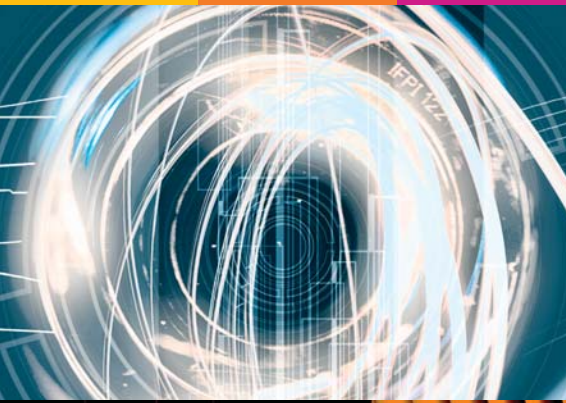


ITT Dublin



Strategy for Research and Innovation 2008 – 2012

SUMMARY

MISSION

“ITT Dublin aims to be a leader in research and scholarly activity in the region, to become established as a Centre of Excellence for targeted research areas which can act as a regional and national resource for industry and other stakeholders and contribute in a unique way to the success of fourth level education in Ireland.”

GOALS

1. To carry out research of an international standard that positively impacts upon society in the Institute's prioritised research areas, whilst identifying emerging thematic research areas in which the Institute can play a role.
2. To develop postgraduate and fourth level teaching and learning to the highest international standard, and to sustain and improve the linkage between discipline-based research and undergraduate and postgraduate teaching.
3. To sustain and further develop the physical infrastructural resources within the Institute to support its research activities.
4. To establish structures and processes that will encourage, support and recognise research activity in the Institute.
5. To identify, expand and deepen strategic research partnerships with regional, national and international partners.
6. To continue to partner with industry to ensure that the Institute develops a diversified and sustainable research base, and that the focus of research is consistent with the challenges set by an innovative and knowledge driven economy.
7. To establish ITT Dublin as a driver for enterprise development in South Dublin County and within the Institute of Technology Sector by developing the expertise to act as a centre of excellence for applied research and knowledge / technology transfer for its region.





GROWTH TARGETS

The Institute has identified the following growth targets to be achieved over the period of this strategy:

- An expansion of postgraduate numbers to 150
- An increase by 50% in the number of staff engaged in research
- A doubling of academic research outputs such as publications
- One award per annum of EI Commercialisation Fund funding, under the Proof of Concept or Technology Development schemes.
- Five patents per annum arising from Institute research;
- One license per annum
- One spin-out over the lifetime of this strategy.
- A doubling of average research funding income over the life of the plan compared with the previous five year period 2003 – 2007, from €3,784,000 to €7,568,000
- Identify the discipline area for the creation of a second nationally significant research centre on campus and take steps to commence prioritisation of the area.
- A doubling of incubation centre companies from sixteen to thirty two, pending available capacity
- Participation as a partner in the development and delivery of three collaborative structured PhD programmes.





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1. BACKGROUND

1.1 Introduction

The Institute of Technology Tallaght Dublin (ITT Dublin) was established as a higher education institution in 1992. It has forged a reputation in the intervening years as an effective provider of teaching and learning opportunities for the population of South Dublin County and beyond. In more recent years, the Institute has developed a parallel and complementary reputation as a centre of research excellence in selected areas. It now engages in the full spectrum of academic endeavour from teaching and learning through research, innovation and knowledge transfer.

The Institute was approved by an international panel in 2007 for the development of a nationally significant research centre, the Centre of Applied Science for Health, in collaboration with Dublin City University, National University of Ireland Maynooth and the Adelaide, Meath and National Children's Hospital, Tallaght, under Cycle 4 of the Programme for Research in Third Level Institutions. This represents an affirmation of the Institute as a credible research performer on the international stage.

The Institute sees direct engagement in the economic activity of the region as a core activity, and strives to maximise its impact through its work in Research and Innovation. This is emphasised in the Institute's Strategic Plan 2005-2008, which clearly articulated a set of key strategic goals in relation to economic and social development.

The Institute's commitment to expand its supports for industry is reflected in the completion of the Synergy Incubation Centre in late 2006. It represents yet another element in the support structure required to translate research outputs into commercial reality, while providing a supportive and sustaining environment for start up enterprises, applied research and technology transfer.

The capability of the Institute to deliver to its strategic agenda is evidenced by the quality of the research outputs that have been achieved, by the level of research collaboration that has been built up and by the capacity of ITT Dublin to support and enable high quality, knowledge-based start-ups.

1.2 The Role of Institutes of Technology in Research

"The Institutes of Technology (IoTs) represent an important resource in this context (regional innovation). Their multi-regional location and openness to working with industry provides a platform upon which real industrial impact can be built. It is clear that the IoTs can develop into an effective technology resource, focused on collaboration with local industry on the basis of applied research and technology development directed at the challenges facing the company.

A high quality response to these challenges will require the research community in the college to understand the science behind problems, be familiar with research processes and good research management practices, and be comfortable working in the context of an industrial environment. In that context, there is a continuing requirement to strengthen the IoTs' overall research capability...."

The above extract from the Strategy for Science, Technology and Innovation clearly outlines the role envisaged for IoTs in applied research by Government. It also recognises the need for deep understanding of underlying science and of research processes, in order to fulfil this role. ITT Dublin has enthusiastically accepted this role and has developed a portfolio of prioritised research areas with an applied or translational focus, much of it related to health, with an appropriate level of underlying fundamental research to provide the essential scientific understanding.

The Institute is committed to providing high quality degree programmes from which it delivers graduates ready to meet the needs of enterprise, the public sector and society. The Institute recognises that an active and dynamic research culture is essential to the success of these programmes, due to the strong interdependency between research and teaching. Consequently, ITT Dublin engages in a level of research that is of a quality and relevance consistent with delivery of graduates who address the needs of an increasingly innovation and knowledge driven economy.

1.2.1 Knowledge Economy

The industrial landscape in Ireland has changed dramatically over the last fifteen years. The Irish Government has recognised that Ireland can no longer compete with low cost centres to engage in low value tasks, and must create the capacity to undertake high value activities which are more aligned with the Irish cost base. To achieve this, the development of a high added value knowledge economy in both product and process is recognised as critical

Since the late 1990's, ITT Dublin has structured its teaching programmes, research, innovation and enterprise support activities to respond to the needs of a knowledge economy by addressing the three main spheres of operation of a mature third level institution. This integrated approach is illustrated in Fig 1.1. National policy has been a key consideration in the manner in which this has been done.

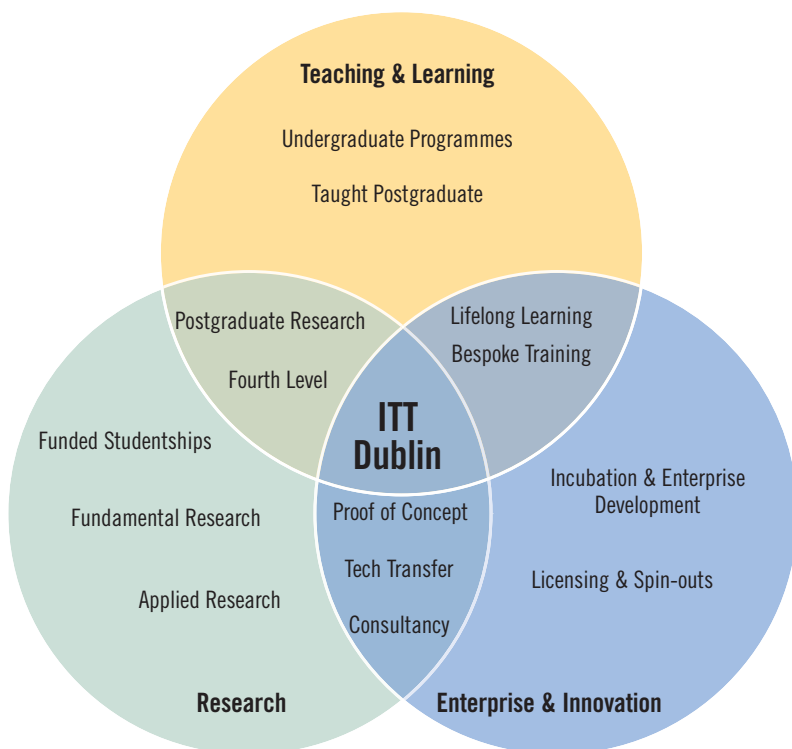


Fig 1.1 Three Spheres of Operation of ITT Dublin

In parallel with its research and enterprise support activities, the Institute has developed a significant programme of lifelong learning and workforce development. It will continue to develop programmes which address the needs of industry and which transfer the accrued knowledge of the Institute to enterprises in the region.

1.2.2 National Policy

The recent developments in national policy that are reflected in ITT Dublin's research strategy are briefly illustrated in the timeline in Figure 1.2 below.

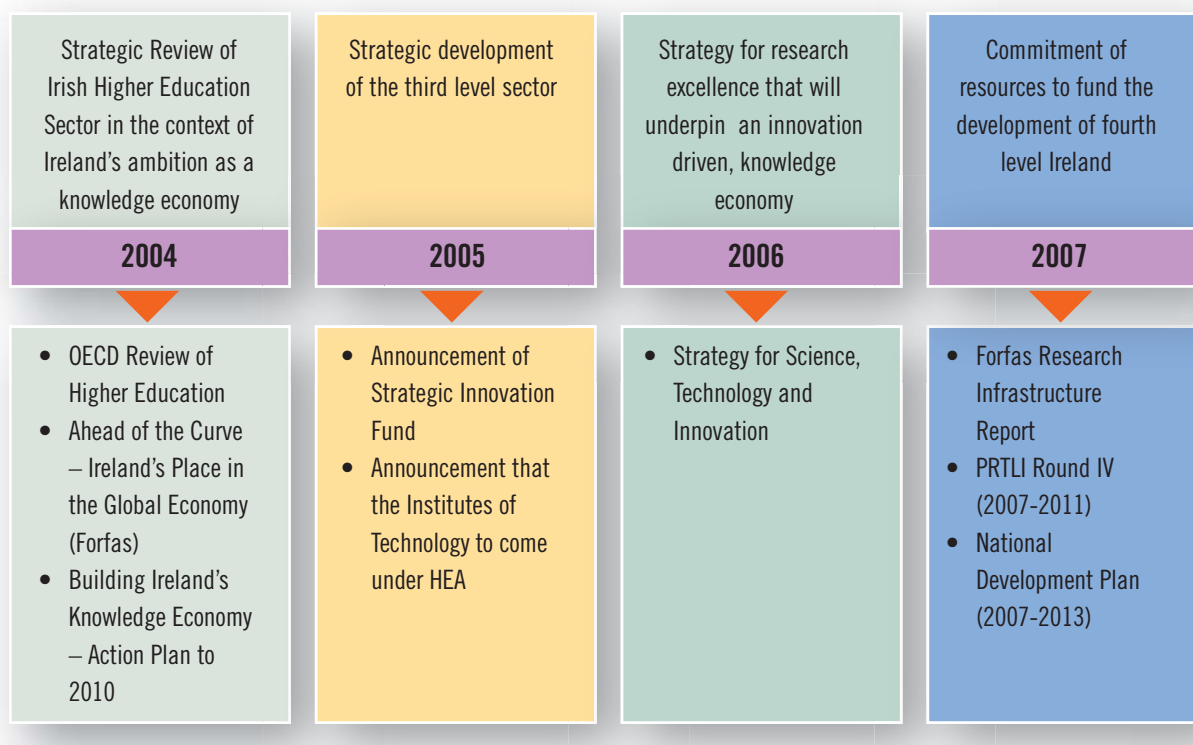


Fig 1.2 Development of National Policy on Research and Innovation

The commitment of the Irish Government to deliver the outcomes required under the Lisbon agenda underpins all of this. A key element of the Government's approach has been the unprecedented commitment of resources to research and innovation in the National Development Plans, particularly through the Programme for Research in Third Level Institutions, Science Foundation Ireland, the support from Enterprise Ireland for the development of applied research and enterprise support in the Institute of Technology sector and the support for postgraduate research in the sector from the Department of Education and Science through the Technological Sector Research Programme.

The Institute is committed to matching this commitment by pursuing an appropriate and focused strategy that will make a significant contribution to the achievement of national priorities as well as setting new standards for research within an Institute of Technology that directly reflect the purpose and mission of the sector.

2. INSTITUTE RESEARCH VISION

The research mission of the Institute has been articulated as follows:

“ITT Dublin aims to be a leader in research and scholarly activity in the region, to become established as a Centre of Excellence for targeted research areas which can act as a regional and national resource for industry and other stakeholders and contribute in a unique way to the success of fourth level education in Ireland.”

This mission statement is aligned with the national vision for the role of Institutes of Technology in the development of research in Ireland as articulated in the Strategy for Science, Technology and Innovation (SSTI)¹.

The overall approach of the Institute to research is to identify targeted areas in which it can carve out innovative and relevant areas of expertise which will add real value to Ireland’s burgeoning knowledge economy, and ultimately establish centres of excellence. To achieve this, the Institute will look at a number of factors, including pre-existing core research strengths, industry requirements (both locally and nationally), and access to collaborators and industry partners. The Institute is also cognisant of the existence of core skills in other third level institution and research centres.

In implementing this approach, ITT Dublin has chosen to concentrate on three core research areas in Science and Technology (S&T) and on one in the Business and Humanities (B&H) area, as well as a number of smaller “prospecting” areas, over a ten year period.

During the life of this strategy the concentration in Science and Technology will be on the area of health research with a particular concentration on the three themes that form the new CASH centre. The goal is to develop the premier research and technology transfer centre for applied health research in Ireland by the year 2013.

The second area of concentration in the S&T field will be selected during the lifetime of this plan. Candidate areas at this point include currently strong research areas in the Institute such as wireless technologies, computing (grid and distributed) and e-learning, and less well developed areas such as energy and environment. A formal process will be designed and carried out to identify the second major area for prioritisation by mid-2009. The selection will influence subsequent decisions on matters such as staff recruitment, development of undergraduate and postgraduate programmes and purchase of equipment. By 2013, an active multi-disciplinary Institute Research Centre in the selected area will be in place. As with the health area, programmes at third level relevant to this new area will combine with specific enterprise support programmes and technology transfer initiatives to complement a solid, innovative and relevant fourth level research base in this field.

Identification of the third area of concentration in the S&T field is a longer term decision, and a timetable for this is not likely to be addressed until the research strategy that succeeds this one in 2013 is formulated.

¹ DETE (2006): Strategy for Science, Technology and Innovation

It is more difficult to bring researchers in Business and Humanities together to work on a common theme, as research in these disciplines is more varied in nature. As a result, the B&H research landscape in the Institute is more fragmented. This explains the more conservative vision of one major area of research concentration in the field within the next ten years. Another factor is the more modest level of funding available in the B&H field compared to Science and Technology. Critical mass can be built in B&H research also, however. An outstanding example of this is the National Centre for Franco-Irish Studies (NCFIS), an internationally recognised Institute Research Centre with an excellent track record, and a potential key element of the ultimate area of B&H research concentration for the Institute. A formal process will be designed and carried out to identify this major area for prioritisation by mid-2009, as for the second area in S&T, and similar approaches will be applied to strengthen the Institute's capability to develop the area.



Launch of National Centre for Franco-Irish Studies

3. EVOLUTION OF RESEARCH AT ITT DUBLIN

3.1 Milestones and Key Initiatives

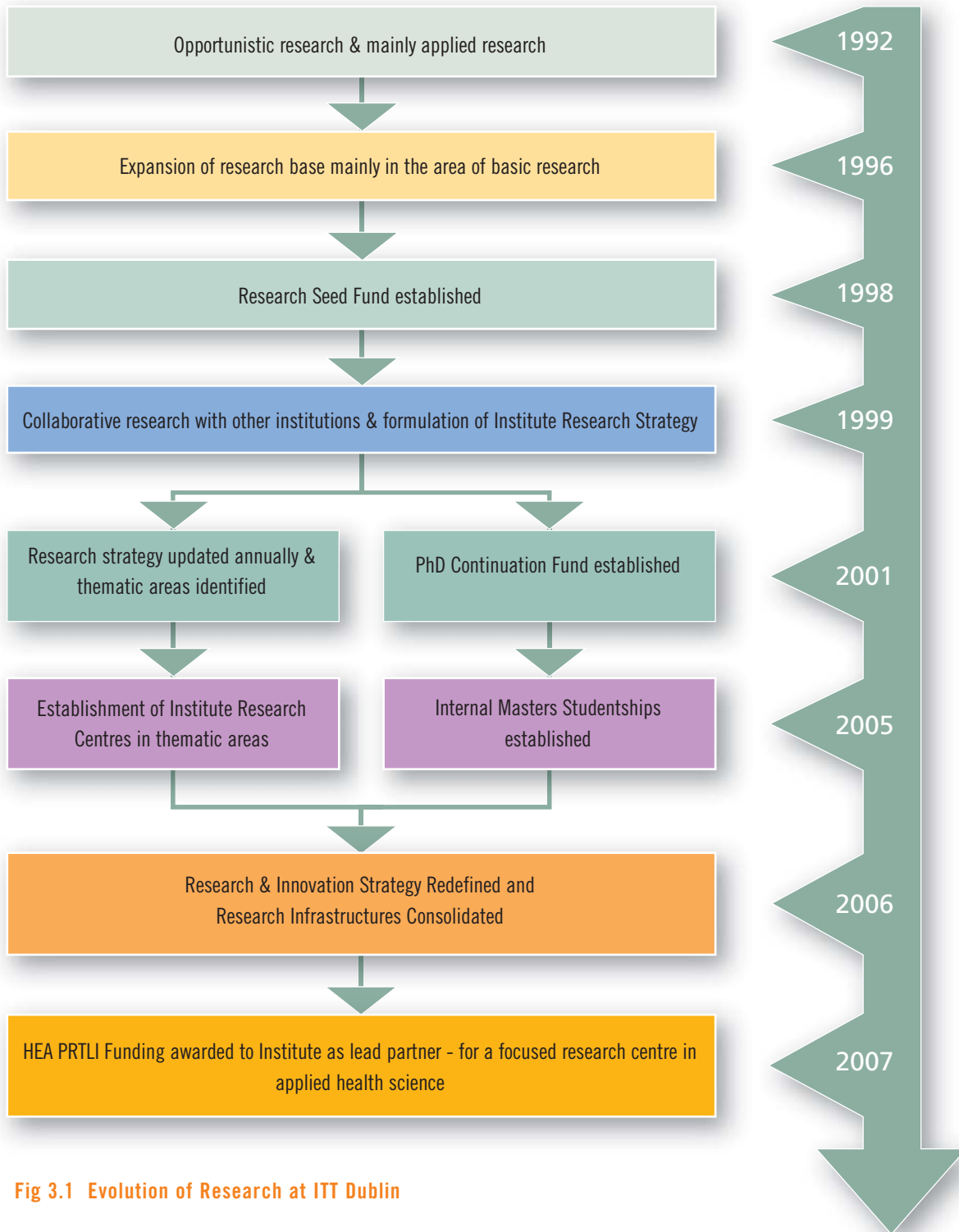


Fig 3.1 Evolution of Research at ITT Dublin

Since it was established in 1992, ITT Dublin has worked in a planned way towards building a capacity in research and development that would provide real value to its stakeholders. Figure 3.1 above outlines the main stages in the evolution of research in the Institute.

Since 2000, over €30m in funding has been awarded to academic researchers at the Institute through competitive applications to national and international agencies. Key to this success has been the alignment of key prioritised areas of research with national priorities, the commitment of staff and management to the development of research and the strength of collaborations with other higher education institutes such as Dublin City University (DCU) and National University of Ireland, Maynooth (NUIM).

However, internal focus, initiative and momentum have been as important to the development of research at ITT Dublin as external support. The Institute has invested its own resources to support the growth of a critical mass of research and has created an environment where academic staff are both equipped and motivated to carry out quality research. These initiatives have been:

- **Research Seed Fund** to support short pilot projects adjudged to have the potential to develop into viable research areas.
- **Internal PhD Continuation Fund** to facilitate exceptional students nearing completion of their research Masters in progressing their project to Doctoral Degree Level, following Institute assessment procedures and successful application to HETAC for transfer to the Doctoral Degree register
- **Internal Masters:** Studentships primarily set up to assist new academic researchers to establish a track record of research outputs, including postgraduate supervision and to enhance their credibility when applying for funding to external agencies
- **Institute Research Centres (IRC):** This is a designation awarded by the Institute on foot of independent adjudication to research groups that are adjudged to have achieved a level of critical mass in relation to number of members, funding, activity and outputs as measured against set criteria. IRCs are provided with significant resources to assist their growth. Seven groups have been designated IRCs since the start of the scheme in 2005.
- **Intellectual Property Policy:** ITT Dublin has revised its Intellectual Property Policy to make innovation and exploitation of research knowledge more attractive to its researchers offering greater commercialisation support and greater share of profits from successfully commercialised knowledge.

3.2 Stages in Research Development

3.2.1 Establishment of Research (1992 -1997)

During this time, academics established their research teams within the Institute and were competing successfully for funding from national and international sources. It has always been the Institute's policy to recruit high calibre staff with proven research track records.

3.2.2 Research Prioritisation and Strategic Development (1998 – 2001)

The Institute recognised that in order to successfully compete for the larger programme-based sources of research funding, such as HEA PRTL, that began to appear at this time, and to establish a sustainable long-term research programme, it was necessary to

- identify priority areas for research effort
- develop sustainable research groups in these areas
- develop collaborations with other research performing institutions.

ITT Dublin became a key partner in the successful DCU-led PRTL Cycle 1 application, as collaborators in the National Centre for Sensor Research and the National Centre for Plasma Science and Technology. This was followed by Institute researchers, along with researchers from the National University of Ireland Maynooth (NUIM), becoming collaborators in the successful DCU-led PRTL Cycle 3 application that led to the establishment of the National Institute for Cellular Biotechnology (NICB). This represented a strengthening of ITT Dublin's strategic collaboration with DCU, and the establishment of an important new collaboration with NUIM. These collaborations were to increase in importance over subsequent years.

3.2.3 Period of Growth (2002-2007)

This was a period of rapid growth in terms of research activity, as reflected in a continuous stream of successful funding applications and a significant increase in the Institute's research indicators. The total funding secured by Institute staff increased from around €2M by 2001 to over €30M by the end of 2007. Highlights during this period included an ITT Dublin-led PRTL Cycle 4 project building on successes in earlier cycles of PRTL as a collaborator, an Applied Research Enhancement Programme award from Enterprise Ireland, seven Technological Sector Research (TSR) Strand 3 awards, an FP7 Marie Curie fellowship and an SFI ETS Walton Visiting Professor award.

The number of postgraduate students registered on research degree programmes increased almost five-fold in this period. The publication rate in peer reviewed journals also substantially increased.

Research income exceeded €10M in a single year for the first time in 2007 with approval for the establishment of the Centre of Applied Science for Health (CASH) on the campus under Cycle 4 of HEA PRTL, along with ongoing successes in other schemes.

Another major development was the opening of the Synergy Centre in 2006, ITT Dublin's purpose-built, €3.2m on-campus business incubation and innovation centre. Synergy Centre is now full of high-technology companies offering opportunities for joint research projects such as innovation partnerships. In addition the centre provides a potential ITT Dublin spin-out mechanism through its facilities and programmes.

4. CURRENT PERFORMANCE

The Institute has experienced a steady growth in its research indicators over the last five years. At this time ITT Dublin would be placed 3rd within the IoT sector across a range of performance indicators, such as postgraduate numbers and funding awards. It is the intention of this strategy to put in place a framework to enable continued growth in these indicators over the next five years.

4.1 Research Postgraduate Students

Over the period of this strategy, it is intended to increase the numbers of research postgraduate students to an annual cohort of 150 students. This will occur in stages as additional space and supervisory capacity becomes available.

The growth in the number of students registered on research degree programmes in the Institute over an 8 year period to 2006/2007 is shown in Figure 4.1. The numbers have risen from 12 in 1999/2000 to 77 in 2006/2007.

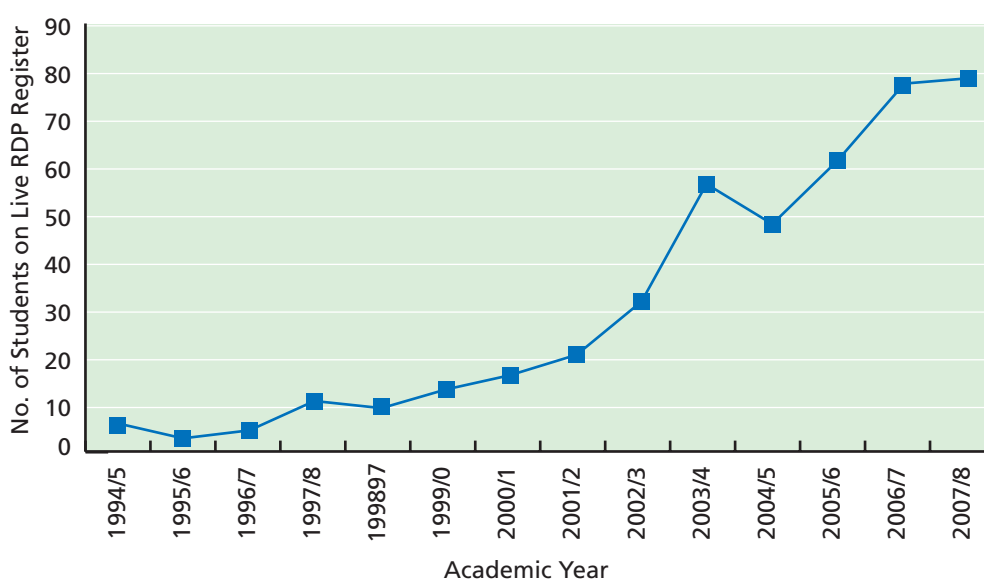


Fig 4.1 Number of Students Registered on Research Degree Programmes

The Institute will implement a PhD model involving a four year structured programme. This will consist of a planned programme of transferable skills training and discipline specific training for its postgraduates. To facilitate the development of this programme, the Institute is a member of the IOTI Strategic Innovation Fund programme which is developing common detailed structures and content for the taught element of the PhD in the sector.

The Institute has also been successful in obtaining SIF funding under the Graduate Education theme of the Dublin Regional Higher Education Alliance (DRHEA) project submission, in the areas of Chemistry and Biomedical Science. The purpose of this funding is to support the development of collaborative doctoral programmes, relevant to the strategic areas of core expertise in each institution. It is expected that during the lifetime of this strategy the Institute will participate in at least 3 such programmes together with its core collaborative partners in the DRHEA and also in line with the existing PRTLTI collaborative group.

It is further expected that Graduate Education will be a major element of Cycle 5 of PRTL1, the call for which is awaited at the time of publication of this strategy. Aside from any capital development funding, the Institute will participate in the proposal of a graduate education programme to PhD in collaboration with NICB DCU, NUIM, and AMNCH.

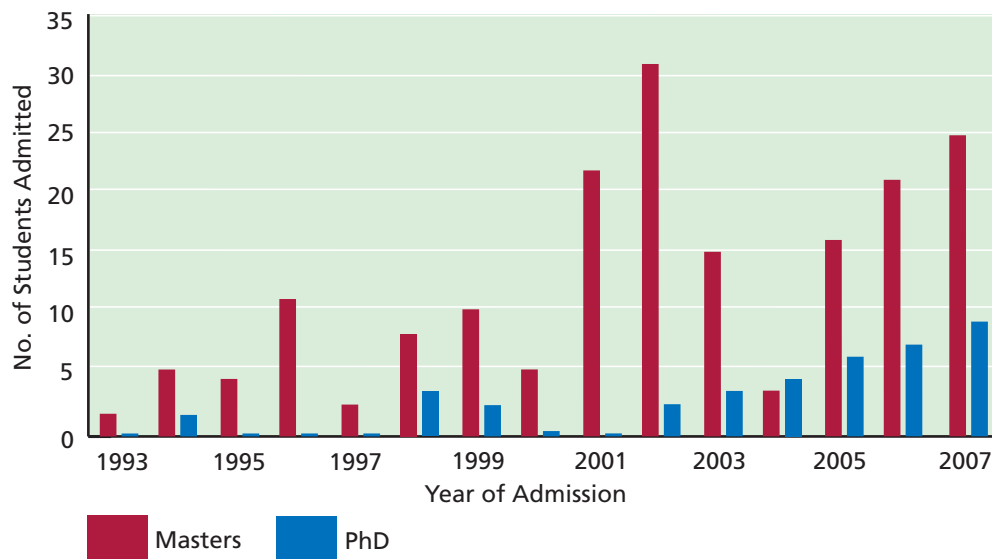


Fig 4.2 Admissions to Research Degree Programmes

Figure 4.2 shows the trend in admissions to research degree programmes from 1993 to 2007. It should be noted that the distribution between masters and PhD numbers is influenced by the fact that the Institute enrolls its postgraduates on Masters in the first instance and then at the end of the 2nd year progresses those who are suitable to the PhD register. In recent years, following the introduction of PhD continuation funding by the Institute, approximately 30% of eligible masters students progress each year.

The Institute was awarded powers to maintain its own register for research postgraduate students by HETAC in 2007. Its application for Delegation of Authority to make its own awards at research Masters and PhD in selected disciplines is now in train, with a panel visit to the Institute scheduled for June 2008.



4.2 Research Indicators

Research in the Institute has expanded rapidly in recent years, and the traditional indicators of research output are expanding in line with this.

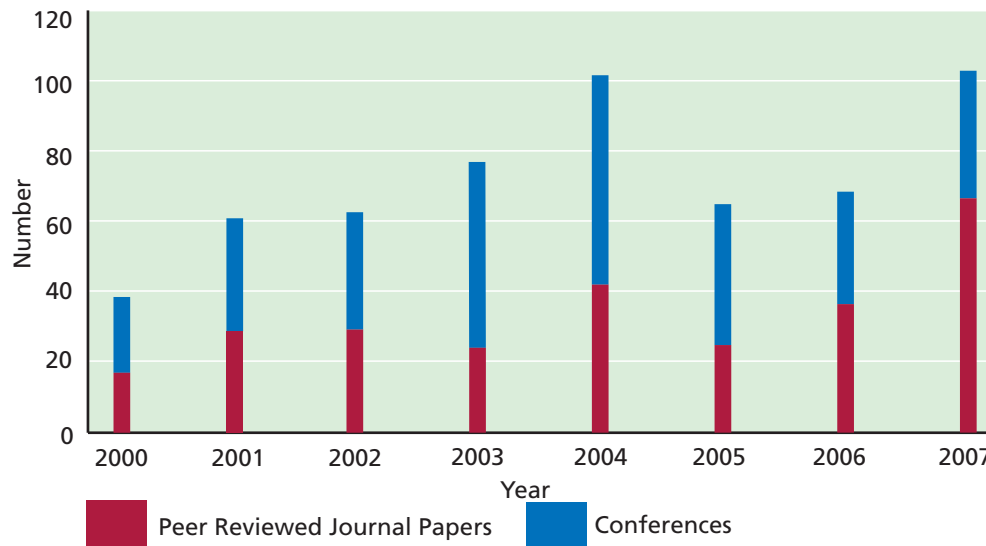


Fig 4.3 Publications 2000 - 2007

The bar chart in Figure 4.3 shows the trend in Institute research publications from 2000 to 2007. While conference presentations have declined slightly from a peak in 2004, the number of peer reviewed journal papers and the overall number of publications have grown significantly over the period in question.

The Institute has a number of projects from which patents and product licences will emanate over the next few years. The growth in this activity is a reflection of the maturing of research in the Institute, and is aided by recent initiatives from Enterprise Ireland in resource base development in this regard. The provision of dedicated technology transfer support is required within the IoT sector, most likely to be funded by Enterprise Ireland, if the level of activity in this area is to be enhanced and developed to its full potential. Despite the absence of such provision, however, invention disclosures and patent applications have begun to be processed in the manner prescribed by the Institute's new Intellectual property policy, with two patents at an advanced stage in the application process, and several more in the pipeline. The IP Committee has met on several occasions in 2007 and 2008 and has approved a number of patent applications arising from invention disclosures.

4.3 Research Funding

In recent years the Institute has seen a rapid growth in research awards and at this point it would be 3rd in the sector in terms of levels of funding. Table 4.1 shows the research funding obtained by the Institute in three year periods since the foundation of the Institute.

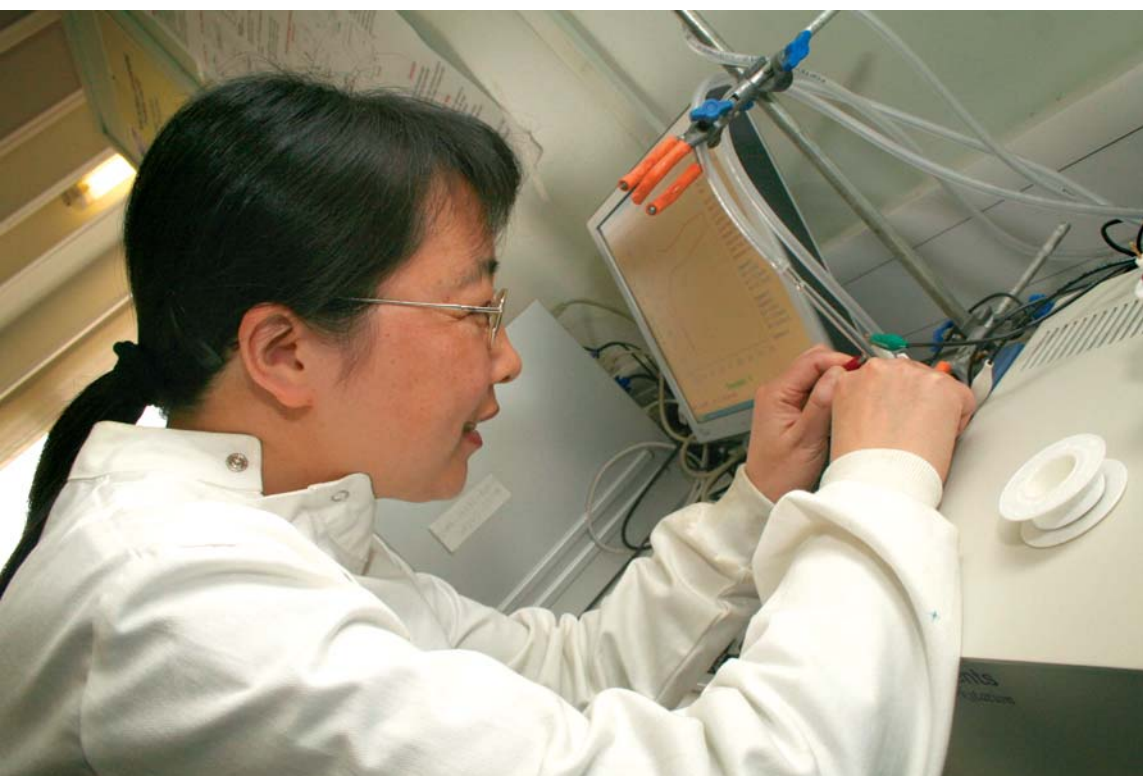
Three Year Period	Research Income (€)
1993 - 1995	382,700
1996 - 1998	993,500
1999 - 2001	3,172,900
2002 - 2004	3,412,100
2005 - 2007	18,242,200

Table 4.1 Research Funding in Three Year Periods

The award of €9.26 million from PRTL 4 in 2007 for a new research building is the largest single award the Institute has received. It is the 2nd highest research award ever made to the sector. It is also particularly significant as the Institute is the lead partner in a collaboration with two Universities, DCU and NUIM, on this project, which signifies an unusual level of recognition from the University sector for an Institute of Technology. The Adelaide, Meath and National Childrens Hospital (AMNCH) is also a partner.

The major sources of funding for Institute research have been TSR, EI, PRTL, SFI, HRB, Embark and EU programmes.

In order to sustain the growth in research numbers identified, the Institute envisages annual research income achieving a target of €6 million per annum by the completion of this strategy.



5. INSTITUTIONAL CAPACITY

5.1 Research Programmes

The Institute is involved in a spectrum of research commensurate with the range of disciplines represented in its undergraduate programmes. The Institute conducts a mixture of applied and basic research and is also involved in innovation and commercialisation of research outputs. The Institute recognises the importance of working with and supporting regional and national enterprises. It has therefore set a target whereby 15% of its research and innovation funding will be associated with projects where there is a significant industrial contribution or which involve commercialisation of research.

The most significant of the research programmes to be developed over the next 5 years will be the PRTL I funded Centre for Applied Science for Health, and the Institute will target further expansion of its research in applied science for health as part of its application under PRTL I 5.

Associated with the applied health research focus, the Institute currently has an Applied Research Enhancement (ARE) project in the area of Microsensors for Clinical Research and Analysis (MiCRA), three Strand 3 projects from TSR, an SFI Walton Fellowship, a Stokes Fellowship and a large number of other projects.

The Institute will develop two further ARE projects over the next three years plus an additional five Strand 3 projects. The ARE projects will be in the broad areas of anti-microbial treatments, medical devices and pharmaceutical production and automation.

In the Business & Humanities field, the Institute hosts the National Centre for Franco-Irish Studies, which has secured several awards from the Technological Sector Research Programme, the Irish Research Council for Humanities and the Social Sciences, the Higher Education Authority and other agencies, and has established collaborations with a number of institutions in Ireland and in France, including University of Limerick, University College Cork, Dun Laoghaire Institute of Art, Design and Technology, University of Nantes and University of Rennes. The Institute will continue to develop this centre.

The Institute will increase its capacity to conduct research programmes by increasing the number of academic staff engaged in research by a targeted 50%. This will be achieved through a programme of mentoring and institutional initiatives and incentives. An increase in the numbers of principal investigators and post-doctoral fellowships will also make a significant contribution to this aim. The Institute is a partner in a sectoral project to develop training and support materials for staff engaging in research projects.

5.2 Fourth Level Education Provision

The quality of the training received by researchers is a fundamental factor in determining the quality of the outputs of the research. Indeed the synergy between research, at doctoral level, and training has recently been identified by a number of reports as being a critical element for generating more rounded research graduates in the future.¹

¹ Postgraduate transferable and Generic Research Skills Training Implementation Working Group, Audit and Needs Analysis – Update Report, J. Turner, July 2003; OECD Review of Higher Education in Ireland, 2004; Observations of the Higher Education and Training Awards Council (HETAC) on the recommendations in Chapter VII (Research, R&D and Innovation) of the OECD Review of Higher Education in Ireland, Discussion Paper, Dec. 2005; Bergen Council of Ministers, May 2005, Short Summary of the Parallel Session on Doctoral Training and the Synergy between Higher Education and Research, Dr. S. Reichert; IUA Reform of 3rd level and Creation of 4th Level Ireland, Oct. 2005; HEA Graduate Education Forum – Key Guiding Principles, Feb. 2006; Proceedings of the HETAC Colloquium on Research Skills Needs, Sept. 2006.

There has been a great deal of discussion nationally on the need to formalise transferable skills training for researchers, moving towards more structured programmes. Since the publication of the OECD report in 2004, there have been a number of responses and government actions that will have an impact on the structure of research degree programmes in the future. The new vision for post-graduate study is:

“the establishment of a world-class 4th Level Sector characterised by internationally competitive masters and PhD level programmes that will deliver the next generation of entrepreneurs and leaders capable of the knowledge absorption, generation and utilisation that will be critical to Ireland’s future success.”

Structured graduate research education will be a key contributor to the development of Ireland’s knowledge economy and international competitiveness.

The Institute has developed a number of structured training programmes on transferable skills for postgraduate students. It is also developing a Postgraduate Skills Record System, that will allow effective monitoring of the training received by postgraduate researchers, and is conducting a gap analysis of postgraduate training and skills needs.

However, the development and provision of advanced courses that would lay the foundations for research as envisaged in the Fourth Level model would not be feasible for the Institute working on its own. Collaboration with other higher education institutions is both necessary and desirable. The Institute is actively involved in two major collaborations, funded under the Higher Education Authority Strategic Innovation Fund in this regard:

- The Dublin Region Higher Education Alliance (DRHEA)
- The Institutes of Technology Research Alliance

5.2.1 The Dublin Region Higher Education Alliance (DRHEA)

In order to sustain the competitive advantage of the Dublin city-region, it is proposed to strengthen the region’s higher education sector through the establishment of a strategic alliance which will enhance the sector’s contribution to achieving the high level goals set out in the National Development Plan 2007-2013 and other supporting strategies such as the Strategy for Science, Technology and Innovation 2006-2013. The Higher Education sector in the region includes four universities and their linked Colleges (TCD, UCD, DCU, NUIM) and four Institutes of Technology (DIT, IADT, ITB, ITT Dublin), many with long established and internationally recognised reputations for excellence in teaching and research. These institutions have now come together to establish the Dublin Region Higher Education Alliance (DRHEA) with substantial funding under the Strategic Innovation Fund (SIF2).

The eight members of the Alliance have identified four strands of activity where there is an immediate need for resources to enable collaborative actions:

1. Enhancement of Learning
2. Graduate Education
3. Internationalisation
4. Widening Participation

The Graduate Education strand will be led by ITT Dublin and UCD, with funding in excess of €2 million.

The DRHEA will radically reposition the Dublin region as an international centre for graduate education, and PhD education in particular, by combining the strengths of the participating institutions. It will deliver a general, cost-effective and scaleable approach to inter-institutional graduate programmes, encompassing advanced taught courses as a platform for research, which will far exceed the potential of individual institutions working separately.

The proposal will have long-term impacts beyond graduate education. The very high levels of co-operation and inter-operability required to develop collaborative graduate education will build strong links between the different Schools and Departments across the Alliance. The institutions will use this as an opportunity to establish joint strategic planning across the network for different academic disciplines, facilitating and accelerating a natural process of specialisation and differentiation, ensuring diversity and breadth across the system while facilitating strength and specialisation in the individual institutions. The proposal is fully aligned with the recommendations of the HEA graduate education forum.

5.2.2 The Institutes of Technology Research Alliance

The Institutes of Technology recently formed the **Institutes of Technology Research Alliance**, an initiative funded under the Higher Education Authority Strategic Innovation Fund, to provide sector-wide supports to researchers, both students and staff, in the delivery of the new 4th level graduates required.

It aims to enhance the rate, scope and depth of the sector's strategic and professional approach to the delivery of postgraduate research degree programmes in the context of 4th level education provision.

ITT Dublin is an active participant in this alliance which is led by the Institute of Technology Sligo. The Alliance is mentored by collaborators in NUI Galway, NUI Maynooth, the University of Ulster and the University of Melbourne. HETAC, the Irish Universities Association (IUA) and DIT joined the Alliance in January 2008.

The Alliance also provides support and training in coordination, benchmarking, training and dissemination of best practice. The main strands of the Research Alliance are presented in Figure 5.1.

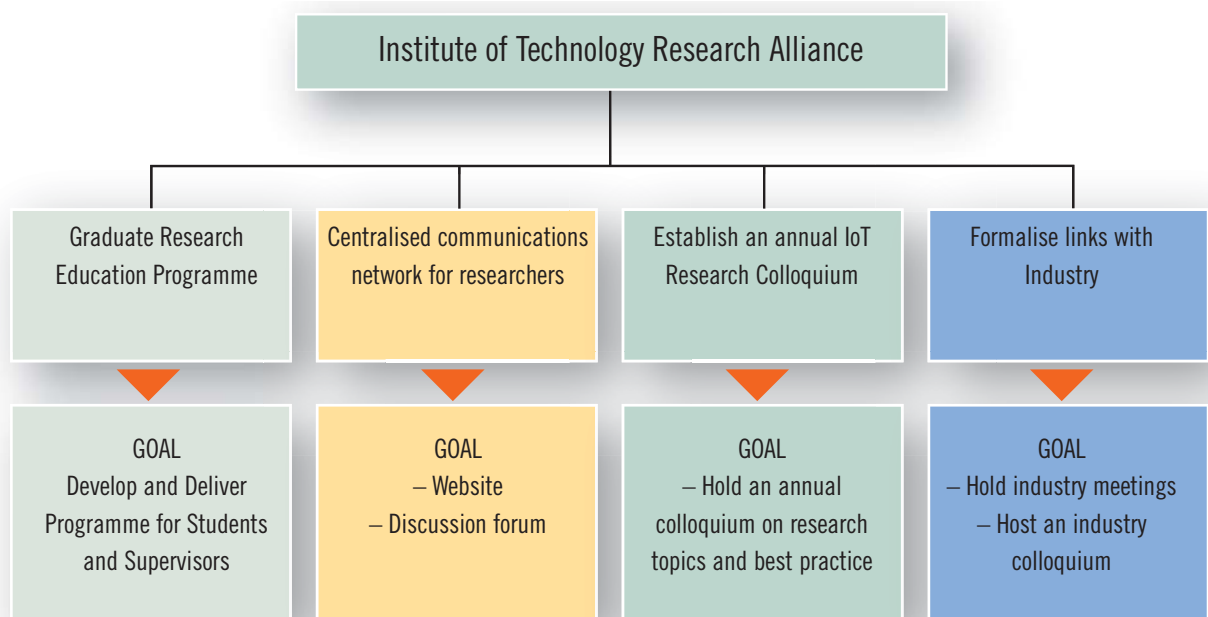


Fig 5.1 Research Alliance Objectives and Goals

The overarching objective of the Alliance is to improve the quality of education and structures for the delivery of post-graduate education and research across institutions. It is believed that an accredited transferable skills programme would give the student the transferable skills that they need early in the programme, allowing the research team (supervisor and student) to focus on the expert area studies. Such a programme, an accredited Level 9 Course in Transferable Skills for Research Students and Staff, is under development, and a submission document will be submitted to HETAC in June 2008.

5.3 Research Infrastructure

To achieve the growth in postgraduate numbers and research outputs the Institute must develop increased physical capacity, more and better equipment, increased capacity to manage research programmes and postgraduate students and improved support structures.

The Institute currently has approximately 450 sq metres of research laboratory space. As a result of relocation of administrative space, it is intended in 2008 to convert an additional 400 sq metres of existing space to research space and postgraduate accommodation. This will allow for an additional 25 postgraduates, and will be part-funded through the 2008 HEA Research Facilities Enhancement Scheme.

The Institute has received funding to develop a new building to house the Centre for Applied Health Research. This building will accommodate an additional 20 postgraduates, 4 post-doctoral fellows, research assistants and a Centre Manager.

In 2011 the Institute will complete a major capital development programme involving a 50% increase in teaching space. This will enable the Institute to allocate an additional 400 sq metres of space to research.

The Institute will require an investment of approximately €8 million over the 5 years of this plan to ensure that its technology base for research is commensurate with the development of quality research. Both Enterprise Ireland and the HEA are providing competitive funding to the HE sector to ensure that an appropriate technology base for R&D is put in place in the form of the HEA Research Facilities Enhancement Scheme, and the Enterprise Ireland Research Equipment Renewal Scheme. The Institute will actively engage with both schemes over the lifetime of this strategy.

5.4 Library Facilities

The library offers enhanced loan and study facilities to postgraduate students and researchers. Library resources and services include:

- Online databases
- Journals
- Subject librarians
- Subject specific online resources
- Inter-library loans.

Many library online resources, such as online databases, may be accessed both on and off campus through the intranet and weblink respectively which are available to both academics and postgraduate researchers.

The library at ITT Dublin is responsible for provision of library and information services to the Institute's learning community. The collection currently stands at c35,000+ items and there is an extensive range of books and journals, with each school being comprehensively covered. The library also subscribes to 110 print journals and 14 online full-text databases and over 9000 electronic journals or e-journals are available through these online databases.

As the number of postgraduate students and other researchers grows further over the lifetime of this strategy, the provision of enhanced information resources, and issues such as the provision of a dedicated research librarian, an Institutional repository, enhanced resource management and searching systems and involvement with initiatives such as the Irish Research eLibrary (IReL), will be addressed. Enhancements and initiatives such as these will be part-financed from research overheads.

5.5 Innovation and Enterprise Support

The Institute established a business incubation centre on campus in 2006 with support and funding from Enterprise Ireland. In March 2008, the Synergy Centre hosts 16 start-up knowledge-based companies in business units of different sizes. Synergy also provides the setting for the Institute's range of enterprise support programmes and activities. It is also the gateway through which companies can access research and technical expertise in the Institute and through which research centres and groups can access support for the commercialisation of research and technology transfer.

The pipeline of projects coming through the centre is of the highest quality. At this time the current building is over 95% occupied and it will achieve 100% shortly. The Institute proposes to increase its capacity for this type of enterprise support by 200% over the lifetime of this plan. The Institute will develop and submit a proposal in this regard to Enterprise Ireland in line with the scheme for extension of incubation centres announced by the Minister for Enterprise Trade and Employment in March 2008.

To facilitate the development of enterprise support activity, the Institute has put in place a three phase vertically integrated Synergy Enterprise Development system. Phase one comprises a six-week Enterprise Start Programme, phase two a twelve month Enterprise Platform Programme (M50 Programme) and phase three a two year incubation tenancy for the company in the Synergy building, as illustrated in Figure 5.2.



Fig 5.2 The Synergy Enterprise Development System



Minister Micheal Martin at the opening of the Synergy Centre, with Centre Manager Nicola Mountford and Dr. Tim Creedon, President of ITT Dublin.

As part of the enterprise support initiative, the Institute has a suite of innovation laboratories dedicated to joint industry-Institute research projects in the disciplines of ICT, RF Technology, and Sensor Technology. The Institute will develop additional innovation laboratory capacity particularly in those technology or discipline areas that are close to commercial exploitation, such as medical devices and pharmaceutical product development and technology transfer. This latter centre will be supported by the pilot scale pharmaceutical plant which exists in the Institute.

The Institute will target having at least three Innovation Partnership, Proof of Concept or Commercialisation programmes on-going from the beginning of 2009. The Institute will also become involved as a collaborator in at least one SFI CSET and one SFI SRC during the period of this strategy.

5.6 Technology Transfer

The capability of the Institute in the areas of research performance and enterprise support is developing rapidly as described above. Technology Transfer (TT), the third element of the Innovation System in the Institute, and the piece that connects research and enterprise development, has understandably lagged the other two in its development. Indeed, across the IoT sector, Development Offices are struggling to deal with the issues of intellectual property management and research commercialisation while trying to meet obligations under the National Codes of Practice and the requirements of grant contracts of funding agencies such as Enterprise Ireland and Science Foundation Ireland. As a result of the new emphasis on knowledge transfer in the major funding programmes such as HEA PRTLII, TT expertise and organisational infrastructure are critical in order to be able to compete for funding from these sources. The Institute therefore recognises the need to develop its capability in TT to maximise the overall impact of its Innovation System.

Support is being received from Enterprise Ireland under the Technology Transfer Office (TTO) Strengthening initiative in this regard since early 2008, although this does not extend to funding for dedicated TT personnel.

ITT Dublin has set ambitious TT targets under this plan:

- One award per annum of EI Commercialisation Fund funding, under the Proof of Concept or Technology Development schemes.
- 5 patents per annum arising from Institute research;
- One license per annum and one spin-out over the lifetime of this strategy.

The Institute will endeavour to achieve these targets with existing resources and will take what steps it can in terms of training existing staff to carry out the specialised activities involved. It will also continue to work with Enterprise Ireland to develop the necessary increased capability in this critical area, commensurate with the level of research activity in the Institute.

6. RESEARCH PRIORITISATION AND COLLABORATION

Since 1999, the Institute research strategy has been centred around research prioritisation across the Institute research activities, and the building of critical mass in the areas prioritised. This approach will be continued and strengthened throughout the period of this strategy.

Research prioritisation led directly to such successes as the Centre of Applied Science for Health, the Institute's key priority for the duration of this strategy. It also led to the Institute's first success in the Applied Research Enhancement programme and the establishment of the Microsensors for Clinical Research and Analysis (MiCRA) Centre. The Institute will now develop two further ARE programmes. It is planned to have the first one, in the area of anti-microbial treatments, in place in late 2008, while the second one, in the medical devices area is planned for 2009.

The current areas of recognised research expertise in the Institute are listed in Table 6.1.

School of Science & Computing: Health Science, Bio-Process Technology, Antimicrobial Agents, Peptide Synthesis, Microbial Pathogenesis, Cancer Therapies, Pharmaceutical Science, Nanotechnology, Sensor Technology, Supramolecular Chemistry, Molecular Modelling, NMR Spectroscopy, Asymmetric Synthesis, Process Analytical Technology (PAT), E-learning, Mobile Computing, Grid Computing, Interoperable Systems and the Semantic Web, Complex Emergent Systems

School of Engineering: Bio-Engineering, Medical Devices, Wireless and RF Technology, Control, Vision & Learning Systems, Thin Film and Sensor Technologies, Communications Technology, Integrated Manufacturing Design and Production, Rapid Prototyping, Energy and Environment.

School of Business & Humanities: Communications, Language & Society, Media & Society, Social Sciences, Education, Management Research

Table 6.1 Current Areas of Research Expertise, January 2008

6.1 Institute Research Centres

A key concept in the delivery of this strategy to date has been the development of inter-disciplinary teams through the creation of Institute Research Centres (IRC) in which coherent groupings of research staff with a specific discipline focus were brought together. Seven centres have been created to date:

- Bio-pharmaceutical and Nutraceutical Research Centre (BPNR)
- Centre for Pharmaceutical Research & Development (CPRD)
- Nuclear Magnetic Resonance Institute Centre for Spectroscopy (NMRics):
- Centre for Research in Electroanalytical Technology (CREATE)
- Centre of Microbial Host Interactions (CMHI)
- Bioengineering Technology Centre (BTC)
- The National Centre for Franco-Irish Studies (NCFIS)

Research teams are developing in other areas in addition to these centres, such as the Process Analytical Technology (PAT) Group, the Molecular Design and Synthesis (MDS) Group and the Radio Frequency Technology (RFT) Group

Each of these centres and groups as appropriate contributes expertise and resources to the designated research disciplines within the Institute. Many are contributing to the CASH centre.

6.2 Broadening Strategic Alliances

Long-standing collaborations have been an essential element in the rapid development of research in the Institute. The Institute has strong partnerships with researchers in DCU, NUIM, TCD and UL. It is expected that CASH, the IRC's and the ARE Centres will continue to build on existing collaborations with other national research centres and with industry, and establish new ones during the period of this strategy. Examples of existing links with other centres include:

- Materials Surface Science Institute, UL (Dr. Edmond Magner – links with CREATE)
- National Centre for Sensor Research (Prof. Forster, Prof. Diamond and Dr. Keyes – joint projects and publications with CREATE)
- Centre for Research in Engineering Surface Technology (strong links with CPRD)
- UCD Conway Institute of Biomolecular & Biomedical Research (Prof. Brayden - recent publications with CMHI).

Through these collaborations the Institute will continue to apply for funding under the major national research programmes such as SFI and PRTLl.

6.3 Centre of Applied Science for Health (CASH)

In 2007, an ITT Dublin-led consortium was awarded €9.26M in funding by the HEA under Cycle 4 of the Programme for Research in Third level Institutions (PRTLl) to establish the Centre of Applied Science for Health as the first national research centre on campus. The mission for the Centre of Applied Science for Health is to pursue world-class research in prioritised areas, translate knowledge gained to the industrial and clinical arenas, and contribute to the enhancement of teaching, learning and research in ITT Dublin and the partner institutions.

ITT Dublin's partners in the successful bid were the Adelaide, Meath and National Children's Hospital (Tallaght Hospital), Dublin City University (the National Institute of Cellular Biotechnology) and NUI Maynooth. The institutions have a strong track record of collaboration in applied / translational research for specific areas of healthcare. This builds upon the success of a PRTLl Cycle 3 programme led by DCU and leading to the establishment of the National Institute for Cellular Biotechnology with an ITT Dublin research team as a partner.

The founding principles of the Centre of Applied Science for Health were to build upon established successful research collaborations between the partner institutions; implement an interdisciplinary research programme in key thematic research areas; develop and transfer knowledge to the clinical and industrial arenas, generating important social and economic benefits regionally and nationally; and, strengthen the research-teaching linkage.

The CASH Centre will be strategically located alongside Synergy Centre to encourage an emphasis on technology transfer and with a view to facilitating a natural interaction between industry, entrepreneurs and the CASH research teams.

Key target areas for research are microbial disease prevention and control, medical device technologies, and cancer research. There will be an emphasis on the transfer of knowledge and technologies from the laboratory to the clinical setting and from the laboratory to industry through development of devices and therapies, including scale-up and formulation technologies.

Antimicrobial Strategies

- Development of Biopharma and Pharma-based antimicrobial agents (including peptides and peptidomimetics) with subsequent scale-up, pre-formulation and formulation. Of related interest to this latter point will be process analytical technologies (PAT).
- Investigation of host-pathogen interactions and mechanisms of pathogenesis with a view to prevention of colonisation and the design of immunomodulation therapies.
- Design and development of technologies which inhibit the growth of micro-organisms on surfaces thereby reducing the possibility of transmission by personal contact.

Biomedical Devices

- Microsensing and modelling tools, e.g. the fabrication of diagnostics, based upon new generic designs (e.g. integrated on-chip microfluidics) for the detection of important clinical markers (e.g. cancer markers) and as tools for clinical placement of probes in the gastrointestinal tract.
- Amperometric microsensors for biomarkers of oxidative stress and in vivo voltammetric techniques will enable investigation of the functions and roles of specific neurochemicals in neuronal signalling. The devices will be tested in vivo using disease state animal models (using NUIM facilities) enabling pre-clinical testing, with a view to translation to humans.

Translational Research in Cancer and other diseases

- Investigation / development to clinical trial stage, of drug combinations for drug resistance.
- Investigation of resistance mechanisms to standard and novel anticancer therapies, and to novel immunomodulatory drugs using expression microarray and proteomic analysis on tumour biopsies followed by functional validation using cDNA and siRNA approaches.
- Advanced proteomic technologies to identify cancer specific markers in serum and saliva thereby allowing earlier detection of cancer in high risk groups and allow the development of methods for early detection of relapse/lack of response to therapy in the clinical situation.

The new centre will leverage a wealth of expertise from ITT Dublin, DCU, NUIM and AMNCH to advance both knowledge and technology relating to areas of societal concern. Each institution will contribute in a highly complementary fashion to the chosen areas with a particularly strong clinical perspective being provided by AMNCH and other hospitals. The result will be a coherent research programme which will facilitate the continued development of these strategic alliances.

Recruitment	ITT Dublin	NUIM	AMNCH	DCU	Total
Post-Doctoral	2	1	0	3	6
Post-Graduate	9	5	2	3	19
Other Academic	1	0	0	0	1
Other Non-academic	5	0	0	1	6

Table 6.2 CASH Research Personnel

A number of initiatives are planned to enhance and deepen the collaboration between the partner institutions and to increase the benefits that will flow from the collaboration to the institutions and all their stakeholders, including:

- Establishment of a Centre Management Committee with stakeholder involvement;
- Research network meetings between partners, alternating between sites.
- Joint research initiatives e.g. further expansion of pre-existing joint research supervision established between ITT Dublin researchers and supervisors at the partnering institutions, achieved through submission of collaborative research proposals to both national and international funding sources. Based upon previous experience, the exposure to two research environments (e.g. academic and clinical) enriches the student experience and increases the research outputs generated (publications etc.).

6.4 The Research – Teaching Linkage

An active research programme is vital in dynamic education systems seeking to respond to the needs of students, employers and society in general, and in enabling educational institutions retain a relevance to the market place. A key ingredient in the Institute's research strategy is to ensure that the research priorities for the institute link to the undergraduate programmes and to improve the linkage between discipline-based research and teaching at both 3rd and 4th level, through:

- New course development at undergraduate level informed by the Institute's research activities;
- A suite of undergraduate research projects linked to the existing Institute Research Centres;
- Formalised training modules for postgraduate students; and,
- Exposure of researchers at both undergraduate and postgraduate level to resources available in partnering institutions.

The Institute and its collaborators have established a number of key initiatives that have enabled and will further develop the research - teaching linkage.

Joint teaching initiatives at postgraduate level will include:

- Short postgraduate teaching modules at ITT Dublin open to all postgraduates;
- Joint seminars / symposia on "Hot Topics" to stimulate new ideas/partnerships;
- Postgraduate participation on 4th level training courses at ITT Dublin and partner institutions; and,
- Postgraduate placements at partner laboratories.

Joint Teaching Initiatives at undergraduate level will include:

- Student project based exchanges via joint undergraduate teaching programmes and via summer school programmes (i.e. SPUR, UREKA, SURE);
- Guest lecturer delivery by partnering institutions on related modules (e.g. guest lecture by AMNCH's Prof. Philip Murphy on Molecular Diagnostics as part of the B.Sc. (Hons) in Bioanalytical Science course and,
- Joint access and education outreach initiatives as mechanisms to increase participation rates in the Dublin region, such as links between ITT Dublin and Trinity access programme.

7. GROWTH TARGETS, GOALS AND ACTIONS

7.0 Growth Targets

The Institute has identified the following growth targets to be achieved over the period of this strategy:

- An expansion of postgraduate numbers to 150
- An increase by 50% in the number of staff engaged in research
- A doubling of academic research outputs such as publications
- One award per annum of EI Commercialisation Fund funding, under the Proof of Concept or Technology Development schemes.
- Five patents per annum arising from Institute research;
- One license per annum
- One spin-out over the lifetime of this strategy.
- A doubling of average research funding income over the life of the plan compared with the previous five year period 2003 – 2007, from €3,784,000 to €7,568,000
- Identify the discipline area for the creation of a second nationally significant research centre on campus and take steps to commence prioritisation of the area.
- A doubling of incubation centre companies from sixteen to thirty two, pending available capacity
- Participation as a partner in the development and delivery of three collaborative structured PhD programmes

These targets are based on a set of seven goals, and an associated set of prioritised key actions, that form the core of ITT Dublin's Strategy for Research and Innovation 2008 – 2012.

7.1 GOAL ONE

To carry out research of an international standard that positively impacts upon society in the Institute's prioritised research areas, whilst identifying emerging thematic research areas in which the Institute can play a role.

Rationale: ITT Dublin can and should deliver research that shows demonstrable value for money by addressing clearly-defined needs. In light of the expected level and scale of Government investment over the next five years, the outcomes of research must be of a standard that merits such investment. ITT Dublin believes that there is a body of research that it is uniquely positioned to deliver, given its close relationships with industry and insights into its needs. The scale of ITT Dublin enables it to move quickly and flexibly to carry out research and deliver solutions that will meet the needs of industry.

Specific Objectives: To regularly review and re-evaluate the mix of prioritised research that is supported by the Institute, with a view to:

- Establishing a centre of excellence in a number of research areas within the Health Sciences through the amalgamation of selected IRCs on campus within a specific research area which has been prioritised by the Institute, in a regional and national context;
- Identifying new potential interdisciplinary linkages between groupings, whether IRCs or smaller/younger research groups, and encouraging and incentivising new collaborations;

- Consolidating groupings into larger Centres with greater critical mass (ultimately one or more Centres of Excellence) where possible and appropriate;
- Ensuring a balance is maintained between establishing a base of knowledge and expertise through fundamental research and the application of that knowledge and expertise through applied research and technology transfer.

Key Actions:

- Establish the Centre of Applied Science for Health on campus, which was approved for funding of €9.26M under Cycle 4 of PRTL in ITT Dublin, in collaboration with partners DCU, NUIM and AMNCH;
- Obtain funding under the Enterprise Ireland Applied Research Enhancement Programme and develop two further applied research centres of excellence in specific technological areas of benefit to Irish industry;
- Obtain Strand 3 funding under the Technological Sector Research Programme for the establishment of three new research groups with the potential to develop into Institute Research Centres or add new strengths to existing centres;
- Invite input via the R&D Committee from internal and external representatives of all stakeholders to further prioritise research, identify emerging research thematic areas and promote private investment;
- Regularly review the Institute's research performance by external peer review;
- Develop and continuously review new forms of internal seed funding to support emerging research areas.

7.2 GOAL TWO

To develop postgraduate teaching and learning to the highest international standard, and to sustain and improve the linkage between discipline-based research and undergraduate and postgraduate teaching. This will include the development of fourth level teaching and learning to ensure the development of an appropriate blend of discipline-based and transferable skills in postgraduate students.

Context: Teaching and learning are at the core of ITT Dublin's mission. Fourth level research and learning will be developed on the basis that excellence in one informs and builds excellence in the other. The Institute has always ensured close alignment between its research activities and its teaching and learning remit, and will continue to do so.

Rationale: The integration of research with teaching and learning ensures that the quality of undergraduate and postgraduate teaching and learning is enhanced. Integration of research and teaching is important in supporting the development of a pipeline of researchers by engaging students in research from an early stage.

Specific Objectives:

- To develop structures within the Institute that enhance and support integration between third and fourth level;
- To achieve the highest international standards for the postgraduate learning experience, including the development of both discipline-based and transferable skills in students;
- To engage with all students from first year of entry to develop an interest in and understanding of research as a key part of the curriculum;
- To double the number of postgraduate students in the Institute to 150 over the period of this strategy;
- Consider and appraise new approaches to PhD study that draw from ITT Dublin's expertise and innovation in workplace learning;

- Consider the development of collaborative PhD programmes as an element of Institute submissions to PRTL cycles 5 & 6, with existing PRTL partner institutions.

Key Actions:

- Work with higher education partners in the Dublin Region Higher Education Alliance and the Institutes of Technology Research Alliance to further develop best practice in the educational provision for postgraduate students, including refinement of the current postgraduate induction programme, the development of modules covering generic transferable skills, and training of supervisors to enhance their ability to foster the development of discipline-based skills in students;
- Work with DRHEA partner institutions to develop collaborative fourth level programmes in the areas of Chemistry and Biomedical Science;
- Work with research partner institutions such as DCU and NUIM to obtain funding for and develop fourth level programmes in selected areas, in particular under the auspices of PRTL cycles 5 and 6;
- Seek delegation of authority to make academic awards for research to PhD level in selected areas;
- Regularly review and improve the Institute's policies and regulations on postgraduate supervision;
- Develop a Postgraduate Skills Record System, that will allow effective monitoring of the training received by postgraduate researchers;
- Conduct a gap analysis of postgraduate training and skills needs;
- Continue to provide PhD Continuation funding from internal resources to students who transfer to the PhD Register to whom financial support is not available from external sources;
- Liaise with industry partners and other relevant stakeholders to identify needs and opportunities for fourth level workplace learning and roll out programmes accordingly;
- Integrate project-based research into teaching, and ensure that the development of basic research skills is addressed at undergraduate level. Sustain and further develop current initiatives in this regard such as the summer undergraduate research scholarship programme, (SURE) in conjunction with TCD and SFI.

7.3 GOAL THREE

To sustain and further develop the physical infrastructural resources within the institute to support its research activities

Context: The unprecedented levels of funding committed by the Irish Government in the past and into the future (2007-2013) with a view to building sustainable world class research centres of excellence.

Rationale: The Institute's strategic objectives for research will only be achieved by substantial development of the infrastructure on campus, to be funded from a variety of sources.

Specific Objectives:

- To ensure that appropriately serviced space and items of equipment are available in a timely manner for all aspects of the Institute's growing research activities.

Key Actions:

- To construct and commission the PRTL Cycle 4 funded Centre of Applied Science for Health, as an integral part of the expanded Synergy building on campus by the end of June 2010;

- To develop new and refurbished research space that will enable continuing growth of research in the Institute, through implementation of the campus development plan by means of the €50M capital development programme for which funding has been assigned by Government, and other capital funding schemes from agencies such as the HEA, EI and SFI designed to meet the research capacity targets set under SSTI;
- To develop a further 200 m² of innovation laboratory space within the expanded Synergy Centre, to add to the 115 m² developed in late 2007;
- To continually identify and secure funding for equipment that will enable continuing growth of research in the Institute.

7.4 GOAL FOUR

To establish structures and processes that will encourage, support and recognise research activity in the Institute.

Context:

The scope of the research support function has grown rapidly in recent years. From being a support service for academic researchers, it now incorporates areas such as international alliance building, strategic and commercial relationship management, research staff and student training and professional development and monitoring of research quality and ethics.

Rationale:

A more strategic approach is now required to the development and management of the various offices that support research and their staff, in light of the research ambitions of ITT Dublin, to ensure maximum impact of the research investment.

Specific Objectives:

- As the scale and quantum of research expands, ensure that the Institute's management and support structures for research remain commensurate with the scale of activity.

Key Actions:

- Regularly review and strengthen research management, administrative and technical support;
- Provide and develop new software and hardware resources to effectively monitor and benchmark research and innovation performance within the Institute;
- Provide and develop new customer relationship management tools to support technology transfer and the management of strategic relationships with other institutions and industry;
- Develop a structured programme of training for researchers and potential researchers in research management and proposal writing;
- Enhance internal and external promotion of the Institute's research activity, using tools such as the web site, newsletters and other PR methods;
- Review and improve the incentivisation of researchers to take part in applied / contract research;
- Review and revitalise the current sabbatical policy;
- Establish a mentoring programme for emerging academic research supervisors.

7.5 GOAL FIVE:

To identify, expand and deepen strategic research partnerships with regional, national and international partners.

Context:

Partnership and collaboration have been among ITT Dublin's long-standing strengths, with exemplary working partnerships with other institutions, hospitals and industry partners.

Rationale:

The need to develop research collaborations of this type is central to the SSTI and to other statements of current Government policy.

Specific Objectives:

- To enhance the current research linkages between the Institute and its partners, particularly DCU, NUIM and AMNCH;
- To encourage the establishment of new linkages at individual and research group level;
- To increase the international dimension to the Institute's collaborations, with a view to increased participation in European research programmes such as Framework 7, and other international programmes, and to enrich the research culture of the Institute. Participation in 4 consortia funded under European programmes is targeted;
- To gather information from the internal research community and from external sources on contacts with other research organisations or with companies that have the potential to generate larger collaborations.

Key Actions:

- To manage effectively and grow the current research linkages between the Institute and its partners within the Centre of Applied Science for Health - DCU, NUIM and AMNCH – by vigorously pursuing the research programme of the Centre and operating the management structures of the Centre in an open and constructive way;
- The CASH Centre will actively explore potential connections with European research networks and individual institutions, with a view to becoming involved in 2 consortia funded under FP7, Interreg or similar;
- IRCs, ARE Centres and other research groups will be encouraged and incentivised to become involved in international consortia, with a view to realising a further 2 European projects;
- Develop a suite of pro forma IP agreements to cover different types of collaborations, and the expertise to negotiate and agree final agreements that will facilitate open and productive collaboration;
- Develop a marketing, branding and communications strategy for research collaborations and partnership at ITT Dublin.

7.6 GOAL SIX

To continue to partner with industry to ensure that the Institute develops a diversified and sustainable research base and that the focus of research is consistent with the challenges set by an innovative and knowledge driven economy.

Context:

ITT Dublin has a proven track record in building relationships with industry and enterprise and has directed its research and teaching efforts towards their needs. It will continue to consolidate these relationships to ensure that the focus of research effort within the Institute will be aligned with real needs.

Rationale:

The SSTI states that:

“HEIs contain the largest pool of scientists and researchers within the national innovation system and it is a key policy aim in most countries to encourage industry to make more use of this resource. It is increasingly recognised that this is essential if significant increases in BERD are to be achieved. A range of current Enterprise Ireland programmes are the principal mechanisms for promoting such interaction, including the Innovation Partnerships scheme and more recently, the Industry-led Networks.”

Specific Objectives:

- To sustain existing institutional industrial partnerships whilst identifying new opportunities for industrial collaboration;
- To exploit all funding mechanisms available to support HEI-industry collaborative research.

Key Actions:

- Liaise with industrial partners and engage proactively with the new industry-led research consortia and initiatives to identify research areas of common interest, with a view to commencing at least two Innovation Partnerships or directly funded research projects per annum;
- Develop the additional Innovation Laboratories referred to in Goal 3, and the support structures necessary to expand the capacity of the Institute to respond to the innovation needs of industry through mechanisms such as Innovation Partnerships, Innovation Vouchers, Fusion and directly-funded research;
- Develop at least one SFI-funded Centre of Science, Engineering & Technology on campus in conjunction with the relevant industry sector;
- Develop at least one SFI-funded Strategic Research Cluster on campus, again with appropriate industrial involvement;
- Promote the Institute’s applied research and technology transfer capacity to industry;
- Strengthen the industrial training activities of the institute to complement its research activity and establish it as a key centre of innovation and driver for change in the region.

7.7 GOAL SEVEN

To establish ITT Dublin as a driver for enterprise development in South Dublin County and within the Institute of Technology Sector by developing the expertise to act as a centre of excellence for applied research and knowledge / technology transfer for its region.

Context:

Effective knowledge transfer from research institutes to industry and the wider community is a key policy objective of government in the drive to create a knowledge economy.

Rationale:

Successful knowledge transfer to enterprise must be a priority in order to contribute to the socio-economic development of the region and to create a research base that is sustainable.

Specific Objectives:

- To develop enhanced technology transfer capability within ITT Dublin commensurate with the level of research activity, in collaboration with institutional partners;
- To develop the IP management and technology transfer expertise in ITT Dublin to facilitate effective and appropriate working relationships with commercial entities;
- To ensure timely identification of potentially valuable IP arising from the Institute's own research, and proper management and protection of such IP;
- Target at least one award of EI Commercialisation Fund funding, under the Proof of Concept or Technology Development schemes per annum;
- Generate at least 5 patents per annum arising from Institute research;
- Generate one license per annum and one spin-out over the lifetime of this strategy;
- Generate 1 HPSU per annum from among the tenant companies of the Synergy Centre, and a further 2 per annum from participants on the Institute-led M50 Enterprise Programme;
- Engage with key regional stakeholders in the context of economic development, such as SDCC, SDCEB, South Dublin Chamber, etc. to ensure alignment of strategies supporting economic development, and enabling greater levels of South Dublin coherence in this regard.

Key Actions:

- Identify and develop the infrastructure necessary to accommodate the necessary development of technology transfer expertise and resources;
- Continue to seek the assistance of Enterprise Ireland under the Technology Transfer Offices Strengthening Initiative to develop the technology transfer and innovation capabilities of the Institute;
- Systematically search, with the researchers involved, current and recent research results of CASH, the IRCs, ARE Centres and other research groups for invention disclosures. A significant backlog of research results exists at the time of commencement of this strategy;
- Regularly convene the IP Committee to consider potential patent applications based on invention disclosures;
- Avail of the EI IP Protection Scheme to fund patent applications;
- Maintain the high standard of the knowledge-intensive companies that are selected as tenants of the Synergy Centre;
- Obtain funding for the expansion of the Synergy Business Incubation Centre to 2,200m², widely agreed as the approximate minimum size for a sustainable incubation centre;

- Continue to secure funding to offer the M50 Enterprise Programme to a minimum of 10 knowledge-intensive companies per annum, and to maintain it as one of the leading sources of HPSUs in Ireland;
- Work with SDCC and South Dublin chamber to align economic development strategies of all stakeholders where appropriate.

GLOSSARY OF ACRONYMS

AMNCH:	ADELAIDE, MEATH AND NATIONAL CHILDRENS HOSPITAL
ARE:	APPLIED RESEARCH ENHANCEMENT (CENTRE OR PROGRAMME)
BERD:	BUSINESS EXPENDITURE ON R&D
BPNR:	BIO PHARMACEUTICAL & NUTRACEUTICAL RESEARCH CENTRE
BTC:	BIOENGINEERING TECHNOLOGY CENTRE
CASH:	CENTRE OF APPLIED SCIENCE FOR HEALTH
CMHI:	CENTRE OF MICROBIAL HOST INTERACTIONS
CPRD:	CENTRE FOR PHARMACEUTICAL R&D
CREATE:	CENTRE FOR RESEARCH IN ELECTROANALYTICAL TECHNOLOGY
CSET:	CENTRE FOR SCIENCE, ENGINEERING & TECHNOLOGY
DCU:	DUBLIN CITY UNIVERSITY
DIT:	DUBLIN INSTITUTE OF TECHNOLOGY
DRHEA:	DUBLIN REGION HIGHER EDUCATION ALLIANCE
EPP:	ENTERPRISE PLATFORM PROGRAMME
ESP:	ENTERPRISE START PROGRAMME
FP7:	7TH FRAMEWORK PROGRAMME
HE:	HIGHER EDUCATION
HEA:	HIGHER EDUCATION AUTHORITY
HEI:	HIGHER EDUCATION INSTITUTION
HETAC:	HIGHER EDUCATION & TRAINING AWARDS COUNCIL
HPSU:	HIGH POTENTIAL START-UP
HRB:	HEALTH RESEARCH BOARD
IADT:	(DUN LAOGHAIRE) INSTITUTE OF ART, DESIGN AND TECHNOLOGY
ICT:	INFORMATION & COMMUNICATIONS TECHNOLOGY
IDA:	INDUSTRIAL DEVELOPMENT AUTHORITY
IOT:	INSTITUTE OF TECHNOLOGY
IOTI:	INSTITUTES OF TECHNOLOGY IRELAND
IP:	INTELLECTUAL PROPERTY
IRC:	INSTITUTE RESEARCH CENTRE
IREL:	IRISH RESEARCH ELIBRARY
ITB:	INSTITUTE OF TECHNOLOGY BLANCHARDSTOWN
ITT DUBLIN:	INSTITUTE OF TECHNOLOGY TALLAGHT DUBLIN
IUA:	IRISH UNIVERSITIES ASSOCIATION
MDS:	MOLECULAR DESIGN AND SYNTHESIS GROUP
MICRA:	MICROSENSORS FOR CLINICAL RESEARCH AND ANALYSIS (ARE CENTRE)
NCFIS:	THE NATIONAL CENTRE FOR FRANCO-IRISH STUDIES
NCSR:	NATIONAL CENTRE FOR SENSOR RESEARCH
NICB:	NATIONAL INSTITUTE OF CELLULAR BIOTECHNOLOGY
NMRICS:	NUCLEAR MAGNETIC RESONANCE INSTITUTE CENTRE FOR SPECTROSCOPY
NUIM:	NATIONAL UNIVERSITY OF IRELAND MAYNOOTH
OECD:	ORGANISATION FOR ECONOMIC COOPERATION AND DEVELOPMENT
PAT:	PROCESS ANALYTICAL TECHNOLOGY
POC:	PROOF OF CONCEPT
PRTL:	PROGRAMME FOR RESEARCH IN THIRD LEVEL INSTITUTIONS
RF:	RADIO FREQUENCY
RFES:	RESEARCH FACILITIES ENHANCEMENT SCHEME (HEA)
RFT:	RADIO FREQUENCY TECHNOLOGY GROUP
SDCC:	SOUTH DUBLIN COUNTY COUNCIL
SDCEB:	SOUTH DUBLIN COUNTY ENTERPRISE BOARD
SFI:	SCIENCE FOUNDATION IRELAND
SRC:	STRATEGIC RESEARCH CLUSTER
SSTI:	STRATEGY FOR SCIENCE, TECHNOLOGY AND INNOVATION
TSR:	TECHNOLOGICAL SECTOR RESEARCH PROGRAMME
TT:	TECHNOLOGY TRANSFER
TTO:	TECHNOLOGY TRANSFER OFFICE