (HEIA-FR) on the former industrial site of the Cardinal brewery. Headed by Martin Gonzenbach, the centre conducts research on housing that puts people first. “A user-based approach is essential if we want to develop welcoming, efficient construction systems,” the Lab’s director says. Architecture researchers and professionals, along with legal experts, sociologists and IT specialists, have joined him to find balanced, sustainable solutions. The first experimental, life-size playing field is the future building of the Lab itself. Built mainly in wood, the 5,000 sq. m open, modular site will soon accommodate 130 people. All this will come together to form a laboratory packed with sensors and monitoring tools to analyse energy performance and interactions between humans and buildings.

Protecting and conserving fragile ecosystems

All this work going into improving energy and construction is first meant to protect environments at risk due to human activity. In the area of protecting polluted water systems, Professor Wendy Lee Queen from
the Laboratory for Functional Inorganic Materials (LFIM) has developed a new material with a diameter 50,000 times smaller than a hair strand. This sand-like powder acts like a sponge that absorbs and eliminates pollution. This system is used to obtain a huge structure with a very low volume: “one gram of this material can have the same surface area as a football field, around 7,800 sq. m.” With a team made up of chemists and chemical engineers, the LFIM is working to harness the infinite possibilities of this material in various applications, including the removal of toxic heavy metals such as lead and mercury. That capacity is ideal for treating domestic wastewater or decontaminating water supply areas. The team is also working on other “spongy” materials that can extract harmful greenhouse gases like CO₂.

In an era when we find traces of plastic and pollutants in the most remote areas of the world, the Swiss Polar Institute (SPI) presents another example of EPFL’s commitment to protect natural sites. Created in 2016 by a consortium of Swiss universities and hosted by EPFL, the SPI acts as both coordinator and funding agency, says its executive director, Danièle Rod. The entire polar community can obtain aid from the IFS, from the SME that wants to test its drones in areas where the communication services are disrupted by electromagnetic waves to some research projects in climatology and anthropology. About seven to eight projects are supported every year, in climatology, glaciology, oceanography, and more. Each project then publishes its findings in scientific articles, as with the Antarctic Circumnavigation Expedition (ACE) led three years ago. Scientists from around the world participated in the revolutionary expedition aboard the Russian research vessel Akademik Treshnikov. Synergies were created across a multitude of projects, including the removal of toxic heavy metals such as lead and mercury. That capacity is ideal for treating domestic wastewater or decontaminating water supply areas. The team is also working on other “spongy” materials that can extract harmful greenhouse gases like CO₂.

A blend of limestone and calcined clay, LC3 cement can reduce CO₂ emissions by up to 30%.

Founded in 2016, the Swiss Polar Institute, or SPI, offers another example of EPFL’s commitment to protect natural sites.
About 38 million people live without electricity in Tanzania, and 20 million in Kenya... In the African Great Lakes region, many are left with no other solution than to burn kerosene for lighting, both toxic and expensive. With another EPFL alumnus, Briac Barthes co-founded hiLyte in 2018 to bring some real answers to the problem. Their solution is a simple battery offering 1.5 W of power, enough to light a small room or charge a mobile phone, by dipping iron plates and carbon felt in a homemade liquid solution. The chemical reaction produces five hours of electricity.

“We sold more than a thousand functional prototypes in Tanzania. Now we want to adapt the design to manufacture it on an industrial scale,” the young CEO says. Their goal is to bring a solution to 10% to 20% of the population in Tanzania without access to electricity, before hoping to move into other countries. To make its product available to everyone, hiLyte has asked telecommunications companies to finance the purchase of these green batteries.

The co-founders (Jonathan Florentini, Briac Barthes and David Lambelet) pose with their batteries designed for people living in emerging countries.
Pictet’s three core businesses are wealth management, asset management and asset servicing. The Geneva-based group employs more than 4,500 people at offices in 27 locations including London, Hong Kong, Singapore, Luxembourg, Tel Aviv and Tokyo.

For 29 years, Jacques de Saussure (see text box) was a Managing Partner at Pictet. “The average tenure for a Partner is 21 years, as our business requires stability and trust,” he explains. Stability is what enabled Pictet to rise to become a leading independent financial-services provider, today with CHF 556 billion in assets under management.

Whether for the core businesses or support operations, Pictet relies on EPFL alumni that can be found in various business lines within the company.

Chloé Koos (see text box) leads the 20-strong team in Robotic Process Automation (RPA) and Cognitive Systems, which is developing ways to automate processes: “At EPFL, we were taught how to think and work in a structured way that at the same time would trigger our intellectual curiosity. This mindset is crucial in a Group such as ours.”

Banking innovation and its challenges
Pictet's policy is not ‘innovation for innovation’s sake’. For example, Chloé's team is working to automate processes still largely done by hand, thus saving people a considerable amount of time. The team is also assessing the potential of artificial intelligence. “When I started at Pictet, my job even back then was designing ways to make everyday tasks less time-consuming. As a team, our latest automations have, in just one year, freed up time equivalent to 12 new staff members. So employees spend less time on paperwork and more time looking after clients.”

Sven Holstenson, who graduated from EPFL in Microengineering and today heads up Pictet Wealth Management for Europe, thinks the same: “Regulators want increased oversight over, and more access to banking data. Because of that, we have to provide a technological platform that meets their requirements.”

Pictet is not busy trying out virtual agents or chatbots. According to Sven, technology at Pictet is primarily about the IT system underpinning the services. “Robo-advisors are for retail banks. For our clients, what matters is how we process data, present it to them and store it.”

Consequently, tech spending is deliberately keyed to client needs – to keep the platform running efficiently and to provide effective cyber-security. Data is protected, data integrity is ensured and fraud is combated through a leading-edge IT system. The relationship between client and bank is highly sensitive so the technical solutions used must be safe and user-friendly. “We are also keeping a close eye on several startups, both in Switzerland and further afield, to monitor
Jacques de Saussure joined Pictet shortly after graduating from EPFL in 1975. He began as an intern in the IT department. He was appointed Senior Partner in 2010. In 2014, he was the recipient of an EPFL Alumni Award.

Can you describe your career at Pictet? After graduating from EPFL in 1975, I first joined the private banking unit for a six-month placement in the IT department. After that experience, I went on to earn a master’s at MIT in the US. I returned to Pictet in 1979, where I had to learn the basics of banking, namely what is a banking transaction, and about client relations and, obviously, all about investing. In 1987, I was appointed Partner. Among the challenges I faced, my expertise was useful in addressing the technological aspects of the issues encountered. I had to be patient, as it took time for my colleagues and fellow Partners to grasp the importance of innovation. This was one reason why, as soon as I joined, and even during my internship, I helped design banking software that would facilitate the work of my colleagues. Newly hired graduates are generally smarter than their colleagues on the technical front. But then the reality of the workplace brings them down to earth.

As a former Partner, how important was technology to you, in a Group such as yours? On becoming a Partner, you become liable for the company’s financial obligations. And you may have to put up your own funds. With that in mind, we don’t simply want an entity that is solid and safe; we also want to increase the value of the equity. Our mission as Partners is quite simple: make sure that Pictet is better and more robust than when we became a Partner. And for that to happen, our operations platform has to be highly capable.

How has technology changed the business of banking? In the olden days, there used to be ring binders containing paper share certificates, which is where the word ‘portfolio’ comes from. The internet obviously sparked a revolution in the way information is transmitted, but the preceding IT revolution was even more consequential because it improved not only the information sent to clients but also business processes. The advent of the internet fundamentally changed one aspect of our business, as it did for all other businesses, namely that today clients have access to far more information.

So our added value is to give clients a different angle in the conversation.

How would you describe Pictet’s business culture today? Pictet has a history stretching back more than 200 years. At all times it has functioned, so to speak, as a start-up owned by its managers. In a collegiate partnership structure, corporate culture has a great deal of importance. The Partners are responsible for passing on the company’s expertise, values and capital. Today, Pictet strives to keep its staff thinking like business owners. For example, a member of staff may suggest a process-optimisation tool or put forward a new fund they deem innovative. Value is placed within the Group on this mindset and the resulting innovations. So innovation is vital, even if it’s less visible here than elsewhere.
the latest in fintech innovation,” explains Christian Schröder, Chief Digital Officer and an EPFL graduate in Communication Systems.

“TOMORROW, WE WILL NEED TO HARNESS THE DATA FROM A TO Z”

CHRISTIAN SCHRÖDER

He believes that innovation primarily manifests itself in the core investment business. “Besides the technological innovation of our IT solutions, we are pioneering by offering our clients funds investing in themes such as Robotics and Smart Cities.”

Scientists increasingly on the front line

Trained scientists are using their knowledge and understanding of technology to help the Group evolve digitally. “Our strategy is to sustain a high degree of innovation in the investment solutions on offer.” That’s why the Chief Digital Officer is supporting the Partners and the business lines in making this shift. “Our aim is understanding how technology will impact the world of finance and alter client expectations. Technology is still only a means to an end. What actually dictates the rate of change and guides digital developments are our clients and what they need.”

With that in mind, Christian finds himself at the crossroads between the Partners’ strategy, Pictet’s digital projects, and clients’ wants and needs. His job is to look ahead to what banks will require in the future. “Time-honoured profiles such as banker and asset manager are today joined by new ones such as data scientist, UX designer, web developer and digital project manager.” As the competition is fierce, banks need to demonstrate technological expertise and hire staff capable of getting to grips with the new technologies. “Tomorrow, the amount of data available will be huge. We will need to harness it from A to Z.”

After three years at HR, she was offered a position heading up the Robotic Process Automation & Cognitive Systems department. Here she manages a team of 20 whose job is processing automation and designing resources to increase profitability and save time. She is also researching novel solutions linked to artificial intelligence. “At Pictet, we are selective about innovation. It needs to be applicable to everyday work. Optimisation is the watchword, but we have to work within existing constraints.”
After studying for a master’s degree in Communication Systems, Christian – who is originally from Germany – felt drawn to the financial services industry. In 1994, he was recruited by Credit Suisse at the EPFL Forum and joined their Organisation department. Three years later, he was hired by Robeco and worked on the merger between Robeco and Rabo Bank in Switzerland, becoming IT chief of the new entity at the age of 28. In 2000, he joined Pictet. Christian’s first task was to set up the IT department of the Pictet Asset Management business line. After that, for five years he co-managed the IT platform changeover at the Group – a mammoth project. In 2006, he became manager of the Organisation department, which oversees the Group’s strategic and cross-divisional projects.

Today, 20 years on, Christian is an Equity Partner and wears several hats: Head of Organisation, Group Corporate Secretary and Group Chief Digital Officer. “I endeavour, day by day, to help the highest echelons of the company understand and act upon technological issues in everything we do. Backed by a central team of 25 employees, comprising senior project managers and digital & data experts, my role is to guide and support key group leaders in the biggest operational overhauls they have to conduct and help them manage strategic development projects.”

Sven Holstenson was awarded a degree in Microengineering in 2006. Though passionate about robotics, Sven – who is originally from Geneva – did not see himself beginning his career in an R&D department, so he joined Procter & Gamble to work in marketing. Two years later, he added an MBA from INSEAD, then went to work for McKinsey for three years. In 2012, he started working for Christian Schröder at Pictet, later joining Pictet Wealth Management, where he currently manages the European client-facing team. “Obviously we need a powerful platform to ensure our clients’ data is safe and secure, but our bespoke solutions are what make us stand out from the pack. We offer our clients trust, reliability, expertise and security.”

How does he imagine the bank of the future? “To continue flourishing, we need to rely on a first-rate proprietary technological platform that meets the expectations of our clients and the requirements of regulators and which keeps the data entrusted to us safe and secure. If we do this right, wealth managers will be able to continue to focus on their clients, understand the issues they are facing and provide solutions.”
How should you approach a performance review? The best option is always to start the review by pointing out how much you like working for the company, providing concrete examples to demonstrate that. Second, you can steer the discussion more towards the personal aspect of your relationship with your manager, again emphasising the pleasure in working together. You can also mention any issues, but always draw on a constructive mindset and highlight the positive points. Finally, it’s a good idea to show that you want to grow and develop, asking how you can further improve your work and be more efficient. This type of discussion can also open the door to professional development opportunities.

What are the keys to successful salary or promotion negotiations? There are three main keys to getting it right. First, you should focus on the objective you want to achieve and visualise it. Visualisation is an important concept, widely used in sports for example. Through visualisation, you no longer fixate on the process, which often creates stress, but on the end objective and how to get there. A good technique is to note your goals on a post-it before the interview.

The second key to success is a three-pronged technique: proximity, uncommon, value. **Proximity** because the chances for success increase when you determine it with your manager, for example by demonstrating how you can help him or her meet his or her own objectives. **Uncommon** because by showing that you are capable of accomplishing uncommon things, which go beyond the scope of traditional objectives, you prove to the organisation that you represent an opportunity for the company. And **value** because you have to provide rational, numbers-based evidence that you bring value to the company, by generating profits, reducing costs or avoiding mistakes.

The third key is not to “sell” but instead to “get them to buy”. In other words, to get the manager to project into the future and view the pay increase or promotion as the clear pathway to reach that reality, in such a way that the proposal comes from the manager and not from you. For example, the ideal way to get a promotion you want is not to name the position specifically but rather to speak in terms of projects, skills and objectives.
I provide modern and efficient IT services. I’m working for Switzerland.

Francesco
Head of Operation Backend Services
DR
How does one get into the space industry?
We all have a passion for space. Fabien Jordan, Astrocast’s co-founder and CEO, worked with the SwissCube project, the very first Swiss satellite. It was developed at EPFL and launched into orbit in 2009. I did a minor in space technology at EPFL and had a startup project in the industry before we created Astrocast. It is this passion that brings us together, and it’s incredible that EPFL has the only space studies minor in Switzerland.

What makes Astrocast different?
With our satellites, we bring our customers specialised telecommunications services in the Internet of Things (IoT). That means they can manage their infrastructure remotely at a relatively low cost. We met with this startup with a high-flying future.

Text: Arnaud Aubelle

Based on campus and co-founded by the EPFL electrical engineering graduate Federico Belloni, Astrocast develops miniaturized satellites that allow its customers to monitor their infrastructure and facilities remotely at a relatively low cost. We met with this startup with a high-flying future.

Federico Belloni

How does one get into the space industry?
We all have a passion for space. Fabien Jordan, Astrocast’s co-founder and CEO, worked with the SwissCube project, the very first Swiss satellite. It was developed at EPFL and launched into orbit in 2009. I did a minor in space technology at EPFL and had a startup project in the industry before we created Astrocast. It is this passion that brings us together, and it’s incredible that EPFL has the only space studies minor in Switzerland.

What makes Astrocast different?
With our satellites, we bring our customers specialised telecommunications services in the Internet of Things (IoT). That means they can manage their infrastructure remotely. The main thing that sets Astrocast apart from its competitors is that we manufacture our own satellites. This gives us full control over our value chain and our service, and strengthens the trust our customers have in us. The second point is the size of our satellites. We make nanosatellites, measuring about 10 cm by 30 cm. This miniature size and our production capacity also give us a considerable price advantage over our competitors.

Your first satellite was launched by SpaceX at the end of 2018, also known for its competitive pricing...
Yes, SpaceX was the company that shook up the space industry by bringing prices down. It was an incredible experience for us to finally have our first satellite in orbit and significantly boosted our reputation. Generally speaking, we need to be collaborating with big names in the industry. For example, our partnership with the European Space Agency has enabled us to finance our first launches and provides significant support in validating our product technology. We also partnered with Airbus to develop the chipset integrated into our products, making their miniature size possible.

What are the next steps?
We have recently raised CHF 9 million. That investment will be used to finance our next generation of satellites. The next funding round has already begun and is expected to close by 2020. This will help accelerate our development. We now have two satellites in orbit and plan to launch 80 by 2023. We’re always on the lookout for new collaboration opportunities, for either technical or commercial partnerships. If alumni are interested in our work, our door is always open.

The expert’s point of view
Founder of Altyn, a Swiss company that develops space projects, José Achache is a leading figure in the space business in Switzerland. The managing director of the incubator AP-Swiss – the ambassador platform of the European Space Agency in Switzerland – is also on the management team of some 20 startups active in the industry, including Astrocast.

“Newspace holds the promise that extremely profitable commercial services can be offered from space using very small (and hence very cheap) satellites. To date, this remains to be demonstrated with a successful project and, in my view, Astrocast will be the first company to achieve commercial success with a constellation of nanosatellites” says José Achache.

“We have the best possible technology, strategic technical assets and a remarkable team, which I am proud to be part of. Becoming the first global satellite telecom operator using nanosats, and operating from Switzerland, what an achievement!”

Alumnist Startup
54
Bringing gardening indoors with smart greenhouses

Growing your own basil, lettuce or strawberries is now possible right in the comfort of your living room with small connected greenhouses developed by Caulys. Two alumni, Grégoire Gentile (GM’19) and Tom Lachkar (SV’17), created Caulys in early 2019. The startup aims to turn consumers into urban farmers by providing them with indoor gardens that can be installed anywhere. With no packaging, no pesticides, no GMOs and no CO2 from transport, these modular greenhouses can be stacked up to four levels high to hold up to 200 plants. Using sensors and LED, the greenhouse continuously adapts to light, temperature and humidity to optimise plant growth. The closed loop irrigation system uses up to 95% less water compared with traditional farming.

Alumni shine among the Top 100 Swiss startups

EPFL and its alumni took the spotlight in the Top 100 Swiss Startups Award 2019. Two EPFL spin-offs, both founded by alumni, landed the two highest honours. In first place, Flyability, founded by Patrick Thévoz (MT’09) and Adrien Broid (PhD MT’14), is a leader on the market for drones built to inspect dangerous areas. In second, Lunaphore was created by Ata Tuna Çiftlik (PhD MT’13, Deborah Heintze (SV’12) and Diego Dupouy (PhD MT’16) to produce automated devices that facilitate tissue diagnostics and the shift towards more personalised medicine. Bestmile, also founded by two alumni, Anne Mellano (GC’12) and Raphael Gindrat (GC’14), and specialised in autonomous vehicle fleet management, won fifth place.
Increase your visibility through Alumnist

Alumnist is sent in the winter to 27,000 EPFL graduates. The magazine is published in French and English.

Distribution

Alumnist is designed for EPFL graduates, an audience well versed in science and technology, and active in both industry and research.

Place of residence: 75% living in Switzerland, 25% abroad

Gender: 82% men, 18% women

Age: 22% under age 29; 30% age 30–39; 21% age 40–49; 12% age 50–59; 15% age 60 and over

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Thank you to all our alumni and Alumni Award recipients for making our school shine through your talent and as such contributing to enhancing its reputation worldwide.

To our contributing members for your support. It is thanks to you that we can strengthen our network and continue investing in the future of our school and of our alumni community.

To our chapter presidents and their committees for your time, creativity and personal dedication, which give alumni the opportunity to meet new people and continue to learn.

To our career mentors for guiding students and young graduates in finding their path and making the right career choices. You contribute to creating a spirit of mutual aid and to driving the success of our community.

To our innovation mentors, to all those who invest in EPFL startups and to those who support collaboration in research.

To our alumni donors who enable our school to make a stronger impact through education, research and innovation, and to contribute to the advancement of our society.

To all our alumni who support EPFL with their advice, networks and stories, and by sharing their knowledge.

To EPFL and everyone involved with the school for its impact and excellence, which we are so proud of, and for helping us create the most wonderful alumni network in the world.

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We wish you all the best of health, success and happiness for 2020 and beyond!
THE EXPLORER

The world of Rolex is filled with stories of perpetual excellence. Created in 1953, the Explorer was inspired by the Oyster watch used by Rolex to equip the expedition of Sir Edmund Hillary and Tenzing Norgay on the first ascent of Everest. Its Oyster case in Oystersteel, combined with its Chromalight 3-6-9 numerals, allows robustness, precision and reliability in the most hostile environments. Tested across the world’s most rugged terrain and on its highest mountains, the Explorer continues its quest for greater challenges. This is a story of perpetual excellence, the story of Rolex.

#Perpetual