swiTTreport 2017

SWISS TECHNOLOGY TRANSFER REPORT

swiTT
swiss technology transfer association

CONTENTS

SUMMARY

The annual survey „swiTTreport" is the most comprehensive analysis of the technology transfer activities of Swiss public research organisations (PRO). The report covers two main areas, a) research collaborations of the participating institutions with private or public partners, and b) the activities for the economic exploitation of research results from these institutions. The Swiss PRO interact very actively with partners in the economy. These activities are collectively designated in the report as "technology transfer" (TT) activities. With regard to scientific disciplines, the report mainly focuses on the areas of life sciences, natural sciences and engineering sciences.

Data on technology transfer activities from eight cantonal universities and the two Federal Institutes of Technology (collectively Universities), from six universities of applied sciences (UAS), and three research institutions of the ETH domain (RI) were available for this year's report.

Although the evolution of the data over the years is reported, caution should be taken when comparing these. Missing or incomplete data from some institutions introduce a bias into the year on year evolution and lead to a clear underestimation of the real situation. The respondents reported their results to swiTT voluntarily based on the questionnaire mentioned in Appendix 4, and the data presented in this report is based on the responses provided as is.
For reasons of confidentiality, the report mainly contains aggregated numbers (Appendix 2). However, some of the key parameters are presented on an individual basis for those institutions that agreed to do so (Appendix 3).

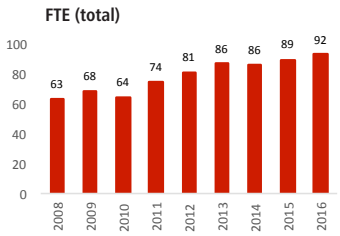
On account of the differences in mission, organisation and objectives of the three types of institution (Universities, UAS, RI), their data are reported separately.

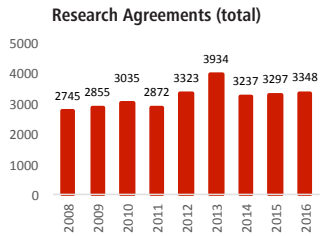
Overall, the respondents reported the following indicators on technology transfer activities in 2016:

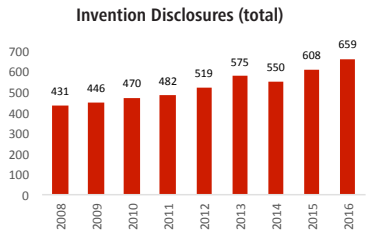
3348 New Research Projects
659 Invention Disclosures
343 Patent Applications
251 License & Option Agreements
74 Start-Ups founded

Larger companies (> 250 employees) and public institutions are the most common cooperation partners of Universities, while RI and UAS partner mostly with small and medium sized companies (SME) and public organisations. With over 90% of all patent applications filed and of all licenses concluded, universities account for most of the commercialization activities.

The collaborative culture between academia and industry in Switzerland and the technology transfer performance of Swiss universities and other PRO are important location factors for industry. Easy access to academic researchers and well defined technology transfer processes are important criteria for companies to invest in and to relocate their business to Switzerland. Maintaining a system which is based on fair partnership between academia and industry together with continuous process optimization will be important aspects to further strengthen Switzerland's leading position in the international context.

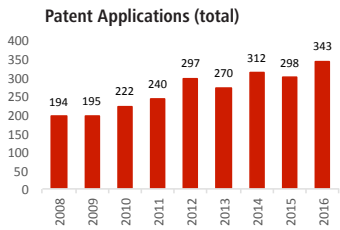


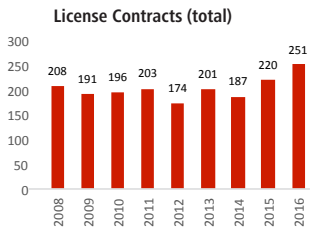


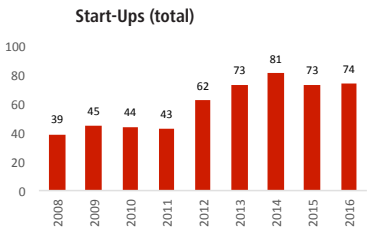


Data of the last nine years showed a solid outcome of the TT activities in Switzerland.

FTE = Full Time Equivalents







RÉSUMÉ

L'analyse présente est la plus exhaustive connue sur les activités de transfert de technologies réalisées par les institutions publiques de recherche suisses. Le rapport couvre deux aspects principaux: les collaborations de recherche de ces institutions avec des partenaires privés ou publics et les activités liées à la valorisation des résultats de recherche obtenus par ces institutions avec ces partenaires. Ce rapport désigne collectivement ces collaborations et activités de valorisation sous les termes de transfert de technologies (TT). L'analyse révèle que les institutions suisses coopèrent très activement avec les entreprises et que les activités de TT sont présentes dans tous les domaines technologiques et scientifiques, avec une plus grande représentation dans le domaine des sciences de la vie et de l'ingénierie.

Ce rapport s'appuie sur les données relative aux activités de TT telles qu'indiquées en réponse au questionnaire mentionné à l'Appendix 4. Ces données proviennent de huit universités cantonales et deux écoles polytechniques fédérales (Universités), de six universités de sciences appliquées (UAS) et de trois institutions de recherche dans le domaine des Ecoles Polytechniques Fédérales EPF (RI). Il est à noter que certaines données transmises sont incomplètes ou partielles et que les chiffres présentés dans ce rapport sous-estiment probablement la situation réelle. Par ailleurs, les données de plusieurs institutions n'étaient pas disponibles ou étaient trop fragmentaires pour être incluses. Une comparaison entre les chiffres de l'année 2016 et les années précédentes est fournie pour la plupart des données. A noter qu'une telle comparaison doit être considérée prudemment pour les raisons mentionnées ci-dessus.

Les personnes (en général les responsables des offices de transfert de technologies) ont communiqué à swiTT leurs données annuelles sur une base volontaire. Pour des raisons de confidentialité, ce rapport contient principalement des données accumulées (Appendix 2). Certaines données importantes peuvent toutefois être présentées individuellement quand les institutions ont donné leur accord (Appendix 3).

Compte tenu des différences de missions, d'organisations et d'objectifs des trois types d'institutions analysées ici (universités, UAS, RI), leurs données sont présentées séparément. Dans l'ensemble, les personnes interrogées ont communiqué les chiffres clés suivants sur les activités de TT en 2016:

3348 Nouvelles collaborations de recherche
659 Déclarations d'invention
343 Demandes de brevets
251 Contrats de licence et accords d'option
74 Création de start-ups

Les grandes sociétés (>250 employés) et les institutions publiques sont les partenaires externes les plus fréquents des Universités. Dans le cas des RI et des UAS, la majorité des partenaires externes sont des petites et moyennes entreprises PME (≤ 250 employés) ainsi que les organisations publiques.

Plusieurs études internationales confirment une culture de collaboration bien implémentée entre les milieux universitaires et économiques en Suisse et l'excellente performance des institutions de recherche publiques suisses dans le domaine du transfert de technologies TT. Des règles et pratiques définies en matière de TT constituent des critères importants pour les entreprises qui envisagent de collaborer avec les institutions ou de s'établir en Suisse. Ces pratiques visent à des partenariats équilibrés et motivants entre les milieux universitaires et les entreprises et l'adaptation et l'évolution de ces pratiques sont essentielles pour maintenir, renforcer la position économique de la Suisse à l'échelle internationale.

Voir figures 'données des 9 dernières années' en page 3.

ZUSAMMENFASSUNG

Der jährlich publizierte "swiTTreport" ist die umfassendste Analyse der Technologietransferaktivitäten öffentlicher Forschungsinstitutionen (PRO) in der Schweiz. Dieser Bericht umfasst zwei Hauptbereiche, Forschungskooperationen mit der Wirtschaft und wirtschaftliche Verwertung von Forschungsergebnissen. Diese Aktivitäten werden häufig auch unter dem Begriff „Technologietransfer" zusammengefasst. Der Bericht zeigt, dass die schweizerischen PRO sehr aktiv und erfolgreich mit der Wirtschaft interagieren. Die in der Analyse erhobenen Daten beziehen sich vorwiegend auf die Fachbereiche Life Sciences, Naturwissenschaften und Ingenieurwissenschaften.

Der Bericht umfasst die Aktivitäten von acht kantonalen Universitäten und der beiden ETHs (zusammengefasst unter "Universitäten"), von sechs Fachhochschulen („UAS") und von drei Forschungs-institutionen des ETH-Bereichs („RI").

Allerdings waren von einigen Institutionen nur Teildaten aus einzelnen Bereichen bzw. generell sehr fragmentarische Angaben verfügbar, so dass die effektiven Aktivitäten substanziell höher sind, als in diesem Bericht zusammengefasst. Daten einiger Institutionen waren so unvollständig, dass sie gar nicht berücksichtigt werden konnten. Dies führt dazu, dass die Daten mit jenen von früheren Jahren teilweise nur beschränkt vergleichbar sind.

Die teilnehmenden Institutionen rapportierten die Resultate an swiTT auf freiwilliger Basis und die Daten wurden wie berichtet verwendet. Aus Vertraulichkeitsgründen enthält der Bericht vorwiegend aggregierte Zahlen (Appendix 2). Einige Kennzahlen werden auch auf individueller Basis publiziert, allerdings nur für jene Institutionen, die einer solchen Publikation zugestimmt haben (Appendix 3). Die Daten der unterschiedlichen Arten von Institutionen (Universitäten, UAS, RI) werden im Bericht separat zusammengefasst.

Insgesamt rapportierten die teilnehmenden Institutionen die folgenden Kennzahlen über ihre Technologietransferaktivitäten im Jahr 2016:

3348	Neue Forschungsprojekte
659	Erfindungsmeldungen
343	Patentanmeldungen
251	Lizenz- & Optionsverträge
74	Start-ups gegründet

Grosse Firmen (>250 Angestellte) und öffentliche Institutionen sind die häufigsten Kooperationspartner der Universitäten, während es an den RI und UAS vor allem kleinere und mittlere Unternehmen (KMU) und öffentliche Institutionen sind.Die Universitäten sind für die meisten Aktivitäten im Bereich der wirtschaftlichen Umsetzung von Forschungsergebnissen verantwortlich (über 90% der Patentanmeldungen und der Lizenzen).

Die kooperative Kultur zwischen Industrie und Hochschulen in der Schweiz und die ausgezeichneten Transferleistungen der öffentlichen Forschungsinstitutionen sind auch ein wichtiges Kriterium für den Standortentscheid von Firmen. Die weitere Stärkung des partnerschaftlichen Verhältnisses zwischen Hochschulen und Industrie und der entsprechenden Prozesse sind wichtig, um die führende Rolle des Innovationsstandorts Schweiz auch künftig beibehalten zu können.

Eine graphische Zusammenfassung der TTO-Aktivitäten der letzten 9 Jahren befindet sich auf Seite 3.

1. PARTICIPATING INSTITUTIONS AND DATA COLLECTION

Two Swiss Federal Institutes of Technology (ETH) and eight cantonal universities (collectively "Universities"), nine universities of applied sciences (UAS), and three research institutes (RI) in the ETH domain were contacted in spring 2017 and asked to provide data on their technology transfer (TT) activities for the year 2016. The expression "technology transfer" used in this report covers the activities of these institutions with regard to research collaborations with partners from the economy and the commercialization of research results for the benefit of the economy and society overall.

The questionnaire was returned by all members of Universities and RI, as well as individual departments of seven UAS. The data show that the handling of research collaborations with economic partners and other TT activities varies substantially among different institutions. Of note: not all of them were able to provide a comprehensive overview. *Thus, the data provided in this report are not complete and only summarize the figures reported, while the actual activities at the interface of academia and economy are presumably higher.* Appendix 1 shows the institutions that participated in the survey and comments on the comprehensiveness of the data provided.

The swiTTreport is the most comprehensive study in Switzerland on TT activities of academic and other PRO. The report mostly provides aggregate data for the three types of institutions covered in this survey. For those institutions that agreed to disclose individual data some key figures are listed in Appendix 3.

Comments on data received by the different types of institutions:

Universities

At several universities, only contracts for collaborative research projects with economic partners above a certain threshold need to be signed by university management. Therefore, not all collaborative projects can be reported by such institutions. At some universities, technology transfer offices (TTO) only handle a part of the collaborative research projects with economic partners. Activities in research and TT at university hospitals are usually closely linked to the respective university, hence the services of these transfer offices are also available to researchers at the hospitals. Data from the hospitals are included in the report, but not all are complete. For example, data from several hospitals do not include clinical research activities.

UAS

The management of TT activities at the UAS varies widely among institutions and individual departments. Some departments or schools have professionals working in a centralized TTO and are able to provide comprehensive data. At other departments or schools, no centralized support functions exist and data are fragmentary or completely lacking.

RI

The research institutions that participated in the survey have centralized support functions providing TT services for the researchers although the scope of services provided differs.

2. INSTITUTIONAL RESOURCES FOR TECHNOLOGY TRANSFER

2.1 Services Provided

All University TTO are handling contracts for research collaborations. However, at several Institutions the finalization of research agreements by the higher management is not mandatory, or not all contracts are covered (eg. contracts for EU project or contracts < 50k CHF excluded). All University TTO deal with the handling and commercialization of intellectual property (IP), which includes the evaluation of the commercialization potential of products or services based on research results, the protection and management of IP, and the licensing or sale of IP to industrial partners. Eight of nine TTO at Universities also provided support for the coaching of start-up projects.

Four of six UAS TTO and all RI TTO offer support for research collaborations. Five out of six UAS TTO and all TTO of RI deal with the management of IP. The commercialization of IP is supported by all RI TTO but only by two UAS TTO. Coaching of start-up projects is offered by two UAS TTO and one RI TTO.

2.2 Staffing

Staffing refers to the number of full-time equivalents (FTE) employed for TT activities at an institution. These are professionals such as licensing, IP, technology or research contract managers and administrational staff, whose main occupation is in the area of technology transfer. Their activities cover the drafting and negotiating of research and cooperation agreements, IP management, patent portfolio management, patent, technology licensing and other TT activities. Part of the staff may also be involved in the coaching of start-up projects. To be reported here, the TT activities must account for at least 20 % in this person's job description. The total number of FTE in technology transfer at the participating institutions slightly increased to 92 (+4%) in 2016. The average size of the responding offices is 5.4 FTE with the largest TTO reporting 16.2 FTE. TTO typically collaborate with external patent firms for the drafting, filing and prosecution of patent applications and may address specific legal issues to external attorneys. Several TTO also outsource legal issues to external attorneys. At some institutions, start-up projects are handled by dedicated organisations such as business incubators. Study agreements for sponsored clinical trials at university hospitals are dealt with by the legal departments in several institutions. Thus, the actual number of people supporting the TT activities is larger than the number of FTE reported for the TTO.

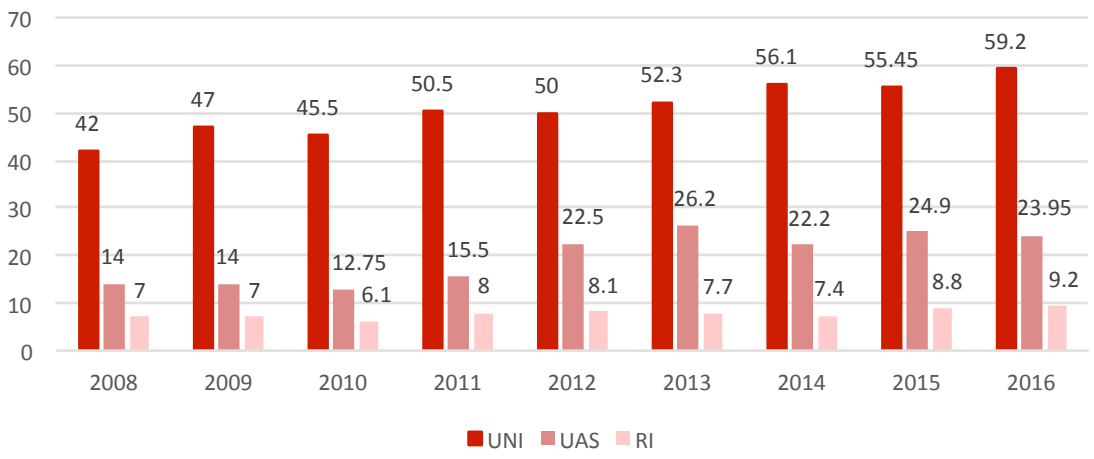


Fig.1: Development of Staffing Level Full Time Equivalents (FTE)

3. RESEARCH COLLABORATIONS WITH PARTNERS FROM THE ECONOMY

3.1 Research Agreements Handled by the TTO

In 2016, the TTO handled contracts for a total of 3'348 research projects with economic partners, a plus of 2% over the previous year. However, in view of the incomplete data provided by the institutions the year on year comparison should be taken as an approximation.

For the Universities the number of new cooperative research projects rose to 2'465 (7%). The RI reported 441 (+5%) projects and the participating UAS 442 (–23%). Unfortunately only a minor percentage of data on TT activities in UAS is available for this report. Therefore, the figure cannot be compared easily with previous years. The lack of data results in a significant underestimation of the real situation. Research collaborations between academia and industry are a key aspect of TT, they do indeed represent various possible benefits to academia and the economy. They not only allow industry to access the know-how and infrastructure of academia, companies also gain access to academic talents through such collaborations.

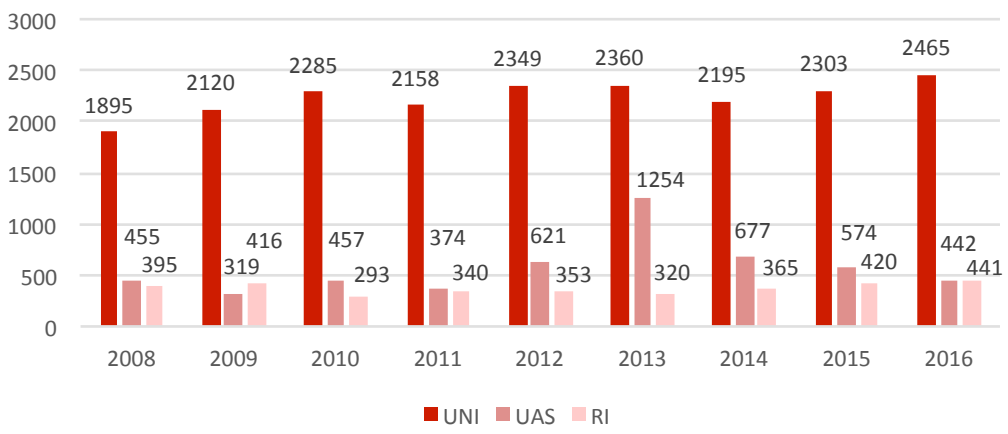
Likewise, academic labs can also benefit from the know-how and infrastructure of the industrial partners. In addition, the funding of joint projects by partners from the economy may account for a significant contribution to the research budgets of certain PRO. Such collaborations are also a great opportunity to feed and enrich each other in cutting edge innovation areas. In this context, research collaborations are most important for TT.

For the collaborative research projects handled by the TTO, survey respondents reported total cash contributions in 2016 over 388 million CHF (+6%). The average cash contribution per project is 121'709 CHF in 2016 and shows an increase in average project value by 14% compared to the previous year. The average cash payments per project at UAS nearly doubled from 61'470 CHF in 2015 to 112'909 CHF in 2016 (+83%). The average contribution per project at Universities was 104'500 CHF (+7.8%), and at RI's 221'374 CHF (+1.7%). Please note that not all institutions provided numbers for the amount of cash payments they received.

In addition to research collaborations, TTO handle other types of agreements which foster the cooperation between academia and economic partners, such as consulting agreements, material transfer agreements (MTA), and non-disclosure agreements (NDA). In 2016, the institutions reported altogether 2'925 (+0.6%) such other types of TT agreements.

In general TTO experience an increase of complexity of the collaborations. Encouraged by funding agencies and translational initiatives, collaborations tend to include more partners. Together with growing expectations in terms of governance this reinforced the role of the TTO, but also puts more strain on them.

Fig. 2:
Number of Research Agreements and EU Contracts handled by TT Offices



3.2 Type of Collaboration Partners

With regard to the type of collaboration partner, the small- and medium-sized enterprises (SME), i.e. companies with fewer than 250 employees, account for 22% (2015 16%) of total projects reported. Higher numbers of projects were performed with large companies (27%), and with public institutions (36%). The latter including other public national or international research organisations.

If one considers only collaborative projects with the private sector, SME account for 45% (2015 37%) of all projects with commercial partners.

Both UAS and RI have multiple partners per project or do not specify the type of partner for a high percentage of the projects.

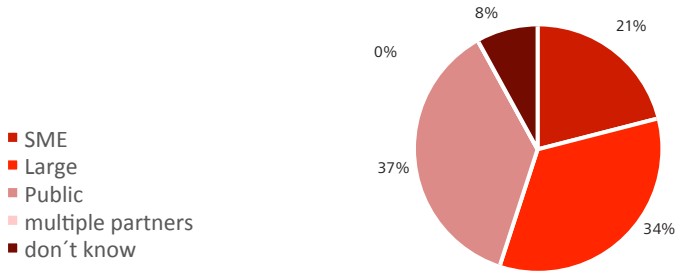


Fig. 3a:
Partners in Research Projects of Universities in 2016

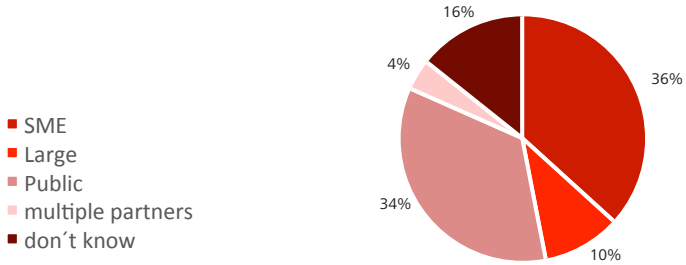


Fig. 3b:
Partners in Research Projects of UAS in 2016

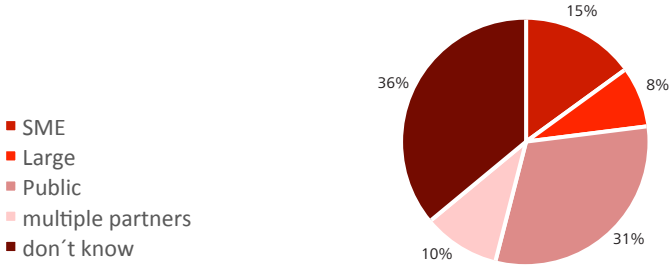


Fig. 3c:
Partners in Research Projects of RI in 2016

CASE STUDY

RESSOBOIS – WOODEN BOXSPRING

Berner Fachhochschule

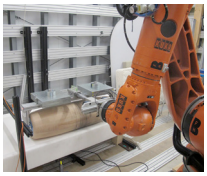
Elite LITERIE D'EXCEPTION

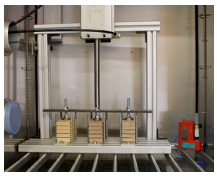
Problem – Challenge

Sleep is one of the essential part of our existence. Nowadays our sleep is disturbed by many factors like noise, indoor air quality, light and electrosmog. Customers's demand is increasingly oriented to the use of fully natural materials in order to replace metal and plastics in bed systems. Elite SA and the Institute for materials and wood technology of the BFH have been together studying the possibilities to replace flexible metallic parts in bed by wooden elements. This represents several technical challenges: the element should have an adaptable stiffness to give comfort to the different body parts; they should have small dimensions and should resist to approximately 30'000 loads and climate cycles. The complex analysis of the wood behaviour in terms of hygromecanics, relaxation, creep, fatigue and viscoelasticity in this specific case had to be first clarified. 3-dimensional woodworking solutions had to be developed in order to find a suitable cutting pattern giving wood more flexibility.

Solution

The project has demanded an extended work in prototyping and mechanical characterisation wooden springs. Several wood species were investigated as they offer different solutions in terms of viscoelasticity and resistance. Climate cycles have been measured in different point of a bed in normal use. Thanks to this data it was possible to simulate numerically the solicitation of several night cycles. A testing set-up was also developed in order to validate the numerical models with experimental values. Finally the team developed a wooden box spring system where laths are 3-D machined in order to produce an in-line series of wooden rectangular springs. This offers a progressive load carrying and increases the comfort. The system is manufactured out of spruce (Picea abies) without any specific treatment. First Wooden Boxspring systems are already successfully commercialized by Elite SA.





CASE STUDY

DNAFOIL – 30 MINUTES TEST TO DETECT UNDECLARED INGREDIENTS AND CONTAMINATIONS IN FOOD

UNIVERSITÉ DE GENÈVE

SwissDeCode

Problem – Challenge

To be safe for consumption, food needs to be free from pathogen contaminants. In addition, many consumers want to be able to detect and avoid specific foods such as for example peanuts, pork or horse meat. DNA testing is possible but currently takes up to 7 days and can only be done in a laboratory setting. Food is however produced and consumed much faster, often in only about 2 days. The resulting gap constitutes a big risk for food companies who often have to resort to expensive and image-damaging food recalls.

Solution

Researchers at the University of Geneva have invented a DNA-reacting, color-changing ink that can be used to detect specific DNA bar codes with the naked eye, outside a laboratory setting. SwissDeCode, a spin-off company from the University of Geneva, has developed a point-of-need test kit that allows food factory staff to screen raw materials and finished products for undeclared ingredients and contaminations in 30 minutes. SwissDeCode has won a MassChallenge Accelerator Gold prize in November 2016 and has started commercializing its first kit for meat detection in early 2017.

4. COMMERCIALIZATION ACTIVITIES

Research results of Universities, UAS and RI do have potential to form the basis for innovative products which are developed and later commercialized by companies. The public institutions strive to make research results with a potential for socio-economic impact available to the private sector. Usually this is done through licensing of technologies to companies. To raise the attractiveness for industry of academic TT and licensing, research results with socio-economic potential need to be screened and identified, and the corresponding intellectual property rights need to be secured. While software is usually protected by copyright, protection of most new technologies is sought in form of patent applications. Without an appropriate protection of the intellectual property, industrial or financial investors in many industry sectors will not consider investing for the research and development of products that are then free to be copied by competitors.

With regard to patentable inventions, this process involves the following main steps: identification and evaluation of research results through invention disclosures, filing of patent applications, identification of suitable licensing partners, negotiating and concluding license agreements with existing companies or newly created start-up companies. At many institutions, the creation of such start-up companies is supported by various additional services. Sections 4.1 – 4.4 in this report describe the key TT indicators in relation to those activities from the participating institutions.

4.1 Invention Disclosures

A total record number of 659 (+8%) invention disclosures were reported for 2016 which is again more than in the previous year. The vast majority of invention disclosures were reported by Universities (92%). The three RI accounted for 6.6% of the invention disclosures, the UAS for 1.4%.

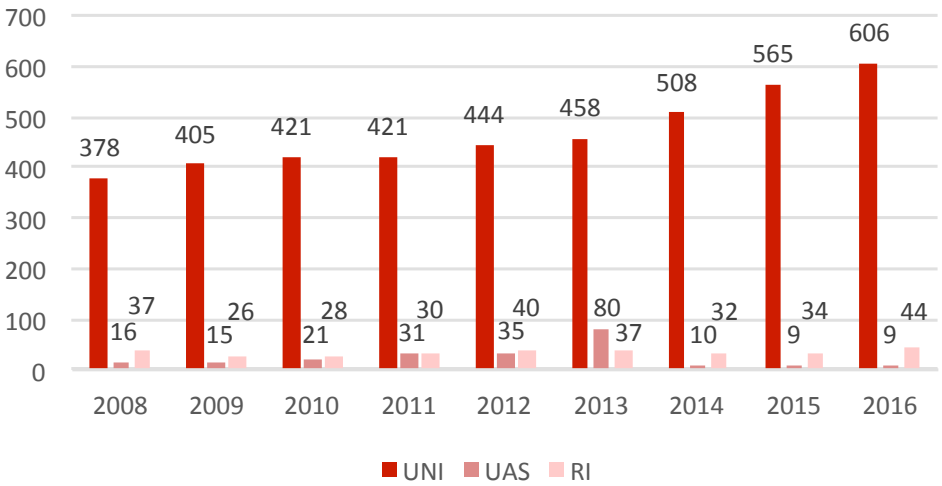


Fig. 4:
Number of Invention Disclosures

4.2 Patenting Activities

4.2.1 Priority Patent Applications

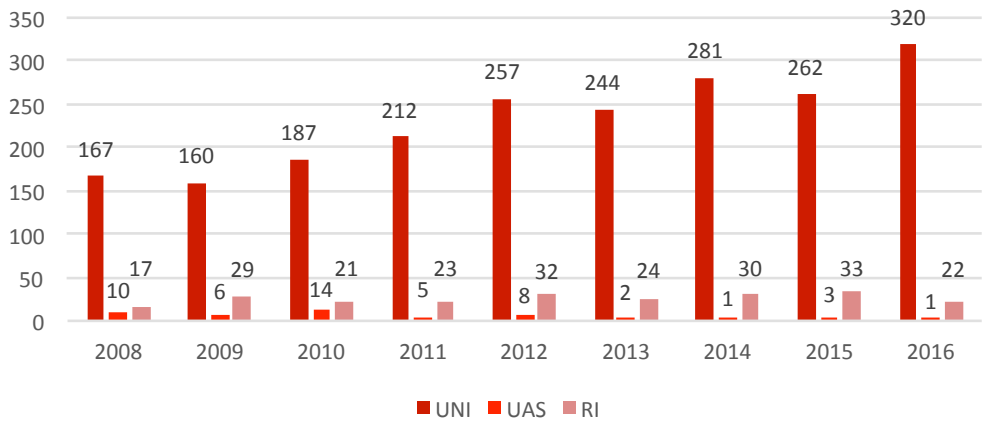
In 2016 the institutions reported 343 (+15%) new priority patent applications, significantly more than in 2015. As for the previous year, the majority of these applications were filed by Universities (93.3%), followed by the RI (6,4%) and UAS (0.3%). In total 85.4% of all patent applications were filed by ETH transfer, the TTO of EPFL and Unitectra (the TTO for the Universities of Basel, Bern and Zurich).

The protection of intellectual property in the form of patents is of great importance in many industry sectors. This is particularly true for industries with high product development costs and long product lifecycles, e.g. biotech and pharma. The TTO at PRO must decide at an early stage about filing patent applications because patenting of an invention is no longer possible after the results have been rendered public in scientific journals or through other channels. Moreover, many companies will not consider evaluating a new technology if it is not protected by a patent. Thus, patenting activities of PRO can be a prerequisite for entering into a partnership with an industrial partner.

4.2.2 Patent Portfolio – Active Patent Cases End of 2016

At the end of 2016, the institutions participating in the survey reported 2'419 (+10.9%) active patent cases which were either licensed to a company or for which they were searching for a licensee. Marketing of such technology opportunities is done by the research institutions through various channels. Identifying the responsible person within the organsation of a potential licensee is a challenge, and often existing contacts of researchers are used to approach companies. To support the research institutions in their technology marketing efforts, swiTT runs the searchable national technology portal swiTTlist (www.switt.ch/swittlist). swiTTlist provides industry with a quick and easy, up-to-date overview of current technology opportunities from Swiss PRO. TTO regularly upload new technologies on this searchable portal. With the help of an automatic alert system, company representatives are informed immediately each time a new technology is available in their field of interest.

Fig. 5:
Number of Priority Patent Applications filed



CASE STUDY

RED CERAMICS FOR THE WATCH INDUSTRY

Empa
Materials Science and Technology

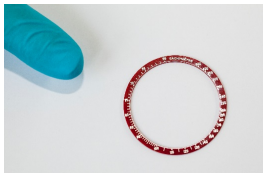
SWATCH GROUP

Problem – Challenge

With increasing cost pressure from globalization and the strong Swiss franc, innovation is becoming a key competitive factor for Swiss companies. This is one more reason to step up the collaboration between industry and research institutions in order to bring innovative ideas onto the market sooner.
Empa set about developing a red ceramic material that meets the high demands of the watch industry. The new material had to be non-toxic, which ruled out any compounds containing lead or cadmium for color schemes. A glaze on the ceramics was also unsuitable as it could chip off. The bezel therefore needed to be produced from colored ceramics that would also survive the subsequent engraving of the letters and numerals unscathed.

Solution

And so the Empa team opted for aluminium oxide as their material of choice – a common, white ceramic material used in artificial hips or as a seal in taps, for instance. Months of experimenting followed, where the researchers specifically mixed tiny amounts of chromium as well as inorganic additives into the ceramics. The multi-stage process to produce red ceramics was co-developed by the Swatch Group and Empa in a CTI project. The extremely complex production path has been protected by a patent application in March 2016.



CASE STUDY

CONTRABASS CLARINET EXTENDED

HKB
Hochschule der Künste Bern
Haute école des arts de Berne
Bern University of the Arts

clarinet solutions GmbH

Problem – Challenge

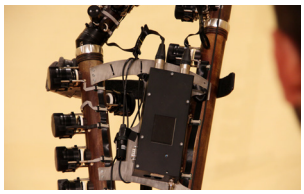
Contrabass clarinets commercially available today leave many musicians' wishes open. Traditional mechanics demand compromises in positioning the tone holes, which lead to a flawed sound and insecure intonation. The challenge was therefore to develop an innovative "play-by-wire" musical instrument that is nevertheless still blown like a traditional instrument.

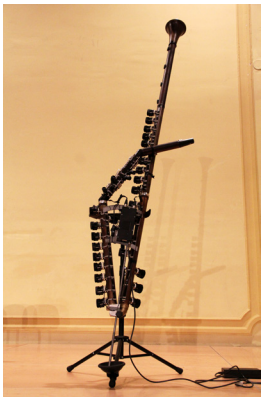
In the precursor project, Contrabass Clarinet Unlimited, a functioning laboratory model was presented in October 2013 after two years of research. The task was to realise a newly conceived instrument with its own character, and to make it ready for the market.

Solution

The team chose a radically new approach. The traditional mechanics have here been replaced by sensory dynamic keys that activate small electric motors. This means that no more compromises are necessary in positioning the tone holes. The sound and intonation have been markedly improved, and new audio-visual interfaces have been created for composers and performers. The innovations developed in this project could in future be applied to the bass clarinet and other low wind instruments, which all suffer from similar technical and tonal difficulties.

For further information see: http://www.hkb-interpretation.ch/projekte/contrabassclarinet-extended/





4.3 Licensing

4.3.1 Licenses and Sales of Intellectual Property (IP)

The number of reported IP agreements, usually licenses, rose by 19% compared to the previous year. Overall 251 deals were reported, 91.2% of them by Universities, 7.2% by RI and 1.6% by UAS. In a few cases the agreements involved a sale of the IP rather than a license. In total 82.9% of all agreements were handled by ETH transfer, the TTO of EPFL and Unitectra (the TTO for the Universities of Basel, Bern and Zurich).

4.3.2 Type of Licensing Partners

As in previous years with 131, the majority of the licenses granted in 2016 went to SME (52.2%). 57 (22.7%) licenses were granted to larger corporations and 52 (20.7%) to public organisations. The rest (11) was granted to multiple partners.

PRO regularly license technologies to their start-up companies, which are counted as SME. Thus, start-up companies play an important role in developing university technologies. Depending on the industry segment and on the particular product these companies will either market the final products themselves or will sublicense the technologies to larger companies that have the necessary know-how and resources to bring the product successfully on to the market. Frequently, projects or start-ups are acquired by larger companies once their products or services have reached sufficient maturity.

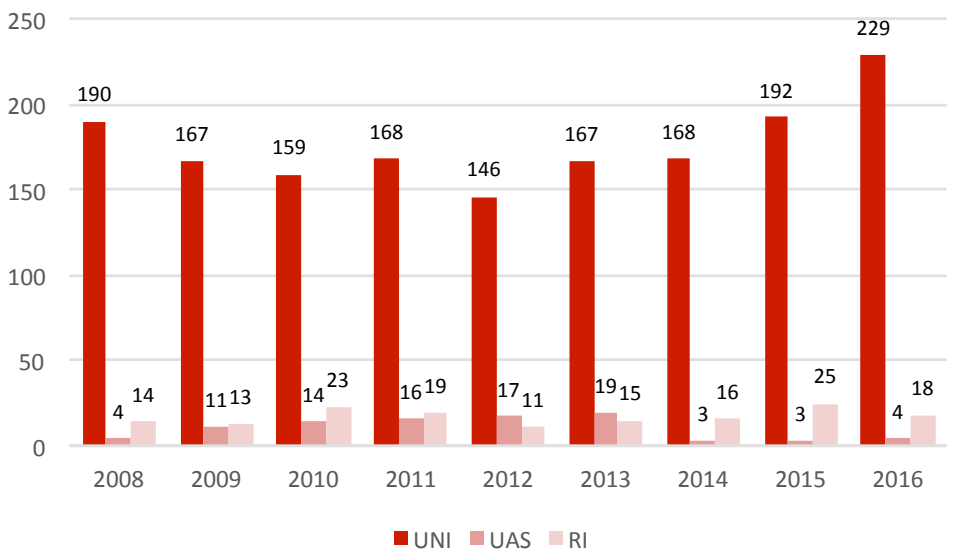
4.3.3 License Portfolio and License Income

The number of active licenses under management at the end of 2016 was reported as 1'591 (+ 7.9%) cases. Thereof, 92.9% of active licenses were handled by the universities, 6.9% by the RI and 0.2% by the UAS.

Of these active licenses 29.1%, namely 406 cases (+14%), resulted in license income to the institutions and the researchers involved. In more than half of those cases (266) such license income came from royalties on product sales. This figure has increased continuously in the past years in line with the growing number of products sold on the market that are based on research results of PRO. In the other cases income resulted from other types of license fees, e.g. license issue fees or milestone payments for products still in the development process.

These figures reflect the typical situation of licenses granted to industry by PRO. Many of the licensed technologies are at an early stage and require extensive development by the licensees. It often takes several years until a product reaches the market. Moreover, the development risk is often high for these early stage technologies, and a significant number of projects are stopped before a marketable product is ready.

Fig. 6:
Number of new Licenses, Option or Sales Agreements for Intellectual Property Rights (IPR)



Data on license income are incomplete and were reported only by about half of the institutions participating in this survey. The total license income of these institutions amounts 10.6 million CHF.

When licensing to start-up companies, some institutions may accept equity in such companies as a partial compensation for the licensing of technology. Such equity transactions usually replace down-payments or early milestone payments in order to avoid any cash drain from the start-up at the early stage of development. This results in a deferral of license revenues from such licenses until the shares in such start-up companies are sold by the institutions. In 2016, the institutions reported equity transactions for 31 of the 53 new start-up companies created that involved a license (see Section 4.4) or a transfer of technology. In the past years more institutions started to accept equity as part of their license deals, thus reducing the annual licensing income and managing an equity portfolio.

4.4 Start-up Companies

The number of newly created start-up companies from PRO remains at a high level similar to the previous year. In 2016 the institutions reported a total of 74 new start-up companies (+1.4%), whereby 53 of these companies (71.6%) relied on a license or a contractual transfer of intellectual property from a PRO. The remaining companies were created on the basis of know-how developed at the research institutions, but without a formal license.
Academic institutions took equity in 41.9% of all new start-ups created in 2016 (a significant increase from the 19% in 2015), and in 58.5% of those start-ups that are based on a license agreement with the PRO (40% in 2015).

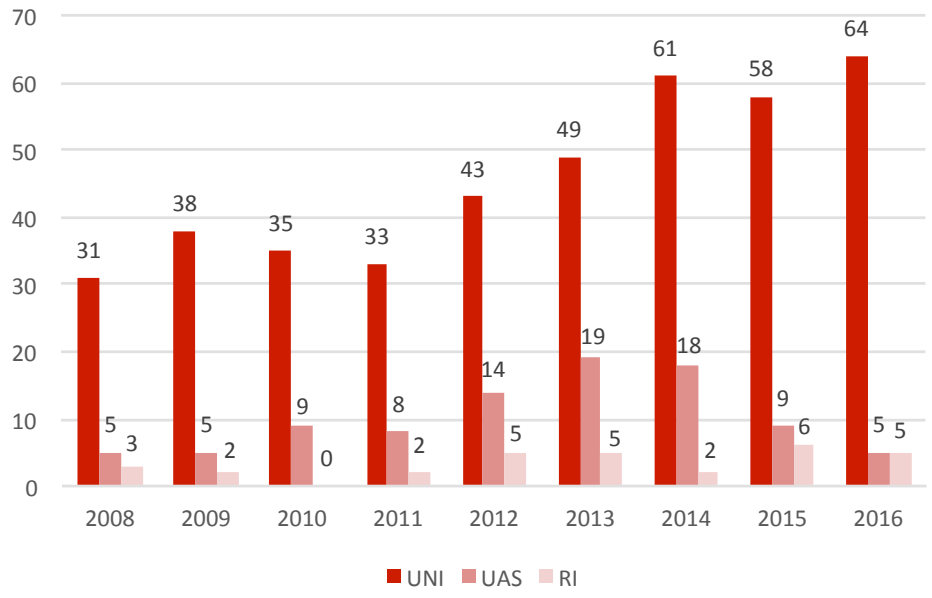


Fig. 7:
Number of Start-up Companies Founded which were Based on Licensing or Contractual Transfer of an Institution's Technology

CASE STUDY

INSTRUMENT FLIGHT TO THE INNER EAR

INSELSPITAL
UNIVERSITÄTSSPITAL BERN
HOPITAL UNIVERSITAIRE DE BERNE

UNIVERSITÄT BERN

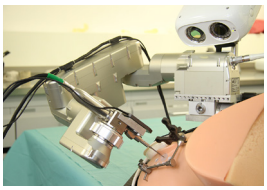
Problem – Challenge

To embed an electronic cochlear implant device into the ear of a deaf patient, the surgeon has to create a precise access from behind the ear, through the skull bone all the way into the inner ear. The implant electrode that bridges the damaged part of the inner ear to allow the patient to hear again is then carefully inserted into the cochlea through the access in the bone. Currently this procedure is carried out manually and the ear, nose and throat surgeon directly views the access into the cochlea through the opening in the skull bone.

Solution

A team of surgeons and engineers of Inselspital, Bern University Hospital, and the ARTORG Center for Biomedical Engineering Research, University of Bern (Switzerland), has developed a high-precision surgical robot for cochlear implantation successfully applied to several patients in a clinical trial. In the same way that avionics allow a pilot to fly a plane by instrument solely based on read-outs from the cockpit, the surgical robot developed by the researchers has the capabilities to perform surgery that a surgeon cannot carry out manually without a robot.

The critical developments that have led to the breakthrough first procedure on a patient are the reliable, computer-controlled safety mechanisms applied to the actions of the robot when drilling the tunnel into the side of the patient's head. The minimally-invasive keyhole tunnel runs at a safe distance between the facial nerve and the chorda tympani nerve into the cochlea so that the electrode wire of the implant can be inserted through this opening into the cochlea at the preplanned angle. Safe navigation and drilling inside the human ear that avoids damage to these nerves and the microscopic structures of the inner ear is accomplished through a combination of three interlocking safety components that act as the eyes, ears and touch of the surgeon.



CASE STUDY

PROTECTION AGAINST FUNGAL PARASITES

MycoSolutions

Empa
Materials Science and Technology

Problem – Challenge

There are half a million wooden telephone poles in Switzerland. They are easy to erect and last up to 35 years without the need for any major upkeep. However, Swisscom has to replace as many as 5'000 poles a year for its landline infrastructure – many because fungi have caused them to rot. Although the poles are impregnated with biocides such as copper, such biocides are ineffective if copper-resistant fungi transform the copper using oxalic acid and then destroy the wood – resulting in the poles needing to be replaced far sooner than planned. In nature, fungi keep each other in check. In a forest this works by itself, a fungus that destroys wood has an antagonist that stops it in its tracks. In the case of wooden constructions and trees that are planted or erected outside their natural habitat, however, this equilibrium spirals out of control and the pest can spread unimpeded.

Solution

Francis Schwarze, a wood, tree and fungus researcher at Empa, has discovered a means to protect the wooden poles against copper-resistant fungi: if deployed early enough, another fungus, a natural adversary of wood decay fungi, is able to inhibit the formation of oxalic acid and kill off the pole destroyers. First of all, Schwarze set about isolating and identifying the harmful organisms on the tree. Then all he had to do was "simply" find a natural adversary and turn it into a product – granules – which tree surgeons could scatter in the soil around the trees' stricken roots. And so Schwarze founded a spin-off in St. Gallen with backing from Startfeld, the innovation network of the St. Gallen region. The fledgling company, MycoSolutions, is looking to develop product from beneficial organisms.

APPENDIX 1 – INSTITUTIONS CONTACTED FOR THE SURVEY AND COMMENTS ON THEIR DATA PROVIDED

Universities	TT-Office	Comments on data provided
ETH Zürich	ETH transfer	Complete data, research agreements <50kCHF only partly
EPF Lausanne	TTO	Complete data, research agreements <50kCHF only partly
Universität Basel / Universitätsspital Basel	Unitectra	Complete data only for the Medical, Natural Sciences and Psychology Faculties, partial data for hospital
Universität Bern / Inselspital	Unitectra	Complete data only for the Medical, Vetsuisse and Natural Sciences Faculties, no data for research agreements of other faculties
University of Fribourg inclucing Adolphe Merkle Institute	Tech Transfer Fribourg	Partial data, not all contracts pass through TTO, especially SNF and EU-grants are treated separately
Université de Genève / Hôpitaux	Unitec	Complete data for commercialization activities, research contracts
Université de Genève	Universitaires de Genève	Universitaires de Genève only partly handled by TTO
Université de Lausanne / Centre Hospitalier Universitaire Vaudois Lausanne	PACTT	Complete data for commercialization activities, research contracts
Université de Neuchâtel	TTO	Complete data
University of St. Gallen	TTO	No data available
Università della Swizzera Italiana (USI)	AGIRE	No data available
Universität Zürich / Universitätsspital	Unitectra	Only aggregated data, data only for the Medical, Vetsuisse and Naural Sciences Faculties, no data for research agreements of other faculties

Universities of Applied Sciences	TT-Office	Comments on data provid
Berner Fachhochschule	TTO	Complete Data (AHB, TI, WGS, HKB, HAFL)
Fachhochschule Nordwestschweiz (FHNW)	TTO	Data available from 2 departments (HLS & HABG)
Fachhochschule St. Gallen	IZSG-AAL	No data available
Fachhochschule Ostschweiz	TTO	Partial data from NTB
Zürcher Fachhochschule ZFH	ZHAW TTO	Data only available from ‹Zürcher Hochschule für Angewandte Wissenschaften› (ZHAW)
Hochschule Luzern – Lucerne University of Applied Sciences and Arts	Ressort F&E	Partial data available
Haute Ecole Spécialisée de Suisse occidentale (HES-SO)	Tech Transfer Fribourg	No data available
Scuola Universitaria Professonale della Svizzera Italiana (SUPSI)	Research & Innovation	Partial data available

Research Institutes	TT-Office	Comments on data provided
Paul Scherrer Institut	PSI TT-Office	Complete data
Empa, Swiss Federal Institute for Materials Science and Technology	Empa-Eawag TT-Office	Complete data
Eawag, Swiss Federal Institute of Aquatic Science and Technology	Empa-Eawag TT-Office	Complete data

CASE STUDY

C-LABS: SAFER PRODUCTS TO MAKE THE WORLD A BETTER PLACE.

SGS DIGICOMPLY
The Regulatory Intelligence Network

USI/SUPSI IDSIA

Problem – Challenge

Food companies need up-to-date and complete food compliance news and regulatory information.

Solution

Founded in 2016, C-Labs is an Industry 4.0 startup, developing solutions for transforming food regulatory compliance. It adopts the latest machine learning techniques with the support of Swiss Artificial Intelligence Lab IDSIA (Istituto Dalle Molle di Studi sull'Intelligenza Artificiale. SGS DIGICOMPLY is the product launched by C-LABS SA, an AI based specialized content management platform, able to automatically retrieve to sort and classify huge volumes of global compliance data into a single, coherent and reliable source. SGS Digicomply content delivers:

- *Insight into the regulatory development process*
- *Support to the decision-making process within an organisation*
- *A single point-of-data, ensuring security and efficiency*
- *Support to impact assessments while keeping track of historical issues*
- *An easy to search global repository of food*

CASE STUDY

SECOND SPECTRUM – MACHINE INTELLIGENCE ADVANCING PROFESSIONAL SPORTS TEAMS AND LEAGUES

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

PLAYFULVISION

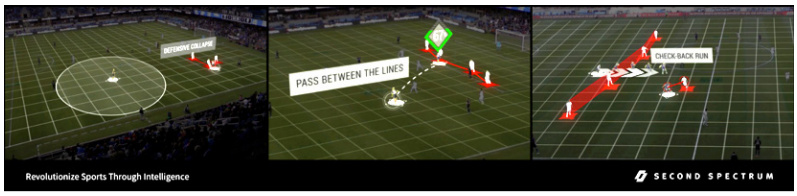
Second Spectrum

Problem – Challenge

Enabling new analysis, compelling content and experiences through interactive applications and augmented video for sports leagues, coaches, front offices, traditional and digital media, and content owners.

Solution

As the Official Optical Tracking Provider of the NBA, Second Spectrum applies state-of-the-art machine learning and computer vision techniques to track and analyze the movement of every player on the court. Second Spectrum's player tracking system leveraged some of the technology developed by EPFL and its spinoff PlayfulVision, which was integrated into Second Spectrum's core operations in 2015.
The technology consists of optical trackers that captures the movements of each player and the ball, providing their exact coordinates 25 times per second. This information allows the precise analysis during a game: position, shots, rebounds or faults.



CASE STUDY

INTERAX BIOTECH – EFFICIENT GPCR LEAD DISCOVERY BY COMBINING NOVEL BIOSENSORS WITH COMPUTATIONAL BIOLOGY

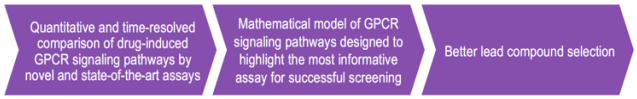
Problem – Challenge

Drugs targeting G protein-coupled receptors (GPCRs) represent 40% of all marketed medicines across all therapeutic areas. However, due to the complex nature and pharmacology of these receptors, only a fraction of them has been successfully targeted by drugs. The pharmaceutical industry is investing billions yearly to develop drugs for many high-value but yet intractable receptors and to improve drugs for classical GPCR targets. Most screening methods analyzing the GPCR pathways are limited in their scope and predictive capability. Our technology platform opens new possibilities in GPCR drug discovery.

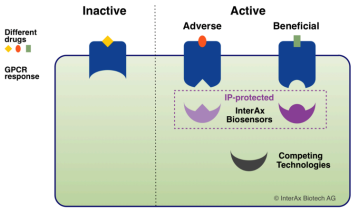
Solution

Our solution enables the dissection of human receptor signaling in high-throughput drug screening for better prediction of clinical "drug-like" properties such as quality, safety, and effectiveness of drug candidates. The drug screening process will be significantly improved by utilizing our proprietary protein-based biosensors, mathematical models of drug-induced signaling pathways with strong predictive capability and a highly efficient multigene expression system for primary cells. These technologies together allow to determine cellular signaling responses leading to beneficial or adverse effects or mixtures thereof for patients: enhancing therefore quality of drug candidates. We are building a technology platform for addressing pharmacological relevant indications such as metabolic disorders, CNS, and others. We will dramatically reduce costs for the development of novel GPCR drugs with reduced side effects, thereby benefiting patients with unmet medical needs.

Key benefits of our technology platform are:



Core technology in-licensed from PSI:



CASE STUDY

AERIAL DATA FOR PROFESSIONAL MAPPING AND SURVEYING

Problem – Challenge

Recent progress in sensor, battery and motor technoogy makes a new class of small and affordable aerial robots possible. However, current platforms are limited in a way that they either provide maneuverability (rotorcrafts) or range (fixed wing airplanes), and typically must be operated by humans.

Solution

Thanks to its unique design, the WingtraOne is as easy to use as an agile multicopter with the long range and speed of a high endurance fixed-wing airplane. Its smart navigation software, WingtraPilot, allows to intuitively plan survey flights. It can be customized with various high-end cameras to capture high-resolution aerial images to generate accurate orthomosaics and 3D models. The WingtraOne is equipped with the best components, giving the user a professional drone that is particularly robust and efficient. The Wingtra principle consists of three steps: 1. Intuitive and easy mission planning with the WingtraPilot (PLAN), 2. Fully autonomous flights: No piloting skills needed / Take off and land vertically everywhere (FLY), 3. High-quality geotagged images right after the flight / Images compatible with any aerial data analysis software (ANALYSE).

PLAN FLY ANALYSE

APPENDIX 2 – DETAILED DATA 2008 – 2016

All respondents	2008	2009	2010	2011	2012	2013	2014	2015	2016
Full-time equivalents (FTE)	63	68	64	74	81	86	85.7	89.2	92,4
Research contracts (incl. EU contracts)	2745	2855	3035	2872	2349	3924	3237	3297	3'348
Invention disclosures	431	446	470	482	519	575	550	608	659
Priority patent applications	194	195	224	240	297	270	312	298	343
Active patent cases end of the year	924	1512	1573	1606	1818	1951	1969	2191	2429
License agreements	208	191	196	203	174	201	187	220	251
Active license agreements end of the year	1079	1143	1237	1249	1307	1351	1437	1474	1591
kCHF of net licensing revenues	9479	8197	8533	7665	13303	14776	18729	10316	10615
License agreements with revenues in respective	271	289	288	299	308	386	376	406	463
New start-ups on basis of formal license	39	45	44	43	62(29)	73(45)	81(49)	73(47)	74(53)

Universities	2008	2009	2010	2011	2012	2013	2014	2015	2016
Full-time equivalents (FTE)	42	47	45	50.5	50	52.3	56.1	55.5	59.2
Research contracts (incl. EU contracts)	1885	2120	2285	2158	2348	2360	2195	2303	2465
Invention disclosures	378	405	421	421	444	458	508	565	606
Priority patent applications	167	160	187	212	257	244	281	262	320
Active patent cases end of the year	779	1355	1358	1450	1664	1779	1839	2008	2202
License agreements	190	167	159	168	146	167	168	192	229
Active license agreements end of the year	1013	1058	1135	1459	1167	1213	1320	1352	1487
kCHF of net licensing revenues	8338	7686	7829	7029	10519	9713	14170	6933	6395
License agreements with revenues in respective	252	268	258	257	270	337	339	203	410
New start-ups on basis of formal license	31	38	34	33	43(23)	49(35)	61(38)	58(41)	64(44)

RI	2008	2009	2010	2011	2012	2013	2014	2015	2016
Full-time equivalents (FTE)	7	7	6	8	8	7.7	7.4	8.8	9.2
Research contracts (incl. EU contracts)	395	416	293	340	353	320	365	420	441
Invention disclosures	37	26	28	30	40	37	32	34	44
Priority patent applications	17	29	21	23	32	24	30	33	22
Active patent cases end of the year	97	110	141	112	112	133	121	174	186
License agreements	14	13	23	19	11	15	16	25	18
Active license agreements end of the year	61	81	90	103	123	119	115	120	110
kCHF of net licensing revenues	961	337	190	170	2217	4463	4532	3353	4210
License agreements with revenues in respective	16	20	17	19	21	31	34	43	51
New start-ups on basis of formal license	3	2	0	2	5(1)	5(2)	2(1)	6(0)	5(2)

UAS	2008	2009	2010	2011	2012	2013	2014	2015	2016
Full-time equivalents (FTE)	14	14	13	15.5	23	26.1	22.2	24.9	24
Research contracts (incl. EU contracts)	455	319	457	374	621	1254	677	574	442
Invention disclosures	16	15	21	31	35	80	10	9	9
Priority patent applications	10	6	16	5	8	2	1	3	1
Active patent cases end of the year	48	47	56	35	42	39	9	9	41
License agreements	4	11	14	16	17	19	3	3	4
Active license agreements end of the year	5	4	12	15	17	19	2	2	18
kCHF of net licensing revenues	180	174	514	466	567	600	27	30	30
License agreements with revenues in respective	3	1	13	23	17	18	3	3	1
New start-ups on basis of formal license	5	5	9	8	14(5)	19(8)	18(10)	9 (6)	5(2)

Note (i): For new start-ups the numbers in parentheses refer to equity deals
Note (ii): The number of institutions that participated in the survey varies between years.

APPENDIX 3 – KEY PARAMETERS FOR INDIVIDUAL INSTITUTIONS

Institution	Name TTO	Start TTO	TTO FTE	Total # research contracts	# of invention disclosures	# of priority applications	# of IP agreements	# of startups
Universities								
EPFL	EPFL-TTO	1993	13.1	251	149	100	58	20
ETHZ	ETH transfer	1995	16.2	593	215	109	78	25
Uni Geneva	Unitec	1998	7.8	90	52	10	15	2
Uni Lausanne	PACTT	2000	6.8	190	28	9	2	0
RI								
Eawag TT	TT Office	2001	1.2	106	4	2	0	3
Empa	TT Office	2005	4	177	28	14	13	1
PSI	TT Office	1999	4	158	12	6	5	1
UAS								
BFH	TT Office	1999	14.9	262	5	1	4	2
HSLU	Ressort F&E	1998	2	n/a	3	n/a	0	0
FH OST–NTB	TT Office	2000	1.2	75	0	0	0	1
ZHAW	TT Office	2007	2	n/a	n/a	n/a	0	2

Note: The table lists individual data only of those institutions that agreed to publish it.

GLOSSARY

CTI	Commission für Technolog & Innovation
ETH	Swiss Federal Institutes of Technology
EU	European Union
FTE	Full Time Equivalent (for the number of employees)
IP	Intellectual Property
MTA	Material Transfer Agreement
NDA	Non-Disclosure Agreement
PRO	Public Research Organisations
RI	Swiss Federal Research Institutions in the ETH domain
SME	Small- and Medium-sized Enterprises (<250 employees)
SNF	Swiss National Science Foundation
Start-up	Newly established company founded or co-founded by researchers from the respective institution and which either relies on a formal license of IP or on know-how developed at the institution
swiTT	Swiss Technology Transfer Association
TT	Technology Transfer
TTO	Technology Transfer Office(s)
UAS	Universities of Applied Sciences
Universities	Cantonal Universities and Swiss Federal Institutes of Technology

APPENDIX 4 – THE QUESTIONNAIRE

swiTT Technology Transfer Survey 2016 (online survey)

1. Confidentiality			
Do you agree to the publication of the individual data collected in the questions marked *[pub] under your institution name? All other data will only be published in The aggregated format by type of institution? *All other data will only be published in the aggregated format by the type of institution*			☐ Yes ☐ No
2. Background Information			
2.1 Name of the academic institution/s			
2.2 Is your institution associated with a university hospital? *(If yes, please note that all figures given below should include the numbers of the hospital, too)*			☐ Yes ☐ No
2.3 Does your institution gave a dedicated office / responsible person for TT activities (TTO)?			
If yes which year did the TT program start)		*[pub]*	
2.4 Name of the responsible for survey program			
Name of responsible for survey data			
2.5 TTO address and contact information			
Office Name :		Telephone	
Office Name :		Telephone	
Street :		e-mail	
City :		Postal code	
3. Activities and FTEs			
3.1 What are the activities of your TTO?			
(A) Research contracts (drafting, negotiating, controlling)			☐ Yes ☐ No
(B) Evaluation, protection and management of IP			☐ Yes ☐ No
(C) Commercialisation of IP (licensing, marketing)			☐ Yes ☐ No
(D) Coaching of start-up projects			☐ Yes ☐ No
(F) Financial administration of research projects			☐ Yes ☐ No
3.2 How many full time equivalents FTE were employed in your TTO on Dec. 31st 2016 *(Do NOT include researches working as project managers in transfer project in this number)*		FTE *[pub]*	
3.3 Of these FTE, how many were employed to work on			
(A) Technology transfer activities *(Staff with main occupations (> 20%) in the area of technology transfer, such as 'Licensing Officers', 'Intellectual Property Managers', Technology Managers', or 'Research Contract Officers. Do NOT include project managers carrying out transfer projects)*		FTE	
(B) Administration and general management			
Comment 3.1 – 3.3 *(e.g. if additional people outside your TTO but inside your institution are also working in technology transfer activities according to 3.1, special organisation with specific faculties, centralized/decentralized organisations)*		FTE	
4. Research and Development			
4.1 Total number of new research contracts handled by your TTO (*Collaboration agreements, service agreements, clinical trial agreements, CTI complementary and EU agreements, NO MTA, NO NDA, or other TT contacts (see 4.3) and NO SNSF contracts)*		[pub]	
Of these research contracts, how many were executed with small and medium enterprise (SME), how many with large companies and how many with public partners? *(Definition: SME are companies with 250 or less employees)*		(A) SME: (B) Large Company: (C) Public Institutions: (D) Multiple Partners (E) Don't know *(Sum shall equal 4.1!)*	
4.2 Amount of cash payments due to your institution from research contracts that were handled by your TTO according to 4.1 (*Please give the amount of cash due to your institution, NO material asset e.g. for machinery and NOT the total amount of Research Project, e.g. if an EU project adds up to 3 Mio. EUR but your institution gets only 200'000 thereof, the latter shall be given. Do not split the amount, if the contract is covering several years but report the fill amount in the year the contract is signed)*		CHF	
4.3 Number of other technology transfer contracts handled by your TTO *(Non-Disclosure Agreements (NDA), Material Transfer Agreements (MTA), consulting contracts, inter-institutional contracts, sponsoring, donations, but NO licenses, options, sales)*			
Comments to 4.1 – 4.3 *(E.g. restrictions/regulations of your institution. Knowledge of ALL contracts or only contracts above a certain amount)*			

Preliminary Notes:

- All questions refer to the calendar year 2016. Please make your statements accordingly.
- If no answer is available for certain questions, please indicate with n.a. Questions for which your office or your institution does not collect data should be left open (n.a.) and should not be answered by giving an estimate.

5. Patent-Related Activity	
5.1 How many invention disclosures were received by your TTO?	[pub]
5.2 How many priority applications were filed by your TTO? *(Priority application being the very first application for a new technology in any patent office of the world)*	
(A) Of these, how many are based on research significantly funded by SNSF	
5.3 What was the overall number of active patent cases at the end of 2016 managed by your TTO? *(Active patents cases are pending or granted patents on a technically unique invention (patent family). Application in various countries on ONE technically unique invention count as ONE patent case*	
6. Patenting Costs and Legal Fees	
6.1 Amounts spent by your TTO/institution on patenting costs and external legal fees? *(Including all external costs for patent filing, prosecution, maintenance, litigation, expenses or costs for drafting or support in negotiation of contracts)*	CHF
6.2 Amount of patenting costs and legal fees invoiced to commercialization partners? *(Does NOT include patenting costs or legal fees paid DIRECTLY to the patent attorney or other service providers by licensees or external partners)*	CHF
7. License, Option and Sales Agreements	
7.1 How many licenses/options/sales of protected or unprotected IP did your TTO execute? *(Count only the agreements for different technologies, i.e. 30 licenses for the same software library count as ONE. If a license agreement is combined with a research agreement (e.g. advanced sale of the results of a research project), this contract shall count only as research contract and NOT be included in this question unless the invention/software that is licensed/sold exists already at the execution date of the research contracts)*	[pub]
Of these licenses/options/sales, how many were licensed to SME, how many to large companies or public institutions? *(Definition: SME are companies with 250 or fewer employees)*	(A) SME: (B) Large Company: (C) Public Institutions: (D) Multiple Partners (E) Don't know *(Sum shall equal 7.1!)*
(D) Of these licenses/options/sales how many are based on research significantly Funded by SNSF?	
7.2 How many licenses/options/sales included equity? *(Equity meaning the ownership of interest in a company such as shares, options, warrants, etc. in consideration for granting a license or sale of IP)*	
7.3 How many licenses/options were active as of December 31, 2016	
Comments to 7.1 – 7.3 *(e.g. large variations to previous years, special situation, i.e. with free software licenses openBSD, etc)*	
8. License Income	
8.1 What was the total number of licenses/options/sales revenue?	
8.2 How many licenses/options/sales yielded running royalties? *(Running royalties are based on product sales and are only due after launch of a product In the market)*	
8.3 What was the total amount of licenses/options/sales revenue received at your institution? *(WITHOUT patent costs and fees invoiced in 6.2)*	CHF
9. Start-up companies	
9.1 Total number of start-up companies formed at your institution	
(A) Of these start-up companies, how many are dependent on licensing transfer of your Institution technology?	
(B) Of these start-up companies, how many are dependent on unprotected know-how or technology of your institution (without license agreement)?	
(C) Of these start-up companies, how many are based on research significantly funded by SNSF?	
9.2 In how many of these new start-up companies does your institution hold equity?	
10. Post-Licensing Activities	
10.1 Did one or more of your institution's licensed technologies become available for consumer or commercial use in 2016?	☐ Yes ☐ No
If yes, how many?	
10.2 Information about the launched products *(please give a short title of each product success story and the e-mail of the contact person for additional information)*	[Title, Contact Person]
Comments	
(if you want to bring additional comments or suggestions to the attention of the team of the swiTTreport, please post them here)	

swiTT

swiTT, the Swiss Technology Transfer Association, is the association of the professionals in Switzerland dealing with the interaction between public research and industry. swiTT currently has more than 100 members from all parts of Switzerland. Most of them work in technology transfer at public research institutions, others are employed in the private sector.
For further information about swiTT, please refer to **www.swiTT.ch.**

Among other services, swiTT operates swiTTlist, a unique portal with current technology opportunities from Swiss public research institutions available for licensing and development by industry.
To search this opportunity database please visit **www.swiTTlist.ch.**

swiTT
swiss technology transfer association

swiTT MISSION

- COOPERATION
- DEVELOPMENT
- SERVICES
- DIALOGUE

Facilitates and strengthens COOPERATION and technology transfer between Swiss public research institutions and the private sector;

Offers professional DEVELOPMENT to its members and other practitioners involved in technology transfer within public institutions and the private sector;

Provides SERVICES of common interest to its members, their institutions and other stakeholders involved;

Maintains an active DIALOGUE with research institutions, the private sector and the authorities to foster optimal processes and regulatory framework/regulations.

IMPRESSUM

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