



ENTERPRISE IRELAND TECHNOLOGY CENTRE INFORMATION

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Technology Centres Overview

As outlined in the current Programme for Government, introducing companies to the research expertise in Irish Higher Education Institutes with the aim of generating innovative technologies leading to job creation is of the utmost importance.

In line with this commitment to generating economic value from publicly-funded research, the Government has provided funding to establish industry-led Technology Centres. These centres are collaborative entities established and led by industry. They are resourced by highly qualified researchers associated with research institutions who are empowered to undertake market focussed strategic R&D for the benefit of industry. This is a joint initiative between Enterprise Ireland and IDA Ireland allowing Irish companies and multinationals to work together in these centres.

There are 14 industry-led research centres in the Technology Centres Programme, some of which are just getting started. Details of each centre and contact information is available on their respective websites and the following pages attached.

ARCH Applied Research for Connected Health

Applied Research for Connected Health (ARCH) is the centre of connected health research in Ireland. People and technology come together through ARCH to deliver better health outcomes and prove these from economic, clinical, technology robustness and usability perspectives.

ARCH is an industry-focused technology centre providing access to world-class clinicians, academics and patient cohorts to explore and evaluate potential connected health solutions for the global market. Changing demographics coupled with reducing resources are placing increasing pressures on health systems across the globe. New care models must ensure patient quality of life while reducing costs and maintaining or improving clinical outcomes. Connected health is an emerging model of care ensuring stakeholders are 'connected' by means of timely sharing and presentation of accurate and pertinent information regarding patient well-being through smarter use of data, devices and people. Ireland is in a unique position to become a global centre of activity and excellence in connected health. ARCH is at the centre of an unparalleled connected health education and research infrastructure that spans a range of activities from gathering, analysing and interpreting data, through the development of new knowledge and care models to implementing and evaluating change.

Research performed by

- University College Dublin
- University of Limerick

Research areas

- How is care delivered today and how might it be improved by connected health technologies?
- How can the barriers to the use of connected technologies be overcome and maximum impact achieved?
- How can large and diverse health-relevant data sets be mined for actionable information and presented to diverse stakeholders?

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CeADAR Centre for Applied Data Analytics Research

www.ceadar.ie

The Centre for Applied Data Analytics (CeADAR) is a market-focussed technology centre for the development, and deployment of analytic technology and innovation. The Centre's work focuses on developing tools, techniques and technologies that enable more people, organisations and industries to use analytics for better decision making and competitive advantage. The primary outputs of the Centre are prototypes, demonstrators, alongside contract research plus state of the art reviews of data analytics technology, and best-practice methodologies.

CeADAR is funded by Enterprise Ireland, IDA Ireland and by contract research. The Centre is based in and led by University College Dublin in partnership with the Dublin Institute of Technology.

CeADAR has particular strengths in: predictive analytics, machine learning, real time analytics and visualisation. The Centre has an extensive catalogue of technology demonstrators, IP and analytics technology reviews which are all made available to members.

CeADAR's 3 core work programmes are:

1. Visualisation & Intelligent Analytic Interfaces

This research area concerns making the "Analytics disappear" so ordinary users can derive benefits and can explore data, develop insights and communicate results from advanced analytics tools. A major driver is to ensure the right data gets to the right person at the right time in the right medium. Subthemes within this area are: Beyond the desktop (applying / developing ground-breaking ways of interacting with large complex data sets using more natural interfaces to discover new insights), changing user behaviour based on analytics and passive analytics

2. Data Management for Analytics

This thematic area develops approaches, methods and tools to improve, simplify and reduce the effort involved in the management of data for analytics purposes

3. Advanced Analytics

Advanced analytics is evolving to provide timely, relevant and accurate information to enable real time decision making for organisations. This new analytical capability has the power to provide a competitive edge to organisations. But the advanced analytics story (particularly in relation to big data) is still being written and this research theme is focused on pushing the boundaries out even further. Sub-themes within this area are: knowledge discovery and insight, social media trending and contextualisation challenges, continuous analytics, predictive analytics and cognitive computing

The Centre is also the focal point of a thriving data analytics ecosystem delivering frequent seminars, conferences, consultancy and members' networking events throughout the year.

Industry membership of CeADAR has grown significantly in recent years and now totals over 80 industry partners. The latest industry players to become members are Ericsson, Prudential and Vodafone.

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DPTC The Dairy Processing Technology Centre

The Dairy Processing Technology Centre (DPTC) is an industry—academic collaborative research centre, hosted by the University of Limerick, with a research agenda driven by the long-term growth opportunities

for the dairy sector created by the removal of milk quotas in 2015.

DPTC has been established as a centre of excellence for dairy processing research and innovation. The Centre will help to fuel growth in the Irish dairy sector by performing research focused on cost efficient processing, facilitating a step change in environmental sustainability and creating, validating and commercialising a pipeline of science and technology-based manufacturing platforms for dairy ingredients. The foundation of the DPTC is a strong, long-term industry—academic collaborative partnership that will develop, build and translate the knowledge and capabilities in dairy processing that are needed today and for the long-term growth development of the sector. Current members of the Centre are the industry partners Arrabawn Co-op, Aurivo Co-op, Carbery Group, Dairygold Co-op, Glanbia Ingredients Ireland, Kerry Group, Lakeland Dairies and Tipperary Co-op.

Research performed by

- University of Limerick
- Teagasc
- University College Cork
- University College Dublin
- NUI Galway
- Dublin City University
- Trinity College Dublin
- Dublin Institute of Technology
- Institute of Technology Tallaght

Research areas

- Efficiencies cost competitiveness in dairy processing
- Process development next generation dairy processing science and technology
- Product innovation innovating for value through dairy processing
- Quality and safety product quality and safety by design
- Environmental sustainability towards a zero emissions dairy industry

The Dairy Processing Technology Centre (DPTC) Padraig McPhillips CEO

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FHI Food for Health Ireland

Food for Health Ireland (FHI) unites world-class science and industry expertise to improve health through innovation in food. Its purpose is to identify novel ingredients coming from milk to develop functional food ingredients that will offer health benefits to consumers.

FHI links world-class academic research with industry vision for the potential of successful market innovations. The industry-focused

research strategy within FHI includes the identification, development and exploitation of novel milk-derived bioactive compounds for improving health and wellbeing. FHI also provides a pipeline for the development of new functional food ingredients and products with validated health benefits for consumers. The FHI approach is to work with Irish food industry partners and in close connection with scientists. FHI has built a unique bridge between high-class research organisations and industry needs. FHI also provides a contract research facility for small and large global food companies utilising our competencies, resources and technologies. This service provides a gateway to academic research in Ireland and supports open innovation. FHI has completed over 40 projects of this kind since 2008.

Research performed by

- Teagasc Food Research Centre, Moorepark, Fermoy, Co. Cork
- University of Limerick
- University College Cork
- Dublin City University
- NUI Galway
- Maynooth University
- University College Dublin

Research areas

- Technology and healthy cheeses
- Infant nutrition
- Appetite modulation
- Glycaemic management
- Performance nutrition and healthy ageing

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GRCTC Financial Services Governance, Risk and Compliance Technology Centre

The Financial Services Governance, Risk and Compliance Technology Centre (GRCTC) is a dedicated market-focused research centre, undertaking applied research and innovation in the areas of financial services governance, risk and compliance. The Centre's purpose is to support its industry partners in resolving the transformational impact of costly regulatory compliance challenges, presented by the velocity, complexity and volume of change, through the development of innovative financial technology ('FinTech')-based GRC solutions. The industry continues to be beset by ineffective processes and inadequate ('traditional') technology, with too many tasks requiring manual interventions, inhibiting its ability to progress to 'smarter compliance', where semantically enriched FinTech provides the potential to shift from machine-assisted human querying and inferencing of data to human-supervised machine exploration. The GRCTC is positioned in-the-industry-for the- industry, and is recognised within the global financial services landscape. The Centre's applied research and innovation project areas are specifically targeted to assist financial services institutions and FinTech players in unpacking often multijurisdictional and multi-layered regulation by:

- developing a structured process to ingest regulatory obligations;
- helping to implement regulatory change in a cumulative and consistent manner;
- generating standardised data structures to enable meaning to travel with data; and,
- creating the ability to benchmark these capabilities, and support training and knowledge transfer initiatives.

The GRCTC embodies multidisciplinary expertise located at its host institution, University College Cork, and at University College Dublin and NUI Galway.

Research performed by

- University College Cork
- NUI Galway
- University College Dublin

Peter Cowap

Centre Director

Research areas

- Regulatory compliance change management system
- Regulatory compliance interpretation methodology
- Regulatory compliance information system
- Regulatory compliance knowledge base
- Regulatory compliance knowledge management system
- Regulatory compliance capability maturity modelling

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Irish Manufacturing Research

Irish Manufacturing Research is an independent manufacturing and industrial energy efficiency research centre focused on delivering solutions for the manufacturing ecosystem throughout Ireland. Our passion is to make Ireland a world leader in advanced manufacturing operations. As an independent research centre, Irish Manufacturing Research offers manufacturing industry a unique environment to collaborate with peers across all manufacturing sectors, and to inform and guide manufacturing research that not only addresses industry problems but also visions for future factories. We are a cross-sectoral research centre with partner companies in semiconductors, ICT, pharmaceuticals, medical devices, food, energy services, aerospace and other areas. We work closely with academic, Government and industry partners, and through bringing this cross-sectoral interaction around one table, we establish best in class knowledge and behaviours as the starting point for future research. Under the shared brand of Advanced Manufacturing Ireland, Irish Manufacturing Research in partnership with the industry network organisations, ICMR and i2e2, have demonstrated productivity improvements and efficiency savings opportunities in excess of €20m for member and partner companies through embedded pilots. It has achieved this through delivery of enterprise-ready solutions in areas such as schedule optimisation,

operations simulation, metrology, HVAC (heating, ventilating and air conditioning) commissioning and energy-efficient production. We are open to all levels of collaboration with Irish-based SMEs and large/MNC manufacturers.

Research performed by

Irish Manufacturing Research and through collaborations with most of the universities and institutes of technology throughout Ireland.

Barry Kennedy

CEO

Research areas

- Manufacturing informatics
- Industrial energy efficiency
- Operational excellence
- Industry 4.0
- Intelligent systems
- Additive manufacturing
- Supply chain

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IVI Innovation Value Institute

The Innovation Value Institute's (IVI) contribution to Government and industry is the availability of a body of knowledge that directs those managing information and technology in the most effective practices dedicated to optimising their investment and delivering business outcomes and value. The IVI researches, develops and disseminates empirically proven and industry-validated IT best practice through a unique open collaboration between leading academic and industry practitioners. The IVI facilitates a

collaborative community of like-minded peers committed to investigating, advancing and disseminating the frameworks, tools and best practices associated with managing IT value and IT-enabled innovation. The IT-Capability Maturity Framework (CMF) has been used by over 500 global organisations to enable and measure improvements in key areas:

- IT capability measurement and improvement;
- IT organisational design and capability management;
- IT business alignment and leadership;
- organisation benchmarking and best practice;
- IT risk management data protection; and,
- enabling digital processes across all

business departments.

The IVI represents a 'triple-helix' support and innovation model across academia, Government and industry, and facilitates a thriving international consortium, which now includes over 100 organisations globally. This collaboration provides the stable foundation and ecosystem to transform the way public and

private sector organisations manage IT for value and innovation.

Research performed by

Maynooth University

Martin Delaney General Manager

Research areas

- Defining and presenting the capability that organisations need to use the opportunities presented by technology and information management
- Developing the tools and training needed to allow organisations to use our research output
- Defining and developing an IT capability framework for SMEs
- · Using the IVI capability framework to address current business challenges
- Developing a European framework for ICT professionalism for the European Commission

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Learnovate Centre

The Learnovate Centre is leading learning innovation to provide real impact for our industry partners and position Ireland as a global leader in learning technologies. The Learnovate Centre is an industry-focused centre of excellence for research and innovation in learning technologies, hosted by Trinity College Dublin. Our mission is to enhance the competitive advantage of Ireland's learning technology industry and position Ireland as a global hub for innovation in Edtech. Through targeted research projects and a series of industry-focused services we provide innovation support, driving growth and job creation. Our research projects are focused on investigating areas of interest to our industry partners, from schools/K12 through higher education and into corporate learning. Our world-class team employs a multidimensional approach to research. The team has a core of technology-enhanced learning expertise from TCD, UCD, NUIG and

WIT. In addition, the Centre provides a wealth of experience across disciplines including pedagogy, learning design, psychology, user interface design and software development. Commercial experience is embedded throughout our team to ensure that we remain industry focused.

Research performed by

- Trinity College Dublin
- University College Dublin
- NUI Galway
- Waterford Institute of Technology

Research areas

- Personalisation and adaptive learning
- New assessment methods
- Learning analytics
- Mobile and informal learning
- Social and collaborative learning
- Immersive learning experiences
- Game mechanics for learning

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MCCI Microelectronic Circuits Centre Ireland

The Microelectronic Circuits Centre Ireland (MCCI) is an industry-led technology centre focused on world-class research into analogue and mixed-signal circuits. Our R&D activities deliver circuits that push state-of-the-art and optimise across cost, performance, power and functionality for a range of industry-directed end applications. MCCI is a technology centre focused on executing microelectronic circuit research forthe benefit of industry. MCCI is a world leader in analogue and mixed-signal integrated circuit research and has a pool of over 45 researchers spread across six institutions. Microelectronics is a key enabling technology for many diverse applications. MCCI is working with medical companies on new ultra-low power implantable microchips to monitor the human body, with smart food companies on microchips that can detect if a beef burger contains horsemeat, and with energy companies to reduce the power in data centres. With over 20 industry partners, MCCI conducts both multi-party collaborative research and confidential bilateral projects. The world-class circuits that we design allow companies to differentiate their products. In the last two years alone there have been six commercial licences from MCCI, 50% of MCCI staff have transferred into industry, and our member companies have created over 1,000 new jobs, with 120 of those jobs attributed to MCCI.

Research performed by

- Cork Institute of Technology
- Institute of Technology Carlow
- Maynooth University
- Tyndall National Institute
- University College Dublin
- University of Limerick

Research areas

- Analogue and mixed signal circuits research
- Sensors
- Communications
- Smart medical devices
- Smart agri-food devices

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PMTC Pharmaceutical Manufacturing Technology Centre

The Pharmaceutical Manufacturing Technology Centre (PMTC) is a leading industry-informed research centre focused on developing advanced technology solutions for all stages of pharmaceutical manufacturing. The Centre accesses state-of-the-art research facilities capable of delivering molecule to patient solutions through its Irish academic members. The PMTC is hosted at the University of Limerick with core funding from the Irish Government; this is supplemented with co-funding from industry in addition to leveraged research funding. The Centre is co-ordinated by an industry—academia Steering Committee with an industrially driven research programme. Members, including indigenous SMEs and MNCs, inform the research agenda. Market-focused research delivers solutions to contemporary issues facing the pharmaceutical industry. The recently launched "Good Cleaning Validation Practice (GCVP)" document is a concrete example of this objective in practice. The integrated guidance document was developed to directly and quickly address a pressing collective membership need. Our member base benefits by having unrivalled access to core capability and skills in continuous processing, mathematical modelling, statistics and process optimisation, and unrivalled awareness of research programme outputs.

Other benefits include: pre-agreed project agreements; professionally managed, timely access to IP and research outputs; opportunities to identify talent for future recruitment; and, access to members-only networking forums and events.

Research performed by

- University College Cork
- University of Limerick
- Institute of Technology Tallaght
- Institute of Technology Tralee
- Institute of Technology Sligo
- Waterford Institute of Technology
- Cork Institute of Technology
- NIBRT
- SSPC

Dr Chris Edlin

Centre Director

Research areas

- Advanced rapid microanalytical techniques
- Enabling and control of continuous processing by process analytical technology (PAT)
- Soft sensor modelling tools
- Active pharmaceutical ingredient (API) real-time release PAT
- Pharmaceutical packaging technologies
- Cleaning, validation and verification

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IC4 The Irish Centre for Cloud Computing and Commerce

The Irish Centre for Cloud Computing and Commerce (IC4) is a multi-institutional, multi-disciplinary research centre whose mandate is to carry out rapid turnaround, applied research projects in areas of cloud computing that are chosen by its industrial members.

IC4's mission is to:

- i) generate and transfer knowledge and technology to its industry members, in areas they can commercialise;
- ii) accelerate the rate at which businesses adopt cloud computing; and,
- iii) showcase Ireland's capabilities in cloud computing.

One of IC4's main research priorities is "building trust and dependability in the cloud", with the goal of addressing the need for compliance to standards, quality of service, data privacy, auditability and reliability of service. These issues permeate the cloud ecosystem and are relevant to cloud platform or application developers, cloud service providers, cloud solution resellers and cloud consumers. IC4's multidisciplinary team of postdoctoral researchers delivers fast-turnaround research under industry-friendly commercialisation terms. Members get access rights to all core funded research results but can also get exclusive access rights to results on targeted projects that are focused at their specific needs.

Research performed by

- Dublin City University
- University College Cork
- Athlone Institute of Technology

Research areas

- Cloud architecture
- Service lifecycle
- Business research
- Cloud security

Tony McEnroe, Centre Director

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IComp Irish Centre for Composites Research

The Irish Centre for Composites Research (IComp) provides world-class innovative R&D, consultancy and networking opportunities for industry throughout Ireland, across all sectors where there are opportunities to use composite materials and associated technologies. IComp provides the focal point in Ireland for academia and industry to work together to address some of the critical issues related to the use of composite materials. Research projects are identified by IComp industrial members who include companies from the aerospace, electrical, construction and renewable energy sectors. IComp's R&D activities include materials innovation and processing, the design of composite components and structures, joining technologies (including adhesive bonding and surface engineering), and damage detection and repair. All areas are supported by a comprehensive programme of modelling, testing and in-depth characterisation. Additionally, bespoke experimental support, consultancy, networking and information services are provided to industrial members. IComp has well-equipped laboratories with the capability of manufacturing as well as testing and inspecting composite components and structures up to the semi tech scale. The world-class faculty and research staff at UL, UCD and AIT has many years of experience working in national and international funded programmes.

Research performed by

- University of Limerick (UL)
- University College Dublin (UCD)
- Athlone Institute of Technology (AIT)

Dr Terry McGrail Centre Director Research areas

- Innovative processing and product development of thermoplastic composites, including recycling
- Liquid resin infusion processes and product innovation for out-of autoclave manufacture
- Adhesives and adhesion science for bonding and dis-bonding composites and metals
- Surface engineering to tailor composite, polymer, fibre and metal surfaces to optimise performance
- Damage prediction, detection and repair of composites

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IERC International Energy Research Centre

The International Energy Research Centre (IERC) leads collaborative research to meet global societal needs for secure, affordable and sustainable energy services. It is focused on demand side energy efficiency and embedded energy generation at the building, community and city levels. The IERC aims to address global societal needs for secure, affordable and sustainable energy services by transforming the efficiency of energy-enabled services and enhancing the quality of people's lives. While a range of solutions exists to help reduce energy use, integrated system thinking is required to provide low-carbon solutions that will deliver efficiently and effectively throughout their lifetimes. The IERC aims to develop a truly collaborative ecosystem delivering economic impact through research and business partnerships. The Centre is developing new products and services that will ensure real energy and carbon reductions across society, while building new knowledge and insight for our partners. The IERC has developed a collaborative research and IP model to engage key stakeholders in delivering high-level integrated, system-level solutions. The IERC is funded jointly by the Department of Enterprise, Jobs and Innovation and the Department of Communications, Energy and Natural Resources.

Research performed by

- Cork Institute of Technology
- Dublin Institute of Technology
- Dublin City University
- Limerick Institute of Technology
- NUI Galway
- Maynooth University
- Tyndall National Institute
- University College Cork
- University College Dublin
- University of Ulster

Research areas

- Smart cities and sustainable communities
- Low carbon heating and cooling
- Monitoring, measurement and analysis of energy
- Embedded and micro generation systems

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MTC – The Meat Technology Centre

The Meat Technology Centre (MTC) is an industry-academic collaborative research centre, hosted by the Teagasc, Ashtown Food Research Centre, with a research agenda driven by the opportunities provided by the opening of new markets for Irish beef and sheep meat.

MTC has been established as a centre of excellence in the processing of beef and sheep meat, focusing on the opportunities provided by opening of global markets and the increased capacity in the Irish herd through the expansion in dairy. The Centre will be a 'one-stop shop' for meat processing research and technology, serving as a hub to co-ordinate all beef and sheep meat processing research needs. The key to the collaboration is the focus on research and innovation on the factors that influence the quality and marketability of beef and sheep meat produced on Irish grassland.

The MTC has developed a five-year research vision for the Irish meat industry, hosted by Teagasc at its Ashtown Food Research Facility in Dublin, in collaboration with Dublin Institute of Technology (DIT), University College Cork (UCC) and the Irish Cattle Breeders Federation (ICBF). The companies behind the initiative are ABP Ireland, Ashbourne Meat Processors, Dawn Meats Group, Dunbia (Ireland), Hilton Foods Ireland, Irish Country Meats, Kepak Group, Liffey Meats, and Slaney Foods International. Research Performed by:

Teagasc
Dublin Institute of Technology
University College Cork
Irish Cattle Breeders Federation

Research Areas:

The Research Programme addresses both the challenges and opportunities for the sector. Genomic Selection,
Meat Tenderness,
Meat Safety/Bioburden/Shelf-life Extension,
Biomarkers for Irish grass-fed beef/sheep,
Meat Grading,
Meat & Health,
New Market Opportunities,

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