



European Consortium of Innovative Universities: Leading the way for innovation in academia

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Executive Summary

The European Consortium of Innovative Universities ECIU welcomes the Flagship Initiative Innovation Union as a central instrument of innovation policy to promote the Europe 2020 strategy for growth, competitiveness and jobs. Within this scope, ECIU wishes to confirm the view that universities play a crucial role in the innovation chain, both as active protagonists that create innovation and bring it to the market, as well as through creating framework conditions that are favorable for innovation through educating and developing students and staff to cultivate innovative and opportunistic mindsets. ECIU proposes that three major characteristics associated with innovation based on the experience of its member universities are fundamental to delivering Innovation Union:

- Sustainable innovation needs to be joined up at regional, national and international level
- Start early; include entrepreneurship skills in educational programs
- Innovation is teamwork

Innovative practices from ECIU member institutions bear out that the universities belonging to this consortium have a track record in pursuing these approaches. The member universities offer their continued support to the European Commission in implementing the Innovation Union.

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1 The ECIU perspective on innovation

The European Consortium of Innovative Universities ECIU is a consortium of research and innovation intensive universities focused on collaboration in innovative teaching, learning, research and knowledge exchange, enhancement of university-society interaction, internationalization of student and staff experience, and active engagement in policy development and practice in the European context. Innovation is central to the shared ethos of the member institutions, whether in pedagogic and curriculum development, research, knowledge and technology exchange, or economic regeneration and links with industry, business and the public sector in their respective regions. On this basis, the consortium was founded in 1997.

For ECIU, the most successful innovation and knowledge systems are characterized by openness, knowledge-sharing, cooperation and collaboration. In this context, the ongoing transformation of economy and society through innovation is both radical and incremental. As such, harvesting the gains from the ICT-revolution and realizing the transformation to a carbon-free society entail organizational and individual learning as well as the promotion of radical innovation. And, of course, innovation requires interaction - ideas originate when people from different disciplines and professions, and with different knowledge, skills and experience meet and interact.

ECIU recognizes that fundamental issues and problems increasingly need to be addressed and tackled on a global scale. The role played by innovation involves the joining up of individuals, organizations and regions globally. As such, innovation combines local capabilities of workers and firms with global interaction among scientists and within transnational corporations. In successful regions economic, scientific and political actors combine regional co-operation with networking and strategic collaboration on a global scale. With these phenomena, and the rapid and constant changes involved, come uncertainties and risks, including social inequality and exclusion, and ECIU is aware of and motivated by the challenges in ensuring that societies as a whole are involved in the process of and benefits of innovation.



2 Flagship Initiative Innovation Union

The *European Consortium of Innovative Universities* (ECIU) acknowledges the communication Europe 2020 Flagship Initiative 'Innovation Union' and wishes to extend its compliments to the European Commission. The communication outlines how innovation will play a central role in the deployment of the Europe 2020 Strategy for growth and jobs. The integral approach that is laid down in the communication, and the synergies with the other Flagship Initiatives, pave the road for a successful retreat from the economic crisis. ECIU strongly shares the view that innovation leads to prosperity and that universities are at the heart of the Innovation Union.

In particular, ECIU wishes to highlight from the Innovation Union document the importance of the principles of autonomy for and excellence in universities in Europe, the development of strategies to train sufficient researchers in line with R&D targets, the development of the European Research Area and implementation of measures to remove obstacles on mobility and cross-border cooperation, such as a common approach towards doctoral training, mobility of researchers, and the creation of appropriate employment conditions including transferable pensions and a European supplementary pension fund. All of this is vital to the principle of promoting brain circulation as an integral part of brain gain. The focus of future research and innovation programs on grand societal challenges, the intention to develop EU-instruments to attract private finance, dedicated budgets in pre-commercial and public procurements and a focus of Structural funds on innovation relating to societal challenges will all constitute an important contribution to the competitiveness and sustainability of the European economy. Last, but not least, the attention for social innovation and the recognition that integrated policies are needed to make Europe even more attractive for academics, researchers and innovators, is highly valued by ECIU.

ECIU is a network of responsive young and modern universities that lay special emphasis on collaboration with their regions, and who are particularly experienced in innovative practice in their mainstream business. By definition of their profiles, the member-universities are highly engaged in activities that promote smart, sustainable and inclusive growth. The members have an impressive track record in playing an important role in the innovation process at regional, national and international levels and they can draw upon many years of experience in this field.

The experience of the members of the ECIU bears out that programs to achieve successful innovation depend on many factors, such as the type of technology, product or service under consideration, the local and regional support structure and the right mind-set. Within the complex dimensions involved in the phenomenon of innovation, ECIU wishes to point out three issues that it has found to be critical to successful innovation:

- Sustainable innovation needs to be joined up at regional, national and international level
- Start early: include entrepreneurship skills in educational programs
- Innovation is team work



2.1 Sustainable innovation needs to be joined up at regional, national and international levels

Successful innovation programs often have the common aspect that a local or regional authority is involved. Key innovation actors and funders across the great diversity of European regions need to be involved in an integrated, efficient and effective manner in the execution of regional, national and European innovative activities. The setup of regional innovation platforms to define smart specializations is an example of a fruitful instrument to do so. Creating local infrastructures helps commercial partners to buy into the wealth of intellectual resources of knowledge institutions and this can be replicated across Europe and its regions. ECIU advises the European Commission to exploit as much as possible the synergies that can be derived from focusing the Structural Funds and Funds for Research and Technological Development towards innovation, with the possible further synergies with Funds for Education and Training also to be exploited. It fully agrees that access to such programs should be simplified as much as possible in order that innovative individuals and organizations are not put off when they think of applying.

The issue of joining up innovation at regional, national and international levels goes far beyond the current competencies of the Commission. Creation of a Single European Market, the European patent and a European Venture Capital Market will highly depend on constructive attitudes of the Member States. This change of attitude could very well be termed radical social innovation and the ECIU expects that the European Innovation Partnerships can play an important role in bringing about this innovation and taking away these barriers for successful innovation.

The members of the *European Consortium of Innovative Universities* will step up their efforts in collaborating in innovative activity across the Regions and Member States in which the universities are based. There is already an example of this in the DIFUSE project funded by the European Commission, and the ECIU is open to develop further the sharing of best practice from its member institutions with the Commission.



2.2 Start early; include entrepreneurship skills in educational programs

Successful innovation leans heavily on the people involved. By paying attention to entrepreneurial skills in educational programs, the next generation of the European workforce will be well prepared for the step change that is expected from it. The involvement of the full innovation triangle in the Knowledge and Innovation Communities of the European Institute of Innovation and Technology can be referred to as a good example, as well as the involvement of industry in Marie Curie actions (Initial Training Networks in particular), Erasmus Mundus actions and other instruments.

Current activities to expose young Europeans to entrepreneurial qualities are only reaching a small part of the target population. Therefore, specific initiatives for entrepreneurial and innovation skills should be incorporated as a transversal skill in all areas of education and at all levels. Without necessarily the need to create more instruments, increasing the entrepreneurial and innovation content of existing instruments can be used to achieve this objective.

The ECIU builds on a long history of including entrepreneurial skills in all levels of its institutions, including education, which has given rise to their current profiles. The result is displayed by the plethora of good practices in valorization activities, for example. The great diversity in these examples illustrates that successful innovation needs social innovation: an attitudinal change that can be brought about by addressing entrepreneurial skills early in the stakeholders' careers. And as the regional constitution of stakeholders varies over Europe, so will the nature of successful innovation activities be diverse in the Regions of Europe.

The *European Consortium of Innovative Universities* will continue to include entrepreneurship skills in its educational programs at all levels and offers the current best practices as elements in future initiatives. We would like to point out to the European Commission that the Agenda for Modernization of Higher Education offers a good opportunity to increase the innovative character of Europe's universities and we commit ourselves to a constructive dialogue with the Commission on this topic.



2.3 Innovation is team work

Successful innovation starts with the acknowledgement that many individuals will play an important role in the innovation process and that each role is important. Entrepreneurs need to realize soon in their career the importance of building a multidisciplinary team around them. In order to achieve this it is not only important to coach the young entrepreneurs where necessary in this process of team building. The social and professional network will also be important. European, national and regional initiatives should not underestimate the value of these networks. Facilitation by networking events, mentoring projects and Erasmus for entrepreneurs have proved their benefit to many young entrepreneurs already.

The multidisciplinary nature of the entrepreneurial team illustrates the need for multidisciplinary competencies in the team implementing any innovation program. Successful initiatives rely heavily on the experience of researchers, successful entrepreneurs and government officers, to name a few. Innovation programs are therefore executed most successfully by multidisciplinary teams. A European initiative for (Erasmus) exchange for teams that execute innovation programs could be a useful addition to the European palette of mobility.

The notion of multidisciplinary teams for innovation is supported by the experience of ECIU members that there is a need for multidisciplinary researchers *as well as* specialists for constructive and creative innovation. Being aware of this composition has proved to be a major factor for successful growth of SME's and the ECIU is convinced that it will be important in the success of the European Innovation Partnerships. We therefore ask the Commission to take special care to involve experts as well as generalists, industry as well as academia and regional as well as national in the design of these partnerships.

The *European Consortium of Innovative Universities* will continue to support its' students and staff to act in multidisciplinary teams within and outside of the walls of the academic institution. It is open to constructive discussions on the way forward and in disseminating experience.

Appendix 1: Why we define ourselves as Innovative Universities

- The term Innovative University has two meanings. First, our universities contribute to innovation in society and in business. Second, we are engaged in ongoing systematic efforts to renew teaching, research and knowledge transfer both in terms of methods and content.
- We want our universities to host and help to contribute to major technological breakthroughs. We do so by organizing problem-oriented and original research and by using training methods that promote individual and collective creativity in all our teaching programs.
- Our universities also support incremental innovation and the wide use of new technologies by pursuing research that includes the location of organizational and institutional barriers for the full exploitation of existing technological opportunities.
- To overcome barriers between disciplines and professions we stimulate interdisciplinary research and use teaching and learning methods that give students social and cultural skills to interact with others, for instance by using project-organized work and cross-professional training programs.
- In a context of rapid change knowledge quickly becomes obsolete and the success of individuals, organizations and regions reflect the capacity to learn. Therefore our universities are open to interaction with the outside world and foster links between theory and practice.
- Innovation is associated with new technology and economic progress. But our universities have a wider agenda. In the high risk society humanities contribute by rethinking cultural identity. Social science defines and designs institutions that help people to control their own destiny.
- Some of the most serious challenges of our time require global co-operation. Therefore we stimulate researchers to co-operate globally and students to take part of their study programs abroad. We welcome scholars and students from all over the world to join our universities.
- The most important foundation of societies is knowledge. Universities deliver knowledge crucial for innovation. But contributing to innovation is not the sole task. Our universities have a historical responsibility to produce 'reasonably reliable knowledge' and to criticize 'false prophets'.
- Our universities work closely with external partners in the private and public sector. But we insist upon relative autonomy. To be effective in fostering innovation our universities must be learning sites with open debates testing ideas based upon the most diverse opinions and values.

ECIU member institutions were among the first to use project-oriented problem-based learning, offering students the opportunity to test their theoretical knowledge on projects in cooperation with industry and business. A common characteristic of all ECIU institutions is that they are based in regions where major industries have declined e.g. shipyards and mining and have consequently made a significant contribution to the regeneration of their regions. This is evidenced in the close collaborations between research groups and new emerging industries and in ECIU institutions being early proponents of technology transfer and knowledge exchange activities.

Appendix 2: ECIU members innovative profiles

Aalborg University, Denmark

- Academic staff 1.285
- Students 13.814
- International students 1.134
- Annual budget 226.5 Million Euro

Innovative profile

A characteristic feature of Aalborg University, AAU, is the ability to find new paths within research and education. As a result, AAU is a leading university in innovative ways of cooperating with the surrounding world at a local, national and international level. AAU has adopted an interdisciplinary, problem-oriented approach to research and education, and is today one of the world's leading universities within problem-based learning. OECD describes it as an almost perfect learning method, and AAU has become synonymous with the method, widely known as the "Aalborg Model".

Innovative practices – selected examples

As a key partner in regional development, Aalborg University has set up various schemes to ensure the creation of new knowledge intensive companies in the region.

Incubator:

The region of northern Jutland has a strong ICT cluster, but due to the financial crisis, several large companies in this cluster were forced to close down by the end of 2008, leaving a large amount of engineers unemployed. In an attempt to create new start-up companies and keep highly skilled labor in the region, Aalborg University set up an incubation program target solely at the unemployed engineers. In the program, the participants were given the opportunity to tap into Aalborg University's facilities and knowledge in order to qualify and start up new ventures in an academic environment of relevance to the business opportunity at hand. Participants were offered office space at the university, access to laboratories and databases, business mentoring, academic counseling relevant for their business, professional guidance, access to competent business guides and a range of courses focusing on business planning and development. This program was later merged with the ordinary incubation program at Aalborg University allowing experienced participants to collaborate and network with entrepreneurial students and post graduates. The incubation program at Aalborg University now encompasses anyone (student, staff, post graduate or industry spin-off) with a business opportunity that benefits from having access to Aalborg University's facilities, networks or knowledge & know-how.

Research programs and start-up companies in collaboration with industry:

Together with a major cleantech company in the region, Aalborg and Aarhus University had been developing a commercially and academically highly interesting field within cleantech. Because of restructuring of the company due to the credit crunch in mid-2009, the cleantech company decided to shut down this particular field, and R&D engineers together with company IP, developed in a collaboration project with Aalborg University, were being abandoned by the company. Together with two key R&D engineers within this field of interest, Aalborg University approached the company, and the IP was handed over to Aalborg University, in order for the University to found a new company



together with the two entrepreneurial R&D engineers and a venture capital fund.

The foundation of the company has been beneficial for the university and the region in two ways: it has been a key element in further developing the research field at Aalborg University, and the newly founded company has given numerous positive effects for job creation in the region through employments in the company and the university through joint research projects.

In order to further working on an open innovation paradigm in the region, this will be a story of best practice of how IP and entrepreneurs can work together with universities in founding new companies on the basis of work already done at companies, and securing that these companies can have access to the technology at a point in time more beneficial and opportune for the company.



University of Aveiro, Portugal

- Academic Staff 1081
- Students 13.368
- International students 426
- Annual budget 74.7 Million Euro

Innovative Profile

The University of Aveiro is more than a node in the Portuguese higher education network: it is a network in itself. It embodies university departments, research units, interface units, polytechnic schools and a relevant vocational education network, articulating and harmonizing the teaching and research environments. This enables the construction of individual education paths, from post-secondary vocational education to doctoral programs, including vocational training and different kinds of postgraduate specializations. Teaching activities are developed in a research-based environment, and along the academic year tens of national and international conferences are organized, generating a dynamic and multicultural atmosphere for the students. The University of Aveiro is very much concerned about the current issues of the modern society, always looking for the best resolutions for its problems. Technical and scientific partnerships, both with the industry and with several private institutions, enable the university to understand and to respond with accuracy to the present time issues, assuming a prospective position.

Innovative practices – selected examples

A new Triple Helix approach in Aveiro region

The new guidelines for the deployment of European Union (EU) Structural Funds created a range of opportunities that are leading to innovative approaches in the link between the University of Aveiro and its region. The EU policy agenda promotes co-operation between municipalities at sub-regional level, and simultaneously stimulates the emergence of new methodological approaches to policy making processes, a new set of development initiatives and broader institutional networks and governance practices.

In this context the university and an association of the 11 Municipalities in the Aveiro region, with about 375 thousand inhabitants, decided to take a bold step by traditional standards: they established a partnership for the design of a regional development program. This initiative has a twin aim: first to mobilize the diversity of disciplinary knowledge existing in the university to help to address the problems and expectations of the different municipalities and the regional community as a whole; second to initiate the process of developing a shared understanding of regional development dynamics and challenges, which indeed could and should lead to a re-interpretation of needs and expectations. This one year long project allowed putting together a common strategy recognized as being among the best in the Central Region of Portugal. Moreover, it allowed the opportunity to broaden the partnership between the university and local authorities, bringing into the process representatives of the economic fabric of the region, so building a Triple Helix approach on the basis of a broad consensus on (regional) development goals.

The articulation between the priorities of the Europe 2020 strategy and the community-based policy

agenda is a well-recognized challenge for development policy, as is the compatibility between science driven approaches to development objectives and the prosaic world of short term pressure of everyday problems and expectations. The University of Aveiro therefore set up a specific program, structured around the organization of informal meetings on selected topics, bringing together a small number of academics with complementary disciplinary backgrounds and relevant expertise, one or two staff members of the 11 municipalities and the coordination team with expertise on strategic spatial planning. Such meetings were held under the aegis of the local authorities association and the university, and were enlarged to accommodate the participation of members of regional entrepreneurs associations. The aims of the meetings were to create favorable ground for the alignment between i) science and technology perspectives, ii) local agenda perspectives, iii) robust policy frameworks, iv) entrepreneurial dynamics and v) opportunities provided by the new EU structural funds. In other word, this methodology allowed for innovative ways to bridge a path dependent on local agendas with new combinations of scientific and policy knowledge with entrepreneurial dynamism.

The process resulted in significant side benefits. As mutual knowledge and trust was further developed between local authorities and the university, a wider range of initiatives were taken. At the level of the association of local authorities, a new application for a EU financed programmed was prepared under a similar partnership, now focused on “Urban Networks for Innovation and Competitiveness”, which was built around five selected topics: education, culture, health, climate change and entrepreneurship (including social entrepreneurship). At the level of individual municipalities, other initiatives were taken often in the framework of international networks, namely under EU Interreg and Urbact programs. A new relationship between local government, small and medium sized firms and the university is emerging, integrating local public policy, economic modernization and revitalization and multidisciplinary research activity.



Universitat Autònoma de Barcelona, Spain

- Academic staff 3.080
- Students 50.474
- International students 2.151
- Annual budget 269.7 Million Euro

Innovative Profile

Universitat Autònoma de Barcelona (UAB) contributes knowledge and innovation to society at large. It equips professionals with profiles to match society's needs. The UAB has extensive research experience, which contributes knowledge and innovation. It prepares professionals with the profiles needed by society and holds an intense scientific research by hosting research centers and institutes, which together with the departments, forms the research consortium known as Esfera UAB. Its infrastructure is created entirely for university life, with all the academic, research, cultural and social activities on the same central campus. It is very committed to international projection, taking part in international programs and student exchange programs in Europe, Latin America, North America and Asia. It is strongly committed (through policies and research) to the environment, thus addressing society's grand challenges like climate change.

Université de Technologie de Compiègne, France

- Academic staff 330
- Students 3.600
- International students 15 %
- Annual budget 50 Million Euro

Innovative Profile

The University of Technology of Compiègne (UTC) was founded in 1972 as an experimental public university combining the characteristics of the prestigious French engineering school system (Grande Ecole) with those of a classical French research university. Many innovative features distinguished UTC from other higher education institutions in France. The introduction of a two semester year and a modular structure for the courses were new and the university statutes permitted UTC to recruit a third of its academic staff directly and select students based on academic performance. The inclusion of two training periods of six months each in the final years of study also created a new kind of relationship between the university and industry encouraging the integration of industrial representatives in the educational process as well as facilitating innovative industrial research projects. UTC has 8 double degree program and 143 active international exchange agreements enabling more than 50 % of its students to study at least one semester abroad



TU Dortmund University, Germany

- Academic staff 2.448
- Students 24.000
- International students 2.750
- Annual budget 226 Million Euro

Innovative Profile

TU Dortmund University has been researching and teaching at the global intersection between man, nature and technology since its establishment in 1968. It has developed a unique profile with a special combination of faculties in the natural sciences and engineering, the social sciences and the humanities. This structure produces new knowledge, methodologies and technical innovations. It also provides deep insights into how technology drives cultural change. All this is achieved through a wide spectrum of innovative research and in more than 60 bachelor's and master's programs including a broad-based teacher training curriculum.

Innovative practices – selected examples

Innovation lab

The new project “innovation lab” supports growth-oriented high-tech projects and spin-offs both at very early stage as well as during the growth process. The project was selected for funding in the context of a European regional development competition, initiated by the Ministry of Research, Science and Technology of the state of Northrhine-Westphalia. The innovation lab is part of a regional innovation network, branded the “innovation location”. In cooperation with other initiatives, this network aims at fostering technology and knowledge transfer between science and the economy, primarily small and medium sized companies, in order to establish an innovation culture within the region. Members of the network are TU Dortmund University, the University of Applied Sciences and Arts in Dortmund, the City of Dortmund, the chambers of commerce and crafts, the Technology Center in Dortmund and the economic development agency of the City of Hamm. The funding of the three-year project is supposed to start in January 2011. It offers an innovation academy, screening of business ideas and growth-oriented business plans, teambuilding tools, consultancy and interdisciplinary workshops for the further development of 12 to 15 target enterprises per year. The project focuses on knowledge-based start-ups and growth-oriented enterprises with a research background and is tailored towards research staff both from TU Dortmund University as well as from public research institutes in the region.

Culturepreneurship initiative

The “culturepreneurship initiative” (kultur.unternehmen.dortmund) supports students, staff and alumni in the development and realization of start-up ideas in the creative industries. The initiative is coordinated by the research and knowledge transfer unit of TU Dortmund University. The project is embedded into the nationwide network EXIST, funded by the Federal Ministry of Economics and Technology, and the “G-DUR” network which supports research based spin-offs in Dortmund and the region. Within the “culturepreneurship initiative”, TU Dortmund University cooperates with the University of Applied Sciences and Arts in Dortmund, the City of Dortmund, its start-up competition, the network of regional technology centers, a local center for art and media and the an incubator for IT start-ups. Support tools include interdisciplinary project and business plan seminars, a start-up



workshop (over a period of three months), information and networking events, start-up offices and coaching services. Over the last three years, 125 students have participated in the seminars, 22 companies have made use of the start-up offices and over 80 participants have completed the intensive workshops.



TUHH Technical University Hamburg, Germany

- Academic Staff: 470•
- Students 5.000
- International students 1.000
- Annual budget 55 Million Euro

Innovative Profile

Located in Hamburg, TUHH is a competitive entrepreneurial university focusing on high-level performance and high quality standards dedicating to the principles of Humboldt (unity of research and education). TUHH has a strong international orientation and also focuses on its local environment. It does so by contributing to the development of the technological and scientific competence of society, aiming at excellence at the national and international level in its strategic research fields. TUHH educates young engineers and academics within demanding programs using advanced teaching methods. Being essentially a public institution, TUHH is actively engaged in private-public partnerships and has set up the Northern Institute of Technology & Management (nIT) and the Hamburg School of Logistics (HSL), which has just started as the new Kühne Logistics University.



Linköping University, Sweden

- Academic staff 1.900
- Students 26.000
- International students 2.000
- Annual budget 300 Million Euro

Innovative Profile

Linköping University (LiU) is renowned for its innovative educational spirit, and its long-standing tradition of cross-disciplinary studies and research. The dual criteria of scientific excellence and societal benefit are guiding principles for the university's strategic enterprises. During the past decade the university has experienced rapid growth, involving the establishment of a new campus in the twin city of Norrköping and a doubling of the student population to today's 26 000. Education and research is conducted within four faculties: Arts and Sciences, Educational Sciences, Health Sciences & Medicine and the Institute of Technology.

Innovative practices – selected examples

The foremost strength – a coordinated regional innovation system, GrowLink®

The GrowLink® network is an initiative from Linköping University gathering all publicly founded organizations with a growth related agenda – in order to promote the start-up and growth of knowledge-intensive/innovative companies in the region. The operational idea of the network is to be a common, coherent regional arena where entrepreneurs and ideas in different development phases can be guided forward through an effective utilization of common resources. The goal is to create an entrepreneurial and dynamic business climate in the region to the general benefit of regional growth, public welfare and prosperity. To be a model to others, nationally and internationally, on how cooperation in the innovation system can create success stories. Key actors in the network includes: The University as coordinator; The Regional Development Council; The County Council; The County Administrative Board; Science Parks and Incubators in the region; Municipalities and all publicly funded Venture Capital organisations and foundations.

Empowering entrepreneurship, VentureZone

VentureZone offers a “one stop shop” sounding board and support function for all employees and students at the university, a free-of-charge advice on all aspects of enterprising under complete confidentiality, an inspiration and aid to the creation of new business and an internal access point the regional innovation system. VentureZone supports and inspires the thought of entrepreneurship by the distinct offer of physical meeting points on the three campus areas, supporting people and ideas with personal guidance, pre-incubator space and experimental facilities (CRL). The so called Concept Realization Laboratory aims to further improve the design of products and services by providing a creative test bench and market validation. The laboratory represents a meeting space where the two spheres of commerce and creativity can successfully interrelate as a support structure to the Venture Zone concept. On a yearly basis about 200 ideas are processed within the system producing some 40-50 new companies.

In close contact with business and society, LiU Liaison Offices

Five University Liaison offices covering all adjacent municipalities, in total 20, constituting a bridge between the university and working life in regional businesses, companies and public sector. An organization co-financed by



the university, municipalities and regional development council's, adopting a pull strategy, market needs seeks research ideas, rather than a push strategy were research discoveries and innovations seeks a potential market. The liaison officers are knowledge brokers involved in projects that create long-term capacity-building in the region, contributing to economic growth and public wealth. They are the natural entrance for the region's SMEs and contact point for student/researcher – company relations, involved in more than 500 company visits per year. LiU Liaison offers a comprehensive offer for the development of joint R&D resources, regional and international development projects, student placements; commissioned education and research; verification and evaluation schemes etc. A proof of concept organization generating a 1 to 4 cost benefit outcome.

Networks, Medleys, Clusters and focused areas of Product development

"How can we develop new business opportunities and cooperation in the field of xxx?" This the question put by LiUs Innovation Office on a regular basis. There are several ongoing initiatives ranging from BioMedley, a life science cluster, to MDPU, a focused effort of environmentally driven product development within CleanTech Östergötland, the regional competence center for environmental technology. The aim of this project is to strengthen regional business competitiveness and revenue, increase the competence and understanding of market needs and legislators demands on environmentally sound products and services. The program involves product development projects in 35 regional SMEs, supported by researchers from the university and business coaches from the regional innovations system. The goal is focused and clear: 70% of the projects should reach a commercial market within 3 years.



Technical University of Lodz, Poland

- Academic staff 1510
- Students 20.023
- International students 72
- Annual budget 93,5 Million

Innovative Profile

Technical University of Lodz, renowned for its entrepreneurial spirit, has been persistently aiming at combining its educational nature with crucial industries in order to foster partnerships between academia, research and business and to achieve a leading position on the innovation market. Considering the demand for highly professional engineers Technical University of Lodz has been constantly extending its educational and scientific offer willing to establish increasingly more cross-border linkages. TUL takes the high 4th position among Polish engineering universities. TUL as the only university in Poland belongs to the exclusive group of European education institutions that are holders of the ECTS Label awarded by the European Commission, a prestigious certificate which acknowledges introduction of the standards ensuring good quality of studies and international exchange.

Innovative practices – selected examples

The development of research co-operations with industry is an important task for TUL. The university collaborates with companies like Procter & Gamble, ABB, Siemens or Gillette. Cooperation with industry is intensified by scientific and industrial consortia. TUL takes part in the research activities of six Advanced Technology Centres and coordinates two of them, one of them BioTechMed. BioTechMed was established in 2004 and contains 15 institutions from Lodz region. The purpose of BioTechMed is to carry out long-term research as well as the development and implementation works aimed at elaborating innovative technologies having applications in the protection and improvement of the people's health and environment. The result of the activity of BioTechMed was the establishment of the European Centre of Bio- and Nanotechnology at the Technical University of Lodz in 2008. The main activity of ECBNT is the creation of a unique research center based on close cooperation of academic and industrial research institutes and integration of research activities in biotechnology, nanomaterials and nanotechnology. ECBNT received financial support and in 2015 will be opened one of the most modern R&D center in Europe.

TUL actively engages in development of Lodz region and country. In 2003, TUL joined the Industry and Technology Park Bełchatów Kleszczów Ltd. contributing its know-how in the form of innovative technologies. TUL is also strongly committed to the Łódź Regional Park of Science and Technology Ltd. In 2012, BIONANOPARK - Research Centre for Business will be completed. BIONANOPARK contains two laboratories: Laboratory of Industrial Biotechnology and Laboratory of Molecular and Nanostructural Biophysics.

A number of initiatives taken by TUL, seeking to establish effective cooperation between scientific and industry institutions, are supported by the Technology Transfer Office. Business activities of TTO are supported by commercial company Technology Transfer Centre Ltd TUL. This is the first company in Poland whose founder and sole owner is the university.



University of Strathclyde, United Kingdom

- Academic staff: 1.281
- Students: 25.105
- International students: 2.590
- Annual budget 276.6 Million Euro

Innovative Profile

The roots of the University of Strathclyde lie embedded in the revolutionary thinking of an 18th century educator who believed in the right to education for all and the relevance of education for a prosperous society. Today, the commitment to relevance remains equally strong. The University of Strathclyde aims for excellence in education, research and knowledge exchange and its achievements — graduate employment rates, research funding levels and commercialization successes — bear that out. The aim of the university's founder was to create a 'place of useful learning' — the University has combined an enterprising approach with the commitment to that concept to address the requirements of an increasingly challenging world.

Innovative practices – selected examples

Research Pooling:

The University of Strathclyde is an active participant in the Research Pooling Initiative created by the Scottish Funding Council in 2003. Research Pooling aims to encourage researchers across Higher Education in Scotland to pool their resources in dynamic collaborations between research departments in order to gain a competitive advantage in an increasingly competitive international environment. The resulting enhancement of the research base has been significant across the subject areas included – engineering, energy, physics, chemistry, life sciences, economics, geological and earth sciences, marine sciences, informatics and computer sciences and mathematics. Strathclyde has been particularly active in the pooling of energy research across Scotland delivered through the Energy Technology Partnership (ETP), an alliance of Scottish universities engaged in world class energy research, development and demonstration (RDD) that is actively engaged in numerous UK and international partnerships, including well developed links with industry and a strong track record in the delivery of RDD.

Business Incubation, entrepreneurship and start-ups:

'Technology transfer' and 'commercialization' are two phrases used to describe the transfer of technology and innovation from universities to industry, and on to the marketplace. One way to achieve this transfer of technology is via the formation of new companies based on University-owned IP, commonly referred to as spin-out companies. Additional terminology such as 'entrepreneurship' and 'enterprise' are also frequently referred to in the context of company creation. All these terms are recognized globally as key elements of economic development activity; forming new companies stimulates economic growth at a local, national and international level. The University of Strathclyde has embraced all aspects of company creation by providing practical support to Strathclyde students, graduates and researchers striving to launch new companies. Here the return on investment remains likely to be commercial and in the form of excellent PR, but includes the prospect that a Strathclyde-related entrepreneur will donate some of their future wealth to the University, such as in the case of Sir Tom Hunter and the Hunter Centre for Entrepreneurship at Strathclyde.

One example of the way in which Strathclyde supports company creation is Strathclyde Entrepreneurial Network (SEN), a community of practice that delivered 19 new companies in the academic year 2009/10. SEN is a forum that connects entrepreneurial activities at Strathclyde and promotes entrepreneurship in practice as a core value of the university. This unique network provides an informal yet sophisticated mechanism for the exchange of ideas, information and material.

The three key elements of the SEN community of practice are: 1) The University of Strathclyde – the University has a long and established history of invention, of developing applied research for the benefit of industry and the greater good of society. 2) The SEN network – a virtual incubator, it could be termed; producing a pipeline of entrepreneurial talent and commercial prospects, a center of excellence for Strathclyde persons interested in starting a new business. 3) Strathclyde100 – facilitated by SEN this is a Strathclyde alumni network of experienced business people, who become key connectors in this ‘hub and spoke’ entrepreneurial network, connecting budding entrepreneurs to funding and expertise.

Cooperation with multi-national companies and SMEs, innovation networks and platforms:

The University of Strathclyde prides itself in being a dynamic institution which is responsive to, and providing solutions for, the major global challenges of the 21st century. One means whereby Strathclyde maintains a presence as a leading international technological university is through the development of productive partnerships with industry, external academic communities and policy makers. A program that exemplifies this approach is the £30M Advanced Forming Research Centre, the first of its kind in the UK; a collaborative venture between the university, Scottish Enterprise, and engineering firms including Boeing, Aubert and Duval, Mettis Aerospace, Timet and Rolls-Royce. The aim of the center is to make the UK’s aerospace, energy, marine and automobile industries more competitive globally by delivering advanced products to the market quicker and more cost effectively.

Another mechanism used to engage with companies from global names to SME is Knowledge Transfer Partnerships (KTP). Strathclyde is one of the leading exponents of KTPs in the UK. Knowledge Transfer Partnerships is a UK-wide program to enable businesses to improve their competitiveness, productivity and performance. A KTP achieves this through the forming of a partnership between the business and the academic institution, enabling access to skills and expertise to help develop the business.

Strathclyde Links is a Scottish Government and ERDF funded project set up to help small to medium sized enterprises (SMEs) access university research and consultancy services by facilitating introductions, providing support and funding, and networking opportunities via a series of events. Strathclyde Links supports companies from any sector to work with researchers from across the University, signposting to other suitable sources of internal and external support if appropriate. The team at Links works closely with Interface, a Scottish Funding Council sponsored matchmaking service connecting businesses quickly and easily to world-class expertise, knowledge and research facilities available in all of Scotland’s Universities and Research Institutes.

Strathclyde also prides itself in being one of only 12 recipients of the UK-wide Knowledge Transfer Account (KTA). The Strathclyde Knowledge Transfer Account is a program which aims to develop the engagement between the University and external organizations and is funded by the Engineering and Physical Sciences Research Council. There are a number of types of funding available to support these engagements, varying in length from 2-3 months to 2-3 years. The industrial sectors being targeted are Power and Energy, Chemicals and Biotechnology, Advanced Manufacturing and Defence, Electronics and Communications, and Healthcare. The Strathclyde Institute for Pharmacy and Biomedical Sciences (SIPBS) Knowledge Exchange (KE) Hub fosters collaborative links with industrial partners by providing funding for pre-commercial work and KE-trained Project Champions to support companies in accessing further funding, commercial opportunities and people exchange.



Tallinn University of Technology, Estonia

- Academic staff 1.112
- Students 13.739
- International students 420
- Annual budget 1.049 Million EEK

Innovative Profile

Tallinn University of Technology's mission as a university is to provide internationally competitive education, research and innovation services in the areas of engineering and entrepreneurship, which are significant for Estonia's sustained development. The Tallinn University of Technology campus is located approximately 7 kilometers from the center of Tallinn. It includes modern facilities and up-to-date computer labs, the brand new best research library in Estonia in engineering and business, new dormitories for students, indoor and outdoor sport facilities. Tallinn University of technology highly values internationalization in higher education and continues the pursuit towards a student-centered, entrepreneurial university.



University of Twente, The Netherlands

- Academic staff 1.496
- Students: 7.849
- International students: 607
- Annual budget 320 Million Euros

Innovative profile

The University of Twente (UT) is well-known for its entrepreneurial mindset. In little over twenty years, the university has generated over 600 spin-off companies. Their survival rate is high, thanks to university support in the early years of their existence. Furthermore, UT's major research institutes recently started business accelerator initiatives to shorten the time-to-market of promising scientific ideas. Within Kennispark Twente, scientists and entrepreneurs meet in the lab: this is stimulated by facility sharing and new on-campus business opportunities.

Innovative practices – selected examples

From Entrepreneurial University to Entrepreneurial Region

The most salient characteristic of the valorization activities in Twente, is that the approach includes the regional governments: the university, the city and region, the province and the Saxion university of applied sciences. Together they started a foundation called Kennispark Twente and the aim is to create new jobs for our region. Initiatives include:

Investment capital

TOP – Temporary Entrepreneurial Positions

In the 1980s the University of Twente started with so called Temporary Entrepreneurial Positions. This program enables university researchers to start their own company. It includes support in drawing up a business plan, coaching by a research group and a business coach. It is also possible to get an interest-free loan of 20.000 euros for the start of the company. These support measures are available to participants for 1 year and the participants are screened and monitored throughout their participation in the program. About 30 companies make use of this program a year. www.utwente.nl/top

Informal Investment

This year UT started a network called 'Meesters van de Toekomst' (Masters of the Future). This network offers support by informing new informal investors about the do's and don'ts, helping companies prepare for informal investment and by organizing matchmaking sessions between companies and informal investors. The network includes over 200 active informals that have invested millions over the last few years. The key success factor is that it links experienced entrepreneurs that have become informal investors to startups. www.meestersvandetoekomst.nl (Dutch)

Seed Investment Fund

In 2010, the University of Twente founded a seed investment fund of approximately 18 M€ together with a regional fund and a number of wealthy regional entrepreneurs. The fund invests in promising starting firms and is based on a strong management team with links to the larger funds that are available in the European environment.



Business Development Support

Venturelab Twente

VentureLab Twente offers business development support for technology-based start-up businesses and is a business growth accelerator for well-established companies. The one-year business development program jump-starts and provides sustainable growth for young businesses, as well as long-standing companies, which aim to grow further and more rapidly. Venturelab Twente is about creating a team with people that have different skill and is a cooperation between the University of Twente and Saxion University of applied sciences. www.venturelabtwente.com

Open innovation Centers

Thermoplastic Composites Research Center

In Twente there are have several Open Innovation Centers in which companies and the UT actively collaborate in R&D. One example is the Thermoplastic Composites Research Center. TPRC is an open innovation, research- and development center that aims for Thermoplastic Composites for a broad range of end use markets. In this research center Boeing, Ten Cate, Stork Fokker and the University of Twente participate. As Tier 1 members in the center, they have access to the IP that is developed. Kennispark Twente helped this center in its first steps by acting as a neutral party, helping organize the collaboration and acquiring external funds. <http://www.tprc.nl/>

HighTech Factory

Recently the UT opened its new cleanroom and laboratory for nanotechnology. Its old cleanroom is being transformed to a production facility for companies that are active in micro- and nanotechnology. This enables them to focus on business development and growth, instead of the expensive infrastructure that they need. Hightech Factory also offers the 20 companies involved an operational lease facility for the necessary equipment. This enables the companies to scale up their production. www.hightechfactory.com

Events - Powered by Twente

Powered by Twente is a foundation that organizes events that focus on innovation and entrepreneurship. Each year 100 – 150 small and large events are organized. These events have several goals:

- Networking and getting to know more potential partners and customers
- Knowledge sharing: what are the current trends in the market and what could be future trends according to science
- Workshops that focus on certain skills for (high-tech) entrepreneurs
- Events that promote entrepreneurship and that put successful entrepreneurs in the spotlight
- Events that bring students into contact with SME's
- Events that link between investors and investees

These events make sure that the right people come into contact with one another and that makes it a unique selling point for the Twente area. Kennispark is more than an area with facilities and office space, it is an active network that you join when you move your business to our innovation campus Kennispark Twente.



ECIU Associate partners – beyond Europe

Tecnológico de Monterrey, Mexico

- Academic staff 8.448
- Students 92.875
- International students 4.524

Innovative Profile

Seeking to educate professionals and equip them with the skills needed to succeed in the business world, Tecnológico de Monterrey has developed into an institution recognized, nationally and internationally, for the academic excellence. Tecnológico de Monterrey was the first Latin American university to connect to the internet and was also a pioneer in the use of wireless technologies in Mexican businesses. The use of technology for education has been a landmark and now Tecnológico de Monterrey is the first university offering courses direct to your PDA. The university system is spread throughout Mexico, and it currently extends its educational services to other Latin American countries by way of the Virtual University.

Southern Federal University, Russia

- Academic staff 3.047
- Students. 49.123
- International students 500
- Annual budget 13.7 Billion Roubles

Innovative Profile

The Southern Federal University is a dynamic, modern university with high standards in teaching and research and a growing reputation for enterprise, employment and opportunity. At present SFedU, the legal successor of Rostov State University, comprises Technological, Teachers' Training and Architecture Institutes, 35 faculties, 23 branches, 70 Research units. SFedU has 2 campuses in Rostov and Taganrog. SFedU has well established international links with 300 universities from 40 countries. It is the largest center of education, science and culture in the south of Russia. One of the most exciting features about study and research at SFedU is its breadth. It encompasses humanities and arts, education, business, social and behavioral sciences, engineering and natural science.



Swinburne University of Technology, Australia

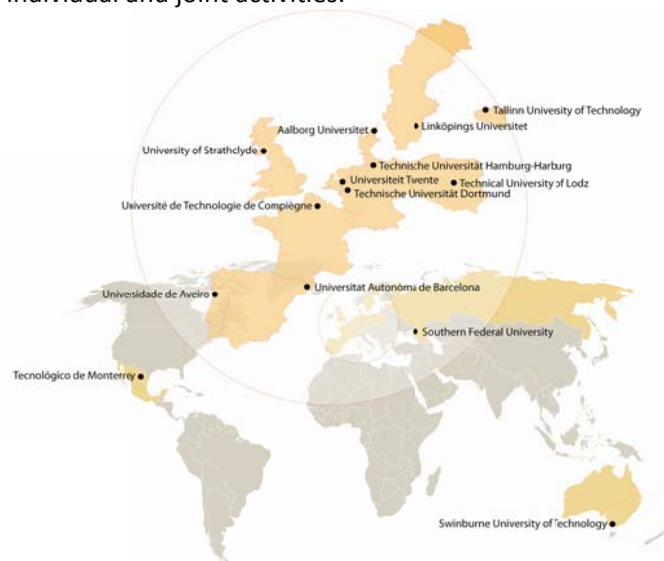
- Academic Staff: 1.130
- Students: 59.334
- International students: 7.677
- Annual budget 354 Million A\$;

Innovative profile

Swinburne has a strong reputation in Australia and overseas as a provider of career orientated education and as a university with a commitment to research. The university maintains a strong technology base and important links with industry, complemented by a number of innovative specialist research centers which attract a great deal of international interest. A feature of many Swinburne undergraduate courses is the applied vocational emphasis and direct industry application through Industry Based Learning (IBL) programs. Swinburne was a pioneer of IBL, a program which places students directly in industry for vocational employment as an integral part of the course structure. Swinburne is now one of a few Australian universities whose responsibilities span the range of programs from apprenticeships to PhDs. In keeping with this breadth of involvement, the university continues to play a leading role in creating new approaches to integration between sectors.

Appendix 3: The European Consortium of Innovative Universities ECIU

The European Consortium of Innovative Universities is a network of universities who are united by a common profile, by shared beliefs and interests, and mutual trust. The ECIU universities see themselves essentially engaged in the Knowledge Triangle: promoting the interaction between research, education and innovation. They are innovative in that effect that they are not only open to new approaches in this field, but they also strive for the implementation of these new approaches. The ECIU member universities are strongly committed to the development of the European Higher Education Area and the European Research Area. They support the goals of the EU 2020 Agenda and wish to contribute to its success through their individual and joint activities.



ECIU member universities as of summer 2010

ECIU maintains the profile of a network of universities that are relatively young, entrepreneurial, and progressive and have close ties with industry and the region where they are situated. The ECIU universities all have academic strengths in engineering and social sciences; also life science and humanities are strongly represented within ECIU. The partners are very committed to developing and implementing new forms of teaching, training and research, to assuring an innovative culture within their walls, to experimenting with new forms of management and administration, and to supporting and nurturing internationally-minded staff.

Core areas of enhanced commitment are:

- International education and student mobility (including joint educational programs)
- Human resource development through mobility and the Leadership Development Programme
- The Knowledge Triangle (technology transfer activities and cooperation with the region)
- European policy

The spectrum of activities is amended by offering a platform for additional joint projects, e.g. in the area of international benchmarking, and for finding international partners and facilities for research.



Competitive Advantage

The ECIU is a unique network of universities with its base in Europe, but building on the experience and insights of institutions in other parts of the world to reflect the global nature of Higher Education in the 21st Century. Whilst many consortia today are innovation based, ECIU member institutions were pioneers in pursuing an innovation agenda. The ECIU now has a collective wealth of experience and expertise in innovative education, research, knowledge exchange and administrative structures and practices. The ECIU offers a pool of resources e.g. in the field of problem based learning; in promoting entrepreneurship amongst students and staff and in treading new roads in the collaboration with business, industry and the public sector which provides a sound basis for the ECIU's various activities. ECIU membership is a vehicle for maintaining a competitive edge, allowing members to learn from each other and to take forward activities that individual institutions could not pursue on their own. By combining resources, ECIU institutions develop top quality activities by picking out the very best of education and research activities in selected institutions and combining this into offering e.g. new joint masters programmes. Externally, the ECIU provides a collective, more powerful voice with greater impact than individual institutions engaging in European public debate on their own.

ECIU Strategy

The ECIU's strategy is to remain a small, tightly-knit, consortium that collaborates on different activities and makes a difference to both its member institutions and the surrounding society. The ECIU's activities reflect the broader EU 2020 strategy and contribution to Europe's development with the ECIU's focus on best practice in technology transfer and the emphasis on making use of research outcomes either through commercialisation, spin-out formations or through network collaboration and strategic partnership with industry.

Examples of ECIU activities benefiting students and staff are:

- Curriculum development through the Graduate School
- Offerings of new European Joint Masters programmes
- A European cross-institutional Leadership Development Programme
- Staff Development through tailor-made programmes for administrative staff
- Opportunities to pursue European funding to support activities such as DIFUSE; a project on best practice across the ECIU in technology transfer
- Joint responses to EU consultation processes

The ECIU engages in the debates on the EU 2020 strategy, new innovation policies and the creation of a European Higher Education Area and efforts to contribute to policy developments in the field of education and innovation in particular.