

# University Collaboration on Technology Transfer: An All-Island Feasibility Study



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## **ACKNOWLEDGEMENTS**

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# University Collaboration on Technology Transfer: An All-Island Feasibility Study

Commissioned by InterTradeIreland on behalf of  
Universities Ireland and the Irish Universities Association

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This document is a summary report of a feasibility study into all-island university collaboration on technology transfer. A full background document is available on the [InterTradeIreland](#), [Universities Ireland](#) and [Irish University Association](#) websites.

## FOREWORD

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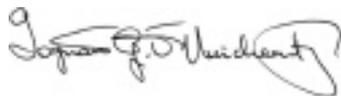
There is a growing recognition of the importance of the role that universities play in economic development, and governments in Europe, North America and Asia are now providing support to translate the results of research in higher education institutions into outcomes that benefit the economy and society.

This timely report makes a number of recommendations as to how the universities on the island, North and South, might work together to strengthen and extend the capability of technology transfer services in the third level sector. Clearly the universities on the island have different structures for the delivery of intellectual property management and technology transfer. However there are common challenges which face all of us: notably the need to exploit our research output successfully and to promote, market and sell our research-led technologies and intellectual property.

As the report points out, the environment in which universities operate is undergoing rapid and significant change, with governments providing less in traditional block grant funding and urging the higher education sector to be more competitive in attracting private sector finance and selling its services to business. In this climate of greater competition, the universities are increasingly asking themselves the question: How can we do better at exploiting the bright ideas that are being generated in our libraries, lecture rooms and laboratories and, where appropriate, bring them to the marketplace to the benefit of our economies as a whole?

At a time when both research investment and research outputs in the two jurisdictions have grown exponentially, the universities on the island, which are small by international standards, continue to have very different ways of delivering IP management and technology transfer. This report endorses the developments already taking place within the universities. The time has come to look seriously at how we might achieve significant added value by undertaking at least some of these activities collaboratively. In the US this has been happening for many years. In the UK groups of universities like the White Rose consortia and IP2IPO have come together on a regional basis to work with business and build knowledge transfer activities.

This report provides some clear signposts for mutually beneficial collaborative action between universities on the island of Ireland in this vital area, and outlines an implementation plan for how this necessary process might begin. Universities Ireland welcomes its publication and looks forward to working with other agencies such as InterTradeIreland and the Irish Universities Association in taking forward its proposals.



**Iognáid Ó Muircheartaigh**

Chairman, Universities Ireland  
President, National University of Ireland Galway

# EXECUTIVE SUMMARY

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## Background

This report, which was commissioned by InterTradelreland following discussions within Universities Ireland and the Irish Universities Association (IUA), seeks to provide some initial recommendations on how the universities on the island, North and South, might work together to maximise the benefits of exploiting the output of their research activity and proposes mechanisms to achieve collaboration and co-operation.

The universities are an important element in economic development on the island, North and South. There has been significant investment in research in both jurisdictions and there is now a need to optimise the exploitation of the results of that investment in a consistent way. The environment in which the universities operate is undergoing considerable change and significant steps have been taken recently at both national and institutional levels in both jurisdictions to support and develop Intellectual Property (IP) management and exploitation in the universities. As a result of this, and of their history, each university is at a different stage of evolution in its ability to undertake the exploitation. However, all face the need to exploit the research output successfully and all face particular, and similar, issues in marketing and selling technology and IP.

## Methodology

The findings of the study are the result of a six month consultation exercise with universities, stakeholders and Technology Transfer professionals.

The study was overseen by a Project Steering Group drawn from representatives of the Vice-Presidents (VP) for Research & Innovation, Technology Transfer professionals, and representatives of Universities Ireland, the Irish Universities Association and InterTradelreland.

## Recommendations

There are 2 core recommendations for the universities which are outlined overleaf and 1 core recommendation for the government in Ireland<sup>1</sup>. The detailed recommendations can be found in section 2 and are grouped around:

- Joint marketing
- Expert professional input to policy & strategy
- Training & entrepreneurship
- Campus company support
- Interaction with the Venture Capital (VC) community
- Accessing external professional services
- Shared expertise
- Technology bundling
- Single funding stream in Ireland

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<sup>1</sup> Ireland refers to the Republic of Ireland.

## **Recommendations for Universities Ireland (see section 2 for full list of recommendations)**

### *Joint Marketing*

- establish a strategy and policy task force on joint technology marketing, drawn from Technology Transfer professionals and appropriate communications professionals. The task force should have the remit to develop and cost a comprehensive marketing strategy, working with external stakeholders where appropriate.

### *Expert Professional Input to Policy & Strategy*

- establish a sub group of Universities Ireland comprising Directors to advise Universities Ireland and the VPs for Research and Innovation on IP management and technology transfer policy issues, with an agreed remit which would include matters at European level.
- agree the level of support to be provided to AURIL-Ireland and the reporting mechanisms.

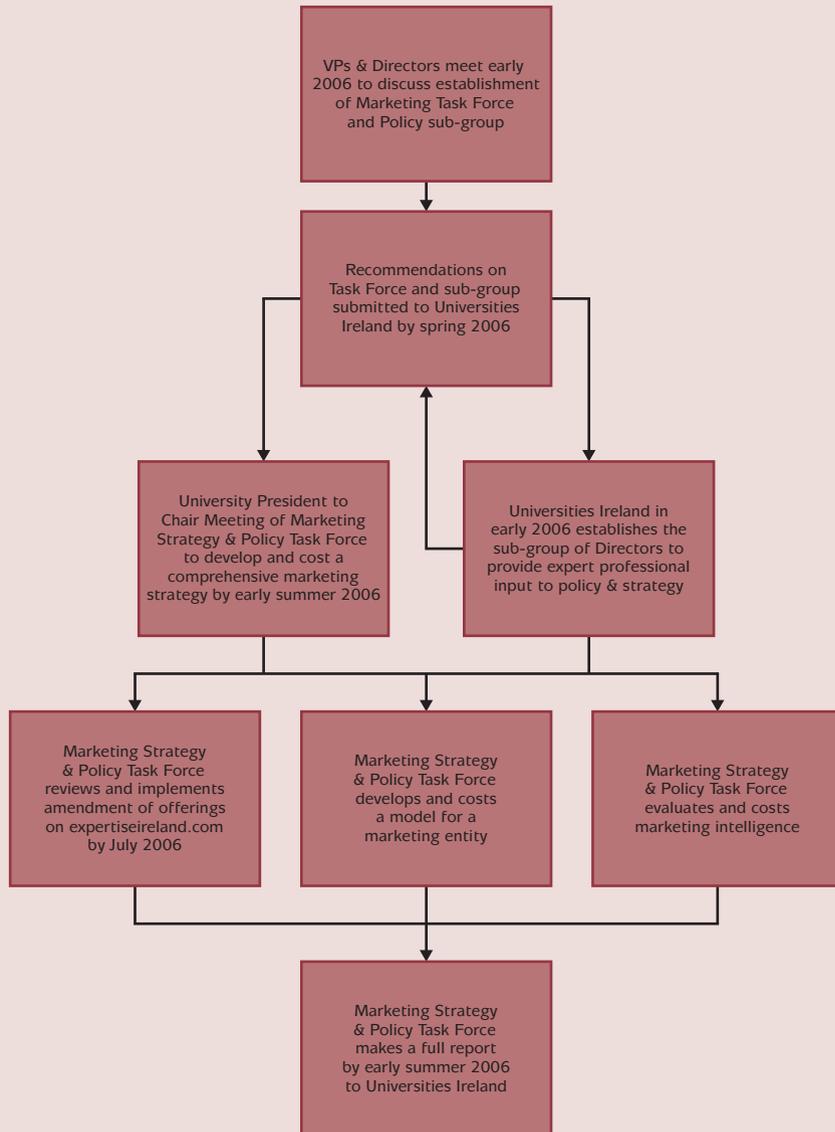
## **Funding**

The direct cost of implementing the recommendations is dependent upon the strategy agreed by the proposed task force. This would be facilitated by the employment of a fixed term post to support development of the strategy. It is proposed that this post should initially be for up to 12 months and should be undertaken as part of the work of AURIL-Ireland, as the specialists in the field, and funded through Universities Ireland and InterTradelreland.

All the Technology Transfer professionals in Ireland consulted for this study emphasised that currently they did not have the staffing infrastructure nor the budgetary flexibility to undertake even minimal additional activity in the marketing area. This is despite the obvious benefits and potential cost savings in the longer term.

There is clearly a North/South misalignment in the funding of technology transfer/commercialisation on the island. The 2 Northern Ireland universities have a central government funding stream for their knowledge transfer and technology transfer activities through the Higher Education Innovation Fund (HEIF). Such a mechanism does not currently exist in Ireland. Technology transfer/commercialisation funding through the current phase of HEIF (2004 – 2007) amounts to approximately 3 per cent of the total research funding. This report recommends that a similar proportion of total R&D funding in Ireland is ring-fenced for this vital activity. If the HEIF funding levels for the universities in Northern Ireland were transferred, pro-rata, to the sector in Ireland, the funding for Technology Transfer (under the 2007-2013 National Research Plan) would be in the region of €7 million per annum, across the 7 universities. The funding required to support the collaborative marketing, and other activity recommended in this report, would come from this fund. There would need to be consideration of an additional collaborative fund for the Northern Ireland universities. This is because HEIF funds were allocated against specific projects and targets and this is already committed. A total of £50,000 per annum for the universities in Northern Ireland is an indicative sum.

## IMPLEMENTATION FLOW CHART



# SECTION 1

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## CONTEXT

Recognition of the importance of the role of university research in the development of the economy and the improvement of the quality of life is growing worldwide. As governments recognise this key role they have responded by enhancing support for the creation of knowledge in the universities. On the island, North and South, that investment is now bringing results and those need to be transferred to industry and other users to ensure the maximum return on the research investment.

On the island, North and South, the rate of change has created an environment that is in flux and is experiencing major changes of expectations. Universities have struggled to keep up with the rate of change and the implications this change has for their role in the context of economic development and also within society. The universities have come to be perceived as the engine of a knowledge economy very rapidly, and are responding to the challenge. By European or North American standards however they have had a relatively short time to adjust to such a prominent profile in a new and developing role which sometimes sits uneasily alongside more traditional roles of teaching and research.

## Research Funding Investment

On the island, North and South, the 2 jurisdictions have invested heavily in the research base in recent years.

The universities of Northern Ireland have been funded through recurrent grant for research activity, the quality of which is assessed periodically and the level of grant adjusted accordingly. This totalled £37 million in 2004-2005, a rise from £23.5 million in 2002-2003. In addition the Support Programme for University Research provided £90 million in the period 2001-2007, the Research Capability fund provided £3.2 million in 2004-2005 and the Science Research Infrastructure Fund will provide £26.3 million in 2006-2007. Over £40 million has been allocated through the two previous rounds of the SRIF. All figures are taken from the Department for Employment and Learning (DEL) Annual Report 2004-2005 ([www.delni.gov.uk](http://www.delni.gov.uk)). This is enhanced by the award of grants gained from the UK Research Councils and other sources on a competitive basis.

The universities in Ireland are funded through a recurrent grant for both teaching and research, with no direction on the level available to support research specifically. Funding comes from the Higher Education Authority (HEA) which also provides research support for recurrent and capital costs through the Programme for Research in Third-Level Institutions (PRTLII) which was launched in 1998. That programme has grown from the first phase of €206 million in 1999 to €320 million in the third phase which will end in 2006. In total the HEA funding for research (albeit across all the Higher Education sector in Ireland) grew from €53,297,130 in 2003 to €85,135,644 in 2004 (see the HEA Annual Report for 2004-2005 at [www.heai.ie](http://www.heai.ie)). In addition, research funding is available from a number of funding agencies including Science Foundation Ireland (SFI), Enterprise Ireland, the Research Councils, the Health Research Board and others. SFI is currently investing over €100m per annum in the universities, with the CSET programme (Centres for Science, Engineering and Technology) supporting collaborative research between academia and industry.

## IP Management & Exploitation Support

In the last 5 years the research investment in Northern Ireland has been complemented by sustained, relatively stable, and increasing investment for IP management and exploitation. This has been channelled through the Higher Education Innovation Fund (HEIF) and investment from Invest Northern Ireland (Invest NI). In particular Invest NI has funded 18 Centres of Excellence, located either within universities or in businesses with strong linkages to universities, that focus on issues faced by industry, and that are generating IP for exploitation. In total £9.2 million has been provided through HEIF to the 2 universities in the period 2004-2007.

Support for IP management and exploitation in Ireland has come primarily, for the universities, from their own resources. Ad-hoc support has been provided by development agencies, primarily Enterprise Ireland but there has been no stable and sustained funding stream. As the research investment starts to produce results the absence of appropriate funding to support the increased flow of outputs is causing problems which in turn could have a negative impact on economic development. Planning is now underway for implementation of a €300 million fund announced in the Budget of December 2005. Although details have still to be announced this funding is intended to support change and improve the overall performance in the Higher Education (HE) sector and to encourage more co-operative working across the sector.

## Moving Forward: Expectations and Possibilities

The research investment on the island, North and South, in recent years has led to findings that may have commercial potential and the availability of skills and expertise that can be used for economic benefit. The important role of the universities in the economic development context is becoming more obvious and more generally accepted. There is a clear trend of increasing activity as the research outputs start to flow, as evidenced in Table 1 below.

**TABLE 1**  
**CURRENT KNOWLEDGE TRANSFER / TECHNOLOGY TRANSFER ACTIVITY LEVELS**

<b>ACTIVITY REPORTED</b>	<b>2002-2003</b>	<b>2003-2004</b>	<b>2004-2005*</b>
No of new license deals established	12	13	18
License Income (€ '000)	420	605	840
No of spin-out Companies formed using institutional IP	15	23	4
No of patents applied for	88	110	126
No of patents granted	12	24	16
No of patents used in deals (licensing/spin-out)	9	13	16
No of new collaborative research contracts with industry	171	208	79
No of new consultancy/knowledge transfer activities	307	344	14

Source: Institutional Survey

\*full reports were not available from every university at the time of survey (September 2005).

The trend is upwards but if maximum benefit is to be gained the activity needs to be supported in a consistent and effective manner. Resources will be required to ensure that those outputs, in whatever form, become available to the industrial sectors and to policy makers. Those additional resources will be needed at both institutional level - because the most effective systems of IP

management and technology transfer worldwide depend critically on the initial identification and evaluation of the commercial potential within the universities, and require internal resourcing - and government level to ensure the successful take-up of the opportunities created.

This issue of effective exploitation will not be resolved simply by increasing resources from the agencies or by agencies working together in isolation from the universities. It may be improved, and made more cost-effective, by universities collaborating and by the university sector working in a strategic way with the development and other funding agencies on the island, North and South.

From the surveys undertaken, coupled with evidence of successful collaboration elsewhere, some fruitful areas for collaboration emerged very quickly. Key topic areas identified by the surveys and by meetings of Technology Transfer professionals were: marketing; training and awareness raising; sharing resources; provision of expert advice to strategy and policy development; accessing external expertise and technology bundling.

### **Joint Marketing**

Discussions with Technology Transfer professionals and stakeholders supported findings in the surveys that marketing was an area which could be strengthened significantly through collaboration. External stakeholders consulted included government agencies, industry representatives and representatives of the professions used by the universities to patent and exploit technology.

The immediate benefits of a joint marketing strategy were apparent to all the Technology Transfer professionals who recognised that no one institution could carry the overhead costs associated with a full marketing plan for its technology.

Alongside this practical consideration was an awareness of the strength of the brand if all the universities worked together, and an awareness of how any marketing would raise the profile of the universities with the general public as well as with industrial and commercial clients and other stakeholders.

This view was supported by stakeholders who identified the need for clear and robust marketing and knowledge transfer strategies underpinned by professional staff. Stakeholders recognised that the situation was in flux and that change was occurring rapidly. They expressed the view that there were two challenges to be met:-

- at high level: to ensure value for money from research spend; ensure appropriate structures are in place for future knowledge transfer as outputs come through from research
- at the practical level: to ensure industry linkages (applied research, graduate research, product/process improvement)

Stakeholders believed that a useful operational mechanism would be for the universities to establish a set of case studies for marketing purposes, to demonstrate to both companies and the universities what was possible. The Technology Transfer professionals discussed various issues that could be resolved through the mechanisms of a common marketing strategy, including market research as well as marketing and promotion. They felt that industry wanted a single point of contact for access to the universities with some going so far as to aspire to a form of relationship management within the universities for strategic partners from industry who were funding students and research or development and employing graduates.

An obvious starting point is the expertiseireland.com website, which is supported by all the universities. There was a strongly held view across the sector that, in addition, a marketing entity which actively promoted sales of services and technology would be acceptable and useful. See the recommendations in section 2.1.

### Expert Input to Policy & Strategy

The provision of expert input to the development of knowledge transfer strategy and policy was recognised as crucial to the development of the overall system on the island, North and South. This and joint marketing forms the 2 core recommendations to be adopted and taken forward by Universities Ireland. See the Executive Summary and also recommendation 2.2.

This model operates within Scotland, where the Scottish Directors are a subgroup of Universities Scotland, but there are other models, such as ProTon Europe, operating across several jurisdictions. Closer involvement of the Technology Transfer professionals in policy development, in a structured way, was welcomed by the VPs and would of course facilitate benchmarking of good practice, monitoring of technology transfer outputs and support lobbying on behalf of the sector.

### Training and Continuing Professional Development (CPD)

A third area for cooperation would be training and awareness raising activity, but also training of staff engaged directly in knowledge transfer. The need for this came across clearly from the institutions, Technology Transfer professionals and stakeholders. Both Technology Transfer professionals and stakeholders identified the requirement for additional training and the areas that should be encompassed by such training. Stakeholders commented on the apparent inexperience of many staff and the inconsistency of the professional approach across the island, North and South, and saw this as a barrier to successful technology transfer. This is a reflection of the relatively short time that many Technology Transfer professionals have been working in this area, as referenced in Table 2 below. See recommendations in section 2.3.

**TABLE 2**  
**LENGTH OF TECHNOLOGY TRANSFER PROFESSIONAL INVOLVEMENT IN**  
**KNOWLEDGE TRANSFER ACTIVITIES**



Source: Technology Transfer Professionals Survey

In addition, there is widespread provision of entrepreneurship training which could be drawn together into a coherent package, possibly modelled on the collaborative activity of NICENT (The Northern Ireland Centre for Entrepreneurship which aims to embed a culture of entrepreneurship across the 2 participating universities). The success of this activity can be illustrated in England with the Midlands Medici programme, a description of which is available in the background document to this report.

### **Sharing Resources**

Another area with potential was that of shared resources, building on the model in Ireland of secondees from Enterprise Ireland. As the system matured this model clearly needed to evolve and Technology Transfer professionals were keen to explore with Enterprise Ireland and with each other how a new operational model might be developed. See recommendation 2.7.

### **Campus Company Support**

Campus company support was an area which was also seen as providing natural opportunities for collaboration, both in sharing knowledge to increase expertise levels but also in working collaboratively to increase the effectiveness of support mechanisms and the range of funding for new companies. See recommendations in sections 2.4 and 2.5.

Seed funding, which is available in Northern Ireland at the moment, was seen by stakeholders as a necessity, particularly at the early stages of company development.

### **Engaging External Expertise**

All the Technology Transfer professionals and many of the external stakeholders recognised the value of collaboration on the engagement of external expertise. See recommendation 2.6. External stakeholders believed that greater control needed to be exercised over the way in which academic staff interacted with patent agents, and the Technology Transfer professionals could see the merits of collective purchasing of services.

### **Technology Bundling**

Technology bundling across institutions was a further area which the Technology Transfer professionals were quite ready to embrace, proposing this as one facet of the development of a new marketing entity which would actively market technology from the university sector. Stakeholders also recognised the value of such bundling in creating more robust technology and technology with wider applications. See recommendation 2.8.

## SECTION 2

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### RECOMMENDATIONS AND ACTION PLAN

#### 2.1 Joint Marketing

**Recommendation:** Universities Ireland establish a strategy and policy task force on technology marketing, drawn from Technology Transfer professionals and appropriate communications professionals. The task force should have the remit to develop and cost a comprehensive marketing strategy, working with external stakeholders where appropriate.

The proposed terms of reference for this task force should include development of the expertiseireland.com website, market intelligence and an entity to market technology.

This was strongly supported as the initial top level priority for the universities. Models elsewhere such as Medicon Valley or INTERFACE in Scotland illustrate the importance of effective marketing, especially using people “out on the road” in creating market pull and in establishing the recognition factor. They also illustrate how such a model can operate across 2 jurisdictions.

Promotion of the university research base on the island, North and South, building on the expertiseireland.com website, can only be beneficial to the universities and to the economic growth of the island, North and South. This combined with support for market research would

- Raise the profile and establish the position of the universities and the island as an R&D powerhouse
- Provide a vehicle for the marketing of services and facilities
- Provide a common platform for addressing the multi-national company sector
- Improve the perceptions of stakeholders and the business community both on the island, North and South and worldwide
- Inform policy by elucidating common strengths and positions
- Provide a common platform for lobbying policy development, particularly at European level on R&D and Innovation policy
- Facilitate technology take up from the research base by companies
- Enable technology bundling for marketing purposes

##### 2.1.1 Website Development

###### Recommendations:

- The universities review their current offerings on the expertiseireland.com website and make every effort to populate the website in a standard manner with agreed quality of content
- AURIL-Ireland address the issue of responsibility for marketing, including maintenance of university information on the website

A starting point would be to fully populate and to develop a marketing strategy for the [expertisereiland.com](http://expertisereiland.com) website. This recommendation arose from the Technology Transfer professionals who recognised the value of the site, but commented on the resources required to translate technical disclosures of IP into a suitable form for publication on the website (see section 4.1 of the background document). A similar model operates in Scotland as [university-technology.com](http://university-technology.com) and there are various examples in Germany. All are discussed in the background document.

The [expertisereiland.com](http://expertisereiland.com) website already has a strong profile according to Technology Transfer professionals. To get the full benefit of the recommended changes it would require the provision initially of some resources to write up in appropriate language the available technology, describing what it could do rather than what it was.

Technology Transfer professionals reported that “cleaning” disclosures in order to market the technology took resource they did not have, which may account in part for the difficulties companies have in accessing knowledge about available technologies. In time however, those engaged in exploitation i.e. marketing the technology, would be expected to be able to write short technology descriptions for use with companies, in marketing material and in case studies for funders or VCs and for websites. The development of a standard template for these would facilitate their production and present a consistent style and level of content.

Responsibility for the maintenance of the university information on the website would rest with the universities and a strategy for uplifting content, checking the content and clearing badly written content or stale offerings should be put in place by the Directors and should be monitored by them. Such a website can only succeed if it is credible and its content is dynamic and up to date. A similar exercise could be undertaken by the universities for their offerings on [www.biotechnologyireland.com](http://www.biotechnologyireland.com).

### **2.1.2 Market Intelligence**

#### **Recommendations:**

- the economic development agencies and the Directors explore the potential to purchase access to a selected database of protected IP, such as the Delphion database, on behalf of all the universities
- the economic development agencies and the Directors explore the potential to access information on companies to which particular technologies, or types of technology, would be of interest

To understand the potential appetite in the market for a technology, the universities have to develop their knowledge of the market itself. Their difficulties with this were commented on by stakeholders and by Technology Transfer professionals alike (see section 4.1 of the background document).

The universities need support to develop or to easily access expertise on

- the needs of local industry – local market knowledge;
- regional plans and market gaps;
- national / international markets – to find international industry.

Much of this information is available through databases of companies but the most effective route should be through collaboration with development agencies. Those agencies supporting inward investment should make information available through regular contact with the universities – possibly identifying liaison managers to work with them – and supporting bulletins etc. They should also consider providing more tailored services to match companies and university technology. A starting point is to provide more detailed access than is available through Patent Offices to information on protected IP and thus to companies interested in/engaged in relevant areas.

### **2.1.3 Technology Marketing Entity**

#### **Recommendations:**

- establishment of a group, with representation from the development agencies and the universities, to develop a model for an entity, owned collectively by the universities, that would employ staff to actively promote the technology produced by the universities; the pre-selling stage
- the universities, working across the Technology Transfer professionals and the External Communications units, develop a suite of materials – case studies – which could be showcased
- the development agencies develop strategies to produce these professionally and to use them in suitable venues and events

Technology Transfer professionals proposed the establishment of a “central” marketing entity, owned collectively by the universities, with staff who would go out and promote available technology, adding value to existing mechanisms. Responsibility for the actual selling and the terms of deals would remain with the university/ies. This model, which is used extensively in Germany, would also, in their view, facilitate the bundling of protected IP as recommended in section 2.8.

Funders, development agencies and the universities should consider and develop a marketing strategy for a single sector brand and a joint marketing, university controlled and run, entity to actively promote technology. This would interact with the [expertiseireland.com](http://expertiseireland.com) website and would add value by acting as a single point of contact, marketing expertise, access to facilities and technology in a common format to all types of industry. It would require staff who have the ability to promote technology.

The model would have to be considered to take account of how it would interact with the universities on the actual sales of technology. Some technology might be marketed by this entity but other products might best be marketed by the university if it had a ready market for it. Marketing expertise and access to facilities should be relatively straightforward and should be developed quickly in parallel with discussions of what guidelines were applied to technology. As a baseline however, all technology available for marketing should be at least sign-posted through the website and this entity.

Such a model could be based on profit sharing to ensure its sustainability. The value of such branding cannot be overestimated, particularly if the brand achieves recognition as a “blue chip” brand. Given the high visibility of the island of Ireland as a brand in other sectors it should be relatively easy to establish an island brand for university technology, while still taking account that there are two jurisdictions involved. Any such brand would have the universities and the exploitation of their research output and technology as the focus. The challenge may be in ensuring the quality of the offerings to industry.

Showcases encompassing all the universities under a single brand would support the marketing strategy and were also identified as being important by Technology Transfer professionals (see section 4.1 of the background document). With appropriate marketing materials they could be used by the inward investment offices overseas; at international trade fairs and conferences both globally and on the island, North and South and at airports on the island, North and South (as research is promoted at the moment). They would need to be refreshed but core material could be built around the major research themes, including the emerging themes which would attract the attention of multi-national companies looking for long term partnerships.

Showcase events could be built around these themes with inward investment strategies for multinational companies.

## **2.2 Expert Professional Input to Policy & Strategy**

### **Recommendation:**

- Universities Ireland establish a sub group of Directors to advise Universities Ireland and the VPs for Research and Innovation on IP management and technology transfer policy issues, with an agreed remit which would include issues at European level
- agree the level of support to be provided to AURIL-Ireland, and the reporting mechanisms

Currently there is limited, although increasing, consultation by stakeholders with the Directors in Ireland but this is not systematic and is generally reactive. Issues were raised about the possibility of such collaborative working across 2 jurisdictions but there are models, for instance ProTon Europe, where more than 2 jurisdictions are covered by a single entity addressing policy issues that are generic or apply at European or global level. There are sufficient professional issues in IP management and technology transfer facing all the universities on the island, North and South, to merit an all-island grouping. Where an approach was required or a policy development occurred which applied to only 1 jurisdiction, this would be acknowledged by forming a sub-group on an ad-hoc basis.

This sub-group would:-

- Advise the VP groups and thus the Presidents / Vice Chancellors
- Act as the consultative point for all the external stakeholders on policy and process at all-island level
- Provide a formal consultative route through sub-groups for issues specific to Northern Ireland or Ireland
- Prohibit grounds for an oft repeated claim that universities were "picked off individually"
- Increase collaboration as the group activity evolved

Such a group would be invaluable in developing the profile of the sector at both local and European level. It would also serve as a useful sounding board for the external stakeholders and the university senior strategic managers.

The sub-group would comprise all the Directors, that is, those who have operational responsibility for implementing institutional and sectoral strategy under the oversight of the VPs for Research & Innovation.

The group should also be charged with presenting to Universities Ireland, on an annual basis, a report on performance against agreed metrics. These would be invaluable in discussions with stakeholders and in promoting and marketing technology and expertise in a wide range of milieus.

This group could be, and should be, built around the recently established AURIL-Ireland. This ensures that the advice received will be fully rounded and informed by those who are engaged in discussions with the UK and Europe on new developments and trends in technology transfer and IP management and related government practices, good professional practice, career development and impact assessment.

A model could be the Scottish Directors who report formally to the Research and Commercialisation Committee of Universities Scotland but also use their quarterly meetings for informal discussion on emerging topics or matters of sector-wide concern, as well as strengthening collaboration around ad-hoc sector projects and cross-university development projects.

The group would require some administrative support for meetings and for drafting documents. This could be provided by a part-time secondment to Universities Ireland, probably of a mid-range administrator, for 4 days per month. This appointment would also provide some executive support to the Chair of the group and possibly provide representation at appropriate events.

## **2.3 Training**

### **2.3.1 Entrepreneurship**

**Recommendation:** the universities look at the work of NICENT as a model of collaboration in this area and decide how that might be applied across the sector.

This recommendation arose from discussions with Technology Transfer professionals and from comments made by stakeholders, particularly those who engaged directly with academic staff. Entrepreneurship training is widely available and it would be useful to codify and benchmark it. One such appropriate model which was identified is the Northern Ireland Centre for Entrepreneurship (NICENT), which is a collaborative model across 2 universities. Models elsewhere include the Scottish Institute for Enterprise, the Midlands Medici programme and the Royal Society of Edinburgh's Enterprise Fellowship programme funded by Scottish Enterprise.

Developing and encouraging entrepreneurial take-up of the IP created by the universities is essential for economic development and the 2 activities of entrepreneurship development and exploitation facilitation should be closely linked to gain most benefit. The universities should consider development of a collaborative teaching programme to include entrepreneurship in the curriculum for science and engineering students. This would have to be led by teaching experts in entrepreneurship, although Technology Transfer professionals could contribute to modules.

### **2.3.2 Centralised System for Training in IP Awareness**

**Recommendation:** the Enterprise Ireland Enterprise Platform Programme be delivered as a permanently available road-show and arrangements put in place to allow participation from the universities in Northern Ireland.

This recommendation relates also to the findings in sections 3.6 and 4.2.2 of the background document. Several of the universities provide in-house training programmes for academic and research staff. These are essential in fostering and supporting a culture change but can be very resource intensive.

Technology Transfer professionals reported that a successful programme had been developed in Ireland by Enterprise Ireland and suggested that there was a case for central provision delivered locally and facilitated by their offices. One very strong argument in favour of this which applies in almost every university in the world is that academic staff will listen more readily, at least initially, to external expertise. Another would be that local provision of a single, all-island programme would ensure a common standard and be cost effective.

It is recommended that the course content and structure of all the in-house provision, and that provided under the Enterprise Ireland programme, is reviewed with a view to developing an agreed, comprehensive, single suite of modules which could be delivered as a "road show" on an annual cycle in every university or institution. Ideally a small advisory board would be drawn from university managers, agencies and the academic community to review and, if necessary, refresh the programme each year.

### **2.3.3 All-Island Continuing Professional Development (CPD) programme**

**Recommendation:** AURIL-Ireland should roll out the pilot AURIL-Nova UCD programme.

There is demand for a programme of training on the island, North and South, which fosters career progression and goes beyond the technical skills, as evidenced by uptake of the pilot CPD programme supported by InterTradelreland. This arose in the findings from the Technology Transfer professionals survey (see section 3.5 of the background document) but was expressed mostly strongly in repeated comments from almost all the external stakeholders (see sections 5.2.2 5.2.4 and 5.2.5 of the background document).

One specific topic that has been partially addressed but needs to be more widely understood is that of working with multi-national companies to understand their objectives and how a university may protect its rights and position while working to assist those objectives.

## **2.4 Campus Company Support**

There are different models of company support in different universities. Training and experience in this area is recognised as being of very high importance. There exists a clear, well defined specialist group which could work together, and would also support the development of recommendation 2.6.2 below. Examples elsewhere are numerous, particularly in England as a result of HEIF collaborations.

### **2.4.1 Seed Fund**

**Recommendation:** the universities in Ireland<sup>2</sup> develop a proposal to the government for a single multi-university pilot scheme for seed-funding of new companies. If successful it could be opened up to the universities in Northern Ireland under suitable funding arrangements.

Seed-funding is an essential element of company support before the company is ready to launch on the market. It is in part funding of proof of principle and in part pump-priming of the first stage of company development, usually under the wing of the university. The absence of such a fund in Ireland was remarked on by stakeholders. Interaction with such a fund under experienced fund manager control would assist development of the skills base referred to by stakeholders and by Technology Transfer professionals (see sections 3.5.2 and also 5.2.5 of the background document).

In the short-term an Ireland seed fund should be established with the model rolling out across the island, North and South if appropriate. The seed fund should be established under independent management to fill gaps in funding by the revenue capital community and to grow campus companies. A reputable third party could be found to manage the fund and the investments, as has been done in some parts of the UK with University Challenge Funds.

Funding should be provided from government sources but investment should be on a purely commercial basis with no account of geographic factors. Oversight should rest with a Board comprising the government agencies and the universities. That Board would be expected to develop a business plan to make the fund self-sustaining within a reasonable timeframe – recognising that returns will take time to start flowing.

### **2.4.2 Business Incubation Network**

**Recommendation:** AURIL-Ireland arrange a meeting of all those engaged in business incubation and support around a topic or a series of topics in order to establish an informal network.

Business incubation is an activity that all the universities and the Institutes of Technology are engaged with but many lack confidence (see section 3.5.2 of the background document).

There is potential for mutual learning through the development of an incubation centre network. Sharing of knowledge and of different practices can only be good for both staff and companies, and as this area is non-competitive (even gaining VC funding is, technically, non-competitive) there is no rational argument not to develop such a network.

It would be beneficial if the network was able to establish – or share knowledge on – the availability of a “pool” of potential CEOs for new companies, preferably those with experience in growing new companies.

## **2.5 Interaction with the Venture Capital Community**

**Recommendation:** AURIL-Ireland to arrange a series of seminars with representatives from the Venture Capital (VC) community to allow an exchange of views.

Working together the universities would have more power as a group in negotiations for funding of new companies. If they shared information and reached agreement on points of principle - which were realistic - they would further the development of the VC community and the quality of the deals being struck by the companies.

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<sup>2</sup> Ireland refers to the Republic of Ireland.

To do this would require consultation and interaction with the VC community, possibly bringing in external VC companies with experience of deals outside the island of Ireland.

A starting point should be a series of evening seminars where both communities meet constructively to attempt to understand each one's point of view and to address the question of what deal structures are realistic and provide win-win situations for both and for the island.

Such a face to face format would build understanding and create a network that would make deals and access to technology and to funding easier in the long run.

## **2.6 External Professional Services**

### **2.6.1 Tendering for Services**

**Recommendation:** the Directors appoint a small group from their number to negotiate an acceptable arrangement on access to external patent support and legal advice.

The universities on the island, North and South, have reported an increase in the costs of patenting following the establishment of the Enterprise Ireland Patent Fund. This wider development of rising patent costs was reflected in some of the comments of stakeholders about the relative inexperience of junior staff and in their suggestions that academic staff would benefit from more awareness when engaging with external service providers. (see sections 4.3.1 and 5.2.5 of the background document)

Universities on the island, North and South, engaged with a variety of patent agents. None appear to be developing in-house resources in initial patent writing, a development that is increasing in England, Scotland and Wales. Most appear not to have a retaining contract with any specific patent agent although some in Ireland do get services in-kind in return for recognition of the patent agency/lawyers as the "house" adviser. They do not believe they get discounted fee rates despite the increasing volume of business from the university sector.

The exception is Queen's University, Belfast, which reported a retaining contract with one company which required delivery by the company of training and awareness events to the university community.

The patent agency interviewed reported a lack of control by universities in Ireland on the costs and the extent of interactions with the researchers. This may reflect the overstretched resource more than anything else but it is undoubtedly increasing costs to the university and to Enterprise Ireland.

Discussions with the Technology Transfer professionals generated widespread agreement that they could work together to

- Establish common terms and fee levels with both patent agents and providers of legal services
- Share information and evaluate the quality of service provided
- In the long term put out to tender one or more contracts to provide such services to the universities

## **2.6.2 Shared Central Resource on Patenting**

### **Recommendations:**

- the Directors develop a business case for using/sharing in-house expertise to support the process of drafting initial filings with a view to making a costed recommendation based on the premise of a shared resource by early summer 2006
- a similar case is developed for legal and contractual advice

A further development which had not been considered as a possibility by the Technology Transfer professionals would be to collaborate on the funding of a central resource to support the drafting of initial filings under the oversight and direction of the Technology Transfer office. Initially this might be based in one university but provide a service to several.

Managing the patent portfolio of items included in this process could form part of the role, with the intention being to ensure that patents are only maintained if they are to bring tangible results.

This would cut patent costs significantly; it would be predicated on what was needed to close a deal, rather than drafting a totally watertight protective patent; it would provide and build internal expertise and understanding and would assist in the development of a more informed and more pro-active approach to IP management.

This model exists in some UK universities where the post can be held by someone who enables the researchers to draft the technical aspects of the initial patent. Sensitive or more complex filings would always be finalised with external expertise.

Advice on the development of such a service, and the training and costs could be obtained from UK universities who have adopted it.

The system has been shown to work because:-

- Experience indicates that a patent need only be complete or watertight to a certain degree in order to be used. Total protection against every eventuality is not necessary in every case and indeed is rarely possible since a valuable patent will tend to be attacked anyway by a competitor's legal team if the commercial drivers are important enough.
- There is time to adjust filings in the first year and subsequent filings in the Patent Co-operation Treaty and national phases will use external patent agents.

Similar views pertain to the provision of legal services. One quoted example related to legal fees rapidly mounting over the sub lease of property for a new company. The only stumbling block was the original lease. The lawyers spent considerable time trying to ensure that the length of the original lease would not inhibit company growth. It took a third party to ask what relevance to anyone present was a lease that ended in 3004!

## 2.7 Shared Expertise

**Recommendation:** Enterprise Ireland to consider initiating discussions with the Directors on the transfer of accountability and day to day responsibility for seconded staff.

There was extensive discussion by the Technology Transfer professionals about the current arrangements for secondments from Enterprise Ireland to the universities.

The current arrangements were put in place when the overall system for IP exploitation was immature and many universities lacked experience in managing such processes. The level of maturity now, and the need to develop faster the expertise and accountability of the universities suggest that Enterprise Ireland should consider developing their programme of placing expertise in universities to allow the university or a group of universities to manage the work of those staff within the context of the university. Enterprise Ireland would continue as the employer of such seconded staff

This could be supported by developing the Enterprise Ireland network of sectoral expertise but it would require the universities to be accountable for the output from the posts, and would give them more ownership, and more management responsibility for recruitment strategy and outcomes.

Although some universities in Ireland would have the critical mass to sustain one or more full-time posts in some sectoral areas, the programme should encourage collaborative bids in areas where that critical mass does not exist at the level of the single institution and provide new mechanisms to support inter-institutional collaboration which in turn would provide new opportunities.

## 2.8 Technology Bundling

**Recommendation:** investigation of the potential of a system for technology bundling.

Although technology bundling forms part of the recommendations on joint marketing it also underpins some aspects of sharing resource and for that reason it is listed separately.

The recommendation above would facilitate development of a system for bundling technology into packages that would give true robustness and comprehensive technical/product breadth. This would facilitate the sustainable growth of new companies exploiting this technology or larger scale licensing deals.

The Technology Transfer professionals consulted saw the potential for establishing framework agreements on joint projects and there would be little difficulty in extending that to exploitation. The actual identification of suitable technology for bundling might be delivered by a mix of the universities consulting each other about technology they have under development and intend to protect, the use of shared expertise which would enhance awareness of possible synergy and by joint marketing.

The universities, at all levels, would have to recognise the benefits of being part of a larger offering, but probably holding a smaller share. As always 10 per cent of something with commercial potential is better than 20 per cent of something that has no commercial potential on its own.

## 2.9 Single Funding Stream in Ireland

**Recommendations:** The funding agencies in Ireland<sup>3</sup> should:

- examine the impact of HEIF funding for infrastructure in Northern Ireland and the mechanisms for delivery of that funding, against strategic plans
- reach agreement on the ownership of IP arising from work or infrastructure they have funded, ideally allowing IP ownership to rest with the universities who would report through strategic plans on their success in exploitation
- develop a single funding stream to support the necessary infrastructure. A suitable funding level would be 3 per cent of the research budget to exploit the research. This is comparable to the level of HEIF expenditure on technology transfer in Northern Ireland.

The difficulties experienced by the universities in Ireland as they struggled on limited resources to deal with the administrative burdens of applying for and reporting on project based funding to manage and exploit IP were referred to by both Technology Transfer professionals and external stakeholders as seriously inhibiting the exploitation of research outputs. See section 4.3 and 5.2.1, but also section 2.2.11 of the background document for a very clear exposition of the issues from the Technology Transfer professionals. Although outside the scope of this study it should be noted that the issues raised are regarded as very serious in that they hinder successful IP exploitation for the benefit of Ireland.

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<sup>3</sup> Ireland refers to the Republic of Ireland.

## GLOSSARY

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AURIL-Ireland	Association for University Research & Industry Links (AURIL) is the professional association representing all practitioners on the island of Ireland involved in knowledge creation, development and exchange who work to ensure that new ideas, technologies and innovations flow from their institution into the market place
DEL	Department for Employment and Learning
EI	Enterprise Ireland
HEA	Higher Education Authority
HEI	Higher Education Institution
HEIF	Higher Education Innovation Fund
IP	Intellectual Property
IUA	Irish Universities Association
PRTL	Programme for Research in Third-Level Institutions
SFI	Science Foundation Ireland
SPUR	Support Programme for University Research
SRIF	Science Research Infrastructure Fund
VC	Venture Capital

The term VP refers to Vice President for Research or equivalent within each institution.

The term Director refers to Director of Technology Transfer or equivalent within each institution.

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