

Insights
of 2018 with
Innosuisse

DIS COW ER



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Innosuisse – Swiss Innovation Agency

Our factsheet always shows the current figures on funding by Innosuisse. Posters can be ordered at media@innosuisse.ch (please indicate quantity).

Facts and figures
(end-2018)

How Innosuisse provides funding

ORGANISATION AND ROLE OF INNOSUISSE

Innosuisse is the Swiss Innovation Agency. We fund science-based innovation in the interests of industry and society with the aim of increasing the competitiveness of small and medium-sized enterprises (SMEs) and start-ups in Switzerland.

149.4

CHF m

The CHF 149.4 million of **funding contributions awarded** in 2018 were distributed as follows (clockwise):

Funding in 2018

- 61% START YOUR INNOVATION PROJECT (incl. overheads of CHF 11.6 million)
- 6% START AND GROW YOUR BUSINESS
- 4% BE CONNECTED
- 4% GO GLOBAL (incl. overheads of CHF 0.6 million)
- 20% Energy funding programme
- 5% BRIDGE programme

Working for Innosuisse

As of 01.01.2019

BOARD OF DIRECTORS

EXECUTIVE COMMITTEE (5)

SECRETARIAT (68)

INNOVATION COUNCIL (23)

EXPERTS (165)

Accredited

COACHES (79)

INNOVATION MENTORS (20)

Innosuisse funding of innovations by companies and start-ups in Switzerland is geared towards needs:

START YOUR INNOVATION PROJECT

START AND GROW YOUR BUSINESS

BE CONNECTED

GO GLOBAL

West 70

Central 66

East 114

San Francisco (12)

Boston (6)

New York (6)

London (6)

Rio de Janeiro (1)

São Paulo (2)

Bangalore (8)

Shanghai (4)

At end-2018, a total of 250 start-ups were in Innosuisse's **Core Coaching** programme.

Number of camps in brackets

7 start-ups received an **Innosuisse Certificate** in 2018, confirming that they are "ready for sustainable growth".

▶ "BE CONNECTED"

Innosuisse is the Swiss Innovation Agency. We fund science-based innovation in the interest of the economy and society with the aim of increasing the competitiveness of small and medium-sized enterprises (SMEs) and start-ups in Switzerland.

Here is what you will find in “Discover 2018”:

2018 as seen by the Chairman and the CEO	4
Funding activities at a glance	7
Events and milestones	10
Concrete innovation funding: selected projects from 2018	13
Background topic	24
Facts and figures	25
Organisational structure	32
<u>Schedule: 2018 Financial Statements</u>	

2018 as seen by the Chairman and the CEO



Innosuisse began operating on 1 January 2018. In an interview, Chairman André Kudelski and CEO Annalise Eggimann look back over the agency's first year.

Mr Kudelski, Innosuisse started up a year ago. What is your personal assessment?

Kudelski: The year was marked by the establishment of a new Innosuisse organisational structure led by new governing bodies and teams, for example the Innovation Council. In our first year of operation we implemented new ideas and drivers that provided positive momentum within the agency. Our discussions regarding the 2021–2024 multi-year programme fuelled reflections on the roles and strategies of our future funding. One

of the main challenges ahead is that we must be in a position to support more projects that entail risks but hold out large potential.

What are the seminal points of the multi-year programme?

Kudelski: We are convinced that we have to take another hard look at the ways we promote innovation. In a constantly changing world, what we've done so far is no longer enough. We must find solutions for the challenges of the future – digital transfor-

“We must be in a position to support more projects that entail risks but hold out large potential.”

André Kudelski,
Chairman Innosuisse

mation, the life sciences, societal development and climate change – solutions that help Switzerland stay competitive internationally.

What were the biggest challenges in 2018?

Kudelski: We first of all tried to improve cooperation between the various bodies of Innosuisse. We discussed this in detail last year and there will be ongoing efforts to make cooperation more effective.

There are two phases in the process of assessing support for innovation projects: the Innovation Council takes decisions based on the opinions of independent experts. Although this process is indeed complex, it guarantees the most objective decisions possible. But not everything is running smoothly yet, and in some areas, we will have to make improvements so that Innosuisse can fulfil its mission as the most important source of funding for science-based innovation in Switzerland more efficiently still.



“We succeeded in continuing to conduct funding activities at a good level compared with the previous year.”

Annalise Eggimann,
CEO Innosuisse



For example?

Kudelski: We want applicants to receive their funding contributions faster in the future, with less time elapsing between the funding decision and the actual conclusion of funding contracts that have been awarded. As a consequence, in 2018 we already worked on significantly reducing the time needed for the application process, i.e. from an application’s reception to the signing of the contract.

Ms Eggimann, as CEO you are responsible for operations. How have they progressed at Innosuisse?

Eggimann: Despite a number of uncertainties due to the transformation from CTI to Innosuisse, we succeeded in continuing to conduct funding activities at a good level compared with the previous year. Demand for support in our first year of operation developed differently from one funding area to the next. Whereas in Start-up Coaching the inflow of applications was very large from the outset and exceeded the previous year’s level significantly, the number in Project Funding (488) was about two-thirds the 2017 volume. On the other hand, the demand for innovation cheques was very large, with 308 cheques issued last year. Vouchers for innovation mentoring for SMEs were also very popular.

Why the hesitant start in Project Funding?

Eggimann: The transformation of our organisational structure certainly played a role in the first half of 2018. Numerous details had to be ironed out when the new system came into force before applicants could submit their project requests properly. Moreover, many companies were very busy and had brimming order books. This probably also prompted them to wait for our new system to run smoothly.

Partly, however, the circumstances were home-made as well, be-

“Broad-based support for innovative Swiss SMEs is crucial for the well-being of our country and to ensure employment.”

André Kudelski,
Chairman Innosuisse

Annalise Eggimann is Chief Executive Officer of Innosuisse. Previously she was already chief executive of the Commission for Technology and Innovation.

André Kudelski is Chairman of the Board of Directors of Innosuisse. He is Chairman and CEO of Kudelski SA.

cause at the beginning of the year not all points in the funding conditions were clear and hadn't been fully communicated.

How did you remedy the situation?

Eggimann: Last year we took a great step forward in this area. The evaluation process was made more flexible. The most convincing applications are no longer discussed at the monthly meetings of the Innovation Council but are instead given fast-track online approval.

Give us a glimpse of the future: earlier you mentioned digital transformation as being one of the main challenges. What does this mean for innovation funding?

Kudelski: Digital transformation is proceeding ever more quickly and concerns all parts of society and life. Countries that can't keep up risk missing the connection. Switzerland therefore has to seize the opportunities associated with digital transformation and ensure that our economy and society can remain at the top internationally. Broad-based support for innovative Swiss SMEs is crucial for the well-being of our country and to ensure employment. Whether times are or good or bad economically, they must invest in the future and develop a sustainable competitive advantage.

Eggimann: As part of the Federal Council's 2019–2020 action plan to promote digitalisation, Innosuisse has taken on the task of implementing measures. The Impulse Programme that we set up is intended to support innovation through projects by Swiss SMEs and research institutes that concern Industry 4.0 and Modern Manufacturing Technologies. In addition, we are funding digitalisation in Energy and Mobility via three Swiss Competence Centers for Energy Research (SCCER). This programme is certain to keep us very busy in the next two years.

Funding activities at a glance



If a company wants help in turning its idea into a breakthrough, the Innosuisse section **“START YOUR INNOVATION PROJECT”** provides support with its funding instruments. We help companies secure easy access to the knowledge and resources of research facilities. Innosuisse brings science and the economy together by promoting joint innovation projects.



Innosuisse furthers innovative business ideas and entrepreneurial thinking of the next generation in science and the economy. When budding company founders want to turn their idea into a firm or gain an international foothold, they can find appropriate funding instruments in our **“START AND GROW YOUR BUSINESS”** section.



To bring innovations to market, the right innovation partners are essential. Our **“BE CONNECTED”** section helps SMEs that are looking for suitable research institutions and seeking to set up innovation projects.



Companies that come to Innosuisse with international ambitions are also at the right place. Our **“GO GLOBAL”** section assists them in finding the proper partners abroad. Innosuisse provides them with access to international research networks and calls for tenders.

Funding activities at a glance

Innosuisse funds innovations by companies and start-ups that are geared towards needs in Switzerland.

Funding instrument	"START YOUR INNOVATION PROJECT"		Good to know
	INNOVATION CHEQUES	<p>With an innovation cheque, SMEs can tap a research partner for research services worth up to CHF 15,000 and have the feasibility of their idea tested. Preliminary and idea studies or analyses on innovation and market potential can also be funded.</p>	
	INNOVATION PROJECTS	<p>Innosuisse co-funds science-based innovation projects that companies and private or public institutions conduct together with research partners. It is important that the project meets a market need and either holds out the prospect of economic success or promises societal benefits.</p>	
	INNOVATION PROJECTS WITH NO IMPLEMENTATION PARTNER	<p>Innosuisse supports innovation projects of researchers that have not yet found a partner to implement their results. In this area we mainly fund risky projects with a high innovation content.</p>	
	"START AND GROW YOUR BUSINESS"		
	START-UP TRAINING	<p>With its Start-up Training programme Innosuisse helps budding company founders develop their business idea, set up a company or devise a growth strategy. Our four training modules are taught by experienced entrepreneurs and are held throughout Switzerland.</p>	
	START-UP COACHING	<p>We help start-ups and budding company founders with individual coaching, which for the moment is offered on two levels: Initial Coaching and Core Coaching. Experienced business coaches provide assistance and support in setting up, further developing and growing these firms sustainably.</p>	
	INTERNATIONALISATION CAMPS	<p>Under our Market Validation Camps and Market Entry Camps programme, Innosuisse sends innovative start-ups with international ambitions for first-hand contact with the relevant markets outside Switzerland.</p>	
INTERNATIONAL FAIRS	<p>Thanks to Innosuisse, start-ups with global ambitions are also able to attend major international fairs as visitors or take part as exhibitors.</p>		

Funding instrument

Good to know

"BE CONNECTED"



INNOVATION MENTORING

The Innosuisse innovation mentors are intimately familiar with the Swiss funding scene and can explain various funding instruments to SMEs. They facilitate access to technology and research and help set up an innovation project with a research partner.

NATIONAL THEMATIC NETWORKS

Innosuisse supports eleven National Thematic Networks (NTNs) with country-wide connections that specialise in specific innovation themes, bringing both worlds closer together and fostering knowledge and technology transfers.

THEMATIC SPECIALIST EVENTS

Innosuisse funds thematic specialist events that bring together players from the economy and academia around a specific innovation topic.

"GO GLOBAL"



ENTERPRISE EUROPE NETWORK

The Enterprise Europe Network (EEN) helps SMEs and start-ups develop cooperation, implement innovation and research projects and tap new markets in Europe and other countries.

MULTINATIONAL COOPERATION PROGRAMME*

Innosuisse takes part in selected ERA-Nets with its transnational calls and enables Swiss companies and research institutes to join and gain access to funding.

* Since 1 January 2019 Innosuisse has also been responsible for the innovation-oriented European Partnership Programme with the EU (Eurostars 2, Active and Assisted Living AAL, Electronic Components and Systems for European Leadership ECSEL) as well as for the market-oriented R&D initiative EUREKA.

THEME-ORIENTED PROGRAMMES

ENERGY FUNDING PROGRAMME

Innosuisse and the Swiss National Science Foundation (SNSF) oversee eight inter-university networked Swiss Competence Centers for Energy Research (SCCER), which unite the economy and academia to work on supplying the energy of tomorrow.



BRIDGE PROGRAMME

At the interface between basic research and scientific innovation, the SNSF and Innosuisse together support young and experienced researchers through two funding offerings (Proof of Concept and Discovery).

2018 EVENTS AND MILESTONES

JANUARY



Innosuisse begins its new job.

The first **15 start-ups** apply for the Coaching programme.



Applications are received for **43 mentoring services**.

Innosuisse takes over leadership of the **Enterprise Europe Network (EEN)** in Switzerland.

FEBRUARY

The first **13 applications for innovation projects** are studied at Innosuisse.



MARCH

Roadshows

Innosuisse introduces itself across Switzerland, e.g. on 22 March in Basel ...



APRIL



"FORWARD, the innovation forum for SMEs"

Innosuisse sponsors the first edition of this event on 19 April in Lausanne on the theme:

*"LA DIGITALISATION
C'EST MON AFFAIRE"*

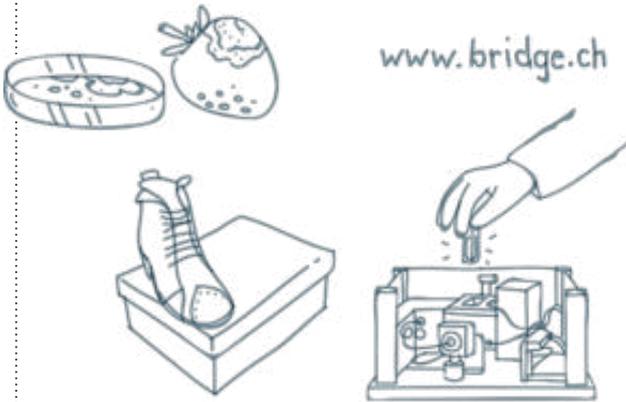
The first **27 start-ups** are enrolled in the Coaching programme.

... on 9 April in Manno (TI),
on 17 April in Fribourg and
on 26 April in Buchs

MAY

The first **BRIDGE projects** funded by Innosuisse and the SNSF are presented:

- Natural substances vs. pathogenic moulds on fruits and vegetables
- An online platform for fair shoe retailing
- Flash tests for diagnosing malaria



JUNE



Swiss Medtech Day

Innosuisse is main partner.

Innosuisse invites the Israel Innovation Authority, Israel's state organisation for the promotion of innovation, to Switzerland. **A joint declaration of intent is signed** for cooperation in the area of innovation. 160 participants attend the joint event that follows on the topic of cyber security.



Innosuisse at mid-year:

211 APPLICATIONS

have been submitted for innovation projects.

JULY

The Innovation Council meets informally to discuss **plans for the 2021–2024 multi-year programme.**



AUGUST

The 100th innovation project is approved. ✓

The **Code of Conduct** is introduced, setting standards and ethical guidelines for all Innosuisse activities.



First Innosuisse plenary session at the CERN in Geneva





SEPTEMBER

Top 100 Swiss Startup Awards 2018

7 of the top 10 Swiss start-ups were coached by Innosuisse.

1st start-up receives an **Innosuisse Certificate**, meaning it successfully completed the Coaching programme and is "ready for sustainable growth".



1,000 followers on Twitter, 1,600 on LinkedIn

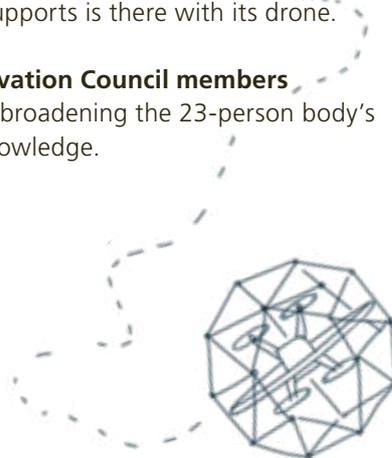
OCTOBER

Swiss Digital Day 2018



Innosuisse is strategic partner and the Flyability start-up it supports is there with its drone.

6 new Innovation Council members are elected, broadening the 23-person body's specialist knowledge.



NOVEMBER



Swiss Innovation Forum

Innosuisse is main partner.



Launch of the Impulse Programme Digitalisation

Matchmaking event in Brugg



The Federal Council appoints **Luciana Vaccaro**, Rector of the University of Applied Sciences and Arts Western Switzerland, to the Board of Directors. She succeeds Martina Hirayama, who was appointed to the State Secretariat for Education, Research and Innovation (SERI).



DECEMBER

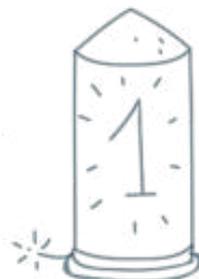


Impulse Programme Digitalisation

Matchmaking event in Neuchâtel with over 120 participants

"In our **first year of operation** we implemented new ideas and drivers that provided positive momentum within the agency."

André Kudelski, Chairman Innosuisse



Concrete
innovation funding:
selected projects
from 2018



Lea Schiess, visiting the Empa laboratory, observes an enlarged representation of a textile sample to which she applies hydrogel.

“

As a newcomer on the research scene, I found it exciting to see how science works.”

Lea Schiess, start-up founder

CLOTHING FROM A 3D PRINTER

Lea Schiess has a dream: the start-up founder with a degree in Business Administration wants mass-produced clothing to be 3D printed one day in Switzerland. She wants to help make textile production less resource-intensive and more sustainable in the future. The biggest challenge for 3D printing of clothing today is still the material. With an innovation cheque from Innosuisse Ms Schiess, in association with Empa, was able to test the suitability of hydrogels.

In the first step towards fulfilling Schiess's dream, both partners decided to print hydrogels on textiles. For the lab tests at Empa Biomimetic Membranes and Textiles in St. Gallen, they chose workers' cloth trousers. The reason was that these can bear heavy strain and the practical use of the findings was important to both partners. The aim, in addition to collecting data

on the first experiences with hydrogels, was to reduce rubbing between cloth and skin.

Schiess later confirmed the results of the Empa tests, saying, "I know now that hydrogel not only reduces rubbing but is also bio-compatible." She would now like to onboard other specialists to move another step closer to fulfilling her dream – also with the help of initial coaching by Innosuisse, for which she successfully applied after the tests.

SUPPORT BY INNOSUISSE

- Innovation cheque
- Initial Coaching (testing the business idea)



“ USING A COLOURING AGENT TO LUBRICATE SKIS?”

Until now no one had come up with the idea. In this process the colouring agent indigo forms water-repellent layers. And it is environmentally friendly to boot, unlike the highly fluorinated hydrocarbons used in conventional professional waxing, which is toxicologically and ecologically questionable. Unfortunately, so far sustainability has not been much of an issue. In various tests including at the Alpine Under-23 Championships, Isantin, our slip agent made from pigments, held its own with the best waxes. Last year I secretly waxed the cross-country skis of my daughter-in-law and two of her friends with Isantin. They came home from the trail enthusiastic. I'm especially proud that our slip agent is made of vegetal matter and is thus harmless for the environment and those who work with it. I now hope that the Institute for Snow and Avalanche Research, after conducting tests under differing conditions with calibrated skis, will confirm Isantin's good glide qualities. Walter Ammann, an Innosuisse mentor was instrumental for the successful funding of this preliminary study. He knows not only how to assess risks correctly but also how important sustainability is." **Dr Peter Bützer**, retired chemist

SUPPORT BY INNOSUISSE

- Voucher for innovation mentoring
- Innovation cheque



THREE QUESTIONS FOR THE MENTOR

Dr Walter Ammann

What does an innovation mentor do?

As mentor I introduce an SME to a research partner and, depending on the possibilities, help them get their project approved. I examine the project idea critically and make sure it is coherent. The aim is to draw up a reasonable business plan.

How did you come to collaborate with Peter Bützer?

Normally an SME applies for mentoring through Innosuisse and then chooses a mentor. But things were different with Bützer and his son. A former colleague of mine from the Institute for Snow and Avalanche Research (SLF) told me about a chemist who wanted to develop an organically based slip agent and could be contacted through the Institute. At the time, Innosuisse didn't know him yet. He subsequently applied for mentoring services.



An SLF researcher tried out the pigment-based slip agent on test skis.

How were you able to help the start-up?

After the first test I felt the risks for an innovation project were still too large because, first of all, it had to be determined whether the product was feasible. Then I thought of an innovation cheque – a proven way to reduce risks in a subsequent research project. With approval for a preliminary study, SLF was able to test the glide qualities of Isantin in varying environments and snow conditions.

SPOTTING PERSONNEL RISKS WITH A DIGITAL SOLUTION

Several researchers in the psychology, statistics and economics departments of the University of Applied Sciences and Arts Western Switzerland (HES-SO) are working concurrently together with the software publisher Oxial. They want to develop a program to help companies such as banks and insurers fight personnel risks, especially economic crime. "We are focusing on the proprietary staff risk. Four of five fraud cases can be traced back to dissatisfied employees," explains Oxial's CEO Eric Berdeaux. Firms often say the stress index surveys used up to now are too expensive, adds Dr Magali Dubosson at the HES-SO in Fribourg. "We are looking for a solution to collect market-relevant data quickly and efficiently. In doing so, we aren't concentrating on individuals but instead measuring whole teams and departments." With a type of hotspot map based on anonymous employee surveys, companies should be able to determine at a glance where the greatest dangers lie and respond accordingly.

SUPPORT BY INNOUISSE

- Innovation project with more than one research partner



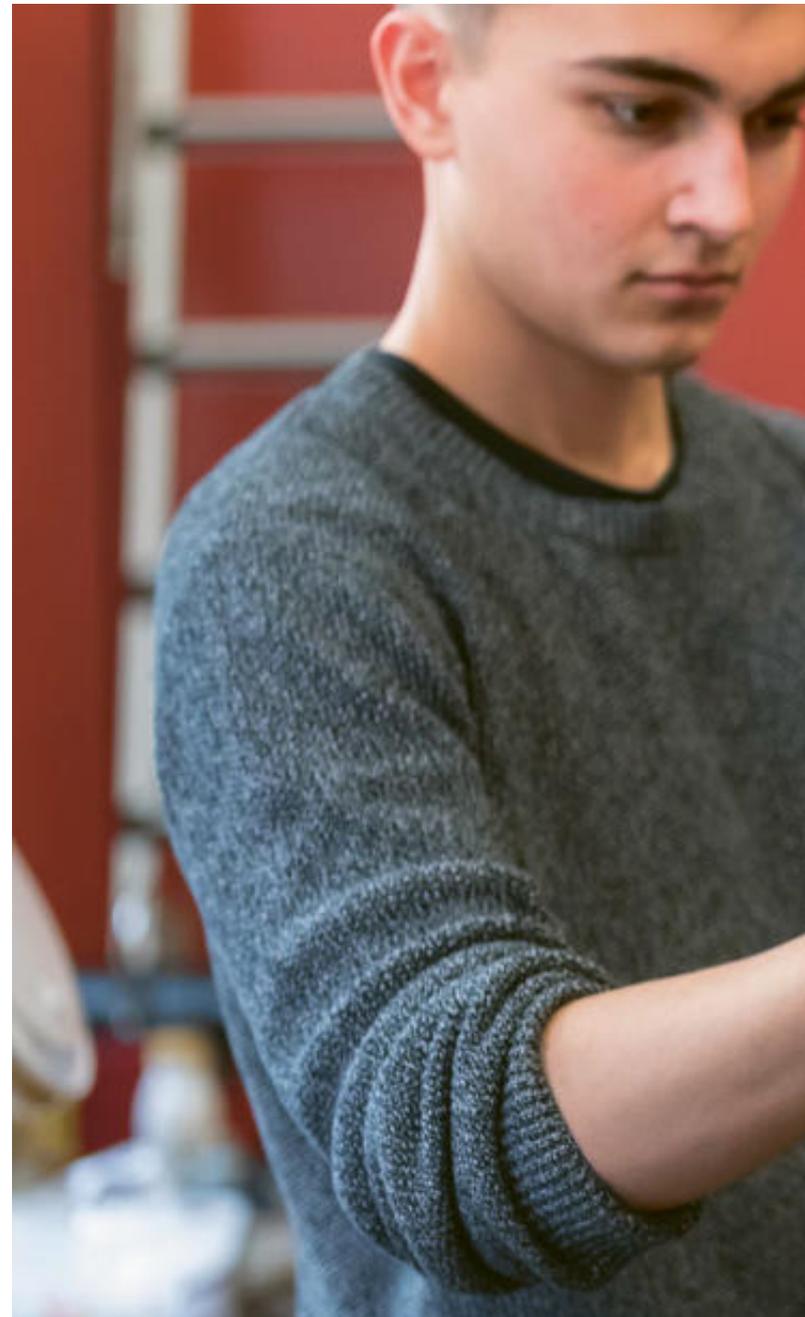
“

I was very pleasantly surprised by our cooperation with Innosuisse. The agency pursues a pragmatic course and thinks very entrepreneurially.”

Eric Berdeaux, CEO Oxial

CAMERAS FOR VIDEOS AND INDIVIDUAL NEEDS

Alpa, a Swiss producer of high-end cameras, is constantly enlarging its product assortment including towards medium- and large-format videos. Moving images are in demand, not only for online advertising but also for screens, which are increasingly replacing wall posters. Alpa's system combines photos and videos in association with Product Development Group Zurich headed by Prof. Mirko Meboldt. By means of additive manufacturing and 3D printing, the partners make prototypes and cam-



era components for end-users easily, quickly and economically. Feedback from the user communities is systematically and promptly factored into product tweaking. AM technology makes it possible to create cost-efficient product designs in small series or as single units. This gives Alpa an advantage with respect to its highly competitive Asian rivals.

SUPPORT BY INNOSUISSE

- Innovation project
- Support by NTN Additive Manufacturing



AM

REQUIRES NEW COMPANY PROCESSES

The events organised by NTN Additive Manufacturing (AM Network) are an important platform for many projects. At a national AM conference, Alpa's Development Manager Ralph Rosenbauer explained how introducing this new technology changes a company: "New processes, a new culture and adaptations to the business model are needed." And cooperation with customers requires more time: "I have to survey customer needs in a much more structured manner." In the AM Network, Alpa can benefit from the experiences of others to move in this new direction.



The Swiss camera manufacturer Alpa wants to make a name for itself in the fiercely competitive video market with prototypes and components produced by 3D printing.

“

I find it exciting to work on finding a solution to a politically provocative issue.”

Johannes Tiefenthaler, doctoral candidate in Process Technology, ETH Zurich



Johannes Tiefenthaler, a doctoral candidate at Zurich's University of Applied Sciences (ETH), fills a reactor with crushed concrete. During the carbonisation process, lime is produced that can be seen here as the lower white mass in the reactor (pictured on the right).

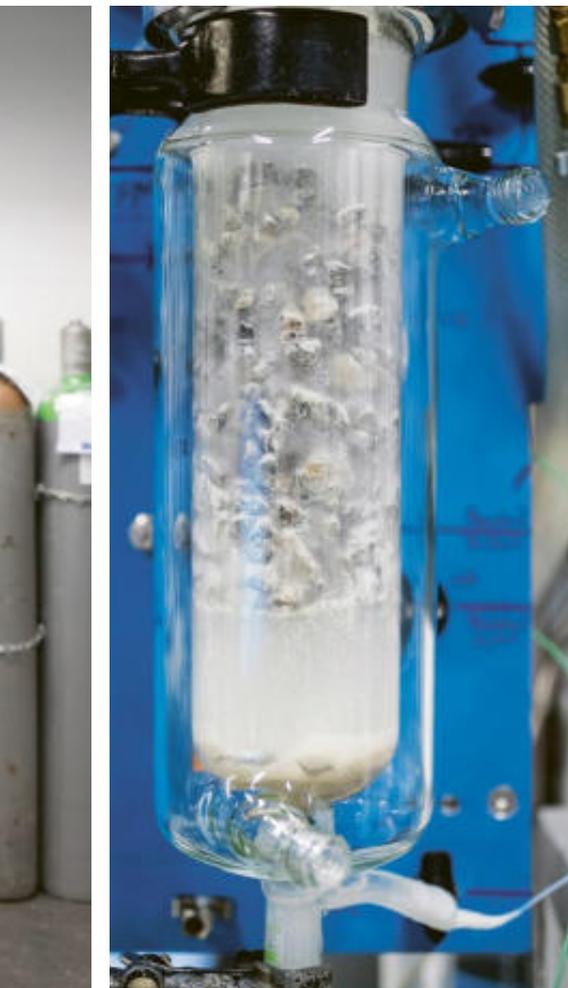
RECYCLING CONCRETE SUSTAINABLY

The production of cement, the material that binds concrete, is very stressful for the environment and is alone responsible for 5 to 7 per cent of global CO₂ emissions. Concrete is worn out after 50 to 100 years and is then recycled. It is crushed and the coarse granulate is then re-used as gravel in new concrete. “But that's not a good solution because you get lower-quality concrete,” says Tiefenthaler, who is studying at ETH Zurich's Institute of Process Engineering. “Making new concrete with recycled granulate requires more cement than normal concrete to ensure good quality. That produces more CO₂ emissions.”

Working for SCCER EIP, the research competence centre for efficient industry processes, Tiefenthaler is investigating how concrete can be recycled more sustainably. Here is his idea: during carbonisation, CO₂ should remain permanently in the form of lime in the recycled material. This reduces porosity, making the material harder and more easily workable. At the same time, less cement is needed to produce fresh concrete, thereby reducing CO₂ emissions. “That may not solve all the industry's environmental issues, but it does lick a substantial part of the problem.”

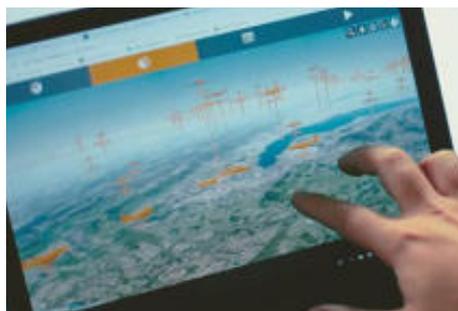
SUPPORT BY INNOSUISSE

- Supported through the Energy funding programme (SCCER EIP)



HELPING DRONES SEE

Seamless monitoring of airspace may be self-evident for larger aircraft but for drones, which fly much closer to the ground, it is still being patched together. As a consequence, for the sake of security there are still major restrictions and requirements for operating drones. "Worldwide, millions of drones will be flying in the coming years," says Cristina Mihalachioiu, co-founder of the Swiss start-up Involi. The company develops and produces a traffic monitoring system for automated drone flights, which for example include ferrying blood for hospitals and search and rescue missions.



The online platform shows all air traffic in a given region.

A network of micro-control towers built on existing Swisscom antennas or masts collect data on all flying objects. These data are transmitted to drones, thereby making it possible for them to "see" the surrounding air traffic.

The online platform already covers 8,000 square kilometres of Western Switzerland. By 2020 Switzerland's full surface area should be equipped with micro-control towers. Then the project will move abroad. "We have ambitious objectives in this very fast-changing business segment," Mihalachioiu enthuses. To help it grow internationally, Involi is supported by the European Commission via the funding programme SME Instrument and the Enterprise Europe Network (EEN), coordinated in Switzerland by Innosuisse. EEN provided the start-up's team with international networking and arranged for three days of leadership coaching.

“

The three days of intensive coaching helped us grow together as a team and set a common course.”

Cristina Mihalachioiu, co-founder of Involi

SUPPORT BY INNOSUISSE

- CTI Entrepreneurship Training (now Start-up Training)
- Initial Coaching (testing the business idea)
- Internationalisation camp
- International partner search via the Enterprise Europe Network (EEN)



This project received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 816071.



Selected projects from 2018

“

The BRIDGE funding programme is helping me get out of the lab and into the real world.”

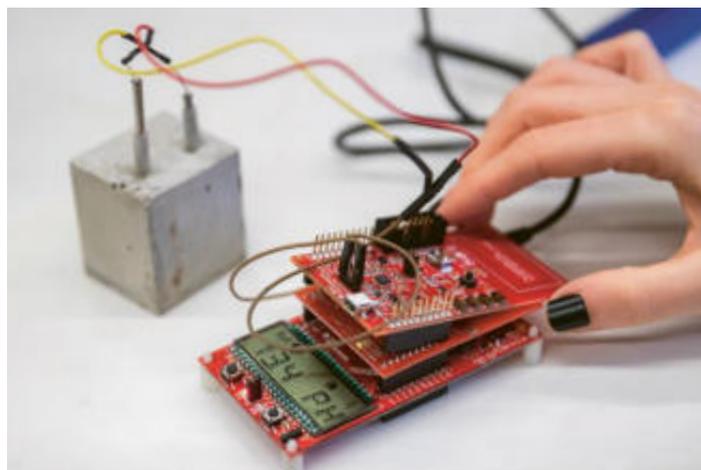
Dr Yurena Seguí Femenias,
construction engineer, ETH Zurich

DETECTING CORROSION IN CONCRETE EARLY

Steel-reinforced concrete is the building material used most throughout the world. But the steel inside is corroded by chloride seepage, for example from seawater and de-icing salt, and by CO₂ from the atmosphere. “Corrosion is a slow process which, most of the time, cannot be easily detected because it takes place within the concrete,” says Dr Yurena Seguí Femenias. “When it’s discovered, it’s often too late.” Undetected corrosion damage was probably one of the causes that contributed to the collapse of the motorway bridge in Genoa last summer.

In Switzerland, a lot of concrete structures were built in the 1970s and are nearing a critical age. Checking for corrosion in concrete is very expensive, explains the construction engineer. In Switzerland building repairs are usually very conservative. “That costs a lot of money and harms the environment because the production of concrete is very CO₂ intensive. What’s more, renovation work reduces the availability of an infrastructure for its users.”

Supported by BRIDGE’s “Proof of Concept” funding, Seguí Femenias is working to develop a sensor system. Sensors embedded in the concrete, in association with an algorithm, monitor the chloride concentration and pH level (a rising CO₂ concentration drives the pH level down). This makes it possible to forecast when damage to the steel reinforcing rods in the concrete will begin. Depending on the rising risk of corrosion, it will be time to react – not too late but also not too soon.



Yurena Seguí Femenias experiments in the ETH laboratory with sensors that measure the pH level in concrete. This can be read on a meter by means of electromagnetic waves (small picture).

SUPPORT BY INNOSUISSE

● BRIDGE Proof of Concept

BRIDGE

“THERE ARE THINGS THAT TAKE TIME”

EXCERPTS FROM THE DIARY OF START-UP FOUNDER
DR SOPHIA BOROWKA

22 April 2018: I spent a lot of my time as a theoretical physicist seated during research work and I was constantly tense. Now I want to put my technological knowledge into practice and develop a robot masseur for physiotherapists that detects tenseness and massages by itself. That’s why I’m currently enrolled in the “Business Concept” start-up training module. So much is new for me. I’m learning a lot about funding, law and team structuring. I’ve observed that founding a start-up takes time.

17 October: Many of the participants in the “Business Growth” module are already ahead of me. I can learn from their experience. I also notice that I have done things wrong that I never thought would have happened to me. This training is a big opportunity for researchers who are not very business- and market-minded yet.

3 December: I was accepted for Initial Coaching by Innosuisse. Today I met my coach, Gian-Luigi Berini, who is helping me draw up a business plan. He is very precise in his judgments and says things that I don’t really want to hear. But if one accepts these things, it’s possible to make great progress. He has convinced me to talk about my product to friends, passers-by and therapists. “Do you want to replace me?” some of them asked. I figured out that a robot masseur is not the right solution.

13 December: When I talk to other start-up founders, I note that in the meantime I have become well prepared for the coming phases. I realise that up to now I have moved in a very technical environment and have thought very little about what the market actually needs and wants. Instead of a robot I am now developing a diagnosing instrument for medical specialists: a kind of cushion that one can lay over the body and that transmits images from inside the organism to a tablet or computer. The cushion is meant to help spot tense muscles and inflammations quickly, among other things. I am presently working in close cooperation with an osteopath.

SUPPORT BY INNOSUISSE

- Start-up Training Modules 2 to 4 (Business Concept, Business Creation, Business Growth)
- Initial Coaching (testing the business idea) by an accredited coach



THREE QUESTIONS FOR THE COACH

Gian-Luigi Berini

You have advised start-up founders for 20 years. What has your experience been with researchers?

Quite generally, to me it seems particularly important for technological, science-based start-ups to scrutinise the assumptions they’ve made. Young entrepreneurs as a rule have an excellent scientific background but don’t know the market. So first of all, I have to explain to them that it is not only a question of technology but mainly of market issues.

You also coach the physicist Sophia Borowka. Is that a typical case?

And how! Sophia was very keen on furthering her technological knowledge. She wanted to put it to work practically in the programming of algorithms and was looking for an application. Sophia’s advantage is that she deals with critical questions, listens and checks to what extent the answers can help her. Moreover, she likes to approach people and is good at implementing ideas. She developed her business idea quickly, in a short time, by talking to potential customers.

Has everyone got what it takes to found a start-up?

You have to enjoy being an entrepreneur. You can’t hole up in a laboratory. The researchers whom I coach have to come to the realisation themselves whether or not they are suited to heading a firm. Those who don’t have that calling can still find co-founders for their start-up. But everyone should be aware that about 85 per cent of all start-ups fail, mostly because their founders don’t gauge the market properly. It has been shown that coaching by Innosuisse can increase the chances of success significantly.

“

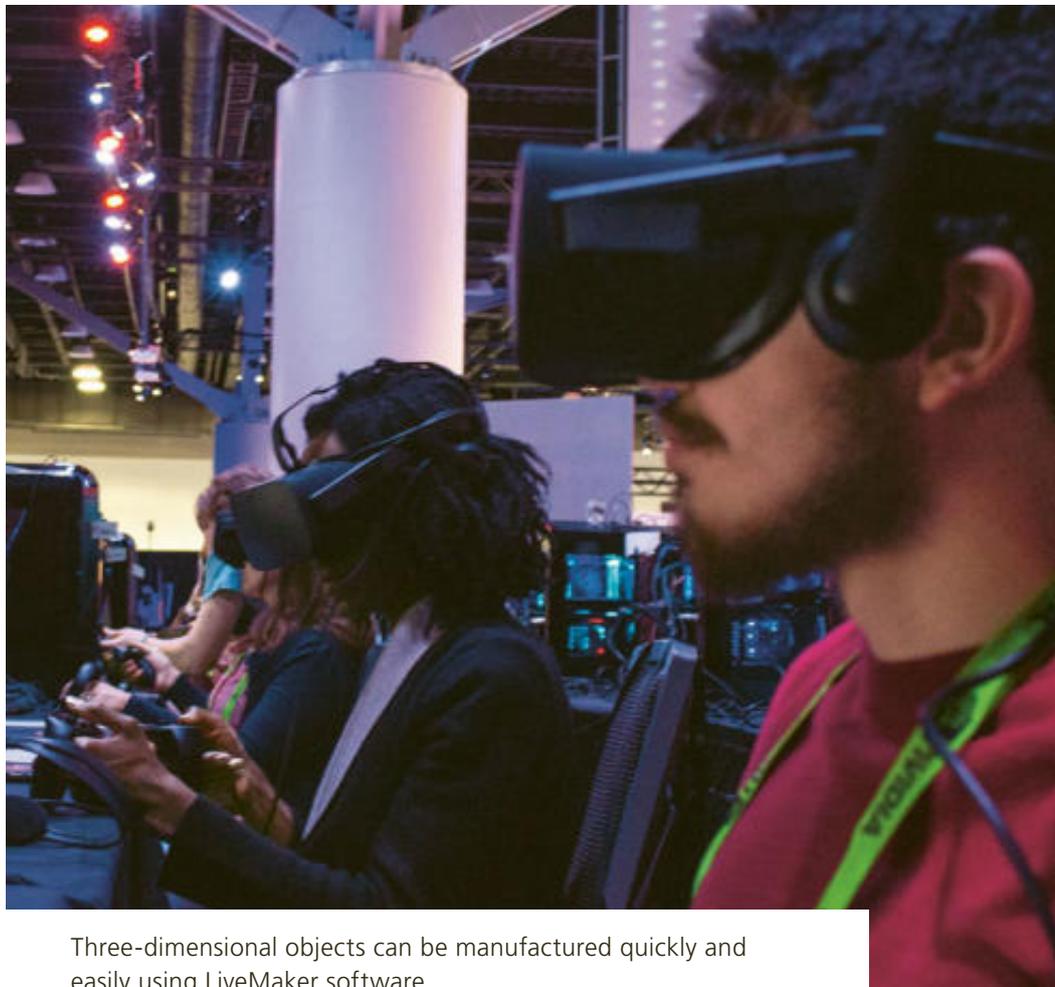
Wood from Switzerland or Europe would be more sustainable. But the quality mustn't suffer.”

Thomas Volkmer, Professor BFH

SEEKING ALTERNATIVES TO US WOOD TO MAKE COLOURED PENCILS

To sharpen lead and coloured pencils easily, it takes homogeneously structured wood with a light density. As a consequence, the Geneva-based premium manufacturer Caran d'Ache uses only Californian cedar. But because the supply of this wood is limited, it costs more.

In an innovation project with the Bern University of Applied Sciences (BFH), Caran d'Ache is now conducting tests to find out whether switching to European or even Swiss wood varieties would produce similar qualities. To begin with, the



Three-dimensional objects can be manufactured quickly and easily using LiveMaker software.

wood should be impregnated so that it becomes more malleable and easier to split. Secondly, the researchers want to modify the wood physically and chemically so that pencils made from it can be sharpened more easily.

The biggest hurdles in this project, according to Dr Thomas Volkmer of BFH, are finding suitable natural treatments and uniformly modifying the wood. Cooperation with partner institutions is planned within the NTN Swiss Wood Innovation Network.

SUPPORT BY INNOSUISSE

- Innovation project
- Support by the NTN Swiss Wood Innovation Network



A 3D ENGINE SAVES TIME AND MONEY FOR FILM-MAKERS

3D engines are used in computer graphics to make people and settings appear virtually real. The 3D engine developed by the start-up Imverse is the basis for its Imverse LiveMaker software, which turns normal, 2-dimensional pictures into 3D settings. The package will first be marketed in the entertainment industry, where it can reduce the time-and-money cost of producing films by a factor of ten. For example, to make the storyboard of a 3D film, appropriate sites in the real film setting are recommended for setting up the cameras. But LiveMaker is also suitable for architectural structures and other sites.

At the Innosuisse Core Coaching course given by Simon Johnson, Imverse benefits from his knowledge of the US market and intellectual property. "Thanks to Simon's experience, we're learning far faster than if we had to find things out ourselves," says Imverse CEO Javier Bello Ruiz.

SUPPORT BY INNOSUISSE

- Core Coaching (strategy development, going to market) by accredited coaches
- Internationalisation camp in San Francisco



LEARNING FROM OTHER ENTREPRENEURS

Three highlights of Imverse's internationalisation camp in San Francisco

1

The Swiss founder of an online marketing firm told us how his start-up grew rapidly because it was able to integrate its technology at Facebook and finally sell it to Google for a lot of money. He underlined the importance of the techies' mecca, Silicon Valley, and of having contacts there.

2

A Swiss entrepreneur with several start-ups under his belt explained how crucial it is to onboard the right people in one's team. Technology is instrumental, he said, but the most important thing of all is people. A start-up can have no slackers.

3

A US start-ups coach showed how a pitch should be made to potential investors if a start-up wants to arouse their interest in the limited time available. Three questions are key: What is the product? Who is supposed to buy it? How does the business plan look?

Digital transformation in Switzerland

Digital transformation is moving forward at an ever-faster pace and pervades all aspects of life. Countries that can't keep up risk missing the connection. Switzerland therefore has to seize the opportunities associated with digital transformation and ensure that our economy and society are at the top internationally. According to IMD's 2018 World Digital Competitiveness Ranking, Switzerland is already doing a good job in this area, though there is still room for improvement. Our country holds the top spot, having come up a bit compared with the previous three years. But it would be wrong to sit and gloat over our laurels, because the study also pointed up a few shortcomings. Of particular note are the small proportion of women in segments of the economy geared towards mathematics, the natural sciences and technology and the small proportion of high-tech patents. According to the study there is also upside potential for the use of digital technologies in interaction between the state and society.

Opportunities with digital transformation

The Swiss economy generally stands out by virtue of its high level of development. For decades, thanks to incremental innovations in various areas, as well as in highly profitable niches, our country has occupied top positions in international innovation rankings. Now, however, while digital transformation is placing greater demands on companies it also offers

them numerous opportunities. The structural conversion that is involved in digital transformation requires virtually all players in the economy to radically change their way of thinking. It is not enough to review production processes and supply chains; often a company's entire business model has to be reassessed. New models are needed. Solid, time-honoured firms probably have a much harder time dealing with such a makeover than the young and agile. To ensure full employment in our country, however, it is vitally important that well-established companies also negotiate this turn successfully.

How does Innosuisse help SMEs manage the digital revolution?

To help them successfully come to terms with this transformation, Innosuisse provides helpful incentives and a range of effective support mechanisms. Concretely, our agency funds innovation projects that companies want to set up and implement together with research institutes. In doing so, Innosuisse aims not only to promote digital technologies but also to have the question of digital transformation dealt with appropriately across the widest possible range of economic and academic segments. Applicants should moreover be free to choose their innovation topic according to their needs, though increasingly they will be asked to tell us in their applications to what extent they have come to grips with digital transformation issues in their practical innovation instruments.

Impulse Programme Digitalisation

The Federal Council's 2019–2020 action plan to promote digitalisation (with funding totalling roughly CHF 62m) provides for making the best possible use of the opportunities this transformation affords. This is of vital importance to Switzerland and the promotion of innovation has a great role to play in this regard. Two of the proposed measures are being implemented by Innosuisse:

- the Manufacturing Technologies Impulse Programme, with CHF 12m/year
- support for digitalisation in Energy and Mobility via the Swiss Competence Centers for Energy Research (SCCER), with CHF 1.5m/year.

The aim of the Manufacturing Technologies Impulse Programme is to fund innovation projects at the interface between research and technology transfers in Industry 4.0/modern manufacturing technologies.

All information at:
www.innosuisse.ch/digitalisation

Here is how we promote innovation

The **funding contributions awarded** by Innosuisse in 2018, totalling CHF 149.4 million (incl. EEN specialist contributions), can be broken down as follows:

CHF
79.5^{*}
million
excl. overheads of CHF 10.9m



START YOUR
INNOVATION PROJECT

CHF
8.7
million



START AND GROW
YOUR BUSINESS

CHF
6.6
million



BE CONNECTED

CHF
6.1
million
excl. overheads of CHF 0.6m



GO GLOBAL

* Total innovation project funding
incl. international projects: CHF 84.7m
(excl. overheads of CHF 11.6m)

CHF
30.1
million

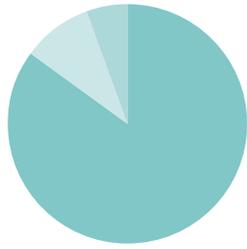
Energy funding
programme

CHF
6.9^{*}
million

BRIDGE
programme

* Innosuisse share

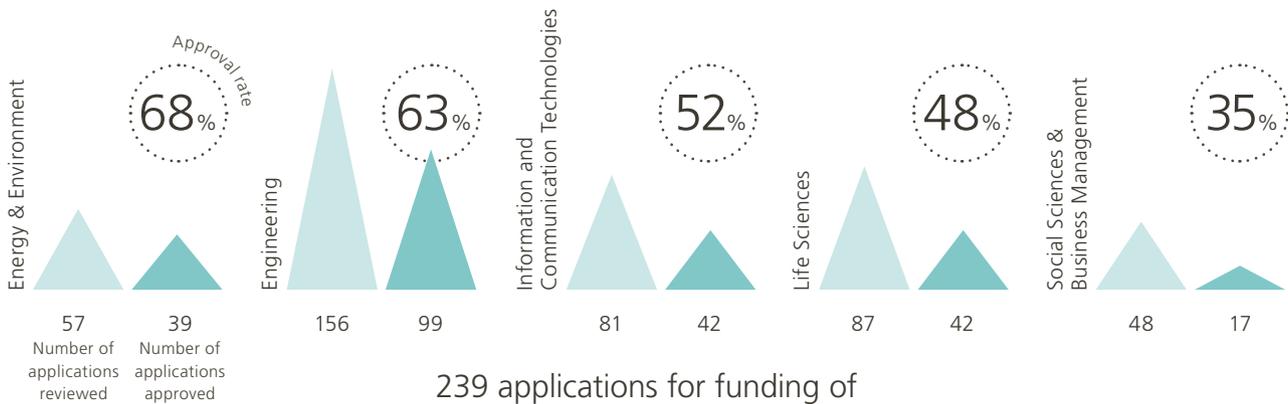
"START YOUR INNOVATION PROJECT"



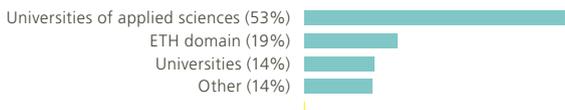
488
funding applications

Funding contributions awarded in 2018 totalled CHF 84.7m*
(clockwise):
Innovation projects CHF 72.2m
Innovation projects with no implementation partner CHF 7.9m
Innovation cheques CHF 4.6m
* incl. international projects, excl. overheads of CHF 11.6m

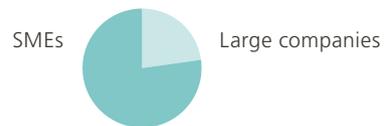
for **innovation projects** were submitted to Innosuisse in 2018.



239 applications for funding of **innovation projects** were approved, including 31 with no implementation partner. The approval rate averaged **56 per cent**.



53 per cent of the research partners participating in the innovation projects are **universities of applied sciences**.



The **proportion of SMEs** among the participating companies is about 77 per cent. (SMEs are firms with fewer than 250 employees).

For the first time

In 2018, 270 companies were participating in an innovation project. **53 per cent** of them for the first time.

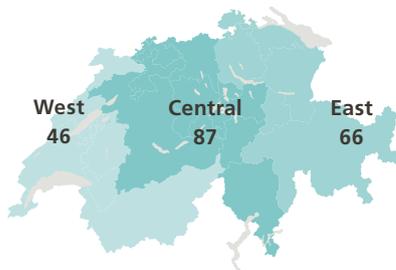
308
innovation cheques

totalling more than CHF 4.6 million were approved in 2018, enabling SMEs to join the world of science-based innovation.

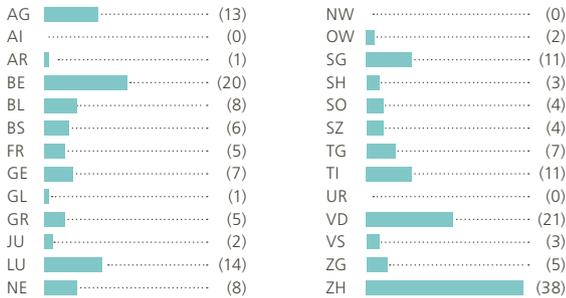


Regional breakdown

of the **main implementation partners** in approved innovation projects



Breakdown of main implementation partners in approved innovation projects **by canton**



1,127 innovation projects supported by Innosuisse were under way at end-2018.

14%

Proportion of women among main research partners in approved innovation projects



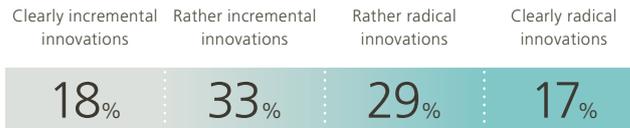
10%

Proportion of women among main implementation partners in approved innovation projects



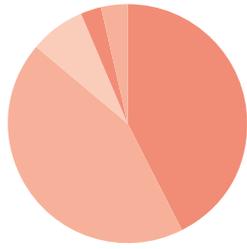
17% clearly radical innovations

One project in six (17%) is aimed at providing a radical innovation that will **significantly change the market and the company**. Clear further developments and optimisations (incremental innovations) are almost just as strongly represented. The bulk of projects can be characterised as both.*



Statements on **type of innovation** for innovation projects (4% gave no answer).

* Results of an external study on impact analysis (Phase II): www.innosuisse.ch/impactanalysis (Expected to be published in May 2019)

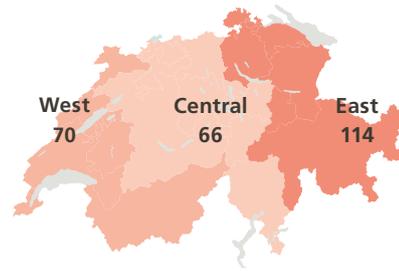


Funding contributions awarded in 2018 totalled CHF 8.7m (clockwise):

- Start-up Training CHF 3.7m
- Start-up Coaching CHF 3.8m
- Internationalisation Camps CHF 0.7m
- International Fairs CHF 0.2m
- StartUp Ticker CHF 0.3m

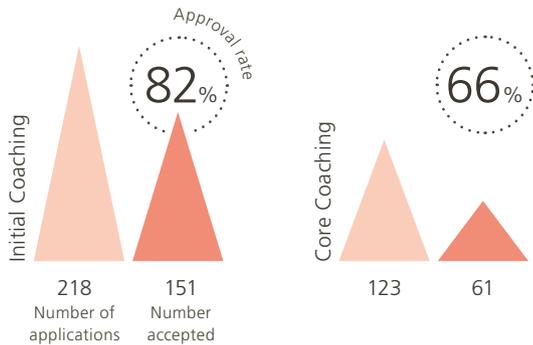
Regional breakdown

of start-ups in the Core Coaching programme

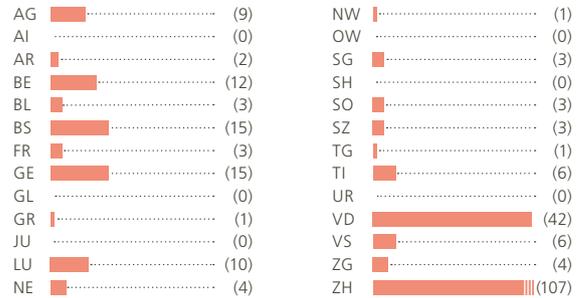


Coaching

341 start-ups applied for coaching by Innosuisse in 2018.



Number of start-ups in Core Coaching programme by canton



250
start-ups

were enrolled in the **Core Coaching** programme at end-2018. They operate in the following segments:



7

start-ups received an **Innosuisse Certificate** in 2018, confirming that they are "ready for sustainable growth".



3,668

trainees

took part in one of the four start-up **Training Modules.**



In 2018 Innosuisse funded **80 Awareness and Training Courses** for budding company founders at the regionally organised consortia of universities of applied sciences.

Camps

In 2018, 49 start-ups were accepted to take part in an **Internationalisation Camp**. These gatherings, held in eight cities across five countries, enable entrepreneurs to discover new markets.

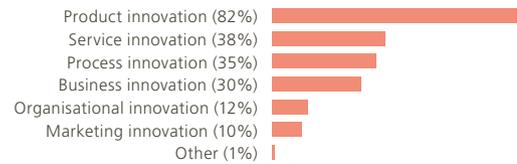


Number of camps in brackets

30%

of start-ups

associate their **business idea** with an innovation business model.*

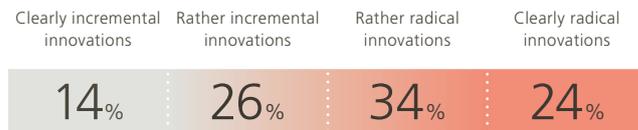


Multiple designations are possible.

24%

clearly radical innovations

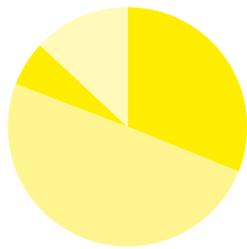
For 24% of the funded start-ups, clearly radical innovations are an important part of their **business idea**.*



Statements on the **type of innovation** in Start-up Coaching (2% gave no answer).

* Results of an external study on impact analysis (Phase II): www.innosuisse.ch/impactanalysis (Expected to be published in May 2019)

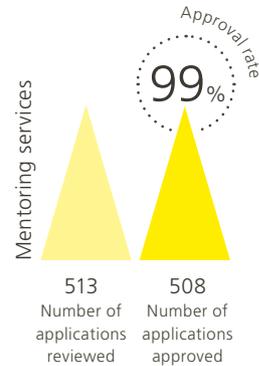
"BE CONNECTED"



Funding contributions awarded in 2018 totalled CHF 6.6m
(clockwise):
Mentoring CHF 2.1m
National Thematic Networks CHF 3.3m
Thematic Specialist Events CHF 0.4m
Information Transfer CHF 0.9m

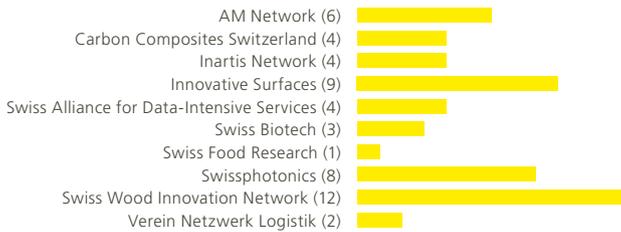
Mentoring

337 SMEs received one or more **Voucher for innovation mentoring** in 2018.



Networks

In all, 147 funding instruments were set up with help from the **National Thematic Networks (NTNs)**, including 53 Innosuisse projects (without innovation cheques).

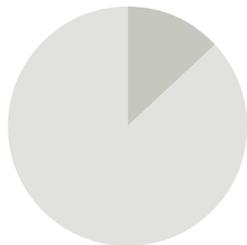


69 innovation projects were set up by the **innovation mentors**.

Specialist events

14 Thematic Specialist Events were awarded funding contributions in 2018.

"GO GLOBAL"



Funding contributions awarded in 2018 totalled CHF 6.1m
(clockwise):
Enterprise Europe Network (specialist contributions) CHF 0.8m
International Projects (ERA-NET, South Korea) CHF 5.3m*
* excl. overheads of CHF 0.6m



SME Instrument

The Horizon 2020 programme for SMEs awarded funding contributions to 85 companies in 2018 for their innovation projects.

First contacts

The EEN is strengthening cross-border innovation funding by arranging roughly 220 first contacts a year.

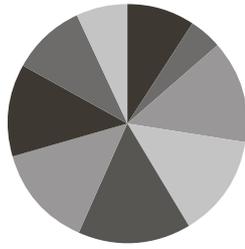
Partnering events

Over 2,100 SMEs took part in 24 partnering events throughout Switzerland.

ERA-NET

Innosuisse supports four ERA-NETs. Through these international research networks Innosuisse secures access for companies and research institutions to international calls for tenders. In 2018, seven projects were supported as part of the ERA-NETs.

ENERGY FUNDING PROGRAMME



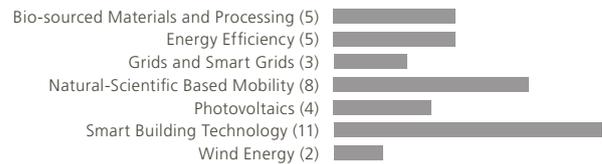
Funding contributions awarded to SCCER in 2018

totalled CHF 30.1m (clockwise):

- FEEB&D CHF 2.8m
- EIP CHF 1.3m
- FURIES CHF 4.2m
- HaE CHF 4.1m
- SoE CHF 4.6m
- CREST CHF 4.2m
- Mobility CHF 3.8m
- BIOSWEET CHF 3.0m
- Joint Activities CHF 2.1m

38
innovation projects

were approved in 2018 under the Energy funding programme across the seven action areas.



38%
third-party funding

The SCCER generated CHF 43.5 million of third-party funding in 2018.

1,351
researchers

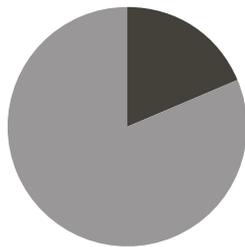
are taking part in the Energy funding programme.



23 research institutions are taking part in the Energy funding programme.

BRIDGE PROGRAMME

BRIDGE



Funding contributions awarded in 2018

totalled CHF 19.8m (clockwise):

- Proof of Concept CHF 3.7m
- Discovery CHF 16.1m

Total funding contributions awarded by the SNSF and Innosuisse



29 projects were supported in 2018 via BRIDGE's "Proof of Concept" offering.



12 funding applications were approved as part of "BRIDGE Discovery".

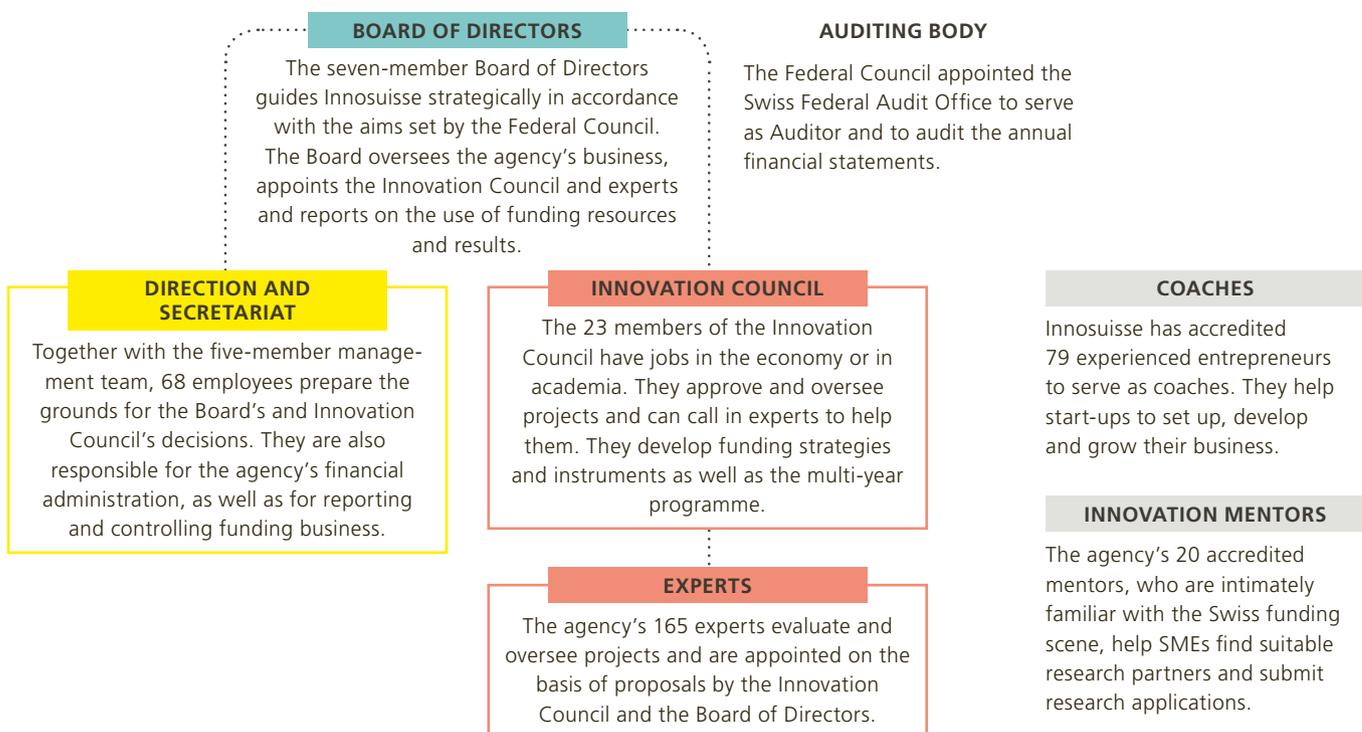


All figures stated in this report have been individually rounded.

For more innovation funding statistics, see www.innosuisse.ch/statistics

At Innosuisse about 350 people work in innovation funding.

Innosuisse's governing bodies and their tasks



BOARD OF DIRECTORS

Chairman

André Kudelski
Chairman and CEO, Kudelski SA,
Cheseaux-sur-Lausanne

Vice-Chairwoman

Martina Hirayama (until end-August 2018)
Director of Engineering, Zurich
University of Applied Sciences ZHAW,
Winterthur
Member of the Audit and Compliance
Committee

Members

Edouard Bugnion
Professor EPFL, Datacenter Systems
Laboratory, Lausanne

Thierry Calame
ETH, attorney, partner and co-head
of the Intellectual Property special unit
at Lenz & Staehelin, Zurich

Trudi Haemmerli
CEO and Director PerioC Ltd, Ongar,
UK and Managing Director TruStep
Consulting GmbH, Basel
Chair of the Audit and Compliance
Committee

Marco Illy
Member of the Audit and Compliance
Committees

Nicola Thibaudeau
CEO MPS Micro Precision Systems, Biel
Member of the Audit and Compliance
Committee

Luciana Vaccaro
Rector University of Applied Sciences
and Arts Western Switzerland (HES-SO)

INNOVATION COUNCIL

Chairman

Bernhard Eschermann, ABB Group

Vice-Chairman

Alois Zwinggi, World Economic Forum

Members

Reinhard J. Ambros, former head
Novartis Venture Fund (from November
2018)

Jean-Luc Bazin, Swatch Group

Yves Béhar, Fuseproject (until
end-October 2018)

David Brown, Angel Investor (from
November 2018)

Nicoletta Casanova, FEMTOprint SA

Christophe Copéret, ETH Zurich

Bettina Ernst, Proponent Biotech GmbH
(from November 2018)

Christine Demen Meier, HEG Fribourg,
HES-SO

Alisée De Tonnac, Seedstars SA

Clemens Dransfeld, TU Delft

Frédéric Hemmer, CERN – The European
Organisation for Nuclear Research

Renat Heuberger, South Pole Group

Emanuela Keller, Universitätsspital Zurich

Sophie Kornowski-Bonnet, Waypoint
Capital/Gurnet Point Capital

Massimo Lucchina, Samsung Electronics
(from November 2018)

Myriam Meyer, mmtec (until end-June
2018)

Adriano Nasciuti, University of Applied
Sciences and Arts of Southern
Switzerland (SUPSI)

Thomas Puschmann, Swiss FinTech
Innovation Lab (from November 2018)

Philippe Renaud, EPFL Lausanne

Monika Ribar, SBB (until mid-May 2018)

Kelly Richdale, ID Quantique SA

Christoph Rüttimann, Bystronic Group

Stephan Sigrist, W.I.R.E (until end-2018)

Stelio Tzonis, digital-strategy

Anja Wyden Guelpa, civicLab Ltd (from
November 2018)

EXPERTS

Siehe www.innosuisse.ch/experts

DIRECTION

CEO

Annalise Eggimann

Members

Andreas Reuter (until end-October 2018)
Head Project and Programme Funding
department

Kathrin Kramer, Head Project and
Programme Funding department ad
interim (from November 2018)

Dominique Gruhl-Bégin
Head Start-Ups and Next-Generation
Innovators department

Marc Pauchard
Head Knowledge Transfer and
International Cooperation department

Caroline Boutillon-Duflot
Head Finance & Organisation

COACHES AND MENTORS

See www.innosuisse.ch/coaches
www.innosuisse.ch/mentors

Frequently used abbreviations

AM	Additive Manufacturing
CEO	Chief Executive Officer
CHF	Swiss franc
CTI	Commission for Technology and Innovation
EEN	Enterprise Europe Network
Empa	Eidgenössische Materialprüfungs- und Forschungsanstalt
ERA	European Research Area
ETH	Eidgenössische Technische Hochschule
HES-SO	Haute Ecole Spécialisée de Suisse occidentale
ICT	Information and Communication Technologies
KTT	Knowledge and technology transfer
NTN	National Thematic Network
R&D	Research and development
SCCER	Swiss Competence Centers for Energy Research
SME	Small and medium-sized enterprise
SNSF	Swiss National Science Foundation

Full names of the SCCER

FEED&D	– Future Energy Efficient Buildings & Districts
EIP	– Efficiency of industrial processes
FURIES	– Future Swiss Electrical Infrastructure
HaE	– Heat Electricity Storage
SoE	– Supply of Electricity
CREST	– Competence Center for Research in Energy, Society and Transition
Mobility	– Efficient Technologies and Systems for Mobility
BIOSWEET	– Biomass for Swiss Energy Future

PUBLICATION DETAILS

Publisher: Innosuisse – Swiss Innovation Agency

© Innosuisse, April 2019

Concept and design: Weissgrund, Zurich

Editorial content: Eliane Kersten, Innosuisse; Weissgrund, Zurich

Statistics: Caroline Kämmle, Innosuisse

Photography: Alessandro Della Bella, Winterthur: all photos if not otherwise indicated; Hansueli Rhyner, SLF: p. 15; Swiss Technology Award: p. 19, right; Inverse SA, Geneva: p. 22

Available from: media@innosuisse.ch



WE PROMOTE INNOVATION

Innosuisse – Swiss Innovation Agency
Einsteinstrasse 2
3003 Bern

www.innosuisse.ch