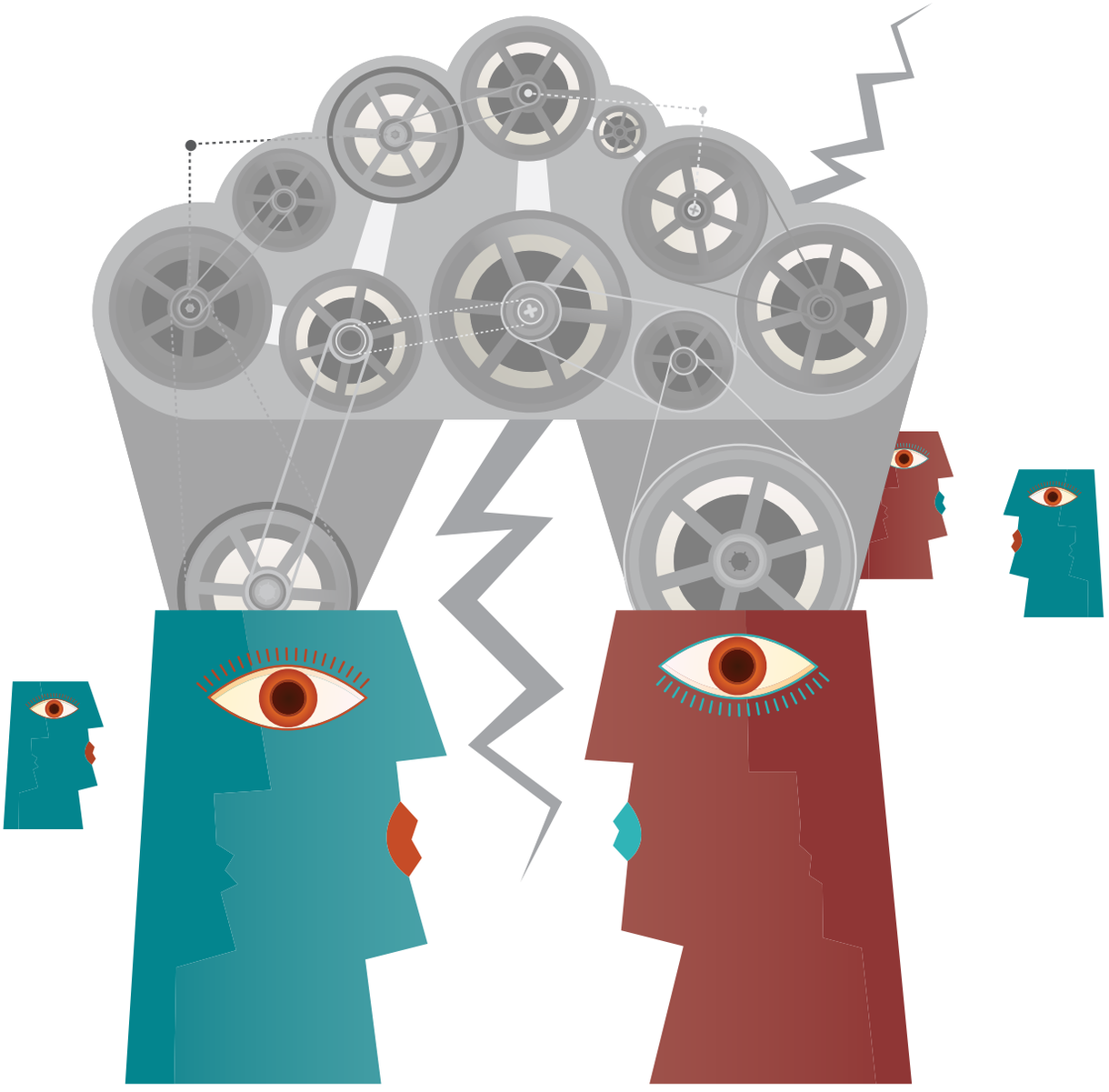
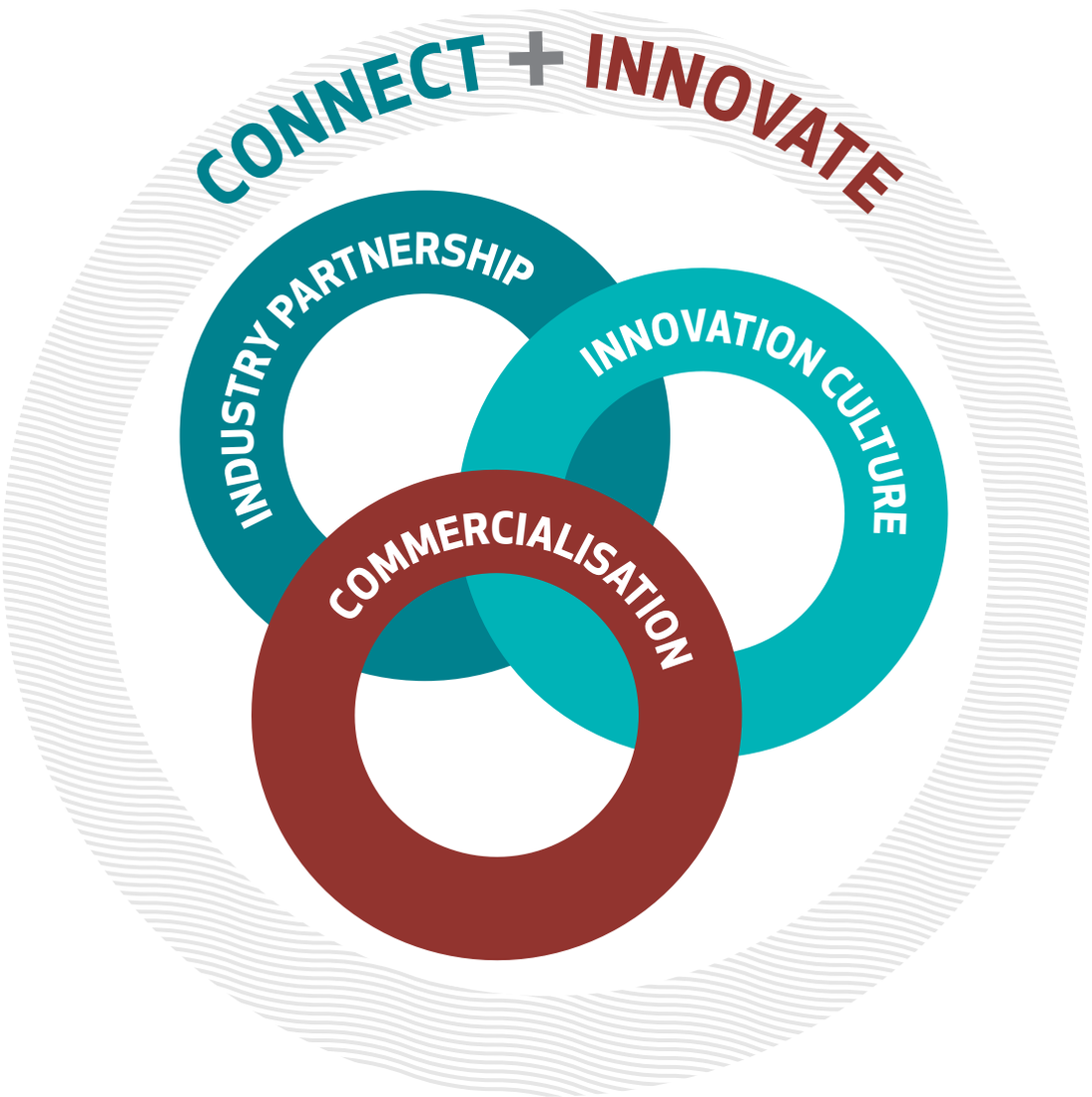
COMMERCIALISATION
NUI MAYNOOTH
CONNECT + INNOVATE



CONNECT + INNOVATE

2013/2014


CONNECT + INNOVATE
INDUSTRY PARTNERSHIP
INNOVATION CULTURE
COMMERCIALISATION

FOREWORD

THE WORLD BANK'S "DOING BUSINESS" REPORT [1] RATES IRELAND AS A LEADING EUROPEAN LOCATION TO START A BUSINESS; YET FOR MANY ACADEMIC ENTREPRENEURS THE PATH FROM IDEA TO MARKET CAN STILL SEEM DAUNTING.

In this context, it is a pleasure to introduce the 2013 annual report of the NUI Maynooth Commercialisation Office. The team, led by John Scanlan, has positioned NUI Maynooth as "best in class" in supporting the full range of interaction between researchers, investors and industry. This report provides an overview of the work of the office during the year, and highlights some of the successes and achievements in the commercial and enterprise sphere that have been achieved by the partnership of NUI Maynooth researchers with the Commercialisation Office team.

This report provides the detailed metrics that describe how NUI Maynooth is pivotal to Ireland's enterprise system. In particular, our leadership of a technology transfer alliance with our trusted partners in Athlone Institute of Technology, the Institute of Technology Carlow and Waterford Institute of Technology allows us to create and support innovation activity in a region that reaches from the Shannon to the Irish Sea. Our commercialisation work is focused on three activities. First we excel in identifying and commercialising the intellectual property developed by University researchers. Our ethos is to smooth the path for academic entrepreneurs to take promising ideas and developments and create impact through commercial opportunity. That path will be different for each entrepreneur, it is here that our commercialisation team gives professional advice and support guiding each fledgling opportunity to reach its full commercial potential. The team advises on best practice on bringing research to market and help to identify new potential collaborators and investors. The Commercialisation team at NUI Maynooth is also skilled at supporting our national enterprise agencies (IDA and Enterprise Ireland) in connecting researchers with industry and the market place. This can be in the form of specific academic consultancy or via long term, intense cooperative relationships between industry and academic teams. In this way NUI Maynooth experts support the development of our indigenous industries, attract inward investment to Ireland and help embed multi-national corporations in our region against fierce international competition. Our Commercialisation Office coordinates efficient contract negotiations and facilitates partnerships that maximise benefits for each stakeholder, quickly and effectively.

Finally, NUI Maynooth is always mindful of our mission to educate and develop our students as they begin to appreciate their own innovation capabilities. We are developing a unique Maynooth Curriculum to encourage our students and staff to take the risks that entrepreneurship always requires. The Commercialisation team have been at the forefront of developing a culture of entrepreneurship and research commercialisation at NUI Maynooth that supports those pioneers to take each new step on the road to commercial success. We are very proud that our undergraduate and postgraduate students are now joining our leading academic colleagues in commercialising their discoveries. In particular we wish our spin out companies such as *Surface Tension* every success, and we pledge the sustained support from our Commercialisation Office as these companies move from academic achievement to commercial accomplishment.

Prof. Bernard Mahon, VP Research

[1] *Ease of doing business report, 2014. World Bank Group. (www.doingbusiness.org)*

INTRODUCTION

THE COMMERCIALISATION OFFICE AT NUI MAYNOOTH HAS JUST COMPLETED ITS FIRST YEAR AS CONSORTIUM LEAD OF THE EI FUNDED TECHNOLOGY TRANSFER ALLIANCE IN PARTNERSHIP WITH ATHLONE INSTITUTE OF TECHNOLOGY (AIT), INSTITUTE OF TECHNOLOGY CARLOW (ITC) AND WATERFORD INSTITUTE OF TECHNOLOGY (WIT).

The consortium is focused on ensuring a professional and efficient approach to the identification, protection and commercialisation of research and continues to be supported by the Enterprise Ireland Technology Transfer Strengthening Initiative (TTSI) phase 2, 2013-2016. The commercialisation team welcomed an experienced executive, Peter Conlon. Other team members include Dr. John Scanlan, Director, Owen Laverty and Dr Paul Tyndall, Commercialisation Executives and Lorraine Kane, Office Manager.

The TT consortium comprises a team of dedicated technology transfer experts with considerable experience in directing innovation and commercialising technologies across a wide range of sectors including engineering technologies, medical devices, pharmaceuticals, drug delivery, sensors, biomaterials and ICT.

While each institution manages its own outputs our consortium reports joint metrics to EI and we exceeded our 2013 targets, and score highly on the outputs-to-research spend ratio.

The NUI Maynooth 2013 performance metrics are outlined overleaf. Against international standards per research expenditure, NUI Maynooth ranks in the top percentiles. This performance is down to the outstanding research and the desire of our researchers to see their work make not just a scientific impact but an economic one.

The Commercialisation Office continues to focus on 3 pillars of activity:

- Connecting NUI Maynooth researchers with industry and the market place
- Developing a culture of research commercialisation at NUI Maynooth
- Identifying and commercialising the IP developed by NUI Maynooth researchers

The output of these 3 pillars of activity contributes to the growth and development of Ireland's knowledge economy and job creation.

John Scanlan
Commercialisation Director

2013
PERFORMANCE METRICS

2 NEW SPIN-OUT COMPANIES

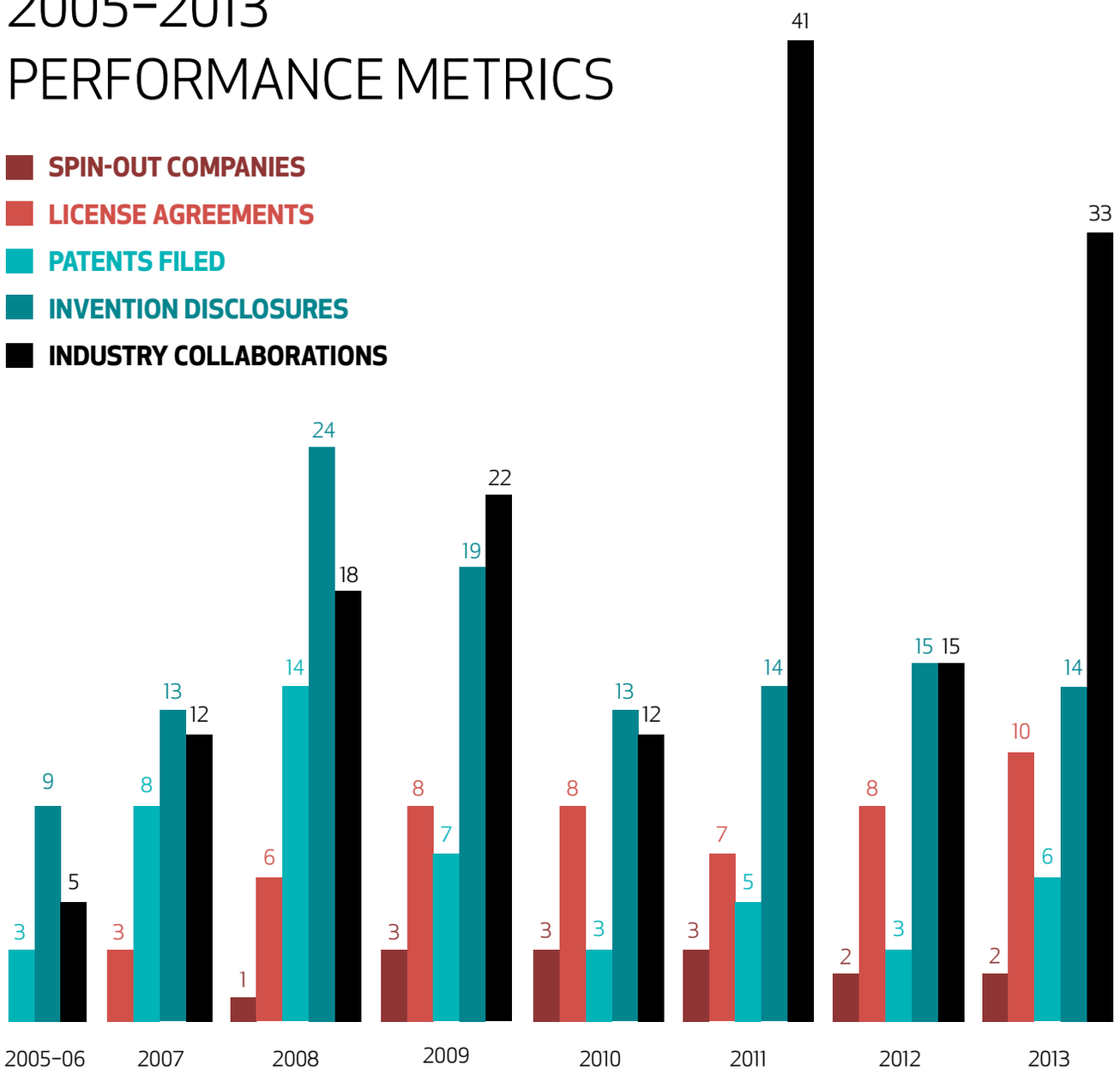
10 NEW LICENSE DEALS

6 NEW PATENTS FILED

14 NEW INVENTION DISCLOSURES

33 NEW INDUSTRY LINKS

2005–2013
PERFORMANCE METRICS



COMMERCIALISATION OF NUI MAYNOOTH RESEARCH

2013 SPIN-OUT COMPANY ACTIVITY

NUI Maynooth spun-out 2 new companies in 2013, based on research work carried out at the University over the last couple of years:

CaraMagic was a joint spinout company (NUIM / AIT), which is actively working on a number of products for different sectors based on voice changing algorithms developed by Dr Bob Lawlor and Yuhang Ye of the Electronic Engineering Department. Commercial product launch is expected in 2014.

Surface Tension is a spinout company whose first product is a music based application which allows users to interact fluidly with a tablet and produce music in a unique way, which is due for release in Spring 2014. This is the culmination of work by Patrick McGlynn and his undergraduate student colleague Simon Kenny, who together won the NUI Maynooth Student Entrepreneur Competition in 2013.

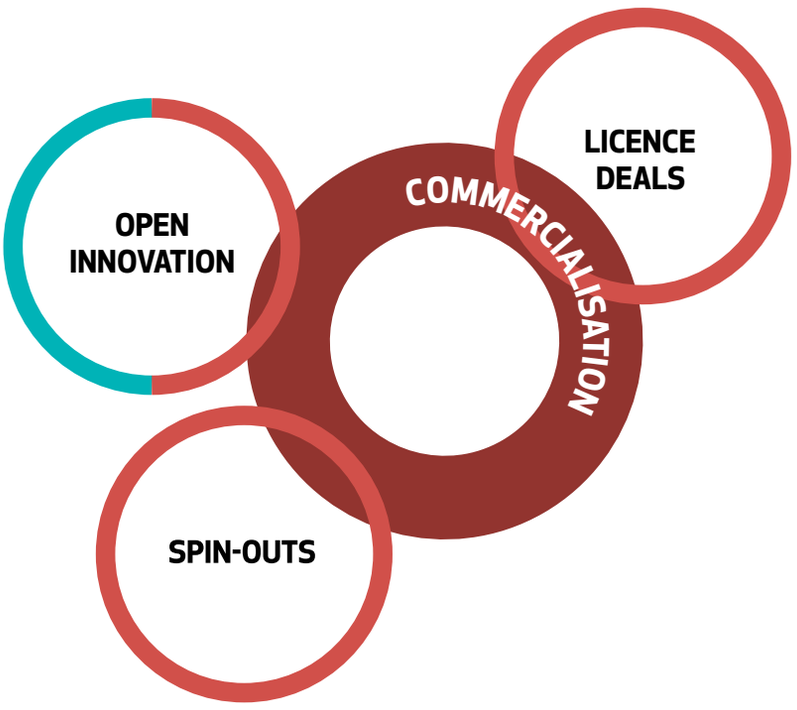
We also continue to support the spin-out companies we completed in the last number of years. Some highlights from these companies over the year include:

- **Odikyo** have continued to develop their team expertise and exhibited at the annual web summit in Dublin.
- **3Metric** are working toward further product development and are in negotiation with potential clients for their 3D scanning software.
- **Profector Life Sciences** continued to develop its patented electrospray technology product range and raised further investment in 2013.
- **Neuromod (formerly Mutebutton)** continued to raise funds to bring the technology to market and are focused on finalising product design.
- **RaiseYourIQ** have successfully launched a range of products e.g. SMART, a revolutionary behavioural teaching tool developed by scientific researchers. The company are currently in negotiations to raise investment to expand their platform.

2013 LICENSING ACTIVITY

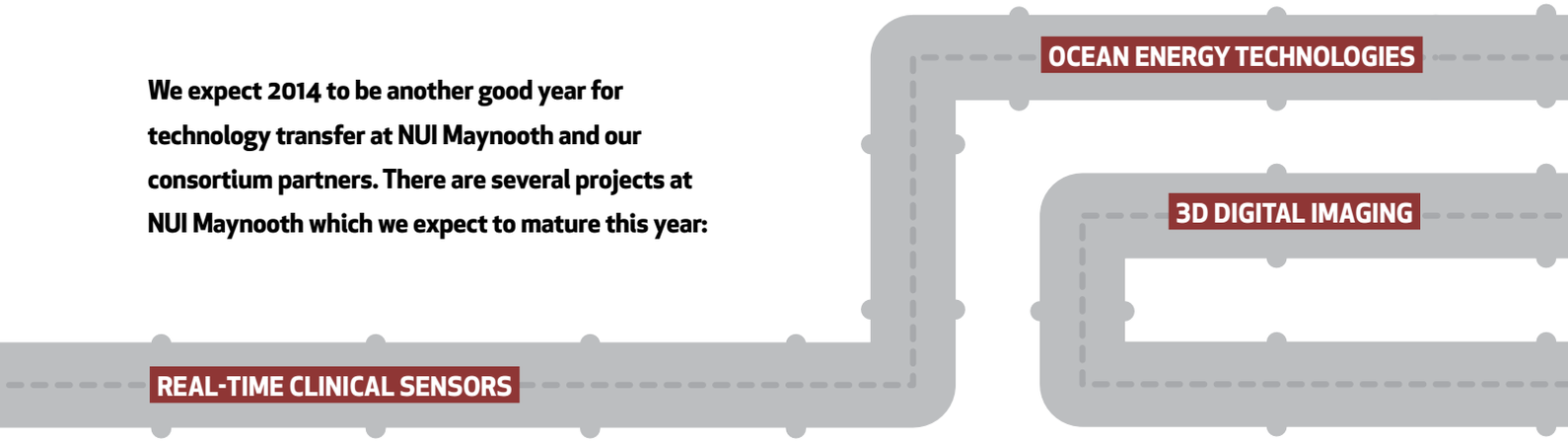
An example of the new technologies licensed in 2013 and the companies we have licensed them to include:

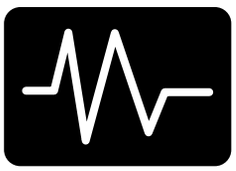
- In conjunction with Inserm in Paris, we licensed a patent application to Illiad. The technology is a vaccine adjuvant with particular application for pertussis.
- We licensed software tools for wave energy simulation to an overseas renewable energy company.
- We licensed congestion control software to an overseas company, this software is used to help improve network throughput efficiency, scalability and resilience to attacks and eavesdropping.
- We licensed an online platform application that allows friends and family to follow athletes progress on a race course.
- We licensed technology that allows for the large scale scanning of objects using low cost hardware such as Microsoft Kinect™.
- We licensed a voice changing algorithm to provide entertainment applications.
- We licensed a concentration range for priming and stimulating the immune system of bees to improve bee health and treat bee disease to a USA based company.



FUTURE PIPELINE

We expect 2014 to be another good year for technology transfer at NUI Maynooth and our consortium partners. There are several projects at NUI Maynooth which we expect to mature this year:





REAL-TIME CLINICAL SENSORS

We are developing a suite of in-vivo electrochemical sensors for clinical applications, including continuous monitoring of patient vital signs in the I.C.U, during surgery, anaesthesia and in organ transplantation.

OCEAN ENERGY TECHNOLOGIES

The Centre for Ocean Energy Research (COER) at NUI Maynooth has core strengths in mathematical modelling, control systems, prognostics and optimization – all focused on ocean energy research. COER is strongly supported by EI and has programs in place to drive at least two spin-out companies, one focussed on ocean energy technical services and another focussed on wave energy converter technology.

3D DIGITAL IMAGING

We have developed a computer programme that allows for the accurate, high speed, high resolution, colour scanning of very large objects using a low cost Microsoft Kinect™ device. This has opportunities from personal scanning for shopping to capturing sets for use in virtual environments.

HR TRAINING SYSTEM

We are developing an expert system allowing HR managers to understand the ROI on staff training. The system allows companies to measure the effects of training and increase effectiveness in their organisations.

BIOSENSOR PLATFORM

THERANOSTICS/DIAGNOSTICS FOR AUTOIMMUNE DISEASES

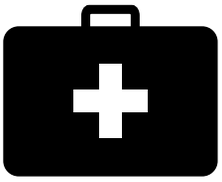
HR TRAINING SYSTEM

LIDAR DATA MANAGEMENT

BIO ASSAY DEVELOPMENT

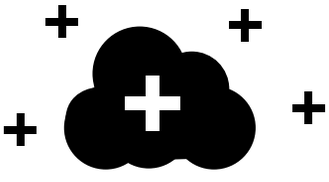
BIOSENSOR PLATFORM

We are developing an exciting biosensor based technology with high sensitivity and selectivity to pre-selected analytes. Our sensor can be pre-programmed for sensitivity to a range of airborne and liquid based analytes, with applications in security, health and environment. The sensor is portable, robust and operates in real-time.



THERANOSTICS/DIAGNOSTICS FOR AUTOIMMUNE DISEASES

We have a team of researchers evaluating a novel peptide for its therapeutic potential in the treatment of inflammatory bowel diseases. This peptide is effective in inhibiting LPS signalling and we are currently attempting to generate small molecule mimetics to assess their potential in the treatment of sepsis.



LIDAR DATA MANAGEMENT

We are developing a cloud based tool for user management of global Lidar data. The tool allows users to easily find and upload location specific data from an easily accessible data mirror.

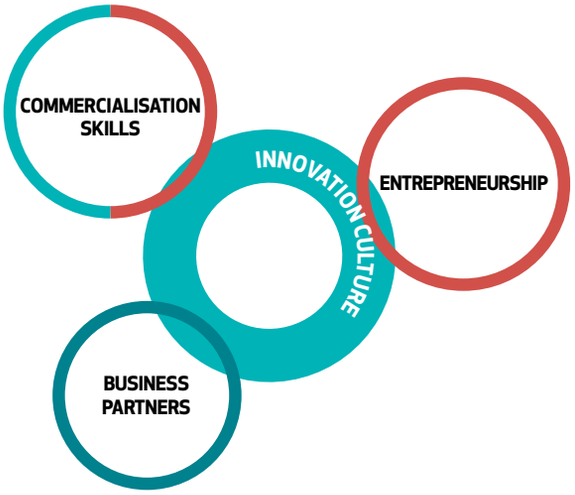
BIO ASSAY DEVELOPMENT

We are developing a novel screening service with a selected range of applications including a novel insect model that can be used for microbial virulence screening, pre-clinical toxicity testing as well as early stage anti-microbial efficacy assessment.

CONNECTING INDUSTRY AND NUI MAYNOOTH 2

INDUSTRY LINKS

2013 saw NUI Maynooth form 33 new partnership contracts with industry. These links are based on research collaborations and range from working relationships with SME's under the Enterprise Ireland Innovation Voucher Programme to collaborations with multinational companies on specific issues for which NUI Maynooth has research excellence. NUI Maynooth now has over 100 ongoing industry collaborations across all disciplines which are an indication of the outward facing culture at NUI Maynooth. Additionally, the NUI Maynooth Innovation Value Institute (IVI) has an additional 75 active industry links.



MARKET PARTNERS

Successful technology transfer or commercialisation is based on the execution of three key tasks; selection of projects with good commercial potential, execution on those projects and securing sufficient capital funding to bring the technology to market. Getting the first two right tends to make the last one easier, and we therefore focus most of our efforts on the first two. Given that we have a relatively small commercialisation team, having expertise in multiple fields and staying market informed is practically impossible, so we must rely on external partners to help in the selection and execution of worthwhile projects.

Our extended team of market partners continues to be a vital part of our commercialisation process. The team now includes more than 100 professionals in various roles such as product development, marketing, legal, IP, business owners, clinicians, investors from organisations of all sizes from small companies to multinationals. This group remains our sounding block to help ensure the commercialisation projects we focus on are "market-informed" and we continue to deliver solutions to "problems that are worth solving".

SEEDING INNOVATION AT NUI MAYNOOTH

CONNECT EVENT 2013

CONNECT event is hosted by the Commercialisation Office and is focused on two main objectives:
(i) to showcase research expertise and encourage industry to tap into the knowledge base of the University and its partner institutes and thereby develop research collaborations; and
(ii) to provide a networking opportunity for delegates to meet and explore how they can work together.

NUI Maynooth and its knowledge transfer consortium partners, Athlone Institute of Technology, Institute of Technology Carlow and Waterford Institute of Technology showcased the diverse range of research expertise available to industry. Almost 200 delegates attended CONNECT 2013, 120 of whom were from industry. Our keynote speakers included founders of start-up tech based companies e.g. Blue Box Sensors and FeedHenry; along with speakers from Enterprise Ireland and the Irish Universities Association outlining European and national funding opportunities for SME's and speakers on innovation and science.

GENERIC SKILLS PROGRAMME

The Commercialisation Office ran its Generic Skills GSE2 programme in October 2013 at NUI Maynooth. The participants this year also included research students from our technology transfer consortium partners, Athlone Institute of Technology, Waterford Institute of Technology and the Institute of Technology Carlow. The module is entitled "Innovation and Research Commercialisation" and the aim is to equip researchers with the skills required to commercialise the outcome of their research, to provide them with the ability to interact with industry and to improve their skills to innovate and act with an entrepreneurial mindset.

The course covers the basics of intellectual property, technical marketing, product development, spin-out company formation and research commercialisation contracts. Also included are workshops and exercises, including preparation of a marketing pitch, culminating in a group business plan presentation. These are very useful in informing the student how to present their ideas as a business opportunity rather than as just interesting science, a practical approach which then complements their academic training.

STUDENT ENTREPRENEUR COMPETITION

The NUI Maynooth Student Entrepreneur Competition completed its seventh year and has grown year on year in both the numbers participating and the quality of competitor ideas. The first competitive round of the competition kicked off in January 2013, with the competitors pitching their concepts in front of an internal judging panel. The groups were mentored and pitched again, after which a number were selected for the following round where external business people review the business plans and pitches.

Four competitors were selected for the final, taking place in Semester 2, for an open-to-the-public Dragon's Den format final. The total sponsored prize fund on offer was €10,000, with €6,000 earmarked for the winning team/competitor. The judges at this years' competition congratulated the competitors on the quality of their presentations and strength of the company ideas.

The competition was sponsored by McCann Fitzgerald Solicitors and Bank of Ireland Maynooth with additional supports provided by FRKelly Patent Attorneys and Carton House Hotel. The judges posed questions to find out how well each participant understood the potential of their own challenge and business idea. The prize money offered is to invest into the business to take it to the next level of development. Mentoring support is also offered by the experienced judges to help the entrepreneurs move forward into the market place.

COMMERCIALISATION AWARD AND ENTERPRISE IRELAND ROADSHOW

Professor John Ringwood of Electronic Engineering was presented with the annual Commercialisation Award by Professor Bernard Mahon, Vice President for Research. John has been very active in the commercialisation space over the last number of years and has successfully licensed several technologies to industry. John currently leads the Center for Ocean Energy Research (COER) at NUI Maynooth.

The annual Commercialisation Award recognises excellence in the commercialisation of research at NUI Maynooth. We consider activity such as licence deals, spin-outs and linking with industry key factors in bringing research to the market place. Previous winners include Ronan Farrell, the Callan Institute; John Lowry, Chemistry Department; Kevin Kavanagh and Sean Doyle, Biology Department; Ross O'Neill (formerly the Hamilton Institute) and Tim McCarthy, National Centre for Geocomputation at NUI Maynooth.

TECHNOLOGY TRANSFER CONSORTIUM HIGHLIGHTS

Technology Transfer in Irish higher education institutes is supported by Enterprise Ireland through the Technology Transfer Strengthening Initiative (TTSI). During the current TTSI funding programme, NUI Maynooth leads a TT consortium with partner institutes Athlone Institute of Technology, Institute of Technology Carlow and Waterford Institute of Technology.

Below is a summary of our activity at our partner institutes.

ATHLONE INSTITUTE OF TECHNOLOGY

2013 was a good start for the NUI Maynooth and AIT TT partnership, which resulted in us exceeding our targets and providing a useful example of collaboration with the formation of CaraMagic, a joint spin-out company. As part of our collaboration we provided on-site training in various modules (including IP, Legal and how to spin-out). It was a year for getting to know the research community and the great work being carried out. We now have identified a number of projects with commercial potential and are working with the various teams to bring them through the stages over the next few years.

INSTITUTE OF TECHNOLOGY CARLOW

2013 concluded successfully with the creation of the spin-out, Microgen Limited, based on research work licensed from the EnviroCORE research centre at IT Carlow. 2013 was also IT Carlow's first year of participation in TTSI. The year's focus was on building relationships within the college and promoting the message that commercialisation of research can have wider community as well as personal benefits. In 2014 pipeline building of college commercial activity will continue using EnviroCORE, DesignCORE, GameCORE, GeoCORE and SecurityCORE research centres as starting points. As an example, we are working closely with final year DesignCORE students to enhance the commercial potential that exists in their projects and possibly targeting follow on funding. Beyond the college and with the help of the Enterprise & Research Incubation Campus 2014 will see more local companies encouraged to bring their research needs to IT Carlow and leverage the facilities and expertise of the college through collaboration.

WATERFORD INSTITUTE OF TECHNOLOGY

2013 was an excellent start to the NUI Maynooth and WIT partnership. The focus was to work towards establishing relationships with key groups in the Biotech, Medical Device and Engineering areas. This included one-to-one planning meetings with key personnel linking technical/commercial milestones to regulatory requirements targeting innovative business models. This hands-on approach will seed and deliver an exciting commercial pipeline over the lifetime of TTSI. Targets for the year ahead include a business development push to identify key projects to leverage the excellent relationship with local Biotech Industry.

BUSINESS INCUBATION CENTRE

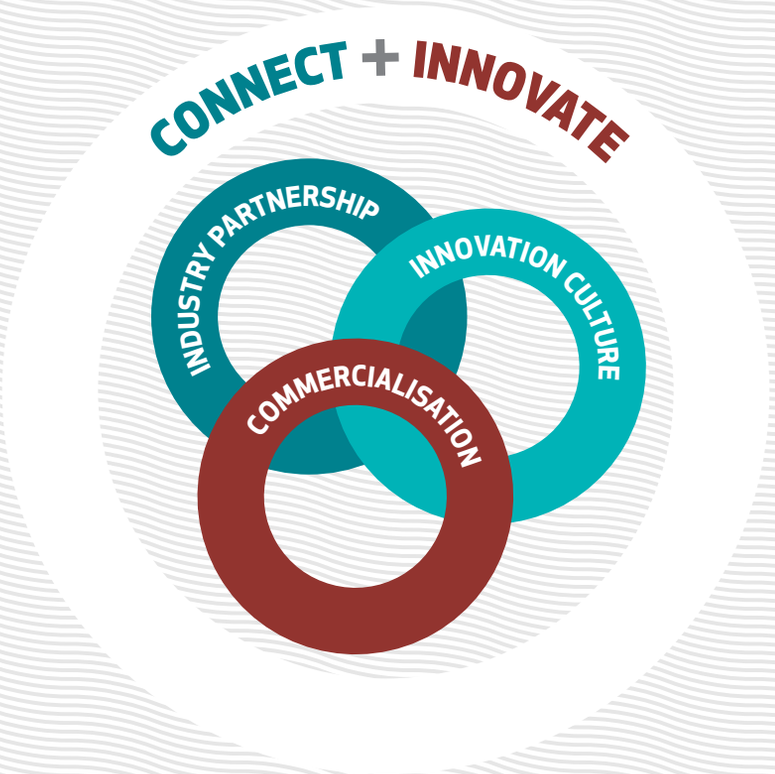
NUI Maynooth broke ground on a new ICT building which will house a Business Incubation Centre (BIC) which will facilitate spin-in and spin-out companies. The BIC will focus on promoting industry-academic links and act as a locus for entrepreneurial activity and commercialisation. The BIC is due for completion Q2 2015, and we are actively looking for incubator clients.

NDP
National Development Plan 2007 - 2013

EUROPEAN UNION
STRUCTURAL FUNDS

ENTERPRISE IRELAND
where innovation means business

Funders of technology transfer in Ireland



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