



# Annual Report

## Innovation Promotion Agency CTI 2009



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
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Swiss Confederation

Federal Department of Economic Affairs FDEA  
**Federal Office for Professional Education and Technology OPET**  
Innovation Promotion Agency CTI



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# I A new funding record despite the crisis

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Who would have expected at the beginning of 2009 that CTI would achieve a new funding record in the last year? For the economic crisis reached its peak in the first quarter of 2009 and the various economic forecasts could not have been more diverse.

As a response to this, parliament decided in the spring to increase R&D funding loans as part of the range of economic stabilisation measures, launch an innovation check and to raise awareness particularly of companies in the cleantech and smart materials sectors.

The flexible funding conditions as well as a communications campaign through the consortia and networks of CTI led to a prominent increase in applications in the second half of the year. Just four weeks after the launch of the 133 innovation checks, these had been allocated. A call for the re-issue of checks came loud and clear from businesses very quickly.

The palpable increase in cleantech projects also shows that the decisive measures were having an effect. The year 2009 therefore stands for a very high deal flow. With regard to the receipt of applications and federal funds granted (CHF 123 million), CTI registered a record in its 60+ year history.

Start-up support also enjoyed a very good year: Around 20% more companies were supported in the coaching process than in the year before. Firstly, Switzerland was at the top of the Red Herring list for the most innovative young companies in Europe. Of the 14 listed Swiss start-up companies in the 100 most promising start-ups, 10 were involved in a CTI coaching process.

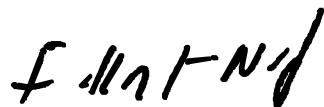
The new record number of CTI applications shows the high level of innovative energy in the Swiss economy, even in economically difficult times. These top places were confirmed in the European Innovation Scoreboard and in the World Competitiveness Report. The companies demonstrate their wish to apply valuable resources with expertise in future-oriented projects. Resources released were invested in further development and research to be ready for the upturn. The investments of participating economic partners were not only limited to short-term projects with potential for rapid enhancement, but were also concentrated in long-term projects with the effect of basically re-positioning the industry among the competition and responding to long-term development trends.

With the new two-phase “Merlin” funding process, introduced early in the summer of 2009, CTI not only offered universities, but also companies, the option of submitting short R&D applications. At the same time the web platform of the identical name was launched, on which applicants could enter their applications online. After initial problems in operational implementation, Merlin will be further optimised and designed to be more customer-friendly.

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An important step towards the independence of CTI took place last autumn when parliament approved the partial revision of the Research and Innovation Promotion Act. A modern legal basis for the activities of CTI was thereby created and CTI will be re-positioned as an independent authoritative commission in 2011.

CTI therefore expects another challenging year. Innovation remains on the agenda, not just for promotion, but also for the CTI itself. In this sense, we are certain that willingness to take risks and the will for change will be worthwhile. We look forward to supporting as many innovative projects as possible, thereby further reinforcing Switzerland-s place as a location for innovation.



Dr Ingrid Kissling-Näf, Head of Innovation Promotion Agency CTI

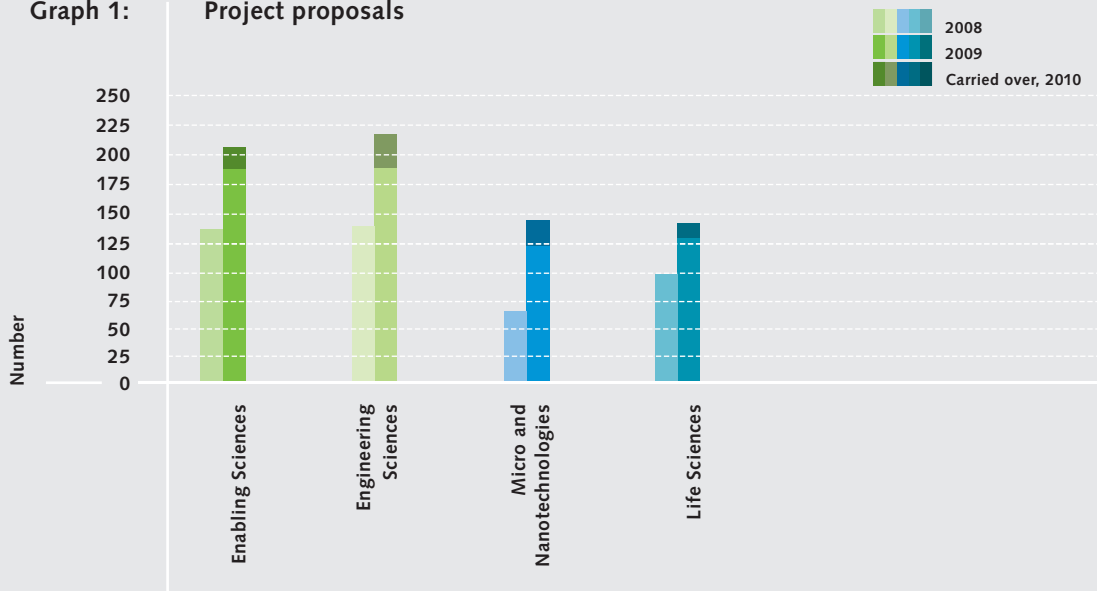
### Facts and Figures on project promotion

	No.	%	Project costs CHF million	Federal funding CHF million	Industry funding CHF million
Submitted grant applications	637				
Requested federal funding				221.9	
Approved grant applications	319				
Project approval ratio		50			
Federal funding approval ratio		49			
Cancelled projects	4	1.3			
Cost I financing the approved projects			241.2	108.2	133.0
of which flexibilising funding criteria (stabilisation programme 09)*				16.7	
Participating companies (approved projects)	563				
Participating SMEs, < 250 employees (approved projects)	417	74			
Participating corporations, > 250 employees (approved projects)	146	26			

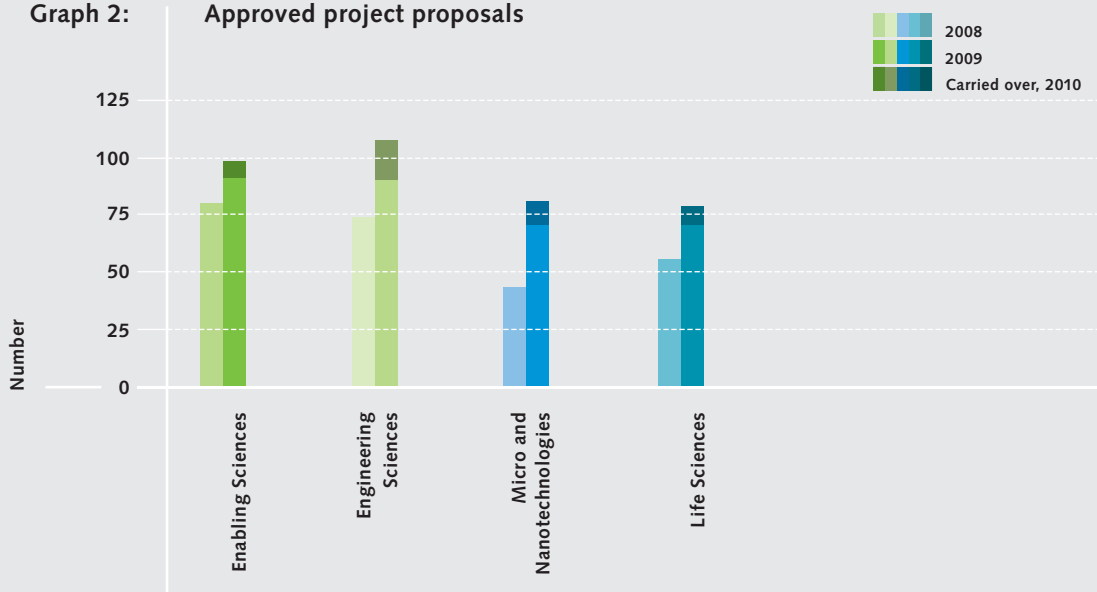


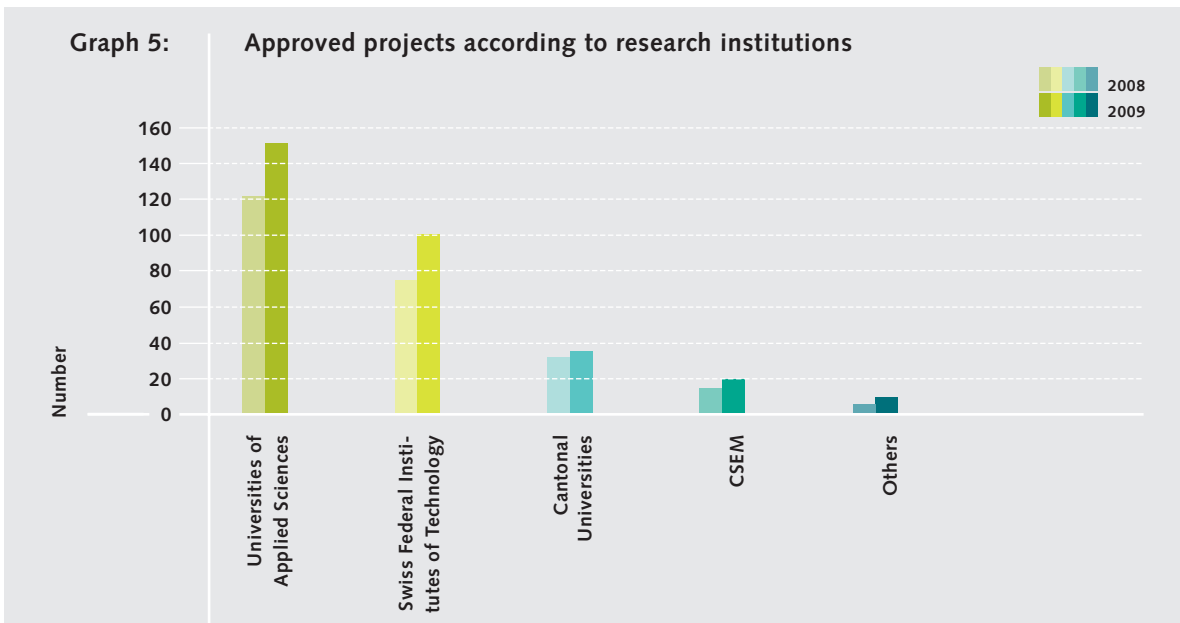
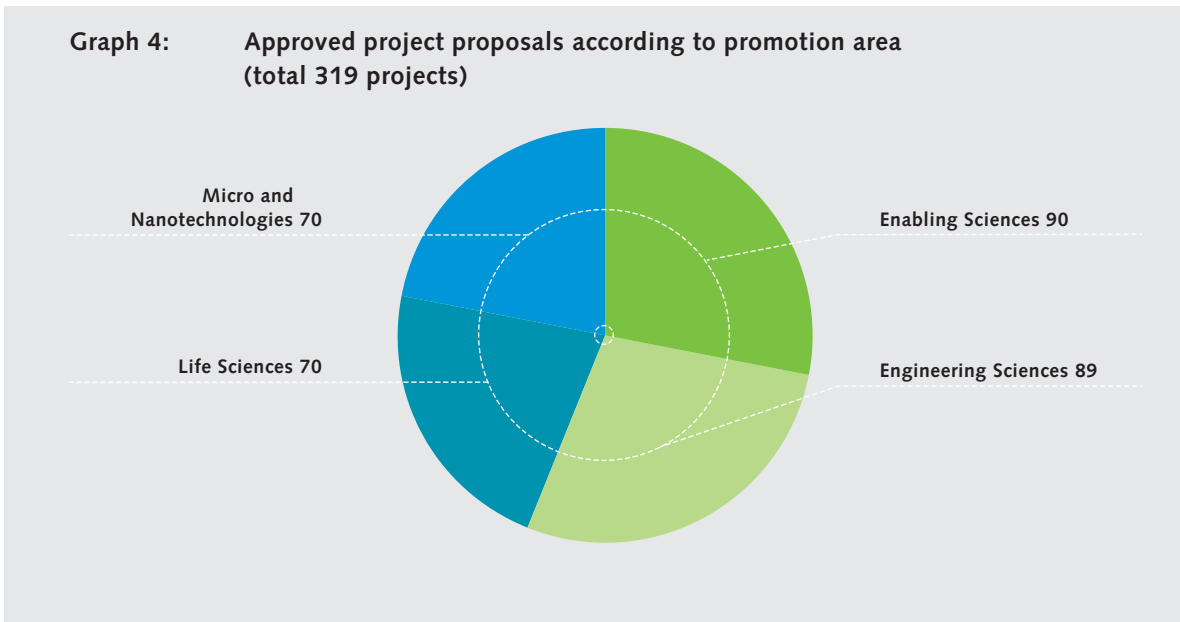
\* Carried over to 2010: CHF 3.3 m

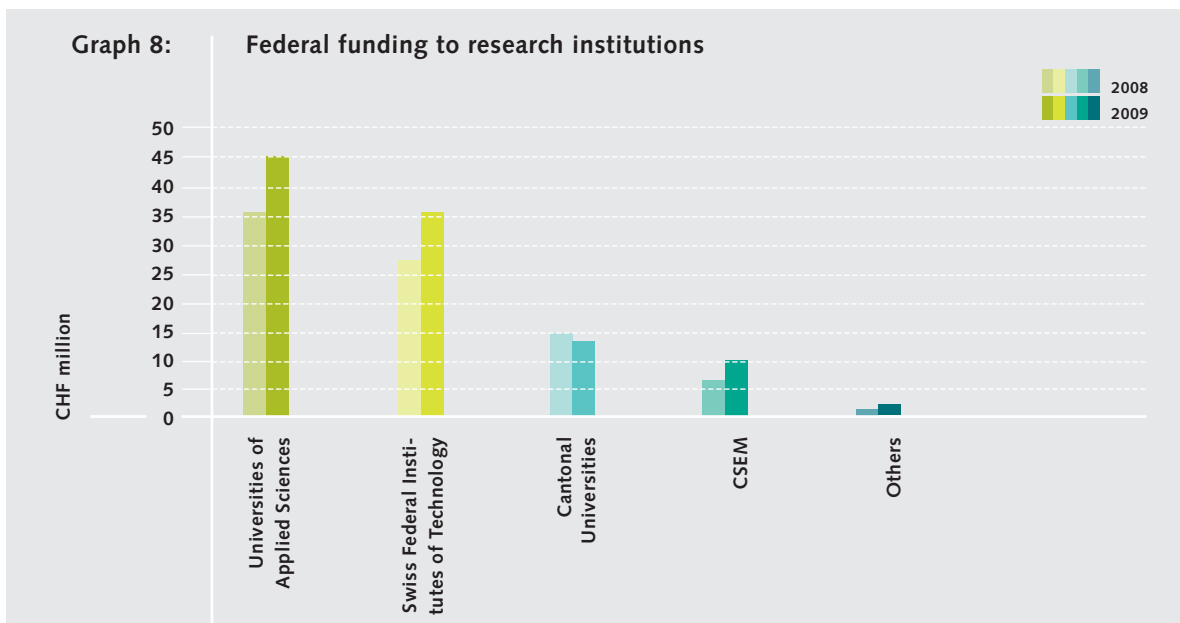
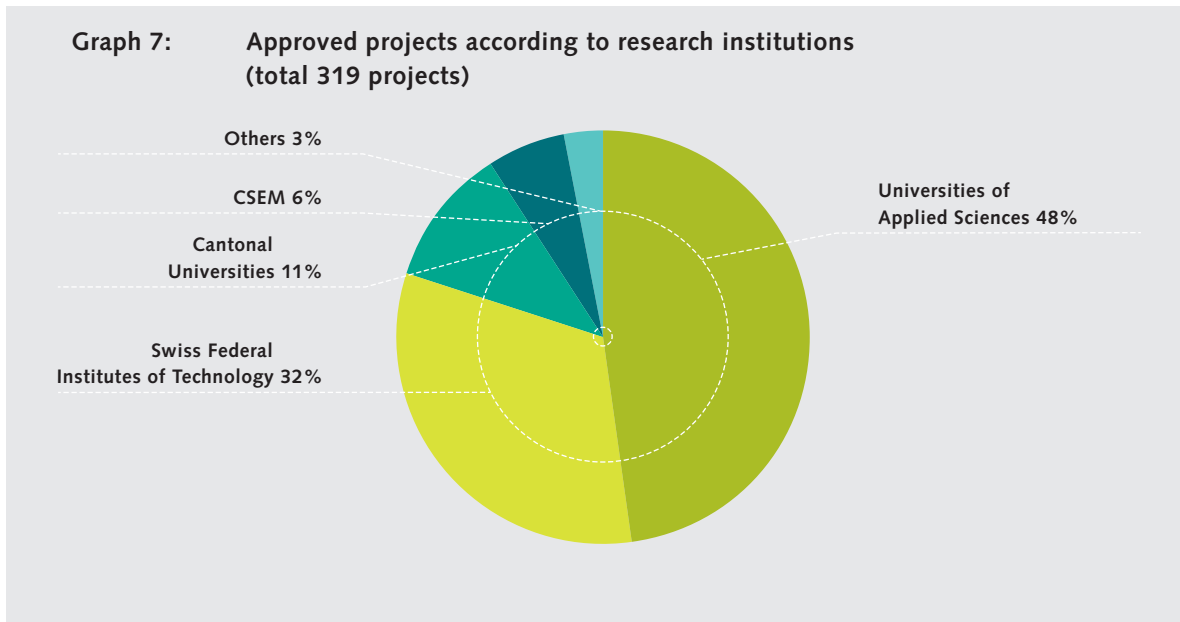
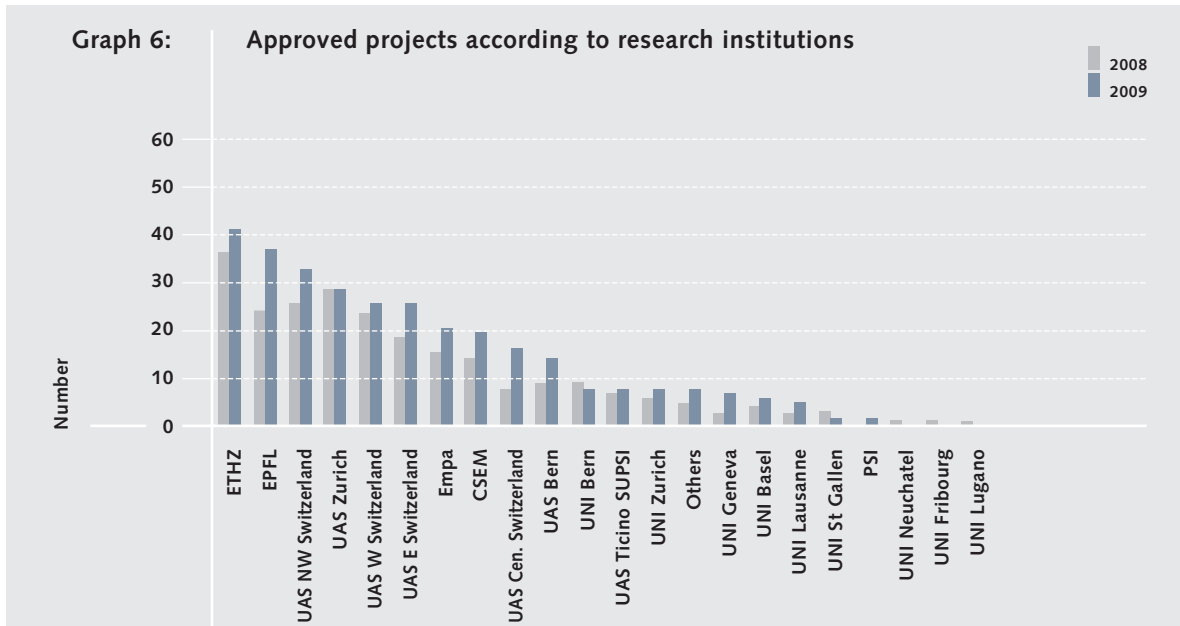
Graph 1: Project proposals



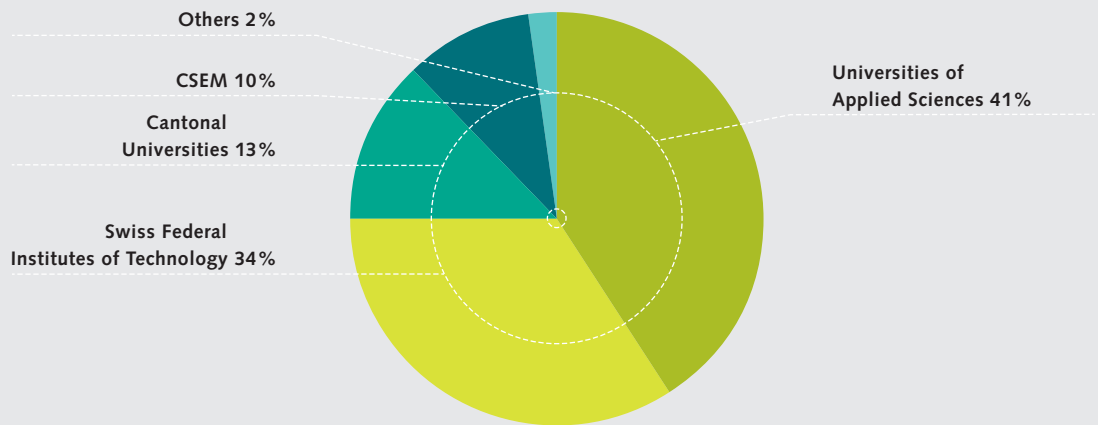
Graph 2: Approved project proposals



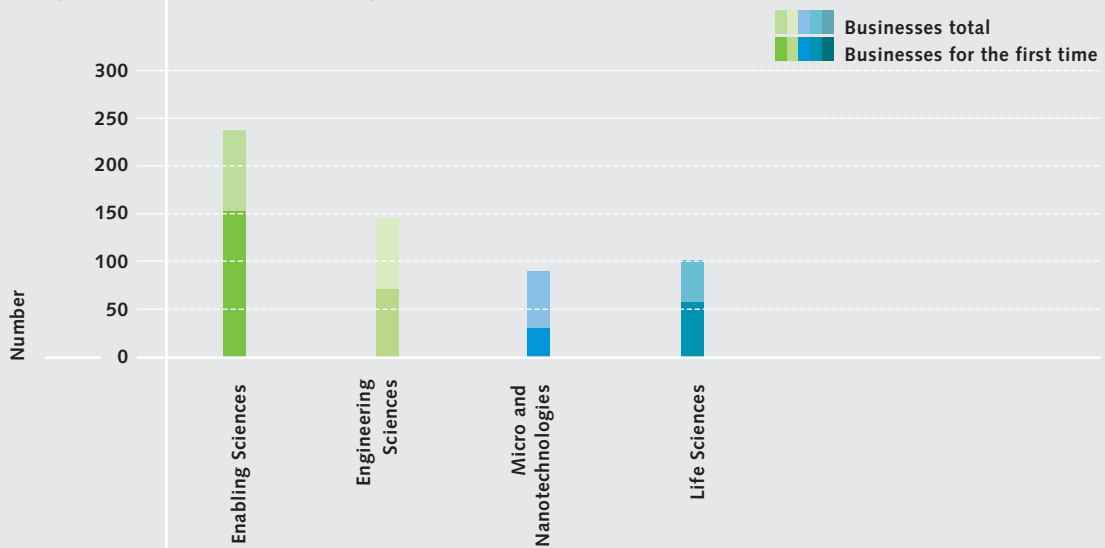




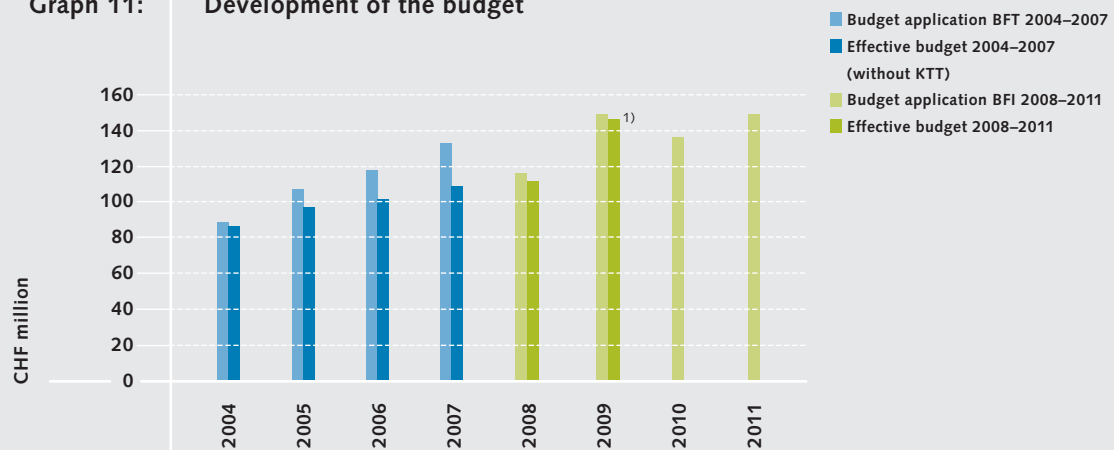
**Graph 9: Federal funding to research institutions (total CHF 108.2 million)**



**Graph 10: Businesses in projects for the first time**



**Graph 11: Development of the budget**



<sup>1)</sup> Incl. CHF 21.5 m stabilisation measures, 2009

# I Federal stabilisation measures

In its March 2009 session, the Federal Assembly agreed on the second phase of economic stabilisation measures, whereby around CHF 21.5 million was to be invested in innovation promotion and research support for CTI. The purpose was an increase in R&D funding loans, the launch of an innovation check as a pilot project and a thematic sensitization campaign among the target groups.

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The increase in loans included more flexible handling of the funding criteria, in which the Confederation was investing CHF 20 million. CTI financed infrastructure and material costs for the universities case by case and issued the usual cash amount to the company. The demand for R&D projects rose considerably. In the period from January to December 2009, 717 funding applications were received, of which 361 were approved. 637 of the funding applications and 319 granted applications were included in the 2009 financial year, and the other applications were carried over to the 2010 financial year due to the budget for 2009 being exhausted.

The areas of cleantech and smart materials were the focus of the sensitization campaign. Applications increased notably in cleantech, which included renewable energies, energy saving, energy efficiency, sustainable mobility and management and protection of resources: Cleantech demonstrated a growth of over 70% against the previous year. The federal government provided CHF 17.2 million for cleantech projects, which corresponded to around 16% of overall federal contributions for R&D. In the field of smart materials, a total of five projects have been submitted since 2007.

The objective of the CHF 1 million innovation checks awarded was to stimulate SMEs to strive for partnerships with public research institutions, even in economically difficult times. They should call upon the latest knowledge to strengthen their innovative potency and remain competitive. The launch of the check on a first come, first served basis should be viewed as a success. Just four weeks after the start of the promotion, the 133 planned checks had been awarded and 85 more applications could therefore not be processed. According to the CTI guidelines, all projects have to be completed by May 2010. At the end of December there were cooperation agreements for almost 80% of all applications and 21 projects had already been successfully completed. CTI had the initiative evaluated by Technopolis Forschungs- und Beratungsgesellschaft GmbH in Vienna. The study (Technopolis GmbH, Vienna, October 2009) came to the following conclusions: The innovation check was viewed by the SMEs and research institutions involved as very useful and proved to be an ideal instrument to prevent inhibition thresholds, encourage SMEs into cooperation with academic partners and reinforce existing contacts. How well the innovation check created incentives for cooperation was demonstrated by the fact that three-quarters of SMEs were entering into a CTI-promoted cooperation with a public research institution for the first time. It was advantageous that the check enabled the financing of preliminary studies, which led to subsequent projects in most cases. The project partners classified the amount of the inno-

## Facts and Figures on CTI project funding – total dealflow 2009

	No.	%	Project costs CHF million	Federal funding CHF million	Industry funding CHF million
Total approved funding applications	717				
of which allocated to the 2010 financial year	80				
Total requested federal contributions				253.6	
Total approved funding applications	361				
of which allocated to the 2010 financial year	42				
Total expenditure   financing			271.9	122.6	149.3
of which allocated to the 2010 financial year				14.3	



vation check to be meaningful, at CHF 7,500. They appreciated the low administrative effort as the applications were processed within 15 working days. Technical disciplines were a thematic focal point and around 60% of checks approved related to engineering sciences. A quarter of them focused on cleantech, which is clearly greater than it used to be in the regular R&D project business. The innovation check has proven to be particularly suitable for cooperation with universities of applied sciences. Around two-thirds of the agreements were concluded with them.

In the context of the roughly 40 events organised by the R&D and KTT consortia, 3,400 representatives of SMEs had the opportunity to gain information on the new CTI promotional instruments and obtain contacts for possible cooperation.

One of the three largest national events was the Energy Symposium on 19<sup>th</sup> June 2009 in Berne in which more than 200 visitors orientated themselves on innovations in the energy industry. On 13 August 2009, CTI and Empa extended invitations to the National Innovation Briefing “Smart Materials”, which again attracted 200 guests from industry and research. The event also provided an update on the national research programme, NRP 62, “Smart Materials” in which SNSF and CTI are jointly involved for the first time. More than 220 interested parties came to the national “Fachtagung Cleantech” in Zurich on 20 August.

## II CTI Life Sciences – High flyer medical technology

12 +

The life sciences sector attracted more applications compared with the previous year. Medical technology continued to take the lion's share with 43 of a total of 70 approved applications. This reflects the wide portfolio and importance of the Swiss medtech industry, as well as the competence of the universities and the universities of applied sciences in this highly interdisciplinary sector. Clear-cut marketability characterises these applications. There has been an increase in applications in which research partners from universities and universities of applied sciences are jointly involved. The overlaps with other life sciences sectors are noticeable as these applications need to be approached in a differentiated manner.

The Medtech Event, the annual communications hub for medical technology, attracted some 400 participants from industry and research. The Medtech Award has become a powerful label for the CTI and is becoming increasingly important for SMEs and start-ups.

In the biotechnology sector, the CTI approved 18 applications. Pre-clinical trials are becoming increasingly important. In addition, clinical phase 1 is gaining in importance for start-up companies. In the proven consortium with the most important stakeholders, a 2009 update to the Swiss Biotech Report was produced in order to assist the Swiss Biotech Industry, whilst the Swiss Biotech Association (SBA) was supported in the publication of the Swiss Biotech Directory 2009/2010. In addition, the CTI, in partnership with the SBA and other sponsoring organisations, participated in setting up and holding topic-orientated industry symposia, such as "Outsourcing in Drug Development", as well as participation in various national and international biotech trade fairs. The CTI similarly supports the current national coordination work on industrial, "white", biotechnology.

In its first year of the newly established foodtech sector, the CTI has already approved six applications. This was initially based on the launch of the "Swiss FoodTec-Day" on 15 May 2009 as an information event for the Swiss food industry, and also the work of the Swiss Food Research Consortium, which was able to establish its acquisition work for application oriented research projects in 2009. The SATW (Swiss Academy of Engineering Sciences) "Transferkolleg" held on 12/13 November 2009 on the topic of "food processing", with around 15 good to very good project ideas, met with a strong response from SMEs in the Swiss food and associated equipment industry.

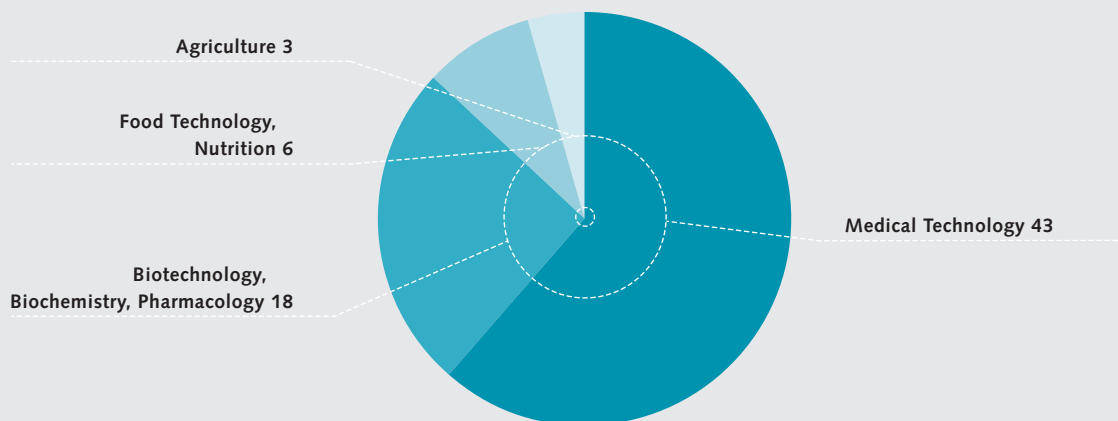
The universities of applied sciences are more and more active in seeking industrial partners with which to initiate applications. Thankfully, this frequently results in cooperation with SMEs. This shows that the CTI grant process stimulates the inclusion of SMEs which, with a top-down promotional system, would probably not have been motivated to participate in such innovative projects.

The lively cooperation between life sciences and the start-up sector has intensified during the year under review. A scientific coaching at the outset helped to alleviate the subsequent start-up.

## Facts and figures on CTI Life Sciences

	No.	%	Project costs CHF million	Federal funding CHF million	Industry funding CHF million
Submitted grant applications	131				
Approved grant applications	70				
Cancelled projects	0				
Project approval ratio		53			
Cost I financing the approved projects			57.1	27.4	29.7

Graph 12: Approved projects according to research areas Life Sciences (total 70)



# Quickly exposing toxic substances in blood

14 +

Melanie had actually only left her drink unattended at the bar for a moment so that she could look at the revellers at the mega party. She sipped from her glass – and blacked out almost immediately. When she regained consciousness the sun had risen, she was lying in a back alleyway and her dress was smeared with blood. Where and when she had been raped, she was unable to say.

Gamma-hydroxybutyric acid (GHB) is a substance produced naturally in the human body, however the substance currently produced in large quantities by the chemical industry is better known in the headlines as the “date rape drug”. A colourless and virtually tasteless powder, when secretly added to a drink, its intoxicating effect renders the victim powerless to act. At all-night raves, GHB is in demand as a club drug, similarly as an illegal drug in sport, which is used mainly by bodybuilders, since GHB is said to stimulate growth hormones and to promote lipo-metabolism. Verification is difficult since GHB decomposes in the body within a few hours. Proving GHB intoxication requires costly and time-consuming chromatographic analysis combined with mass spectrometry. This can be provided by special labs, which are not operational either at night or at weekends.

Bühlmann Laboratories AG in Schönenbuch/BL is able to assist. It develops and produces immunoassays and bioanalytical verification methods, which simplify disease diagnosis, determine the therapeutic efficiency of a medication, check the efficacy of therapies or predict changes in a patient's state of health. In a CTI project with the School of Life Sciences FHNW Muttenz, biotech experts developed a platform for the development of new in-vitro tests. In-vitro tests are used for diagnosis outside a living organism. Laboratory specialists from Basel University Hospital were also involved. They validated the developed tests in a professional clinical environment and tested them for diagnostic sensitivity and specificity using patient samples. While the FHNW produced the biological components, the University Hospital, as the reference centre, carried out the clinical trials.

In the autumn of 2009, Bühlmann Laboratories AG brought the enzymatic test onto the market. "Whilst such tests are currently carried out chromatographically, involving considerable numbers of staff and are not available around the clock, our new test provides reliable results within 10 minutes", summarises Dr. Thomas Jermann, Science and Technology Manager at Bühlmann. "Thanks to a verification method that is available at any time, the victim can be helped faster and in a more focused way."

In Europe, GHB is an underestimated problem as analysis has seldom been used due to the previously expensive and complicated method. With the new test, clinics and laboratories now have a suitable tool with which to expose GHB intoxication quickly, efficiently and inexpensively. Bühlmann Laboratories AG has thus created a further piece of the puzzle in its niche range of products. "Our strategy is to be active in those segments in which larger diagnostic manufacturers usually do not invest any money or time because they are either unable to foresee new market developments or this appears to them to be too small", says Thomas Jermann. "These are suitable market niches for smaller private companies, which have more autonomy and short decision-making processes."

[www.fhnw.ch/lifesciences](http://www.fhnw.ch/lifesciences)  
[www.buhlmannlabs.ch](http://www.buhlmannlabs.ch)



In the laboratories of Bühlmann Laboratories in Schönenbuch, the first automated enzymatic test for the quantitative measurement of urine and GHB (also known as "liquid ecstasy" or "knockout drops") was developed. The measured results are available in just 10 minutes.  
 (Photo Bühlmann Laboratories)



The research partner in the development of enzymatic GHB tests was the laboratory at the University of Life Sciences at Basel University of Applied Sciences, under the direction of Professor Daniel Gyga.  
 (Photo FHNW)

## III CTI Enabling Sciences – Strong commitment from the private sector

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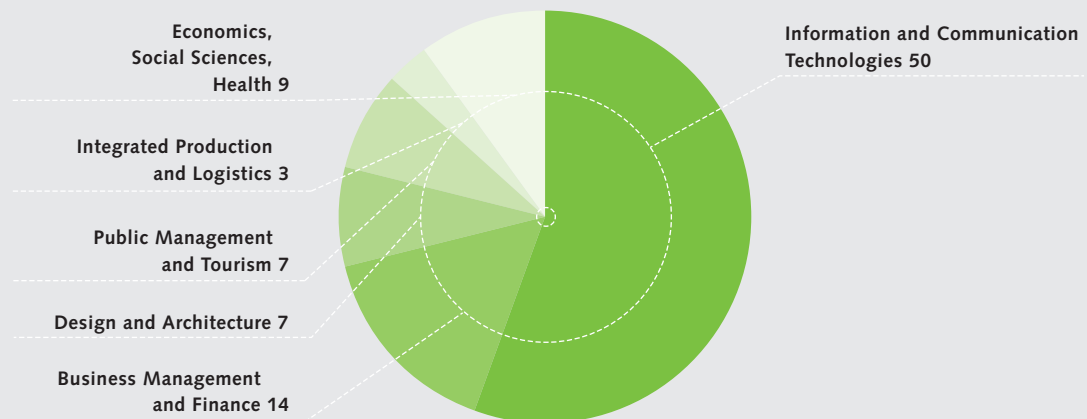
Unfortunately, in the field of enabling sciences, the quality did not keep pace with the number of applications. Many applications had to be rejected as they did not satisfy the CTI criteria. The lion's share of approved applications – as in the previous year – came from information and communications technologies, with CHF 14.4 million or 57%. The applications reflect a strong commitment on the part of private industry. The companies thereby received competent support from the numerous university institutions. The field of public administration and tourism stagnated with 7 approved applications at around the level of the previous year. Their proportion was around CHF 1.8 million or 7%. The decrease in 3 applications granted (3%) in the field of integrated production and logistics was a cause for concern. Particularly in times of recession, investment in these disciplines is needed if competitors are to be engaged again during an upturn.

In the last few years, the CTI has made greater efforts to appeal to the disciplines of economics, social sciences and health. These efforts are showing the first signs of success. The number of approved applications tripled to 9 (10%). As experience shows, the implementation partner in such cooperation makes a considerable contribution to its success, as they are the ones who make the knowledge generated by the project generally accessible, thereby generating further benefits.

## Facts and figures on CTI Enabling Sciences

	No.	%	Project costs CHF million	Federal funding CHF million	Industry funding CHF million
Submitted grant applications	188				
Approved grant applications	90				
Cancelled projects	0				
Project approval ratio		48			
Cost I financing the approved projects			58.1	25.4	32.7

**Graph 13: Approved projects according to research areas Enabling Sciences (total 90)**



# Augmented reality – meaningfully complementing the real world

18 +

We leave the Bistro on Boulevard des Capucines to go to the nearest Paris metro station. A brief glance is all we need to know that we can take lines 3, 7 or 8 at Opéra close by, and where these are headed. No, we're not having any hallucinations, just the right iPhone with augmented reality (AR), a computer-aided extension to reality perception. In augmented reality, virtual objects merge with scenarios, which a video camera integrates spatially and correctly in real time thereby extending the actual image. The user accesses information as and when required. While such "location-based information services" can currently be used on a mobile phone using GPS, outdoor "head mounted displays" (HMD) are still few and far between. These HMDs consist of mini monitors, worn as a display fixed on the head like glasses, and are connected to a video camera.

The interior architect and media artist, Jan Torpus, developed just such an HMD at the Basel School of Design and Art (HGK FHNW). His "lifeClipper" art project served as a feasibility study for a CTI project with the company, iart interactive ag. It is active in the mobile information systems sector and was also an exhibitor in the Swiss Pavilion at the World Expo in Aichi, Japan, and in the Mercedes-Benz Museum in Stuttgart. The aim of the project was to investigate the potential of AR Guides for use in tourism and in the development of town projects, and to further develop the project into a marketable application. Several weak points in the prototype lifeClipper project were reviewed. The perspective of the HMD was restricted, which made it difficult for the user to move around safely and freely. Solutions needed to be found, such as optimising the visual angle as well as the sensory recognition of obstructions and achieving automatic blanking of the virtual superimpositions. A real challenge for mobile computer systems is that of processing video and sound in real time. Delays and limited screen resolution can be overcome by a programmable chip (field programmable gate array – FPGA). Thanks to digital signal processing, the video image can be influenced in real time, even though it is transmitted directly from the camera to the HMD screens. The improved performance also permits operation with a stereo image, which solves the problem of distance estimation. The

IT Department of Basel University provided assistance in this regard. For outdoor direction finding, a hybrid tracking system was required for the superimposition and calibration of a virtual superimposed 3D model; a problem that was resolved by the industrial partner and by the Institute for Geomatics. In addition, the “wearable system” had to be achieved with inexpensive basic components, which could be modularly extended and technically updated.

The city of Basel participated as an implementation partner. With the results produced, the city marketing department evaluated the extent to which it could use the system in future as an experience-based city guide system. In addition, there are considerations as to how town-planning projects can be made understandable for a wider audience with the optimised lifeClipper. Novartis was also involved. It used the system to visualise the planned campus with office buildings and research and manufacturing facilities on the St. Johann factory site in Basel.

[www.fhnw.ch/hgk](http://www.fhnw.ch/hgk)  
[www.i-art.ch](http://www.i-art.ch)  
[www.lifeclipper.net](http://www.lifeclipper.net)

In the art project, LifeClipper, developed at the Basel School of Design (FHNW), the development of town projects is also tested for their feasibility with augmented reality.  
(Photo iart/ Jan Torpus)



# IV CTI Micro and Nanotechnologies – A boom amongst the smallest of the small

20 +

Following a somewhat quieter phase in previous years, the number of project applications rose in 2009 to its highest ever level since the establishment of the micro and nanotechnology (MNT) sector. With almost CHF 26 million, the amount of sponsorship reached a record level, even though the average amount sponsored per grant application was slightly lower than in the previous year. This surprising development in a year of economic downturn is probably linked to the reluctance of project applications submitted in previous years. Whereas in the past many Swiss companies had tied up their resources with their current business, the difficult economic situation in 2009 probably enabled them to spend more time on the development of new products and technologies. CTI supported this development through its sensitization campaign. Compared with the previous year, this resulted in a slight decrease in the contributions by industrial partners because CTI was now also involved in the financing of materials, allowances and expenses for infrastructure. The greatest growth in the MNT sector, with an increase of 70%, was achieved by the microelectronics, optoelectronics and sensor technology sectors, followed by nanotechnologies at 55% and the two other sectors of micro-system technology and systems engineering at 50%.

Numerous interested parties attended the 6th CTI Forum in Neuchâtel on 11 November 2009 held under the slogan of "The Impact of Miniaturization". Representatives from industry and research used the platform to exchange ideas and gained insight into successful CTI cooperations through poster presentations and lectures from researchers and industrial partners. Guest lecturer, Gian-Luca Bona, the new director of Empa, provided a behind-the-scenes view of the research institute in the sector of nanotechnology and spoke about the positioning of Empa in the international environment.

In addition, nanotechnology drew attention in 2009 due to the new National Research Programme, NRP 62 "Smart Materials", which was awarded CHF 11 million. Materials are planned that can reversibly alter their characteristics when the physical, chemical or biological aspects of their environment change. For the very first time, the Swiss National Science Foundation (SNSF) and the CTI are cooperating in an NRP, to be able to quickly transform promising results into CTI projects.

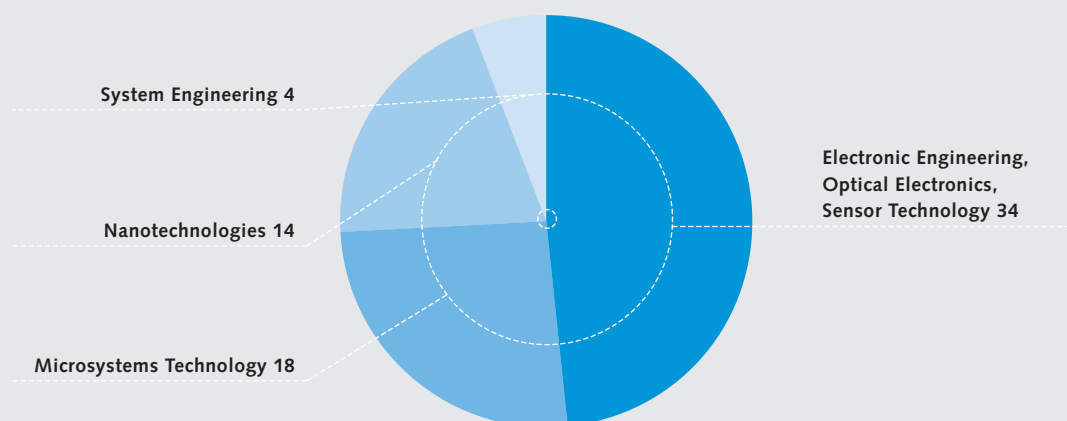
In 2009, the laying of the foundation stone for the 6000 square metre nanotechnology research centre in Rüschlikon attracted attention. The centre should begin its research work in 2011 as a collaboration between IBM and ETH Zurich. The CTI intends to make allowance for this forward-looking project by creating a new "nanomaterials" sub-discipline within the sponsorship sector.

## Facts and figures on CTI Micro and Nanotechnologies

	No.	%	Project costs CHF million	Federal funding CHF million	Industry funding CHF million
Submitted grant applications	126				
Approved grant applications	70				
Cancelled projects	0				
Project approval ratio		56			
Cost I financing the approved projects			56.9	25.9	31

+ (21)

**Graph 14: Approved projects according to research areas  
Micro and Nanotechnologies (total 70)**



## High-tech for the avalanche airbag

22 +

On 16 February 2009, a group of 3 freeride skiers were out and about with their mountain guide on the Pischaboden, near Klosters. When a German skier attempted to ski down the slope, a sudden avalanche at 2,300 m swept him away. A search began immediately. The victim was partly uncovered within 15 minutes. Even so, the emergency services were only able to declare that the man was dead. "Deaths due to avalanches happen every year, especially to freeride skiers as deep snow is treacherous and the covering of snow may suffer a loss of integrity due to instability", comments Yan Berchten, the founder of Snowpulse SA. He thought of a safety system, consisting of an integrated airbag that can easily be carried in a rucksack. He had already developed and tested various prototypes on snowfields with specialists from Air Glacier and the Snow and Avalanche Research Institute (SLF) in Davos. Encouraged by the positive tests, the start-up entrepreneur wanted to further develop his high-tech avalanche airbag in Verbier into a marketable product, which when fitted with an air bubble would optimally protect the head, chest and respiratory tract of the wearer.

He received support for his project from Professor Cédric Bornand of the Institute for Embedded Information Systems of the HEIG-VD and AIT-CeTT (Vaud School of Business and Engineering; society of the Canton of Vaud for the Promotion of Innovation and Technology, Studies and Technology Transfer Centre), who initiated a CTI project. This involved selecting suitable components, such as sensors and energy sources, as well as core elements, such as the nozzle and finally the total integration of the system. The system consists of four parts: "We produced the sensory section with a timer, 3D acceleration sensor and a pressure sensor, in addition to signal processing with a low power consuming digital signal processor", stated Cédric Bornand. "We selected a type of venturi nozzle for the actuating mechanism, which also uses ambient air to fill the airbag. This was designed by Yan Berchten in his thesis at HEIG-VD." A particular challenge in developing the system was that it had to function at temperatures as low as  $-40^{\circ}\text{C}$ .

The project manager, Yan Berchten, also took on board specialists for flow mechanics from the Geneva University of Applied Sciences (CMEFE), who dealt with the mechanical activation of the cartridge used for filling the airbag. Air Glacier and the SLF were also involved once again. They made their infrastructure available for the tests in an actual avalanche environment. The tests were conducted by experts for automobile airbags from the TÜV (Technical Service Corporation) in Munich.

In the winter of 2009/2010, the innovative Swiss product was launched in 17 countries. The "LifeBag" provides the best possible protection because the buoyancy it offers in the prone position ensures that the head of the victim is always kept clear of the snow. In addition, the airbag protects the head and chest from impact while the avalanche is taking place, "an important factor given that 15% to 20% of deaths resulting from avalanches are due to trauma", Yan Berchten adds. The "Life Bag" weighs just 1.2 kg and takes up very little space; it can be fastened quickly and simply be reused. It is available in various volumes and sizes, tailor-made for the pertinent activity. "It is essential that the user is familiarised with the individual procedural stages from the outset, so that he can react correctly in an emergency", comments the Snowpulse boss and warns: "The avalanche airbag can prevent victims from being engulfed, but this should not encourage skiers to take even greater risks."

[www.cett.ch](http://www.cett.ch)  
[www.snowpulse.ch](http://www.snowpulse.ch)

With the avalanche airbag "LifeBag" integrated in the backpack, chances to survive an avalanche are higher. The head stays at the surface of the avalanche and is – same as the chest – optimally protected against mechanical injuries.

(Photo Snowpulse)



# V CTI Engineering Sciences – Preparing for the recovery via innovation

24 +

How can natural sciences knowledge be applied, based on mathematics, biology or physics, in a whole range of technical areas? With this basic question, engineering is at the pulse of research and technical development. This area was high on the list for companies in the reporting year. Presumably, due to the difficult economic situation, many companies sought competent support from universities to prepare for the recovery. The number of applications was then around 37% above the year 2008.

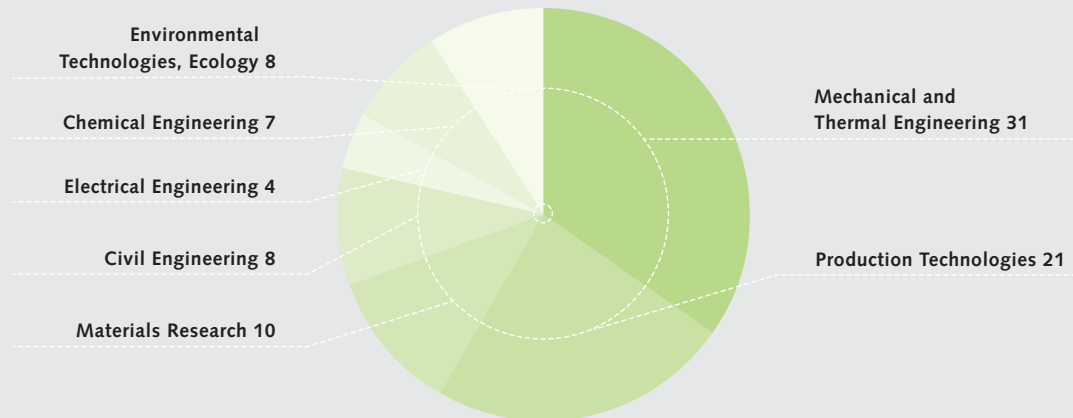
A clear trend was apparent from the funding applications in a key area of the machinery, electronics and metals industry. With 31 of a total of 89 applications approved, this represents a proportion of around 35%. The Swiss machinery and equipment industry figured as a particularly active partner in the engineering sector. This clearly shows that this important branch of the economy deploys targeted innovations in order to be able to maintain its leading market performance with meaningful changes.

In engineering funding, applications with young companies as an implementation partner had a positive impact. They were supported in close cooperation with the engineering experts and coaches of CTI Start-up. The project promotion instrument is often decisive in enabling these start-ups to obtain financing from investors in addition to federal funding.

## Facts and figures on CTI Engineering Sciences

	No.	%	Project costs CHF million	Federal funding CHF million	Industry funding CHF million
Submitted grant applications	192				
Approved grant applications	89				
Cancelled projects	4				
Project approval ratio		46			
Cost I financing the approved projects			69.0	29.5	39.5

**Graph 15: Approved projects according to research areas Engineering Sciences (total 89)**



## Faaros – more safety with fashionable accessory

26 +

**Human life expectancy continues to rise.** Ever more people want to remain active at a ripe old age, retain their independence and live in their own homes. Many are aware of their increasing frailty and consequently would like to have a simple alarm system that they can activate in an emergency, without affecting their individual lifestyle. In view of the growing demand, the range of such alarm systems is considerable. However, most of these systems only work at home via a fixed phone line, are complicated to operate and are not very attractive.

The team from Faaros AG, a Zurich-based firm, are leading the way. The young entrepreneurs have developed an attractive wristwatch with an integrated GSM (Global System for Mobile Communications) mobile phone. It transmits an alarm call to a call centre and establishes a voice link between the centre and the caller. In addition, the watch has an integrated speaker and a microphone. The alarm can be simply activated by pressing the crown although this is positioned to prevent unintentional activation. Even so, the user has 20 seconds in which to cancel the alarm. The elegant Faaros watch can be used anywhere, not only at home, is simple to operate and is around 30% cheaper than other systems currently available. In addition, frequent charging of the battery is not required as it lasts for several months.

To implement their idea, the ETH engineer, Sven Carlson, the HSG economist, Pascal Koenig, and watch expert, Pascal Stübi, set up their own company. In order to combine traditional Swiss expertise in watch making with know-how in miniaturised electronics, they contacted CSEM SA (Swiss Centre for Electronics and Microtechnology), which initiated a CTI project and provided the scientific input. To test the prepared prototypes, the Faaros team brought in the Swiss Red Cross.

The technical challenges were considerable. "A suitable aerial design was needed for optimal GSM connection, which was also suitable for indoor use, and the integrated speaker and microphone had to produce good acoustic performance. In addition, all of the components needed to be housed in an attractive watch", stated Pascal Koenig, who has med-tech experience with continuous patient monitoring. "The power consumption had to be minimal so that the rechargeable battery would run for as long as possible. The system also had to be robust and simple to operate, yet have an aesthetic appearance." The focus throughout the development phase was on the individual and their requirements: We not only considered what was technically possible, but also how we could improve the quality of life for future clients", Pascal Koenig explains.

During the development stage, the Faaros team worked on a promising business plan on how to market the product. Their vision is for the product to be manufactured in canton Solothurn and sold to service providers, such as the Swiss Red Cross. These service providers then hire out the device to interested parties. The pilot scheme has shown that the watch is useful not just for senior citizens, but also for a variety of other applications. Faaros AG received the coveted CTI Start-up label for their clever business idea, which serves as a quality seal for investors for a possible investment just 13 months after the start of the CTI coaching process. On this basis, the company has managed to gain investors who are perfectly positioned for manufacturing and marketing.

[www.csem.ch](http://www.csem.ch)  
[www.limmex.com](http://www.limmex.com)



Watches with fashionable flair and integrated GSM mobile phone from Faaros AG.  
Limmex man's range.  
(Photo Faaros AG)



Limmex ladies' Range.  
(Photo Faaros AG)

## VI CTI Start-up – Facing the future with confidence despite the recession

28 +

Despite the difficult economic times, young entrepreneurs still had the courage to start up their own companies in 2009. The CTI received 143 applications for the coaching process, which represents an increase of 10% against the previous year. 92 start-ups met the CTI criteria and 70 ultimately fulfilled the preconditions for the coaching process. In total over 200 companies were supported in the coaching process, an average of around 20% more than last year. The CTI was able to award 25 companies the CTI Start-up label, which is a seal of quality in the eyes of investors and industry partners.

A significant factor in the success of CTI Start-up is the team of professional coaches behind it. They have practical experience in setting up and managing companies, foster contacts with the private sector and can adapt their support to the needs of the industrial sector of the fledgling company. They not only need to be competent specialists, but also skilled in psychology. "As a coach you have to possess the skills of an entrepreneur as well as bridging any skills that may be missing in the company team, you have to suggest measures to overcome them and support their implementation", explains CTI coach, Christian Brand. "Good coaching should not be a substitute for team performance but must promote the team's capabilities and development, identify risks and help to set the right priorities. The coach can only work successfully in an environment of mutual trust."

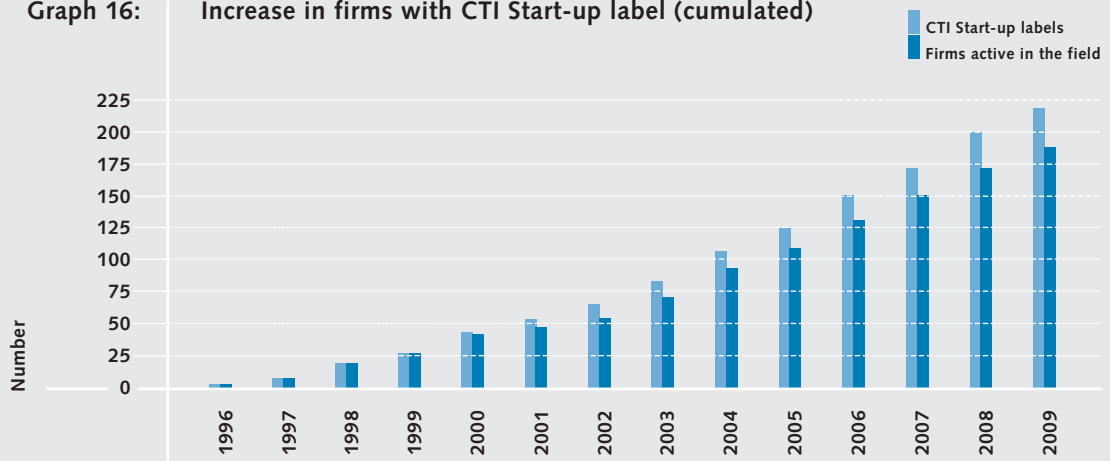
The coach introduces the start-up companies to the CTI network, which gives them access to experts in high-technology and to investors, as well as to foundations, technoparks and technology transfer centres. Under the auspices of CTI Invest, the private law CTI-initiative for investors, 34 start-ups were introduced to potential investors in the reporting year. These investors allocated almost CHF 30 million for initial financing of young entrepreneurs, which corresponds to some half of the venture capital allotted in 2008.

The CTI Start-up label is a door-opener to venture capital as well as to industrial partners. This year, the sought-after distinction was awarded for the 200<sup>th</sup> time since 1996.

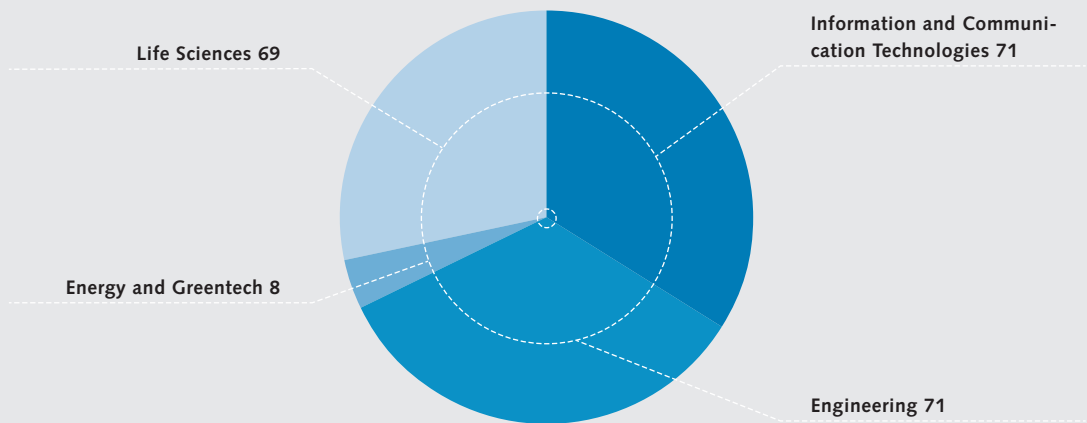
At an international level, CTI Start-up has cooperated with swissnex, Switzerland's field offices for science and technology. Swissnex San Francisco supported around 20 start-ups making contact with customers and business partners on the West Coast, and swissnex Boston created new positions that start-ups can take advantage of. CTI Start-up has also received international recognition for the quality of work performed. With 14 out of 100 winners, Switzerland came out on top at the "2009 Red Herring 100 Europe", which honours the most innovative young entrepreneurs in Europe each year. Of the Swiss Red Herring winners, 10 undertook CTI start-up coaching.

Numerous requests and visits to CTI from partners abroad underline the good reputation of CTI start-up promotion. The funding possibilities in connection with the experienced coaches and the support tailored to the individual requirements of start-up companies are of particular interest.

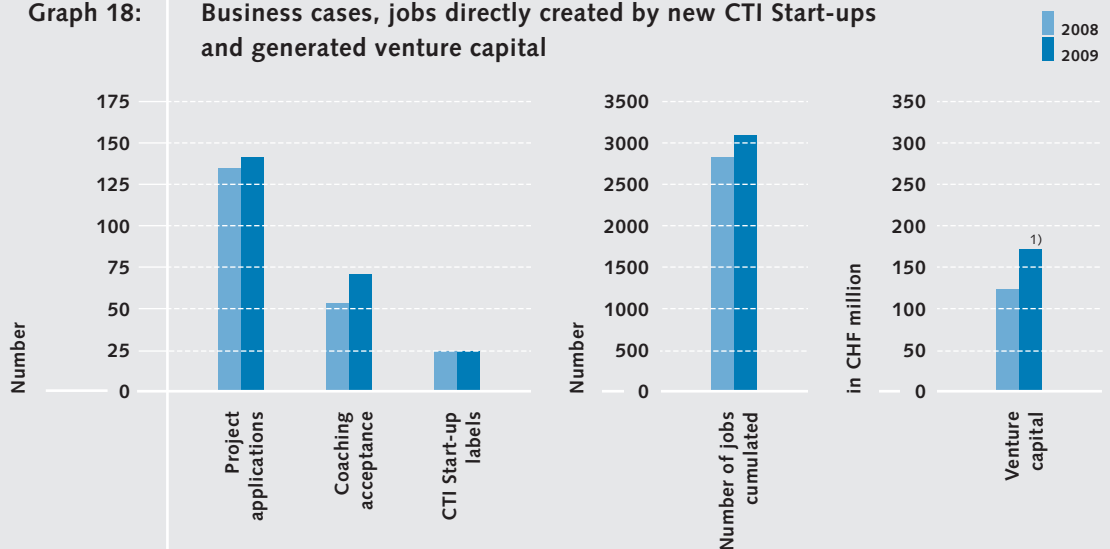
**Graph 16: Increase in firms with CTI Start-up label (cumulated)**



**Graph 17: Firms with label according to sector (total 219)**



**Graph 18: Business cases, jobs directly created by new CTI Start-ups and generated venture capital**



<sup>1)</sup> Missing data for 3 start-ups with larger investment volumes

## From scientist to entrepreneur

30 +

**Colon cancer is very common.** The probability of contracting this disease is one in two hundred for people over the age of fifty. What is more, the disease is insidious. As clinical symptoms only tend to develop after ten years, it is often discovered far too late for treatment to be effective.

Even so, no more than 20 per cent of the over-fifties have preventive check-ups. That is why the disease is often detected too late. The reason for this reticence for preventive check-ups is simple: Early detection is currently only possible with an unpleasant and complicated colonoscopy. Stavros Therianos is working with his Diagnoplex on a considerably more pleasant alternative. He has developed a blood test that detects colon cancer in the early phases. "Those who have a positive result with our test have a 98% probability of actually suffering from colon cancer", Therianos explains.

The company founder started on the development several years ago as an assistant professor at Rochester University in the USA. He improved an existing analytical technique for the detection of individual genes. Thinking of establishing a company, he returned to his birthplace in the French-speaking region of Switzerland. From the outset, Therianos had to face up to the challenges. Looking back, he explains "In recent years I have had to change from a scientist to an entrepreneur." Along with his experienced co-founders, an important party en route to the CTI Start-up label was played by the coaching programme. With the aid of the programme, he was able to gain comprehensive expertise, which extended from the financial sector to the topic of intellectual property. Even more important for the founder were the suggestions by the CTI coach on project presentation and conducting negotiations. Therianos is certain that "these tips were a decisive factor for the success of

our first major round of finance." Until the negotiations were finally completed, his coach had repeatedly encouraged him by providing him with information – with success: Diagnoplex was able to generate ten million Swiss francs from prominent investors, and did so in the midst of the financial crisis in autumn 2008. The money will enable Diagnoplex to make rapid progress in the next few years. At present, preparations are under way for a major trial of the Diagnoplex product with over 1,000 patients.

Therianos intends to bring his testing kit with the associated evaluation software onto the market by 2011. It is not just the high speed that ensures Therianos will be ahead of the competition. The product also benefits from leading expertise in two areas. In addition to Therianos' own know-how, it also incorporates research results from the field of colon cancer. These originate from Curzio Rüegg, the Director of the Centre for Experimental Oncology at the University of Lausanne. The CTI also assisted Diagnoplex in the combination of molecular biological and medical knowledge. The company carried out a feasibility study on its approach with Curzio Rüegg from the University of Lausanne as the scientific partner.

[www.diagnoplex.com](http://www.diagnoplex.com)



Stavros Therianos, founder  
and CEO of Diagnoplex  
(Photo Ben Huggler)

## VII CTI Entrepreneurship – An uninterrupted supply of entrepreneurs to be

32 +

“venturelab” is one of the CTI funding instruments which supports the “science to market” process. “venturelab” awareness-raising and training initiatives play an important part in the initial structuring of science-based business ideas. It supports the launch of spin-offs, generates a substantial deal flow for the CTI start-up coaching and gives CTI high visibility. Since 2004, the “venture challenge”, “venture plan”, “venture training” and “venture leaders” training modules have been flanking measures alongside the scouting of start-up talents with business ideas in the high-tech environment and their project-related and practise-relevant funding.

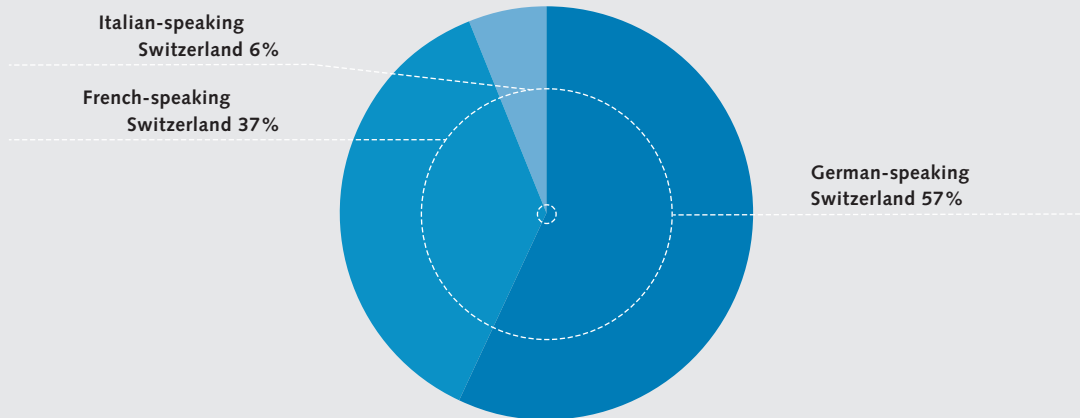
In the reporting year, 57 courses were run over a total of 346 course days. In terms of the educational background of the 2,800 course participants, 49% were graduates from universities of applied sciences (UAS), 27% graduates from federal institutes of technology (ETHZ/EPFL) and 24% graduates from universities. Since 2004, a total of over 13,000 students and start-ups have benefited from the opportunities to further develop their entrepreneurial ideas and projects.

Thanks to detailed approval criteria and a more restrictive selection process for course participants, the quality of promising projects has further increased. “venturelab” is closely dovetailed with the CTI Start-up coaching programme. The share of companies which have taken part in and passed “venturelab” courses increased to more than 62% in the reporting year. This represents an increase of around 15% compared to 2008.

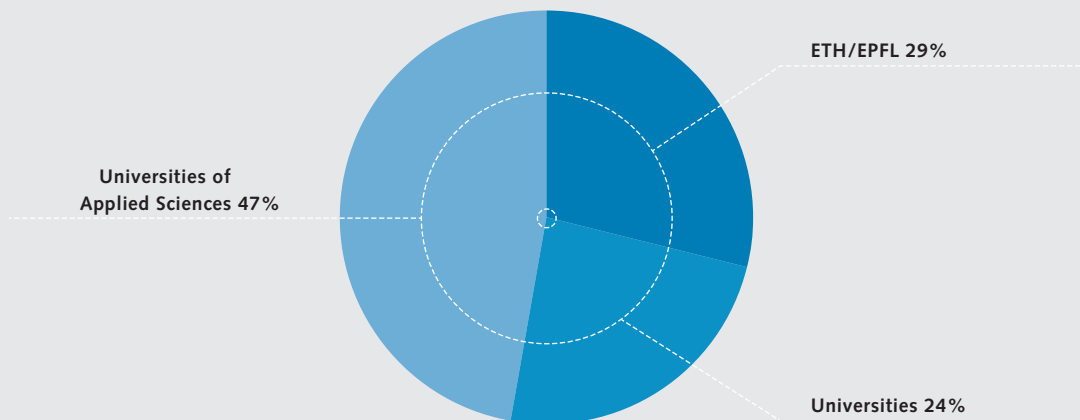
At the end of October 2009 “venturelab” launched a revised website with optimised presentation containing an outline of the courses offered and clearer selection and acceptance criteria. The testimonial approach with the presentation and opinions of previous participants is therefore a consistent feature of the new website.

CTI Entrepreneurship increased its presence and activities in Switzerland in 2009 and extended its base of cooperation partners and suppliers in entrepreneurship training at the university and UAS level. Various two-day seminars on topics such as company management, team management, communications and brand and patent rights were publicly tendered through the company “Business Tools”, which offers courses at the ETH Zurich. In October 2009, CTI Entrepreneurship once again organised a seminar for lecturers in entrepreneurship training along with the SME Institute at the University of St. Gallen. The aim was to create a lecturer platform for exchanging experiences of best practices in founder training.

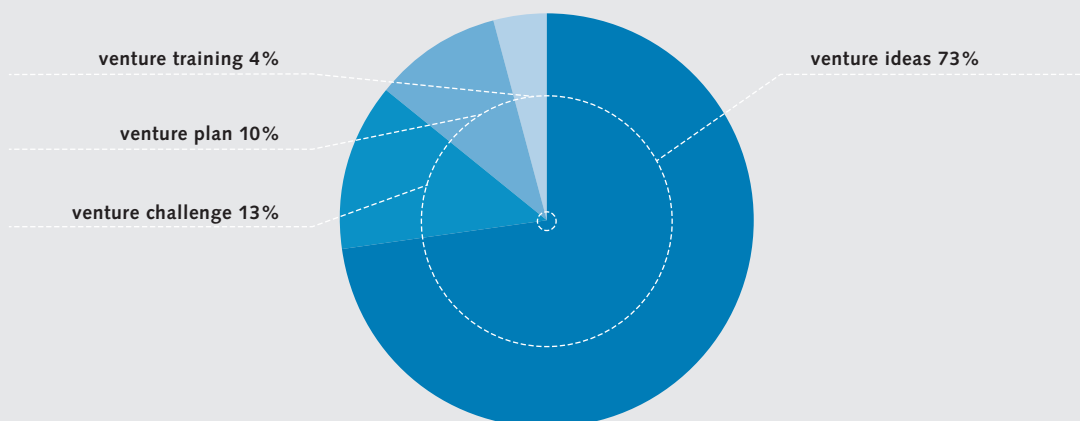
Graph 19: Participating students and Start-ups 2007–2009



Graph 20: Ratio of participants at universities 2007–2009



Graph 21: Ratio of participants at venturelab according to type of course 2007–2009



## “venturelab” helps with the breakthrough

34 +

**Green is in, even in the travel sector.** Jochen Munding spotted this trend and joined in at an early stage. His travel platform, routeRANK is successful and the start-up has since made international headlines. And not simply because routeRANK has repeatedly come up with new innovations and is able to attract well-known partners such as Nokia. “venturelab” has also contributed to this success. Munding perfected his business model and made many contacts at the 10-day intensive “venture leaders” course in Boston, which opened the door to investors and partners.

There are many online travel platforms, but not that many that take into account all factors of travel planning from CO<sub>2</sub> emissions and check-in times at the airport to price. And this is exactly what routeRANK does. Jochen Munding, founder of the French-Swiss start-up: “With a click of the mouse, routeRANK supplies all important details required for travel planning and a complete comparison of different routes. We will also show you how environmentally friendly the travel options are.” Thanks to a partnership with “myclimate” it has also recently become possible to conveniently offset the CO<sub>2</sub> emissions shown online. It is a solution that also appeals to large companies. Nokia, for example, uses the innovative online platform and the environmental organisation, WWF, has incorporated the services of routeRANK.

Travel specialists reckon routeRANK has great potential and are committing to the start-up accordingly. Klaus Töpfer, the former executive director of the United Nations Environment Programme, describes routeRANK as “an intelligent tool that enables users to make informed, environmentally-conscious decisions. This system allows informed travel decisions, which are not only efficient in terms of time and cost, but also benefit the environment.”

On the way up, routeRANK also received valuable support from “venturelab”. As well as the “venture challenge” semester course, Munding also attended the “venture leaders” business development programme in Boston in 2006. “That is where I really learned to sell my business idea. Pitch, pitch and pitch again was the motto”, says Munding, and he adds: “This training combined with the contacts that I was able to make through ‘venturelab’ gave routeRANK the impetus it needed and contributed decisively to our breakthrough.”

That the “venturelab” concept leads to success can also be seen in the winner listings from international and national press cuttings. Whether it is TechCrunch, the Swiss ICT Award, Red Herring or specific industry competitions: “venturelab” graduates are nearly always at the top. routeRANK is no exception: As well as the KPMG Tomorrow’s Market Award, the Microsoft ICT Award or the nomination for the “Best Cleantech/Environmental Startup (EMEA)” at TechCrunch routeRANK won “venture kick” start-up capital of CHF 130,000, among other things.

For Munding this was a successful start, which has encouraged him onwards. “We have never rested on our laurels but have always stuck with it and continuously improved our product. This will not change in the future.” This constant “striving for more” is also reflected in the short runtime of the start-up. Jochen Munding, an engineer, started up his company after completing the “venture challenge” semester course. The following year he was already able to bring the first completed beta version onto the market and move into his own office premises in the Science Park with his team. routeRANK also benefited from CTI projects and coaching. Since 2008 routeRANK has been an established player in the market and as Munding reveals, negotiations are currently underway with important partners who will push the start-up on even further.

[www.venturelab.ch](http://www.venturelab.ch)  
[www.routerank.ch](http://www.routerank.ch)



Jochen Munding (left) with  
some of his team  
(Photo Manuel Flury)

## VIII CTI KTT Consortia – A lively interest in the CTI sensitization campaign

36 +

Knowledge and technology transfer (KTT) between universities and companies is a matter of trust. Are my challenges in the innovation process of any interest for research? Where do I find the right university? Will my contact understand my business problem? What will the speed and trustworthiness of the expertise required be like?

Such questions and others are typical for many smaller and medium-sized companies in Switzerland, which face global innovative competition. Thanks to the transfer services of KTT consortia, the CTI KTT initiative has been able to build up support accordingly in the last few years. Today Switzerland has a unique network of KTT coaches in the shape of Alliance in western Switzerland, WKNW in northwest Switzerland, CHost in eastern Switzerland, W<sup>6</sup> in the central plateau, ITZ in central Switzerland, Ticinotransfer and the two thematic consortia, eco-net and energiecluster. This network of coaches undertakes an initial needs analysis in companies on matters of innovation and seeks for partnership solutions with universities.

The government's second stabilisation package presented a real test for the KTT consortia. In just under six months, KTT consortia organised and held 37 national and regional sensitization events on the topics of CTI flexible innovation funding, innovation checks, cleantech and smart materials, along with the R&D consortia. More than 3,000 representatives from companies and universities gained important impetus for their innovation, were motivated to cooperate with universities and informed about the special conditions of CTI funding. This work showed that, with its KTT networks, the CTI had competent and efficient communications and distribution channels in the regions and in industry.

The new regional policy (NRP) of the federal government and the CTI, for its part, benefited from the economic potential of KTT consortia via contact with new groups of clients. KTT coaches are also working on behalf of the new regional policy. With additional resources from the cantons from the new regional policy fund, they offer their consultancy services to those companies who do not have any contact with university research due to their peripheral location or previous business orientation.

The varied expertise and qualifications of coaches are decisive for their acceptance and success with clients. In 2009, the CTI therefore embarked on a pilot project training KTT coaches with regard to R&D cooperation. Surveys of the coaches involved show that these courses met with keen interest. The quality and expertise of the coaches remain key points for the CTI and KTT in 2010 because KTT is and remains a people business and a matter of trust.

As required for the quality of services of KTT consortia, an external evaluation will be shown which was commenced in December 2009. This process will be supported by an OECD evaluation, which will provide Seco and the CTI with important indications of where further improvement in KTT is possible and desirable.

# Alliance – no time lost in producing greater added value

SMEs in particular are extremely innovative in the main and they have no shortage of new ideas. But they often lack the knowledge to achieve optimum added value for a product or how to gauge which academic partner is the right one to make the technological leap. The CTI offers help in the shape of its knowledge and technology transfer (KTT) initiative, a network of regional and thematic consortia. They help to find the most appropriate partnership with researchers and help set up a CTI project quickly without too much red tape. The special feature here is that the “Pull coaches” of the KTT consortia take the SME's business model as their starting point and begin the search for a solution from the perspective of the SME's day-to-day challenges – not that of the university researchers. One example of this is a patented security code, which the Geneva SME, Algoril SA – a specialist in product piracy protection – aims to bring onto the market. “Our security code enables consumers to use their normal mobile phone to identify whether a brand label is an original or a counterfeit,” explains Frédéric Hahn, company founder and director of Algoril. The innovation has the potential to set new standards in the fight against product theft. In his search for a companion, Frédéric Hahn came across Marc Gandar at EPFL, a KTT coach with Alliance, the KTT consortium for French-speaking and Italian-speaking Switzerland, which can call upon the expertise of 6,000 researchers. The EPFL computer specialist gained experience in the industry in management roles and knew exactly how an SME functions. In discussions, the tangible needs for technology expertise became apparent. Marc Gandar introduced the Algoril CEO to Lucien Falco, who runs the optical laboratory at the Haute Ecole Arc. The professor worked away on the physical principle of the code, and worked out an image with non-copiable features invisible to the eye, which could nevertheless be read easily by a mobile phone camera. Algoril paid for the first stage from its own resources and was thereby able to demonstrate the feasibility of the project. The company then received an “SME innovation check” which the Innovation Promotion Agency CTI had launched as part of economic stabilisation measures. Algoril added another CHF 4,000 to the CHF 7,500 it received in order to produce a prototype. Aldo Salvi helped with this. He has been at the Haute Ecole Arc for 15 years and specialises in industrial vision. The professor set up a demonstration

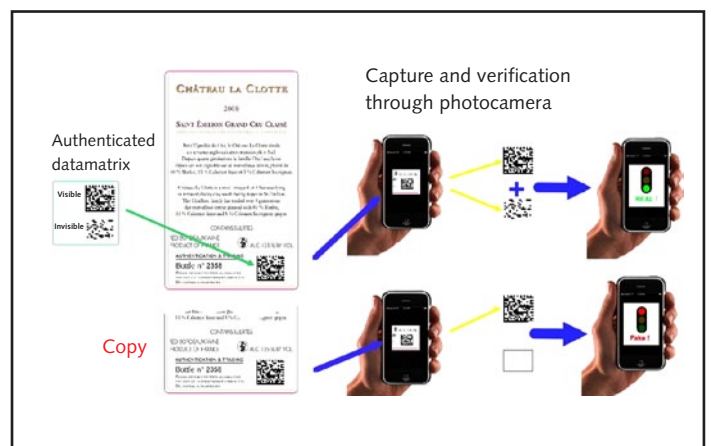
38 +

with a laptop and small camera, created the lighting and optics and developed software to read the security code. Equipped with this prototype, the CEO Frédéric Hahn contacted the first clients. And he found these straight away in the field of tobacco, textiles and cosmetics. It is clear to him: "It is only thanks to the support of the KTT network and CTI that we were able to work out convincing results in such a short time."

At the end of 2009, Algoril entered into a CTI project together with an industry partner and Professor Laurent Sciboz from the Institute for Economic Computer Science at HES-SO, Valais. Using his knowledge, the technology developed was integrated into the mobile phone and the product was completed ready for the market. Frédéric Hahn was also able to embed the universally deployable code into a network of services via the Internet. The user can follow the course of the product and be certain of the distribution channels and content. Algoril has thereby been able to develop a new value added chain – which is considerably more than the mere working out of technological expertise. This accords completely with the CTI KTT Initiative motto of making business innovations and business models the centre of their support to SMEs and thereby thinking in a market and customer-orientated way. Protection against brand fraud is the utmost priority, for it is not only the loss of jobs that is at stake but also peoples' health. International crime syndicates are not averse to deploying mafia methods, as there is more money to be made via product piracy today than from drug trafficking.

[www.alliance-tt.ch](http://www.alliance-tt.ch)  
[www.algoril.com](http://www.algoril.com)

TAM-TAM or how to verify the genuineness of a product using your mobile phone.  
 (Diagram Algoril SA)



# IX CTI R&D Consortia – Robust research networks

Just two years after the founding of the funding initiative for R&D consortia by the CTI, the initiative has clearly gained energy. Of the original 11 qualified national competence networks, six have changed of status to an R&D consortium and three have come into it new. The management team of the R&D networks is of the view that the “bottom-up” principle, whereby suggestions are made on project topics by the cooperation partners themselves, is successful. In order to be able to provide even more attractive offers to economic partners, the consortia and research institutes bundle their resources and infrastructure. The result for the SME is rapid and competent access to cross-topic knowledge as well as the latest technological status at a national and international level. The R&D consortia provide valuable support in working out solutions. The increased perception of R&D consortia as thematically orientated competence associations and as valued solution providers has led to an increase in R&D projects in universities – and with some delay also in business. A total of 72 R&D projects were launched, 42 of which were CTI projects. The total funding amount was CHF 25.1 million, and the CTI funding sum was CHF 15.6 million.

As the current R&D consortia are particularly active in the technical and scientific field, joint association strategies in the fields of services, social care and healthcare, and sustainable economic performance, could strengthen research and development. However, given Switzerland's limited size, its fragmentation into individual economic branches and to some extent the marked orientation towards niche markets, the potential and critical mass for R&D consortia is limited in the medium term.

# List of CTI-funded R&D Consortia

40 +

## **www.biotechnet.ch**

biotechnet Switzerland brings together the universities of applied sciences in Wädenswil, Muttenz and Sion and their expertise in research and development, as well as training and further training in services for the biotechnology industry, and it gives access to infrastructure and a wide range of high-level expertise in the biotech industry.

## **www.brenet.ch**

brenet (building and renewable energies network of technology) is a network established between Swiss universities of applied sciences and research institutes of the Federal Institutes of Technology and private institutions in building technology and renewable energies. Its requirement is to consider buildings as a whole giving particular consideration to environmental and economic factors to sustainably influence the building technology sector.

## **www.ecademy.ch**

The Ecademy is the national R&D consortium of Swiss universities, companies and public institutions for designing ICT-supported, sustainable business models and business processes. It combines training, research and practice to promote a competitive Switzerland in a globalised information and scientific society.

## **www.manufuture.ch**

ManuFuture-CH is the Swiss subsidiary of the European ManuFuture platform. The focus is the MEM Industry and related industries. SMEs in particular are being targeted, which are looking for contact with other companies in their segment, or for development partners. The manufacturing industry is the basis for successful product development in the medical technology, biotechnology, watch and clock, precision instruments, microtechnology and nanotechnology, energy technology and chemical/pharma industries.

## **www.netzwerkholz.ch**

In March 2000 the national competence network of the universities of applied sciences for the wood industry was founded by the Swiss University in Biel with 12 partners from all of the Swiss universities of applied sciences. The network

partners wish to cooperate primarily in research and development projects with the wood industry, and thereby deploy knowledge and expertise from almost 200 specialists in all parts of the country.

## **www.foodresearch.ch**

The R&D consortium, Swiss Food Research, is a network of publicly financed Swiss universities and research institutes, founded with the objective of promoting the competitiveness of the Swiss food industry and its suppliers. The Federation of Swiss Food Industries (FIAL) is also a member of the consortium.

## **www.swisslasernet.ch**

Swisslaser Net (SLN) is a not-for-profit organisation. It serves as a network of joint vision and growth for the photonics industry in Switzerland. The objective of SLN is to improve the competitiveness and growth opportunities of its members by promoting innovation, from science and technology to introduction on the market.

## **www.swiss.mnt.network.ch**

The Swiss MNT Network is an R&D consortium of public research and development institutions in Switzerland in microtechnology and nanotechnology. It helps industries that are searching for competences and expertise for their projects, to gain simple access to the latest knowledge, and enables original problem solving for industrial partners.

## **www.touespace.ch**

TourEspace is the national competence network for tourism and living space, with regional/local as well as national and international fields of activity. The objective is to increase the competitiveness of the tourist industry, promote development in tourism and living space and to make a contribution to sustainable development in the area of living space.

# Innovative success by pooling strengths

The CTI promotes R&D consortia as a partner of science and industry to pool the strengths of universities and resources in defined industrial and service sectors. This offers companies the opportunity to increasingly initiate high-quality CTI projects. One example of this is Swiss Food Research (SFR). The network of publicly financed Swiss universities and research institutions, established in February 2008, as well as the Federation of Swiss Food Industries (FIAL) intends to promote the competitive ability of the Swiss food industry and its suppliers. This was developed rapidly. In October 2008, the CTI acknowledged the SFR as an R&D consortium, in May 2009, the first "Swiss FoodTec-Day" took place in Schlieren, where 130 scientists and entrepreneurs met to exchange of ideas. In June, the SFR in Berne launched the "National Technology Platform, Food for Life, Switzerland" and its strategic research agenda 2009–2020, which internationally networks the consortium. In August 2009, the SFR recorded projects amounting to CHF 3.2 million of CTI funds, which considerably exceeded the initially targeted CHF 1.45 million. The "Swiss Food Net", as a partner of scientific organisations, federal authorities and Swiss universities and research institutions, complements the SFR, by coordinating and communicating further education events that are being provided by members. Just how such a SFR project deals with a current problem is evident from a collaboration initiated in spring 2009 between the Swiss College of Agriculture (SHL) and the Agroscope Liebefeld-Posieux (ALP) Research Institute. Over the past year, de-structuring phenomena have been occurring with raw and boiled ham. The meat falls apart when sliced and is thus unsuitable for sale. Up to 40% of each batch may be rejected, so that the consequential losses are around CHF 4.8 million per annum. It has not yet been possible to determine the reason for this de-structuring, although it is probably due to

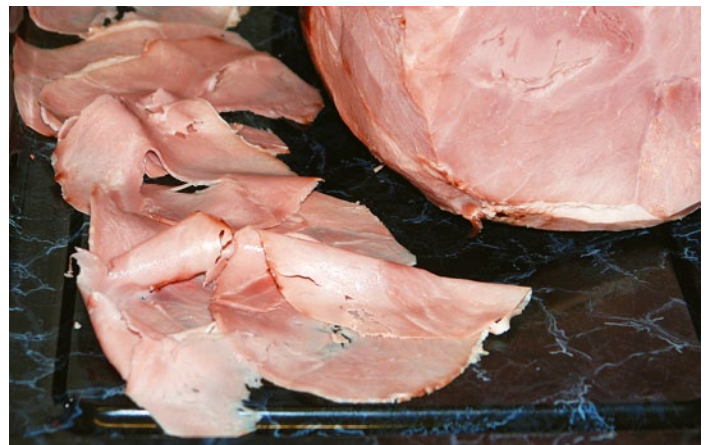
42 +

an interaction between various effects, in the processing, in animal-related factors, in aspects of the slaughtering or in the refrigeration technology. It has not yet been possible to initiate any steps, however a joint paper (De-structuring in boiled ham – results of a practical enquiry) by ALP and ETH Zurich dealt with this topic in 2005. The results of these investigations were picked up by SHL and ALP, so as to further develop these and put them into practice. For this, the SFR initiated a CTI project together with Proviande, the Industry Association of the Swiss Meat Industry, bringing together livestock owners, slaughterhouses, processors and sales organisations, as well as with SUISAG, the Swiss Service Centre for Pig Production. Possible action throughout the process chain of pig production and meat processing is being jointly investigated. This ranges from the choice of genetics, feed procedures, treatment of the animals, meat production and processing to a combination of all parameters. Also to be investigated is whether a lighter colour of meat, i.e. a fault in the meat, which leads to de-structuring during further processing, is visible by means of a probe for measuring reflection and conductivity within the muscle. The objective of the CTI project is to be able to advise breeding businesses and slaughterhouses in future so that they can take precautions to reduce losses by 80%.

[www.foodresearch.ch](http://www.foodresearch.ch)  
[www.shl.bfh.ch](http://www.shl.bfh.ch)  
[www.agroscope.admin.ch](http://www.agroscope.admin.ch)

In the CTI project, researchers investigate the phenomenon of de-structured boiled ham, which for unexplained reasons falls apart when sliced, thus resulting in considerable losses.

(Photo Elsbeth Heinzelmänn)



# X CTI Diversity Management – New initiative, “Diversity@CTI”

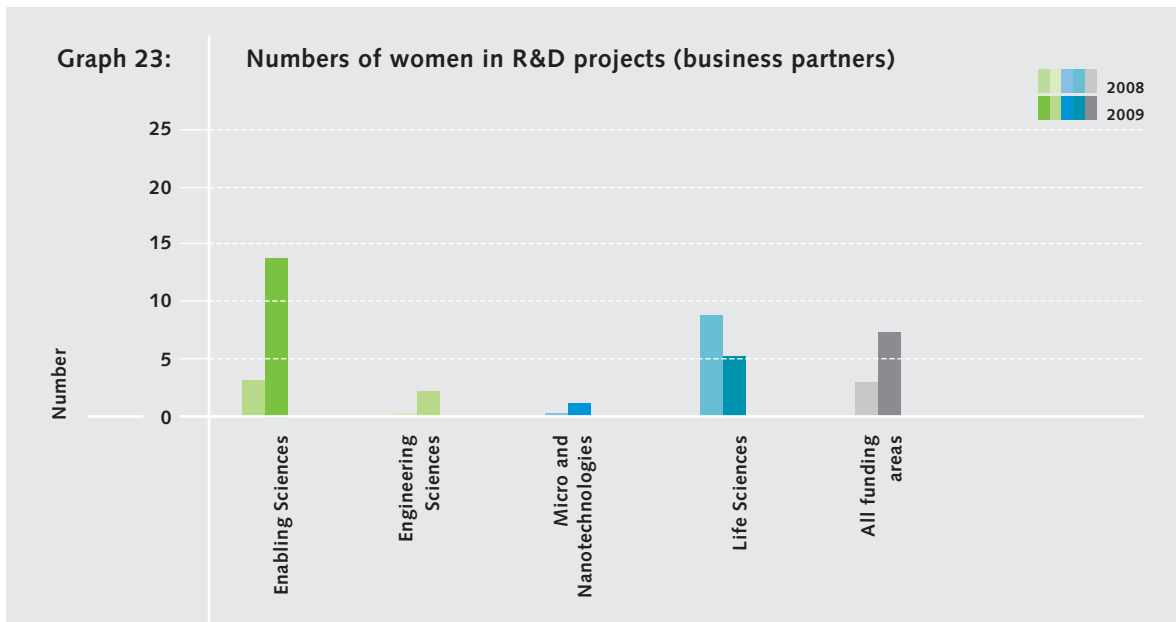
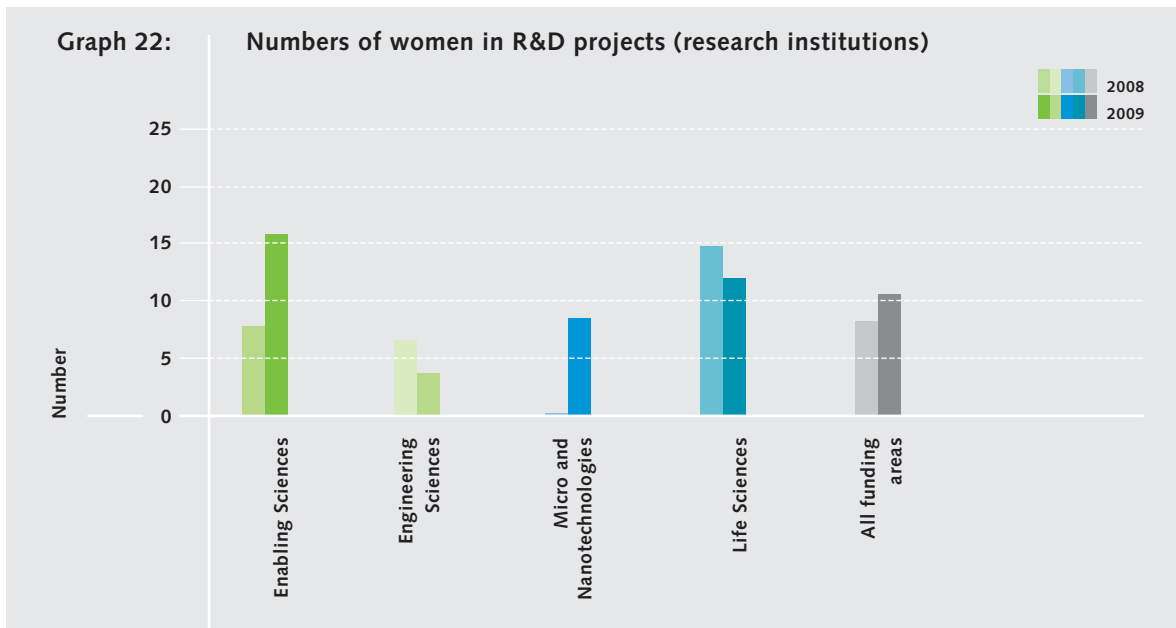
Innovation thrives on variety, on the breadth of ideas and thus from the diversity of people in our working environment. Importantly, part of this is the potential of women. On this point, Switzerland is a long way from the top international rankings, which it otherwise occupies in matters of innovation and competitiveness.

The CTI is faced with low participation on the part of women in research and business. The proportion of women in the Expert Teams at CTI is 15% for R&D project promotion and 10% for start-up coaching, including the members of the Coaching Certification Board (CCB). There are many reasons for this.

As the chart below shows, the proportion of women working on approved R&D projects across all research institutions has increased only slightly from 2008 to 2009, by just under 3%.

A clearer picture is shown by the participation of women in industry or implementation partners: Only 7% of all applicants from business are female. With regard to the research institutions as well as implementation partners, the share of women in the areas of enabling sciences and life sciences is somewhat higher. The spotlight here is on social work and health as well as pharmacy and biotechnology as fields of activity, in which the proportion of women in research and the working environment is generally higher. In those companies which have been accepted for the first stage of the coaching process (admissions) the proportion of women in start-up promotion is just under 15%, and for CTI Start-up label companies it is around 13%.

The participation of women as experts and start-up coaches as well as researchers and founders can and must be increased. That is why the Diversity@CTI initiative was launched in 2009. In order to raise awareness of the CTI funding programmes among women and to motivate them, a film has been published on the new Diversity@CTI website presenting the CTI's funding opportunities, from R&D and start-up funding to working as an R&D expert or coach in addition to information and networking events.



# The instruments of the Innovation Promotion Agency CTI

## **R&D promotion**

The CTI stimulates cooperation between science and industry through the annual financing of several hundred projects in application-orientated research and development. It thereby helps those scientists who wish to jointly convert their research results into successful products and services in cooperation with companies.

## **CTI Start-up**

Young entrepreneurs often have inspiring ideas but frequently lack the experience to set up a new company. CTI Start-up can offer support. In a four-stage process, more than 40 experienced coaches can accompany the start-up, to help them on their way to becoming their own company and positioning themselves on the market. To come through the hard coaching process is to aspire to the CTI Start-up label, which marks the young company as ready for sustainable growth or venture capital financing.

## **CTI Entrepreneurship**

The CTI offers help, with its Entrepreneurship initiative, to build up a culture promoting the entrepreneurial spirit and develop readiness to take risks. With "venturelab", it offers young entrepreneurs a modular set of services to help them on their way to independence. The spectrum ranges from motivational events – "venture ideas" to semester courses – "venture challenges" and five-day instruction on strategy development – "venture plan" to "venture training", where participants can optimise their business plan.

## **R&D Consortia**

As synergies between universities and industrial partners in R&D associations bring particularly innovative results, CTI promotes R&D consortia in a targeted way. These consortia offer quick and simple access, particularly for SMEs, to the latest knowledge from public research institutions and smooth the way for them to conquer new markets.

## **KTT Consortia**

Since 2005, the so-called KTT consortia have been available to interested parties across the whole of Switzerland. They stimulate knowledge and technology transfer by enabling contact between research institutions and by opening up access to specifically required university knowledge via consultancy from specialists. The KTT consortia therefore work closely with R&D consortia amongst others.

# CTI Start-up Coaches

## Coaching Team East

### Director

Dr Urs Althaus, Ortschwaben (ICT)

### Coaches

Jean-Jacques Becciolini, Geroldswil (Eng./Intd)  
Christian Brand, Bern (ICT)  
Peter Cairoli, Füllinsdorf (Eng./Intd)  
Ulf Claesson, Wettswil (General management)  
Dr Silvano Cometta, Wallisellen (LS/MD)  
Dr Pierre Comte, Kilchberg (LS/MD)  
Sandro Cornella, Zurich (ICT)  
Alberto De-Lorenzi, Bioggio (ICT)  
Dr Marcos Garcia Pedraza, Menzingen (LS/MD)  
Paola Ghillani, Zurich (Eng./Intd)  
Henning Grossmann, Baar (ICT)  
Christoph Heidelberger, Zurich (ICT)  
Dr Jost Harr, Witterswil (LS/MD)  
Prof Martin J. Horst, Hergiswil (LS/MD)  
Dr Paul Kleiner, Attinghausen (ICT)  
Dr Monika Krüsi, Zollikon (ICT)  
Dr Markus Oswald, Schwyz (Eng./Intd)  
Hans Oury, Zug (ICT)  
Nicolas Perrenoud, Biel-Bienne (Finance)  
Jean-Philippe Rickenbach, Meilen (Finance)  
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Eugen Stalder, Zurich (Eng./Intd)  
Dieter von Schulthess, Blauen (General management)  
Jean-Pierre Vuilleumier, Mörigen (Finance)  
Josef Walker, Chur (LS/MD)  
Beat Walther, Zurich (ICT)  
Christian Wolf, Vaduz (Eng./Intd)  
Martin Wyttenbach, Cham (Eng./Intd)

### Abbreviations:

LS/MD (Life Science/Medical Devices)  
ICT (Information & Communication Technology)  
Eng./Intd (Engineering/Interdisciplinary)

## Coaching Team West

### Director

Faris Sabeti, Versoix (ICT)

### Coaches

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Dr Benoît Dubuis, Plan-les-Ouates (LS/MD)  
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Mahmud Samandari, Vessy (ICT)  
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Tomas J. Svoboda, Geneva (LS/MD)  
Paul-André Vogel, Sion (Eng./Intd)  
Jean-Marc Wismer, Lausanne (LS/MD)

## CTI Certification Board

Dr Urs Althaus, Ortschwaben  
Brigitte Baumann, Zurich  
Dr Martin A. Bopp, Basle  
Jan Burger, Zurich  
Prof Fritz Fahrni, Zurich  
Prof Denis Hochstrasser, Geneva  
Beth Krasna, Chêne-Bougeries  
Dr Bruno Oesch, Stilli  
Prof Jane Royston, Founex  
Jakob Schlapbach, Oberrohrdorf  
Prof Beda Stadler, Bern  
Ernst Uhlmann, Diessenhofen

# CTI Teams of Experts

## Enabling Sciences

### Director

Dr Martin Müller, Unterlunkhofen

### Members

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Janine Graf, Stäfa  
Dr Paul-Eric Gyax, Steffisburg  
Dr Matthias Kaiserswerth, Rüschtikon  
Reiner Lustenberger, Richterswil  
Dr Fiorenzo Scaroni, Minusio  
Dr Pascal Sieber, Berne  
René Sommer, Morges  
Walter Stulzer, Zurich  
Beat Sutter, Walchwil  
Dr Rolf Wohlgemuth, Zurich

---

## Micro- and Nanotechnologies

### Directors

Dr Raymond Zehring, Muttens  
Prof Dr Martina Hirayama, Winterthur

### Members

Dr Marc Degrauwe, Chez-le-Bart  
Prof Dr Alex Dommann, Neuchâtel  
Pierre Fazan, Lonay  
Andreas Reber, Biel-Bienne  
Dr Markus Rossi, Rüschtikon  
Prof Dr Louis Schlapbach, Muri  
Dr rer. nat. Berthold Schmidt, Jona-Kempraten  
Prof Dr Urs Stauer, CD Delft  
Prof Dr Marcus Textor, Zurich

## Engineering Sciences

### Director

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Dr Bruno Covelli, Wohlen  
Dr Roland Gallay, Farvagny-le-Petit  
Prof Dr Jacques Giovanola, Lausanne  
Prof Dr Lino Guzzella, Zurich  
Dr Stefan Nowak, St. Ursen  
Dr Pieer Pahud, Le Landeron  
Dr Martin Riediker, Basle  
Prof Dr Philipp Rudolf von Rohr, Zurich  
Dr Rolf Schmitz, Ittigen  
Daniel Zürcher, Ittigen  
Dr Fabian Zwick, Bützberg

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## Life Sciences

### Director

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Peter Brunner, Rüfenacht  
Prof Dr Ruth Freitag, Lausanne  
Dr med. Françoise Rampelberg, Zofingen  
Prof Dr Oreste Ghisalba, Reinach  
Dr Barbara Keller, Thayngen  
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Prof Dr Dolf van Loon, Oberhasli  
Prof Dr Erich J. Windhab, Zurich  
Prof Dr Hans-Jörg Zweifel, Unterengstringen

# WTT-Expertenteam, F&E-Konsortien, Diversity Management

## KTT Team of Experts

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Dr Andrea Degen, Zurich  
Charles Phillot, Granges-Paccot  
Dr Fiorenzo Scaroni, Minusio  
Rudolf Schiess, Berne  
Regula Egli, Berne  
Prof Dr Rudolf Minsch, Zurich

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## R&D Consortia

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Dr Fiorenzo Scaroni, Minusio

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## Diversity Management

### Director

Dr Brigitte Baumann, Zurich

—

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