

# **Implementing the Innovation Union: Next steps in Knowledge Transfer**

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## Executive Summary

The Varese Conference “*Implementing the Innovation Union: Next steps in knowledge transfer*” demonstrated the progress made on the management of knowledge transfer (KT) activities. Policies and initiatives are put in place in many Member States (MS) that help to implement the Commission’s Recommendation on the management of intellectual property in knowledge transfer activities and the Code of Practice for universities and other public research organisation (PROs).

The professionalisation of the KT functions is taking shape and actions are in preparation for the accreditation and certification of KT professionals. Universities and PROs are engaging in responsible partnerships with the private sector and other societal partners, taking a more long term view on these relationships. Expertise on Intellectual Property is building up and shared across organisations and borders. Tools such as patent pooling, technology trading and IP portfolio management are being explored and showing positive results.

Notwithstanding this recent progress there are still many actions needed to achieve a fully effective KT and intellectual property management in Europe. Entrepreneurship and the finance of new knowledge based ventures need to be reinforced to reap the benefits of public and private research. All stakeholders have a role to play to tackle the remaining challenges and bottlenecks.

A number of steps forward were suggested during the conference:

- Public authorities in the MS and Associated Countries (AC) should make their overview of progress on implementing the Code of Practice visible and transparent;
- KT requires long-term commitment and consistency from policy makers, universities and research organisations. Government agencies should start with making their own rules consistent and transparent. The Commission could develop FP8 tools for fostering the dissemination and exploitation of research results with clear IP framework conditions and models in view of the open innovation paradigm;
- University rankings and research assessment systems should include indicators related to various KT functions. The European Commission could play a role in introducing KT-indicators to the European university rankings and Member States could include this to research assessment systems of universities and PROs;
- Universities and PROs should allocate sufficient resources to their KT functions and ensure that their KT-staff acquires the right level of professional skills. In addition researchers and entrepreneurs need training and guidance on KT and IP issues;
- There is still a need for more work to develop smart indicators and reliable data to monitor KT activities and their effectiveness. Particularly further research is required for the analysis of societal and economic impact;
- The European Commission, MS and AC should develop processes, methods and tools to unveil the large pool of unused IP that has resulted from public research in Europe. This could be achieved, for instance, by encouraging the development of IP-portfolio’s across institutions, by developing mapping techniques to identify strings of related IP and/or to support intermediaries who could act as brokers or clearing houses in this process. The Commission is to examine how it can support the use of IP Pools;
- European Commission should explore the possibility of building a wide partnership for seed and early stage funding.

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## 1. Introduction

The third annual seminar on Knowledge Transfer (KT) took place in the inspiring surroundings of Varese and Ispra (Italy) on 11 and 12 November 2010. The seminar, under the patronage of the Belgian EU Presidency, was organised by the European Commission, DG Research and the Joint Research Centre. The participants were mostly practitioners and policy makers involved in KT from many EU Member States and countries associated to the EU Framework Programme on Research and the European Commission. The aim of the seminar was to discuss the topic of knowledge transfer in the context of the Innovation Union flagship initiative and to examine the next steps that need to be taken. The seminar stimulated lively discussions and gave the participants ample opportunity to network. The remainder of the report summarises the presentations and debates. The final section provides the conclusions and recommendations for next steps.

## 2. The background

The challenge to exploit Europe's research results with a view to increase Europe's competitiveness is one of the pillars of the European Research Area. In 2007 the European Commission published the Communication *"Improving Knowledge Transfer between research institutions and industry across Europe"*<sup>1</sup>. This Communication calls for European researchers to recognise the advantages of working more closely with business and vice-versa; for research assessments to consider innovation as well as academic excellence; for business to increase its investment in R&D; and for public administrations to make the mobility of researchers between these sectors easier. All these stakeholders are encouraged to take a proactive role in Knowledge Transfer.

Developing a common framework for Intellectual Property is an essential element of enhancing knowledge transfer. A year after the aforementioned Communication the Commission published its *"Recommendation on the management of intellectual property in knowledge transfer activities and Code of Practice for universities and other public research organisations"* as one of five ERA initiatives<sup>2</sup>. The document provides practical guidelines for the effective management of intellectual property generated through publically funded research. The Commission Recommendation was subsequently endorsed in a Council Resolution passed on 30 May 2008<sup>3</sup>. This broad political support provided the context for a number of activities involving KT stakeholders. The Commission recommends that public research organisations define KT as a strategic mission and establish policies for IP-management. Furthermore, it proposes to promote a broad dissemination of knowledge, to improve the coherence of ownerships regimes, and to facilitate KT in cross-border collaboration.

In January 2009 an ERAC<sup>4</sup> working group on KT was set up to report on the implementation of this recommendation. In addition an Annual Forum on Knowledge Transfer with business and research stakeholders was set up to discuss the

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<sup>1</sup> COM (2007) 182 final

<sup>2</sup> Commission Recommendation on the management of intellectual property in knowledge transfer activities and Code of Practice for universities and other public research organisations (COM(2008)1329)

<sup>3</sup> Council Resolution on the management of intellectual property in knowledge transfer activities and on a Code of Practice for universities and other public research organisations – "IP Charter Initiative" (10323/08)

<sup>4</sup> European Research Area Committee (formally CREST)  
[http://ec.europa.eu/research/era/partnership/process/crest\\_en.htm](http://ec.europa.eu/research/era/partnership/process/crest_en.htm)

implementation of the Code of Practice and to exchange best practices. The Varese/Ispra seminar is the third in this series of initiatives organised by the European Commission and participants mostly practitioners in KT.

The audience was welcomed by the joint organisers Mr Tiit Jürimäa of DG Research and Mr Giancarlo Caratti of the EU's Joint Research Centre (JRC).

Mrs **Veerle Lories** (IWT and representative of the Belgian EU Presidency) opened the seminar quoting Margaret Fuller: *"If you have knowledge let others light their candles on it"*. She welcomed the seminar as an important opportunity to share knowledge in the KT community. She emphasised that KT has a great impact on entrepreneurship, growth and eventually employment. It can help young researchers to learn about industry and entrepreneurship, and lead to new linkages between research and industry. Two Belgian examples were highlighted as steps forward to improve the exploitation of research and innovation. The Tetra Fund run by the Flemish Agency IWT aims to encourage KT from public sector research to the private and societal sector. In Wallonia the 'Plan Marshall' has a strong focus on entrepreneurship and knowledge transfer from technological clusters.

Mr. **Tiit Jürimäe (DG RTD)** gave an overview of the work of the ERAC KT working group, consisting of EU Member States (MS) and Associated Countries (AC). The drivers for improved Knowledge Transfer are evident. International co-operation – within Europe and with third countries - is of increasing relevance to all stakeholders. Professional IP management underpins reliable partnerships in international co-operation.

The work of the KT group has focused on:

- Reviewing and reporting on initiatives taken at national levels to implement the Recommendation and Code of practice;
- Identifying specific issues and develop guidelines on these issues;
- Identifying indicators for measuring progress;
- Reviewing how the Recommendation and Code of Practice are promoted in relevant EU initiatives.

Where the group has recently completed a study to review the progress made<sup>5</sup>, clear advancements have been made in the MS and AC. Quite a number of initiatives can be reported from the MS, varying from legislation changes, guidelines, model contracts, linkage of KT offices, and a general support to the professionalisation of the KT sector. Making this progress more visible in the wider research community is an important step in the communication between all KT stakeholders. A member of the audience illustrated that the existence of the Code of Practice was of great support in the Eureka negotiations with South Korea, where it was clear that the Code helped to confirm that the EU negotiated as EU 27+ rather than as a group of single countries.

### 3. Knowledge Transfer and the Innovation Union

Cooperation between the world of science and the world of business must be enhanced, obstacles removed and incentives put in place, according to the Innovation Union, one of the Flagship Initiatives of the Europe 2020 agenda<sup>6</sup>. Remaining barriers for entrepreneurs to bring 'ideas to market' must be removed: better access to finance

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<sup>5</sup> Report by the ERAC working Group on Knowledge Transfer, 2010 Report on the Implementation of the Council Resolution and Commission Recommendation on the Management of Intellectual Property in Knowledge Transfer Activities and Code of Practice for Universities and other Public Research Organisations by Member States (MS) and Associated Countries (AC), 2010.

<sup>6</sup> Europe 2020 Flagship Initiative Innovation Union, SEC(2010) 1161

(particularly for SMEs); affordable Intellectual Property Rights (IPR); smarter and more ambitious regulation and targets; faster setting of interoperable standards; and strategic use of our massive procurement budgets. As an immediate step, agreement should be reached on the EU patent before the end of the year. These Innovation Union actions are at the core of the KT Communication. Important next steps to support the implementation of the Council Resolution start with a number of stakeholder events, both at the international level (e.g. a Thematic Forum on Knowledge Transfer, Eureka working groups on the topic, continuation of the ERAC working group) and at national levels.

Speaking at the first European seminar on KT after the launch of the Innovation Union, Mrs **Francesca Doria** (DG Enterprise) took the opportunity to give the audience more details on the next steps for KT as featured in the Innovation Union.

The Innovation Union (IU) has defined a wide set of commitments for the Commission, the Member States and other stakeholders. Two commitments in particular are related to knowledge transfer. Commitment 21 states that:

*“ The Commission will **facilitate effective collaborative research and knowledge transfer** within the research Framework Programmes and beyond. It will work with stakeholders to develop a set of model consortium agreements with options ranging from traditional approaches to protect IP through to more open ones. Mechanisms are also needed to further strengthen knowledge transfer offices in public research organisations, in particular through trans-national collaboration. “*

This commitment includes some actions such as an ex-post assessment of current IP rules in the Framework programme (FP), provision of model consortium agreements and support to better networking of national knowledge transfer.

In commitment 22 the IU states that

*“... by the end of 2011, working closely with Member States and stakeholders, the Commission will make proposals to **develop a European knowledge market for patents and licensing**. This should build on Member State experience in **trading platforms** that match supply and demand, **market places to enable financial investments** in intangible assets, and other ideas for breathing new life into neglected intellectual property, such as patent pools and innovation brokering.”*

Thus improving knowledge transfer is an important pillar of the Innovation Union as well as the European Research Area. The achievements already made on KT will be taken a step further with the IU initiatives. The European institutions have made it a priority to start implementing the various commitments and actions presented in the IU. The coming months in late 2010 and early 2011 will feature many debates and decisions to help realise the Innovation Union. The audience was invited to use their own events to disseminate the Recommendation and the Code of Practice and thus to participate actively in the implementation of the IU.

Mrs **Simona Seikyté** (DG Internal Market and Services) gave an update on the latest developments on launching a single European Patent. Her presentation described the urgent need for a single EU patent, given the current fragmentation of the internal market and the high costs, complexity and legal uncertainty that it entails. The costs of patenting in Europe are dramatically higher than in other parts of the world. The political decision process to come to the single European patent has been long and many steps still need to be taken. The European Council debate to establish a unified European patent system was taking place at the same time as the Varese seminar. However, no agreement was reached on this matter as we heard from the speaker. She indicated a strong probability that an enhanced cooperation between willing EU

Member States will be initiated to create a unitary Patent starting with a minimum of 9 EU Member States.

The participants asserted that we should not only focus on the European patent, but start making improvements in the whole KT chain, using a holistic approach. The suggestion was made in the discussion that national IPR offices should support the European Patent Office to remain efficient and to make sure that a European patent is really used. Improving the national framework conditions is a good step forward, in making a future European patent more effective.

It was suggested in the discussion that universities should take a long-term view on their IP strategy, as they will be in a disadvantage when having one-off negotiations with large corporations that do have a long-term view on the company's IP portfolio.

It was also suggested that international collaborations with third countries should not only be seen from the perspective of a potential threat to IP, but also as an opportunity for both sides. Opening up the opportunities provided by international co-operation policies outside the research domain (e.g. EU development aid policy) could make the efforts much more effective and efficient. It is urgently needed to start taking up these opportunities.

**Mr Wawrzyniec Perschke** (DG Enterprise) in his presentation explained that the European Commission has actively supported capability building of KT professionals. IPR support measures include the network IPEuropAware (with an IPR Helpdesk) and a dedicated IPR helpdesk for China. The main objective of the network is to raise awareness and knowledge of IPR, especially for SMEs. In the future the network will carry on, pending further budget decisions, using the name IPorta. The China Helpdesk provides practical help for SMEs wanting to trade in China and having to deal with IPR related issues. This pilot action will be fully implemented in the future.

A discussion arose on how to assure the quality of specialised advice to KT offices and practitioners. A member of the audience illustrated that his organisation often uses US patent lawyers as advisors, as they are often the best qualified. Mr Perschke explained that the EU supported IPR Help Desk mainly help SMEs with an initial guidance before they go to professional attorneys. A suggestion was made that perhaps the EU could help setting up networks between EU and US KT professionals to learn from each other.

**Mr Giancarlo Caratti**, from the JRC and co- host of the event, explained the role of the JRC regarding the management of IPR of the European Commission. The Commission possesses a large portfolio of IPR, including patents, trademarks, software design rights and know how. In addition, IPR management for the EC entails not only the formal protection of IP but also the encouragement of the market uptake of research results. The EC has to ensure to respect third party IPR, for instance used in EC projects, to avoid legal risks and financial damages. There is a clear trend of rising demand for IPR-related support within the Commission. An Interservice Working Group, involving several DGs, has recently been set up to coordinate the establishment of an inventory of the IPR used and owned by the EC.

The presentation reflected on the trends in the KT in public research organisations. A key message put forward by Mr Caratti is that the managers of public research organisations need to be made aware that KT is not just about financial gains - very few technology transfer offices manage to generate financial returns – but more importantly about the socio-economic role that public research organisations play to generate knowledge, innovation and economic growth. This includes a mind set geared towards opening up the campuses to companies and entrepreneurs. One reaction from the audience was that while focusing on entrepreneurship, we should not forget the large industries that today create most of the jobs in the EU. Nonetheless, as another participant responded, KT supports the growth of new industrial sectors, so we should nurture the entrepreneurs who might be at the basis of these emerging industries.

On the second day, after Mr **Dolf van Hattem** acting director of JRC site of Ispra presented an overview of the vast research activities of the Joint Research Centre, the participants had the opportunity to visit several JRC laboratories at the site in Ispra. Research teams at the laboratories introduced their work and engaged into questions and answers with the seminar participants.

## 4. Intellectual property and KT aspects in collaborative R&D

This part of the conference consisting of three sessions discussed intellectual property and knowledge transfer aspects in collaborative R&D. They highlighted the topics of exploitation of publicly funded research, patent pooling and open innovation partnerships. The three sessions are summarised in the following sections. The outcomes of the sessions were presented at the plenary session during the second day of the seminar. These sessions were moderated by Patrick McCutcheon of DG RTD and Olivier Eulaerts of the JRC.

### 4.1 Incentives to exploit publicly funded research

In a knowledge-based economy it is essential that research and research results are conducive to and relevant for innovation. The European paradox is that while European research institutions are good at producing academic research outputs, they seem less successful at transferring outputs to the economy. An optimal combination of conditions, rules and incentives within the European framework of publicly funded research may lead to an improvement of KT and exploitation. The first parallel session featured two representatives from research organisations that have considerable experience with knowledge transfer. They both gave their examples and experiences on bottlenecks in KT and suggestions for ways forward.

Mr **Vincent Ryckaert**, patent attorney at IMEC in Belgium, illustrated the creation of shared IP platforms, where IMEC acts as a bridge between universities and industry. There are a number of lessons from the experience at IMEC that can be applied more widely. The position of IP needs to be considered throughout the whole life cycle of research projects, from the very start of research projects through to the eventual commercialisation. One has to realise that the various partners in an R&D collaboration have different interests and occupy different positions in the life cycle. The key challenge is to find the right balance in agreements such that they are acceptable for all parties involved. IP is only one tool in a broader set of collaboration mechanisms. In IP negotiations, public research organisations should build long-term relationships with their industrial partners, and not go for the quick win of a stand-alone deal. Open innovation makes the IP context even more difficult as public research organisations will increasingly find themselves having to be granted licenses from companies in order to conduct research on a more applied level. Thus the context in which IP originates and is exchanged is becoming increasingly complex. There is no easy solution available and solutions will have to be found in a structured way. This reinforces the need for clear IP framework conditions and models.

Mrs **Gillian McFadzean** (Heriot-Watt University) made a strong plea for keeping a 'people perspective' in the KT debate. To make KT work requires the collective passion of people involved across all relevant institutions. The EC Communication on KT covers the key bottlenecks, so slow progress is not a matter of lack of information on what actions should be taken. The real issue is that the people involved are not acting consistently to implement the guidelines and address the problems. The bottleneck now is one of a necessary cultural change. A way forward to overcome the cultural



challenges is to increase the mobility of people between the private and public KT sectors.

In addition, better communication is needed between all stakeholders. Universities need to be involved in the KT discussion at the highest levels (rectors), not just at the level of KT professionals. No one is held accountable for their KT efforts, or lack thereof. The universities' activities in KT and the positive effects these have on society need to be communicated much better to obtain a greater public support for the work of the universities. There seems to be a fear to have the relevance and impact of research assessed. Government research assessment systems do not have KT activities as performance criteria.

The business sector is also reluctant to engage in KT actions and companies have difficulties to reconcile their short and long term needs. An example given of a Scottish KT incentive scheme granting extensive IP rights to SMEs over the results achieved demonstrated that despite generous (financial) support, opportunities were not grasped. The scheme remained mainly unused.

National governments have not been transparent about the progress in implementation of the Code of Practice in their countries. It would be beneficial to communicate progress as well as shortcomings in KT. The work done so far for the ERAC group to review progress on KT needs to be shared with the wider KT community. The KT Recommendation should be more actively promoted by policy makers at national level.

Thus all stakeholders have a role to play. University and industry leaders, policy makers, research funders and the public should make the expectations concerning KT clearer and pass incentives and rewards to those researchers adhering to these expectations. A key challenge for KT is the willingness to make this change.

The point on the appropriate incentives raised quite some debate. It was suggested that EU university rankings should include the performance of KT of universities. This requires a common acceptance of appropriate indicators measuring KT. Members of the audience argued that the peer pressure and incentives should not be (solely) directed at individual researchers, but also at the institutions to provide the right incentives for those individuals and groups who are committed to exploitation of research results. It should be on the shoulders of the leaders of institutions to perform and not on the individual researchers.

It was also argued that we need to avoid linearity in the thinking about exploitation and expect that commercialisation starts when research ends. The relationship with potential commercial partners from industry needs nurturing at an early stage and with long term relationships in mind, rather than an ad hoc contact at the end of the research project. There is much work to be done to overcome the 'valley of death', where research results need considerable additional technological development, before market commercialisation can take place. Access to seed and venture capital is a key issue at this stage.

## 4.2 Patent Pooling

Patent pools – portfolio of patents and other relevant intellectual property held by various actors who agree to cross license and/or license them to third parties – exist for more than a century. By streamlining licensing processes, the patent pools serve as a one-stop shop to facilitate the access to the relevant IP assets protecting a technology. The formation of a patent pool involves significant coordination costs. Different organisational models have been used to establish patent pools, ranging from simple agreements, among a limited number of IP holders, to more complex contractual arrangements aiming at establishing a dedicated licensing vehicle. Today patent pooling is of great relevance in order to accelerate market deployment of innovations. More and more public research organisations collectively set up pools to facilitate their interaction with industry. This session provided practical examples from the medicine area and looked at the benefits of patent pooling from an economics perspective.

Mr **Esteban Burrone** (UNITAID) introduced the Medicines Patent Pool Initiative (MPPI), a portfolio of patents and other relevant IP held by various actors made available on a non-exclusive basis to third parties against the payment of royalties. The urgent rationale for setting up this initiative was to make medicine for the treatment of HIV/AIDS more accessible to developing countries, since by forming a patent pool the price of the medicine would decrease and therefore be more affordable by these countries. The World Health Organisation was the first to introduce the patent pool concept to the public health field, particularly for developing countries. The aim of the pool is to reduce the prices for HIV/AIDS drugs and thus also supporting the development of more refined treatment. The IP rising costs were squeezing the budgets for medicine for the countries most at risk. The patent holders in the pool have the advantage of sharing responsibility of adapted formulations of the medicine (e.g. for children with HIV/AIDS which forms much larger threat in developing countries than in developed countries), adapting royalties to what developing countries can afford, gaining a reputation as a leader in providing medicines to developing countries and reducing transaction costs. In addition it prevented non-voluntary actions – e.g. forcing companies through regulation to provide access to their IP – for instance by the US National Institute of Health (NIH). The NIH gave a strong boost to the pool by being one of the first organisations to license its patents to the pool.

An important challenge to patent pools like the MPPI is to get all the patent holders to agree on terms and conditions, e.g. on the royalty schemes. A particular challenge in the case of the MPPI is to align the public driver (health) and the commercial interests of the companies. In the case of HIV/AIDS, where millions of lives are at stake, there is of course a strong motivation for all the actors involved to make the initiative work.

The second presentation by **Yann Ménière** (MinesParisTech) looked at the advantages and disadvantages of patent pooling from an economics perspective. He explained that with more and more complex technologies, the risk of infringing several patents for one product is becoming an increasing problem. Examples can easily be found in electronics (e.g. with more than 10.000 patent owners related to micro-processors) as well as in health and biotech industries. This can lead to high transaction costs, a stacking of royalties and thus stifling demand and deteriorating innovation. Examples of innovative licensing mechanisms to deal with this patent thicket are open resource science (e.g. in biology in the Tropical Disease Initiative), IP clearing houses, and patent pools. Patent pools were for a long time being treated as ‘suspect’ mechanisms by anti-trust authorities due to the risk of collusive practices.

Today these authorities accept the mechanism more easily, under certain conditions. For instance antitrust law requires that pools include only essential patents.

Patent pooling is still a complex issue. Patent holders, when considering entering a patent pool, shall realise that reduced royalty rate per individual patent owner (a common consequence of a patent pool) is normally counterbalanced by reduced transaction costs. These two effects contribute to the wider diffusion of a technology. If pooling does not provide the opportunity for reaching larger markets, then the business case is not very attractive for a patent holder. A potential disadvantage of pooling is the strategic behaviour of some companies to stay out of the pool and maintain high royalties. There are no easy solutions for the valuation of the IP that parties bring into the pool. More recent pools are using better indicators based on patent families.

Participants argued that patent pooling and joint IP portfolio management is something that could be done much more actively by European public sector research organisations. There are examples of these types of public sector joint patent portfolio's, such as the Helmholtz and Leibniz Associations who have one organisation dealing with all IP management in the National Genome Research Network. It was suggested that European public sector organisations could be much more active in stringing single patents into more useful patent portfolio's. A tool the European Commission could help develop is mapping techniques to identify available patents in Europe.

### 4.3 Open Innovation partnerships

The third parallel session dealt with new forms of partnerships in innovation. Businesses and PROs are increasingly embracing open models of innovation, relying on more complex systems of creating, transferring and acquiring knowledge and often depending on external partners. Firms recognise that they can use external as well as internal ideas. These partnerships, which have a growing international dimension, inevitably require more sophisticated strategies for knowledge management. This requires a new approach towards the management of knowledge, existing infrastructure and regulations on both national and European level.

Mr **Erik Vermeulen** (Philips and Tilburg University) highlighted the fact that successful high-tech eco-systems such as Silicon Valley, not only have a healthy and dynamic business environment, top researchers and world leading universities, but also provide the right 'exit environment' for investors in start up companies. This entails various mechanisms by which investors (such as venture capitalists and corporate investors) can trade their early stage investments in high-risk innovative firms and thus recoup their original funding. The US, in comparison to Europe, has a business environment that is better geared to investment in high growth companies. As a consequence a much larger share of companies, featuring in the Global 500 and founded in the last 35 years, are from the US (13%) rather than from the EU (4%). Europe is facing a big challenge as venture capital in Europe is retreating to more mature companies. European countries have a relatively small share of venture capital investment from outside Europe. In addition various government-led venture capital schemes have not proved to be successful. One of the answers to these challenges could be for different types of high risk investors to work together.

One effect of open innovation is that large corporations are stepping up their interest in corporate ventures in the seed and early stages. They are increasingly investing in innovative start-up companies that operate as partners in their open innovation network. More so than in the past, these investments are aligned to the corporation's business strategy and therefore give the opportunity to establish longer term strategic alliances with these high-tech start-ups. The speaker stated that the larger

corporations understand the technological and potential markets of high tech start-ups better than private and public venture capital funds.

The involvement of corporations in providing seed and early stage capital can bring added value in terms of coaching and partnership opportunities. In addition it could lead to more promising 'exit routes' if these corporations develop an interest in acquiring these start-ups. Thus, there is a huge opportunity for government-led venture schemes, corporations and private venture capital funds to work together to invest in the new large companies of tomorrow. This could become a new European partnership model that livens up the European venture capital market that has become risk averse.

Finally, the speaker illustrated the Japanese initiative Life-Science Intellectual Property Network Fund in the field of medicine and medical treatments which is managed by IPSN<sup>7</sup>. The objective is to overcome the barriers between universities, public research bodies and bundle their IPs. At present it pools 2000 patents in the field of biomarkers, stem cells, cancer and Alzheimer disease.

In discussion, it was also pointed out that Europe has a large pool of sleeping capital, for instance with medium and large family owned businesses and with private business angels. These could also be drawn in into a European wide partnership for seed and early stage funding. In addition it was pointed out that some EU Member States have introduced quite successful fiscal schemes for business angels to invest in seed capital.

Mr **David Joyner** (University of Wales, Bangor and European Universities Association) told the audience that universities are increasingly aware of their role in society as responsible partners. They are not just there for providing education, performing research and solving technological problems, but they also provide a 'public space' (both in a physical and intellectual sense) in their regional communities. The wide-ranging need to achieve success in partnerships is shown by it being the core driver of Henry Chesbrough's open innovation model, which refers to commissioning research outside of organisations, sharing IP, optimising business and technology models, and human capital exchange. A powerful resource to enable this to happen is the *Responsible Partnering Initiative* jointly developed by major European organisations since 2005. The fact that this represents the views of universities (EUA), RTOs (EARTO), major private sector organisations committed to research (EIRMA) and Knowledge Transfer professionals (PROTON-EUROPE), combined with confirmation in 2007 that these principles apply equally to SMEs, make the *Responsible Partnering (RP) Guidelines* a set of tools of enormous importance. The ten principles proposed, and analysed in detail, should be used as a key toolbox to develop profitable, long term partnerships between industry business and Europe's knowledge base.

In particular, Universities and their partners need to become more strategic about these partnerships, especially when the need to exchange knowledge is urgent because of the pressures of current economic conditions when the need to innovate is compelling. Researchers and KT professionals need to be encouraged to foster long term relationships with their partners where there is a shared vision to 'what strategic looks like' to both partners - , for example, rather than achieving rapid returns, it may

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<sup>7</sup> IPSN organises and manages a creative IP network consisting of universities, research institutes, venture companies and R&D companies, which are backed up by the firm supports of the biotech industry and the Japan patent attorneys association. IPSN offers IP related supports with global intellectual property and commercializing strategy to universities and research institutes in the network, consequently improves their intellectual property value and contribute to reinforcement of global competitiveness of Japanese industries by offering highly-valued intellectual property for their commercialization.

be preferable to seek maximum returns but accept that this will take a longer period of time.

In this requirement, Knowledge Transfer professionals have a key role as interpreters and catalysts for building shared values and understanding between partners. Universities should develop strong institutional support for KT such as investing in KT offices with competent KT professionals with an effective IP-management system. Clear policies on KT should be communicated well. A second key message is that universities and their partners should consider innovation as a multidisciplinary task. This is not solely a technological endeavour but should include inputs from many disciplines such as sociology, humanities, as well as the creative and artistic sector.

David Joyner finally suggested that exchange of expertise between very different disciplines was crucial to the knowledge transfer role as required by open innovation and proposed that a new instrument of *creativity transfer* should be developed in order to aid the cross-fertilisation of expertise and know-how, especially across the interface of technical and cultural specialties. This may provide crucial new impetus to successful, strategic, long term and profitable open innovation in Europe. In the discussion the inclusion of collaborative research between universities and companies in doctoral education was put forward as an important mechanism to build the knowledge base of European businesses.

## 5. Improving effectiveness of KT

Mr Tiit **Jürimäe** (DG Research) introduced the session and explained that international cooperation on research projects and the transfer of research results to non-European partners are growth areas for EU research organisations. The understanding of how to manage intellectual property in such relationships is still relatively low, however, and there exists a need for support from Member States and the Commission. Member States have been working for a year with the Commission via an ERAC working group to develop guidelines on this subject. DG Research has appointed an expert group to support the work of the ERAC group through examining the way IP is dealt with in existing guidelines, support measures and bilateral research cooperation agreements. These presentations were moderated by Tiit Jürimäe of DG RTD and Salvatore Amico Roxas of the JRC.

### 5.1 IP issues in international research cooperation

Mr Lorenz **Kaiser** (Fraunhofer Gesellschaft) gave a presentation showing the experiences of a large research organisation, which has engaged successfully in international cooperation, and identifying the key points to consider in IP when engaging in international cooperation.

First of all, he emphasised the need to approach strategically all planned cooperation activities, and to plan each action according to desired objectives. He stressed the importance of profiting from cooperation without endangering one's own assets. It can be considered a naivety to have full trust in the confidentiality of international partners. This reinforces the need to ensure robust non-disclosure agreements with provisions for compensation if the agreement is breached. Nevertheless, there is little legislation compensating for the real loss in most countries.

IP can have different functions depending on the mission of the owner. It can be used as an asset for securing a market position or manifesting market power. Businesses can use it to acquire new ventures, for increasing negotiation power, as a basis for

license revenues, as a defence instrument against competitors and as an incentive to motivate staff.

Mr **Yngve Foss** (Research Council Norway) gave a presentation on the work of the ERAC working group on knowledge transfer and on developing guidelines for stakeholders to manage IP in international cooperation. His presentation focused on the rationale for developing guidelines, the scope of the group's work and a summary of the content of the guidelines.

Mr Foss stated that existing guidelines do not address specific challenges, which arise when engaging in cooperation with stakeholders from non-EU countries. Cultural differences can cause additional problems, even between two similarly developed countries, where the approach to business can differ substantially. Thus, there is a need for guidelines for 'front-line' practitioners (i.e. those who are engaging in international cooperation).

In the debate participants commented that it is important to build on existing guidelines and the experiences of stakeholders in this area. Some suggested that while any work on extra guidelines is a good idea, it is important that any such work is disseminated in such a way that it reaches those who would need it.

It was also mentioned that stakeholders needed to 'do their homework' on any potential partner, ensuring that indications regarding finance have a solid foundation, and checking the partner's track-record through speaking to other researchers who have been involved with them in cooperation activities. This applies not just to individual partners, but also to countries as well.

## 5.2 Professionalisation of Knowledge Transfer

For many European universities and public research organisations the transfer of research results to the market has become a third and relative new task for the institutions and their employees. Traditionally researchers have been engaged in research and education and are not used to give priority to KT. There is an increasing demand for professionals in the field of Knowledge Transfer who can support researchers dealing with these additional tasks. The aim of the session was to discuss how different actors (governments, institutions, professionals) can invest in this profession and improve KT to benefit economy and society with the best results in the long term.

Mr **Pat Frain** (University College Dublin) argued that there is a need for greater recognition of the KT profession at all levels. As a new and fast growing profession KT lacks a recognised career structure and an agreed framework of professional competences. KT professionals also need to become more engaged in the debate with policy makers, who often lack an understanding of KT issues. A transparent professional recognition system for KT practitioners – for instance through certification such as proposed by EuKTS – could stimulate transnational innovation and the international mobility of KT professionals.

Universities need to give stronger recognition to their 'third task' and to put in place appropriate policies, structures and programmes to support innovation and KT. It was commented in the discussion that in practice the universities' expenditures on KT activities are often less than 1% of their research budgets. There is also a need for 'management of expectations' as the university income generated from investment in KT activities may only become visible after many years. KT needs a long term commitment. Universities who enter in KT for a quick financial win for the institution will be disappointed. The success of KT should be measured in terms of its impact on

the economy and society. Governments also need to give a long term commitment to the development of the knowledge transfer profession.

There is the need to raise awareness of entrepreneurship and business among PhD students and graduates. This should include an understanding of KT issues including IP identification, protection and commercialisation. In addition, students must be made aware of the fact that KT activities could provide good opportunities for their career, as researchers as well as entrepreneurs.

Mrs **Dorien Wellen's** (University Nijmegen, the Netherlands) presentation emphasised that it is essential to identify the right people to do the right actions to boost KT. KT has to bridge a variety of aims and cultures at the levels of individuals (scientists, KT professionals), organisations (research institutions, enterprises), national governments and the European Union. There is a need to develop a set of smart indicators to monitor progress in KT, based on hard and reliable data. These should include indicators for different fields of research (including social sciences and humanities). The indicators should also take account of the different stages of KT and demonstrate that the researchers have set in motion a chain of processes - from non-disclosure agreements to spin-offs - to reach the market. The European Commission could take up some 'good practice' lessons applied in the Member States, such as demanding a commercialisation strategy in grant programmes or asking grant holders to involve user committees in their projects. These types of requirements could be introduced in FP8.

### 5.3 Technology markets

Markets for technologies have grown quickly in recent years. Mr **Jean-Claude Prager** (ADIT, France) presented a study for the French government authorities on the analysis of the future market developments and on guidelines to design the best appropriate public policies to foster innovation and long term growth. The conclusions focus on the need to develop technological intermediaries and to improve the quality of technology transactions.

The notion of technology is broader than patents because often exploitation of patents involves embedded know-how. Technology is a very peculiar object of exchange with varied forms of transaction modes. It varies from consulting to licensing of patents and to very complicated collaborative agreements, such as R&D joint ventures. There are quite some uncertainties connected to the trade of technologies such as the strength of the property rights, and the ex-ante assessment of the value of a technology, particularly if there is no market yet. The outcome of the trade depends very much on the way transactions are processed, for instance through auctions or through face-to-face negotiations. The transaction costs are very high partly due to the tacit nature of the knowledge associated to a certain technology and to the existence of asymmetric information.

The main conclusion of the study is that the improvement of the market for technologies will mainly depend on the increased activity and efficiency of intermediaries:

- The intermediaries can help to assess the quality of the traded goods. Intermediaries have incentives to invest in expertise and possess the knowledge needed to estimate the value of the technologies in this context;
- They increase the scope of opportunities for transactions and achieve the best matching between buyers and sellers. The intermediaries also help to identify the best potential partners;
- Thus they help to develop the market by reducing the adverse selection mechanisms.

From a policy perspective however, the disadvantages of treating technologies too much as commodities also need to be taken into consideration. It could lead to a trading behaviour that could create many 'lemons' (i.e. bad opportunities or failures spoiling the market) and speculation. Thus incentives should be in place to ensure the quality of transactions.

It was suggested that stakeholders should strengthen the role and number of intermediaries, provide incentives to create some larger players in this field and increase their professionalism. The public sector should set up a standards policy and possibly provide an independent and transparent rating of patents by agencies under control of public authorities (in order to ensure their independence).

During the discussion two main arguments arose concerning the way in which the activities of intermediaries should be arranged. In particular, there is an argument for 'streamlining' the brokering services, in order to limit the number of different actors and promoting higher cooperation between them. The arguing for rationalisation of services into 'one-stop' shops providing a focus for integrated assistance is a typical example of a streamlining discussion. On the other hand, advocates of a 'local network approach' are afraid of the bureaucratic 'one-stop shop' concept. They are in favour of the 'second-stop shop' concept where all network institutions and personnel have both a perfect knowledge of each other's capability and the motivation and commitment to signpost effectively on the basis of sound information. According to this approach, these institutions should form a network not a 'jungle' and they must be organised in a way so as to clarify the division of responsibilities between each other. However, supporters of this option recognise that in the early stages of the development of these institutions a region has to suffer from overlap and lack of transparency.



## 6. Conclusions and recommendations

### 6.1 Conclusions of the seminar

Today the knowledge transfer community can build on a solid basis of analysis, practical guidelines, and political support developed in previous years. The debates in the seminar benefited from the experience of KT practitioners and from a history of policy strategy support at the European Commission and Member States. As the audience agreed, today is the time to reap from the seeds that have been sown in the past. Thus the seminar focused on progresses made so far and on reviewing remaining bottlenecks and challenges. A number of conclusions can be drawn for the seminar.

At the *KT policy level* the seminar reached a number of conclusions:

- The **drivers** behind enhanced KT and better IP-regimes are as urgent as ever. Europe's society and economy should make better use of the excellent research efforts in Europe and intensify its industry – research relations. KT is a tool to make this happen;
- The ERAC group reported **progress in the implementation** of the Recommendations and Code of Practice in many MS and AC, although the results of this review still need to be disseminated and communicated better. Nevertheless, much remains to be done to implement the Recommendations and the Code of Practice;
- KT is an important **pillar of the Innovation Union** and at the moment it stands high on the policy agenda. The KT community is invited to grasp this momentum to push the agenda forward;
- The agenda for a **single European Patent** is moving at a slow pace and still facing political problems. Nevertheless, small steps are taken to harmonise the European IP-regimes at European level;
- R&D co-operations are increasingly taking place at a **global level**. Private and public sector research need support and guidance on KT arrangements with countries and world regions applying less transparent or different framework conditions for KT and IP. Practical Help Desks are available. Developing a common European agenda can contribute to defining common standards with third countries;
- There is still quite some work to do on developing **smart indicators and performance criteria** for KT that take account the differences in the various scientific and sectoral domains.

Regarding the *public research centres and universities*, findings are that:

- Universities and public research centres are increasingly aware of their role in society and the contribution of KT in building **responsible partnerships**. Implementing the so-called third task for universities is for many institutions still new, thus sharing experience on this across countries is still necessary;
- The practical examples of how KT and IP policies are deployed in specific research centres and universities demonstrate the vast existing **pool of expertise** in Europe. Networking events such as the Varese seminar are very useful for cross border learning;

- **Patent pooling** is a mechanism that is starting to show more practical results in a number of scientific and technological domains. More could be done to share the experiences with this mechanism throughout Europe, particularly as there is a vast pool of unused IP in public research centres;
- As **people** are the important driving force for KT, there is still a need to develop **incentives** to engage in KT activities at all levels of the research system from the management to the individual researchers;
- KT is a tool in establishing **strategic and long-term** co-operations with industry and other third parties. Understanding each other's positions and interests and defining one's own objectives more clearly, will help in establishing 'comfortable' relationships based on mutual trust;
- The KT profession would benefit from clearer **certification** of the various KT functions, thus making the expertise needed for this job much more transparent;

In relation to the *private sector* a number of conclusions can be drawn from the seminar:

- Providing the right framework conditions for **entrepreneurship** is essential if Europe wants to foster the growth industries of the future. The KT professionals need to engage in training the potential entrepreneurs at universities in basic KT procedures and commercialisation skills;
- In addition, existing companies and particularly **SMEs need to engage more in the exploitation of existing IP**. Examples provided in the seminar showed successes in carefully facilitated processes in clusters and value chains related to specific sectors;
- For start-ups, access to seed and early stage financing is perhaps a bigger bottleneck than access to the best KT arrangements. New forms of **financing partnerships** across types of public and private investors, to fund innovative high-risk start-ups, could constitute a big step forward in creating a more dynamic market for new technology based companies;
- There is a need for better **mechanisms to trade technologies** in Europe. Specialised intermediaries form an important cornerstone of this trade.

## 6.2 Remaining bottlenecks and challenges

Despite the many examples of progress in the implementation of KT a number of major challenges and bottlenecks still remain to be tackled. The most frequently mentioned ones include:

- Public research institutions need to take their R&D collaborations and consequently their KT activities on a higher strategic level, rather than relying on a case-by-case approach. A danger looms when these institutions consider their co-operations and related KT policies in a short term approach. Thus partners negotiating the terms for KT, and particularly for IP, need to have this long term partnership in mind and not only the short term financial gain;
- There is still a need to make the top management of universities and research organisations aware of the importance of building long term relationships with private sector organisations. Today incentives and policy pressure should target PROs to push them to engage more wholeheartedly in their third task i.e. the engagement with society;
- KT professionals need to promote their profession better, both within their universities and outside the research community. It would benefit the public

understanding of research if the socio-economic role of universities were made more visible. Public research organisations and universities in particular should do much more to communicate the benefits of KT activities to the local, regional and national economies in which they operate;

- Incentive mechanisms including national research assessments are still focused on education and scientific research achievements, but are not yet geared to taking aboard the achievements of institutions and individual researchers in KT; as long as the incentive structures work against KT efforts, no real progress will be made. There is a role to play for the leaders in public research who should be more involved in the KT debate;
- A balance needs to be found between increasing the number and visibility of intermediaries specialised in trading technologies, and maintaining the quality of IP transactions. Public authorities should develop methods to raise and maintain the standards of these intermediaries while not hampering the dissemination of the traded technologies (especially towards SMEs);
- Patent pooling could generate benefits (e.g. reducing transaction costs and thus acquisition cost, reducing complexity) for patent holders and for the market. However it is a complex matter that needs experience and dedication to achieve a clear result. More could be done to share good practice and experiences for instance in domains with grand challenges that ask for societal solutions and innovations.

### 6.3 Suggested ways forward and recommendations

The basis for the steps forward lies of course with the EC's Recommendations and Code of Practice, published in 2008 and reiterated by the seminar participants. A number of suggestions and recommendations were made in order to reinforce their implementation.

- Public authorities in the MS and AC should make their overview of progress on implementing the Code of Practice visible and transparent. This would provide a good discussion platform for policy makers, KT professionals and the leaders in research organisations to engage in the next steps;
- KT requires long-term commitment and consistency from policy makers, universities and research organisations. Government agencies should start with making their own rules consistent and transparent. The Commission could develop FP8 tools for fostering the dissemination and exploitation of research results with clear IP framework conditions and models in view of the open innovation paradigm;
- More pressure should be put on university and PROs management to be accountable for their KT performance and progress. University rankings and research assessment systems should include indicators related to various KT functions. The European Commission could play a role in introducing KT-indicators to the European university rankings and MS and AC could include this to research assessment systems of universities and PROs;
- Universities and PROs should allocate sufficient resources to their KT functions and ensure that their KT-staff acquires the right level of professional skills. In addition researchers and entrepreneurs need training and guidance on KT and IP issues;
- KT professionals should connect with networks and user communities from industry in an early stage, in order to foster relationships that go beyond the one-off IP deal;

- There is still a need for more work to develop smart indicators and reliable data to monitor KT activities and their effectiveness. Particularly further research is required for the analysis of societal and economic impact;
- The European Commission, MS and AC should develop processes, methods and tools to unveil the large pool of unused IP that has resulted from public research in Europe. This could be achieved, for instance, by encouraging the development of IP-portfolio's across institutions, by developing mapping techniques to identify strings of related IP and/or to support intermediaries who could act as brokers or clearing houses in this process. The Commission is to examine how it can support the use of IP Pools;
- Improving access to seed and venture capital for start ups needs more holistic approaches and partnerships between various types of investors as well as good framework conditions for entrepreneurship and KT. European Commission should explore the possibility of building a wide partnership for seed and early stage funding.

The lively debates and active networking that occurred during and between the sessions demonstrated the importance of sharing expertise and knowledge in this relatively young domain. It shows the added value of these transnational events and the need to keep the debate going on in forthcoming stakeholder events. This knowledge deserves to be widely disseminated to stakeholder groups in all countries.