



INSTITUTE OF TECHNOLOGY
TRALEE
INSTITIÚID TEICNEOLAÍOCHTA TRÁ LÍ



RESEARCH AND INNOVATION STRATEGIC PLAN 2017-2021



FOREWORD

Since its establishment in 1977, IT Tralee is a key driver of economic and social development for the region it serves. It has over 3,000 full-time students, employs 350 staff and provides a financial contribution of circa €60m to the local economy. IT Tralee, in keeping with its mission *'to excel in teaching, research and development work, for the benefit of students, industry and the wider community,'* is firmly committed to growing its reputation as a research-led institution that is influential in the global pursuit of societal advancement.

This Research and Innovation (R&I) Strategic Plan 2017-21 firmly underpins the Institute's current Strategic Plan 2017-21 and builds upon our research performance over the period of the previous R&I Strategic Plan *'Connecting Knowledge Globally'* which was published in 2013. This strategy was developed via an extensive process of consultation with a wide group of stakeholders and I am indebted to them for their time and rigorous commitment to this project. This new R&I Strategic Plan gives us a chance to advance fresh ideas that will enable us to continue to improve standards in our delivery of research excellence that will translate into economic growth and societal development in the region we serve.

At present, the Institute supports a thriving research community of over 150 researchers including academic staff, research professionals and postgraduate students many of whom are linked to one of our larger research centres: Shannon ABC and IMaR research centres (both funded under the Enterprise Ireland Technology Gateways programme) and the Institute's UNESCO Chair research centre. Over the past 3 years our researchers secured over €5m in highly competitive national and EU research funding awards, published over 120 research papers and completed over 90 market-needs research projects with external companies. IT Tralee is firmly committed to continuing to perform high quality research that will strengthen our relevance as a strong driver of economic and social growth. This strategy recognises that achieving our research ambitions relies wholly on the talents and efforts of our research community. The Institute is committed to putting in place the conditions that encourage our staff to engage in research in strategically important areas across all disciplines. In addition, a critical element of this new strategy is to expand our linkages externally with academic, industrial and social partners to intensify collaborative research activities that will harness our indigenous key research strengths.

Over the course of the next five years, the Institute will review the implementation of this strategy to monitor that our performance is on target to achieve our goals by 2021. Together we will ensure that IT Tralee remains pivotal to enriching culture and society via its research and innovation excellence.

Dr. Oliver Murphy,
IT Tralee President,
February 2017



RESEARCH AND INNOVATION

A Strategy for 2017 - 2021

IT Tralee has successfully built a strong research capability with a distinctive multidisciplinary approach that has earned the Institute an international reputation. The Institute has prioritised research themes which focus on the creation and dissemination of new knowledge in areas of significant economic and social impact. Our research successes to date are attributed to the talents and efforts of our dynamic research community and the strengths of their collaborations and alliances with leading international universities, research institutes, and industrial and societal partners.

This Research and Innovation Strategy was developed through a comprehensive review of the progress made during the period of its predecessor R&I Strategic Plan 2013-16 *'Connecting Knowledge Globally'*, an extensive consultation process with internal stakeholders and an examination of current national and international relevant policy developments. This strategy places a particular emphasis on enabling and supporting research activity in its widest perspective across the Institute. The strategy introduces new initiatives that are aimed at encouraging a larger number of our academic staff to engage in research and in parallel introduces new

incentives including a research career framework to support the retention of our talented professional research community. The strategy reflects an Institute wide approach to expand our research linkages both internally and externally to further develop our capacity to deliver research and innovation excellence.

This strategy establishes the following priorities (with associated milestones by which we will measure our progress) to strengthen our reputation for excellence in research and innovation:

1. **Research Excellence: Internationally Benchmarked and Externally Evaluated;**
2. **Research Impact through Innovation;**
3. **Enhance Research Linkages and Collaborative Research Activities;**
4. **High Quality Research Degree Provision to Level 10;**
5. **Enabling and Supporting Research Activity across IT Tralee.**





The National Strategy for Higher Education to 2030 (Ireland, Department of Education and Skills, 2011) sets out a number of key challenges for Ireland's higher education sector in the coming years. The document states in its high level objectives (p27) that **'Research activity in Irish higher education will continue to increase. It will be characterised by its international level quality, by a strong and broad base across all disciplines, as well as significant focus in niche areas that are aligned with and are a significant support for Irish national economic social and cultural needs'**. According to the strategy (p21), engagement with wider society must become more firmly embedded into the mission of higher education institutions and **internationalisation** of higher education must be considered in the widest perspective.

IT Tralee plays a pivotal role in the South West and Ireland's economic development through its education, research and innovation programmes. The Institute is recognised for its applied and technological research and for its industry-focused, collaborative work with external partners. Almost half of our staff are engaged in research at nationally and internationally recognised levels, delivering excellence and impact across society in areas as diverse as providing for greater equality and social justice for people with disabilities, integrating robotics and sensors to accelerate production in industry and discovering commercially valuable innovative ingredients and biological products from natural resources for the

biotech and life science industries. Our researchers have established international collaborations with leading multinational companies and higher education facilities as well as having a significant track record of established partnerships with indigenous industry, HEI's, and social partners.

Only excellent research will secure IT Tralee's reputation as a high performing research engaged, education provider. The Institute hosts three schools: the School of Business, Computing and Humanities, the School of Science, Technology, Engineering and Mathematics (STEM), and the School of Health and Social Sciences. The school structure at IT Tralee, with each school covering multiple disciplines, facilitates research cutting across traditional discipline barriers.

Linked to our three schools, IT Tralee has developed three research centres of scale whose missions align with national (NRPE Ireland, Forfás 2011), and global (European Commission Horizon2020 and UNESCO Chair research) research and innovation priorities. **Shannon Applied Biotechnology Centre** (Shannon ABC) and the **IMaR Research Centre** (both Shannon ABC and IMaR are co-funded under the Enterprise Ireland Technology Gateway programme), and the **UNESCO Chair research** in the area of *'Transforming the Lives of People with Disabilities, their Families and Communities, Through Physical Education, Sport, Recreation and Fitness.'*

Our prioritised research themes are driven by our three research centres of critical mass and scale:



United Nations
Educational, Scientific and
Cultural Organization



• UNESCO Chair "Transforming the Lives
• of People with Disabilities, their Families
• and Communities, Through Physical Education,
• Sport, Recreation and Fitness"

In addition, across our three Schools, a number of research groups exist (e.g. the Centre for Entrepreneurship and Enterprise Development (**CEED**) and the Irish Academy of Hospitality and Tourism (**IAHT**)) and new research groups and alliances are emerging where staff are working jointly together across departments and schools and developing advanced competencies in multidisciplinary areas of research. The Institute will continue to identify and support emerging opportunity areas as well as supporting existing research areas.

Examples of achievements via co-authored multidisciplinary research publications and highly competitive EU research funding being awarded across two or more departments signals the calibre and value of the totality of the research and innovation ongoing at IT Tralee. CEED has been steadily delivering impactful research results through its engagement in collaborative interdisciplinary research on both a national and EU platform. CEED practices a policy of growth through collaboration and works closely with each of the prioritised IT Tralee research centres and the other research groups in achieving same at both an applied and basic research levels. CEED's research agenda spans across all

departments within the Institute with a particular focus on research into **service design driven innovation, the commercial mindset, innovative learning practices and analysis, incubation and new venture creation and sustainability**.

The IAHT, with a primary objective to provide continuous professional development programmes to the **hospitality and tourism** industry sector, also delivers impactful research results that directly address the needs of the niche sector it serves. Encouraging progress is also being demonstrated by some of the emerging research groups at IT Tralee e.g. the **nursing and social sciences** group and the **languages and cultural studies** group, each at different stages in their development and advancement towards the achievement of critical mass. Through their track records of participation in collaborative transdisciplinary research both internally, nationally and internationally our researchers continue to successfully apply their approaches and perspectives into other discipline areas and positively influence the development of innovative solutions that contribute to societal advancement.



Target No 1: Research Excellence - Internationally Benchmarked and Externally Evaluated

The Institute is committed to maximising the quality and quantity of our research outputs across all disciplines. We will continue to encourage our staff to publish and disseminate their research in high quality internationally prominent journals and books.

Performance Indicator 1:
We will measure research excellence through the number of our peer reviewed research publications.

IT Tralee is firmly on the global map in terms of the excellence of our research and the capability of our researchers and principle investigators to secure highly competitive national and international research funding awards. The procurement of research funding is essential to ensure the sustainability and growth of our research capabilities. We will continue to compete globally and secure research funding by expanding our in-house proposal writing expertise and diversifying our funding sources.

Performance Indicator 2:
We will measure research excellence through the value of our research funding grants.

The National Research Prioritisation Exercise (Ireland, Department of Education and Skills, 2011 p43) states that **'the ability to translate research into economic and societal benefits ultimately comes down to the quality of people working in the research system**

and the quality of the trained researchers emerging from the system at all levels'. We will continue to deploy efficient research recruitment policies that will attract top national and international research talent to IT Tralee. The introduction of a Research Career Framework in IT Tralee in 4Q 2016 is a clear statement of the Institute's commitment to providing the research environment and career development sought by high performing researchers. The Institute is committed to the transnational effort to improve the conditions for researchers throughout Europe and to promote research as an attractive career in accordance with the European Commission's HRS4R (Human Resources Strategy for Researchers).

Performance Indicator 3:
We will measure research excellence through the growth in the number of research professional staff at IT Tralee.

Research excellence requires world class research infrastructure. To plan for the longer term growth of research capabilities at IT Tralee, we need to target investment in new, well-equipped, research infrastructure. While there has been strategic investment of institutional funds in recent years to provide for critical upgrading of existing research infrastructure, the existing research infrastructure is now at capacity. The building of the Kerry Sports Academy at IT Tralee is a landmark infrastructural enhancement of the UNESCO Chair research facilities at IT Tralee. Due to commence in 1Q 2017, the Kerry Sports Academy, at a cost of €16m will be the largest educational capital project to be undertaken in Kerry in

the coming years. In addition to hosting the UNESCO research centre, the building will be home to the Health and Leisure programmes at IT Tralee, CARA, the National Centre for Adapted Physical Activity; Kerry GAA Centre of Excellence and Comhaltas Ceolteóití Éireann in Kerry. The development of the Kerry Sports Academy building will put IT Tralee at a significant advantage when competing nationally and internationally for both students and external competitive research funding linked to the School of Health and Social Sciences.

A primary objective for the long term development of research capabilities at IT Tralee is to seek out opportunities at national and European level for the procurement of funding to further expand the research facilities at IT Tralee. We will endeavour to secure funding to build a dedicated research building with the

best possible equipment and facilities that will host our two STEM research centres (Shannon ABC and IMaR) as well as the growing community of postgraduate researchers at IT Tralee. The new facility will underpin the Institute's collaborative, industry-led research agenda and will ensure IT Tralee remains at the cutting edge of industry focused research and innovation. We will include the development of a new dedicated research building as a primary objective within the Institute's capital development master plan.

Performance Indicator 4:

We will measure research excellence through our investment in new research infrastructure.

No	Indicator Title	Indicator Description	Current Ave. in 2016	Target Min. 2017-21
1	Publications	Increase in the number of peer-reviewed research publications	40	*250
2	Grants	The value of externally sourced research funding secured	€1.5m	*€8m
3	Excellent Researchers	Attract, develop and retain outstanding research professional staff	30	50
4	New Research Infrastructure	Target national and international funding to build a dedicated research building at IT Tralee	-	Funding secured

*Cumulative over the 5 year period



Target No 2: Research Impact through Innovation

Ireland’s cutting-edge research and innovation sector is driven by outstanding levels of collaboration between industry, academia and government agencies, aiming at maximising the impact of research in Ireland on industry competitiveness. Bringing innovative ideas to full market realisation is the key focus of these stakeholders, with over 700 companies engaging annually in research partnerships with Universities, Institutes of Technology, Technology Centres, Research Centres and the numerous other research performing organisations (RPOs) in Ireland. (Refer to www.kti.ie).

The creation of intellectual property (IP) and optimising the transfer of IP from IT Tralee to enterprise to promote greater application of our research results is central to our strategy for research innovation. In Enterprise 2025, [Ireland's National Enterprise Policy 2015-2025, Department of Jobs, Enterprise and Innovation, 2015] innovation has been identified as a core focus and one of Ireland’s key differentiators. The outstanding success of Ireland’s approach to open innovation is demonstrated by the fact that more research is commercialised in Ireland through licenses and spinouts per million euro invested than most other European countries.

IT Tralee will optimise its efforts to create commercially valuable intellectual property through collaboration with publicly funded research.

Performance Indicators 5, 6, 7:
We will measure our success in the dissemination and application of our innovations by tracking the following indicators of successful technology transfer i.e. invention disclosures; licenses, options and assignments (LOA's) and priority patent applications.



No	Indicator Title	Indicator Description	Current Ave. in 2016	Target Min. 2017-21
5	Invention Disclosures	Increase in the number of inventions disclosed	2	8
6	LOA's	Intellectual property converted to licence, option or assignment	0	2
7	Patents	Priority patent applications	0	2

These technology transfer targets (cumulative over the 5 year period) are aligned with our core funding agreement with Enterprise Ireland (2017-2021) under TTSI3 Contract Ref: SI 2016 0006.

Target No 3: Enhanced Research Linkages and Collaborative Research Activities

The relatively small size of IT Tralee within the national and international higher education context and its geographic location means that it is strategic for IT Tralee to seek to participate in collaborative research that will complement and harness our indigenous research strengths. A critical objective of this strategy therefore is to expand our global network by establishing new linkages with leading global research performing organisations (RPO's) as well as the end users of our research outputs i.e. business, industry and the public sector to promote both collaborative research with IT Tralee and the discoverability of our research outputs. We must align our best resources to deliver success to our partners through our research excellence and innovations and grow our research profile internationally. We will encourage our staff to avail of opportunities to engage with national and international networks within their sphere and to seek out opportunities to travel to other HEI's, industry, social and cultural organisations and policy systems to strengthen existing partnerships and to forge new relationships.

Performance Indicator 8:

We will measure our intensification of collaborative research activities through the growth in the number of research agreements wholly funded or part funded by industry.

Research performed at IT Tralee relies on competitive funding awarded by external national and international research funding agencies. IT Tralee must succeed to be identified as a research partner of choice, our researchers must be visible on the global platform and pursued by the highest achieving national and international RPO's, industry and research consortia who themselves have strong track records of research funding procurement. We will seek to promote greater discoverability of our research outputs and enhanced public accessibility to our researchers and facilities through the development and maintenance of a strong on-line research portal. We will ensure more effective visibility of the research being conducted in IT Tralee and more effective dissemination of the results of our research both nationally and globally.

Performance Indicator 9:

We will develop and maintain a high functioning institutional research webpage.



No	Indicator Title	Indicator Description	Current Ave. in 2016	Target Min. 2017-21
8	Knowledge Transfer - Industry	Research Collaboration Agreements wholly funded or part funded by industry	12	*80
9	ITT Research Webpage	Development and maintenance of high functioning on-line ITT research webpage	Webpage exists	Enhanced Webpage

**This target (cumulative over the 5 year period) is aligned with our Core Funding Agreement with Enterprise Ireland (2017-2021) under TTSI3 Contract Ref: SI 2016 0006*

Target No 4: High Quality Research Provision to Level 10

On the National Framework of Qualifications the Institute has ‘Research Approval’ granted by the QQI (formerly HETAC) in the following discipline areas:

Discipline areas with Research Approval at IT Tralee

Level 9	Level 10
<div>1. Computing and Mathematics</div> <div>2. Health Studies & Sports Science</div> <div>3. Nursing</div> <div>4. Social Studies/Care</div> <div>5. Business, Tourism and Entrepreneurship</div> <div>6. Engineering</div>	<div>1. Chemical & Life Sciences</div> <div>2. Mathematics</div> <div>3. Educational Sciences</div> <div>4. Language & Literature</div> <div>5. Arts</div>

‘Research Approval’ is a process for the validation of research degree programmes at NFQ levels and/or discipline areas where there has been little or no prior provision by the provider concerned. Research approval provides the platform for a provider to build its track record to progress towards meeting the criteria for research accreditation. Postgraduate research activity at IT Tralee has evolved significantly over the past number of years and there is now a substantial track record to underpin a successful application to the QQI for delegated authority across all discipline areas at level 9.

Performance Indicator 10:
The Institute will apply for, and achieve, delegated authority to award research degrees across all discipline areas at level 9.



The Institute is committed to growing the number of PhD students registered at IT Tralee within its prioritised discipline areas. To support this objective, IT Tralee will apply for an expansion of the discipline areas for which it has research approval to level 10. We will further develop our capacity to deliver research degree programmes at level 10 aligned with national and international best practice guidelines and policies [Ireland, IUQB 2009; Helsinki, ENQA 2005; Salzburg, EUA 2005; Ireland, HETAC 2010; European Commission, 2005; Science Foundation Ireland 2006].

We will support suitably qualified staff to undertake research supervision at level 10 in prioritised discipline areas. We will encourage this staff cohort to develop innovative and competitive level 10 research proposals that are capable of securing external funding and attracting the highest calibre of students to undertake their PhD education at IT Tralee. Staff new to research supervision at level 10 will be encouraged to co-supervise

with an experienced staff member who has a track record of supervising PhD students to completion. In parallel, staff will be encouraged to seek to collaborate with partner institutions to partake in the cross institutional provision of PhD programmes e.g. the co-supervision of a student registered to either IT Tralee or another institution.

The Institute will invest in enabling policies that will support staff to develop expertise at supervising research degree students at level 10. This will be achieved by institutional investment in academic time release to afford staff, in consultation with their Head of School, time to undertake research degree supervision at level 10.

Performance Indicator 11:
We will increase the number of IT Tralee staff supervising level 10 research degree students.

No	Indicator Title	Indicator Description	Current Ave. in 2016	Target Min. 2017-21
10	Delegated Authority at Level 9	Delegated authority to award research degrees at level 9	-	Achieved
11	Level 10 Research Degree Programmes	Increase in the number of students registered for research degrees at level 10 in IT Tralee	1	*15-20

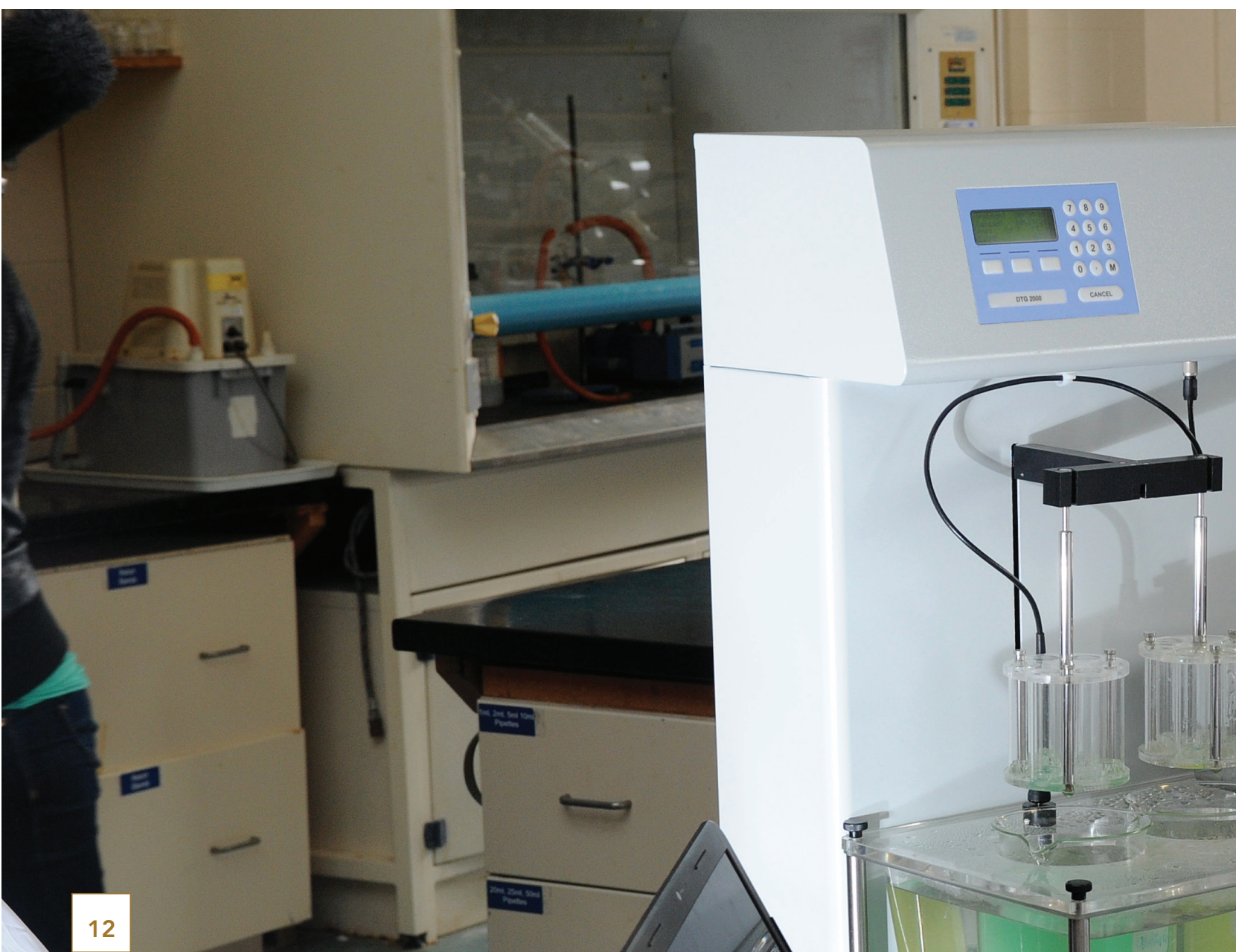
**By the end of 2021 there will be 15 to 20 students registered for PhD's at IT Tralee.*



Target No 5: Enabling and Supporting Research Activity across IT Tralee

We recognise that people are the lifeblood of this strategy. We seek to nurture a research environment that is both encouraging and rewarding for our academic and research professional staff. While not every academic will be engaged in research, the 'National Strategy of Higher Education to 2030' (Ireland, Department of Education and Skills, 2011, p61) recommends that **'the roles of teaching and research should be afforded parity of esteem. This should be reflected in resource allocation, in promotion criteria, and in the metrics used to assess performance at individual, institution and system level.'**

The significant teaching loads within the Institutes of Technology is widely reported by academic staff to be a barrier that constrains research activity. We recognise that the research pursuits of a single staff member can contribute significantly to raising the profile of IT Tralee as a research-led institution that provides a world class educational experience. There are many examples of landmark research achievements that are attributed to individual IT Tralee staff members since our establishment in 1977. In order to support our staff's ambitions to contribute to research excellence at IT Tralee, the Institute is committed to prioritising research and ensuring that a well-oiled research support system exists that fosters research activity and harnesses the full potential of our staff.



The Institute will invest in the following targeted system of supports to support our community of academic and research professional staff to engage in research activities:

- Continuous personal development programmes for research will be accessible to all staff;
- The communication of external research funding calls within departments will be enhanced;
- New research active staff will be supported to develop their grant writing skills to empower them to compete successfully for research grant awards;
- An on-line research portal will be created to promote the research profiles of staff, in addition to serving as an effective tool for the dissemination of IT Tralee research outputs;
- Excellence in research and innovation will be recognised in career development opportunities;
- The Institutes IP Policy will be revised to increase the current financial rewards to inventors if their inventions are exploited commercially.



Greater Cohesion between the Research and Teaching Agendas

The 'National Strategy of Higher Education to 2030' (Ireland, Department of Education and Skills 2011, p17) recommends that **'Every student should learn in an environment that is informed by research, scholarship and up-to-date practice and knowledge'**. The strategy also advocates (p67) that **'All research active staff should engage with undergraduate teaching and the most senior academic researchers with introductory teaching'**. Embedding the research activities of the Institute within the individual academic departments is key to fostering and developing a spirit of curiosity and scholarship amongst our undergraduate students. We must develop new approaches to integrate research more into teaching and learning. We will ensure that our research professional staff are student-facing and disseminating their tacit knowledge inside the classroom and that research and teaching migration pathways exist for all staff. A strong functioning research ecosystem, where research permeates all academic departments from levels 7 through to 10 and across all fields, will underpin the quality of the education and training being delivered by IT Tralee. Research has a direct bearing on the formation of our students and we will continue to ensure that our graduates emerge as innovative alumni equipped with the transferable skills necessary to secure jobs and advance their careers, succeed as entrepreneurs, as well as shape and contribute to their society.



Specific Actions:

- The school executive will drive the school's research agenda and interconnect the school's academic and research centres agendas;
- The school executive will publish the school's research KPI's which will contribute to the achievement of the Institute's overall research KPI's;
- Regular course board review of curricula to ensure that they continue to be research informed and that a culture of enquiry and engaged scholarship permeates programme content;
- Provision of peer mentoring and support for academic staff new to research;
- One or more departmental research seminars will be hosted per year to showcase research activities and achievements at all levels to encourage student progression from levels 7-10;
- One or more school research seminars will be hosted per year to showcase both academic and research professional staff's research activities to encourage collaborative research activities amongst the wider staff community;
- School invitations to external industry / societal research partners to deliver guest lectures to staff and students;
- A public engagement strategy will be developed that will include hosting of 'Research Open Days' to showcase the Institutes research activities to the wider public;
- Schools will host annual research poster competitions and research posters will be displayed along access corridors;
- Introduce student high achiever awards in research;
- Recognition of landmark research achievements that are attributed to individual staff members to promote excellence in research and innovation.



CONCLUSIONS

IT Tralee is competing globally on the basis of our talent and our growing reputation as a significant player both as a co-ordinator and partner in successful national and international research consortia. This strategy represents an ambitious step forward for further developing IT Tralee into a globally recognised and professionally relevant, research performing organisation where the talents of our research community flourish. This strategy aims to safeguard the role of IT Tralee as a key influential player in the South West region of Ireland through its deployment of research and innovation.

This strategy is commencing during a period of immense financial pressure within the HEI sector, and uncertainty surrounding the future of the Technological Universities Bill, which is the legislation required to provide for IT Tralee and our partner, Cork Institute of Technology to merge and achieve designation as a technological university. It is hoped that through the achievement of our research targets, we will emerge in 2021 as a stronger and more dynamic organisation that is better positioned to withstand future external factors. This Strategy represents the Institute's prioritisation of research and innovation as key strategic objectives and underpins our vision to be distinguished an ambitious and globally competitive research-led institution.

Relevant International & National Policy Development

This strategy was been developed with reference to a number of key national and international policy developments:

- Europe2020 (<http://ec.europa.eu/europe2020>) sets priorities and targets Europe wide, to address the grand challenges of modern times facing European countries. Research and innovation (R&I) are at the heart of the Europe 2020 strategy, given their essential role in triggering smart and sustainable growth and job creation and in addressing societal challenges;
- Horizon2020 (<http://ec.europa.eu/horizon2020>) is the biggest EU Research and Innovation programme ever with nearly e80 billion of funding available over 7 years (2014 to 2020). Horizon 2020 promotes Europe's scientific and technological excellence to extend the frontiers of human knowledge, boost the EU's economic competitiveness, address societal challenges and remove barriers to innovation, including between the public and private sector;
- European Commission Research and Innovation Observatory (RIO) (<https://rio.jrc.ec.europa.eu>) delivers analysis, insights, statistical data and best practices on designing, implementing and evaluating research and innovation policy at EU and national levels;
- The National Strategy for Higher Education to 2030 (Ireland, Department of Education and Skills 2011) '*presents a vision of an Irish higher education sector that can successfully meet the many social, economic and cultural challenges that face us over the coming decades, and meet its key roles of teaching and learning, research, scholarship, and engagement with wider society*';
- Innovation 2020 (Ireland, Department of Jobs, Enterprise and Innovation, December 2015) the new five-year (2016-2020) Strategy for Research and Development, Science and Technology '*sets out the roadmap for continuing progress towards the goal of making Ireland a Global Innovation Leader, driving a strong sustainable economy and a better society*';
- Enterprise 2025 (Ireland, Department of Jobs, Enterprise and Innovation, 2015) '*Innovation has been identified as a core focus and one of Irelands key differentiators*';
- Action Plan for Jobs - South West Region (Ireland, Department of Jobs, Enterprise and Innovation, 2015) '*the Government's key policy instrument to support job creation and enterprise growth in the South West region*';
- Investing in National Ambition: A Strategy for Funding Higher Education (Ireland, Report of the Expert Group on Future Funding for Higher Education, 2016) '*The funding system is simply not fit for purpose. It fails to recognise the current pressures facing higher education institutions or the scale of the coming demographic changes*';
- HEA: Financial Review of the Institutes of Technology Sector (Ireland, Higher Education Authority, November 2016) which confirmed that '*the Institutes of Technology sector has major sustainability issues which must be addressed in the short-to-medium term*';
- The Hunt Report (Ireland, Department of Education and Skills 2011) and the subsequent '*Towards a Future Higher Education Landscape*' (Ireland, Higher Education Authority, 2012) '*Provides for the establishment of Technological Universities with a particular focus on the application of knowledge in a regionally contextualised way*';
- Process and Criteria for Designation as a Technological University published by the HEA (Ireland, Higher Education Authority 2012);
- The National Research Prioritisation Exercise (Ireland, Forfás 2011) resulted in '*the identification of 14 national research priority areas into which the majority of national funding will be directed and funding awards will be made with a strong focus on economic output*';
- The National IP Protocol 2016 which underpins the knowledge transfer framework in Ireland. (<http://www.knowledgetransferireland.com>);
- The Government's new capital investment plan, Building on Recovery: Infrastructure and Capital Investment 2016-2021 outlines '*an exchequer spend of €27b over the next six years. A total of €3.78b (14%) will be allocated for Enterprise and Innovation over the time-frame of the plan*'.



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