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Danish Technology Transfer in an Nordic and European Perspective

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Abstract

The four biggest Nordic Countries (Denmark, Finland, Sweden and Norway) are characterized by being some of the best competitive countries in the world (WEF). They are relatively small homogeneous welfare societies with populations of 5-9 million people.

In the Nordic countries, universities are public institutions, and since higher education is free of charge, a relatively large part of the public hold university degrees. Universities take part in the political agenda regarding regional economic development as well as follow the globalization challenge, expanding the focus on research and teaching towards embracing generic, academic innovations and exploitation of cooperation with industry.

The Nordic countries use different kinds of technology transfer systems. Some countries base the technology transfer on university technology transfer offices and/or regional technology transfer offices.¹ However, the biggest difference is that in Sweden professors have the rights to their own inventions. They can therefore choose between several commercialization routes.

In a Danish perspective protection and exploitation of intellectual property (IP) is a relatively young field of activity. The performance in patenting and licensing by public research institutions in Denmark remains second to that of leading American or British universities. However, annual growth rates are considerable reflecting an increasing professionalism in the managing of university IP.

In this paper talk we will touch upon three different levels of perspectives covering initiatives from Government, National Network and universities.

A. Government perspective: Initiatives from central administration

From the point of the central administration, exploitation of public research IP has been developed through a mix of policy measures: Core initiatives have included: 1) Refund of university patenting costs (terminated), 2) Development of technology transfer structures, 3) Proof of Concept funding, 4) Training of technology transfer officers, 5) Guidelines and model IPR-contracts, 6) Evaluation and documentation of commercialization performance.

In addition to the direct measures to promote exploitation of public research IP, a variety of initiatives have been taken to improve the performance and innovative capacity of Danish universities in general. Several of these initiatives can be expected to influence also the exploitation of university IP - even if this was never announced as an explicit objective. Such indirect measures have included: 1) Increased investment in research base, 2) University management reform, 3) Reform of institutional structure, 4) University performance contracts, 5) Individual appraisal and reward systems, 6) Support for university spinouts, 7) IP training for students.

B. National Network perspective: Two initiatives

The National Network for Technology Transfer in Denmark was launched 2005 and has been a success for developing a professional technology transfer community in Denmark. Two initiatives will be focused upon in this paper:

In 2006 the National Network for technology Transfer launched a national virtual patent exchange for IPR from public research institutions such as universities, national research laboratories and public hospitals in Denmark (one-stop-shop Denmark).

¹ There are only national statistics available for Denmark.

As a parallel initiative and with the Danish Technology Transfer network as main driver the Nordic countries have 2007 taken the initiative to start the Nordic TT Network, and been partner with Manchester University on setting up an e-based knowledge pool system connecting regional technology transfer units and innovation actors, technology corporates and technology brokers/scouts, science park business development/tenant support people, innovation relay centre people, patent agents etc.

C. University administrative perspective. Implementation of New Knowledge Transfer Policies.

Main results from the report "An Analysis of the Effects of European and National Guidelines on the Implementation of New Knowledge Transfer Policies at Institutional and Member State Level." The report was commissioned by the European Commission, DG Research, as part of the work by the Expert Group on Knowledge Transfer 2008/2009 and conducted by G. Balling.

Introduction

In Europe, especially over the last 10 years, TT (technology transfer) has gained momentum with a continued expansion of the cooperation between public research and the business community through which good ideas are transformed into products and services for the benefit of society. In the Nordic countries the question of TT has become a counter stone in innovation policies and the effectiveness and outreach of commercialization processes has become a subject of intense interest for a wide range of stakeholders. This corresponds to the objective of public policy in the context of the revised Lisbon agenda, to encourage European universities to take a more active role in the innovation process.

Denmark in the Nordic Community

The concept "the Nordic countries" comprises 5 different countries: Denmark, Norway, Sweden, Finland and Island. National statistics are only available for Denmark. Link: <http://en.fi.dk/publications/2010/public-research-commercialisation-survey-denmark-2009>

Nordic Characteristics

The Nordic countries are all relatively small homogeneous welfare based societies. We have a progressive tax system where high income segments pay more than 60% of the last earned Euro in taxes. This money is used for common welfare goods like free education, free health care, state subsidy of the unemployed, etc. The Nordic countries have obtained a high degree of stability and homogeneity by offering welfare goods and decreasing of the difference between the rich and the poor.

University education is free of charge and a result of this is that a relatively large part of the public population holds university degrees. Universities are public institutions which are spread out all over the countries and not only based in the major cities. The Universities take part in the political agenda regarding regional economic development and follow the globalisation challenge, expanding the focus on research and teaching to embrace generic, academic innovations and exploitation of cooperation with industry as well.

Sweden

- University TTO

A Technology Transfer Office in a Nordic country, typically counts 1 to 25 people working exclusively with patents and contracts. One of the biggest units belongs to The Karolinska Institute in Stockholm, Sweden. They occupy 20-25 people, have a holding company for equity and start-up companies and two development funds. They have a venture capital of more than 200 mio. \$, which is unique in a Nordic perspective.

- Professors Privilege

Many universities in Sweden have their own TT Units, but their situation differs from the other countries. In Sweden university researchers have the rights to their own inventions – inventors can therefore choose between several commercialisation routes.

Finland

- Towards university ownership and inventor compensation

The other Nordic countries have left this principle and changed it into university ownership and inventor compensation. The last country to do so was Finland. In Finland the Act on the Right to Employee Inventions dates back to 1967, but doesn't include the university professors. 2005 Finland got the amendment to the University Act, where universities are requested to interact with the surrounding society and promote societal impact. This doesn't have anything to do with the professors as such, but stresses the point that universities and their researchers are expected to give something back to the society that pays them. This could very well be in the form of commercialising research results for the benefit of society and university economy. The year after, in 2006, the Act on the Rights to Employee Inventions, follows. It is a very important step towards university ownership even though it is just a step on the way. This act does not give universities the right to researchers' and professors' inventions, but rights can now be transferred through contracts. Finally, in 2007, Finland removes the "Researchers exemption". Instead compensation based on net income is offered: 50% to inventor, 30% to institute, 20% to institution.

Denmark

- Towards university ownership and inventor compensation

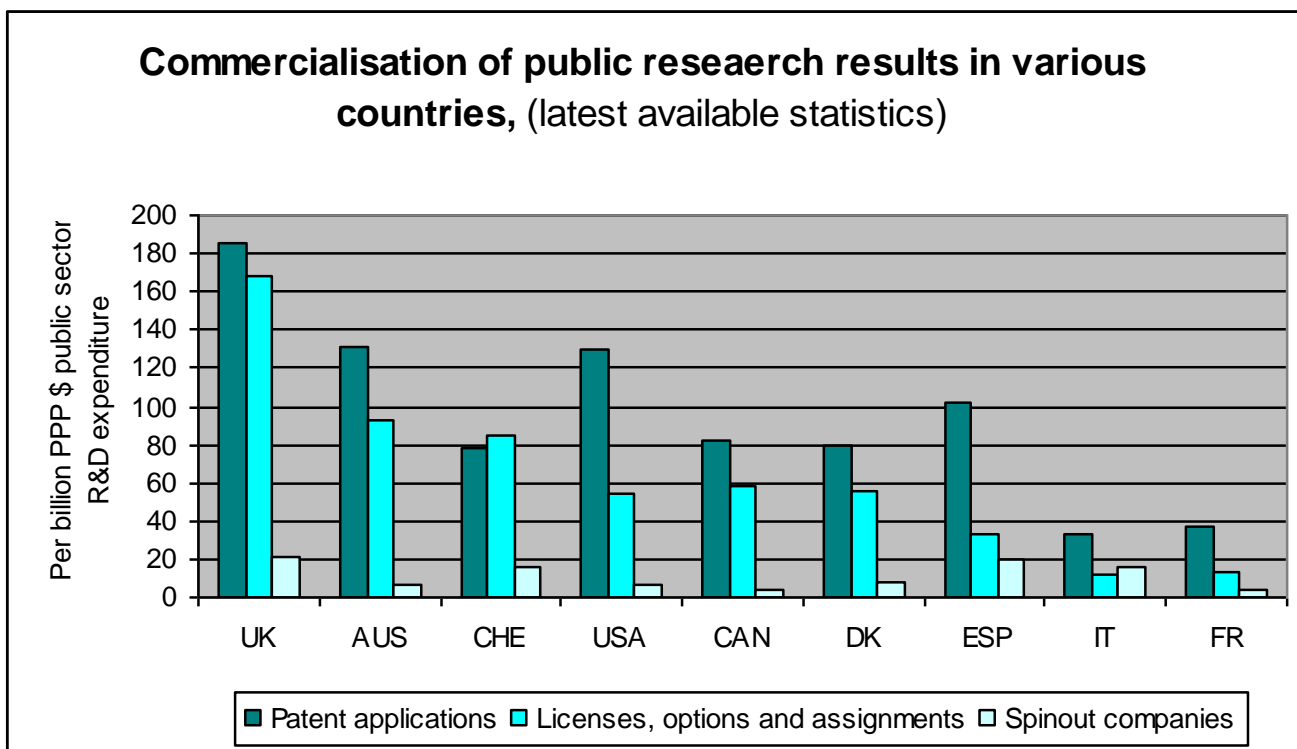
Denmark got its Bayh-Dole Act back in June 1999. It focuses on the increasing co-operation between research institutions and businesses to make new knowledge and competence available to Danish society.

Based on this law, universities take over promising inventions from the professors/researchers at the institutions. When the inventor has presented his potential patent to the university administration, the university has 2 months to decide if they want to commercialise the research result/s. Within these two months they examine the commercialisation potential, they investigate the novelty and inventive step of the technology and search for possible buyers or collaboration partners. If the university decides to take on the risk, they take ownership, pay all the patent related expenses and lead the legal and commercial process in collaboration with the inventor. A successful commercialisation is most often based on licensing or assigning IPR and/or in creating spin outs. When this is achieved the net income is split between institution, department and inventor. A typical model is to share revenues in equal shares between the institution, department and inventor. If the university fails to commercialise the invention, the inventor will not lose any money, and if the university does not have any interest in the invention, the inventor is free to commercialise it himself. In such cases, the inventor is obligated to share 1/3 of the net income with the university.

A. Danish Government Perspective: Initiatives From Central Administration

International benchmark

Protection and exploitation of intellectual property (IP) is a relatively young field of activity at Danish universities. The performance in patenting and licensing by public research institutions in Denmark remains second to that of leading American or British universities. However, annual growth rates are considerable reflecting an increasing professionalism in the managing of university IP. Denmark now occupies a middle position within the international technology transfer environment.

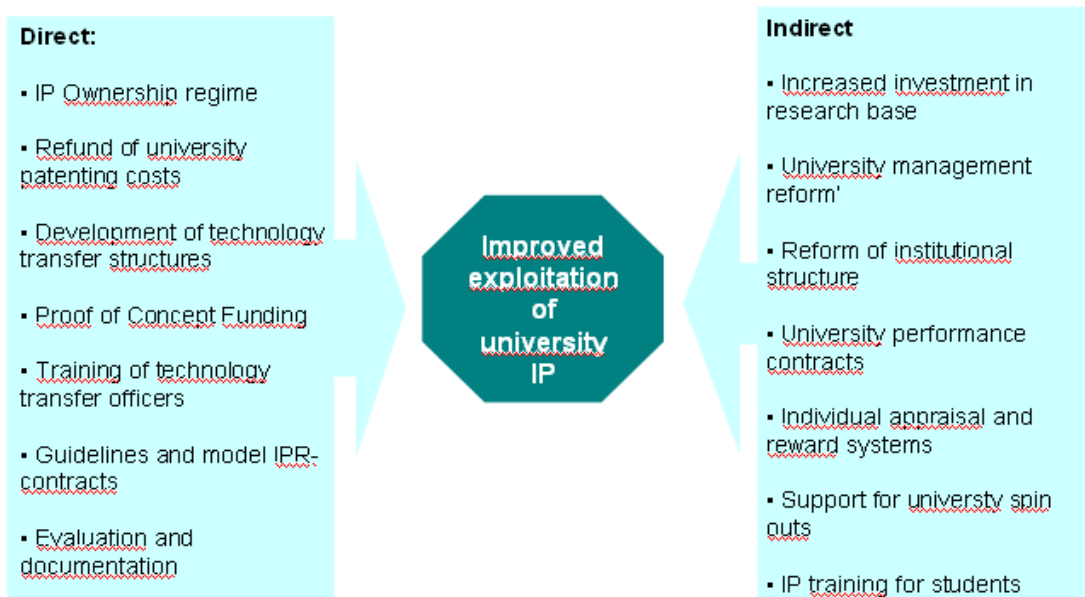


If we roll time back 10-15 years, these were the main characteristics of Danish technology transfer.

- Danish Universities presented excellent research results.
- But there was no entrepreneurial culture (wasn't well seen).
- Limited co-operation with industry (On a personal basis and with no overview from the side of university – and often with a cruise for the inventor).
- All in all – it was a poor exploitation of research results.

Direct and indirect measure

Over a ten year period the Danish Government has set up a number of direct and indirect measures that have all, to a larger or smaller degree, helped to professionalize the technology transfer



Legal framework on IP ownership

Until January 2000 a so-called professor s privilege gave individual researchers all rights to inventions at Danish universities - offering little incentive for the institutions to engage in commercialisation activities.

This regime was abolished following a parliamentary decision adopting the *Act on inventions at public research institutions*. By this act universities, university hospitals and government research institutes can claim ownership to inventions made by their own employees. At the same time the act specifies that:

- Researchers are obliged to notify their institution of any invention and postpone publication if required
- Institutions are required to evaluate inventions within specific time limits (2 months) and to exploit the IP obtained
- Institutions must establish an adequate structure for technology transfer
- Commercial revenue shall be divided between institutions and inventors
- Industry must negotiate IPR-contracts with the institutions and not the individual researchers
- Institutions can receive equity in spinout companies in return for IPRs.

The act on inventions at public research institutions aims to promote the commercial exploitation of public research IP and constitutes the basis on which Danish universities have evolved their efforts in this field.

Refund of university patenting cost

Parallel to the new IP ownership regime a mix of policy measures has been launched to support the practical implementation.

Refund of university patenting costs was a first step (now terminated) From 2000 an initial support scheme was available to refund university patenting costs. A total of 5 million Euros was allocated for this scheme. Individual grants were offered for all institutions with a funding limit of 20.000 Euros per invention to encourage institutions to engage with commercial partners at an early stage.

In 2003 an evaluation pointed out that the scheme had been successful in setting up an initial portfolio of IPRs - but also found that future efforts should be redirected to focus more on exploitation - and less on protection of IP. Furthermore, the evaluation found that future efforts should stimulate the organisational

development and skills of technology transfer offices. Consequently, the scheme for refund of university patenting costs was terminated by the end of 2003 and replaced by other initiatives.

Development of technology transfer structures

In order to develop and implement new technology transfer concepts The Danish Council for Technology and Innovation in 2005 funded a series of pilot projects at public research institutions. In general, these projects aimed to make the process of technology transfer more market-driven by setting up networks of industrial and private investors and advisory boards of experts from best practise institutions abroad. The total funding amounted to 4 million Euro over the period 2005-2009.

Furthermore, from January 2005 a new *Act on technology transfer at public research institutions* permitted universities to organise technology transfer activities in subsidiary companies. These are required to operate at market conditions, and the company management and economy must be kept separate from that of the parent institutions. The model has been approved according to EU state aid regulations. So far the practical experiences are limited, as only two such companies have yet been established.

Proof of Concept funding

A national scheme for Proof of Concept funding at public research institutions was introduced in 2006. It is the objective of this scheme to facilitate commercial exploitation of early stage inventions by providing better documentation of the technical and commercial potential (gap funding).

The funds are provided by The Danish Council for Technology and Innovation and can be accessed by public research institutions to finance Proof of Concept projects.

As refundable project costs are considered expenses for employment of project assistance, temporary release of scientific personnel, purchase of equipment and materials, use of external consultants, project-related IP protection costs and travel expenses. Each project can be funded by maximum 100.000 Euros over a period no longer than 18 months. Second round funding is possible for costly, but promising projects – and they can then have 100.000 Euros on top.

At present a total of 10 million Euro has been allocated for the Danish Proof of Concept Scheme over the period 2010-2012. The initiative has shown promising results with 47% of the projects commercialised.

Training of technology transfer officers

Since 2000 public funding has been available for the training of technology transfer officers from Danish research institutions. From 2005 five professional training networks were merged into a single National Network for Technology Transfer - an organisation of professionals parallel to AURIL in the UK or AUTM in the USA.

The National Network for Technology Transfer organises domestic courses and workshops and refunds the participation of technology transfer officers and research managers in training activities available from international associations such as ASTP, ProTon and LES. The Network also produces books on technology transfer-issues, spanning from topics like contracts to regional and economic development. Furthermore the network operates the homepage www.techtrans.dk including a joint Internet IP exchange for the participating institutions. Beside these main activities there was also a substantial amount of international collaboration with ProTon Europe, ASTP, AUTM, EU Commission – and the Nordic Technology Transfer Network. The Nordic network and the IP exchange will be described later in this paper.

At present the network activities are supported by an annual grant of 500.000 Euros a year from The Danish Council for Innovation and Technology.

Guidelines and model IPR-contracts

To support the practical implementation of the 2000 act on inventions at public research institutions an initial guideline for technology transfer officers was set up. This included materials such as standard forms for invention disclosures, secrecy statements, remuneration models and check-lists for licensing and collaborative research contracts.

In 2004 this was followed by a code of conduct - Contracts and codices - Research co-operation between universities and companies - jointly published by The Danish Rectors Conference and The Confederation of Danish Industries.

Furthermore, a similar guideline with special emphasis on clinical research was published by the Danish University Hospitals.

In 2006 The Danish Agency for Science, Technology and Innovation initiated The Johan Schlüter Committee. This expert IP committee was established to facilitate the negotiation of R&D-contracts between academia and industry by providing a practical toolbox of model agreements and accompanying manuals.

This internet toolbox was launched in 2008 and followed by an English translation of the basic model agreements in early 2009. Link: <http://en.fi.dk/innovation/model-agreements>

Evaluation and documentation of commercialisation performance

The 2000 Act on inventions at public research institutions was subject to an independent evaluation in 2003/04. Besides a national overview of the preliminary experiences with IP exploitation the evaluation also provided documentation of the difference in performance by the individual institutions.

In 2005, 2006, 2007, 2008 and 2009 this evaluation has been followed up by annual surveys on public research commercialisation. The annual surveys are conducted by The Danish Agency for Science, Technology and Innovation according to international standards for such statistics allowing for national and international benchmarks. Until last year we made them in Danish and English, but now we just do the key figures in English. Link: <http://www.fi.dk/innovation/kommercialisering-og-ivaerksaetteri/teknologioverfoersel/kommercialiseringsstatistik>

Data from the Danish survey also feeds in to the pan-european survey conducted by ProTon Europe. But several institutions also feed the data into the annual ASTP and AUTM-survey.

Indirect measures

In addition to the direct measures to promote exploitation of public research IP, a variety of initiatives have been taken to improve the performance and innovative capacity of Danish universities in general. Several of these initiatives can be expected to influence also the exploitation of university IP - even if this was never announced as an explicit objective. Such indirect measures have included:

- Increased investment in research base
- University management reform
- Reform of institutional structure
- University performance contracts
- Individual appraisal and reward systems
- Support for university spinouts
- IP training for students

Increased investment in research base

The Danish Government will to comply with the Barcelona objective of investing no less than one percent of GDP in public research by 2010. For this purpose an ambitious investment plan for Danish research has been adopted by Parliament including a new advanced-technology foundation for supporting applied research. Resulting from this investment, an increased number of university inventions can be expected for the future.

University management reform effective from 2003 is a reform that has introduced an improved model for university management – including recruitment of professional managers at all levels of university administration and an opening for more influence by industry representatives in advisory and governing boards. As a side effect, more people with IP experience has been engaged in university management.

Reform of institutional structure

Effective from 2007 a number of Danish universities and Government Research Institutes have merged - providing a more competitive university structure.

Following this reform more than 90 percent of all activities with IP exploitation have been concentrated at 6-7 institutions. This has provided for more critical mass in technology transfer units.

University performance contracts

A system of university performance contracts has been active for a number of years. From 2008 these contracts include additional targets for the third mission activities of knowledge diffusion and co-operation with industry.

Furthermore, future university research grants will be linked to the annual performance. This will provide additional incentives at institutional level to interact with industry and engage in technology transfer activities.

Individual reward systems

By employment and promotion of researchers Danish universities may now consider performance in patenting equal to that of scientific publication. Moreover, besides the mandatory remuneration of inventors, most universities provide additional economic incentives for patenting through the wage system.

Support for university spinouts

A variety of initiatives are available to support the venture capital market and support individual entrepreneurs. With particular focus on university start-ups a national scheme of so-called innovative incubators provide pre-seed capital and professional consultancy services for individual entrepreneurs. A total of 25 million is allocated for this scheme at an annual basis. Starting up something like 45 companies a year.

IP training for students

Most Danish universities offer training in IP-issues for graduate and postgraduate students in particular within life- end engineering sciences.

Furthermore, since 2005 a cross-institutional academy has provided training and assisted universities to develop entrepreneurship courses for university students. A new, more permanent organisation for these activities is now in place, called the Entrepreneurial fund.

National strategy to improve commercialization

In autumn 2009 The Danish Council for Technology and Innovation presented an overall strategy to improve commercial exploitation of research results. The strategy includes policy recommendations for Parliament, public authorities, funding bodies, universities and stakeholder organisations in six areas:

- Improved access to early stage gap funding
- Integration of IP- and commercialisation aspects in R&D-collaboration and funding schemes
- Stronger incentives for commercialisation at institutional and personal level
- Professional assistance for researchers and entrepreneurs in all stages of the commercialisation process
- Improved training of graduate students in entrepreneurship and IP issues
- Implementation of the EU Code of Practice on knowledge transfer and IP management (IP charter) (Look at your handout)

B. National Network perspective: A Danish and a Nordic initiative

- The Danish Patent Exchange 2006

Background and objectives

In 2005, before the university reform, Denmark still was characterized by many small and medium-sized public research institutions organized under the National Network of Technology Transfer. After 5 years of technology transfer it was time to take the business to the next level – to further increase the effectiveness of the technology transfer sales process and to be more accommodating in aiding industry in finding appropriate technologies. This was accomplished by using an internet based platform - a virtual patent

exchange, a one-stop-shop-Denmark. The platform was to be connected to the Network's main website www.techtrans.dk.

Platform Issues

Actual users of a database like this, searching for possible venture capital investments, are non-specialists – so it was important to present inventions in a way non-specialists could understand.

Therefore it was the goal to build an easy-to-use tool - based on customer needs and using categories from the earlier patent consortia that business partners were already familiar with. To be sure that we actually presented the patents in a way that was understandable we produced a test site/subsites. This was followed by a big usability test with different segments of the primary user groups to ensure that the final result matched the expectations of the actual user. This turned out to be a very wise decision, since user groups always seem to act differently from what you expect them to.

Having a one-stop-shop also made it relatively easy to secure quality control on updates as well as searchability.

The final version became a virtual patent exchange split into 5 categories: "Production", "Biotechnology", "IT", "Food" and "Energy".

The exchange has become an easy-to-use-tool and seems to be used widely, both by potential customers as well as the central administration to get an overview of what is in stock in the national portfolio on patents for license or sale from the public research institutions.

- Nordic Technology Transfer Network²

Background

Several hundred technology transfer professionals, geographically separated across the Nordic regions are focussed on exploiting their own organisations' IP, using the contacts, knowledge, and networks at hand, generally, in isolation and unaware of possible useful knowledge that is held by peers across the Nordic regional technology transfer community.

Individual professionals in the technology transfer offices are frequently presented with technology disclosures in technology and market areas that are new to them. It is therefore not uncommon to commence the project due diligence process from a standing start. As a business case develops and the exploitation process progresses, substantial additional supporting knowledge, information and external experience is needed.

Among the Nordic countries it was therefore accepted to apply a concrete knowledge sharing pool tool and a shared development platform for cross-fertilizing the Nordic Technology Transfer community and the regional innovation systems in which individual technology transfer units take part.

This was possible due to a grant from Nordic Innovation Centre 2007 (NICE) and a initiative from Manchester University's IP department – and especially Mark Thomson.

In a general perspective the main objectives were to a) increase the effectiveness of the technology transfer process as a whole, whether technology licensing/sale or spin-out company activity, b) to aid industry in finding the technologies it requires, c) to facilitate technology bundling, d) to build value adding links and relationships that currently don't exist, e) to generate opportunities for joint venture and commercial collaboration.

In a more specific perspective the main objectives were a) to develop a network between Nordic technology transfer actors for enhancing the performance of individual regional innovation systems. The main objective was to improve accessibility to resources and contacts (often tacit) across the regional innovation systems by codifying knowledge through regional contact points, b) to bring the technology transfer communities closer

² Developed in collaboration with Manchester University that delivers the software for the system.

together by forming a Nordic regional technology transfer forum, c) to base the Nordic Regional technology transfer Network on an e-based infrastructure: a knowledge sharing pool tool with which it is simple to search for specific IP from a large pool of technology transfer resources and d) to cross-fertilize the regional innovation environments in which the individual technology transfer units and innovation actors take part with a view to creating an embryonic model for a Nordic cross-border regional innovation system.

The system has now been moved to a new platform at www.knowledgevine.net. The Nordic Network have 150 members and the system all in all more than 1000 members from more than 50 countries.

C. University administrative perspective. Implementation of New Knowledge Transfer Policies in Europe.

In the last part of this paper we will touch upon a study commissioned by the EU Commission and conducted by Gert Balling in 2008-9. The title is "An Analysis of the Effects of European and National Guidelines on the Implementation of New Knowledge Transfer Policies at Institutional and Member State Level" and it focuses on the extent to which universities and other Public Research Organisations in the Member States have implemented new knowledge transfer policies.

The study presents trends and an overall estimation of the actual implementation of new knowledge transfer policy in the Member States, but is not comprehensive enough to map the implementation in detail. The analysis will therefore focus on the degree to which a certain percentage of Member States have implemented certain policies, and encompass examples on best practice. Main findings will be presented differentiated into five categories: Internal Policy, External Policy, Staff and Network, Collaborative and Contract Research, Development and Publication of Policies and Procedures.³

Internal Policy for Management of Own Intellectual Property

Of Member States present in the survey, based on respondents covering universities and other Public Research Organisations:

- 63 % rate policy to be highly in line with their institutions' overall mission and strategy.
- 50 % have implemented long-term knowledge transfer & Intellectual Property management strategy to a high degree.
- 88 % have general rules concerning disclosure and ownership of new ideas of commercial interest, whilst around 70 % have general rules on publication and dissemination policies as well as on policies on incentives for commercialising Intellectual Property.
- 31 % have implemented a knowledge transfer policy regarding conflict of interest to a high degree.

As regards internal policy, the main findings show a relative difference in the percentage of implementation of general policies and actual policies.

Only in slightly more than half of the present Member States universities and other Public Research Organisations have implemented a policy in line with their overall mission and strategy and a long-term knowledge transfer and Intellectual Property management strategy and mission to a high degree. Although more than two thirds rate the implementation as medium to high degree, the institutional management framework and long-term strategy is a necessity for the development of a knowledge transfer dimension as imbedded in the institutional policies and general development plans.

However, general rules on specified knowledge transfer and Intellectual Property management activities seem to be implemented to a high degree. In 88 % of the present Member States universities and other Public Research Organisations seem to have general rules on disclosure procedures and management of ownership, while around 70 % have general rules on publication and dissemination policy as well as on policy on incentives for commercialising Intellectual Property.

³ Findings are calculated as a percentage of Member States present in the survey, based on respondents covering universities and other Public Research Organisations.

Whereas the routines concerning core activities of knowledge transfer have a high implementation rate, the focus on Conflict of Interest is far less. An explanation could be that Conflict of Interest does not directly influence the daily work in the same way as disclosure procedures and ownership matters, or that it is a moral issue and can be ad hoc administrated at department level, and therefore not prioritised in the written policy.

External Policy for Management of Own Intellectual Property

Of Member States present in the survey, based on respondents covering universities and other Public Research Organisations:

- 69 % have general rules concerning engagement with third parties.
- 6 % rate the implementation of Intellectual Property Pools as high.
- 94 % have a policy on the creation of spin-offs.
- 81 % monitor Intellectual Property protection and knowledge transfer activities and promote them and 44 % have to a high degree implemented the internet as a way to present information on Intellectual Property..

As regards external policy, the main findings show a considerable difference in the percentage of implementation of relational policies and the internet as concerted outreach.

Spin-offs have the highest rate of implemented policies in the survey with 94 % of the present Member States, even though the policies vary in explicitness. Staff can engage themselves, but have to choose whether they want to work for the spin-off or for the institution. Regarding engagement with third parties it is desirable and somewhat expected that researchers engage themselves. In 70 % of the present Member States policies on engagement with third parties in relation to financing and ownership have been implemented, and respondents exemplify relational issues through references to codes of conduct ranging from general Customer Relation Management considerations to Model Agreement templates.

In 81 % of the present Member States respondents mention Intellectual Property protection, knowledge transfer activities and the promotion of them. Since most of the institutions seem to have local portals presenting Intellectual Property in relation to their institution website, and only in 44 % of the present Member States respondents rate the implementation of such activities as high, one would expect a relatively low output regarding access to national Intellectual property Portals. But apparently, there seems to be ambitious national portals presenting information on university and other Public Research Organisation Intellectual Property in a number of Member States as well as broader setups developed by several national Patent and Trademark Offices. An explanation of the relatively low rating on internet activities could be that the universities and other Public Research Organisations, even though they have the possibility, do not prioritise being present at national or other platforms than the one offered by their own institution.

The tendency is that more Knowledge Transfer Offices report data to national and European surveys. This trend is supported along two different strings. On the one hand, more Member States are beginning to attach funding requirements to survey participation, so in the future, universities and other Public Research Organisations will be obliged to a higher degree than now to report performance data to national or international knowledge transfer surveys. On the other hand, the Commission Expert Group on KT Metrics (EU 2009b) recommended a European survey model to harmonise European surveys to improve the possibility for individual universities and other Public Research Organisations and Member States to monitor and compare knowledge transfer achievements against themselves and each other on a shared set of indicators, in order to identify trends and to support work on improvements if needed.

While all other issues in this part had the interest of most of the involved universities and other Public Research Organisations, there is a clear indication that respondents do not value Intellectual Property Pools as a useful tool for making an innovative idea to be attractive to the private sector in the sense that various universities and other Public Research Organisations cross-license their intellectual assets or otherwise throw the results of collaborative research in a joint pool. In almost half of the present Member States respondents rate the implementation of Intellectual Property Pools lowest possible, and only in 6 % of the present Member States a score higher than medium is given. Although the interest in the field is low and success stories are rather hard to find, the networking opportunity and obtaining of critical mass is fully in line

with the potential of the Intellectual Property Pools and supports the idea of joining efforts where research institutions do not have the scope and volume of exploitable research results to justify the establishment of a Knowledge Transfer Office.

Staff and Network

Of Member States present in the survey, based on respondents covering universities and other Public Research Organisations:

- 70 % feel that training on awareness and basic skills to a high degree has been integrated into the knowledge transfer practice.
- 93 % have access to knowledge transfer services to fulfil their legal obligations.
- 80 % have Knowledge Transfer Networks for practitioners.

Training of Knowledge Transfer Managers and researchers is considered important, and in almost 70 % of the present Member States respondents feel that training on awareness and basic skills to a high degree has been integrated into the knowledge transfer daily practice. Looking at the supply of knowledge transfer training, it is clear that courses and other training activities mainly are focussed on Knowledge Transfer Managers.

In at least 93 % of the present Member States it seems to that universities and other Public Research Organisations have access to a minimum service to fulfil their legal obligations. This service is performed through in-house facilities in the form of Technology Transfer Offices or Knowledge Transfer Offices offering comprehensive services. It is though striking that in 38 % of the present Member States the respondents declare that their Knowledge Transfer Offices are not reviewed and in 46 % that they are. The survey reveals three levels of review; metrics, external and internal quality control. Surveys seem to be the primary means of monitorisation of efficiency and effectiveness of the Knowledge Transfer Office, although focus tends to be more on measurable output than on processes and procedures.

In 81 % of the present Member States universities and other Public Research Organisations do have Knowledge Transfer Networks for practitioners. This survey has focussed on national practitioners' Knowledge Transfer Networks and not European or other international Knowledge Transfer Networks. With this delimitation in mind, the number is impressive, even if Knowledge Transfer Networks are defined broadly by the respondents covering smaller, larger as well as more specialised Knowledge Transfer Networks.

Collaborative and Contract Research

Of Member States present in the survey, based on respondents covering universities and other Public Research Organisations:

- More than 75 % consider not only their own interests and objectives, but also those of potential partners from the private sector.
- 63 % declare that clarification and negotiation is in the hands of the Knowledge Transfer Office.
- Only 6 % do rarely clarify access rights to Intellectual Property at an early stage in the projects.
- 46 % use model agreements.

In a substantial percentage of the present Member States respondents express that they not only consider their own interests and objectives, but also those of potential partners from the private sector. There is general consensus concerning 'fair rules', which are also embedded in both national Model Agreements and national codes of practice. The general attitude is that the fairness principles are based on the Public Research Organisation's public and social mission.

The same rate of implementation goes for clarification of access rights to Intellectual Property, where consensus is that clarification is enforced at an early stage in the projects and at least before signature. In 46 % of the present Member States either local or national Model Agreements are used. The national Model Agreements are either (more or less) agreed upon by different stakeholders or elaborated on the basis of experience collected from the universities and other Public Research Organisations.⁴

⁴ See Annex B Model Agreements.

A surprising result is that in only 63 % of the present Member States respondents declare that clarification and negotiation is in the hands of a Knowledge Transfer Office. As regards respondents where both Knowledge Transfer Offices and researchers are involved in the clarification and negotiation process, there seems to be two different scenarios: The first scenario is universities and other Public Research Organisations where there are no rules on this matter and where Knowledge Transfer Managers, researchers or other personnel can take the lead in a clarification and negotiation process. The second scenario is where researchers seem to be the natural choice, but they can contact Knowledge Transfer Managers if they need help. Member States with 'professor's privilege' belong to this category.

Development and Publication of Policies and Procedures

Of Member States present in the survey, based on respondents covering universities and other Public Research Organisations:

- 63 % declare that their government has adopted policies in order to make universities and other Public Research Organisations develop and publicise policies and procedures for the management of Intellectual Property.
- 75 % of the organisations have taken certain initiatives in order to make universities and other Public Research Organisations develop and publicise policies and procedures for the management of Intellectual Property.
- 37 % are highly aware of the recommendation (EU 2008b).
- 17 % of the governments have promoted the recommendation's code of practice (EU 2008b).

Both governments and organisations seem to be acknowledged by the respondents for taking initiatives to make universities and other Public Research Organisations develop and publicise policies and procedures for the management of Intellectual Property.

On the one hand a rich variety of policies and initiatives are mentioned: The implementation of Bayh-Dole inspired legislation, the steering mechanisms between government agencies and the universities, national funding schemes for the development of professional Knowledge Transfer Offices, funding of Proof of Concept programmes, national guidelines and codes of practice, codes of conduct for collaboration with industry, model contract tool kits, public grants addressed to universities and other Public Research Organisations for developing knowledge transfer infrastructure and promoting activities at local level etc.

The umbrella organisations and national Knowledge Transfer Networks seem to have added value at three levels. The Spanish Knowledge Transfer Network, RedOTRI, has produced a technical dossier about collaborative R&D and best practices for Intellectual Property Rights management; the Finish Knowledge Transfer Network, Research and Innovation Services, produces policy documents for the network members and carries out several benchmarking exercises involving all member institutions, and the Irish University Association contributed to the discussions around the code of practice.

DG Research has produced the *Commission Recommendation on the Management of Intellectual Property in Knowledge Transfer Activities and Code of Practice for Universities and other Public Research Organisations* (EU 2008b) with key recommendations to Member States for establishing or adapting Intellectual Property / knowledge transfer policies, and a code of practice for universities and other Public Research Organisations with operational principles for setting up institutional policies and knowledge transfer systems.

In 38 % of the present Member States respondents rate the awareness of the recommendation as high, which on the one hand must be considered a medium rating. However, if interpreted in the perspective of that only 17 % of the Member State governments seem to have promoted the code of practice yet, the awareness rate can be interpreted as relatively high.

Contributor's Biography

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CV: Kaare Jarl, senior adviser at the Danish Ministry of Science, Technology and Innovation 1997-2010, where he is co-team leader on commercialisation of public research results. For more than a decade he has been instrumental in the development of national policy on university IP and technology transfer. He has been responsible for the development of national legislation, IPR model contracts and TT-funding schemes and key writer of the national strategy on research commercialisation and annual commercialisation surveys. In this capacity, Kaare Jarl has been a member of several European expert groups in the field of knowledge transfer and exploitation of university IP.