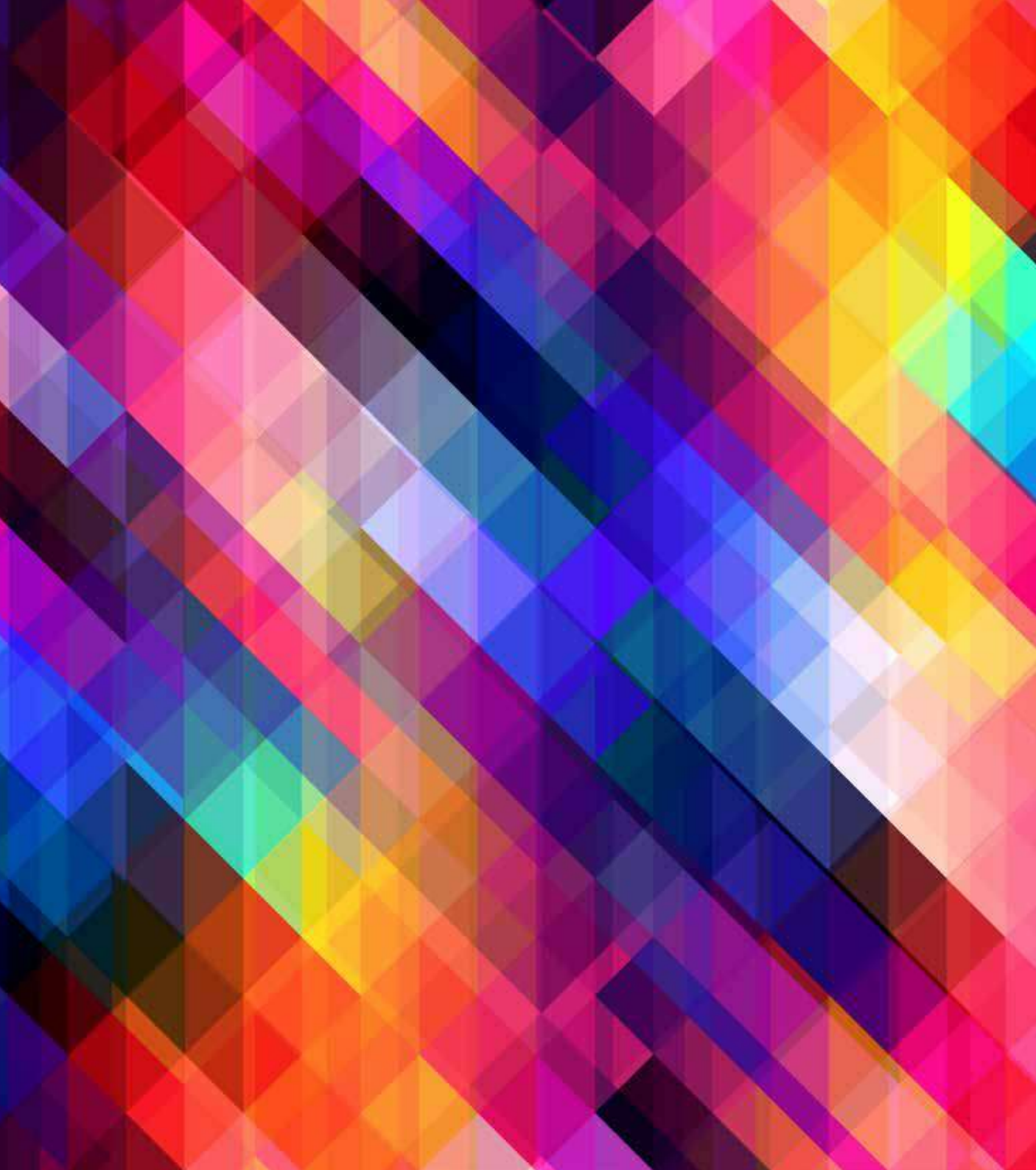


**OFFICE OF RESEARCH, INNOVATION & GRADUATE STUDIES
MAY 2022 – AUGUST 2023 REPORT**



FOREWORD BY ACTING VICE PRESIDENT FOR RESEARCH, INNOVATION & IMPACT



Dr Thomas O'Toole

We are delighted to present the first SETU Annual research report for the period from the date of establishment of our university 01/05/2022 up until 31/08/2023. This publication provides key information, activity and statistics for our research, innovation and graduate studies communities which will be of interest to numerous regional, national and international stakeholders as well as SETU staff and students.

During this period our research community achieved research grant awards totalling over €31M. Our research expenditure remains relatively high in the period (€31.19M), a pro rata comparable figure to that of the last full academic year of 2020/2021, demonstrating stability in terms of our research activity.

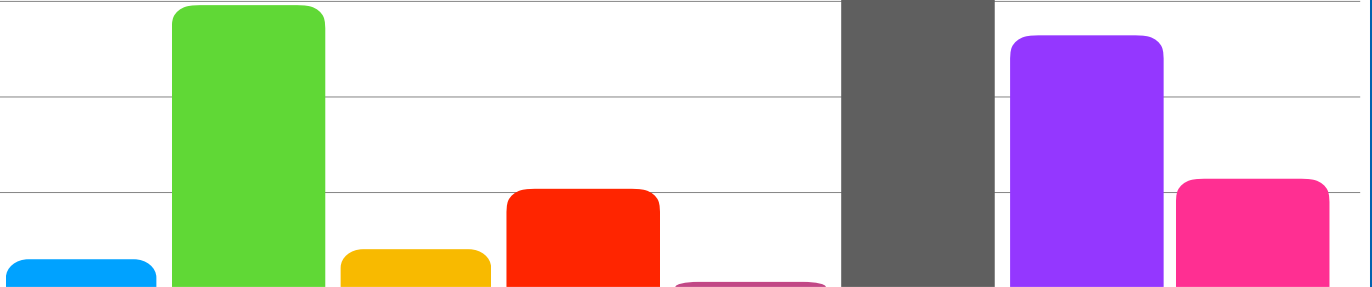
Since SETU's establishment researchers have accomplished some key achievements and funding wins that are outlined in the highlight section. Some of these include the IrelandQCI project, the GRASS Ceiling project, DDS-MAP, and our continued involvement with the EU Conexus - European University for Smart Urban and Coastal Sustainability project was officially commenced in March 2021. The European Commissioner for Cohesion and Reform, Eliza Ferreira, visited the University and researchers presented their diverse projects in September 2022. The Research Excellence Awards ceremony was held for the third year, to recognise the high quality, innovative and impactful research being conducted across the University as well as our long-standing excellence in research supervision. We also saw the continuation of our strategic UK professorship programme.

All of these accomplishments demonstrate what can be done with the support and investment in research and bode well for what will be accomplished in SETU. This report highlights just a handful of our achievements. My main objective as Acting Vice President for Research, Innovation & Impact is to ensure that our research, innovation and postgraduate research student numbers continue to grow and that we meet our maximum potential as a TU. This cannot happen without investment or our staff who possess valuable skills and competences. I would like to sincerely thank the RII unit team and the entire SETU research community for their excellence and commitment to their roles and look forward to our future collective accomplishments.

A handwritten signature in black ink, appearing to read 'T. O'Toole', with a horizontal line underneath.

Thomas O'Toole
Acting Vice President for Research, Innovation & Impact

5 FUNDED RESEARCH METRICS 01 MAY 2022 - 31 AUGUST 2023



CONTENTS

1 VICE PRESIDENT'S WELCOME

Foreword from the Acting Vice President for Research, Innovation & Impact, reflecting on the period May 2022 - August 2023.

5 PERFORMANCE METRICS

Key figures and statistics reflecting funded research activity for the period May 2022 - August 2023.

16 TECHNOLOGY GATEWAYS

An overview of our 4 Enterprise Ireland Technology Gateways that support regional and national enterprise with research and development needs.

20 SUCCESS STORIES

Highlights from the year, looking at funding successes, emerging areas of expertise, outreach activities, and international collaboration.

49 GRADUATE STUDIES

Continued development of our research postgraduate programmes, our structured PhD offering, and key metrics for the year.

57 INNOVATION & IMPACT

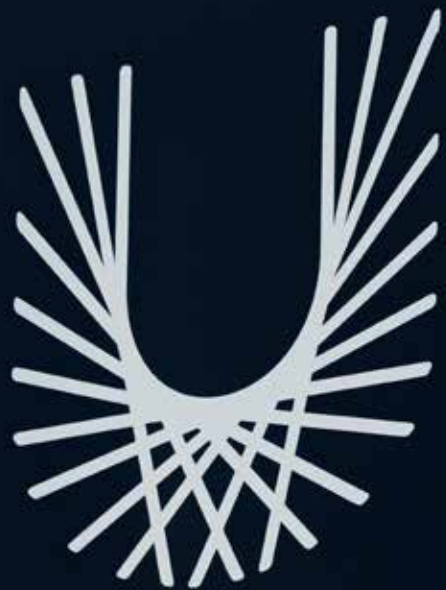
Engaging industry through Technology Transfer, ArcLabs, ERIC, and New Frontiers. How SETU Research & Innovation is helping to grow business in the south east.

63 SUPPORT SERVICES

How SETU Research engages with its community, the range of services and supports delivered, including HR Strategy 4 Researchers progress.

73 ORGANISED RESEARCH UNITS

A showcase of our active research centres and groups, looking back on the highlights of their activity from May 2022 - August 2023.



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PERFORMANCE METRICS

KEY METRICS MAY 2022 – AUGUST 2023

RESEARCH EXPENDITURE

The University continues to sustain significant support to the economy as is evidenced by its research expenditure figures. During the period 01 May 2022 - 31 August 2023, SETU's total research expenditure was €31.19M (excluding capital expenditure). This figure is made up of many components including equipment, consumables, and other items such as payments to partners. As of the end of the period, 187 staff members were either wholly or partly funded by research within the University.

Payments to partners is an expense occurring when SETU is as coordinator for a research project and is responsible for allocating payments to project partners. While research income and expenditure ebb and flow each year, the nature of the income will impact upon the research expenditure trend, e.g. leading a large international project can skew the appearance of the University's expenditure in any given year. For this period, Payments to Partners amounted to €11.32M. Core expenditure relating to research in the University exhibits a more consistent trend.

RESEARCH FUNDING

We are proud to record that the University secured new research awards of €31.85M in this period, alongside key research & support activities that echo SETU's commitment to strengthening both the region and the national landscape for indigenous industries to develop and grow with the supports of leading experts across multiple domains.

This research funding comes from a variety of national and European funding agencies, state bodies, industrial partners, and other benefactors of our research (including €2.1M awarded under the Research Fund for Institutes of Technology/ Technological Universities – RFAM and €2.03M in the form of research overheads).



Figure 1: Research expenditure 01 May 2022 - 31 August 2023



Figure 2: Research funding awards 01 May 2022 - 31 August 2023

KEY METRICS MAY 2022 – AUGUST 2023

RESEARCH FUNDING SECURED BY DIVISION

During the period 01 May 2022 - 31 August 2023, research funding acquired from competitively won research grants was shared right across the University. The funding award total per division is shown in the breakdown chart below.

Note that due to the organisational structure of the new university yet to be decided, this data has been categorised by School and Research Institute from the Waterford Campus and by CORE/Gateway from the Carlow/Wexford Campus. These divisions achieve the best collation of research funding for the University with respect to where most funded research activity both occurs and is managed. Additionally, research overheads from Enterprise Ireland projects and RFAM allocation are categorised distinctly.

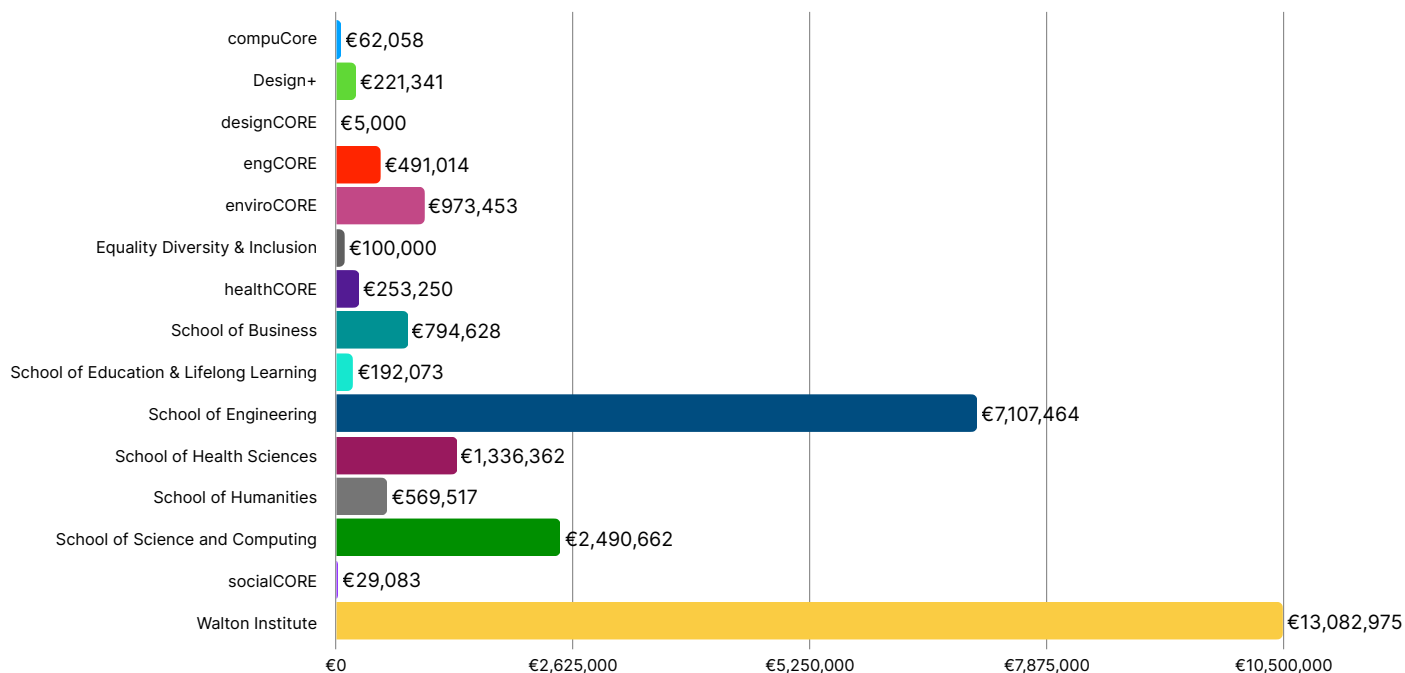


Figure 3: Research funding by division 01 May 2022 - 31 August 2023

KEY METRICS MAY 2022 – AUGUST 2023

NEW RESEARCH FUNDING AWARDS

Research funding reported for the University arises from a number of sources, including industry and philanthropy. However, the vast majority of research funding is generated from competitively won, peer-reviewed research grants from the various funding agencies, both nationally and internationally.

Each year, the process of acquiring funding through successful proposals results in a significant quantity of high-quality research grant applications submitted by researchers in the University. This process can be both demanding and time-consuming. It is testimony to the dedication and professionalism of our researchers that each year, the University submits as many high-quality applications to funding agencies as it does. In the period 01 May 2022 - 31 August 2023, more than 380 research funding applications were submitted by the researchers of the University (excluding Innovation Voucher projects), to various funding agencies both internal and external to the state. Note that the total of new awards for the period shown below is not a direct reflection of the above application count. Some applications from before the start of the period were successful during it and others submitted during the period have not yet been adjudicated upon.



NEW RESEARCH FUNDING AWARDS
BETWEEN 01 MAY 2022 - 31 AUGUST 2023*

* new research awards include PhD Scholarships sponsored by SETU
(this figure excludes Innovation Voucher projects)

KEY METRICS MAY 2022 – AUGUST 2023

RESEARCH FUNDING BY SPONSOR

The University has always maintained success in acquiring competitively won, research grant funding from an array of agencies. These sponsors comprise both industry and state/European funding agencies, in addition to philanthropic organisations. Our close relationship with industry encourages direct funding from commercial enterprise by way of funded research agreements. There is also a strong alignment to commercialisation funding from agencies such as Enterprise Ireland. This is balanced by our basic research activities conducted within European (e.g. Horizon Europe) and SFI-funded programmes.

Figure 4 provides a condensed breakdown of our sponsors for the period, with focus on the primary sources of funding for the academic year. The figure of 43% for European Commission reflects both the success of the University in acquiring funding from Europe and also the dedication of our researchers who understand the importance of participation in programmes such as Horizon Europe.

Figure 5 illustrates the breakdown of research funding secured in the period by way of 3 distinct categories: National, European/International, and Industry. All funding sources for this period have been coded to the most appropriate label for this purpose. The chart provides a clear picture of the University's reach with respect to research grant awards. All charts in this section present the value to SETU of awards with contracts signed within the period, not the financial value of monies received by the University. Research funding awards may extend beyond the end of the reporting period with stage payments still to come, these charts account for the contract values of successful applications in the period.

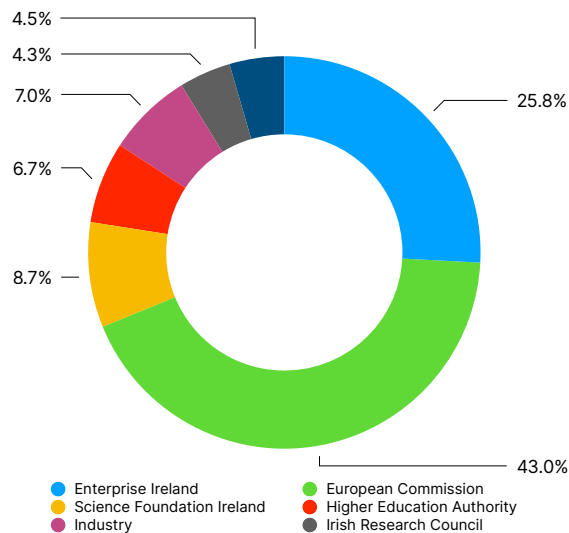


Figure 4: Research funding by sponsor

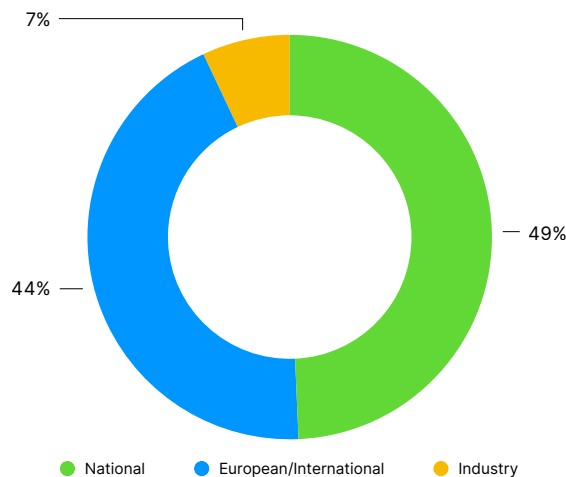


Figure 5: Research funding by sponsor classification

KEY METRICS MAY 2022 – AUGUST 2023

TECHNOLOGY TRANSFER METRICS 2022

Every calendar year, the Technology Transfer Office (TTO) reports its metrics with respect to commercialisation impact, to Knowledge Transfer Ireland (KTI). The University has agreed targets with KTI for performance in a number of key areas related to commercialisation of research outputs, such as patents, agreements with industry, licences, and spin-out companies. SETU has maintained a solid track record of meeting these agreed targets.

The Research Agreements (including Innovation Voucher Agreements), presented here, cover R&D contracts between the University and other companies within Ireland, usually within the region. They reflect both the success of the University in helping industry and also the continued confidence expressed by industry in the quality, expertise, and ability of SETU to add value to their research and development requirements.

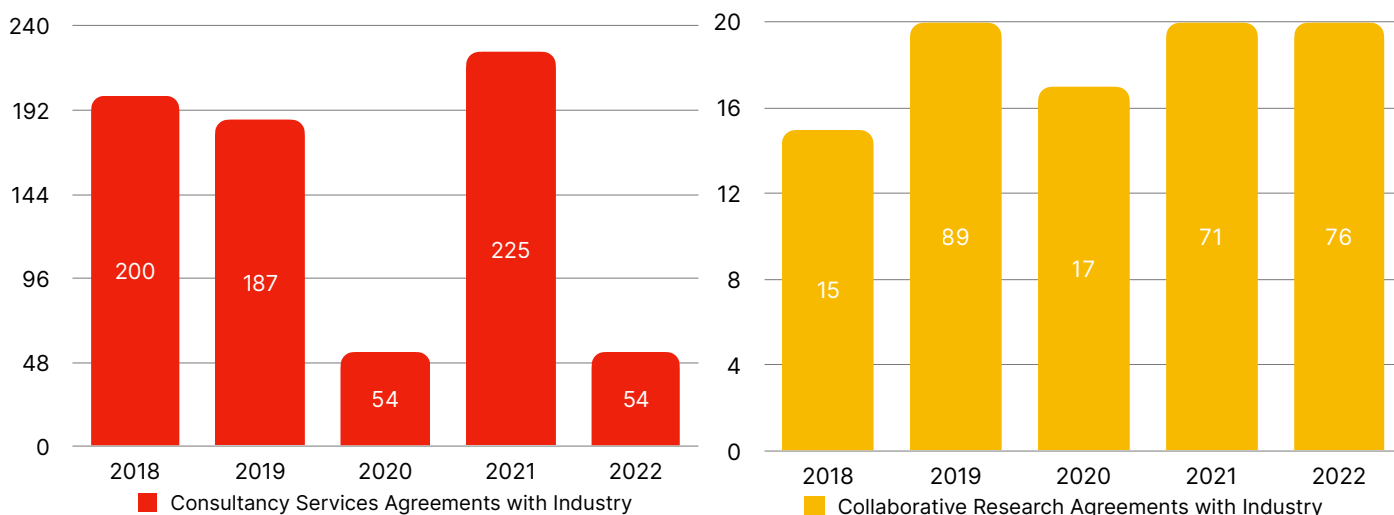


Figure 6: TTO Research Agreement metrics 2018-2022

Innovation Voucher Agreements with Industry are the contracts between the University and SMEs under the Enterprise Ireland Innovation Voucher Scheme. The COVID-19 pandemic impacted upon these agreements, with many smaller SMEs being adversely affected by the pandemic – the drop-off in numbers is apparent in Figure 7. Nonetheless, the University's sustained performance in this programme shows the continued connection of

KEY METRICS MAY 2022 – AUGUST 2023

TECHNOLOGY TRANSFER METRICS 2022

SETU with Irish industries and industry confidence in the quality of SETU's research and innovation.

In addition to contract R&D carried out by way of Innovation Partnerships, Innovation Vouchers, direct consultancy and collaborative research, the University is committed to ensuring the transfer of knowledge and technology through mechanisms such as licensing and spin-out company activity.

In line with the Knowledge Transfer Ireland targets, the University has successfully met and exceeded its targets over the lifetime of its involvement with the same, as its original constituent Institutes of Technology. The year ending December 2022 was a successful year for SETU in terms of execution of licence deals and the creation of 1 spin-out company. Figure 8 below, shows the licensing and spin-out metrics for the last 5 years of KTI-published figures.

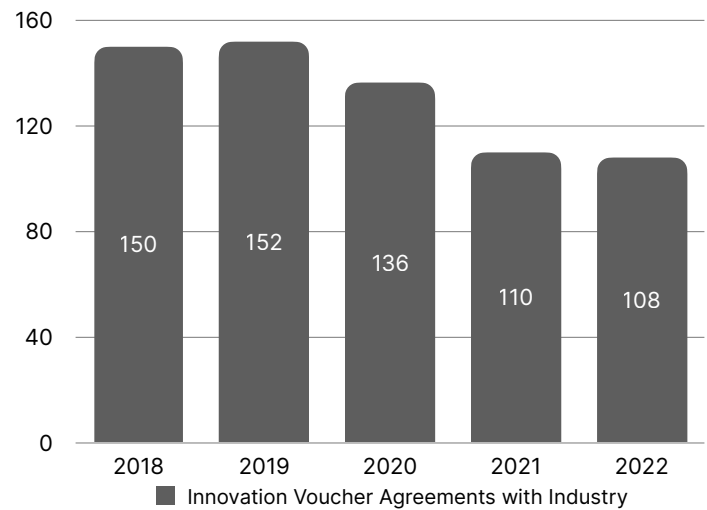


Figure 7: Innovation Voucher agreements 2018-2022

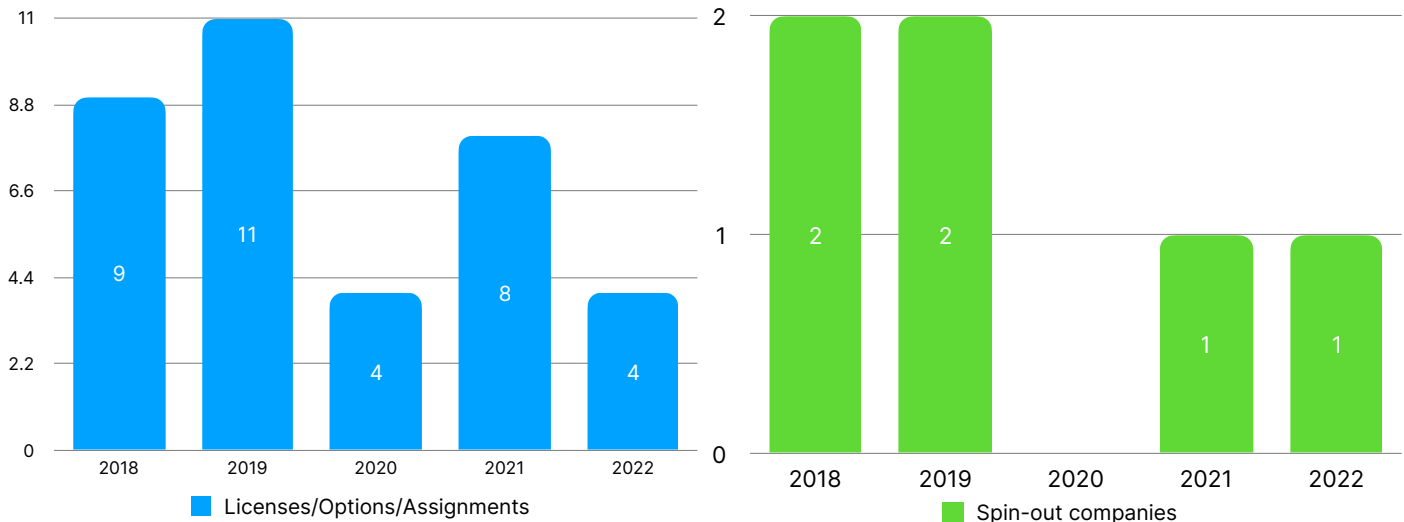
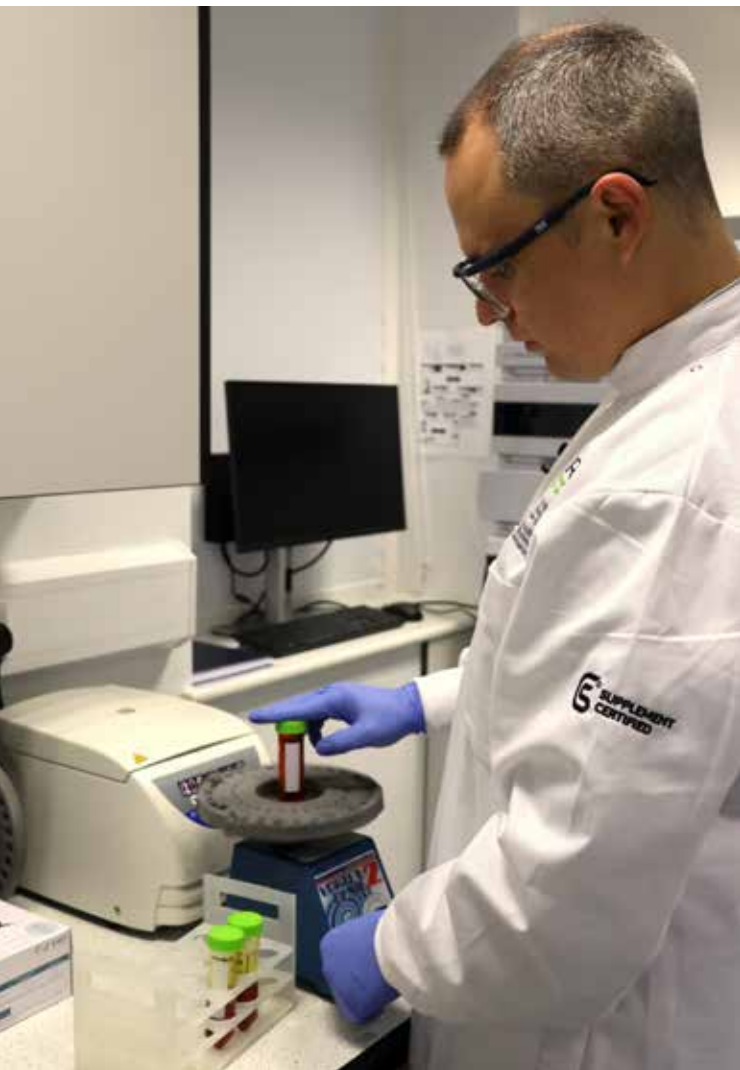


Figure 8: TTO Licensing/Spin-out metrics 2018-2022

KEY METRICS MAY 2022 – AUGUST 2023

CASE STUDY: SUPPLEMENT CERTIFIED (2022 SPINOUT COMPANY)

Supplement Certified is an independent, third-party quality assurance company created by scientists, for the people, measuring carotenoids and omega-3 fatty acids for the multi-billion-dollar supplement industry. The company is committed to setting the standard for quality in the supplement industry by helping companies attain and maintain the highest standards. The analytical team at Supplement Certified have over 25 years of experience in testing carotenoids and omega-3 fatty acids in food and dietary supplements. Their vision is that dietary supplements follow the same regulations as medicines, so that the public has confidence when purchasing these products.



Background: Supplements are used daily by millions of people with little validation of the quantitative aspects of their ingredients. While safety regulations are strictly adhered to, the amounts of the ingredients listed in the package are currently not enforced. To sell a food supplement, manufacturers only need to forward on a model of the supplement label to the food regulatory body of the country they wish to market in. This means that the amounts and stability of each ingredient listed is not demonstrated for the entire shelf life of the dietary supplement.

Solution: Supplement Certified partner with companies that aim for the best product quality, and test their products to assess whether they meet their label claim over their entire shelf life. For the first time ever, the stability of supplements aimed at eye and brain health is being tested over the course of their shelf-life. Alongside the testing protocols developed by the team, the company utilises state-of-the-art analytical systems to conduct analyses in their facilities in Waterford.

Upon spinning out, the company created a business structure that allows it to consistently enrol new customers and attract investment. Additionally, INAB has recommended Supplement Certified for ISO/IEC 17025:2017 accreditation. Upon formal recognition by INAB, the company will be internationally recognised for issuing accurate and trustworthy test reports.

KEY METRICS MAY 2022 – AUGUST 2023

The team:

- Professor John Nolan (Founder, Lead Scientific Officer)
- Dr Alfonso Prado-Cabrero (Founder, Lead Technical Officer)
- Alan Quinlan (CEO)

Motivation: The team are passionate about protecting consumers who might not be aware of the variation of quality that currently exists in the dietary supplement market. The mission of Supplement Certified is to help consumers have positive outcomes by supporting nutraceutical companies that seek to enhance human function.

Dr Prado-Cabrero said, "It is very satisfying to see how our expertise in the analysis of carotenoids and omega-3 fatty acids help distributors formulate their products and, above all, will ensure that consumers really get what the label says."

Prof Nolan says, "Our published research has already highlighted the issues surrounding commercially available supplements, and also the importance of recommending a supplement that has been independently scientifically tested in terms of efficacy and in terms of meeting its label claim. Supplement Certified is also established to assess the stability of the product over time and will work with companies to provide advice on how to meet standards and label claims, if products do fail following the detailed scientific testing."

web: www.supplementcertified.ie



**SUPPLEMENT
CERTIFIED**

KEY METRICS MAY 2022 – AUGUST 2023

TECHNOLOGY TRANSFER METRICS 2022

The final, key set of metrics with respect to Technology Transfer for the University are those of IP generation and protection. Invention Disclosures and Patents, illustrated below, are a measure of the cutting-edge and unique knowledge creation taking place within the University on an annual basis.

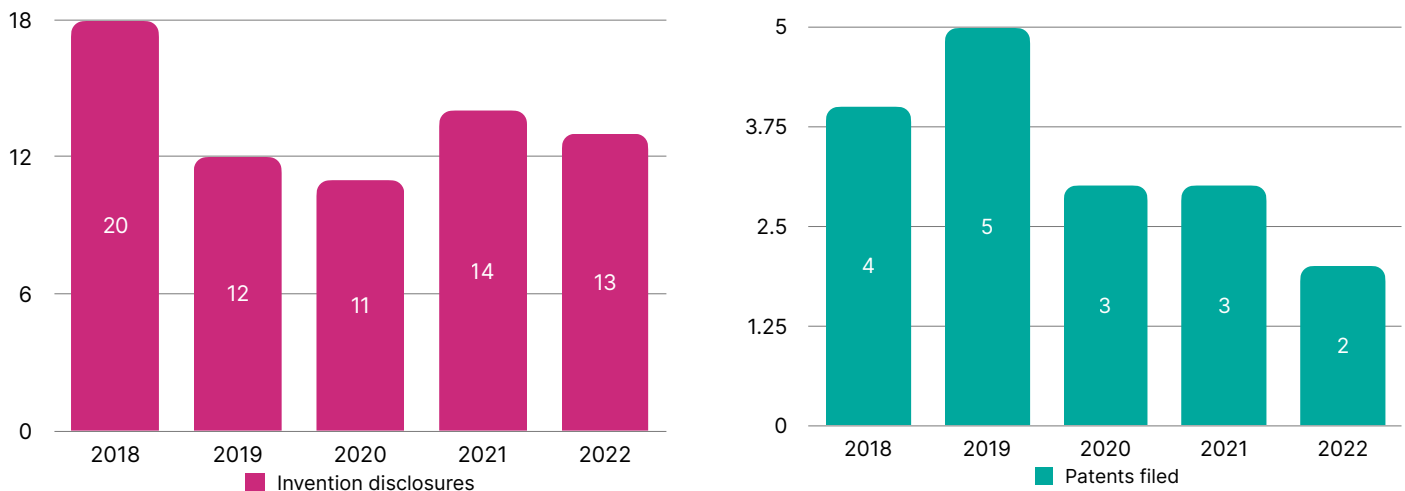


Figure 9: TTO Invention Disclosure/Patent metrics 2018-2022

Our Technology Gateways publish case studies of their work with external companies that provide insight into the work undertaken and the benefit delivered by SETU. These are available to read at:

- designplus.ie/case-studies
- pmbr.org/industry-collaboration
- seam.ie/research/case-studies
- waltoninstitute.ie/industry/case-studies

SUCCESS STORIES

ICS TECHNOLOGY GATEWAY

The ICS (Information and Communication Systems) Technology Gateway at Walton Institute, SETU, gives industry access to cutting-edge knowledge and solutions in advanced ICT software assisting companies in the transformation of an idea through to a reality.

ICS Information Communication Systems
Technology Gateway

Walton Institute has a research engagement process to support start-ups, micro-SMEs, scaling SMEs, and multi-nationals which is a proven successful formula for demand-driven, cooperative research and development. From there they can research and address a company's needs in state-of-the-art analysis, software design and development for web and mobile, for example, and architecture development through the ICS Technology Gateway with expertise in the following areas:

- Digital / Cloud Platforms, Content and Applications
- Data Analytics, Management, Security and Privacy
- Immersive Technologies (AR & VR)
- Future Networks, Communications, and Internet of Things
- Artificial Intelligence and Machine Learning

The ICS Technology Gateway provides access to state-of-the-art, industry focused R&D labs and testbeds funded by the Enterprise Capital Call. The labs serve as an interdisciplinary space where researchers and companies can collaborate with software developers and testers to realise their own ground-breaking innovations. The broad range of equipment offers a comprehensive suite of services across sectors such as healthcare, training, pharma, agri and tourism. These include:

Mixed Reality Lab offers an all-in-one space for exploring the use of interactive technologies and tools. This enables clients and collaborators to not only become familiar with the technology but also, with the aid of Walton Institute's AR/VR team, to investigate how these technologies and concepts may be used to benefit their business and research used.

The Smart Material and e-Textile Innovation Laboratory opens new collaborative opportunities for smart material and smart garment prototype concept creation.

Satellite Communications testbed aims to support sectors using high precision tracking and monitoring for autonomous vehicles and robotics in agri, automotive, geo surveying, navigation, Geographic Information System (GIS) and any location-based services.

The Quantum Security Testbed consists of multiple banking grade security systems leveraging quantum technologies that industry can utilise and manipulate to create novel identity and data protection solutions.

DESIGN+ TECHNOLOGY GATEWAY

The Design+ Technology Gateway is based at SETU's Carlow campus and provides a design-led approach to projects in the areas of business, engineering, ICT, and bioscience.



Working across multiple industry sectors, the focus of Design+ is to provide user-centred knowledge through design leadership to support innovation, competitiveness and business solutions that leads to long-term commercial viability and growth which in turn maximises return on innovation investment.

Design+ industry engagement begins with two key pillars of strategic design and product design filtering into a wide range of research engagement across multiple disciplines. It is through a design led approach that D+ contributes to the broader regional innovation capacity.

The key areas of expertise include:

- Strategic Design
- Product Design
- 3D modelling
- Sustainability
- Prototyping
- 3D Printing
- Validate and test ideas

The Gateway plays a crucial role in the successful delivery of the AMAS (Additive Manufacturing Advancing the South East) course, HCI Pillar 3. In addition to the physical resources of the Gateway, the experienced staff deliver a range of workshops and provide a platform for students to gain hands-on experience and knowledge in Additive Manufacturing.

The Design+ Technology Gateway has 16 active PIs from across compuCORE, designCORE, engCORE, enviroCORE, and healthCORE. Throughout the period of this report, the Design+ Technology Gateway completed 44 Enterprise Ireland Innovation Vouchers, in addition to the completion of 3 Innovate Programmes with Local Enterprise Offices, collaborating with over 30 companies.

Design+ recently received their Raplas PR450 HD Stereolithography 3D Printer, that was funded by the Enterprise Ireland Capital Call. This equipment complements university's existing suite of polymer additive manufacturing machines. Polymer additive manufacturing is a 3D printing technique that involves using ultraviolet laser with polymer resin to create ABS-like parts which are extremely durable. This new printer places Design+ at the forefront of research and development in Additive Manufacturing in Ireland and enables industry to leverage the expertise and innovation of those working within the Gateway.

PMBRC GATEWAY

SETU's PMBRC (Pharmaceutical & Molecular Biotechnology Research Centre) has been at the forefront of research and development both within SETU and nationally, with a list of accolades from the Pharma Industry Awards over the years. An important part of the PMBRC is the Technology Gateway which acts as a bridge between the capability within the research centre and the needs of industry. In 2023 the PMBRC was awarded a 7-year extension to its Enterprise Ireland Technology Gateway funding which will support this industry engagement activity up to the end of 2029.



PMBRC Centre Manager Dr Niall O'Reilly said, "We are delighted to receive an extension to our Technology Gateway programme funding for the next 7 years. This is a strong endorsement of our industry engagement work which we have been delivering since 2009. We are particularly proud of our support of regional SMEs such as TriviumVet, Shorla Oncology, Antech, NEG8 Carbon, and OcuDel Ltd. where we have been assisting these companies in new product development. This feeds into the overall SETU strategic goal to deepen its impact on regional society and the economy through increased high-quality research and innovation activity."

The PMBRC Technology Gateway has also been busy installing new equipment acquired through the Enterprise Ireland Technology Gateways and Technology Centres Capital Funding Programme. The Capital Funding Programme provides industry with access to critical, leading-edge equipment and infrastructure which will help them to build resilience in Industry in the south-east of Ireland and beyond. The funding will increase R&D collaboration and competitiveness for companies via access to further cutting-edge R&D equipment in Technology Gateways and Centres.

In the past year the PMBRC installed including two dynamic vapour sorption units, a near-infrared spectrometer, a differential scanning calorimeter and a sputter coater. In addition, funding for a new Nanoscale Chemical Imaging System has been secured from Science Foundation Ireland and is due to be installed in Q3 2023.

Dr Niall O'Reilly said, "This new equipment infrastructure will help to modernise our capability and allow us to take advantage of new technological developments over the past few years. The new equipment will complement our advanced materials characterisation suite at the PMBRC which includes X-ray Diffraction, Solid-State Nuclear Magnetic Resonance, Rheometry, and Electron Microscopy."

SEAM TECHNOLOGY GATEWAY

The South Eastern Applied Materials (SEAM) Research Centre is an ISO 9001:2015 accredited industry-focused applied research and development facility. It provides innovative materials engineering solutions for research and industrial partners seeking assistance on materials related issues. The unique value proposition of SEAM is that it acts as a one stop shop for industries seeking assistance on materials related issues that cannot be resolved utilising its own resources.



As in preceding years, SEAM activities have been numerous during the period 2022-2023 as the centre constantly utilises technological advances that can be applied as a catalyst to supporting innovation. It is in this context that SEAM opened a new metrology lab in Nov 2022 to meet the requirement of high precision measurement capabilities of complex parts that is increasingly being utilised in precision engineering & medical device sectors.

In Dec 2022, SEAM was also awarded over €2M in funding through the Science Foundation Ireland (SFI) Research Infrastructure call to secure a high-power, high-resolution CT scanner, the first of its kind in Ireland. The enhanced X-ray power capabilities of this new CT scanner will allow larger, denser samples to be analysed non-destructively, providing 3D imaging of the interior of product components. This system, apart from cementing SEAM as the centre of excellence for CT applications in Ireland will be a big boost both for industrial sectors and for researchers in the Advanced Manufacturing field. The tender process has been completed and the scanner is scheduled to be installed in the spring of 2024.

During the period 2022-2023, SEAM executed over 200 direct funded projects valuing over €1M for wide ranging industrial sectors and also successfully executed two Innovation partnership programme projects. SEAM also increased the client base to over 300 companies during this period.

Dr Ramesh Raghavendra, SEAM Director, delivered a keynote talk 'Sustainable Challenges facing Manufacturers & Leveraging by Additive Manufacturing' at Sustainability Conference held in Chennai, India during 01-02 December 2022.

In May 2023, SETU also signed a Memorandum of Understanding with a premier institute in India namely, Indian Institute of Technology, Chennai to collaborate in the field of advanced materials and manufacturing.

MONITORING CLIMATE CHANGE IN OUR COASTAL COMMUNITIES

STREAM is part funded by the European Regional Development Fund through the Ireland Wales Cooperation Programme with €4.3M over five years. STREAM aims to assess the impacts of climate change to establish localised management plans and ensure a sustainable future for coastal regions.

A key aspect of STREAM's achievements lies in testing prototype water quality sensors developed by South East Technological University (SETU), Munster Technological University (MTU), and Swansea University (SU). Some of these novel sensors include cutting-edge 2D printed sensors from the Welsh Centre for Printing and Coating (WCPC). SETU has designed an innovative, cost-effective instrument to detect nutrients in water bodies, which is crucial in assessing ecological health, such as constructing portable systems with optical UV spectrometers to transfer real-time water quality data to a terminal for quick analysis and action. Additionally, ongoing efforts by SETU and MTU involve developing methodologies for the detection of marine bio-toxins that can impact the sales of shellfish.

STREAM has deployed commercial sensors and weather stations at strategic locations like Waterford, Dunmore East, Dungarvan, Tramore, and Faha. Wexford County Council has actively supported the project by helping with the establishment of sensors around the coast. STREAM has also developed an online portal (marinestream.eu) that enables public access to collected data, promoting engagement with coastal communities, researchers, and governmental bodies. This interdisciplinary research and information-sharing aim to strengthen adaptation and mitigation capabilities in Ireland and Wales while increasing knowledge of climate change.

The project led by Dr Joe O'Mahony from the South East Technological University (SETU) brings together a diverse and complementary group of experts comprising physicists, electronic engineers, programmers, chemists, biologists, finance officers, and administrative personnel from SETU, MTU, Swansea University, the Welsh Centre for Printing and Coating (WCPC), and the Centre for Sustainable Aquatic Research (CSAR).

STREAM's dedicated team is committed to safeguarding the environment and helping coastal communities around the Irish Sea to adapt to climate change through cutting-edge technology and interdisciplinary collaboration.

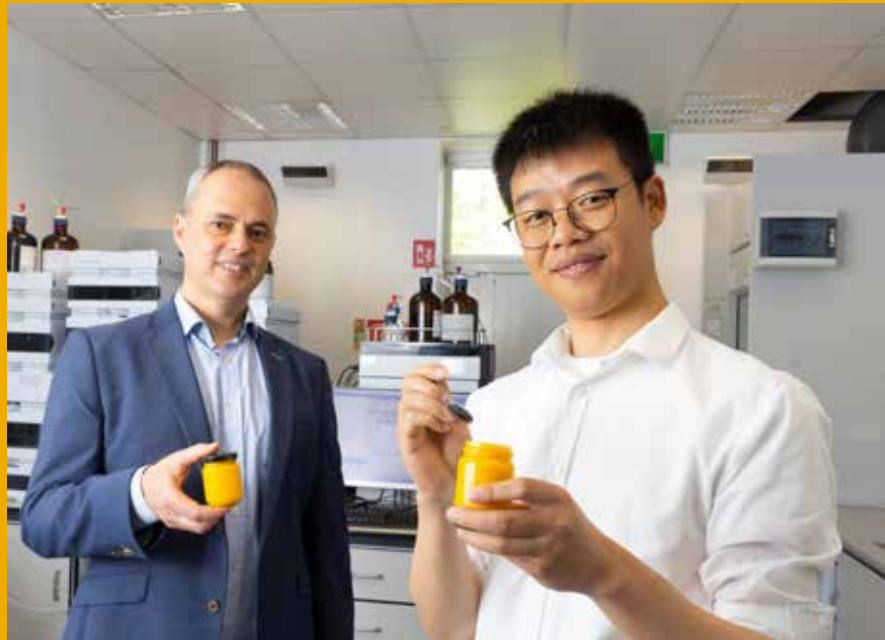


FORTIFIED YOGHURT TO COMBAT ALZHEIMER'S AND EYE DISEASE

Irish scientists are using yoghurt to make it easier for people to consume a nutrient which may help reduce the risk of both age-related macular degeneration (AMD) and Alzheimer's disease.

Lutein is an antioxidant and anti-inflammatory xanthophyll carotenoid present in leafy green vegetables and coloured fruits and found in very high amounts at the macula of the human retina (the centre part of the back of the eye) and also in the brain. While lutein is not a cure for these age-related diseases, published studies are very clear that carotenoids, including lutein, should be used in the management of these diseases.

Significantly, lutein is not made by the body and has to be sourced entirely from diet or from food supplements, and studies are showing that we are not consuming enough lutein as part of our normal diet. This is not just because kale isn't a big favourite – analysis of leafy green vegetables has shown, over the last 40 years, a drastic reduction in the amount of lutein and other carotenoids present in these foods. Capsule-based nutritional supplements can help, but not everyone is able to take them.



Researchers from the Nutrition Research Centre Ireland (NRCI) at South East Technological University (SETU), under the VistaMilk SFI Research Centre umbrella, have successfully added the new lutein formulation – called FortiXan – to yoghurt. The resulting dairy product will enable people to obtain more of the carotenoid simply and easily and will have the potential to improve human vision and cognitive function.

According to Prof John Nolan, Principal Investigator at the NRCI their research has demonstrated that lutein, along with other carotenoids, is really effective at enhancing vision across all the ages and also for patients with AMD and Alzheimer's disease. FortiXan yoghurt is a unique method of delivery that will enable these essential nutrients to reach a wider population group including children and vulnerable individuals who may experience difficulties in swallowing.

The NRCI is a multi-disciplinary research group within SETU studies the role of nutrition and lifestyle for human well-being.

FINANCE SOLUTIONS TO ADDRESS BIODIVERSITY LOSS IN IRELAND

Industry practitioners, policy makers, and academics and researchers from South East Technological University (SETU) and Queen's University Belfast came together on Friday 19 May 2023 in an important workshop to explore how sustainable finance solutions can address biodiversity loss on the island of Ireland.

Biodiversity refers to the variety of living species on Earth critically important for the provision of food, health, medicines, recreation and wellbeing. Together with nature biodiversity makes life possible with nature accounting for more than half of global GDP (European Commission 2020). The World Economic Forum Global Risks Report 2022 ranked biodiversity loss the third most severe threat to humanity in the next decade. As such, the provision of finance is crucial in achieving the ambitious goals set out in the Kunming-Montreal Global Diversity Framework and the EU's 2030 Biodiversity Strategy in helping to reset our relationship with nature.

Funded under the Irish Research Council (IRC)'s New Foundations Programme, the workshop 'Addressing Biodiversity with Sustainable Finance Solutions' was one of several fact-finding events organised by the project co-ordinators, Prof Sheila O'Donohoe, SETU's School of Business, and Dr Lisa Sheenan, Queen's University Belfast Management School.

The impressive line-up of keynote speakers for the day included Senior Ecologist Dr Una Fitzpatrick, Nature and Biodiversity Lead at KPMG, Orlaith Delargy, and SETU graduate and now Head of Client Coverage and Lending in the UK for Rabobank, Paul Doheny.

The workshop concluded with an Appreciative Inquiry exercise to capture the insights of the audience led by Dr Lisa Sheenan. Working in small groups this form of action research drew out the key themes from the workshop and devised a set of propositions which form important outputs from the event.



NEW EVIDENCE OF MESOLITHIC SETTLERS IN IRELAND AND WALES

Research from the Portalis pilot project shows Mesolithic people settled on higher terrains, such as Creadan Head, due to rising sea levels, with evidence discovered of their occupation on the surviving high ground and on lower terrain that is currently submerged by rising seas. Research also indicates that Mesolithic peoples may also have occupied terrain tens of kilometres east of the present shoreline at Creadan Head.

Late Mesolithic and Late Neolithic activity have also been established at an excavation site at Llanllyr in Wales. There are potential signals in the pollen record that point to progressively more significant human impacts on landscapes with time from the Mesolithic through the post Roman period.

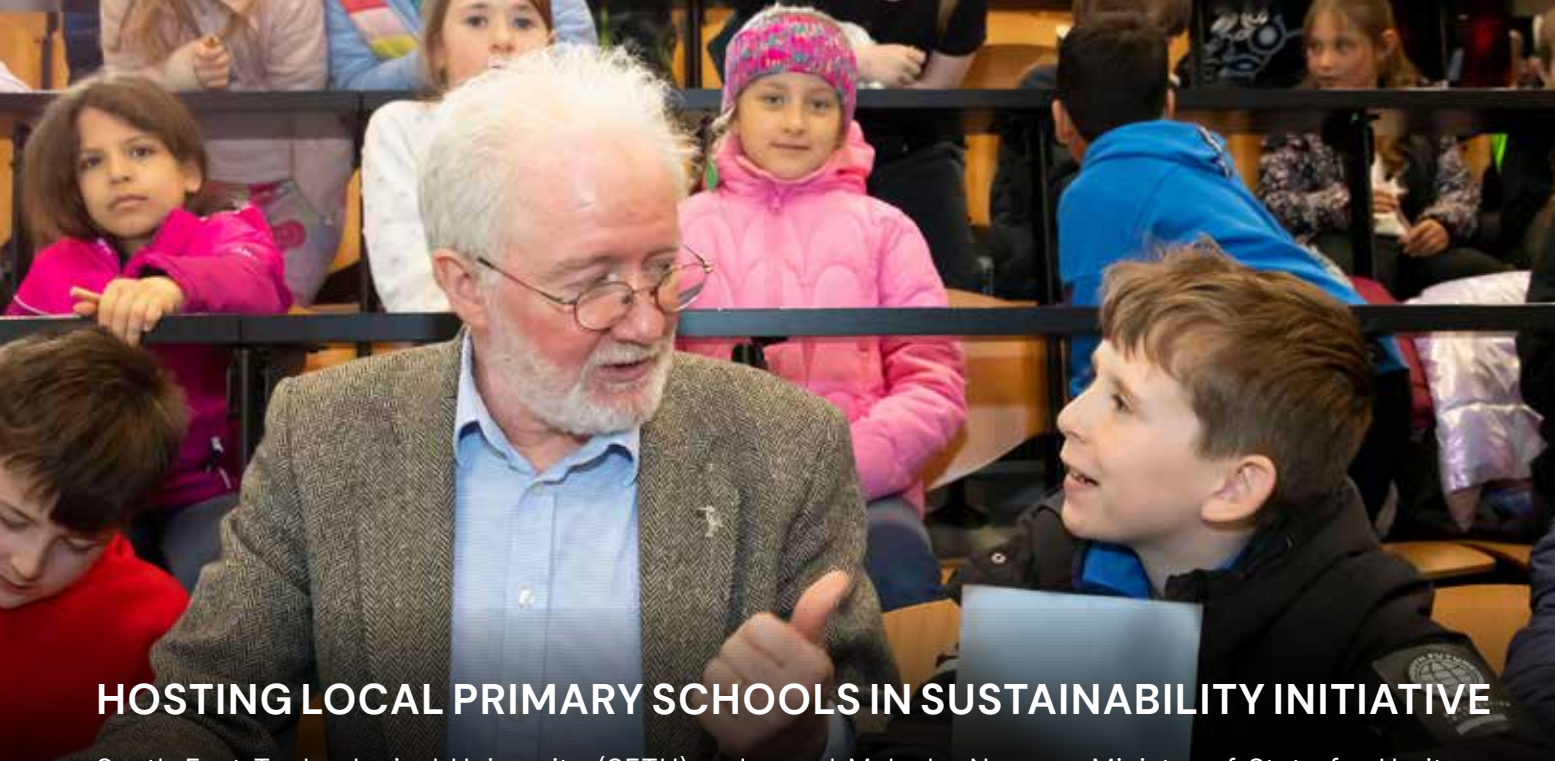
The exciting findings were presented by Portalis public archaeology team members Dr Joseph Schuldenrein and Prof Martin Bates at the project's closure event 'Ambition, Delivery & Future' at the Granville Hotel, Waterford on Thursday 13 July, 2023.

For 15 months, researchers from Ireland and Wales have been working with six coastal communities to explore the earliest connections between both countries dating back to 10,000 years ago. The Mesolithic landscape was different than that of today because the coastline was tens of kilometres further east, and the sea level six to eight meters lower. Over time the sea level advanced landward and rates of sea level rise slowed. Over the course of the Bronze and Iron Ages the shoreline had migrated to the location of present day Fornaught Strand at Creadan Head. Current wave action erodes the sands of the existing beach and exposes evidence of a society that began to organise in groups, leaving remnants of structures and activity areas which the Portalis project team has uncovered.

The Portalis transdisciplinary pilot project owes its origin to the late citizen archaeologist Noel McDonagh, the key experts McDonagh engaged with, notably Prof Peter Woodman and Prof Stanton Green, the subsequent voluntary work of the Creadan Waterford Estuary Steering Group and the great support of its local coastal communities.

"Our findings provide new resources for our six coastal communities and their visitors. The pilot has delivered the first steps in underpinning sustainable new blue and green economy growth. Telling the story of our uniquely significant new data has and will help raise awareness of and interest in protecting our coastal cultural and natural heritage in the challenging times ahead", said Joy Rooney, Portalis Senior Responsible Officer and Design Lead, Lecturer and Researcher in Design, South East Technological University (SETU).

The Portalis project, €1.95M, is supported with €1.5M funding from the European Regional Development Fund through the Ireland Wales Cooperation Programme, <http://www.irelandwales.eu> The project is led by South East Technological University, and is supported by the University of Wales Trinity Saint David, Ceredigion County Council and Waterford Chamber of Commerce.



HOSTING LOCAL PRIMARY SCHOOLS IN SUSTAINABILITY INITIATIVE

South East Technological University (SETU) welcomed Malcolm Noonan, Minister of State for Heritage and Electoral Reform and Green Party TD, to its campus in Carlow to acknowledge the work of local primary school students who took part in the Sustainable Packaging Challenge (SPac) in conjunction with the university. The SPac Challenge is an initiative funded by the Environmental Protection Agency (EPA) and coordinated by SETU's Dr Adriana Cunha Neves, Department of Applied Sciences, and Dr David Culliton, Department of Aerospace and Mechanical Engineering in Carlow. EPA funding was awarded on the basis of the potential high impact this initiative could have for education on environmental issues within the community, and the contribution it could make to SETU's research in this space.

The aim of the challenge was to encourage families to reduce their dependence on plastic packaging in their weekly shopping. Encouraging families to shop sustainably is a crucial step towards reducing our negative environmental impact. The initiative has provided an opportunity for communities to learn about the benefits and possibilities of sustainable (reduced plastic) shopping, and how making these small changes to their daily routines can have a substantial positive impact on the environment.

An invitation to participate was issued to all schools in Carlow, with twelve schools taking part. This meant that over 250 children and their families embarked on a mission to shop more sustainably, paying greater attention to the types of packaging food products were wrapped in. Of these twelve schools, two excelled in meeting their sustainable shopping goals; Carlow Educate Together and St Joseph's National School, and so they were invited to come along to SETU's campus in Carlow for a morning of fun science activities where they learned more about bioplastics and how to scientifically test them. Alongside this, the students were able to ask their own questions and provide ideas about how to solve the problem of plastic pollution during a Q&A session with Minister Noonan and SETU scientists and educators.

NEW COMMUNITY OF PRACTICE FOR TEACHERS LAUNCHED

The School of Education and Lifelong Learning hosted a three-day symposium in March 2023, in the SETU Arena in Waterford. The symposium marked the launch of the Community of Practice for teachers and professionals in education, which is one of the results achieved by the IGNITION Erasmus+ funded project.

A critical digital mindset and constant upskilling and reskilling of our digital literacy development is imperative for everyone involved in higher education including teachers, students, staff, and the external parties, professionals, and industry partners that universities collaborate with.

IGNITION is a group of international researchers who aim to enhance development of digital literacy skills in higher education for digital inclusion, collaboration, and innovation from a perspective of lifelong learning. The event featured in person presentations from IGNITION project partners: Hanze University of Applied Sciences (Hanze UAS), Bremen City University of Applied Sciences, Instituto Politécnico de Bragança, SETU; and guest keynote speakers from University of Limerick and Delft University of Technology (TU Delft).

The first day of the symposium, opened by Dr Helen Murphy, Head of SETU School of Education and Lifelong Learning, focused on sharing practice on digital transformation with presentations from Annalies Kootstra (Hanze UAS); Peter Windle, Ken McCarthy, Dr Fionnuala Brennan, Colm Dunphy, and Eamonn de Leastar from SETU; and concluded with a thought provoking presentation questioning our outlook towards Information Technology led by Prof Andreas Teufel and colleagues from Bremen City University of Applied Sciences.

Challenge based learning was the theme of the second day with engaging and interactive presentations sharing international perspectives from Dr Roisin Lyons (University of Limerick); Dr Renate G. Klaassen (TU Delft); Dr Madelon van Oostrom and Dr Nejla Karabulut (Hanze UAS); and Dr Inês Barbedo, Dr Cláudia S. Costa, and Bárbara Barroso (Instituto Politécnico de Bragança).

There was enthusiastic participation and engagement on day three in the game-based digital competencies workshop facilitated by Eugene Shenderov, Marjan De Jonge (Hanze UAS) and colleagues from IGNITION project partners. Neill Wylie and SETU colleagues working on the project – Laura Widger, Dr Valerie Brett, Dr Helen Murphy and Rebecca Sheridan – spoke of the development and next steps in the IGNITION transnational Community of Practice for teachers and professionals in education.



SETU DESIGN+ GATEWAY RECEIVES STATE OF THE ART 3D PRINTER

Design+ Technology Gateway announced the arrival of a new stereolithography 3D printer, the Raplas PR450 HD, funded by Enterprise Ireland, complements the university's existing suite of polymer additive manufacturing machines. Polymer additive manufacturing is a 3D printing technique that involves using ultraviolet laser with polymer resin to create ABS-like parts which are extremely durable.

Through funding from the Enterprise Ireland Capital Call, Design+ plays a key role in the positive impact that this programme has on Irish businesses. The funding enables accelerated research and development efforts, allowing the technology gateway to offer greater innovative support to Irish companies. Additionally, the Capital Call programme provides access to invaluable support services which allow Design+ to further accelerate growth for businesses. The addition of a 3D printer of this calibre will bolster Design+'s offering that will provide numerous benefits to partnered businesses.



The Design+ team works together with businesses to analyse product portfolios, production lines, and supply chains to identify where 3D printing could be most beneficial. Based on this analysis, the team can develop a strategy for integrating additive manufacturing into a business' operations; identifying the most suitable equipment and materials, and creating a plan for integrating 3D printing into a company's existing processes.

Billy House, Business Development Engineer for Design+ Gateway commented, "The future has arrived with the introduction of our Raplas PR450. No longer a horizon technology, this large format stereolithography 3D printer fits in nicely with our existing suite of additive manufacturing machines and allows us to take our research and development offering to another level."

The Raplas PR450 offers exceptional precision and can produce high-quality 3D prints. It is also versatile and efficient, capable of producing both small and intricate designs at a faster rate than traditional manufacturing methods. This lends itself to reduced lead times and production costs; and improved productivity. Additionally, the printer's customisation capabilities allow businesses to tailor products to customer needs, thus improving customer satisfaction. Its prints can be used in a variety of industries; such as automotive, aerospace, healthcare, and consumer goods.

At Design+ Technology Gateway, the goal is to help businesses to leverage their capabilities to drive innovation, streamline processes, and achieve greater success in the marketplace.

CELEBRATING 3 YEARS OF OCULAR THERAPEUTICS RESEARCH

In March 2023 the ORBITAL project, a European innovative training network, coordinated by the Ocular Therapeutics Research Group of the PMBRC in the South East Technological University (SETU), brought together a cohort of academic and industry representatives to celebrate three years of ocular therapeutics research.

The ORBITAL project, which was granted over €4M in 2019, seeks to develop novel treatment options for people suffering from age related ocular diseases, including diabetic retinopathy and age related macular degeneration.



The conference spanned three days, with members from 11 countries traveling to the sunny south east to share the latest research in ocular drug delivery technology and to build further relationships with pharmaceutical industry members in the local area.

"The purpose of this conference was two-fold. First, it was to celebrate the incredible work of our research cohort, the students and their successes. Second, it was to showcase Waterford and SETU as global leaders in access to pharmaceutical industry partners, like Bausch+Lomb, TEVA, and Sanofi, among others", said Tess Ames (Project Manager).

Added Dr Laurence Fitzhenry, Project Coordinator: "There is no better place than Waterford to host such an event, as our long standing global and local relationships have established this region and city as leaders in this area."

In addition, the ORBITAL project also hosted a Marie Skłodowska-Curie Actions (MSCA) Open Day. This included various presentations on funding schemes within Horizon Europe and the MSCAs, giving researchers of all levels training on subjects such as: how to find funding sources; what makes a successful application; and how to manage projects once they are successfully funded.

This event was funded in part by the Growth Hub at SETU. Housed in the School of Business in Waterford and led by Dr Margaret Tynan, Growth Hub aims to motivate, support and develop student entrepreneurial potential. Growth Hub facilitates a range of entrepreneurial activities such as student mentoring, guest speaker talks, and interactive workshops while also supporting entrepreneurial projects through a range of entrepreneurship education bursaries. Growth Hub is a HCI, pillar 3 funded collaborative project between TU Dublin and SETU in Waterford, which commenced in 2021 with funding for 4 years.

Overall, 160 people attended the various events across the three days, hosted at SETU, WorkLab, Mount Congreve, and online.



PMBRC LAUNCHES GREENER LAB BOOKLET

Researchers at the Pharmaceutical and Molecular Biotechnology Research Centre (PMBRC) have developed a Greener Lab booklet as a guide for implementing more sustainable practices in laboratories. The booklet launched on 18 April 2023, in advance of Earth Day, was developed as part of the ongoing PMBRC My Green Lab accreditation programme. It aims to inspire and support research teams, researchers, and technical staff within South East Technological University (SETU) and at other research institutions to adopt greener and more sustainable practices and culture within their laboratories. The PMBRC Green Lab multi-disciplinary implementation team is a collaboration of academics, technical officers, postdoctoral researchers, and postgraduate students based at SETU in Waterford. The group were supported by SETU Estates Office in Waterford, and the Working Energy Advisory Group (WEAG).

The team tackled four main pillars for lab sustainability: energy, water, waste, and green chemistry/biology which are outlined in the booklet. The team hopes to contribute to a greener future by improving practices within their Centre and encouraging more sustainable practices across all laboratories at SETU. They hope that by sharing this resource, others will be able to implement manageable changes within their laboratories. This is an ongoing and evolving project which aims for continuous improvement.

The team were delighted to present the booklet to the Minister for Further and Higher Education, Research Innovation and Science, Simon Harris and regional TDs at their visit to SETU and the PMBRC in March 2023. The Greener Lab Booklet is available on the PMBRC website as a tool for all laboratory users within academic and industry settings.

DIGITALLY ADVANCING EU HEALTHCARE

SETU is leading a European project that aims to revolutionise healthcare training and development in the European Union.

Funded by EU4Health, Dynamic Digital Resilience for Medical and Allied Professions in Health Services (DDS-MAP) brings together 15 European partners consisting of Higher Education Institutions (medical, nursing, education, and digital technology), NGOs, health authorities, and health insurers to develop new training for health care professionals, helping them acquire and master new and emerging digital technologies, and manage the associated challenges.



The EU4Health programme aims to improve and foster health in the EU, strengthen health systems and pave the way for a stronger, healthier and more resilient Health Union. The DDS-MAP project will embed awareness, knowledge and self-reflection about their engagement and use of digital technologies in both the learning and professional practice of health care professionals. DDS-MAP will conduct a survey of digital competencies across the EU, assessing the training needs and capabilities of health care professionals to inform the development and delivery of a bespoke training portfolio. This will consist of three generic modules that can be adapted to the needs of the multiple disciplines within the health workforce, and a fourth module focused on resilience and wellbeing. This is the first time such an extensive assessment has been undertaken.

Prof John Wells, Dean of SETU School of Health Sciences in Waterford and project leader explained the importance of this work, "DDS-MAP recognises that health services are increasingly dependent on digital technologies to deliver both high end and day to day care and services. These technologies are constantly changing and expanding within the health care space and such pace of change, we know, often causes the health care workforce considerable anxiety.

In addition, in a more destabilised world, health care digital infrastructure is often targeted by international gangs and malign state actors causing enormous disruption to services. DDS-MAP, informed by and supporting the European Pact for Skills, aims to address these challenges by equipping the health workforce with knowledge and a skill set that will give them confidence in adapting to rapid technological change and in managing the consequences of digital disruption to services when these occur."

In addition to the implementation of a pan European survey, DDS-MAP has two other unique features. It will employ micro-credentialing to assess and reward skills development in the clinical setting. It will also use Augmented Reality (AR) and Virtual Reality (VR) as key teaching and assessment technologies. These AR and VR tools will be developed by the Mixed Reality team based at Walton Institute, the internationally recognised ICT research Institute of SETU.

DDS-MAP has been awarded funding of over €2.4M under the EU4Health scheme. The DDS-MAP project commenced on 1 March 2023 and will continue until September 2025.



BOOSTING WOMEN-LED INNOVATION IN FARMING AND RURAL AREAS

South East Technological University is leading a new European project (GRASS Ceiling) that aims to empower rural women and increase the number of socio-ecological innovations led by women in agriculture, the rural economy and rural communities.

This €2.8M EU-funded project under the Horizon Europe programme, brings together 25 partners from across Europe to develop a forum where women can develop innovations in response to socio-ecological challenges and strengthen the resilience of rural areas. This is essential to deliver the UN's goals on gender parity, realise the EU gender equality strategy, and achieve the goals of the Green Deal, the Farm to Fork strategy, the Long-Term Vision for Rural Areas, and the European Pillar of Social Rights.

To achieve this the project will establish 9 living labs for rural women innovators in Ireland, Croatia, Italy, Lithuania, Netherlands, Norway, Scotland, Spain, and Sweden. Each living lab will train between six and eight women and establish a network-learning and innovation system that will support women innovators, strengthen and measure their innovative identity, and transform gender norms and stereotypes by sharing and capturing insights on rural women-innovator policy and practical experience. Researchers will analyse the current position of women regarding megatrends in European agriculture and rural areas, understand the drivers and enablers for women-led innovations, the barriers encountered, and supports needed at Member State and EU level.

Women innovators from a rural or farming organisation will co-lead each lab, with Macra na Feirme joining the project in Ireland. Macra na Feirme is a voluntary organisation representing 10,000 young people from rural Ireland, supporting the social, economic, cultural, personal development and well-being of young people who have a rural connection, including young farmers. GRASS Ceiling's partners also include high-level European bodies and stakeholders who can truly influence EU policy.

DIGITAL TOOL DEVELOPMENT TO HELP IRELAND'S UNEMPLOYED

The PEStech cross-campus project team led by Dr Ray Griffin, in collaboration with Dr P.J. White, Dr Órla Hayes, Dr Brian Casey, and Dr Aisling Tuite was one of the first teams to secure funding under the prestigious Science Foundation Ireland National Challenge Fund – a competition to find solutions to major environmental and societal issues.

The National Challenge Fund is a €65M research fund that provides researchers the chance to make a difference by developing solutions to eight key challenges in the areas of Green Transition and Digital Transformation. As part of the Future Digital Challenge, the PEStech project aims to build digital tools for Irish unemployed people and the organisations that help them to see personalised labour market data, and in doing so improve the quality of decisions and career choices.

The research team have been studying the experience of unemployment since 2012. This project builds on basic research supported by the Irish Research Council and grows directly from an EU Horizon 2020 project which developed a library of advanced statistical techniques (AI and algorithms) to re-purpose Central Statistics Office and Eurostat labour market data made for economists and policy makers, to make the labour market visible to public employment service councillors.

PEStech aspires to progress that work using novel visualisation and User Experience Design to make the complex data constructs in that library intuitive and engaging to the Irish public and unemployed people, presenting data to citizens in a useful and meaningful format. In this way, PEStech will support people to make more evidence-informed career and job-search choices.

The team's work on the existing library indicates this data can have a positive and transformative effect on individual lives. The team is working collaboratively with CareersPortal.ie, an organisation with a strong understanding of the challenge of providing digital career advice, as industry champions.

The PEStech project is built on strong integration, alignment and collaboration with government departments, agencies, enterprise and the academic community. Such collaboration will, through the challenge ethos work towards building policies and procedures developed from the research conducted at SETU and other higher education institutions.

This important funding win shows that SETU is at the forefront of solution-based, practical application of research that is of benefit to Ireland's present and future. The links built with government through Science Foundation Ireland are vital going forward as research is continually looked toward to answer societally defining problems. The National Challenge Fund was established under the government's National Recovery and Resilience Plan (NRRP), funded by the EU's Recovery and Resilience Facility. The fund is coordinated and administered by Science Foundation Ireland.



QUANTUM TECHNOLOGY EXPERTS GATHER IN WATERFORD

Technology specialists from Irish and European universities came together with industry leaders and organisations for their first face to face meeting, Monday, April 24 2023, to pool their expertise and resources to significantly improve the security and efficiency of everything from medical devices to phones to the internet of things.

The project team on the €10M Ireland Quantum Communications Infrastructure (QCI) programme, jointly funded by the Department of the Environment, Climate and Communications and the EU, will trial 16 quantum security technology scenarios with key stakeholders across our public, industry and academic sectors over the next two years as part of the Irish tranche of the EU-wide EuroQCI programme.

Quantum Technologies are based on the applications of quantum theory and they are also set to add an extra security layer to our communications infrastructure and the data it transmits and prevent it from hacks. The IrelandQCI and colleagues from other QCI teams across Europe attended the first meeting, along with key representatives from Science Foundation Ireland (SFI), IDA Ireland, Enterprise Ireland, HEAnet, ICHEC, ESB Telecoms and more. Their agenda included the project coordination and communication as well as coexistence, security, packaging use cases and more.

The IrelandQCI team will create an innovative quantum technology ecosystem in Ireland where they can develop and test devices in the quantum network. They plan to educate key stakeholders and the general public about the importance and relevance of quantum technology to our everyday lives and build the quantum workforce in Ireland to future-proof our networks through a series of lectures, training, workshops and visits to quantum technology laboratories.

The ultimate aim of Ireland QCI is to ensure our communications infrastructure is secure and future-proofed against the rising threat of cyber-attacks similar to the HSE hack that crippled and showcased the vulnerability of trusted systems.

Walton Institute in South East Technological University (SETU) is leading the €10M IrelandQCI project, on behalf of SFI CONNECT, within the EU-wide Quantum Communications Infrastructure (EuroQCI) programme. The other key partners include specialists in quantum technologies in Trinity College Dublin and University College Cork's Tyndall National Institute, with support from University College Dublin (UCD) and Maynooth University (MU). All are member institutions of SFI CONNECT. Other participants in IrelandQCI include the Irish Centre for High-End Computing (University of Galway), as well as HEAnet and ESB Telecoms.

IrelandQCI, the 'Building a National Quantum Communication Infrastructure for Ireland' project incorporates integrating innovative and secure quantum devices and systems into conventional communication infrastructures. They will do this by enhancing ESB Telecoms' optical fibre network with an additional layer of security, all based on quantum physics, in particular quantum key distribution (QKD).

IrelandQCI Project Lead and SFI CONNECT PI, Dr Deirdre Kilbane, Director of Research at Walton Institute, said having the key partners and industry leaders in one room to brainstorm and network is crucial and looks forward to a very productive two plus years ahead.

The IrelandQCI team will establish Quantum Key Distribution (QKD) infrastructure along a major network backbone from Dublin to Cork via Waterford using a quantum channel integrated with existing classical fibre systems. QKD is a secure communication method for exchanging encryption keys known between shared parties alone. The communication method uses properties of quantum physics to exchange cryptographic keys in such a way that is provable and guarantees security.



The 30-month-long project is timely as the security of current encryption technologies relies on computational hardness assumptions - assumptions about how hard it would be to decrypt messages without a key. In the future, advances in quantum computing, combined with ever more sophisticated attacks from different sources, could put at risk the security of the telecom and data communication networks we rely on across healthcare, government agencies, banking, the transport industry, commerce and more.

The Irish project is one of several across the EU which sees the European Commission working with 27 Member States as well as the European Space Agency towards the deployment of a secure quantum communication infrastructure spanning the EU.

SEA-BASED TEST MISSIONS FOR EU-CONEXUS STUDENTS IN SPAIN

A team of engineering, computing, and science students from the SETU Applied Robotics Lab and IMEDMAR UCV Spain, have successfully carried out two days of trial missions in Calpe, on the Mediterranean coast.

During the two days of trials in IMEDMAR Calpe Spain, the students tested the autonomous deployment of payloads for marine based environment research and protection. Example payloads include sensors pods to measure temperature and pH levels.

They successfully trialed the Unmanned Surface Vessel USV-LIR and an associated submersible in sea-based missions off the coast. The USV-LIR is a drone boat, designed, built and tested over the last two years by an interdisciplinary team of students, studying in SETU, on courses from the School of Science and Computing and School of Engineering.

Professors Jose Tena and Rafael Garcia and the team from IMEDMAR, UCV are carrying out research for the protection and restoration of Pinna nonbilis populations, a large species of Mediterranean clam. The research is being carried out as a response to the catastrophic pandemic started in 2016, which caused a mortality of around 99% of the population in Spain. The two professors are leading experts in endangered marine species in the Mediterranean area. The work is being carried out with the contribution of the LIFE programme, the European Union's Financial instrument supporting environmental, nature conservation and climate action projects.

In the framework of the Research for society project of EU-CONEXUS, Prof Tena and Prof Garcia have collaborated with SETU Lecturer Jason Berry under the SETU Research Connexions support scheme and the student lead, USV LIR project group in SETU, and the Applied Robotics Lab, to investigate applications and the suitability of marine robotics for autonomous based missions.

According to Mr Berry, lead engineer in SETU's Applied Robotics Lab, without support, this learning would not be possible. Special thanks go to SETU Schools of Engineering, Science and Computing, SETU Research Connexions support scheme, EU-CONEXUS, STREAM, CALMAST and SETU Educational Services, he said.



€2M FUNDING TO HELP IRISH INDUSTRY QUALITY CHALLENGES

The South Eastern Applied Materials (SEAM) research centre at SETU has been awarded over €2M in funding through the Science Foundation Ireland (SFI) Research Infrastructure Fund to secure an exclusive high-power, high-resolution CT scanner, the first of its kind in Ireland, in a major boost to Irish industry.

The X-ray Microcomputed Tomography (XMT) scanner provides non-destructive 3D imaging of the interior of products and components. The enhanced x-ray power capabilities of the new system – up to 450 kilovolts – will allow larger denser samples to be analysed in Ireland, when previously such analysis had to be conducted abroad.

This new equipment will be a significant addition to SETU as it will cement SEAM as the centre of excellence for X-ray Tomography applications in Ireland, resolving current unmet analysis and inspection needs of various user groups, both industrial and academic.

For industry, the XMT scanner can be used to address a wide range of quality challenges such as tolerance issues, component warpage, assembly problems, failure analysis, weld inspection, porosity analysis, reverse engineering and more.

Minister for Further and Higher Education, Research, Innovation and Science, Simon Harris, TD, recently announced a €53.3M investment in 33 research infrastructure projects through this SFI programme, and SEAM was delighted to be one of the successful projects.

SEAM is an ISO 9001:2015 accredited industry-focused applied research and development facility. It provides innovative materials engineering solutions for research and industrial partners seeking assistance on materials related issues that cannot be solved.

SEAM holds an impeccable track record of executing over 3800 direct funded industry projects since its launch in 2009. SEAM's unique strength lies in its ability to anticipate, understand, and respond quickly and professionally to industry needs by providing competitive customised solutions.



IRC GOVERNMENT OF IRELAND POSTDOCTORAL FELLOWSHIP

South East Technological University is proud to announce Dr Tognisse Anique Godjo as the first SETU researcher to be awarded a Government of Ireland Postdoctoral Fellowship under the Irish Research Council's Government of Ireland programme.

Development of the nematode *Steinernema feltiae* as a sentinel organism for heavy metal toxicity with international accreditation is the title of Dr Godjo's postdoctoral research project supervised by Dr Thomaé Kakouli-Duarte, Director of enviroCORE, and Dr John Byrne, Department of Applied Science in Carlow.

Hexavalent chromium (Cr VI) is a human respiratory tract irritant and is known to cause lung, nose and nasal sinuses cancers. This element is ubiquitous in soils and can also occur as a result of human industrial practices. In Ireland, it occurs naturally in agricultural soils.

Remediation or mitigation of the effects of a particular heavy metal in a contaminated area, start with the detection of Cr VI in the contaminated substrate and the associated risk assessment. This research will provide essential information on the effects of Cr VI on key indicator soil organisms and develop valuable tools for assessing the corresponding risk.

Dr Godjo was one of just 77 awarded this competitive fellowship in 2022.

Dr Godjo completed her first degree in agricultural engineering (BSc, Hons) at the University of Parakou, Republic of Benin in 2007. After working in the private sector, she decided to further her studies and moved to Belgium where she completed a Master of Science in Nematology (2011-2013) followed by a doctoral degree (PhD) in Biology (2013-2018) at Ghent University, focusing on fruit fly management in mango cultivations using entomopathogenic nematodes.

Subsequently, she was engaged in several Economic Community of West African States (ECOWAS), European Union, and Agence Française de Développement (AFD) funded projects at her home institution which involved her performing research work on nematodes and other plant pathogens on diverse tropical crops. Several undergraduate and post graduate students were involved in these projects and performed research work under her direct supervision.



AGRISNAP APP HELPING TO SMOOTH CAP PAYMENTS

AgriSnap, developed by Walton Institute with Horizon 2020 funding, was co-designed with key stakeholders including farmers, agri advisors, and departmental staff. The precision photo app allows farmers to instantly send land parcel pictures and information to the grant payments body. This app aims reduce the need for stressful on-farm inspections, to facilitate payments under the new Integrated Administrative Control System (IACS) for administering CAP grants, and to help make the resolution of claim queries more seamless.

CAP accounts for just over 30% of the EU budget and farmer supports worth €60bn per annum. Direct Payments account for two thirds of this. These payments are linked to eligible hectares, valid agricultural activity, compliance with several environmental and management requirements and more. With over 6.2 million beneficiaries annually, technology to support timely and effective administration and validation is key.

As part of the Irish consortium working with the Department of Agriculture, Food & the Marine (DAFM) and Teagasc, Walton Institute developed the AgriSnap hybrid application which is available on the Google Play and Apple iOS stores. The application allows European Paying Agencies such as DAFM to send photo requests to end users, farmers, and their advisors. The user can return images to the Paying Agency with each image being tagged with key information including geolocation, timestamp, and device information.

The AgriSnap innovation is all part of the wider New IACS Vision in Action (NIVA) project led by Wageningen University & Research in the Netherlands. The international consortium includes 27 project partners, including 9 Member State Paying Agencies all working together to develop and implement technologies that will deliver a more seamless administrative control of CAP.

NIVA also aims to facilitate data and information flows to support sustainability, competitiveness, efficiency and transparency, thereby improving agricultural performance monitoring and reducing administrative burdens for farmers, paying agencies and other stakeholders.

The device location is tracked through high accuracy GPS data with Augmented Reality helping functionality, to make this a user-friendly app. As part of its development the AgriSnap app has already been tried and tested across a number of Irish schemes in 2021 and 2022 successfully demonstrating its security and ease-of-use. It has also allowed DAFM to streamline the payment processing with the schemes involved.

Teagasc championed comprehensive collaboration and co-creation with key stakeholders which included socio-economic research involving 18 key interviews, seven farmer focus groups throughout Ireland and four workshops as well as similar workshops throughout Europe. Surveys have indicated very positive attitudes to AgriSnap and also revealed useful insights which have led to further improvements.



EXPLORING OPPORTUNITIES FOR PILGRIMAGE IN THE SOUTH EAST

Liz Murray, a second-year doctoral student, is one of a number of postgraduate students at South East Technological University (SETU) to be awarded the Irish Research Council's Government of Ireland Postgraduate Scholarship 2022.

'More than Rucksack and Hiking Boots: An Investigation of Spiritual Practices which can enrich the Experience of Pilgrims walking Pilgrimage Routes in the South East of Ireland' is the title of Liz Murray's research project, supervised by Dr Bernadette Flanagan and Dr Joseph Collins from the SETU School of Humanities.

To engage more effectively with the growing global pilgrim market, Murray has set her sights on the opportunities for local pilgrimage. Waterford, Wexford, Carlow and Kilkenny have a rich spiritual heritage, ideally suited for further development of one-day pilgrim routes. By involving local, returned Camino de Santiago pilgrims as co-researchers, she explores the extent to which new and more innovative and attractive types of pilgrim routes, enhanced by a wide menu of spiritual activities, supports and services, could attract participants from the global pilgrim tourism market. The results will contribute to the local economy of the south east and enhance the region's spiritual capital.

The findings from Murray's research study will be tested by dialoguing with the international community of pilgrimage studies. This project will kick-start an ongoing circular, ever-expanding pathway tochar or network of pathways from the south east of Ireland, mirroring the international travels of Irish monks in early medieval Ireland and creating a research 'Camino' with signposts for future researchers. Tourism networks built during the study will be expanded through international linkages. Local businesses will benefit from visiting pilgrims needing food, accommodation, and guides, while other heritage and leisure attractions will also benefit from the increased activity.



DIGITAL TECHNOLOGY IMPACT ON GAELTACHT BUSINESSES

Nadia Blanchfield is one of five researchers from SETU to have been awarded funding to pursue research projects under the Irish Research Council (IRC) Enterprise Partnership Schemes. Bridging Peripheral Business Communities through Native Culture Engagement Leveraging Digital Technologies is the title of Nadia's project in collaboration with enterprise partner Údarás na Gaeltachta.

National and European development plans regularly refer to the access and use of technology as a catalyst for sustainable rural development. However, the role of technology in rural indigenous business communities is poorly understood. To date, rural communities and surrounding businesses had limited access to technology-enabled capability development. Native Irish speakers encounter an additional challenge as technology specialists may not have proficiency in their native tongue, lowering the potential for optimum technology transfer. Despite these challenges, technology has the ability to bridge the native culture gap and cultivate social ties within and beyond the community.

Nadia's research aims to explore the impact of digital technology capability development on Gaeltacht business communities' cultural ties. The project will examine the advantages and disadvantages of the Irish language to local businesses, opportunities to grow everyday use of the Irish language, and ways to help those businesses expand beyond their Gaeltacht borders and compete at a wider level.

As a graduate from the Bachelor of Business (Hons) with Irish in Waterford, and a fluent Irish speaker, this research project allows Nadia to pursue her passion for her native language and business studies. Nadia commenced her research project at SETU School of Business under the supervision of Prof Felicity Kelliher, Department of Management and Organisation, Dr Eugene Crehan, Director of Programmes, Centre for Enterprise Development and Regional Economy (CEDRE), and Dr Seamus Dillon, Head of Department of Humanities.

This is an action research project that will embed Nadia, the researcher, as an intern in Údarás na Gaeltachta, CEDRE, and RIKON, the hybrid centre of innovation in Business Technology Management at SETU. Nadia will work with the teams to develop and implement a pilot technology-enabled capability development program in liaison with business owners in Gaeltacht na nDéise including An Rinn and An Seanphobal. It is hoped findings of the project will advance dynamic capabilities theory and rural business practice, a core objective of Project Ireland 2040.



SETU 'RELEVANCE' CONFERENCE FOR THE IRISH SPACE SECTOR

On 4 October 2022 at South East Technological University (SETU), stars aligned to celebrate World Space Week at the inaugural 'Relevance' conference, showcasing opportunities in the Irish Space Sector, in the Carlow campus.

Second and third level students as well as industry and academic staff enjoyed talks from a host of key figures focusing on how creative ideas, critical thinking, science, technology, engineering and maths can help us explore the wonders and realities of the Universe. The selection of speakers provided a broad perspective on the activities within the space domain with topics ranging from searching for life in the universe to Ireland's rocketry society and how space impacts from personal and a societal perspective.



Dr Pete Worden, Former NASA Ames Research Centre Director discussed the aims of Breakthrough Star Shot and how, even today, we can still learn from the ideas of Kepler and Galileo when it comes to interstellar travel.

The conference also showcased some of Ireland's leading technological companies working within the space sector, such as Realtra Space and Shibumi consulting, who both produce state of the art products and services for and within the space sector.

SEE Space Network with support from Engineering the Southeast, discussed how the southeast continues to develop, construct and build its own space sector. With SETU focused on providing world class graduates for this new and fast developing sector, attendees were given an insight in to some of the exciting space developments happening at SETU campuses, where undergrad and postgraduates are actively engaging with and becoming more and more involved in this dynamic field.

Dr Niamh Shaw, award winning STEM communicator discussed how 'we dare to defy who we are as humans and propel ourselves off this planet and when we do we can't even breathe or sleep or drink water without the assistance of thousands of people to keep us safe...putting in to perspective how far we've come and how far we can go when we work collectively'.

As the southeast begins its journey to the stars, SETU, along with academic and industry partners, looks forward to ongoing opportunities to bring together national and international experts to contribute in the space sector's development and to discuss its relevance.

SETU STAFF AND STUDENTS PERFORM IN THE IMAGINE ARTS FESTIVAL

Staff and students from South East Technological University (SETU) joined acclaimed Irish performance artist Amanda Coogan, and artists and theatre makers Alvean Jones and Lianne Quigley, to share their interpretation of Deaf, Waterford playwright Teresa Deevy's little-known ballet, *Possession*, during the Imagine Festival on 27 October 2022.

Possession presents the story of the Táin, and dramatises the Cattle Raid of Cooley, however unusually Deevy focuses on Queen Maeve's perspective throughout. Coogan called this exploration of Deevy's work *The Possession Project*, which she developed into a production for the Imagine Festival in collaboration with Jones, Quigley and staff and students from SETU Department of Arts.

The Imagine Arts Festival in Waterford promotes both established and emerging artists, featuring a diverse range of events including theatre, music, comedy, visual art, dance, literature, film and more. The aim of the festival is to bring in the best of national and international artistic work to inspire new ideas and thought within the local community through exposure to such talent and creativity.

The *Possession Project* created a hybrid production containing durational, site specific and immersive aspects. Audiences were guided through the performance beginning at the reception of Waterford Museum of Treasures, where they were brought down to the atmospheric Choristers' Hall for the 50 minute-long production.

Coogan, Quigley and Jones offer unique insights into Deaf culture and Deaf experience; Coogan is a hearing CODA (Child of Deaf Adults) and both Jones and Quigley are Deaf. Their consideration of Deevy's work offered a unique interpretation, because Deevy created characters not simply through dialogue, but through inscribing action, reaction, and intention on and through actors' bodies and her use of costume and stage properties.

Led by Dr Úna Kealy, lecturer in Theatre Studies and English at SETU's Department of Arts, staff created *Lyrical Bodies*, a satellite project around Coogan's *Possession Project*. Funded by the National Forum for Teaching and Learning SPARC (Student Partnership and Raising Capacity) fund, the SETU Equality, Diversity and Inclusion fund and SETU Research Connexions, *Lyrical Bodies* supports Coogan, Quigley, and Jones in their creative and research work and contributes to increasing awareness, inclusion, and respect for those whose experience of the world is sensorially different.

ENVIROCORE CELEBRATING IRELAND'S FIRST SDG WEEK

Researchers from South East Technological University recently teamed up with Teagasc, under the coordination of Carlow County Council, to celebrate Ireland's first Sustainable Development Goals (SDG) Week. Female researchers from enviroCORE visited various national schools in Carlow to speak with children, and young girls in particular, about choosing a STEM (Science, Technology, Engineering, Mathematics) education and career path.

SDG Week, which took place from the 20 – 26 September 2022, as part of the wider European Sustainable Development Week (ESDW), marks the anniversary of the day the SDGs were agreed and comprises of activities to celebrate and raise awareness of these goals.

The enviroCORE visits aimed to contribute towards SDG 4 (Quality Education), SDG 5 (Gender Equality) and SDG 9 (Industry, Innovation and Infrastructure). Researchers from SETU's Department of Applied Science, including enviroCORE Director Dr Thomae Kakouli-Duarte and enviroCORE intern Ms Naoise Kelly visited the Queen of the Universe National School in Muinebeagh, Co Carlow on 20 Sept 2022. Similar visits were paid by enviroCORE researchers Ms Marta Mroczkowska to Clonegal National School, Ms Demi Ryan to Scoil Molaise in Old Leighlin, and Ms Katie Phair to St Joseph's National School, Hacketstown.





RESEARCHERS MEET EUROPEAN COMMISSIONER ELISA FERREIRA

The Mayor of Waterford, Cllr John O'Leary welcomed the European Commissioner for Cohesion and Reform, Elisa Ferreira, to Waterford City on Monday, 19 September 2022 to see first-hand some excellent examples of how supports from the EU Funds have enhanced the City in so many ways.

This included a visit to South East Technological University (SETU) to meet with local researchers to hear about the wide variety of research being carried out at the new university which have been funded by ERDF, including SFI centre projects, Enterprise Ireland projects and Interreg. Commissioner Ferreira met with representatives from Walton Institute, SEAM, and PMBRC, and Interreg projects STREAM and Portalis. Researchers explained the impact of their project as related to digital and green themes and regional development.

Commissioner Ferreira was impressed with how SETU has created a research and innovation ecosystem which links researchers and students with entrepreneurs and established companies to create a strong research culture, supported by the Research Support Unit, and was very interested to hear the ambitions to grow this further internationally as a Technological University.

ENTERPRISE IRELAND FUNDING FOR LAND SCIENCES

The Agro-Systems Innovation and Growth Lighthouse will help promote sustainable growth for the agri-food, horticultural, forestry and marine sector in the south east. Staff from the South East Technological University (SETU) Department of Land Sciences have successfully secured feasibility grant study funding from Enterprise Ireland under the new Regional Enterprise Innovation Scoping Scheme (REISS) 2022.

Ministers of State Robert Troy TD and Damien English TD announced details yesterday of the 47 projects that have been approved for a total of €3.5M in grant support under the REISS 2022. Some 15 Projects have been approved for REISS Priming Grants of up to €200,000, while SETU is one of 32 projects to have been approved for REISS Feasibility Study grants of up to €50,000.

The REISS funding supports the development of potential innovative regional projects aligned with the objectives of the nine new Regional Enterprise Plans that were launched earlier this year.

Dr Ultan McCarthy and Dr Anastasia Ktenioudaki, lecturers from the Department of Land Sciences, SETU School of Science and Computing, will use the grant to engage with local, national and international Land Management stakeholders, supporting SETU in its ambition to progress knowledge, skills, solution, and service gaps which need to be addressed to ensure a sustainable future.

Their aim is to establish the Agro-Systems Innovation and Growth Lighthouse based at SETU in Waterford which, will be an instrument for managing collaborations, knowledge flow, developing solution concepts and promoting sustainable growth for the agri-food, horticultural, forestry and marine sector in the South East and beyond.

The next five to ten years will be critical for humanity facing challenges such as climate change, food security, and an ever-growing population. Radical change is required to address these issues and SETU has a key role to play in future proofing our knowledge base and providing both our undergraduate, postgraduate and research community with the future skills required to promote change.

Initial stages of the project will see academic staff within the department re-engage with existing and new stakeholders in the south east and further afield, identifying specific challenges faced by industry, and through a national and international network assist the early-stage development of initiatives that can help strengthen the regional ability to adjust and cope with the potential effects of international economic changes.



DIGITALISATION ROADMAP FOR IRISH AGRI INDUSTRY

In July 2022, Walton Institute proudly launched the AgriDISCRETE Digitalisation Roadmap in a special event attended by Martin Heydon TD, Minister of State at the Department of Agriculture, Food and the Marine, with responsibility for Research & Development, Farm Safety, and New Market Development. The roadmap is one of the key outputs of the 2-year AgriDISCRETE project, outlining opportunities to increase digitalisation in the Irish agri-food supply chain, informing the further development of agri-digitalisation under the Common Agriculture Policy (CAP).

Funded by the Department of Agriculture, Food and Marine and led by Walton Institute, AgriDISCRETE examined digitalisation and data use in Irish agriculture. While the technical infrastructure is often in place, the project took a broader view to ensure social science and business modelling aspects were considered. Partners include RIKON, a business research centre in SETU, and Teagasc's Rural Development unit who provided social sciences expertise.

Outlining the process for developing the roadmap, Kieran Sullivan (Project Manager) said, "The project team held 6 round-table workshops with agriculture providers and farmers to identify challenges the sector is experiencing when considering digitalisation. These workshops were invaluable to the findings illustrated in the roadmap which describes 5 core challenges and related opportunities to increase the use of digital technologies in Irish agriculture and develop a marketplace for agriculture data."

In addition to the roadmap, several pieces of software were written to demonstrate a proof-of-concept in the project. The software created a marketplace which allows data providers and data consumers to build working relationships and engage in contract negotiation for access to various types of agriculture data. The software is now being further developed and examined to identify possible intellectual property and exploitation avenues.

WATERFORD LOCAL COMMUNITY SAFETY PARTNERSHIP PROJECT

The Waterford Local Community Safety Partnership Project was launched by The Minister for Justice, Helen McEntee on Friday 13 May 2022 at the Vestibule, Theatre Royal, Waterford.

The Waterford Local Community Safety Partnership Project is part of a community-based initiative to be piloted for two years, where local communities work with State services to draw up local plans to prevent crime in their own areas.

Three locations were identified to pilot the initiative – Waterford, Dublin's North Inner City, and Longford – based on factors including population density, crime rates and deprivation.

Each Local Community Safety Partnership will have an independent chairperson and will develop a Local Community Safety Plan, with Sean Aylward, former Secretary General of the Department of Justice, the chair for Waterford.



The Partnerships will bring together residents, community representatives, business interests, councillors, local authorities, and State services such as An Garda Síochána, Tusla and the HSE to devise and implement the Local Community Safety Plans. The plans will detail how best the community wants to prevent crime and will reflect community priorities and local safety issues.

As part of the Local Community Safety Partnership project, South East Technological University and Waterford City and County Council are collaborating on a co-funded Research Masters project to identify and evaluate best practices to effectively manage local issues and promote community safety. The research project will be led by Principal Investigator for the project Dr Geraldine Cleere (SETU's Department of Law & Criminal Justice) who will be joined by Dr Michael Bergin (SETU's Head of the Department of Law & Criminal Justice, School of Humanities) and Dr Suzanne Denieffe (SETU's Head of the School of Humanities). The research will see the recruitment of a postgraduate research student to work with the Local Community Safety Partnership stakeholders.

Minister for Justice Helen McEntee, whose department is funding the scheme, met with the local representatives involved in the Waterford Local Community Safety Partnership at the launch.

It is planned that every local authority area will have a Community Safety Partnership, with dedicated funding and staff once the policy is rolled out nationally as part of reforms outlined by the Commission on the Future of Policing.

MAJOR FUNDING WIN FOR ARCHITECTURE AND BUILT ENVIRONMENT

The Resilient Design Curriculum was awarded €3.96M and will radically revise architectural education to embed the principles of the United Nations Sustainable Development Goals.

Minister for Further and Higher Education, Research, Innovation and Science Simon Harris TD, has announced funding of €7.6M for two projects under the Human Capital initiative (HCI), including Resilient Design Curriculum led by Technological University Dublin in partnership with South East Technological University (SETU) Department of Architecture, and Ireland's four other Schools of Architecture.

The HCI programme aims to develop innovative methods of teaching and delivery on enterprise-focused courses and, in particular, to provide lifelong learning and upskilling opportunities. The Resilient Design Curriculum project was awarded €3.96M in funding over three years and will radically revise architectural education to embed the principles of the United Nations Sustainable Development Goals.

The project in collaboration with all Schools of Architecture nationally, will adopt agile models of co-operation, collaboration, and co-learning, with the six higher education institutions working together, and with over 40 partners from industry, to engender the knowledge and skills necessary for architects to respond to the twin challenges of the climate and housing crises while demonstrating the societal value of inclusive, safe, and resilient design.

Welcoming the news SETU Head of the Department of Architecture and Built Environment, Máire Henry said, "The Resilient Design Curriculum project is closely aligned to our strategic priorities of embedding sustainable design into our architectural programmes. In addition, working with our academic and enterprise partnerships, we will deliver a national step-change in architectural education to address the societal challenge of the housing crisis in Ireland and the global and existential threat of climate change."



WATERFORD TEXTILE MAKERS EMBRACE TECHNOLOGY

Supported by Waterford City and County Council and Creative Ireland Waterford, the Re-fashioning the Future initiative served as a collaborative platform, bringing together traditional textile artisans and experts from Walton Institute's Electronic Textiles (eTextiles) and Smart Materials Living Lab. This unique amalgamation aimed to bridge the gap between traditional craftsmanship and cutting-edge technology. Through a series of workshops, the initiative delved into the realm of eTextiles, leveraging the LilyPad sewable range of electronic components. The primary goal was to acquaint and engage traditional craft makers with the intricate world of sewable electronic circuitry, thereby opening doors to innovative wearable Internet of Things (IoT) applications.



Under the guidance and expertise of Aileen Drohan, an Experienced Software Research Engineer at Walton Institute, participants embarked on a transformative learning journey. Not only did they grasp the fundamentals of eTextiles, but they also took on the responsibility of sharing their newfound knowledge with various community groups. These workshops, conducted by the participants themselves, showcased a remarkable blend of creativity and technical acumen. From experimental eTextile fabric items to twinkling fabric flowers and personalised tote bags, the creations were a testament to the participants' enthusiasm and adaptability.

The impact of the workshops exceeded expectations. Aileen Drohan praised the quality of work produced and the attendees' overwhelming interest in exploring similar workshops in the future. During the project's concluding event, Emma Haran of Waterford Cultural Quarter and Cllr John O'Leary, Mayor of Waterford City and County, commended the initiative's achievements. They presented certificates to participants in recognition of their dedication and successful completion of the workshop series.

Frances Cleary, Head of Division at Walton Institute, expressed unwavering optimism regarding the future of eTextiles in Waterford. Leveraging the impressive fashion and interior design VTOS courses available at Durand's Court, she anticipates an expanded role for Waterford in the rapidly evolving eTextiles sector. This collaborative endeavour between funding partners and educational institutions lays the groundwork for Waterford to solidify its position in this burgeoning field.

GRADUATE STUDIES

RESEARCH ENROLMENTS 2022/2023

2022-2023 ACADEMIC YEAR IN NUMBERS

September 2022 marked the start of the first academic year as SETU and also saw the Graduate Studies Office welcome 74 new research postgraduate students to the various campuses of SETU, 41 of which were registered on the Waterford campus and 33 on Carlow-Wexford campuses. The GSO arranged a cross-campus meet-and-greet event, which allowed for new and existing students to know each other, as well as the graduate studies office. With the addition of the new students in the 2022-23 academic year, there were a total of 329 research postgraduate students in SETU, 234 of which were studying towards a PhD, 29 were on the Professional Doctorate in Business programme and 95 pursuing a Masters by Research.

In January 2023, the first graduations of PhD and Masters by Research students from SETU took place. This was a magnificence week of celebration across the South-East with ceremonies taking place in Waterford, Carlow and Wexford. A total of 50 research postgraduates graduated from SETU, 27 with PhDs and 23 with Masters by Research, across a wide range of research areas. This is a remarkable achievement for the graduates, their friends, families, supervisory teams, departments and SETU support staff.

Figure 10 presents a snapshot of the SETU research postgraduate 2022/2023 academic year in numbers.

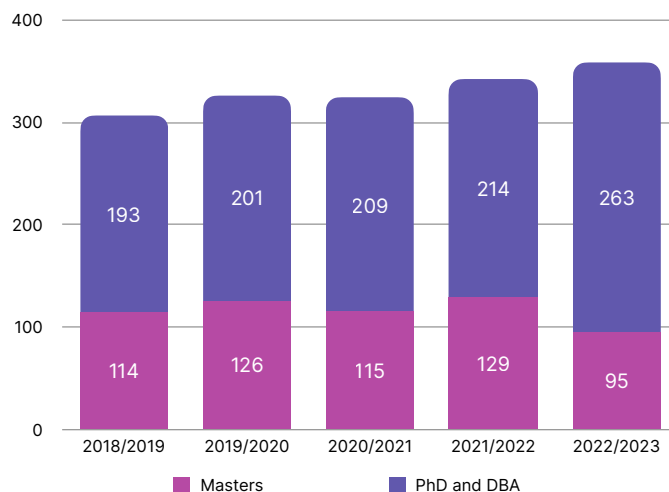
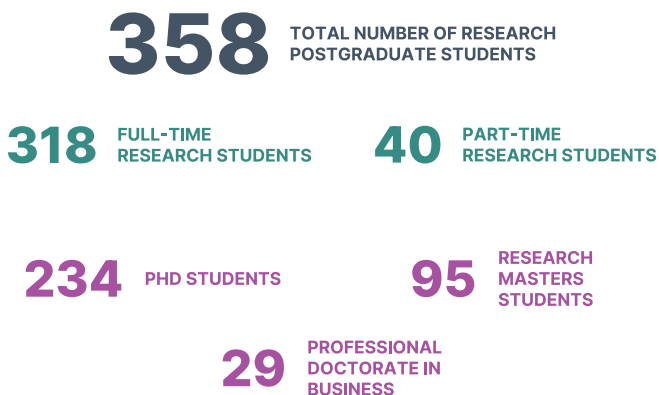
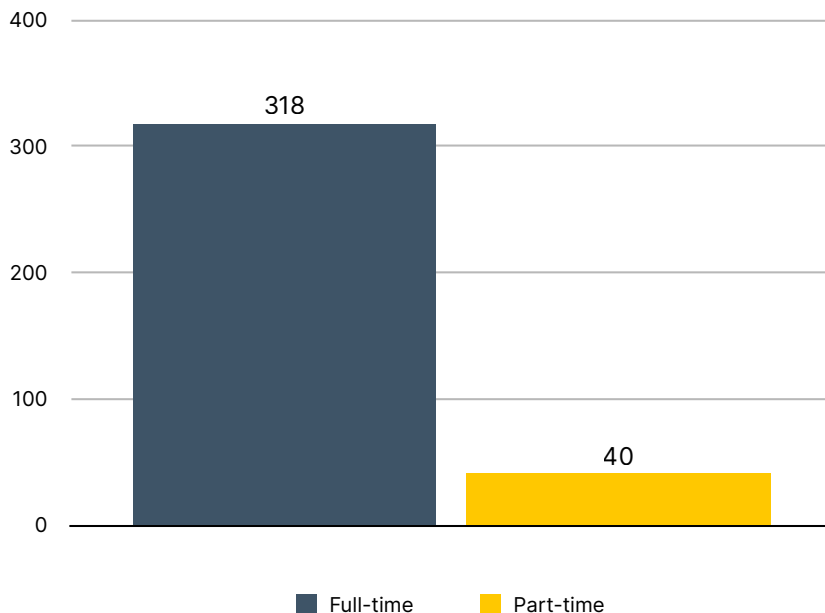


Figure 10: 2022/2023 academic year in numbers

Figure 11: Research Postgraduates 5-year trend

DIVERSITY OF POSTGRADUATE RESEARCH AT SETU



SETU offers a wide range of options for postgraduate research studies that can be flexible. In 2022/2023 there were 40 students pursuing their research degree on a part-time basis. This demonstrates our commitment to maximise educational opportunities for people and provide flexible modes of research study, including both funded and non-funded opportunities. Figure 12 presents a breakdown of the mode of study of research postgraduate students on the various campuses in SETU.

Figure 12: Research Postgraduates by study mode

Postgraduate research across SETU covers a wide area of research areas. The percentage breakdown of postgraduate research for different research areas across SETU is presented in Figure 13. There is approximately a 48:52% split between Science/Engineering/Computing/Maths and Education/Business/Humanities/Health Science.

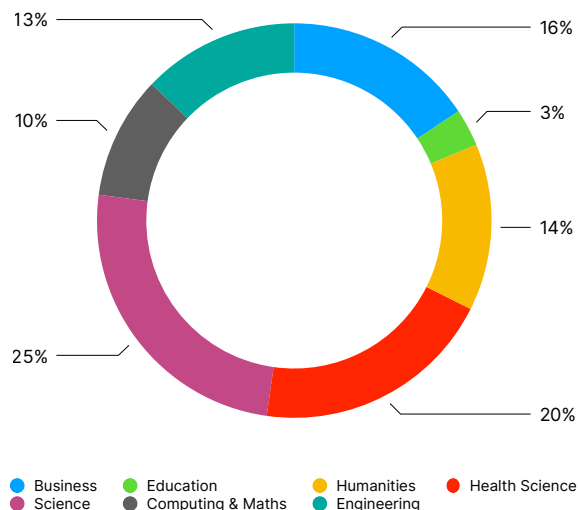


Figure 13: Research Postgraduates by domain

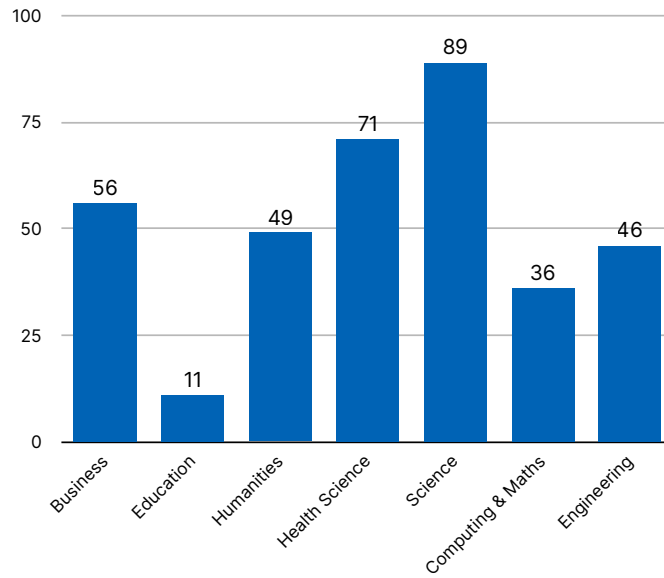


Figure 14: Research Postgraduates by domain

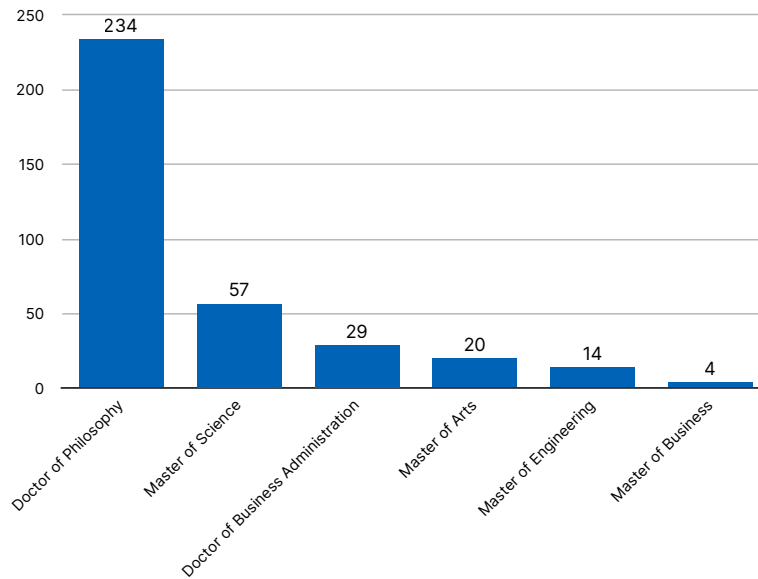


Figure 15: Research Postgraduates by programme

STRUCTURED PHD UNIVERSAL/GENERIC MODULES

Each academic year, a suite of taught/universal pathway modules are made available to students across all campuses. A total of 183 student registrations across all modules was recorded. All modules were open for research postgraduates across all discipline areas and campuses.

As part of SETU's involvement in EU-Conexus, the GSO liaised with the EU-Conexus PhD-level actions to make our Research Planning and Project Management module available to PhD students across the EU-Conexus consortium. This resulted in 12 students from Klaipeda University, Agricultural University of Athens, University of Zadar, Technical University of Civil Engineering Bucharest, Frederick University completing the module at SETU.

Similarly, SETU students had the opportunity to avail of modules organised by different Universities in EU-Conexus. SETU students completed modules in "Collection and Analysis of Research Data", organised by Frederick University in Cyprus and "Geographic Information Systems" organised by Technical University of Civil Engineering Bucharest.

RESEARCH POSTGRADUATE EVENTS

The Graduate Studies Office organises a range of events for research postgraduate students each year. Some highlights are as follows:

- Induction: GSO organised an information meet-and-greet session at the start of Semester 1, followed by formal induction sessions in both semesters that were cross-campus and also virtual, to allow for our diverse student population to attend at a time and in a method that best suited their mode of study.
- Skills sessions: Key transversal skills sessions run regularly through the graduate studies office. Topics covered included, how to write an abstract, research posters and presentation skills.
- Thesis bootcamp: At the end of Semester 2 each year, the GSO organise a thesis bootcamp for students who want to write a paper or their thesis. The day is divided into focused writing sessions with planned breaks to optimise the writing output from the day.
- GSO-Student Liaison Group: This group was set up in 2022 to allow for formal feedback from the research postgraduate students to the GSO. The student representatives on the group represented the diversity of our student population.
- Alumni Network talks: A series of informal discussions were arranged between current postgraduate researchers and members of our alumni network.
- 3-minute thesis: The inaugural SETU postgraduate 3-minute thesis competition took place on the Waterford campus. This is a challenge in which competitors have to present their PhD research to a non-expert audience in 3 minutes.
- Postgraduate conference: This was organised by research postgraduates with the assistance of the Graduate Studies Office and took place on the Carlow campus in May. There were 72 participants, with presentation sessions, poster sessions and opportunities to network. The conference keynote speaker was Prof Sally Shortall, who reflected on postgraduate research from a supervisor and examiner perspective.

EU-CONEXUS PHD SUMMER SCHOOL

In July 2023, SETU welcomed PhD students from across EU-Conexus to the Waterford campus for the 3rd EU-Conexus PhD Summer School focused on Professional Development and Leadership. In total, 29 students from across the Alliance and from Odesa National University in Ukraine took part in the summer school, including six SETU students from all SETU campuses. Seminars and workshops were provided by 16 lecturers from across the EU-Conexus Alliance over the 5-day Summer School in the areas of professional development, research communication and leadership.

The local SETU organisation committee was led by Dr Mike Kinsella, Ms Siobhán Rudden, and Prof Peter McLoughlin.

The Summer School was not just an academic endeavour, it included a trip to Dunmore East and concluded with a hurling demonstration from SETU GAA.



SETU SCHOLARSHIPS 2023

The Office of Research, Innovation and Graduate Studies (RIGS) at SETU is responsible for the SETU PhD Scholarship Programme. Launched in 2013 the PhD Scholarship programme has funded 187 projects so far, 39 of which are co-funded by external industry partners. In July 2023, the RIGS office was able to secure an increase in the annual stipend rate from €15,000 to €16,000 for all live and existing SETU Scholars.

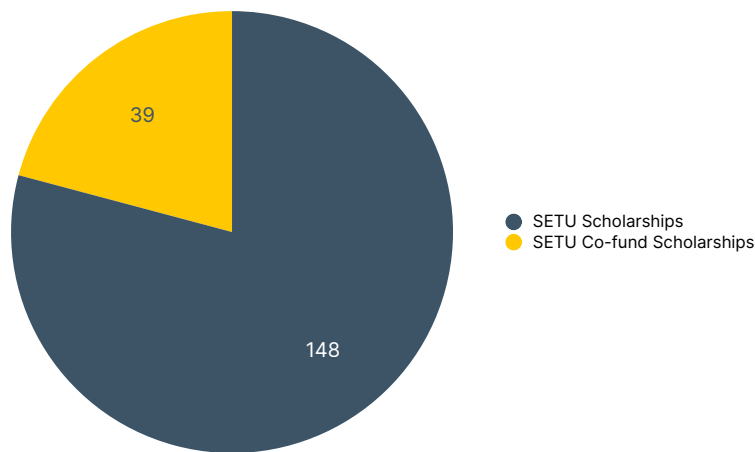


Figure 16: 148 scholarships fully funded by SETU, 39 co-funded with Industry

The SETU PhD and Co-fund Scholarships are awarded on a competitive basis to research proposals that are aligned with the University's relevant prioritised research areas. Multi-campus and interdepartmental supervision is encouraged under these schemes.

Under the 2023 SETU PhD Scholarship Programme, SETU funded 30 new PhD projects across various departments and disciplines on all campuses. Officially launched on the 27 February 2023, the Office received over 90 expressions of interest to supervise PhD students from both academic and research staff. Subsequently SETU received 66 full applications, which were sent for expert external review, resulting in 30 funded projects.

Student stipends were set at €18,500 plus tuition fees and a budget for research expenses up to a maximum of €3,000 per annum for 4 years.

In terms of promoting new and emerging supervisors under our programmes, 20% of available budgets are ring-fenced for new supervisors.

In this call interdisciplinarity was added as part the evaluation criteria to ensure research projects were supporting cross-discipline engagement and transdisciplinary activity. As a result, we saw projects from both STEM and SSH working together to address societal challenges in a multi-faceted and holistic way.

In the 2022/2023 academic year SETU funded 3 PhD and 2 MSc Scholarships collaboratively with Enterprise partners. Since the inception of this co-fund scholarship scheme, SETU has worked with a wide range of industry partners including sporting bodies, local authorities, multinational pharmaceutical companies, engineering companies, health and other scientific disciplines, finance, and cultural associations.

SETU pays 50% and the industry partner pays 50% of the overall total of the scholarship value. The total contribution for an MSc co-fund from the company would be is €27,250 over 2 years, total award is €54,500. The total contribution for a PhD co-fund from the company would be is €54,500 over 4 years, total award is €109,000.

The chart below represents the 187 scholarships since 2013 which amount to a value in excess of €13.8M.

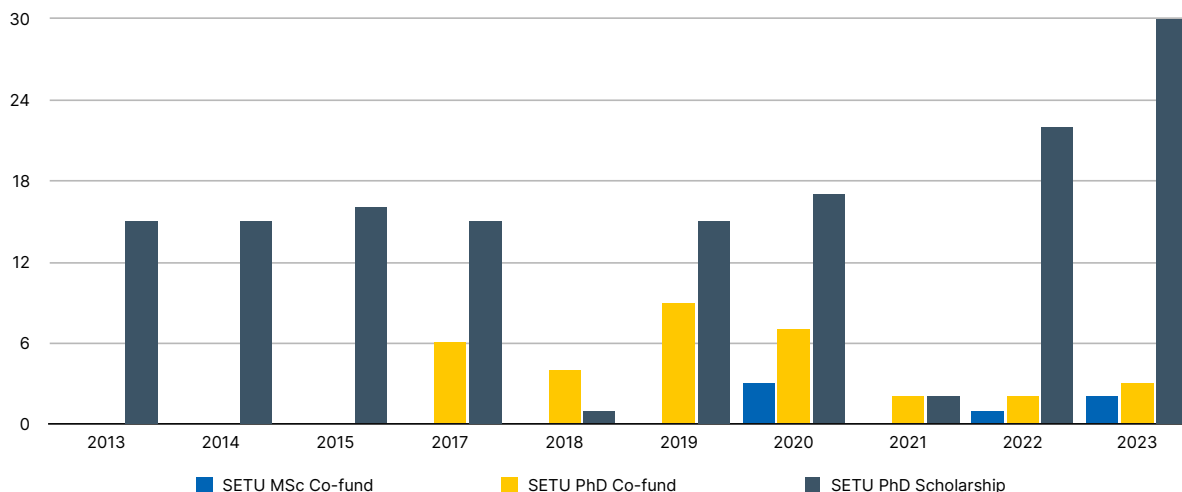


Figure 17: a breakdown of SETU's 187 scholarships since 2013

Outside of the SETU scholarship schemes for both MSc and PhD candidates, both fully funded and co-funded, the University has another cohort of scholarship students supported by the SERD Scholarship programme. These scholarships are funded by the Higher Education Authority and were launched in 2021. The University has a total of 34 postgraduates pursuing awards under this scheme.

INNOVATION & IMPACT

TECHNOLOGY TRANSFER

The Technology Transfer Office (TTO) in SETU is fully-funded through a Knowledge Transfer Ireland (KTI) programme called the Technology Transfer Strengthening Initiative. Working with KTI the TTO has set out a series of ambitious knowledge transfer targets for metrics such as licences, options, assignments, spin-out companies, research agreements, invention disclosures, and patents.

The underlying rationale to this approach is that these metrics reflect SETU's ability to professionally manage the intellectual property output generated from our research, to enhance Ireland's competitive advantage and international reputation whilst creating sustainable jobs and contributing to regional economic growth.



The Technology Transfer Office aims to reinvigorate our activities over the next 12 months as part of the overall strategic plan for Research & Innovation. The ambition is to refocus, redouble and enhance the services provided by the TTO across all of our campuses.

The TTO will provide on-going training to our staff, dedicated efficient IP services to our research community and a catalyst for regional innovation. This increase in our activity is underpinned by our strategic plan 'Connecting for Impact' and SETU's TTO will be at the centre driving this aspiration. These activities will be facilitated by the KT Boost (KTB) programme, which is Enterprise Ireland funded, and will result in additional resources in our offices.

SETU will boost our already impressive successes in knowledge transfer activities from spin outs, company sales, licenses, KTI awards and a sector leader in the number of research agreements with industry. Specifically, SETU intends to achieve the following through KTB: A highly efficient optimally resourced TTO outputting licences, options, assignments, funded CF projects, spin out companies, high potential start up companies, research agreements through our gateways, invention disclosures and patent applications. These outputs will support the creation of jobs through HPSUs underpinning the strategic mission of SETU. This State-of-the-art integrated multi-campus sustainable TTO will provide professional services to stakeholders including academics, researchers, entrepreneurs and entrepreneurial students. It will be a focal point for businesses across the South East, furthering connections, engagements and integration across HPSU support agencies in the region - chambers of commerce, local enterprise offices (LEOs), regional Enterprise Ireland (EI) offices, SEBIC, IRDG, and IBEC.

Further information can be found at: https://www.knowledgetransferireland.com/About_KTI/KT-Boost/KT-Boost.html

TECHNOLOGY TRANSFER OFFICE: ARC Hubs

SETU will prioritise using the knowledge it generates to contribute to the social and economic growth of the region, particularly in areas of regional expertise, like the SFI ARC Hubs Agri-Tech proposal, with a strong emphasis on producing significant commercial outcomes. As part of this effort, SETU will establish strategic partnerships within the consortium to enhance the appeal of the region for talent and investment. The consortium of partners on this proposal, led by University College Cork, includes a wide range of capabilities and infrastructure from Teagasc, Munster Technological University, University of Limerick, Technological University of the Shannon, and University College Dublin. The expertise and resources of this consortium will be mobilised for enhanced regional impact through this proposal, as demonstrated in our detailed application to SFI.

The consortium aims to promote regional development by speeding up new and innovative research in the field of Agri-Tech, as outlined in Ireland's Smart Specialisation Strategy. The goal is to prepare this research for commercial impact. The Food Vision 2030 Strategy aims to establish Ireland as a global leader in Sustainable Food Systems by 2030 in the agri-food sector. By adopting a comprehensive approach to food systems, Ireland aims to be at the forefront of sustainable food and agriculture innovation. This includes producing safe, nutritious, and high-quality food, while also protecting and enhancing our natural and cultural resources. Ireland's efforts in this area will also contribute to the development of vibrant rural and coastal communities, as well as the overall national economy. Developing a strong and forward-thinking Agri-food Sector, powered by technology and skilled individuals, is one of the four key missions in this strategy. The goals encompass transitioning to an innovation system that focuses on addressing challenges, implementing a strategic approach to funding research and development, fostering knowledge exchange, leveraging technology and data, enhancing competitiveness and resilience, and promoting diversity and inclusivity in talent acquisition and retention. The Agri-Tech hub will serve as the means through which S3 and FV30 will be implemented in the region.

The centre will identify opportunities within the partners and provide support to ensure the delivery of commercially focused outputs. Ultimately, this will successfully transition SFI-funded research projects into existing national and international support systems that are closer to the market. The consortium has developed a robust innovation management framework to cultivate a group of entrepreneurial scientists and engineers and equip them with the necessary skills to capitalise on commercial opportunities that arise from research activities. SETU is already a leader in many areas of the Agri-Tech sector through our work, for example, in the CONNECT and VISTAMILK SFI research centres. SETU will provide the Agri-Tech Hub with access to all the necessary infrastructure, services, and support. In particular, the University will utilise the full support of our Technology Transfer Office to deliver the individual translation research projects. This involves providing assistance in the development of invention disclosures, patent applications, the licensing of technologies, negotiating contracts for spin-out companies, training, and offering IP support to the research community. Additionally, marketing technology is also part of the support provided.

In summary, the Hub aims to support and promote researchers focused on commercial applications in the food and Agritech industry. This will help Ireland maintain its leadership in the efficient production of sustainable, nutritious, and healthy food, which is currently and will continue to be in demand by consumers.

NEW FRONTIERS

New Frontiers is the Enterprise Ireland funded national entrepreneurial development programme for ambitious early-stage entrepreneurs with innovative business ideas which have the potential to scale and provide employment. SETU operates the programme at the Waterford and Carlow campuses to provide the skills and confidence needed to support entrepreneurs in starting a successful business. The New Frontier programme managed by Dr Eugene Crehan in the Waterford campus and Gemma Purcell in the Carlow campus.



New Frontiers is designed for individuals who:

- Are early-stage entrepreneurs with little or no experience in starting a business.
- May be in full-time employment but have the desire to start their own business.
- Have an innovative business idea with export and employment potential.
- Can show evidence of a commercial market for their proposed product/service.
- Have experience, sectoral and/or technical knowledge in the area of their business idea.
- Have the drive and ambition required to commit fully to building a successful start-up.

The SETU New Frontiers programme helps start-up promoters to make the transition from employment to entrepreneurship. We give them the skills to investigate their market opportunity, quantify it, and then craft a customer value proposition that is relevant to, and understood by, the target market. A key objective of New Frontiers is that the business has an investment-ready business plan at the end of Phase 2 of the programme. Basically, New Frontiers helps to reduce the fledgling start-up's risks and dramatically increase their chances of success.

Several of the micro-enterprises and SMEs based in the ArcLabs and ERIC have "graduated" from New Frontiers. Programme participants can meet and learn from more experienced entrepreneurs (tenant companies) in ArcLabs and ERIC on an informal basis to increase their networks through these new connections as well as through New Frontiers alumni who regularly come in to share their startup experiences with participants.

Since the establishment of SETU on 01 May 2022, New Frontiers on both campuses has delivered Phase 1 of the programme three times supporting 100 entrepreneurs. Phase 2 of the programme was delivered twice supporting 17 participants. Of these 17 participants, one has secured



Front row left to right: Susan O'Neill, Chris McGarry, Paula Carroll, Praveen Kaur, Nicola Thompson
Back row left to right: Dr Eugene Crehan, Brian Fives (Senior Development Adviser, Enterprise Ireland), Dr Tom O'Toole (Dean of School of Business, SETU)

the Enterprise Ireland Pre-Seed Start Up funding whilst another has secured EI HPSU feasibility funding. Eight of these entrepreneurs have used EI Innovation Vouchers to engage with research centres at SETU in the development of their product or service.

In June 2023, the New Frontiers Class of 2023 Showcase and Awards took place at SETU, Waterford. Members of the southeast start-up community were in attendance to meet the New Frontiers Class of 2023.

The founders of three of the southeast's best start-up in 2023 were honoured for their entrepreneurial spirit in developing innovative business solutions for international markets:



New Frontiers participants at Welcome Day

- The Most Innovation New Idea Award went to Susan O'Neill (Bennettsbridge, Kilkenny) of Sulu Solutions, which is a blockchain payment system that saves time in effecting payments.
- The Best Business Plan Award went to Praveen Kaur, of Waterford based Uoto, which is a peer-to-peer car rental system that allows people to park free at the airport and potentially earn rental income from their car while they are away.
- The Best New Product went to Chris McGarry (Thurles, Tipperary) of Migim who supply a portable, full body, 50-exercise, training system to personal trainers and sporting facilities.

At this event SETU inducted a former New Frontiers (SEEPP) participant, Dermot O'Shea, CEO of Taoglas into the New Frontiers Entrepreneurial Hall of Fame. The inclusion of Mr O'Shea in the Entrepreneurial Hall of Fame is in recognition of his outstanding achievements in growing Taoglas to a \$100m business, employing nearly 500 people, across 10 global locations, including Wexford, Taiwan, and San Diego.

Connect with New Frontiers in SETU via:

- Web: search for "New Frontiers SETU"
- Email: NewFrontiersWd@setu.ie / lorraine.brennan@setu.ie
- X (formerly Twitter): [@NewFrontiersSE](https://twitter.com/NewFrontiersSE) / [@CentreEric](https://twitter.com/CentreEric)
- Instagram: [@eric_setucarlow](https://www.instagram.com/eric_setucarlow)



Left to right: Dr Tom O'Toole (Dean of School of Business, SETU), Dermot O'Shea (CEO, Taoglas and Entrepreneurial Hall of Fame recipient), Dr Eugene Crehan



INCUBATION: RESEARCH & INNOVATION

SETU remained a key driver for economic development in the region during the academic year 2022/2023. ArcLabs Research and Innovation Centre on the West Campus currently houses 25 innovative companies, a substantial percentage of which are actively engaging with SETU's ICT research centre, Walton Institute, on collaborative research activities. The Enterprise Research and Incubation Centre (ERIC) on the Kilkenny Road Campus actively supports the development of 21 start-up and established companies. A further 9 companies are housed in SETU's ArcLabs facility in Kilkenny. Together across these three sites, these SETU-supported companies employ over 350 people in the South East region.

SETU is home to numerous initiatives and programmes to accelerate and nurture enterprise development. Examples include the TEAM Academy Entrepreneurial Programme for postgraduate students, 4 new pre-accelerators focused on the specialty areas of the SETU Technology Gateways and New Frontiers, and the national entrepreneurial development programme funded by Enterprise Ireland.

The South East Innovation ecosystem, led by SETU, is working with all sectors in the region toward the greater goal of building entrepreneurship whilst driving economic growth and job creation, delivering a truly sustainable economy for the South East.

SUPPORT SERVICES

SUPPORT SERVICES

Each year, the Office of Research, Innovation & Graduate Studies reviews the services that it provides from the perspective of support to staff and students but also the range of online services that it makes available. During the period of this report, the Office, led by the Head of Research, brought new service offerings and streamlined processes to the research community in addition to preserving existing services of value.

The RSU ensures that the research community is kept informed of all funding opportunities, upcoming deadlines, research workshops, information sessions and training programmes via email, the Research Newsletter, and the research section on the SETU website. Resources are shared on the new SETU Staff Hub SharePoint site.

Training and presentations developed and delivered in the period include and available on the RSU staff Hub (recordings available for download):

- EU COST actions information session, January 2023
- Interdisciplinary Research Workshop. February 2023
- Cross Cutting Themes Presentation: Open Research, Diversity and inclusion in research (Horizontal principals & Do No Harm) – Gender in Research - February 2023
- Professional Development Week Presentations: All RIGS supports including, the new Pure platform, HRS4R, Funding Landscape Overview and SETU financial supports and budget preparation including guidance on internal procedures jointly delivered by the Research and Finance offices. February 2023
- Horizon Europe Impact Workshop, March 2023
- Horizon Europe and NCP brokerage event, March 2023
- Commercialisation and IPR, March and April 2023
- Fulbright Roadshow Event, April 2023
- Postdoctoral Funding and grant writing workshop, June 2023
- Engaged Research Workshop, June 2023
- GOIPG Information Session (Undergraduates & Postgraduates), July 2023
- GOIPG/PD Focused Application Workshop, August 2023
- Pure Award Management Module, End User Training session, September 2023
- Expected to become a quarterly session until knowledge is widespread amongst the community

Key Supports developed and delivered in the period include:

- Pure support video series development including scripting award management module user guidance and recording for community distribution.
- Developed community feedback forms (Microsoft Forms) which sought to understand the needs of the research community across several topics including desired supports, problematic areas of applications, aspects of research management system that require more training and RSU processes.
- Developed digital reporting model for our internal scholarship programme.
- Comprehensive draft review of strategic grant applications (time permitting) primarily for Enterprise Ireland Tech Gateway Programmes, SFI Infrastructure programme, SFI Frontiers for the Future, SFI National Challenges, SFI US R&D partnership, IRC-SFI Pathways, IRC Government of Postgraduate, Postdoctoral and

SUPPORT SERVICES

Enterprise Partnership Postgraduate and Postdoctoral schemes, DAFM Thematic programme applications as well as many others.

- Developed the weekly RSU "Research Room" virtual drop-in session, to answer research related queries and discuss upcoming funding calls.

The SETU Research office has brought a significant increase in online digital services available, including:

- Scholarship proposal submissions, event sign-ups, expressions of interest and event pages.
- PURE Grant Application Notification – streamlining the process and enhancing the accuracy of our records.
- The website also includes interactive guides for processes such as Innovation Vouchers and Postgraduate recruitment and enrolment.
- A notable initiative in this period was the digitisation of our budget sub account set up forms. This form is integrated across three University departments and has dramatically sped up the processing of new account set up for research income, facilitating the automated communication of key data between departments and ensuing a record for traceability and enhanced visibility.
- Digital in-kind timesheets for EU projects were also developed as a pilot for EU Conexus Plus. This will enhance the traceability of in-kind activity on research projects for PIs. This can be adapted and utilised for other projects.

The RSU continues to develop online and streamlined digital supports to ensure assistance is always available when needed and to enhance interdepartmental communication.

Key Resources for Researchers include our Proposal Cross Cutting Themes document for funding proposals, available on the RSU section of the Staff Hub. Funding opportunity updates are available on our National Funding Opportunities and Horizon Europe resources page on the [SETU website](#). Over the course of 2022 and 2023 we have expanded Information Resources on Gender, Research Integrity, Data Management etc., which are all located on SETU staff hub. This site acts as an intranet and will be updated with new resources as they become available as well as recordings and webinars provided over the year to our research community. We promote and share resources and information across all campuses, to better aid our research community.

Promoting the responsible conduct of research in the research community, Research Integrity training for all staff and students involved in research within the University provided by way of an online course offered by Epigeum. The course is now in its 6th year and is available to all SETU researchers and Postgraduate Students.

The Epigeum course includes a robust certification framework based on the key learner outcomes. The assessment is delivered using randomly selected questions to ensure learners can demonstrate knowledge across the breadth of the course before being awarded a certificate of course completion.

SUPPORT SERVICES

SETU's research community are actively encouraged to engage with the Research Office to promote their research achievements such as funding wins, publications and success stories. The Office issue a periodical Research News newsletter throughout the year highlighting these achievements and creating awareness of upcoming funding calls, research events and training opportunities. The platform has proven very successful since its inception as it provides researchers with a platform to promote their successes to the wider SETU community.

X (formerly Twitter) and LinkedIn have proven to be beneficial platforms for the SETU research community to share their achievements, events, promote funding opportunities and publications through the research support team. SETU has been an institutional member of Vitae for many years, giving all members of the research community access to a vast array of training materials. In addition to the digital materials available for download, Vitae host numerous online "Hangouts" each year, enabling researchers to engage with experts in open forum. Vitae supports professional development of researchers and advice for careers outside of academia while also supporting supervisors of early-stage researchers.

Continued Success Research Brown Bag Series

The research community have over the past 3 years used this platform to enhance research and knowledge sharing within the region. 'The Research Brown Bag Series' is a platform for researchers to present their research, share ideas and identify possible collaborative research opportunities. Each month the series addressed a diverse range of multidisciplinary topics, each with potential impact on the region. The series alternated with experts from different campuses, core strategic thematic areas including health, engineering, ICT, humanities, business and the environment were discussed with a focus on encouraging cross-institutional collaboration.

2023 SETU Research Excellence Awards

The aim of the awards is to recognise the outstanding contributions of SETU academic and research staff to high quality, innovative research that enhances the reputation of the University both locally and internationally. In 2021 the awards were extended to four categories, in addition to the existing Excellence in Research Supervision award introduced in 2005, to acknowledge the commitment and excellence of our research community in driving innovation and impact across all disciplines.

The 2023 awardees are:

- Early Career Researcher awardee – Dr Zeta Dooly
- Established Researcher awardee – Dr Lawrence Fitzhenry
- Research Impact Industry & Commercialisation awardee – Dr Niall O'Reilly
- Research Impact Policy & Practice awardee – Dr Imelda Casey
- Research Supervisor awardee – Dr Larry Stapleton

Now in its 3rd year running, the design of the awards and evaluation process was conducted by Dr Geraldine Canny, the Head of Research and administered by Jo Holohan, Projects Manager, Research Support Unit.

SUPPORT SERVICES

Nomination rules, processes and strict evaluation criteria for each category were distributed to all researchers and nominations for award categories 1-3 were evaluated by external experts. The Research supervision category and final decisions were reviewed by a panel comprised of Dr Geraldine Canny, Assistant Heads of Graduate Studies Dr Sinead O'Halloran and Dr Lawrence Siry, Head of Postgraduate Studies Dr Brian Jackson, Senior lecturer in Computing Dr Greg Doyle, and chaired by an external representative Dr Conor O'Carroll (SciPol).

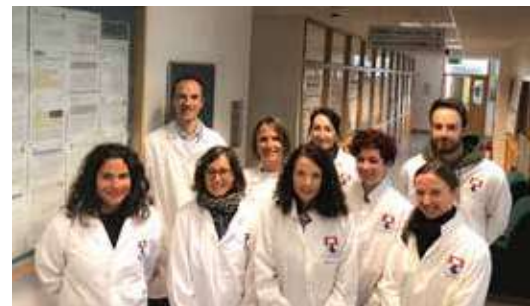
The inaugural President's Award for the Advancement of Research and Supervision at SETU was awarded to Dr Thomae Kakouli-Duarte. This award recognises excellence in contribution to the development of research and supervision at the University.

Dr Geraldine Canny (Head of Research) and Dr Thomas O'Toole (Acting Vice President of Research, Innovation and Impact), would like to congratulate all the [nominees and winners of the 2023 awards](#).

Visit from La Rochelle Université

The Research Office team was delighted to host 6 research staff from La Rochelle Université in October 2022. La Rochelle Université has been piloting the first European University for Smart Urban Coastal Sustainability (LUDI).

In line with La Rochelle Université's institutional project, the European University Alliance EU-CONEXUS not only reflects its ambitions for internationalisation, it also shares the same values: specialisation of research, exemplarity, innovation, and solidarity. On a European scale, EU-CONEXUS reflects La Rochelle Université's desire to build a new model of university: interdisciplinary, specialised in Smart Urban Coastal Sustainability (SmUCS) research topics, oriented towards excellence, and open to the world. These ambitions are shared by SETU and the visit provided an opportunity to create connections, understand our working practices in research administration and HRS4R and to identify research areas that are complementary to Smart Urban Coastal Sustainability.



EU-CONEXUS in numbers

- 9 partner universities – La Rochelle University (France), The Catholic University of Valencia (Spain), the Technical University of Construction of Bucharest (Romania), South East Technological University (Ireland), University of Zadar (Croatia), University of Athens (Greece), Klaipeda University (Lithuania), University of Rostock (Germany), and Frederick University (Cyprus)
- > 8,100 staff members
- > 71,000 students
- 98 research units
- 3 joint courses programmes – 2 minors, 1 master



STRATEGIC PROJECTS

The Office of Research, Innovation & Graduate Studies (RIGS) has engaged in a number of research-driven projects during the academic year 2022/2023 aimed at enhancing the research support infrastructure for the academic and research community at the University as follows:

PURE

Pure is SETU's Current Research Information System (CRIS). It consists of a Research Portal, which was launched in May 2022 on the Waterford campus. It showcases SETU's researchers and research outputs. The Portal aims to raise the visibility of the University's research and provide open access to our publications. The portal draws the data from Pure, and aggregates the information at an individual, research group/centre and organisational level. All research active staff and research postgraduate students are entitled to a personal profile page on the portal. Work continued in the 2022/2023 academic year in rolling out the research portal and encouraging all research active staff and postgraduate students to create a research profile and to keep it up to date at all times.

Pure also consists of an Award Management Module which was rolled out in December 2022. The Award Management Module enables the RSU to track, monitor, and manage research applications and awards. Integrated within Pure, the Award Management Module allows academic staff and researchers to create applications for funding in Pure, obtain institutional approval and keep track of their applications. It also allows for the recording of all funded research awards. The Award Management Module will help to streamline and automate the management of research applications and awards for effective research application approval and project administration.

QUALTRICS

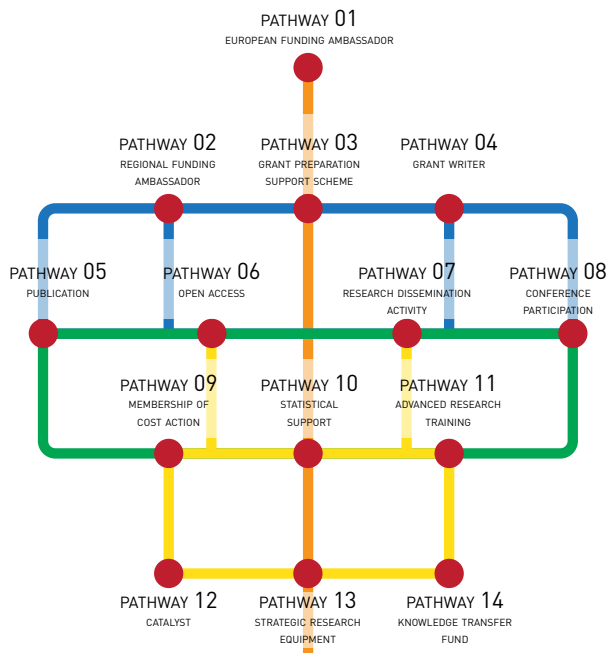
In June 2022 the University invested in 51 Qualtrics licences for the research and postgraduate community at SETU. Qualtrics Research Solution is an easy to use survey tool that can be used to conduct survey research, evaluations and other data collection activities. It enhances research impact, productivity, and data security for universities. Qualtrics is an end-to-end research solution specialising in data collection, for example: surveys and video feedback, sophisticated analysis, panel management, and data governance all in one place. Qualtrics is used by over 3,000 higher education institutions globally, including some of the top Institutions, Universities, and Technological Universities across Ireland and the UK. At the end of the year the University will assess the usage of these 51 licences in 2023 to assess the demand at SETU for a site wide licence into the future.

RESEARCH LEAD

The SETU Strategic Plan 2023-2028 aims to significantly expand SETU's research base, outputs and impact, enabled through increased research funding, research students and research staff. During the academic year 2022/2023 the Research Lead Funding Scheme was rolled out across the University. This internal funding scheme is supported by RFAM and supports the recruitment of a Research Lead in each School and Faculty. It is believed that supporting a Research Lead who is fully dedicated to the development of research, who is embedded in each School and Faculty will help to increase SETU's research outputs, outcomes and impact.

RESEARCH CONECTIONS

Research Connexions is SETU's internal research funding programme which was supported by TUFT. The scheme comprises a suite of fourteen funding pathways designed to enable and support research activity across ten Schools and Faculties at the University. Research Connexions provides the SETU academic community the opportunity to apply for internal funding to enhance and grow research activity, promote research networking and connections, increase competitively won research funding and increase the number of quality peer-reviewed publications, all ambitions linked to the University's wider strategy and to national goals. The 2022/2023 running of Research Connexions funded over 140 projects.



RESEARCH CONNEXIONS 2023

Research Connexions has proven invaluable to the academic community as it allows academic staff time to focus on grant applications and research publications and will enable SETU to continue to disseminate research more widely and collaborate with a more extensive network of partners both nationally and internationally.

HR STRATEGY 4 RESEARCHERS



The past 16 months has been a time of extraordinary change for colleagues at SETU, this period saw a significant transformation in the way we work together with a greater focus on collaboration. Reflecting on HRS4R key achievements and progress, advancements have been made in the areas of EDI in Research; Recruitment and Selection, Working Conditions and Social Security, Ethical and Professional Aspects and Training and Development.

HR EXCELLENCE IN RESEARCH

Equality, Diversity & Inclusion Gender Equality Action Plan & Horizon Europe. In 2022, a comprehensive review and mapping exercise was carried out by the VP for EDI in conjunction with the HR Business Partner for Research and an expert panel. This review ensures the University could evidence full compliance with all of the Horizon Europe Gender Equality Plan requirements and recommendations (SETU Horizon Europe GEP Mapping, Dec 2022). The President published a signed declaration confirming that existing SETU Waterford gender equality strategies and plans meet the eligibility criterion for Horizon Europe (Horizon Europe SETU Signed Declaration on Gender Action Plan).

Athena Swan – As the University works towards an Athena Swan Bronze Award application submission, we continue to foster the supportive relationships that have been forged across EDI, Research and HR, ensuring research colleagues with a range of diverse backgrounds, perspectives and experiences are represented.

Aurora Women in Leadership – In support of the University's Athena SWAN agenda and ongoing commitment to promoting and valuing leadership development and career progression for women across the University, the EDI Unit funded a number of places on the 2022/23 Aurora Programme, including a Postdoctoral Researcher and a member of SETU's PMSS staff supporting research.

The Women In Research network (WIRn) inaugural "Visioning Workshop" explored the accomplishments, challenges, quality of work experiences, insights and recommendations to build a more equitable and inclusive research community for women in research across SETU.

A major focus of HRS4R at SETU continues to be the delivery of a comprehensive professional development programme for Researchers through the Broaden Your Horizons Researcher Development Programme (BYH). During this period, over 35 bespoke training and development opportunities were made available to researchers across SETU from R1-R4. Researcher Orientation/Inductions focused on welcoming new research colleagues into the SETU Researcher community. The 9Plus Podcast series and the Research Brown Bag series gave researchers a platform to share and communicate their research work with the wider SETU community. Dedicated Career workshops were organised to give researchers the time to focus on planning their research career, with a career series of alumni talks were offered to PG researches. Other courses included Building Research Leaders; Active Networking, Online Engagement, Promoting Yourself and Your Research; Creating The 7 Secrets Of A Highly Successful Research Student (for Supervisors), Research Integrity; Ethical Research; Unconscious Bias Awareness, OTM-R training and HRS4R Information Clinics.

HR STRATEGY 4 RESEARCHERS

The ODYSSEY Researcher Mentoring programme ran for the fourth year guiding researchers with their own career development, developing competencies and problem solving skills whilst providing a more neutral support space outside of traditional managerial/supervisory relationships. The ODYSSEY also actively helps build a sense of community amongst Mentors and Mentees and within wider ODYSSEY networks.

Researcher Wellbeing – Through our work with HRS4R we have made real strides in the provision of support, training and resources to support researcher wellbeing, through numerous workshops and initiatives. We continue to bring new resources to help our research community members with their own wellness journey via our researcher wellbeing X account (formerly Twitter) @Wellresearch_SETU.

SETU's Coming Together Series was introduced with the intention of creating a cohesive research community across SETU. We have worked on building relationships based on mutual trust, committing to keeping researchers informed and engaged in every step of HRS4R. During the period, Researchers from across SETU participated in cultural, artistic, sporting and social events. Such events included, Researcher Rounders; SAMHANA at the Wicked Woods, Carols at Christmas and the Researchers Wellbeing Walk. These events are designed to help researchers to meet new colleagues, expand their network and hear others views and experiences of research life across the university in a relaxed social setting.

EXTERNAL ACTIVITY

SETU participated in Ireland's first ever research culture conference at the Royal Irish Academy "Research Culture Perspectives from Ireland and Abroad". The conference brought together members of the research community in Ireland, including researchers, research administrators, funders, and policy makers, for a meaningful conversation about the culture of research.

Enhancing Strategic Partnerships – we have continued to forge international alliances with relevant and mutually beneficial expertise, to improve our own provision and the profile of SETU internationally. We welcomed colleagues from La Rochelle Universite; Universidad de Catolica de Valenci (UCV) and the Institute of Physics of the Czech Academy (FZU). This type of exchange helps us to achieve our HRS4R vision of being a more outward-facing community whilst developing new collaborations, benefiting from different perspectives and staying connected to a diverse range of communities across Europe.

Gender Equality – we partnered with Maynooth University and five other national HEIs in a proposal entitled "Promote: Developing, Promoting and Implementing a Career Progression Training Platform & Network for Early Career Female Researchers-Academics (ECFRAs) across Irish HEIs", seeking funding under the HEA's Gender Equality Enhancement Fund 2023 (awaiting outcome).

Horizon Europe WIDERIA Access European Excellence Initiative – we learned of our success in becoming a partner in the EU-CONEXUS ENABLES project "Promoting excellence through innovative ecosystems". SETU will lead on the Research Careers work package.

Vitae Impact, Culture and Engagement (ICE) Awards – the work of our HR Business Partner for Research has been included in the longlist on the Vitae website in the Research culture impact through researcher development award category.

EDI – the joint International EDI Collaboration between University of Nebraska-Lincoln (USA) and SETU continues to evolve, sharing elements of best practice to embed EDI across institutional policy and governance, research, and education.

Going forward, the success of HRS4R at SETU, more than ever before, will depend on our ability not only to create new ideas, build on our strengths and address head on, those areas that we need to improve upon, but to collaborate, plan and work together to achieve them with a collective sense of purpose and shared values. We are very proud to be sector leading in terms of HRS4R in Higher Education in Ireland and a global collaborator of choice in the domain of researcher careers development. As the landscape for research and innovation continues to evolve and strengthen, our HR Strategy for Researchers will continue to shape and support it.

You can learn more about HRS4R at SETU by visiting our website or by contacting Eimear Fitzpatrick (Eimear.Fitzpatrick@setu.ie), HR Business Partner for Research and HRS4R Project Lead SETU.



ORGANISED RESEARCH UNITS

aRCH

ARCHITECTURE RESEARCH GROUP

The architectural profession embodies both disciplined, goal-oriented work and free, creative exploration of human-environment interaction. This complexity is central to aRCH's role in addressing current environmental challenges. Our focus areas include conservation, landscape studies, and design thinking, fostering collaborations across disciplines from engineering to humanities. We are dedicated to strengthening partnerships with local communities and authorities, as exemplified by the ongoing urban cultural heritage projects with the Waterford Cultural Quarter led by Dr Sharon O'Brien. The latest of these projects is peer-reviewed for inclusion in the online [EU Eurocities Cultural Heritage in Action Case Studies of Good Practice](#).

Another long-term commitment of the group is the support for the Human Capital Initiative Pillar 3, Innovation and Agility project "Resilient Design Curricula 2022-2025" which involves all schools of Architecture in Ireland. Through this project, group members are researching the best way to teach architecture to students and to understand methodologies for measuring the carbon footprint of their designs.

HIGHLIGHTS THIS PERIOD

- A big thank you to Ms Maire Henry, a long-time group member and supporter, for her contribution and wish her all the best in new inquiries and professional explorations.
- We welcome a new member of the group, a fresh PhD student at SETU, Ms Grace Johnson, who works on research project titled 'Earth as Our Client' – Rethinking the Client of Architecture. Grace is supervised by Dr Ray Griffin and Dr Aleksandar Kostić, who were awarded a presidential scholarship for this project.
- Grace Johnson presented a paper "How can post humanism be a method in architectural research?" at the All-Ireland Architecture Research Conference "Design Thinking for Ecological Futures" in TUD, Dublin, April 2023
- Dr Sharon O'Brien currently works on the inclusion of GIS in Architectural Pedagogy with the aim of developing a new undergraduate programme/CPD module.
- Dr Aleksandar Kostić presented a paper at the Conference Philosophy of Architecture in Belgrade and published a double-blind, peer-reviewed article "Plato's account of architectural expertise", in December 2022.
- Dr Aleksandar Kostić presented a double-blind, peer-reviewed paper (publication pending) titled "Tame, Wicked and Aporetic Problems in Design" at the Design Theory Symposium (Southern University of Science and Technology in Shenzhen, China) in June 2023.

ASC

ANALYSING SOCIAL CHANGE RESEARCH GROUP

The Analysing Social Change Research Group is dedicated to the methods and theories that underlie social research in diverse thematic areas. Contemporary society is experiencing rapid social change, with new and constantly changing social challenges and issues. We are in a period of unprecedented transformation in Irish society economically, politically, socially, legally and culturally.

We are witnessing dramatic shifts in work and welfare, social identities, political affiliation and movements, gender relations, family formation and the experience of childhood, political movements, demands for equality, modes of communication and community formation through the internet and social media. It is critical that such social changes are appropriately analysed. To this end, the ASC Research Group focusses on knowledge production, questions of how social change can be conceptualised using different theoretical lenses, and the methods through which social change is analysed.

While it is inevitable that studies of social change will focus on a dizzying array of particular topics, they share the underlying conceptual question of what is causing such change, what its broader implications are, and how social changes can be mapped.

HIGHLIGHTS THIS PERIOD

Multiple academic and practical outputs are a feature of ASC, with work from practitioners and academics from diverse disciplinary fields such as:

- Psychology
- Sociology
- English Literature
- Theatre Studies
- Religious Studies
- Languages
- Media
- Social Policy
- Social Justice

ACG

AUTOMOTIVE CONTROL GROUP

The Automotive Control Group was founded in 2000 to research the use of software and electronics in vehicles. Since that time the group has built up an international reputation for high calibre graduates through its industry-oriented research programmes and undergraduate automotive systems curriculum.

The group has an extensive range of research and employment collaborations with many leading international automotive companies. Areas of research interest include vehicle networking, Advanced Driver Assistance Systems (ADAS) and automotive software development processes.

HIGHLIGHTS THIS PERIOD

- The recent focus for the group has been on outreach activities, such as strengthening our collaborations with industry partners such as Jaguar Land Rover (JLR), promoting the undergraduate automotive software opportunities at SETU and hosting automotive cybersecurity technical events for industry.
- Presentation of Car2x protocol experimental results at the Vector Conference in Birmingham, UK.
- Provision of remote e-Learning training in Embedded Systems as part of the StudyATHome Internationally project with the University of Applied Sciences, Vienna and partners in North Macedonia and Czech Republic.
- Hosting of industry technical workshops on automotive cybersecurity, featuring industry speakers from Vector Informatik and Bentley. The topics covered were Cybersecurity Intrusion Detection Systems (Vector) and Diagnostic Port Risk Assessment (Bentley).

CALMAST

CENTRE FOR THE ADVANCEMENT OF LEARNING MATHS, SCIENCE & TECHNOLOGY

Calmast, SETU's STEM Engagement Centre on the Waterford campus was established in 2003, and is funded by SFI as the STEM Hub of the South East Region. The team at Calmast have won many national and international awards for their work including the 2007 EU Descartes award for Science Communication, the highest EU award in this area. Most recent awards include Award for Excellence in Public Relations 2022, THE AWARDS 2021 & Highly Commended 2021 for the Widening participation or outreach initiative of the year UK & Ireland 2021 and Winner of Best Education Outreach in Ireland at The Education Awards 2021.

The centre champions STEM and collaborates with industry, local authorities, and groups to ensure widespread access. Calmast establishes STEM Clusters in Clonmel, Waterford, Wexford, and Kilkenny, fostering a sustainable ecosystem for STEM education.

Calmast prioritise sustainability and have partnered with Waterford City and County Council (WCCC) on projects supporting decarbonisation by 2040. Calmast led a pilot project in 2022 and secured €250,000 funding for ACT 2 (running 2023-2025) with WCCC.

HIGHLIGHTS THIS PERIOD

- Total Funding of €1.3M and a total audience of 510,000
- Over 60,000 attended Calmast events across the region and 450,000 participated in Maths Week Ireland, which was founded by and is still coordinated by Calmast
- ACT Waterford - 5 artists worked with 5 communities in Waterford City and County on 5 separate climate action themes. Over 1,000 people participated in 48 events with 77% of participants indicating that have changed their behaviour in relation to climate change as a result of taking part in the project.
- Participation in multiple festivals including: South East Engineering Fest, Bealtaine Living Earth Festival, Spraoi, Robert Boyle Summer School.
- Coordinated 3 Science Festivals in Kilkenny, Waterford & South Tipperary, and South Wexford as part of National Science Week
- EU Conexus project: Calmast coordinated the schools competition as part of the SETU EU Conexus Project, with Ard Scoil na Mara Tramore winning 1st prize in the Junior section
- Workshops exploring creativity in STEM took place as part of the Crinniú na Nóg festivals across the region
- With HEA funding – working with RIKON and Growth Hub – Calmast developed and ran a Transition Year programme on STEM Entrepreneurship
- Renowned wordsmith Stephen James Smith ran workshops with Transition Year students in local schools
- In May, Calmast travelled to EUSEA Conference in Italy to present on Exploring Engagement in a complex world using ACT as a case study

CEDRE

CENTRE FOR ENTREPRENEURSHIP DEVELOPMENT AND REGIONAL ECONOMY

The Centre for Enterprise Development and Regional Economy (CEDRE) (led by co-directors, Prof Bill O’Gorman, Director for Research and Dr Eugene Crehan, Director for New Frontiers and Programmes) is an internationally-recognised, leading research centre for applied research into Regional Innovation Systems (RIS), Entrepreneurial Cities and Regions, the development of Knowledge Innovation Communities (KICs), and Smart Specialisation Strategies. The centre is internationally renowned for its entrepreneurship research and education programmes through its own Entrepreneurial Summer School and the New Frontiers (NF) Entrepreneurial Development programme.

NF is for potential entrepreneurs who have well-thought-out innovative business ideas and technologies. NF continues to play an important role within the entrepreneurial ecosystem of the South East region acting as a knowledge broker by connecting participants to other stakeholders such as the region’s four Technology Gateways as well as Business, Engineering, and Computer Science Faculties in SETU. Also, CEDRE, through its EU-funded programmes, continues to enhance SETU’s reputation and currency across Europe as a leader in the research and application of Regional Innovation Systems (RIS) and the development of robust frameworks for disruptive, innovative regional transformation.

HIGHLIGHTS THIS PERIOD

- Two-day international conference, Social Innovation and Education: Empowering Youth to be Future Leaders & Problem Solvers.
- Corporate Social Entrepreneurship handbook launch: Practical Tools and Knowledge for Action.
- Three-day residential hackathon, Grand Challenges: Circular Economy – Creating a Sustainable Future.
- Project Leader to develop the European Curriculum on Corporate Social Entrepreneurship (EMBRACE project).
- Launched the Corporate Social Entrepreneurship Community of Practice platform, CSELab.
- Developed modules for Digital Future Challenge Based Learning in Higher Education (DIFUCH) project
- Developed learning modules for Public Entrepreneurship as a Response to Complex Challenges (Public:START) project.
- Delivered 2 workshops on the international joint master programme, M2PI (Masters in Process and Production Innovation).
- Designed and managed the Empowering youth through responsive and responsible Corporate Social Entrepreneurship (CSE): Building future leaders, at the European Week of Regions and Cities (EWRC)
- Five research papers and 3 international conferences.
- Publications: 18 peer-reviewed journal articles, 2 chapters in international books, and 1 book
- New Frontiers worked with 30 businesses in Phase 1 of the programme and 9 in Phase 2. Three participants were selected for participation on Phase 3 of the programme where they received tailored supports on an individual basis to help them secure customers and/or investment.

CCRG

CREATIVITY & CULTURE RESEARCH GROUP

CCRG's research spans diverse disciplines from design, film studies, and literature to the hard sciences and maths, fostering collaboration across Humanities, Business, and Science. Investigating creativity and culture in various sectors like creative industries, NGOs, and education policy, members explore theoretical principles and apply them to different fields. They delve into the historical role of creativity, shaping culture, inclusion, and diversity. Their goal is a deep understanding of creativity and culture to enhance human life in our world.

Key research focus areas:

- Design & Climate Change
- Design and sustainability
- Design for innovation and the creative industries in an Irish context
- Traditional music culture in Newfoundland and its identity with Ireland
- Spirituality and Religion in Literature
- Music composition in film/moving image
- The interface between theology and film
- The hermeneutics of film
- Philosophical hermeneutics
- Sacramental theology and the visual arts
- Religion and social research
- The new visibility of religion in contemporary culture
- Wellbeing and culture in the everyday
- Inclusion, gender, race and identity
- Irishness and cultural identity in the arts

HIGHLIGHTS THIS PERIOD

The CCRG enjoyed a successful period of research including research outputs, collaborations nationally and internationally, and funded research activity.

Highlights of the period include:

- 2 journal publications
- 5 book chapters
- 12 conference papers presented both domestically and internationally
- 1 external examinership for a PhD student
- 5 invited lectures/presentations
- 6 conference/symposium curations
- The EU-funded Portalis project (€1.95M), funded through the Ireland Wales Cooperation Programme, coordinated by group member Joy Rooney
- 4 design practice-based research pieces stemming from the research conducted within the Portalis project

CFBR

CENTRE FOR FINANCE AND BUSINESS RESEARCH

The aim of this Centre is to promote high-quality research in accounting and finance, stimulate, support and enhance a research ethos for impact and influence. Established in 2009, this Centre now serves as a fulcrum for advanced scholarship, research activity and knowledge transfer in the Department of Accounting and Economics. It reflects the research mission of the School of Business as outward looking, engaged in national and international thinking and conducting impactful research. Our activities and research themes reflect the regional and national priorities for the financial services sector and are aligned with the strategic actions of the Research Fusion Strategy 2020-2023.

Key research themes:

- Accounting education
- Behavioural finance
- Governance and corporate responsibility
- Fintech and digital financial services
- Personal finance
- Small firm finance
- Sustainable finance

HIGHLIGHTS THIS PERIOD

- 4 international peer-reviewed journal articles and 12 peer-reviewed academic conference papers, invited presentations/practitioner publications
- Journal editorial board, co-editors, and reviewers
- Funding for 1 new PhD student (SETU Scholarship)
- Two PhD students selected to present at the European Financial Management Doctoral Colloquiums
- Delivery of 6 research workshops by Visiting Professor Ingrid Jeacle, University of Edinburgh, as well as one-to-one meetings with staff and research students
- New research collaborations established with Queens University Belfast and Maynooth University
- Hosted seminars by senior practitioners: Helen Martin, CEO of the Charities Regulator, Dr Paul Ryan, Head of International Finance and Climate Division, Department of Finance, Cathal Smyth, CEO State Street, Derek Delaney, CEO Waystone, Sean Downey, Deputy Head of Risk Expertise, Amundi
- Hosted Regional Investment Fund Administration Conference in association with the Funds Academy
- Close collaboration with Ireland South East Financial Services Cluster, presented on Financial Services Education in SETU to the cluster
- Contributed to the Funds 2030 public consultation
- Board membership of charities, professional and academic associations, and invited experts on policy formulation and education panels
- Irish Research Council New Foundations funding (with QUB) €19,995 secured for project Addressing Biodiversity Loss with Sustainable Finance: An All Island Research Initiative.

CHBR

CENTRE FOR HEALTH BEHAVIOUR RESEARCH

The Centre for Health Behaviour Research is based in the School of Health Science and conducts research and policy-relevant projects with a public health focus both nationally and internationally.

The key areas of expertise include:

- Evaluation of physical activity and health interventions at the community and population level
- Physical activity programming in recovery focused mental health services
- Implementation science research
- Health in Irish jockeys
- Men's health
- Active Travel evaluation and interventions
- Public health policy implementation and analysis
- Physical activity and cancer
- Social prescribing
- Social return on investment methodologies
- Social disadvantage and physical activity

HIGHLIGHTS THIS PERIOD

CHBR secured competitive research awards to pursue the activities below. Work is facilitated by 5 PhD students, 1 Masters student, and buyout of time for 2 staff members.

- The CHBR team published 15 peer reviewed articles in this time period
- The impact of the 'Ireland Lights Up' walking initiative on health and wellbeing
- Physical Pathways in Healthcare Model; Qualitative Research
- Football Cooperative, a community based physical activity social intervention for men: A feasibility study for scale up
- Measuring the mental health benefits of community-based physical activity programmes-what are the most important indicators for pragmatic evaluation?
- Effective implementation of physical activity programmes for individuals with chronic conditions: an investigation of 'ExWell' across multiple sites
- Evaluation of the Irish Heart Foundation's Mobile Health Unit Services
- Female jockey research-Jump girls
- Using mixed methods to develop a mental health in equine sport education programme

CHBR members are also involved in policy-relevant projects at national level e.g. National Physical Activity Guidelines, funded by the HSE, the Irish Physical activity Research Collaboration, funded by the HRB, and PAAC: Physical Activity for People with Chronic Conditions (PACC) CPD packages for exercise professionals.

CJRG

CRIME AND JUSTICE RESEARCH GROUP

The Crime and Justice Research Group (CJRG) is dedicated to the exploration and critical analysis of the social phenomena of crime and deviance, and considers both the formal and informal reactions to these phenomena.

Researchers in the CJRG are drawn from a range of disciplines including criminology, law, psychology, sociology and social science. This diversity allows us to foster a genuinely interdisciplinary research group focusing on the following research priorities and challenges:

- Punishment processes, practices and cultures
- Desistance, resettlement and prison studies
- Victimology and victimisation
- Security, online terrorism and radicalisation

Members of the CJRG are involved in COST Actions, have been commissioned by various national agencies to conduct research and their work has informed a number of different UN bodies on punishment and victimisation in Europe.

HIGHLIGHTS THIS PERIOD

- Atkins, D., Maguire, N. and Cleere, G. (2023) Experiences of Sentencing and the Pains of Punishment: Prisoners Perspectives, *International Journal of Offender Therapy and Comparative Criminology*. <https://doi.org/10.1177/0306624X221148127>
- Carr, N. and Maguire, N. (2022) Criminal Court Time and Social Work Time: Pre-Sentence Reports and the Chronotope of Adjourned Supervision in N. Carr and G. Robinson (eds.) *Time and Punishment*, London: Palgrave.
- Maguire, N. (2022) The European Supervision Order: Relegation or Renaissance? In Liz Heffernan (ed.) *Criminal Law and Justice in the European Union*, Dublin: Clarus Press.
- O'Mahoney, J. (2022). The Role of Digital and Public Humanities in Confronting the Past: Survivors' of Ireland's Magdalene Laundries Truth Telling. In T. Thomson & A. Schwan, *Palgrave Handbook for the Digital and Public Humanities*. London: Palgrave.
- O'Mahoney, J. (2023). Heritage and Conscience: Waterford's Former Magdalene Laundry and Industrial School. In S. Flynn & R. Hayes (Eds), *Urban Planning for the City of the Future: A Multidisciplinary Approach*. Emerald Publishing.
- Brennan, F 2023, 'Using Restorative Circles in Prison Officer Education'. Poster session presented at Connecting European Penitentiary Training Academies, Portlaoise, Ireland, 17/05/2023 - 18/05/2023.

CMRHHE

CENTRE FOR MANAGEMENT RESEARCH IN HEALTHCARE AND HEALTHCARE ECONOMICS

The centre is a collaborative venture between SETU and the Health Service Executive (HSE) that strives to address the need for a well-crafted and effective healthcare system in the Irish context. Our focus is on research themes in the broad areas of healthcare management and healthcare economics, across all levels of healthcare.

Centre members are engaged in research activities across a number of topics, consistent with the overall themes of the centre. These include:

- Performance measurement in secondary care
- Management in General Practice
- Risk management in secondary care
- Professionalism in healthcare

HIGHLIGHTS THIS PERIOD

- During this period, a student of the centre who was pursuing a PhD successfully completed this. Another student in a healthcare-related topic (who was co-supervised by a member of the centre) also successfully completed their PhD.
- A member of the centre is co-supervising two PhD students in healthcare-related topics who are based in another research group.
- In addition, members of the centre were co-authors of 3 journal articles addressing health or healthcare-related topics.

compuCore

compuCORE

compuCORE's members are primarily based in the Department of Computing in the Carlow campus. Members include 11 PhD candidates and 20 academics with extensive industrial experience across diverse domains. compuCORE's projects are often cross-disciplinary, combining computing with domains such as health and education.

Key areas of expertise:

- Gamification and Game-based Learning
- VR/AR
- Technology Enhanced Learning
- UI/UX
- Ambient Assisted Living (AAL)
- Data Science/AI and Machine Learning
- IoT
- Software testing
- Network Design and Management
- Cybersecurity
- Blockchains
- Gender Equality in Computing/Ethics

HIGHLIGHTS THIS PERIOD

compuCORE continues to expand its activities on a European level. The recent establishment of a new European consortium, comprising compuCORE, socialCORE, An Cosán, University of Tartu (Estonia), Vorarlberg University of Applied Sciences (Austria), Lappeenranta-Lahti University of Technology (Finland), and Technische Universität Dresden (Germany) led our first significant funding proposal with this consortium. During this period we also welcomed 3 new PhD candidates.

Funding:

- 1 project funded by the HEA's Gender Equality Enhancement Fund (GEEF): INDICATOR (Investigating the Gender Dimension in Computing Research across the Irish Higher Education Sector)
- 4 research projects funded by the National Forum of Teaching and Funding SATLE programme
- 1 SETU PhD Scholarship

Publications and conference presentations, including:

- Decentralisation and Privacy at MoneroKon 2022
- Digital tools for learning academic writing at EATAW 2023
- Digitisation of farming services at ESEE 2023
- Meta governance at IEEE COINS 2023
- Terminology Translation at the Machine Translation Summit 2023 and the European Association for Machine Translation 2023
- Publication in the special issue on Green IoT for Future Space-Air-Ground-Ocean-Integrated Networks and Applications in the IEEE Internet of Things Journal.

designCORE

designCORE RESEARCH CENTRE

The designCORE research centre focuses on Human Centred Product and Service Design. At designCORE, we collaborate across the natural and social sciences to further applied design research knowledge transfer at regional, national and EU levels. We engage rigorous research methods with expertise, academic theory with design thinking and practice to gain deep insight into real world contexts. We engage in academic enquiry to extend design research in the areas of theory and applied practice and disseminate knowledge acquired to make a tangible impact in early-stage design for industry, seek through to inform intervention for social benefit and support decision & policy making. Key areas of expertise:

- Product Design
- Service Design
- Design Thinking
- Design Practice
- Co-Design
- Social Design
- Ageing

HIGHLIGHTS THIS PERIOD

- Successful SFI Challenge funding was awarded for the cross-campus project 'PEStech' The project team are: Dr Ray Griffin, Dr P.J. White, Dr Aisling Tuite, and Dr Brian Casey.
- We welcome 5 new PhDs, 2 in Sept 2022 and 3 cross campus PhDs in Sept 2023, with a total of 6 successful cross campus PhD Proposals from this year's SETU PhD Scholarships.
- Several high-quality research outputs were produced ranging from high impact journal articles, conferences papers, seminars, workshops, national news articles, and podcasts.
- A new research Memorandum of Understanding was developed and signed with McMaster University Canada and McMaster Institute for Research on Aging (2023-2026). McMaster is a global top 100 university, and Canada's most research intensive.
- Successful award of SETU Research Connexions funding allowed Dr P.J. White to travel to McMaster University Canada to conduct research workshops to create their Major Program of Research proposal. This funding program is valued at \$1M and involves 15 interdisciplinary professors researching Digital Divide Bridging for Older Adults. Led by Prof Milena Head, Dr White is part of the core team developing the proposal which is now in for review with an international scientific committee.
- Trish Finegan, Veronica Kingston and Fintan Kennedy (Irish Rail) successfully defended their Masters by Research Vivas and graduated in January 2023.

EIRC

ECO-INNOVATION RESEARCH CENTRE

The Eco-Innovation Research Centre (EIRC) is the primary vehicle for environmental research in SETU Waterford. The centre is characterised by its international reputation, strong links with industry, and with the international academic community and is prioritised for development within SETU's strategy. The centre involves 25 academic staff and 23 post-graduate students.

The key thematic areas are: Sustainable Forestry research; focusing on forest protection, silviculture and wood energy; Biodiversity and Ecology Research; Sustainable Agriculture and Food research; with emphasis on Grasslands/Forage, and Animal health nutrition, Food and Soils; and Sustainable Marine and Coastal research; with research focused primarily on sustainability, protection and promotion of the environment.

EIRC is a multi-actor centre emphasising innovative development of high-value technologies from natural resources with low environmental impact. The centre focuses on sustainable solutions for various industries like marine, agriculture, forestry, and food sectors, along with green chemistry for bio-pesticides and pharmaceutical synthesis. SETU supports Eco-Innovation research across these diverse disciplines.

HIGHLIGHTS THIS PERIOD

- Dr Denise O'Meara awarded DAFM funding of €248,714 with ATU under the 2022 Policy & Strategic Studies Research Call.
- Prof Gillian Gardiner awarded SETU Research Excellence Award for Research Supervision in October 2022
- Elisa Arnaud awarded an Oral Presentation Prize at SETU Postgraduate Conference in May 2023
- Prof Gillian Gardiner awarded €15,000 for project 'ProSwine - Mapping a path to market for a novel probiotic feed additive for pigs'. Teagasc START Fund.
- Dr Anastasia Ktenioudaki awarded funding under EIT Food Seedbed Incubator Programme (€6k) and an Enterprise Ireland Commercialisation fund feasibility grant (15k)
- Dr Nick Mc Carthy was appointed to the Secretariat of FOREXT a Pan European network optimising tech transfer in Forestry.
- EIRC continues to be a member of the Institut Europeen de la Foret Cultivee through Dr Nick Mc Carthy's involvement as a management board member.
- 4 PhD students graduated from the EIRC this period carrying out research on sustainable grasslands, soils and DNA analysis of Bat diets.
- Researchers in the EIRC had over 23 peer reviewed Scientific papers published in the period 1 book chapter, together with over 20 conference presentations, 2 of these as invited speakers.

engCORE

CENTRE OF RESEARCH AND ENTERPRISE IN ENGINEERING

engCORE is an Engineering research centre in SETU, collaborating with industry and academia, supported by national and international funding. Researchers across diverse domains work together to create, advance, and disseminate innovative technologies that benefit the South East region. The centre's ethos is rooted in delivering unique industry solutions through a multidisciplinary approach.

The engCORE research group comprises 36 academic researchers supervising 30 postgraduate students, 74% of which are PhD scholarships. engCORE researchers have completed over 75 industry-led RDI projects with a broad range of SME and multinational enterprises. Projects range from small Innovation Voucher projects to larger Innovation Partnership projects and industry-led postgraduate projects funded through the Irish Research Council.

Our key thematic areas of research include:

- Artificial Intelligence & Machine Learning
- Materials & Surface Coatings
- Advanced Modelling & Simulation
- Signals & Sensing
- Sustainable Environment
- Cybersecurity for Industrial, Automation and Control Systems
- Space Technologies

HIGHLIGHTS THIS PERIOD

- Dr Yvonne Kavanagh appointed as Director of Engineering Research and Innovation
- Selected by THEA as an example of good practice in promoting regions' development through user-inspired research & innovation for the Mapping Regional Engagement of Universities of Applied Sciences project
- 4 SETU PhD scholarships awarded
- 35 research grant proposals (15% funded, 8 pending)
- 9 Research Connexions 2023 awards
- 16 journal publications and 16 conference publications
- The installation and commissioning of significant new R&D equipment funded through the EI Capital Call
- Successful completion of an IRC Ulysses mobility project on the Development of Cold Spray using micronozzles for milli to micro-scale metal deposition
- 4 postgraduate students competed in the 2022 Sir Bernard Crossland symposium in NUI Galway
- PhD student MD Shamsuzzaman awarded a scholarship as part of Bord na Móna 'Pathways to the Future'.
- Interdisciplinary Seed Funding 2023 award (€50,000, collaborating with Walton Institute), to progress a Long-Term Ecosystem Research network in Ireland
- Best Paper Award at the "2023 10th International Conference on Heat Transfer and Fluid Flow"
- Postgraduate researcher Theeba Shafeeg won a best poster award at the 2023 International Congress on Advances Materials Sciences and Engineering, Vienna
- Researchers presented a poster entitled 'Athena SWAN – The Impact of Self-Assessment and an EDI Action Plan on Enhancing Student Academic Life in the SETU Faculty of Engineering' at the 2023 SETU Equitas HE Conference.

enviroCORE

enviroCORE, INNOVATIVE BIO-ENVIRONMENTAL TECHNOLOGY

enviroCORE is a world class research centre in sustainable and innovative bioenvironmental technologies, with a view towards enhancing economic and social development in an environmentally friendly manner. enviroCORE currently hosts 24 academic staff, two postdoctoral research scientists, 35 postgraduate students, one intern and two visiting Erasmus interns. Work in enviroCORE delivers biological and chemical components, processes and biomaterials for sustainable food security and environmental protection. Researchers in enviroCORE are extrovert, embracing multidisciplinary, interdisciplinary and transdisciplinarity, and have established a broad international network, strong links and collaborations with national and international industry and regularly engage in science communication while maintaining wider community outreach.

Key areas of expertise:

- Ecology, biodiversity, and natural resources
- Phytotechnologies for waste treatment
- Biomass production and plant biotransformation
- Environmental sensors, bioindicators, and biosensors
- Environmental monitoring and risk assessment

HIGHLIGHTS THIS PERIOD

- 15 peer-reviewed publications, 2 book chapters, and 1 book.
- 6 presentations at national conferences (one awarded as best organic waste management presentation), 5 presentations at international congresses, 2 posters nationally, and 7 posters internationally.
- 2 PhD and 2 MSc students passed examinations, completing 2 industrially-funded projects by Alltech.
- Secured SETU's first IRC postdoctoral funding to develop ecotoxicological methods to risk assess hexavalent chromium pollution in soil, using the nematode *Steinernema feltiae*.
- Secured SETU's first IRC Enterprise Partnership Scheme Postdoctoral Fellowship to carry out an environmental risk assessment of GRI's peatland restoration efforts.
- Secured 4 SETU PhD scholarships.
- €111,000 Enterprise Partnership funding from IRC to study heritage wheat varieties grown organically.
- Established a high-end server to facilitate complex bioinformatics analyses on large genomics datasets.
- Collaboration with the UCD Centre for Humanitarian Action, Concern Worldwide and Wolaita Sodo University in Ethiopia as part of an EU-funded Horizon mobility project.
- Successful completion of the EU Horizon 2020 funded project Greener.
- €5M ReNu2Cycle project funded (€385,000 for SETU) via EU Interreg-NWE.
- Initiated a collaboration with Alltech Crop Science, bringing €80,000 to SETU.
- Dr Thomaé Kakouli-Duarte recognised as a Research Ally for 2022 by IRC.

ERRG

ENVIRONMENTAL RADIATION RESEARCH GROUP

The Environmental Radiation Research Group (ERRG) was established in 2020 and is based in the School of Science and Computing. The group's primary activity involves monitoring natural and artificial radioactivity levels in the Irish environment. Monitoring radioactivity levels can provide an early warning system in the event of a radiological emergency.

Key research areas for this group include:

- Environmental Radiation Monitoring with a focus on marine and air monitoring
- High-resolution Gamma Ray Spectroscopy
- Development of accurate methods for the determination of natural radionuclides by high-resolution gamma ray spectrometry.

The ERRG has developed a strategic partnership with the Environmental Protection Agency (EPA) over a number of years and SETU signed a Service Level Agreement (SLA) with EPA in 2019 to provide a framework for enhanced cooperation in areas of mutual interest in environmental radiation monitoring. The ERRG is part of the EPA's national radioactivity monitoring network. A specific role has been delegated to SETU, namely to provide additional laboratory measurement capability to the EPA in the event of a nuclear or radiological emergency.

HIGHLIGHTS THIS PERIOD

- New PhD student commenced on Radioactivity in the Irish Coastal Environment (RICE) project in July 2022; this EPA-funded project is led by SETU in collaboration with UCD, UoG and EPA
- Presentation of results from RICE project at a number of fora including Irish Radiation Research Society 2023 Annual Scientific meeting
- Ongoing collaboration with EPA under the Service Level Agreement on a number of projects
- All members of ERRG attended a five-day on-site GammaVision Gamma Spectroscopy Training Course at SETU which was funded through the Research Connexions scheme (June 2022)
- All members of ERRG participated in an EPA Radiation Monitoring Laboratory Exercise (June 2023); the purpose of this exercise was to identify gaps or omissions in arrangements for measurement capabilities which would form a key element of the EPA's response to a nuclear or radiological emergency

FRG

FOOTBALL RESEARCH GROUP

The Football Research Group aims to bring together academic members of staff from within SETU, expert independent scholars and those embedded within local and international, amateur and professional clubs and National Associations to produce research within the thematic area of football studies. The group draws on this broad range of expertise within the football community to utilise an interdisciplinary approach, which is driven by the recognition that to research such practical issues there needs to be a connection with the context, beyond academia. The strength of this collective places the FRG at the forefront of research in football.

The key areas of expertise include:

- Ecological approaches to talent development
- Psychosocial influences on talent development
- Education support for youth athletes
- Coaching research
- Youth development pathway analysis
- Stakeholder impact on sport structures
- Longitudinal player tracking
- Transitions in youth sport
- Relative age effect, growth and maturation

HIGHLIGHTS THIS PERIOD

- Secured UEFA co-funding for a PhD student on the scale-up of recreational football nationally
- SETU President's PhD scholarship award in the area of parental behaviour and engagement
- European Association of Sport Management conference presentation, Belfast, in the area of football environments for 6-12-year-old children across Europe.
- 3 journal articles in international science and sports journal publications
- Continued relationships with UEFA in the area of youth football
- Continued research relationships with National Football Associations e.g. Croatian FA, US Soccer
- Two book chapters in the book: Talent Identification and Development in Youth Soccer: A Guide for Researchers and Practitioners, Ed. Adam Kelly
- Various presentations in the area of youth development. e.g. presentations to coach education workshops on Relative Age Effect, growth and maturation, talent ID/development
- PhD supervisory team for the PhD project 'Football Cooperative: A community-based physical activity social intervention for men: A feasibility study for scale up'

healthCORE

healthCORE: CONNECTING FOR WELLBEING

healthCORE is located in the Department of Health and Sport Sciences at SETU (Carlow Campus) and is focused on driving innovation and informing evidence-based practice in chronic disease prevention and healthy ageing, and in tackling inequalities in health and sport.

Key areas of expertise:

- Gender and Men's Health – encompassing the National Centre for Men's Health (NCMH), which focuses on men's health policy, masculinities and mental health, and community-based health promotion programmes targeting hard-to-reach groups of men.
- Sports Rehabilitation – focused on injury risk in sport, injury prevention strategies, and wellbeing in target populations.
- Exercise and Sport Science – focused on sports nutrition, physiological demands of sport, and encompassing special interest groups such as 'FASTr' female athlete, exercise prescription for children with autism, community-based strength training for older adults and 'EVOLVE' Barefoot running.

HIGHLIGHTS THIS PERIOD

- Significant number of publications including journal articles, conference papers, and industry presentations.
- 27 postgraduate research students, 8 graduated in January 2022 (5 MSc, 3 PhD).
- Dr Noel Richardson received a 2022 SETU Research award for 'Research Impact Policy and Practice'.
- PhD student Conor Hammersley completed a Fulbright scholarship at Columbia University, New York.
- Delivered 2 suicide prevention projects, working with the National Office for Suicide Prevention and others.
- Member of the European COST action – Building a European Network for Osteoarthritis Management.
- Began a co-fund study in collaboration with Carlow Sports Partnership to roll-out the 'ExWell' physical activity programme.
- The Autism Research Group hosted a research seminar in May 2023 with keynotes from international experts.
- Dr Peter Francis and Dr Sharon Kinsella were nominated for 2023 SETU research awards.
- The EVOLVE research group hosted a 'Science of Feet and Footwear Conference' in May 2023.
- Maisie Squibb awarded a visiting research fellowship at Sports Performance Research Institute New Zealand
- The research of PhD students Conor Dowling and Lawrence King presented at the American college of Sports Medicine Annual Meeting in Colorado and at the Sport Ireland National Development Conference.
- Collaboration with the Exercise and Rehabilitation Sciences Institute, Universidad Andres Bello, Chile
- Niamh Spratt collaborated with KRSP on a research study exploring the experiences of the Ossory Youth LGBTQ+ group in sport and physical activity.

HBRG

HUMANITIES AND BUSINESS RESEARCH GROUP

The Humanities & Business Research Group has approximately 28 research active members conducting research across a plethora of research themes integral to the Humanities and Business disciplines. With members based in both the Carlow and Wexford campuses, the research conducted under the auspices of the Research Group commands a transformative approach, providing positive economic and societal impacts on the South East of Ireland and beyond.

Key areas of expertise:

- Marketing
- Human Resources Management
- Supply Chain Management
- Media and Public Relations
- Sports Management and Coaching
- Data Analytics
- Corporate Governance

HIGHLIGHTS THIS PERIOD

- 3 SETU-funded scholarships awarded to the value of €259,500
- Several publications were completed by members of the Humanities & Business Research Group in the following subject areas:
 - 'Teaching Practice Development' (published in Postgraduate Pedagogies Journal)
 - 'ESG and Sustainability Performance Rankings of International Football Leagues and their constituent Football Clubs' (published in Responsiball)
 - 'Financial Flexibility' (published in the Irish Journal of Management)
- Several papers/articles were presented by members of the Humanities & Business Research Group, including:
 - Irish Dance and Identity Politics on TikTok (presented at Boston College)
 - American Parcels: Irish American Diasporic Exchange 1930-2000 (presented at UCD)
 - Strategising Modes in Action (presented at the Irish Academy of Management Conference August 2023)
- Events: Care Turn in the Interdisciplinary Humanities, Visual Carlow
- One Masters by Research student graduated in January 2023 with research in the area of social enterprise impact measurement and experiences of social enterprises in the South East of Ireland

INSYTE

INFORMATION SYSTEMS AND TECHNOCULTURE

Based on research since 1991, INSYTE's prime focus is high quality, scholarly output at the cutting edge of emerging digital paradigms in systems and technologies and their social impact. The centre brings together a range of disciplines from across the university to tackle pressing challenges of the emerging digital paradigm. We offer deep insights into how technological and social systems can be co-designed in an ethical way to deliver sustainable performance. In recent years a major focus of our work has been the development of human-machine intelligence systems using smart data systems and human-centred systems design, computing and engineering, as well as diversity and marginalisation in the digital society.

Technologies and Methodologies:

- Smart Data and Metadata Standardisation
- Machine Intelligence
- 2D and 3D Digitisation Techniques
- Robotics, Participation Action Research.
- Indicative Areas of Publication:
 - Intelligent Human-Machine Systems Engineering and Methods
 - Smart Data and Data Science
 - Digital Cultural Heritage
 - Diversity, Inclusion and Exclusion
 - Knowledge Management

HIGHLIGHTS THIS PERIOD

- Members published and presented at International Federation of Automatic Control (IFAC) conference in Prishtina, Kosovo in 2022.
- Members published and presented at IFAC World Congress in Yokohama, Japan in July 2023.
- INSYTE members successful in bid for IFAC conference in SETU, Waterford in 2024.
- Diversity & Inclusion in Engineering: IFAC Diversity & Inclusion working group going from strength to strength with an IFAC D&I award created and positive updates to the Conference Organisers Guide.
- The Cooley Research Laboratory – this is a collaboration between the Luke Wadding Library and the Department of Computing and Maths with interdisciplinary members from Departments of Engineering, Business, Education, Tourism & Leisure along with industry and independent researchers. Continued engagement with undergraduate and postgraduate students on final year and research projects. Advancing the concept of a human-machine symbiosis in the curation of cultural heritage.

NRCI

NUTRITION RESEARCH CENTRE IRELAND

The Nutrition Research Centre Ireland (NRCI), based at Waterford SETU west campus, supports a multidisciplinary research team that studies the link between nutrition, lifestyle, and human function.

Areas of research include:

- The study of nutritional pigments called carotenoids
- Omega-3 fatty acids
- Vision
- Cognitive function
- Ageing
- Age-related macular degeneration
- Alzheimer's disease

Research expertise at the NRCI includes vision science, cognitive function, visual function, measurement of carotenoids, analytical chemistry, biochemistry, and inflammatory markers. The Centre also conducts clinical trials in these areas of expertise.

The centre supports the Howard chair of human nutrition research as Director, deputy Directors, post-doctoral researchers, PhD Students, laboratory technicians, research assistants, visiting research professors.

HIGHLIGHTS THIS PERIOD

- Management of BON conference www.bonconference.org
- Participation at International Carotenoid Conference Japan <http://carotenoid.org>
- Participation at the Council for Responsible Nutrition (awaiting publication) <https://www.crnusa.org>
<https://www.crn-i.org/web/2023-symposium>
- Major publication in Journal of Alzheimer's Disease <https://profjohnnolan.com/wp-content/uploads/2022/11/JAD220556.pdf>
- Conclusion of VistaMilk Project with generation of intellectual property
- Development of a spin-out campus company, Supplement Certified Ltd
- Secured co-fund research projects with IOSA, Cybercolors Ltd, and Maravilla IP
- Blue Plaque Event (Dr Mary Stangham) <https://www.waterfordlive.ie/news/home/1275988/in-pictures-heritage-blue-plaque-unveiled-to-mark-enduring-impact-of-waterford-suffragist.html>

ORG

OPTICS RESEARCH GROUP

The Optics Research Group (ORG) is a multidisciplinary research team based in the Department of Science. The activities of the group span many different aspects of optics and photonics.

Based in a suite of laboratories on the Cork road campus, the activities of the Optics Research Group (ORG) involve developing optical technologies for telecommunications and sensing applications.

Current research areas include high brightness semiconductor laser sources, Raman optical fibre devices, quantum dot dynamics, erbium fibre amplifiers, fibre Bragg sensors and quantum computing applications.

In addition to postgraduate research activities, the ORG labs host numerous taught MSc/MEng students and undergraduate projects as well as scheduled undergraduate Optics and Photonics laboratory sessions.

HIGHLIGHTS THIS PERIOD

The main highlights for this period relate to the execution and completion of a scholarship project involving the use of the nonuniform Fourier Transform to analyse the interferograms from non-uniformly sampled Fourier transform spectrometers.

This work which was funded under the previous internal WIT scholarship program resulted in the development of an alternative approach to the interrogation of the signal from Fibre-Bragg sensors that out-performs the traditional interpolation-based approach in many aspects.

The results of this work appear in the Journal Optics Communications in April of 2023 in a paper entitled "Application of the non-uniform Fourier transform to non-uniformly sampled Fourier transform spectrometers" and for the basis of the MSc thesis submitted for examination in July 2023.

OTRG

OCULAR THERAPEUTICS RESEARCH GROUP

A cohort within the PMBRC, the OTRG's primary focus is on the development and production of novel therapeutics to treat chronic and acute diseases of the eye. This is achieved by developing new nano- and micro-formulations, novel therapeutics, and designing innovative drug delivery platforms to improve patient outcomes and quality of life issues for a range of ophthalmic conditions. As the expertise for particular formulations grows, these are also applied to other pressing societal challenges that include COVID-19 and antimicrobial resistance.

The OTRG seeks to further develop and build upon the current SETU research strategy by producing ground-breaking and innovative research, publications, and industry-ready technologies. With such a multinational, interdisciplinary, and highly-skilled network, the OTRG helps enhance the relationship between SETU Waterford and local and international industry and academic partners, while maintaining focus on producing outstanding and career ready researchers. The work within the OTRG supports each of the pillars of the SETU Research Strategy through considered focus on impact – both the economic impact to society that the research can bring, and the impact upon the researchers (both early stage and career researchers).

HIGHLIGHTS THIS PERIOD

- 2023 Enterprise Ireland Partnership Scheme award, Protecting the vision of preterm infants: Developing new therapeutic strategies for retinopathy of prematurity
- Hosted the ORBITAL Annual Meeting, which brought 60 members of industry from across Ireland and Europe to SETU to discuss novel formulations/research taking place across the ORBITAL consortium
- GrowthHub Bursary Award to host the Ocular Research PITCH Contest in SETU, over 30 companies involved
- Hosted the first-ever Patient as the Teacher Workshop in Lisbon, Portugal – a World Café event bringing together 60 clinicians, patients, researchers, and carers to discuss the impact of living with ocular disease
- First-of-its-kind PhD project at SETU, focusing on the Patient Perspective in Ocular Disorders, "Ocular Nano-Therapeutics through Engagement and Developmental Research Originating from PPI ONE-DROP"
- Awarded IRC GOIPG scholarship - Design and Evaluation of First-line COVID-19 respiratory defence by immune-Enhancing Nano-Decoys (Ali Taha Ozdemir)
- Awarded the RFAM Interdisciplinary Seed Funding Award for Project NO TEARS (New Opportunities in Teaching, Engaging, and Advocacy Research Seminars on Dry Eye Disease) for developing a PPI Framework
- Oral presentation/poster presentations from group researchers Butsabarat Klahan and Saoirse Casey-Power at ARVO 2023 in New Orleans
- Patents for Ocular drug delivery and Microemulsion for Drug Delivery
- Publication: NAD⁺-associated-hyaluronic acid and poly(L-lysine) polyelectrolyte complexes: An evaluation of their potential for ocular drug delivery

PMBRC

PHARMACEUTICAL AND MOLECULAR BIOTECHNOLOGY RESEARCH CENTRE

The PMBRC has established itself as a leading research centre in the pharmaceutical, chemical and biological sciences in Ireland. As an Enterprise Ireland-funded Technology Gateway, the PMBRC supports R&D activities of a wide range of industries including the pharma, medtech, engineering and agri-food sectors. A truly multidisciplinary team, researchers in the PMBRC include chemists, biologists, biomedical scientists, physicists and engineers. The centre has established links with national and international partners across industry and academia.

The key areas of expertise include:

- Drug delivery
- Biomedical Science
- Molecular Biotechnology
- Organic synthesis and biocatalysis
- Solid state pharmaceutical science
- Sensor development

The centre has 40 researchers and staff at postgraduate and post-doctoral level with a further 20 members of academic staff actively involved in research supervision and management. The PMBRC collaborates with partners across Europe, Asia and North America. The PMBRC has a strong industry focus and has a client list of over 100 companies in the pharma, medtech, analytical science, engineering, food and veterinary sectors.

HIGHLIGHTS THIS PERIOD

- Expanded laboratory infrastructure including two dynamic vapour sorption units, a near-infrared spectrometer, a differential scanning calorimeter and a sputter coater. Funding for a new Nanoscale Chemical Imaging System has been secured from Science Foundation Ireland
- Launched major environmental initiative to improve the sustainability of the centre operations which resulted in PMBRC being awarded My Green Lab certification in 2023
- Dr Lee Coffey won the "Established Researcher Award" at the 2022 SETU Research Excellence Awards
- The Ocular Therapeutics Research Group hosted a special interest symposium at EVER in Valencia in 2023
- The Ocular group also hosted the first Ocular Therapeutics Post-Graduate and Industry Collaboration day, with members of over 60 industry organisations from Ireland, Finland, Italy, the UK and Spain in attendance, sponsored by the Growth Hub Bursary at SETU
- High-impact publications in top international journals
- 2 licenses/assignments of intellectual property signed with industry partners
- Work on the PMBRC-coordinated H2020 Marie Skłodowska-Curie European Training Network on Ocular Drug Delivery is ongoing
- Completed projects with 30+ companies across Ireland.
- Supported SETU's bid to develop a pharmacy degree course at the University
- 3 PhD students graduated from the PMBRC during this period

RIKON

HYBRID CENTRE OF INNOVATION IN BUSINESS TECHNOLOGY MANAGEMENT

Founded in 2007, RIKON's work is multi-disciplinary across Business and Management Innovation Research and Business and Technology Management. Our academies include: Future Enterprise & Innovation, Lean Enterprise Excellence, Management Practice & Business Development, Marketing & Digital Transformation, and T&L Innovations. Outputs include 880 peer-reviewed papers, 27 books, 112 book chapters, 40 case studies, and 52 industry papers, in addition to 1,136 Innovation Vouchers delivered to-date.

Our mission is to strengthen our position as an international research leader in business and management innovation, underpinned by multi-layered collaboration. Our goal is to provide novel business model strategies, as well as innovative process optimisation and marketing management solutions that surpass the expectations of our academic and industry partners. We are committed to UN sustainable development goals, conceiving, incubating and delivering conscientious socio-economic business solutions.

RIKON aims for Centre status, proposing the creation of BMI-RIKON, combining multiple research units. This merger will involve 6 academies, 6 industry service themes, 27 faculty members, 2 resident professors, 2 postdoctoral researchers, 7 affiliate researchers, 27 research students, and a team of 4 business technology strategists.

HIGHLIGHTS THIS PERIOD

Key current research projects

- LEAN 4.0 Disruptive Technology Innovation Fund, Coordinator (€1.5M), Lean in Healthcare (HSE, €200,000), E-CORRIDOR (H2020, €46,000), GRASS Ceiling (H2020, €300,000), Agri-DISCREET (DAFM, €60,000), HCI Pillar 3 Innovation & Agility Fund (GrowthHub), SETU value (€1.4M), EIT HEI Network Alliance Project (€180,000), SEALabHaus (Interreg Atlantic Area, €321,900)

Key current commercial projects

- Waterford City & County Economic Database (€45,000), Creative Economy (€30,000), VIPOP (EI Commercial Fund, €165,000)

Research Supervision

- Graduated 5 doctoral students (3 PhD, 2 DBA) – January 2023
- Currently supervising 18 doctoral students, including 4 IRC Scholars (2 EPS co-fund) and 3 SETU President's Scholarship awardees

Key Committee/Board Membership

- Rural Futures Committee, Department of Rural & Community Development
- Secretary, Advisory Committee, International Federation of Societies of Academies of Management
- Editorial Board Member of Service Industries, IJM, JWAM

SABRE

SABRE RESEARCH CENTRE

The SABRE Centre is a strategic alignment of existing research and innovation activity within the Department of Architecture & Built Environment at South East Technological University (formerly WIT). The Centre incorporates three established Research Groups (aRCH, BIMC, and iBERG) which have been active for over a decade, together with individual 'self-tasked' research staff.

The SABRE Centre builds upon the extensive network of industry partnerships. Many of these partnerships have been supported at local, regional and national levels by Enterprise Ireland and the professional bodies (Engineers Ireland, RIAI, CIAT, SCSi, CIOB, CABE, Energy Institute). These partnerships also include the extensive alumni networks for the relevant disciplines, many of whom are operating at very senior levels across the sector in Ireland and internationally.

The Centre's academic partnerships are well established both at home and abroad, including the active membership of the Build Digital Project and the HCI-P3 Resilient Design. On the international stage, SABRE's partnerships include ERASMUS+ partners, as well as the upcoming active membership of EU Conexus.

HIGHLIGHTS THIS PERIOD

- SABRE is a member the Build Digital Project (BDP) consortium that is led by TU Dublin with the Construction IT Alliance, Galway-Mayo Institute of Technology, Munster Technological University and University College Dublin. The grant agreement amounts to €2.5M over 5 years to deliver increased digital adoption across the entire Irish construction and built environment sector.
- The HCI funded (€5M over 3 years) Resilient Design Curriculum project will pilot a radical revision in architectural education to create Resilient Design Curricula embedded with the principles of the UN SDGs. The project's approach will adopt agile models of co-operation, collaboration, and co-learning. The six partners delivering architectural education will work together collaboratively and with the profession and industry to engender the knowledge and skills necessary for architects to respond to the twin challenges of the climate and housing crises whilst demonstrating the societal value of inclusive, safe, and resilient design.
- Digital Twin Waterford – As a new model for building smart cities, the Digital Twin Waterford (DTW) will reshape the city governance structures and rules and inject a continuous momentum for the development and transformation of cities. The rapid development of digital twin technologies has also made it possible to construct digital twin cities.

SEAM

SOUTH EASTERN APPLIED MATERIALS

SEAM is an Applied Research Centre and leading Technology Gateway Centre based in SETU Waterford. It provides innovative materials and design engineering solutions for industries seeking assistance on materials related issues that cannot be solved by utilising their on-site resources.

SEAM's unique strength lies in its ability to deliver professional, competitive customised solutions often under tight time constraints. SEAM's ability to satisfy industries needs is proven through dramatic growth of its client base, now serving over 250 companies from wide ranging industrial sectors.

Key areas of expertise:

- Material Processing, Process Monitoring & Process Optimisation for metal Additive Manufacturing (AM) parts
- Finite Element Analysis and Computational Fluid Dynamics of components systems
- Non-destructive investigations & Metrology evaluation using X-Ray Microtomography
- Failure Analysis of product components

HIGHLIGHTS THIS PERIOD

- SEAM awarded over €2M in funding through the Science Foundation Ireland (SFI) Research Infrastructure Fund to secure an exclusive high-power, high-resolution CT scanner, the first of its kind in Ireland.
- Added high-speed X-ray Imaging technology to our growing capabilities in industrial CT scanning and X-ray.
- Dr Ramesh Raghavendra visited two premier institutes in India namely, Indian Institutes of Technology Madras (IIT-M) and Indian Institute of Technology Pallakad (IIT-P) in December 2022.
- SEAM held its first industry day in over 3 years and over 120 members of industry attended. The agenda included speakers from industry who shared their experiences in the areas of Engineering Simulation, Additive manufacturing and Metrology.
- Official opening of SEAM's new Metrology Lab in October 2022. Our metrology lab boasts market-leading technology and has enhanced further our capabilities in a growing area.
- As our team at SEAM grows so too does our need for office space. We have recently moved some of our staff into new office to accommodate our expansion plans.

socialCORE

socialCORE

socialCORE focuses on applied research in the professional fields of social care, youth work and early childhood education and care. Its members are based at the Department of Humanities Carlow campus, and on the Wexford campus. It comprises 15 academic staff, 5 PhD students (three of whom are co-supervised with colleagues in SETU Waterford) and 2 MA Res students.

Key areas of expertise:

- Technology and early childhood
- Professional enculturation in social care placements
- Equality studies as applied ethics
- Unemployment and mental health/suicide prevention and social care
- Children's rights
- Evaluation research

HIGHLIGHTS THIS PERIOD

- 7 peer-reviewed publications including articles/chapters in the European Early Childhood Education Research Journal; Res Publica; Ethics and Social Welfare; Applied Social Care: An Introduction to Students in Ireland (4th ed); the Concise Encyclopedia of Applied Ethics in the Social Sciences and The Journal of Practice Teaching and Learning, plus 12 conference presentations nationally and internationally
- 1 IRC Government of Ireland Postgraduate Scholarship, 2 SETU PhD Scholarships, IRC Ulysses Award (with Institut Universitaire de Technologie du Havre), Youth Work Ireland (via the Youth Climate Justice Fund), 2 projects under the SATLE programme of the National Forum for the Enhancement of T&L in Higher Education, N-TUTORR Fellowship, SETU EDI Fund
- Dr Dean McDonnell and Dr Niamh McCrea nominated in the Established Researcher and Research Supervisor categories of SETU Research Excellence Awards 2023
- New research consortia established:
 - socialCORE, compuCORE, An Cosán (Ireland), University of Tartu (Estonia), Vorarlberg University of Applied Sciences (Austria), Lappeenranta-Lahti University of Technology (Finland), Technische Universität Dresden (Germany)
 - socialCORE, Youth Work Ireland and several youth organisations across Europe
- Muireann Ranta was Ireland Lead for the Erasmus+ OMEP International project, Sustainability from the Start: An Online ESD Curriculum for Early Childhood Education, Dr Dean McDonnell was re-elected to the Council of the Psychological Society of Ireland (2023-2026)

SpirSoP

SPIRITUALITY IN SOCIETY AND THE PROFESSIONS

SpirSoP was founded in November 2021. The group's focus and ambitions are aligned with the School of Humanities. It aims to:

- recruit students each year by identifying frontier research amongst the annual MA in Applied Spirituality cohort.
- develop a range of dissemination activities, including dissemination to the non-academic sector e.g. custodial care services.
- provide master classes in discipline-specific research methodologies/issues, particularly first person, indigenous, transpersonal methodologies.
- host international gatherings in key focus areas for the group; in collaboration with a cognate international network, where possible.
- cultivate a network of relationships with communities on spiritual tourism/pilgrimage for the purpose of contributing to regional development.
- increase research activity in the group by active participation in the various national/EU funding calls and by engaging with philanthropic funders such as Wellcome Trust, John Templeton Foundation, and the Leverhulme Trust.
- collaborate with SpIRE spiritualityinstitute.ie in delivering all of the above through provision of world-class, discipline-specific library collection.

HIGHLIGHTS THIS PERIOD

- SpirSoP collaborated with the International Network for the Study of Spirituality & the Spirituality Institute for Research and Education (SpIRE) to deliver on the Waterford Campus a full capacity international conference entitled, "Spirituality, Critical Reflection and Professional Practice in an Uncertain World". Participants travelled from 25 countries. Five keynote addresses over 80 parallel papers were presented from May 16-18, 2023. Dr Derek O'Byrne, Vice President for Academic Affairs opened the conference.
- November 2022, over 240 professors from 57 countries participated online in the Awakened Awareness Working Group at Colombia University's Teachers College, USA. Each participant sought to foster holistic learning and develop a sustainability mindset. Dr Bernadette Flanagan was an invited panellist.
- In May 2022 2 doctoral researchers in SpirSoP secured Government of Ireland Postgraduate scholarships:
 - Hunger for Food, Hunger for Life: The Inner Spiritual World of Women who have Overcome Eating Disorders is the title of Tara Traver's project
 - More than Rucksack and Hiking Boots: An Investigation of Spiritual Practices which can enrich the Experience of Pilgrims walking Pilgrimage Routes in the South East of Ireland is the title of Liz Murray's project.
- In July 2022, Spirituality and Addiction, edited by Bernadette Flanagan and Noelia Molina from SpirSoP, with a contribution by Padraic Hurley from SpirSoP was published and very favourably reviewed by Prof Thomas Plante in Journal for the Study of Spirituality.

WALTON INSTITUTE

WALTON INSTITUTE FOR INFORMATION AND COMMUNICATION SYSTEMS SCIENCE

For over 27 years, Walton Institute at SETU's West Campus has led cutting-edge research integrating fundamental science with practical applications, fuelling the emergence of the ICT industry in Ireland's South East. With 80+ research scientists and engineers, Walton maintains a global network of over 700 partners across 35 countries. In 2020, it propelled SETU (formerly WIT) to surpass all Institutes of Technology in securing European ICT research funding.

Walton focuses on ICT domains such as:

- Wired and wireless communication infrastructures
- Artificial intelligence and autonomous systems
- Pervasive sensing systems
- Immersive technologies (AR/VR)
- Data analytics and machine learning
- Internet of Things
- Quantum and satellite communication
- Biological nano communication

Walton generates versatile technologies applicable across various sectors like health, agriculture, retail, tourism, finance, transport, and entertainment through our diverse research programs. With over €135M secured in research funding, our involvement in SFI, EU, EI, and CR&D-funded projects surpasses €0.5B.

HIGHLIGHTS THIS PERIOD

- Total funding secured by Walton this period is €14.2M
- €10M Ireland Quantum Communications Infrastructure programme launched by Minister Ossian Smyth TD, creating a quantum technology ecosystem to future-proof Ireland's communications infrastructure
- Dr Deirdre Kilbane designated as national expert for quantum communication infrastructure
- 27 publications, 1 MSc student, and 2 PhD students
- TSSG Technology Gateway is renamed to ICS Technology Gateway at Walton Institute, joining the new Enterprise Ireland programme co-financed by the Government of Ireland and the EU through the ERDF
- Increased awareness of our expertise from national/international stakeholders, e.g. Bank of Ireland, NTMA, IDA, government departments and policy makers
- ICS Technology Gateway welcomed an increased industry collaborations totalling almost 100 partners
- Geo-tagged photo AgriSnap app was developed by Walton, DAFM, Teagasc and farmers helping smooth Common Agriculture Policy payments
- The innovative Re-Fashioning the Future project was a finalist in the Waterford Chamber Awards
- Minister Heydon launches the AgriDiscrete roadmap
- Kevin Doolin elected as Vice President of Waterford Chamber
- Members of 22 EU clusters/working groups
- Successful conclusion of the 5Gsolutions project
- Successful conclusion of €20M SmartAgriHubs (SAH) – Walton elected to the board of SAH EU network
- Jim Clarke was re-elected to the New European Media (NEM) Technology Platform Steering Board

WCLSS

WIRELESS COMMUNICATIONS & LARGE SCALE SIMULATION GROUP

This Research Group was formed in 2002 with the aim of researching wireless energy propagation, through air and materials, measurement and simulation of the characteristics of wireless communications' channels and antenna design. Recent research has also been carried out using wireless techniques where optical fibre is the medium, to improve data throughput.

Research carried out includes applied research for innovation in novel antennas, modulation, coding and related embedded processing. Innovations in electronic embedded systems are also being exploited. This permits extensive research in wireless sensing, embedded systems and control.

The key areas of expertise include:

- Modulation over Optical Fibre
- Embedded Systems
- Electromagnetic Propagation
- Sensor Systems

HIGHLIGHTS THIS PERIOD

- Ongoing research, based partly in DCU, on modulation and recovery schemes for high-speed optical fibre communications
- Ongoing PhD Supervision of research in the Spectrum Analysis / Cognitive Radio space.
- Full paper presentation: Development of 3D Printed Metallic Lenses, Deepak Shamvedi, Paul O'Leary, Ramesh Raghavendra, 17th European Conference on Antennas and Propagation (EuCAP) (pp. 1-5). IEEE., Florence, Italy, March 2023
- Full paper presentation: A Quality Framework for HE Micro-Credentials, Paul O'Leary, Zeta Dooley, Ken McCarthy, 8th International Conference on Higher Education Advances (HEAd'22), Valencia, Spain, DOI:10.4995/HEAd22.2022.14673
- Started a new PhD research supervision in eXtended Reality (XR)
- Delivery of a Students' Academic Misconduct Workshop, International Seminar on Internal QA: Perspectives and Challenges, October 10-12, 2022, Tbilisi, Georgia
- Poster presentation: Performance analysis of under-sampled autocorrelation-based spectrum sensing for cognitive radio networks, Farwa Ahmed, Pat Chambers, Darren F. Kavanagh, Paul O'Leary, 34th Irish Signals and Systems Conference, ISSC 2023, University College Dublin, Dublin, Ireland 13-14th June 2023
- Application for a Government of Ireland Postgraduate Grant (August 2023)

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