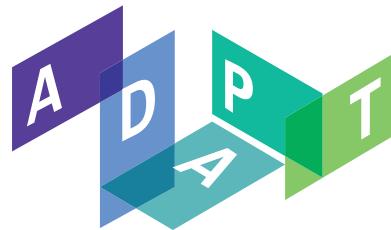


ADAPT: Centre for Digital Content Technology

ADAPT is Ireland's global centre of excellence for digital content. Recently awarded €50 million in additional funding, it is a world-leading multi-institutional research centre. It combines the expertise of researchers at four universities with that of industry partners to produce ground-breaking innovation in digital content that is revolutionising the way people interact with content, systems and each other.



**Engaging Content
Engaging People**



ADAPT's cutting-edge technologies enable businesses in all sectors to analyse, personalise and deliver content more effectively to drive engagement, reach and revenue.

Research Areas

- Our analysis techniques allow more powerful tailored access to customer and community insights
- ADAPT is pushing the boundaries of human speech and gesture recognition to increase the accuracy of robotic interpretation
- We extend the effectiveness of all the MT system types across a wide range of languages and domains
- ADAPT are transforming and delivering personalised content
- Our Machine Learning models enable the analysis of complex data such as financial data sets giving accurate results on large scale data sets
- ADAPT's technology facilitates the recognition of relationships between multi-dimensional data sets by providing new ways to interpret, interact with and gain insights from data

HOST INSTITUTION



The University of Dublin

PARTNER INSTITUTIONS



Research Programmes

Many of ADAPT's 200 researchers collaborate on research projects with industry partners. Current projects include:

- Next Generation Recommender Systems - A Collaborative, Contextual, and Content-Based Recommender
- Novel Visualisation of Financial Data - Using VR to explore confidential financial risk
- Street View Object Detection and Mapping - Discovery and geotagging of assets in street-level imagery
- Dialogue Machine Translation - Building real-time, task-oriented dialogue translation systems

Facilities

- Content-aware multilingual search and discovery technologies
- State-of-the-art interactive information retrieval and meta-data semantics models
- World-leading language technology systems
- Personalisation and delivery applications for textual and multi-modal content
- Dedicated Design & Innovation Lab (dLab) aims to solve immediate business needs by leveraging the outputs of platform research to generate commercial impact for ADAPT partners

Industry and Commercialisation

By enabling deeper engagement for users, ADAPT enhances efficiencies and global reach for a range of industry partners in industries such as ICT, localisation, financial services, eCommerce, eHealth, media, entertainment and games, life sciences, digital culture and humanities, and eLearning/education.

Industry Partners Include:

- Accenture
- Huawei
- Novartis
- Symantec
- Brite:Bill
- IBM
- OSi
- VistaTec
- Deutsche Bank
- Intel
- PayPal
- Welocalize
- DID Electrical
- Iconic
- RTÉ
- Wolters Kluwer
- eir
- Kantan MT Microsoft
- Ryanair
- Xanadu Consultancy
- eBay
- Moravia
- Sajan

Education and Public Engagement:

The theme of ADAPT's Education and Public Engagement programme is Engaging in Our Digital World. The Education strand aims to foster skills necessary for citizens and students to engage effectively in our increasingly digital world and to drive future developments in this rapidly-changing field.

The Engagement strand engages the Irish public with experiences that incorporate discussion, dialogue and deliberation around societal implications of digital engagement.



Key Contacts

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CEO

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Vincent Wade holds the Chair of Computer Science in the School of Computer Science and Statistics, Trinity College Dublin. He was awarded Fellowship of Trinity College for his contribution to research in knowledge management, web-based personalisation and adaptive technologies. He holds multiple patents relating to personalisation and adaptive digital content. He has authored over 300 peer-reviewed scientific papers, received seven 'best paper' awards and has numerous patents in knowledge engineering.

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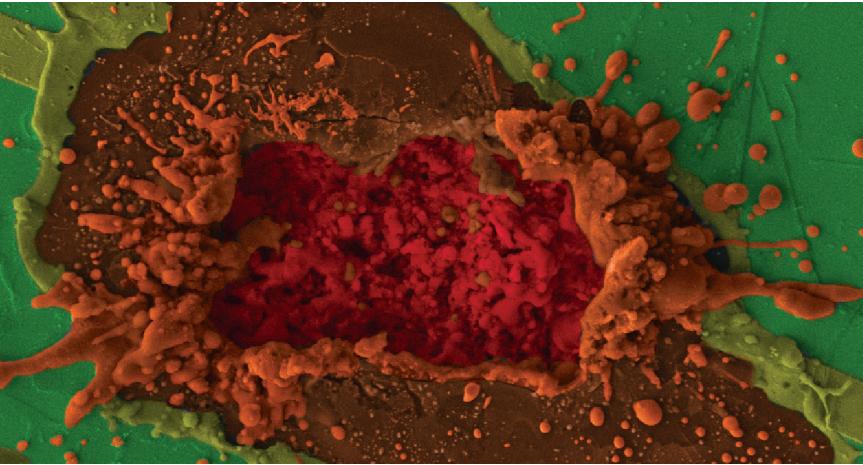
Science Foundation Ireland

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Advanced Materials and BioEngineering Research (AMBER)

AMBER provides a partnership between world-class materials science researchers and industry.

AMBER is at the forefront of translating leading science into new discoveries and devices for the ICT, medical devices, pharmaceutical and industrial technology sectors.



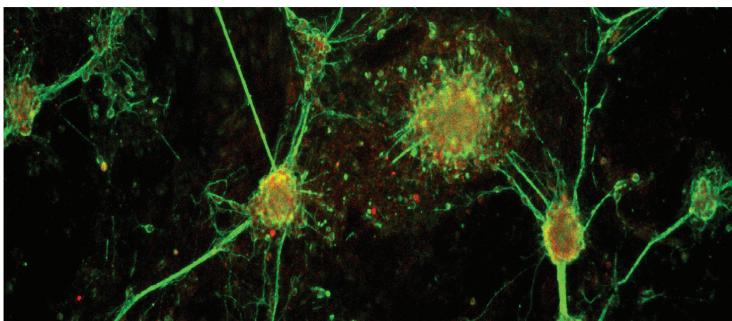
With €85 million in expected funding over six years from Science Foundation Ireland, industry and international sources, the centre combines fundamental and applied research activity within a vibrant culture of industrial engagement and commercialisation.

Research Areas

- › 2D materials and composites
- › Biomaterials
- › Medical devices
- › Semiconductor and memory devices
- › Polymer nanocomposites and membranes



PARTNER INSTITUTIONS



Research Programmes

AMBER's 120 researchers are tackling significant industrial challenges. Their work includes the development of:

- › Novel device architectures and magnetic memory applications
- › Thermoelectric and energy harvesting devices
- › Mechanically, electrically and optically enhanced polymers
- › Surface property modification using nanopatterns
- › Membranes and porous media
- › Food, pharmaceutical packaging and sensing applications
- › Advanced materials and device modelling
- › Drug encapsulation and delivery systems
- › Regenerative tissue engineering

Facilities

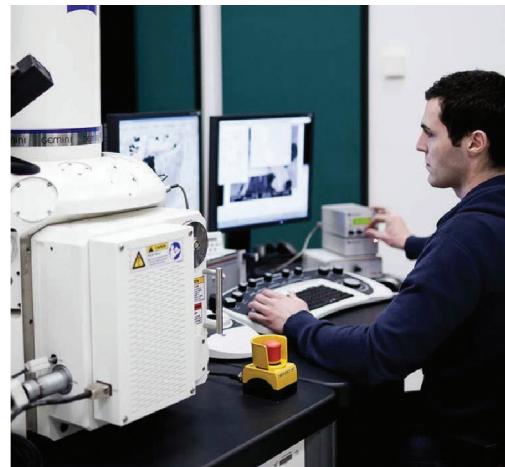
- › Advanced microscopy and nanofabrication lab
- › Polymer development and characterisation lab
- › Photonics lab
- › Clean-room facilities
- › Metrology/spectroscopy
- › Additive manufacturing

Industry and Commercialisation

Central to AMBER's research remit are the collaborative projects it carries out with diverse industry partners. AMBER is creating new knowledge and intellectual property. It is transferring that knowledge to industry through licensing agreements, industrial staff exchanges and spin-outs.

Industry Partners Include:

- > Adama Innovations
- > Glantreo
- > Mergon Group
- > Alcon
- > Innalabs
- > Nokia Bell Labs
- > Amebis Ltd
- > Innovative Polymer Compounds (IPC) Ltd
- > SABmiller Plc
- > Bioplastech
- > Integra Lifesciences
- > Sigmoid Pharma
- > DePuy Synthes
- > Intel
- > Solvotrin Therapeutics
- > Diageo
- > Medtronic
- > Western Digital
- > Eblana Photonics
- > Merck Millipore
- > Glanbia



Education and Public Engagement:

AMBER develops training and educational programmes which impact all levels of the formal education system from primary school to fourth level. As an interdisciplinary and inter-institutional centre, AMBER ensures the incorporation of interdisciplinary research programmes and training elements. In addition, AMBER ensures graduates and postgraduates have a combination of technical aptitude and a range of generic and transferable skills. AMBER is also committed to the development of novel outreach programmes which aim to stimulate discussion on the role of science in defining how we live our lives.

Examples of AMBER's schools' programme:

- > Exploring Materials, a Transition Year work experience programme
- > Magical Materials, a week-long continuous professional development (CPD) course for primary school teachers
- > NanoWOW, a resource pack for primary school teachers to introduce nanotechnology and materials science to 5th and 6th classes
- > Nano in my Life, a resource pack for Transition Year teachers to introduce nanoscience to their pupils

Key Contacts

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Professor Michael Morris is Professor of Surface and Interface Engineering at Trinity College Dublin. He is a founder of Glantreo, a SME spin out for Cork, and maintains links in developing novel stationary phase materials for chromatography applications. His work includes collaboration on the development of new technology for the manufacture of logic/memory circuitry. He also has several engagements with other companies based on his experience of surface engineering and materials science.

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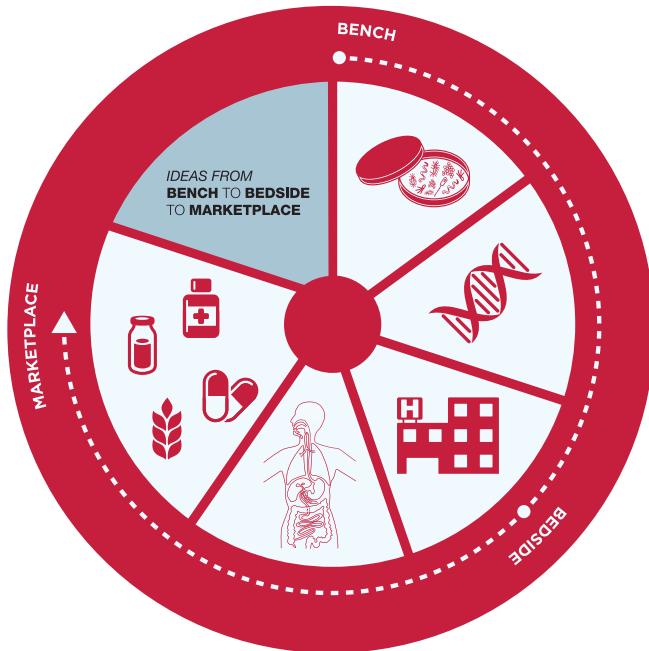
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#BelieveInScience

APC Microbiome Institute

APC is a gastrointestinal health research institute exploring the role microbes (microbiome) play in health and disease. The microbiome is a target for treatment and prevention of disease, and a source of functional food ingredients, new drugs and disease biomarkers.



One of the world's leading institutes in gut microbiome research, APC is receiving €70 million in SFI and industry funding across 2013-2019. It hosts a diverse group of clinicians and scientists working in teams and sharing ideas and resources.

Research Areas

- Discovery of molecules for therapeutics and functional foods
- Designing functional ingredients/foods across the lifespan
- Links between diet, microbes and mental health
- Signalling, host immune-inflammatory responses
- Phage as regulators of the microbiome in health and disease



Interfacing Food & Medicine

Research Programmes

APC's 300+ researchers include global research leaders in food/pharma areas, such as gastroenterology, microbiology, immunology, neuroscience, nutrition, neonatology, gerontology, cardiovascular and metabolic health.

Technology Platforms

- Culture collection
- Next generation sequencing
- BioIT
- Pre-clinical and germ-free
- Human studies
- Flow cytometry
- Bio-processing

Industry and Commercialisation

The APC team has extensive experience collaborating with the food, agriculture, pharmaceutical, biotechnology and diagnostic sectors and welcomes new industry partnerships.

APC's industry partners can access technology platforms, extensive databases and biobanks, and the expertise of its investigators.

Now in its second decade, APC has developed several technology platforms that can be of significant benefit to industry clients in furthering their own R&D agendas.



**Mining the Microbiome
for different life stages**

Current Industry Partners Include:

- > AbbVie
- > Friesland Campina
- > Kerry Foods
- > Second Genome
- > Adare Pharma
- > GE Healthcare
- > Mead Johnson Nutrition
- > Sigmoid Pharma
- > Alimentary Health
- > General Mills
- > Nutricia Advanced Medical Nutrition
- > Suntory Wellness
- > Cremo SA
- > Janssen Pharmaceuticals
- > Trino Therapeutics
- > Danone
- > 4D Pharma



Education and Public Engagement:

APC's main ambition is to create economic and societal impact, and collaborations with innovative industry partners are key to this success. They design industry workshops to cater for the ongoing research and training requirements of the food, pharma and diagnostic sectors with a view to attracting new industry partners. APC in collaboration with Science Foundation Ireland, is involved in many local and national events, including Science Week, Smart Futures and the following unique programmes:

- > The Microbe Magic @ School programme for primary schools
- > Budding Biologists Programme for secondary schools
- > Science for All in which postgraduates present their research to the general public
- > Bringing Science to Society, a programme to engage the wider scientific community and stimulate public engagement

Key Contacts

Prof Fergus Shanahan

APC Microbiome Institute Director
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Fergus Shanahan is Professor and Chair of the Department of Medicine at University College Cork (UCC). He was previously Associate Professor of Medicine with tenure at University of California, Los Angeles (UCLA). He has published more than 500 peer-reviewed scientific articles and several books. He has particular research interests in mucosal immunology, inflammatory bowel disease and most things that influence the human experience. Science Foundation Ireland named him as 'SFI Researcher of the Year' in 2013.

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Dr Sally Cudmore

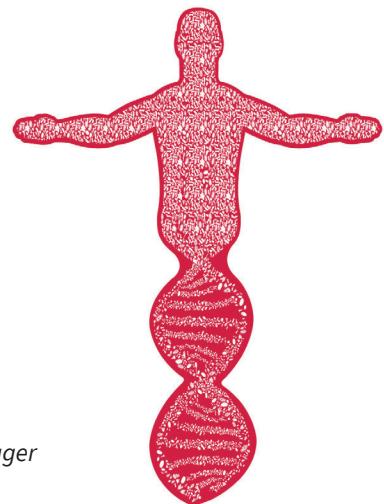
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Science Foundation Ireland For what's next

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BEACON Bioeconomy Research Centre

BEACON Bioeconomy Research Centre harnesses the wealth of Ireland's natural resources on land and in the sea for the development of a sustainable circular Irish bioeconomy, enabling vibrant sustainable communities.



BEACON develops sustainable novel processes and products using biobased resources, creating clusters for new industry partnerships and delivering the expertise and trained workforce to translate new technologies into new sustainable products, processes, markets and industries.

Research Areas

- Bioeconomy
- Agri-Food
- Marine
- Advanced Materials
- Renewable biological resources
- Biotechnology/Biologics
- Resilient and Resource-Efficient Value Chains
- Rural Renaissance

HOST INSTITUTION



PARTNER INSTITUTIONS



Trinity
College
Dublin



NUI Galway
OÉ Gaillimh



teagasc
Agricultural and Food Development Authority

Research Programmes

BEACON will address 3 key interrelated research questions

1. Selective Separation
2. Conversion
3. Sustainability

Facilities

- HPLC coupled to size exclusion chromatography with refractive index detector
- Q Exactive
- Varian Saturn 2000 GC-MS (ion trap) with GC olfactometry
- NMR Spectroscopy
- Mass Spectroscopy
- Electron microscopy

Industry and Commercialisation

BEACON collaborates closely with industry across the Agri-food and Marine sectors to convert residues and waste streams created during primary production processes to higher value products (including food/feed ingredients), creating new business opportunities and new value chains, enabling our partners to diversify and increase resource efficiency.

Through our partnerships we are stimulating rural regeneration, curtailing environmental damage, extracting healthy nutritional supplements, reducing import dependency, and developing human capital.

Industry Partners Include:

- > Alltech
- > Commercial Mushrooms Producers
- > Monaghan Mushrooms
- > BHSL
- > Glanbia
- > Nucleus VP Energy
- > Bioatlantis Ltd
- > HJL Scientific Ltd

Education and Public Engagement:

BEACON's public engagement programme focuses on enhancing the public understanding of bioeconomy and its impact on Irish society.

Research outputs from BEACON's Sustainability Platform informs and supports dissemination activities, including the development of the knowledge hub which integrates emerging knowledge from the Centre for engagement with consumers, society, industry, investors, researchers, regulators and policy makers.



Key Contacts

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Prof Kevin O'Connor, University College Dublin, is shaping the European Bioeconomy Strategy through his chairmanship of the Scientific Committee for the €3.7bn PPP (Bio Based Industries). He has been at the forefront of national developments and was instrumental in securing EU Model Demonstrator Region (MDR) status for the Southeast, drawing together stakeholders from industry, academia and policy-makers from Tipperary County Council. He is a champion for the step-change a bioeconomy can deliver to the Irish economy and society. He is a PI on EU projects researching synthetic biology (P4SB) and biobased products (SYNPOL). Consequently, he is very strongly networked with leading industries, academic institutions and policy makers in the bioeconomy. He is the recipient of Nova UCD Innovation award 2016.

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CONFIRM Smart Manufacturing Research Centre

Smart manufacturing involves the complete convergence of IT systems and industrial automation systems. Confirm's mission is to support the transformation of the Irish manufacturing sector to a smart manufacturing paradigm. This will enable advanced capabilities for industry in the areas of customer-centred manufacturing, optimised real-time decision-making, increased product quality and new business opportunities.



Confirm will be a game changer for Irish manufacturing competitiveness, delivering the technological advances and expertise for a smart manufacturing innovation ecosystem, enabling companies to compete within the rapidly changing global landscape, and boosting Ireland's reputation as a leading international manufacturing location.

The Centre benefits from expertise spanning 8 core research performing organisations in Ireland and 16 international collaborations. The centre also benefits from collaboration with 42 Industry partners across MNC and SME sectors.

Research Areas

- Smart manufacturing
- Optimised processes/products
- ICT-enabled production
- Sensor-enabled tools
- Virtual industrialisation
- Adaptive data-analytics
- Right-first-time decisions
- Test-Bed & Prototype lines



Confirm Smart Manufacturing

Research Programmes

CONFIRM will undertake fundamental scientific and engineering research to deliver disruptive innovations in the following areas of digital manufacturing:

- Hub 1 – Virtual Industrialisation, focusing on adaptive data analytics and optimisation for smart manufacturing; end-to-end supply chains and predictive modelling of manufacturing.
- Hub 2 – Cyber-Physical Manufacturing Systems, focusing on connected infrastructures, machines & software systems; data, information, knowledge integration, security and technology adoption; and semantic interoperability and data analytics for production.
- Hub 3 – Self-Aware Manufacturing Systems, focusing on advanced sensors, controls and robotics to add intelligence, efficiency and safety to machines and production systems.
- Hub 4 – Testbeds & Prototype Lines to provide versatile, adaptable facilities for collaborative assessment and validation of CONFIRM's technologies by all stakeholders.

Facilities

Confirm is currently planning to build its Headquarters at Park-Point, located near the gates of the University of Limerick. This 16,000 m² facility will house many of Confirms 160 strong research staff, resident and visiting Investigators and international collaborators, Industry partners and very many test-bed and prototype facilities.

Industry and Commercialisation

The manufacturing sector is the second largest employer in Ireland and accounts for €110 billion in exports. Smart manufacturing optimises production systems, adding intelligence and enhanced information technology. These new technologies will be at the heart of the factories of the future, increasing product line adaptability, enabling real-time decision making, shortening supply-chains, and speeding up the development of new innovations to produce higher-quality goods at reduced costs across all industry sectors. CONFIRM will be revolutionary for Irish manufacturing competitiveness, delivering the technological advances and expertise for a smart manufacturing innovation ecosystem, enabling companies to compete within the rapidly changing global landscape, and boosting Ireland's reputation as a leading international manufacturing location.

Industry Partners Include:

- Johnson & Johnson
- SL Controls
- Analog Devices
- United Technologies Research Centre Ireland
- Action Point
- KUKA
- Modular Automation
- Medtronic

Education and Public Engagement

Confirm's EPE instruments include:

- Smart Manufacturing & Robotics for Primary Schools
- Access to Extensive Education Programmes inc. Professional Doctorate in Engineering, MEng Mechatronics (in partnership with SL Controls and J&J), MSc Artificial Intelligence, MSc Data Analytics, MSc Business Analytics; BSc Engineering Science and many Apprenticeship programmes.



Key Contacts

Prof Conor McCarthy

Director

As Professor of Engineering at the University of Limerick, Professor McCarthy also leads a research group, who are developing novel methods to join high performance composite materials to other lightweight materials, to result in structures with superior strength and stiffness properties, and with only a fraction of the weight compared to typical steel or aluminium structures. This work has attracted over €6 million in competitively won research funding from Europe, Irish research funding agencies and both national and international Industries. His research has led to over 150 high impact publications and a patent pending on a new smart glue that can be "unzipped" using only high frequency radio waves for applications in automotive assembly down to dental implants. Prof McCarthy is a SFI Principal Investigator, and leads major research programmes in Engineering Science.

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Centre for Future Networks and Communications (CONNECT)

CONNECT is the Science Foundation Ireland Research Centre for Future Networks and Communications. Its mission is to research and develop innovative solutions for the communications challenges facing society today. The Internet of Things, 5G networks and new broadband architectures are the Centre's main areas of focus.



Photo © jamesteohart/Shutterstock

Over 250 CONNECT researchers across 10 Higher Education Institutes are supported by €50 million of funding from the Science Foundation Ireland Research Centres Programme, the European Regional Development Fund and industry partners.

Communications networks are now part of our critical infrastructure, enabling a vast range of applications that we have all come to rely on. These networks must now evolve to enable services that one day will also become ubiquitous, from augmented reality to autonomous vehicles. At CONNECT, we design the next generation of networks that automatically respond to the services that run on them.

Research Areas

CONNECT researches future networks, Internet of Things, 5G and beyond from the following network perspectives:

- Converged (merging optical and wireless networks and data centres)
- Dense (delivering on the promise of 1000X capacity increases)
- Low Energy (low-cost and low-power sensors, actuators and radios)
- Moving (network infrastructure is mobile, e.g., planes, trains, automobiles)
- Nano (network infrastructure is mobile, e.g., planes, trains, automobiles)
- Shared (molecular-scale communications networks)

CONNECT researchers have vast expertise in test and experimentation in these areas.

A World Leading SFI Research Centre
SFI For what's next

CONNECT
Centre for Future Networks

Research Programmes

CONNECT's 250 researchers tackle issues of particular interest to industry. Their work includes the development of:

- Energy-efficient networks, and ultra low-power smart sensors, and storage
- Programmable network substrates for multi-stakeholder ecosystems
- Extreme-sharing systems for Cloud-RAN architectures
- Network-aware, high performance and mm-wave radio transceiver architectures for 5G
- Quality-of-experience management for sparse, bursty data networks

CONNECT is leading Enable, a new €14.5m IoT research programme to connect communities to smart urban environments. It focuses on buildings, environment, mobility, and networks.

Facilities

- Pervasive Nation – Ireland's Internet of Things testbed using a Low Power Wide Area Network (LPWAN). See www.pervasivenation.ie
- Ireland's largest public data centre at TSSG, based in Waterford
- Indoor/outdoor wireless testbeds for cellular, Cloud-RAN and SDR
- RadioSpace - a national facility at Maynooth University for the development and testing of new radio technologies for the Internet of Things and 5G

Industry and Commercialisation

CONNECT works with a wide range of industry partners on targeted projects in the areas of Internet of Things, future cellular (5G and beyond), next-generation broadband, software-defined networks and cloud-based services. CONNECT's expert researchers are dedicated to delivering outstanding results at the pace and standard demanded by industry.

HOST INSTITUTION



The University of Dublin

PARTNER INSTITUTIONS



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Maynooth
National University
of Ireland



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TECHNOLOGY



Tyndall
National
Institute



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University College Cork, Ireland
Coláiste na Trí Bealtaine Caighdeán

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TELECOMMUNICATIONS SOFTWARE & SYSTEMS GROUP

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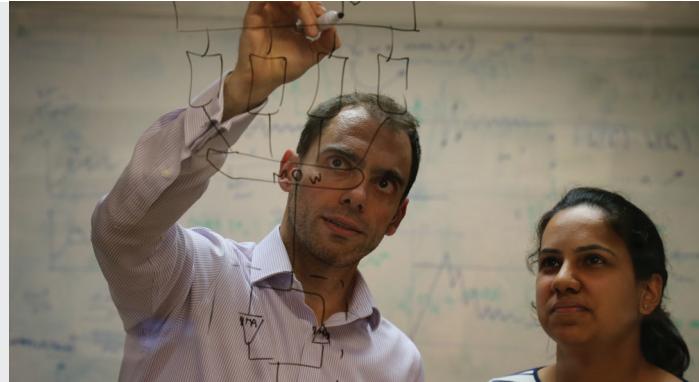
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Industry Partners Include:

- | | | | | |
|------------------|----------------------------|---------------------|-------------------|----------|
| ➤ Aeronet Global | ➤ CISCO | ➤ Huawei | ➤ Rambus | ➤ UTRC |
| ➤ Alchemy Media | ➤ Cork County Council | ➤ IBM | ➤ Real Wireless | ➤ Xilinx |
| ➤ Ampleon | ➤ Dublin City Council | ➤ Intel | ➤ Rivada Networks | |
| ➤ Analog Devices | ➤ ESB | ➤ MA-COM | ➤ S3 | |
| ➤ Arris | ➤ Google | ➤ Nonlinear Systems | ➤ Synopsys | |
| ➤ Benetel | ➤ Granahan McCourt Capital | ➤ Nokia | ➤ Taoglas | |

Education and Public Engagement:

CONNECT has a strong commitment to education and public engagement. A key focus of this outreach is 'STEAM' - using the Arts and creative practices in the traditional formula of science, technology, engineering and mathematics. CONNECT also uses media (international, national, local and social) to help the public to better understand the Centre's research. CONNECT researchers also engage with the public at festivals and events such as the National Ploughing Championships and also with visits to schools.



Key Contacts

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Professor Luiz Da Silva is the Director of CONNECT and Professor of Telecommunications at Trinity College Dublin. His expertise is in wireless communications and networks. He has published widely in these domains and is a Fellow of the IEEE for his contributions to cognitive networking and resource management in wireless networks. He has a wide range of collaborations in Europe, the US, Latin America, and Asia.

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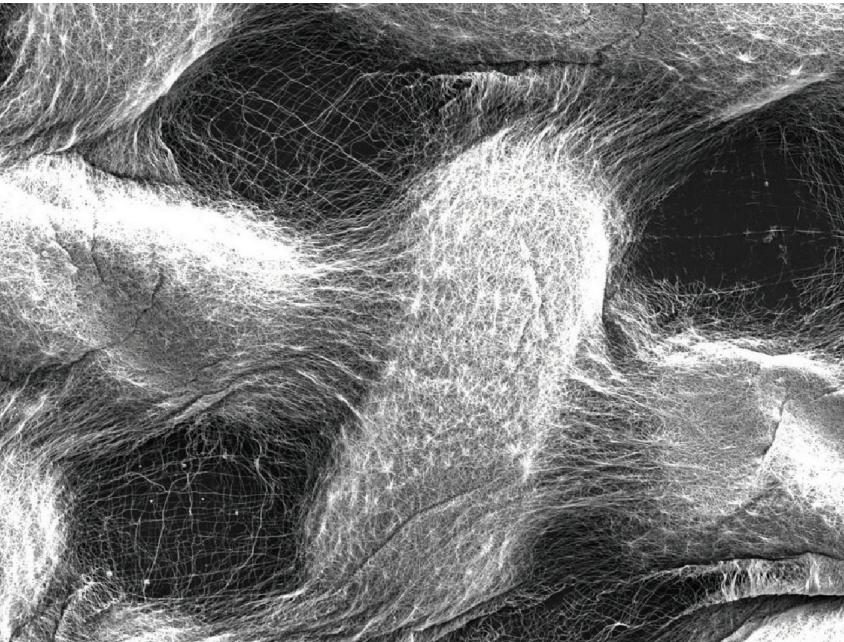
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 [Science Foundation Ireland](https://www.youtube.com/ScienceFoundationIreland)
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Centre for Research in Medical Devices (CÚRAM)

The centre aims to radically improve health outcomes for patients by developing ‘smart’ medical devices and implants. It develops these devices through collaborations with industry partners and hospital groups to enable their rapid translation to clinics.

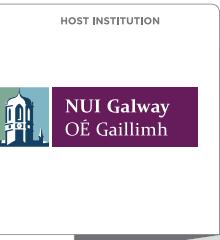


CÚRAM positions Ireland as the driver in developing medical device technologies that will provide affordable transformative solutions for chronic diseases. The centre strengthens Ireland’s standing as a major global hub for medical device research and development.

CÚRAM’s research programme focuses on innovative design, assessment and manufacture of medical devices and is driven by specialist researchers, clinicians and industry partners, ultimately translating research into clinical settings.

Research Areas

- Biomaterials
- Drug Delivery
- Tissue Engineering
- Regenerative Medicine
- Device Design
- Glycoscience



Centre for Research in Medical Devices

Research Programmes

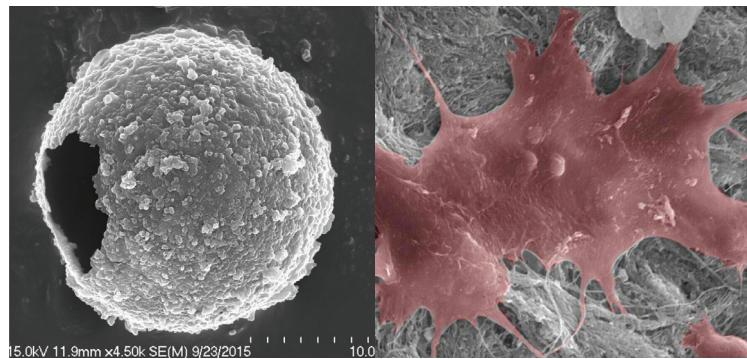
Backed by €49.6m in SFI and industry funding, CÚRAM’s 250+ researchers are designing and manufacturing implants to respond to the body’s environment and delivering therapeutic agents exactly where they are needed. CÚRAM’s outputs will particularly benefit patients with chronic ailments such as heart disease, wound healing, diabetes and musculoskeletal diseases.

Facilities

- Biomaterials manufacturing and processing from nanoscale to macroscale level
- Extensive biomaterials and biological characterisation
- Physicochemical drug analysis
- Device design and testing
- National Biophotonics Imaging Platform (NBIP) including pre-clinical imaging
- Centre for Cell Manufacturing (CCMI)
- Preclinical disease models
- GMP manufacturing
- Clinical research and trial infrastructure

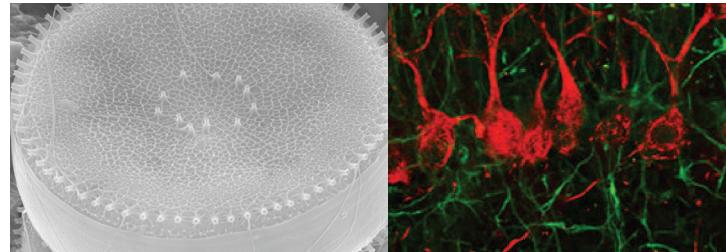
Industry and Commercialisation

CÚRAM includes more than 24 industry partners, including Irish companies and multinationals. CÚRAM also supports product development and the creation of spin-out companies.



Industry Partners Include:

- > Aerogen > Boston Scientific > Mylan Inc
- > Arch Therapeutics > Cook Medical > Neuravi
- > Acuitive > Medtronic > Stryker



Education and Public Engagement:

CÚRAM's Education and Public Engagement programme has been designed to support Science Foundation Ireland's Agenda 2020 objective of 'having the most scientifically informed and engaged public'. SFI-funded researchers at CÚRAM engage with the community through three core residency programmes, for artists, filmmakers and teachers.

- > The Artists in Residence programme supports interaction between the artistic, scientific and industry communities to develop outputs that can educate and inspire the public about the creativity and innovation involved in Irish R&D in the medical devices field.

- > The Filmmakers in Residence programme 'Science on Screen', aims to increase the level of scientific research incorporated into TV and film and develop a Science on Screen Festival.
- > The annual Teachers in Residence Programme runs from October to March and aims to develop a MedTech educational module designed for teachers by teachers, linking with both the primary and secondary school curricula.
- > Participation at national events allows CÚRAM researchers to engage with a wide national audience. Events include BT Young Scientist Exhibition, FAMELAB, TeenTech, Brain Awareness Week, The Galway International Arts Festival, The Ploughing Championships and the Galway Science and Technology Festival.

Key Contacts

Prof Abhay Pandit

Centre Director

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Abhay Pandit, PhD, Professor of Biomaterials at the National University of Ireland, Galway, is Scientific Director of the Centre for Research in Medical Devices (CÚRAM). Through CÚRAM he develops affordable, innovative and transformative device-based solutions to treat global chronic diseases. During his career in the medical device sector he secured regulatory clearance for a hydrophilic wound dressing, and secured IDE approval for a family of collagen vascular sealants for FDA submissions. In 2013, he was awarded the Academic/Emerging Medical Technology Company of the Year-Silver Award, he was the first Irish academic to be elected a Fellow of the Tissue Engineering and Regenerative International Society and was also inducted as an International Fellow in Biomaterials Science and Engineering by the International Union of Societies for Biomaterials Science and Engineering.

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FutureNeuro - Centre for Chronic and Rare Neurological Diseases

The mission of FutureNeuro is to advance research into the genetic contribution to neurological disease and drive the development of precision molecular therapeutics - specifically where the disease is treatment resistant.

The Centre will deploy an integrated e-health infrastructure for improved patient journey and to accelerate research discoveries.



Research Areas

- Connected Health
- Diagnostics/Biomarkers
- Electronic Patient Records
- Epigenetics
- Human Genetics
- Neurology
- Neuroscience and Behaviour
- Pharmacogenomics
- Precision Medicine
- Sensors and Monitoring
- Therapeutics

Research Programmes

FutureNeuro uniquely combines three thematic areas of Diagnostics, Therapeutics and E-Health, mapped closely to targeted projects with our industry partners to leverage and create exceptionally strong synergy between basic, clinical and applied (industry-focused) research capacity.

HOST INSTITUTION



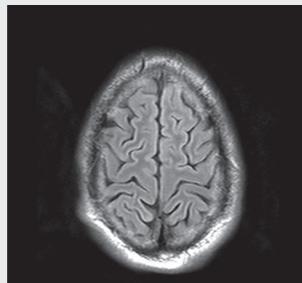
Facilities

- Sequencing, Bioinformatics and Systems biology
- Biobanking
- Molecular and cellular imaging, including:
 - Live-cell imaging and high content screening technologies
 - Intra-Vital Imaging Core
 - Advanced small animal imaging suites
 - Human imaging facility
 - Molecular facilities including high-throughput real-time PCR systems
 - Flow cytometry
 - Proteomic core and immunohistochemistry-based facilities
 - Genomics and next generation sequencing
 - Peptide synthesis and protein chemistry
- Biomedical Research Facility
- Clinical Research Centre
- Microscopy and Imaging
- Biomarker Detection
- Stem cell modelling

Industry and Commercialisation

FutureNeuro connects national and multinational industry with key academics and clinicians based in our leading hospitals to provide diagnostic, therapeutic and E-Health solutions.

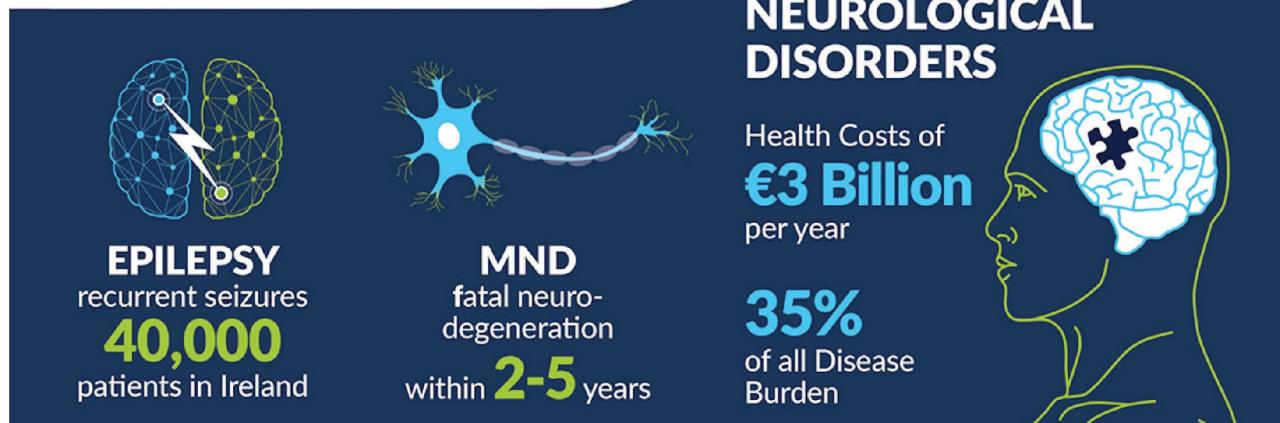
FutureNeuro's target projects with industry partners will bring diagnostic supports to market, a pipeline of new drugs, and connected health solutions that enable patients to monitor and report their health better than ever before.



Education and Public Engagement:

FutureNeuro plans to raise public awareness and understanding of the centre's research and the roles it plays in society. A key part of the planned programme is to encourage the public to get involved and interact with science, technology, engineering and maths.

Why is FutureNeuro important?



Key Contacts

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Director

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Prof David Henshall is Professor of Molecular Physiology & Neuroscience and has been working at the Royal College of Surgeons in Ireland since 2004. His main interests lie in the causes and treatment of the neurological disorder epilepsy. Some of his major research projects are looking at the patho-mechanisms underlying epilepsy development following brain injury, neonatal seizures, developing new medications for epilepsy and exploring the role of epigenetics and non-coding RNA in this disease.

He is the Project Co-ordinator for EU FP7-funded project *EpiMiRNA*, which is looking to improve our understanding of the underlying causes of the epilepsy, and to open up new diagnostic and therapeutic pathways focusing on the role of microRNAs. He is also a funded Investigator in INFANT, the Irish Centre for Foetal and Neonatal Translational Research and an investigator in "NEURO-MIR", a Joint Programming initiative on Neurodegenerative Diseases. Prof Henshall has authored over 100 papers and 7 book chapters.

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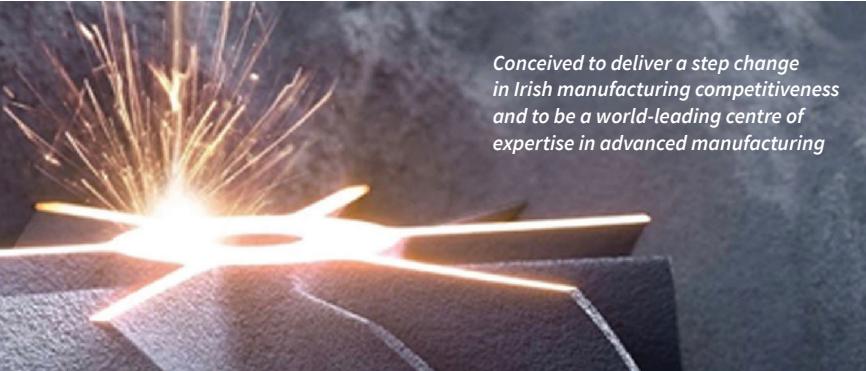


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I-Form: Centre for Advanced Manufacturing

The I-Form Advanced Manufacturing Research Centre addresses materials processing research within a manufacturing environment. A particular focus of the Centre is on Additive Manufacturing (AM), allowing the production of highly customised 3-D printed components with superior quality and performance. This is achieved by applying a range of advanced digital technologies, with the most fundamental scientific/technological aspects of AM. In addition to advanced process diagnostics, a further objective is the development of advanced process simulation, control and feedback systems.



Conceived to deliver a step change in Irish manufacturing competitiveness and to be a world-leading centre of expertise in advanced manufacturing

I-Form's aim is to facilitate the manufacture of high-value added components along with higher process reliability, while reducing processing times and manufacturing waste. Industry partners within the I-Form Centre are involved in a range of industry sectors, including the manufacture of medical devices, aerospace, automobile, microelectronic components, as well as materials manufacturers and suppliers. In addition to companies applying and developing advanced digital and process feedback technologies for use in manufacturing. The Centre brings together a multi-disciplinary team of over 80 PhD and Post-Doc researchers supported by over 25 leading academics in manufacturing engineering, materials and data science.

Research Areas

- Materials Processing
- Additive Manufacturing
- Process-Structure-Property Modelling
- In-process Monitoring and Data Analytics
- Predictive Process Feedback
- Cognitive Computing
- Augmented & Virtual Reality
- Operator-Machine Interactions

HOST INSTITUTION



PARTNER INSTITUTIONS



Waterford Institute of Technology
INSTITUTO TECHNOLÓGICO PHORT LAIRGE

I-Form

Advanced Manufacturing
Research Centre

Research Programmes

- Platform 1: Digitisation of Additive Manufacturing
- Platform 2: Additive Manufacturing Process-Structure-Property Modelling and Simulation
- Platform 3: Advanced Analytics and Engineer Feedback

Associated with the Platform activities are Spoke projects which are dedicated to both individual companies and company groups.

Facilities

- Additive Manufacturing equipment (large range of metal and polymer systems)
- Advance machining capabilities including a sensorised 5 Axis machining centre
- An extensive range of materials characterisation equipment
- Digital Technology capability, including manufacturing demonstrators incorporating data analytics, cognitive computing, augmented and virtual reality

Industry and Commercialisation

The I-Form team has well established collaborations with industry, which will be further strengthened through active collaborations on industrial projects in one of the I-Form demonstrators based in Irish Manufacturing Research Technology Centre in Mullingar. Furthermore, 40% of I-Form researchers will be based at industry partners facilities.

I-Form is dedicated to creating new knowledge, technology and intellectual property, and to transferring these to industry via demonstrators, practical courses, workshops, staff exchanges, licences and spin-outs.

Education and Public Engagement:

I-Form will engage with primary, secondary and third level students through initiatives, such as those supported under the SFI Discoverer programme in Science, Technology, Engineering and Maths (STEM). The centre plans to actively support SFI's Science Week, BT Young Scientist Award, Regional Science Festival and Manufacturing Open Days hosted by industrial partners. I-Form is currently preparing a manufacturing-dedicated booklet for inclusion in the Science Apprentice series. This is aimed at children and adults of all ages, and is designed at encouraging them to explore the science, technology, engineering and mathematics of the world around them.

I-Form will develop a range of different academic courses targeted at both undergraduate and graduate students. Online training programmes will target those currently working in manufacturing. These courses will address materials processing, AM and data-driven digital manufacturing, with shared modules enabling multi-site education.

A Unique Integration of Physical and Cyber System Technologies



Key Contacts

Prof Denis Dowling

Director

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Prof. Denis Dowling obtained his degree and PhD through DIT and UCD respectively. He worked for over 20 years in Enterprise Ireland in technologically-important materials research. There he played a key role in the development of research activities within Irish companies. Denis took up an academic position in UCD Engineering in 2008. He has had an outstanding record of scholarship including over 165 peer reviewed journal papers and 13 book chapters. He has a demonstrated record in translating research from academia to industry. For example, he has been very active with the SME sector, as evidenced by his 8 patent awards and 6 technology licences. Denis was the recipient of UCD's prestigious Innovation Award (2012) and the Institute of Materials Finishing Gold Medal Award (2013). In the case of the latter he was only the 15th recipient of this, the Institute's highest award, in its 88-year history.

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Deputy Director

Ms. Deirdre Clayton

General Manager

Sylvia Leatham

Education and Public

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 [I-Form Advanced Manufacturing Research Centre](https://www.linkedin.com/company/i-form-advanced-manufacturing-research-centre/)

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Irish Centre for Research in Applied Geosciences (iCRAG)

The Irish Centre for Research in Applied Geosciences (iCRAG) brings together Ireland's leading geoscience experts to work on developing safe and secure groundwater supplies, discovering mineral and aggregate deposits, de-risking oil and gas exploration, safeguarding the geomarine environment, protecting from Earth's hazards and educating and informing the public on geoscience-related issues.



The Centre has €26 million in funding supporting 140 researchers.

Research Areas

- Raw materials – mineral/aggregate geoscience
- Marine – marine geoscience
- Groundwater – hydrogeology/hydrology
- Energy Security – petroleum geoscience
- Geohazards – protection from Earth's hazards
- Geochemistry, geophysics, 3D geological modelling, public perception and understanding of geosciences

Research Programmes

Forming an integrated team of internationally leading researchers and both large and small-scale industry partners, iCRAG conducts research which will help in the discovery and harnessing of Ireland's natural resources, such as its world-class Zn-Pb mineral deposits, untapped hydrocarbon resources in challenging NE Atlantic deep water environments, and important and environmentally sensitive seabed and groundwater resources.

Facilities

- A comprehensive suite of analytical and modelling resources
- Platform facilities in geophysics, geochemistry and 3D modelling

Industry and Commercialisation

The technology developed by iCRAG takes the form of soft-knowledge, data, methods, protocols, policy documents and software. This technology helps companies discover and develop natural resources for their mutual benefit, and the benefit of Ireland. As an SFI Research Centre, iCRAG encompasses the broad community of Irish geoscience researchers and engages with industry partners from diverse geoscience-related sectors, including hydrocarbons, marine, minerals and groundwater.



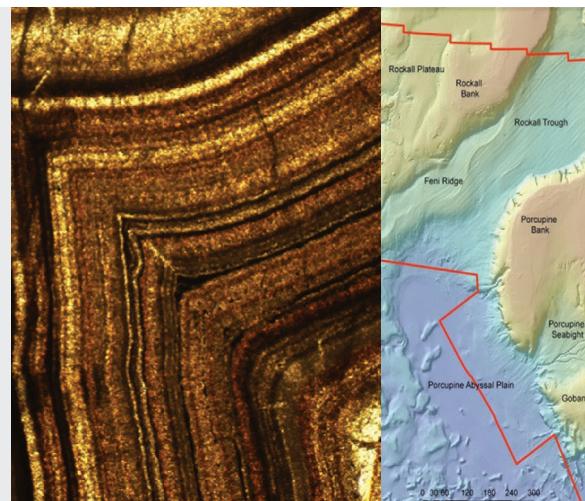
Industry and State Policy Partners Include:

- APEX Geoservices
- Europa Oil and Gas (Holdings) Plc
- International Lithium Corp.
- Services
- Petroleum Affairs Division
- SRK Consulting
- Arup (Ireland)
- ExxonMobil E&P Ireland (Offshore) Ltd
- Intersocial Consulting
- SSE Renewables
- AWN Consulting
- Fehily Timoney & Company
- Irish Drilling
- Statoil (UK) Ltd
- AzEire
- FLI Group
- JB Barry & Partners
- Teck Ireland
- Boliden
- GDG
- Lagan Asphalt Group
- Techworks Marine
- BP Exploration Operating Company Ltd
- Geoscience Ireland
- Lisheen Technical & Mining Services
- Tobin Consulting
- BRG
- Geoserv
- LTMS
- Transport Infrastructure Ireland
- Byrne Looby
- Group Eleven Mining & Exploration Ltd
- Lundin Mining
- Trench Control
- Cairn Energy Plc
- Geological Survey of Ireland
- Meehan Drilling
- Trevali Mining Corp.
- Chevron North Sea Limited
- Homebond
- Mincon Group PLC
- Tullow Oil Plc
- Compass Informatics
- IE Consulting
- Murphy Surveys
- Verde Environmental Group
- Designer Group
- IGSL
- Nexen Petroleum UK Ltd
- Nicholas O'Dwyer
- Shell E&P Ireland Ltd
- ERM
- Pavement Management
- SLR
- Sosina Exploration Ltd
- SRK Consulting
- SSE Renewables
- Statoil (UK) Ltd
- Teck Ireland
- Techworks Marine
- Tobin Consulting
- Transport Infrastructure Ireland
- Trench Control
- Trevali Mining Corp.
- Tullow Oil Plc
- Verde Environmental Group
- Woodside Energy (Ireland) Pty Ltd

Education and Public Engagement:

Education and Public Engagement (EPE) is central to activities in iCRAG, and is informed by research on public perception and understanding of geoscience. The Centre's twin objectives are to foster an interest and understanding of applied geoscience in the general population and to enhance the ability of iCRAG researchers to effectively communicate their research to a non-specialist audience. Initiatives include:

- Primary school visits with "Micro-Geo" and "Our Place in Time" workshops
- The "Science Apprentice – Energy and Resources" magazine for primary schools
- Smart Futures geoscience career visits to post-primary schools and Transition Year placement programmes
- Collaboration with artists, poets and performers to facilitate engagement
- Geoscience Film and Q&A nights



Key Contacts

Prof Murray W. Hitzman

Centre Director

Murray W. Hitzman is Director of iCRAG and a Science Foundation Ireland Research Professor. Murray has B.A. degrees in geology and anthropology from Dartmouth College (1976), an M.S. in geology from University of Washington (1978), and a Ph.D. in geology from Stanford University (1983). He was awarded the SEG Silver Medal in 1999, the Daniel C. Jackling Award by Society of Mining, Metallurgy, and Exploration and the Des Pretorius Award by the Geological Society of South Africa in 2015, and the Haddon Forrester King Medal by the Australian Academy of Sciences in 2016.

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Irish Centre for Fetal and Neonatal Translational Research (INFANT)

INFANT is Ireland's first dedicated perinatal research centre. The centre's mission is to make pregnancy safer and to improve health outcomes for mothers and babies worldwide. Their multi-disciplinary collaborative research and an array of industry partnerships make INFANT an international leader of discovery and innovation in perinatal healthcare.



Research Areas

INFANT is committed to innovative, life-changing research and technology that will reduce the impact of perinatal disease worldwide.

Across pregnancy, birth and infancy, INFANT is solving challenges and measuring impacts on maternal and child health. INFANT is industry facing and explores commercial opportunities with industry partners.

INFANT's key areas of exploration are:

- Biomarkers
- Biomedical Engineering
- Connected Health
- Nutrition
- Therapeutics



HOST INSTITUTION



University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

PARTNER INSTITUTIONS



Trinity College
Dublin
The University of Dublin



NUI Galway
OÉ Gaillimh



Research Programmes

With active project grants worth €30 million, INFANT has over 100 staff and investigators across a range of clinical, scientific and engineering disciplines working to address unmet worldwide clinical needs for pregnant women and newborn babies. They are working to develop screening tests and treatments for pre-eclampsia, preterm birth and fetal growth restrictions; conducting research on maternal and infant nutrition and developing monitoring solutions for hypoxic-ischaemic encephalopathy (HIE) and asphyxia at birth.

Facilities

- Uniquely located within Cork University Maternity Hospital, Europe's second busiest maternity unit, with state-of-the-art infrastructure and over 8,000 births annually
- Biobank: INFANT is home to a world-class pregnancy/infant biobank with almost 2 million aliquots of blood, serum, DNA and other tissue samples
- Extensive physiological and IT databases managed and curated to international standards
- Extensive IT platforms for large scale data storage and processing
- Laboratories and analytical platforms for pre-clinical and basic science
- Dedicated assessment rooms for neurodevelopmental and physical follow-up studies

Industry and Commercialisation

INFANT is a clinical translational research Centre driven by clinical adoption of innovations to the bedside or cotside. As such, working collaboratively with industry to develop and commercialise new clinical innovations is a core part of what INFANT does. INFANT works with innovators, entrepreneurs and industry partners in sectors ranging from diagnostics to medtech and IT to pharma and nutrition to help deliver to world-first technologies to global markets.



Irish Centre for Fetal and
Neonatal Translational Research

Industry Partners Include:

INFANT works with start-ups, small and medium enterprises and multinational corporations across a range of sectors, both Irish and International. Some of these partners include:

- | | | | |
|-------------------|--------------------------|---------------------------|----------------------|
| ➤ Alere | ➤ IBM | ➤ Kvikna | ➤ Nihon Kohden |
| ➤ Crème Global | ➤ Incereb | ➤ Laya Healthcare | ➤ Waters Corporation |
| ➤ Danone Nutricia | ➤ Inspiration Healthcare | ➤ Lincor | |
| ➤ Fresenius-Kabi | ➤ Johnson & Johnson | ➤ Metabolomic Diagnostics | |

Education and Public Engagement:

INFANT's education and public engagement programme actively encourages positive attitudes towards science, technology, engineering and maths (STEM); promotes STEM careers; and works towards increasing science capital across our community and society. In collaboration with Science Foundation Ireland, INFANT researchers engage with schools, community groups and the general public through a wide range of activities such as Science Week, FameLab, Infant Mental Health Week and Engineers Week. INFANT researchers deliver a wide-ranging programme throughout the year, including hands-on workshops, demonstrations, student placements, public forums, discussion panels and training days.



Key Contacts

Prof Geraldine Boylan

Centre Director

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Geraldine Boylan is Professor of Neonatal Physiology at UCC and founding director of the INFANT Centre. Prof. Boylan has a career-long track record in clinical neurophysiology. Geraldine leads a multidisciplinary research team that have established an international reputation in the area of neurological monitoring in the neonatal intensive care unit, particularly in seizure detection and early diagnosis of brain injury.

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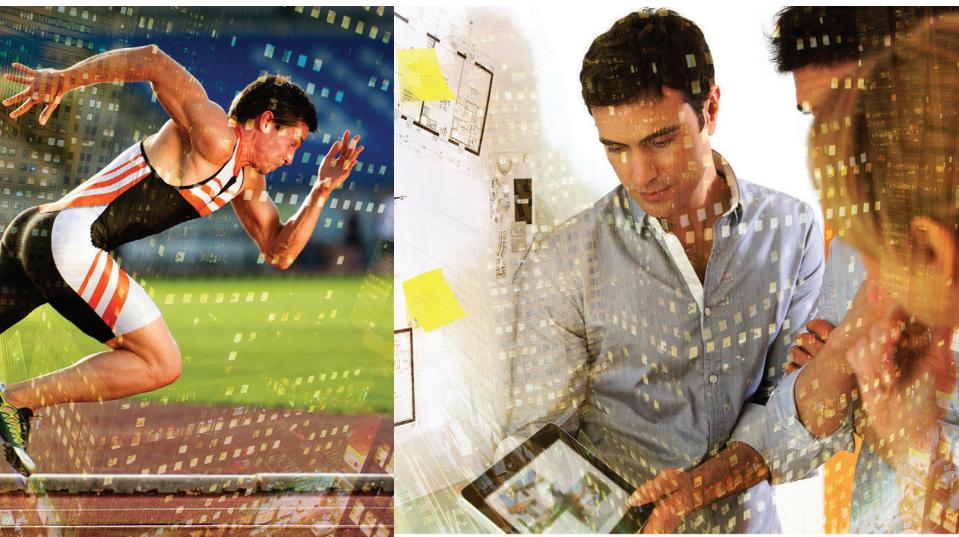
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[Science Foundation Ireland](https://www.youtube.com/ScienceFoundationIreland)

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The Insight Centre for Data Analytics (Insight)

Insight is one of the biggest data analytics centres in Europe. It undertakes high-impact research, seeks to derive value from Big Data and provides innovative technology solutions for industry and society by enabling better decision-making.



With €88 million in funding, Insight has 400 researchers across areas such as connected health, decision analytics, social media analytics, smart cities and the semantic web.

Research Areas

- › Linked data
- › Semantic web
- › Machine learning and statistics
- › Media analytics and personal sensing
- › Optimisation and decision analytics
- › Recommender systems

Industry and Commercialisation

Insight offers data analytics solutions for a broad range of industry partners in ICT, healthcare, retail, finance, media and public services. Insight's expertise includes the whole data value chain, from the integration of multiple heterogeneous data sources to discovering patterns and trends in data and making sense of them.



Research Programmes

Innovative Insight solutions have included using data to:

- › Develop products and services based on matching users' short and long-term needs to a real-time picture of information and opportunities
- › Understand customer behaviour to increase customer satisfaction, experience and loyalty
- › Drive recommendations and support decision-making
- › Find optimal solutions to complex problems
- › Automate business processes

Education and Public Engagement:

Insight, in collaboration with Science Foundation Ireland, is involved in many local and national events, including Thesis in 3, digital maker-clubs such as Coderdojos, 091Labs and Hacker-space. Insight also organises, in conjunction with the Central Statistics Office, Apps4Gaps, the first all-Ireland mobile app competition.

Insight runs and supports computer coding courses, local heritage digital archiving activities, mobile apps workshops and inter-school science debates. Researchers engage in talks on innovation, Internet Safety and Cyberbullying Awareness, and on the exciting career opportunities available in the field of data analytics. Insight is also driving a data ethics initiative, the Magna Carta for Data Project, through which the Centre actively engages with researchers around the world and with policy makers at Irish and EU level.

HOST INSTITUTION



PARTNER INSTITUTIONS



Industry Partners Include:

- › Abtran
- › NitroSell
- › TreeMetrics
- › Adoreboard
- › RTÉ Community Analytics
- › The Irish Times
- › Avego
- › RTÉ Content Discovery
- › Aviva
- › RTÉ News360
- › Eagle Alpha
- › Rubico
- › Flashpoint
- › Shimmer Research
- › Guiyang Municipal
- › Starwood

Facilities

- › Software lab space
- › Environmental lab space



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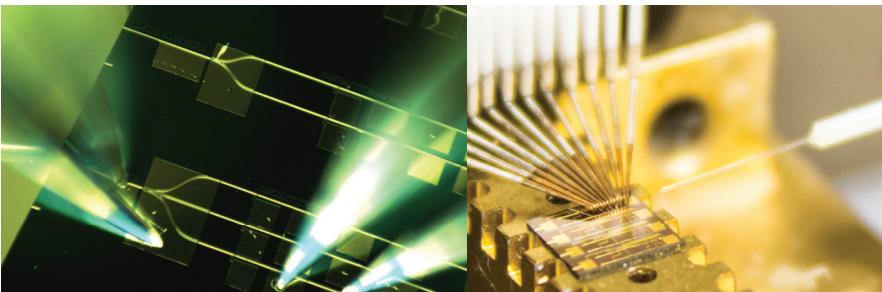
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Irish Photonic Integration Centre (IPIC)

IPIC brings together more than 150 researchers from four institutes to develop new light-enabled technologies. Photonics is the generation, manipulation and use of light. It is a key enabling technology that underpins the internet and drives growth in diverse industries such as the ICT and MedTech sectors, as well as industrial technology which includes both manufacturing and environmental monitoring.



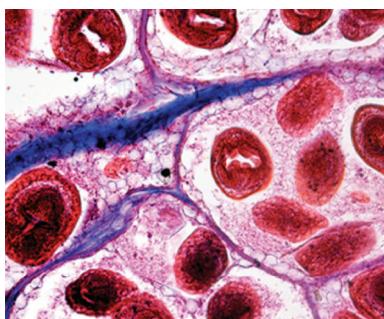
IPIC's integrated research team has competencies in the theory of novel light-emitting materials through to the design of devices and systems. IPIC can accelerate transfer from laboratory to market by using its advanced fabrication and packaging capabilities to develop concepts and deliver low-volume manufacturing of prototypes.

Research Areas

- Enabling continued growth of the internet through faster, more energy-efficient devices for information transport, storage and display
- Delivering smart medical devices for improved treatment of disease
- Developing highly compact instrumentation for point-of-care diagnostics
- Developing systems for process and environmental monitoring

Facilities

- Modelling and design
- Materials growth
- Device fabrication
- Packaging
- Device characterisation
- Systems testing



HOST INSTITUTION



PARTNER INSTITUTIONS



Research Programmes

IPIC's grand challenge is to advance and miniaturise photonic integration science and technology to produce breakthrough micro- and nanoscale optoelectronic systems, increasing device functionality, performance and energy efficiency. The Centre will achieve this through its dedicated research programmes in Optical Communications and Biophotonics. These include:

OPTICAL COMMUNICATIONS

- Highly energy efficient >400Gb/s transceivers for short-reach optical interconnects in data centres to address a critical bottleneck in these warehouses
- Terabit/s communication systems for wide area networks, based on integrated photonic circuits, that allow information channels to be packed tightly to approach theoretical maximum capacities

BIOPHOTONICS

- Miniaturised, and potentially wearable, diagnostics systems by using the emerging science of silicon photonics, and hybrid and monolithic integration technologies
- Surgical instruments with integrated miniaturised photonics-based sensors, including the development of flexible microLEDs for optogenetics

IPIC programmes are supported and enabled by their key technologies:

- Packaging and Hybrid Integration
- Monolithic and Heterogeneous Integration

Industry and Commercialisation

Targeting the ICT, medical devices and industrial technology sectors, IPIC is working with 25 industry partners to develop solutions tailored to their needs. Some 80 percent of IPIC's activity is focused on technology readiness levels 2 to 5, that is concept formulation to validation of prototypes in the relevant environment.

Industry Partners Include:

- British Telecom
- InfiniLED
- Radisens Diagnostics
- Compact Imaging Ltd
- Intel
- Seagate
- Eblana
- Lake Region Medical
- Synergia Medical
- Epi-light Ltd
- Luxcel Biosciences
- Stryker
- FazTech
- M/A-COM
- X-Celeprint
- Firecomms
- Pilot Photonics
- Xilinx



Education and Public Engagement:

IPIC, in collaboration with Science Foundation Ireland, is involved in many local and national events and initiatives, including Smart Futures and the BT Young Scientist Exhibition. IPIC is dedicated to training highly skilled scientists and engineers for industry, to support the next generation of scientists. The IPIC team is dedicated to showcasing the breadth and depth of career opportunities in STEM to students at all levels. Programmes include:

- The “Secret Spectrum!” interactive workshop for primary schools, delivered to 850 primary school students in 2016
- Photonics Explorer which provides robust experimental kits for secondary schools, allowing classes to fully experience the physics of light and optics.

“I like using the kits with Transition Year students as it makes the topics very applicable to real life” – Teacher in Midleton College, coeducational school.

Key Contacts

Prof Paul Townsend

Centre Director

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Paul Townsend is Research Professor in the Department of Physics at University College Cork. He is also an Honorary Professor in the School of Engineering and Physical Sciences at Heriot-Watt University in Edinburgh and a Fellow of the Institute of Physics. Professor Townsend is widely recognised as one of the founders of the field of experimental quantum key distribution (QKD). The main focus of his current research is next-generation fibre to home networks. He has written more than 170 peer-reviewed publications, including 40 invited papers, and holds numerous granted and pending patents.

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Lero - The Irish Software Research Centre



Lero brings together leading software teams from universities and institutes of technology in a co-ordinated centre of research excellence with a strong industry focus.



Ireland has a vibrant and successful software sector, with nine of the world's top 10 multinational technology companies having a significant presence in Ireland. Lero is a key pillar of that sector. Since it was founded in 2005, it has become one of the best known and most highly regarded software research centres in the world. It is home to 289 researchers and funded to the tune of €41m.

Research Programmes



Research Areas

Lero's broad research focus is on evolving critical systems (ECS). These systems change over time ("evolving"), are strategically important to their users or owners ("critical"), and are often significantly – although not necessarily exclusively – software intensive ("systems"). ECS increasingly characterises a large proportion of software systems in development and use today, from business-critical systems (such as airline websites), to safety-critical systems (such as an automotive braking control system), to product critical systems (such as the core modules of a large software product).

Industry and Commercialisation

Lero works with a wide range of industry sectors, state agencies, educational bodies and international collaborators to deliver on its twin goals of research excellence and social and economic relevance.



Industry Partners Include:

- > ACI Worldwide
- > ADA Security Systems
- > Aerogen
- > Allstate Insurance
- > Almir Business Ltd
- > Analog Devies
- > Blu 5 Labs
- > Bluebridge Technologies Ltd
- > Comfort Keepers
- > dabl Health
- > Data Direct Networks
- > Dell
- > DMF Systems
- > Entellexi
- > Ericsson
- > European Space Agency
- > Fidelity Investments
- > Fijowave
- > Hermitage Medical Clinic
- > Horizon Globex
- > IBM
- > Information Mosaic
- > Intel
- > Logitech
- > METAFrame
- > Microsoft
- > Movidius
- > Ocuco Ltd
- > Portable Medical Technology
- > QAD
- > Rigney Dolphin Group
- > S3 Group
- > Salaso Healthcare
- > Software Quality Systems
- > STATSports
- > Storm Technology
- > sysTeam
- > Toyota
- > Tullow Oil
- > Two-Ten Health
- > United Technologies Research Centre
- > Volkswagen
- > Vu2Vu

Education and Public Engagement:

Lero, in collaboration with Science Foundation Ireland, is involved in many local and national events including Smart Futures, Thesis in 3, Coder Dojo, Hour of Code, Pint of Science, Scratch Competition, and Techweek. Lero has significant involvement in introducing computer programming into the primary school curriculum.

Lero promotes awareness in technology through initiatives such as:

- > Scratch Programming in primary schools
- > The Junior Cycle Short Course in Coding
- > Summer Computing Camps

Lero is also involved in computer science at Leaving Certificate and has conducted research for the NCCA around the provision of computer science in upper second level education internationally. Lero develops and delivers CPD for teachers in computer science, in collaboration with Professional Development Service for Teachers (PDST) and Junior Cycle for Teachers (JCT).



Key Contacts

Prof Brian Fitzgerald

Centre Director

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Professor Brian Fitzgerald has been a Science Foundation Ireland Principal Investigator (PI) since 2002. He was one of the pioneers of research into Open Source software and is widely recognized as a global leader in the study of software development processes and methods. He was one of the founding PIs in Lero where he has been a researcher since its inception, apart from a period from 2008-2011 when he served as Vice-President Research at the University of Limerick. He has been Chief Scientist in Lero since 2013. He also holds an endowed professorship, the Frederick Krehbiel II Chair in Innovation in Business & Technology, at the University of Limerick.

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MaREI Centre for Marine and Renewable Energy

MaREI is the marine and renewable energy research and development Centre supported by Science Foundation Ireland. It combines the expertise of a wide range of research groups and industry partners, with the shared mission of solving the main scientific, technical and socio-economic challenges across the marine and renewable energy sectors.



Research Areas

- MRE technologies
- Bioenergy
- Materials and structures
- Energy policy and modelling
- Observation and operations
- Energy management
- Coastal and marine systems

Research Programmes

In addition to fundamental research, the Centre provides targeted research and consulting services to a wide range of companies, which has established the Centre as a strategic research and development partner for both academic and industry partners worldwide.

MaREI has over 200 researchers across six academic partner institutions, working with 46 industry partners. It is coordinated by the Environmental Research Institute (ERI) at University College Cork. MaREI has built upon the excellent track record of well-established marine and energy-based research groups across each of our academic partners, covering a range of cross-cutting topics across seven main research areas.

Facilities

- LIR National Ocean Test Facility – 2600m² tank hall housing four test tanks, including two ocean wave basins, a wave and current flume and a wave demonstration flume
- Rotary and linear power take-off test rigs, electrical micro-grid test and simulation electrical integration test rigs
- Large-scale structural testing and materials testing
- Pilot scale anaerobic digestion reactors and 200m² aquaculture tank lab
- Mace Head Atmospheric Research Station
- High frequency coastal observing radar system (CODAR)
- Galway Bay instrumented sea station platform and test site
- Wet and dry labs, tracking and remote video systems
- Robotic hardware, including remotely operated underwater vehicles (ROVs)
- Limerick Dock testing and development site for MRE Robotics/Tidal Energy

Industry and Commercialisation

MaREI offers unique world class marine renewable energy testing infrastructure, state-of-the-art structural laboratories, novel prototypes and measurement equipment that allow the systematic identification and reduction of development risks through a structured 'Technology Readiness Level' (TRL) development cycle. This, combined with the technical competence of its employees, makes MaREI a preferred research and development partner for companies and research institutes across the world.

HOST INSTITUTION



PARTNER INSTITUTIONS



NUI Galway
OÉ Gaillimh



Maynooth
University
National University of Ireland Maynooth

Industry Partners Include:

- > Aer Lingus
- > Analog Devices International
- > ARUP Ireland Trust
- > Automsoft International
- > B9 Power
- > Brí Toinne
- > Bureau Veritas
- > CAPACITÉS
- > Commissioners of Irish Lights
- > DePuy Synthes
- > DP Energy Ireland
- > ÉireComposites
- > Enerco Energy
- > Ervia
- > ESB
- > ESRI Ireland
- > Gas Networks Ireland
- > GKinetic Energy
- > GRSI Energy
- > Henkel Ireland
- > IDS Monitoring
- > Irish Aviation Authority
- > Johns Manville
- > KOSMOS Energy Ireland
- > MAFIC Black Basalt
- > Marine Harvest Ireland
- > MYMIC
- > National Space Centre
- > NTR Foundation
- > Open Ocean Energy
- > OpenHydro
- > Pure Marine Gen
- > Qualitas Instruments
- > Resilience Energy
- > Resolve Marine
- > RPS
- > RSK Ireland
- > Shannon Foynes Port Company
- > Shell E&P Ireland
- > SkySails
- > SonarSIM
- > Technology From Ideas
- > Techworks Marine
- > Teledyne Blueview
- > Teledyne RESONeson
- > WECCA

Education and Public Engagement:

MaREI's public engagement programme focuses on the development of a better understanding of the relevance and impact of our research on society, in collaboration with Science Foundation Ireland. Our researchers engage with schools, community groups and the general public through a programme of outreach initiatives aimed at different

audiences and by participating in events like Science Week, SeaFest, Cork Harbour Festival and FameLab.

MaREI researchers have considerable experience in stakeholder engagement, working with NGOs, industry, government bodies, local authorities, policy makers and community groups through their research projects, and are focused on communicating science to enable informed decision making.



Key Contacts

Professor Jerry Murphy

MaREI Centre Director

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Professor Murphy is Director of the MaREI Centre and Principal Investigator in Bioenergy Research. He is also Chair in Civil Engineering, Director of Bioenergy Research & Vice Director of the Environmental Research Institute, University College Cork. He also serves as International Energy Agency Bioenergy Task Leader for Energy from Biogas.

Prof. Brian Ó Gallachóir

MaREI Centre Director

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Prof. Ó Gallachóir is Director of the MaREI Centre and Principal Investigator in Energy Policy & Modelling. He is also Professor of Energy Engineering at University College Cork and Chair of the Executive Committee of the International Energy Agency ETSAP Technology Collaboration Programme.

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Synthesis and Solid State Pharmaceutical Centre (SSPC)

The Synthesis and Solid State Pharmaceutical Centre (SSPC), a global hub of pharmaceutical process innovation and advanced manufacturing, funded by Science Foundation Ireland and industry, is a unique collaboration between 24 industry partners, nine research performing organisations, and 12 international academic collaborators.



With €42 million in direct funding and a further €39 million leverage, SSPC supports a community of over 350 individual national and international active members, including 29 Investigators, 40 post-doctoral researchers and 60 PhD candidates. The SSPC leads the way for next generation drug manufacture and spans the entire pharmaceutical production chain from synthesis of the molecule, to the isolation of the material, and formulation of the medicine.

Research Areas

- Strand 1: New Frontiers in Pharmaceutical Synthesis
- Strand 2: Crystal Growth and Design
- Strand 3: Drug Product Formulation and Manufacture

Research Programmes

The SSPC community of 132 researchers is involved in 20 research projects. Recent collaborative projects include:

- An SFI-funded SPOKES project MOMEnTUM (Modelling of Multi-Phase Transport Processes to Enable Automation in Manufacturing), a collaboration between SSPC and industry partners Johnson & Johnson Automation Centre of Excellence and Rusal AAL
- An SFI funded US-Ireland R&D partnership and first of its kind “Centre to Centre” project to research continuous manufacturing for nano-based pharmaceutical drugs. (International collaboration)
- Advanced biopharmaceutical technologies. SSPC works with seven industry partners and three research-performing organisations

Facilities

- Kilo labs
- In-situ PAT systems
- Labmax TM reaction vessel
- Particle visual measurement (PVM)
- X-ray diffraction (XRD)
- Focused ion beam (FIB) milling system
- Atomic force microscope (AFM)
- SEM/Raman spectroscopy
- SEM & TEM microscopy
- Molecular and eEngineering modelling
- Powder extrusion suite
- Hot melt extrusion
- Supercritical spray drying
- Flow NMR
- IR spectroscopy
- Environmental SEM
- In situ Raman microscopy
- Crystallization, Isolation and Drying Technology Test Bed (CIDT²)

Industry and Commercialisation

SSPC works with 24 industry partners to deliver relevant solutions that address the manufacturing needs of pharmaceutical companies. At a corporate level, SSPC industry partners recognise the power of the collective and can facilitate unique collaborations. APC Ltd., a SSPC spin-out company, has created over 40 highly skilled jobs within the pharmaceutical sector.

SSPC’s Dr Patrick Frawley and Dr Brian de Souza, worked with Pfizer Global Process Development Centre, discovering a new commercial process to deliver an innovative, improved manufacturing process for a world leading medicine.



Industry Partners Include:

- > Abbvie
- > AVARA
- > Johnson & Johnson Automation Centre of Excellence
- > Alkermes
- > Allergan
- > Amebis
- > APC Limited
- > Biomarin
- > Bristol Myers Squibb
- > Clarochem Ireland
- > Eirgen Pharma
- > Eli Lilly
- > FMC
- > Genzyme: A Sanofi Company
- > Glantreo
- > GlaxoSmithKline
- > Innopharma Labs
- > Janssen
- > Merck Sharp & Dohme
- > Novartis
- > Pfizer Inc
- > Roche
- > Rusal AAL
- > Scale-Up Systems

Education and Public Engagement:

SSPC in collaboration with Science Foundation Ireland, is involved in many local and national events including Science Week, National Ploughing Festival, SSPC National Crystal Growing Competition, chemistry demonstration workshops and more. SSPC provides professional development training to teachers and connects post-primary students with access to scientists via the Smart Futures programme. SSPC actively supports industry partners and their research associates through industry focused upskilling and training. SSPC also provides an industrial placement programme for PhD candidates.



Key Contacts

Prof Michael Zaworotko

Scientific Director

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Professor Zaworotko is a Bernal Chair of Crystal Engineering at the University of Limerick. He is among the world's top 20 research chemists and secured the first award under the relaunched Science Foundation Ireland (SFI) Research Professor programme. His research interests focus on designing crystal structures that can be used in the pharmaceutical and energy industries.

Professor Gavin Walker

Scientific Director

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Professor Gavin Walker is Bernal Chair of Pharmaceutical Powder Engineering and a principal investigator in the SFI Investigators Programme at UL and the SSPC Spokes Project, MOMEnTUM. His expertise is in pharmaceutical process engineering and modelling of particulate systems.

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SFI Research Centre for Digitalising Dairy Production and Processing

VistaMilk, the SFI Research Centre for precision-based dairy production and processing, will lead the Agri-Food technology sector through innovation and enhanced sustainability across the entire dairy supply chain.

While focused on pasture-based dairy production, the advances developed in the centre will be equally applicable to confinement dairy production and processing systems as well as acting as a catalyst for global growth in the Agri-Tech sector. This will be achieved by greatly improving the soil to gut supply chain connectivity, thereby improving resource efficiency, better meeting consumers' expectations and improving profitability and resilience.



Research Programmes

VistaMilk will develop novel, and advance existing, electronic monitoring and actuation technologies to transform the Irish dairy and Agri-Tech sectors into global leaders. It will specifically address pasture-based dairy production, improved processability and the generation of novel, higher value-added products.

In addition to the creation of new sensing and actuation paradigms, particular focus will be given to developing state-of-the-art analytical techniques applied to large scale, sensor data-sets delivered by advanced network and communication technologies.



Facilities

- **Teagasc** - state-of-the-art research laboratories, including the largest DNA sequencing facility in Ireland and >1500 experimental dairy cows
- **Tyndall** - fully serviced wet chemistry laboratory featuring highly sophisticated nanofabrication technology
- **Insight** - specialised software for data analytics and for processing streamed data
- **TSSG** - infrastructure for testing and measuring networking protocols

Industry and Commercialisation

Through a strategy of highly-interconnected, innovative and ambitious scientific ventures and disciplines, VistaMilk will develop and deploy the scientific solutions and value-creating decision support tools, informed by sophisticated data analytical approaches, to empower the dairy industry in advancing efficiencies across all components of the food chain, and, in doing so, develop a vibrant and dynamic Agri-Tech indigenous industry.

HOST INSTITUTION



PARTNER INSTITUTIONS



Industry Partners Include:

- > ALT
- > Alltech Ireland
- > Analog Devices
- > Anuland
- > Carbery Food Ingredients
- > Cork County Council
- > CropX Technologies Ltd.
- > Dairygold
- > Devenish Nutrition
- > Dovea Genetics
- > Germinal
- > Goldcrop
- > Irish Holstein Friesian Association
- > Kerry Group
- > Lakeland Dairies
- > Munster Cattle Breeding Group
- > Nestlé
- > Nutribio Ltd.
- > Ornuá
- > Progressive Genetics
- > ReproDOC
- > Terra NutriTECH
- > United Technologies Research Centre
- > Volac Feeds
- > Weatherbys Scientific.
- > Yara GmbH & Co. KG
- > YL-Verkot OY
- > Zoetis

Education and Public Engagement:

The mission statement of the VistaMilk outreach program will be to “promote an understanding and appreciation of the role of information and communication technology and other sciences in the sustainable delivery of consistently high quality, safe dairy products through engagement with stakeholders and the general public”. The strategy of engagement will help the general public to judge the importance and relevance of science in achieving the goal of more sustainable and safe food production systems. Awareness will also be raised around the importance of dairy food in the diet.

Key Contacts

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Professor Donagh Berry works as a senior principal investigator in statistical genetics at Teagasc, Moorepark, Ireland since completing his PhD in animal genetics in 2003. He is responsible for the development of the national dairy cow breeding objectives which includes the prioritisation of the relative importance of different animal characteristics in the national breeding goals, generation of statistical and genomic models to generate accurate individual animal estimates of genetic merit for all traits, and the development of optimal breeding schemes to ensure long-term genetic gain.

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