



Anticipating the Potential Impact of Proposals

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Science Foundation Ireland

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Of Competitive Funding Systems”
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Science Foundation Ireland

Key Information

Founded in
2000

Officially
established in
2003

As at 31 December 2015

700 Live Awards
with future commitments totaling
€426m

€1.9bn

Spend and

€2.4bn

Committed
to date in

4,470
Awards

Science Foundation Ireland Position in the RDI Landscape

Department of Jobs, Enterprise & Innovation



Supporting Indigenous Irish
Companies



Supporting Research
and Innovation
for the Future



Supporting Multinational
Companies in Ireland

RDI
Funding
Spectrum
TRL

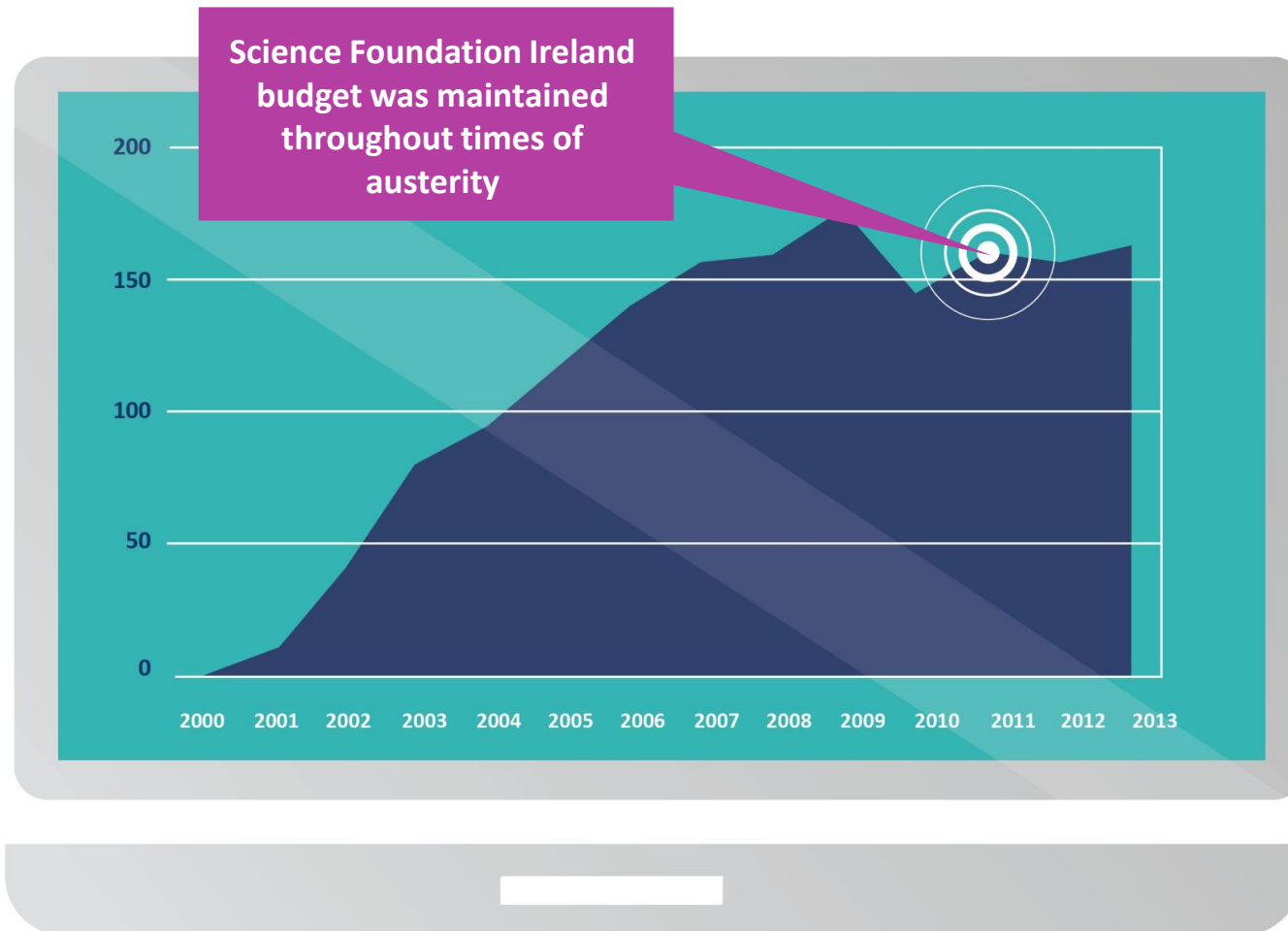
0. Idea	2. Technology formulation	4. Small scale prototype	6. Prototype system	8. First of a kind commercial system
1. Basic research	3. Applied research	5. Large scale prototype	7. Demonstration system	9. Full commercial application

Science Foundation Ireland

Enterprise Ireland

IDA

Representation of funding since establishment



SFI Agenda 2020

Excellence and Impact



1 To be the **Best** science funding agency in the world at creating **impact** from **excellent** research and demonstrating clear value for money invested

2 To be the exemplar in **building partnerships** that **fund excellent science** and drive it out into the market and society



3 To have the most engaged and **scientifically informed public**

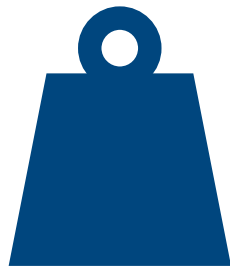
4 To represent the **ideal modern public service organisation**, staffed in a lean and flexible manner, with efficient and effective management.



Innovation 2020

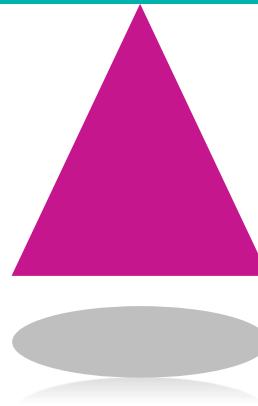


Impact and Excellence Concept



EXCELLENCE

Ensuring
Quality/Excellence
both of the person and
of the proposed
programme via
International Peer/Merit
Review

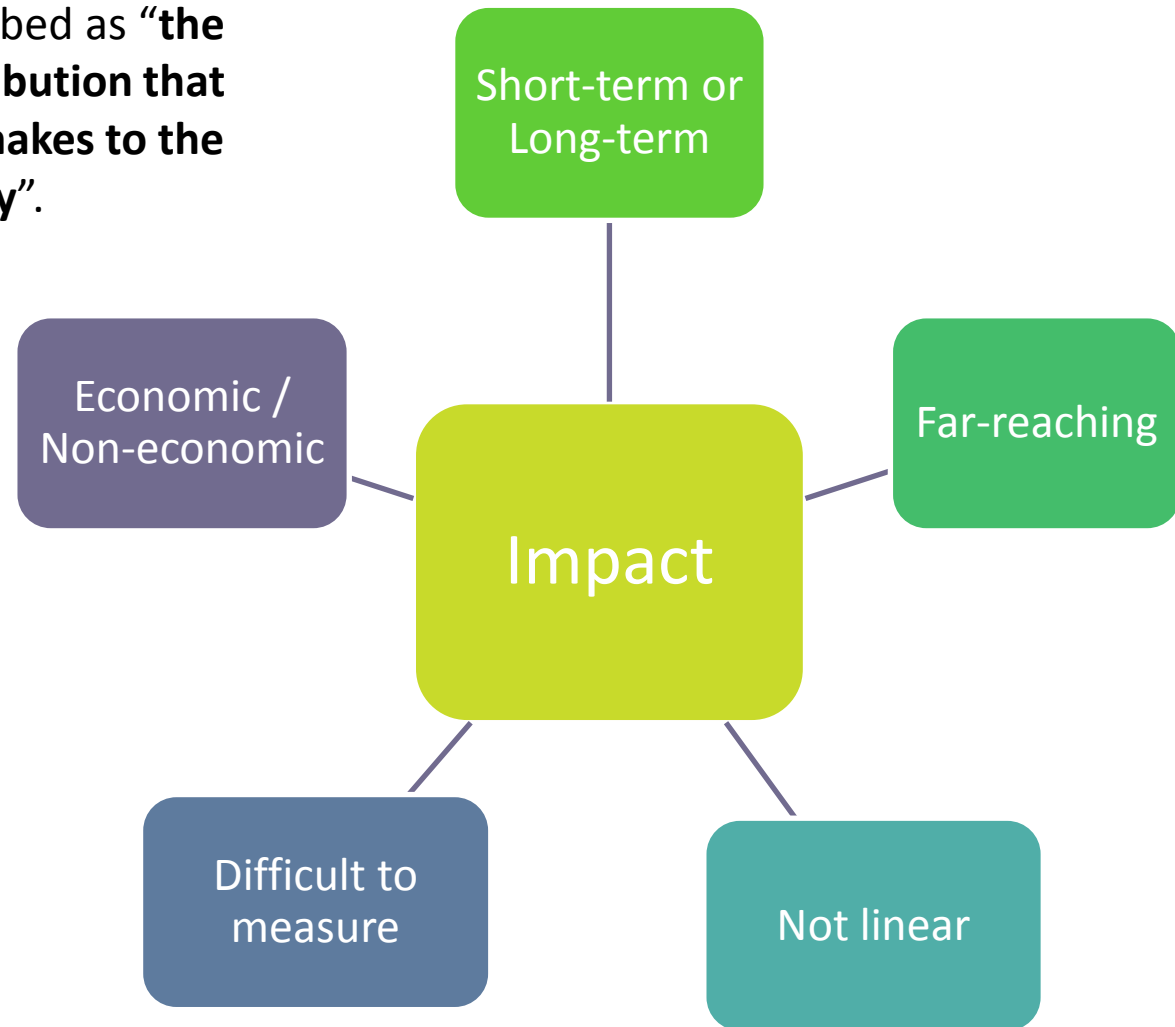


IMPACT

Increase focus on applicants
**demonstrating and
delivering impact
from research** due to an
absolute need to demonstrate
to government and the public,
**the value to the Irish
economy and society
of public funds spent
on research**

What is Impact?

Impact can be described as “**the demonstrable contribution that excellent research makes to the economy and society**”.



Small Advanced Economies Initiative

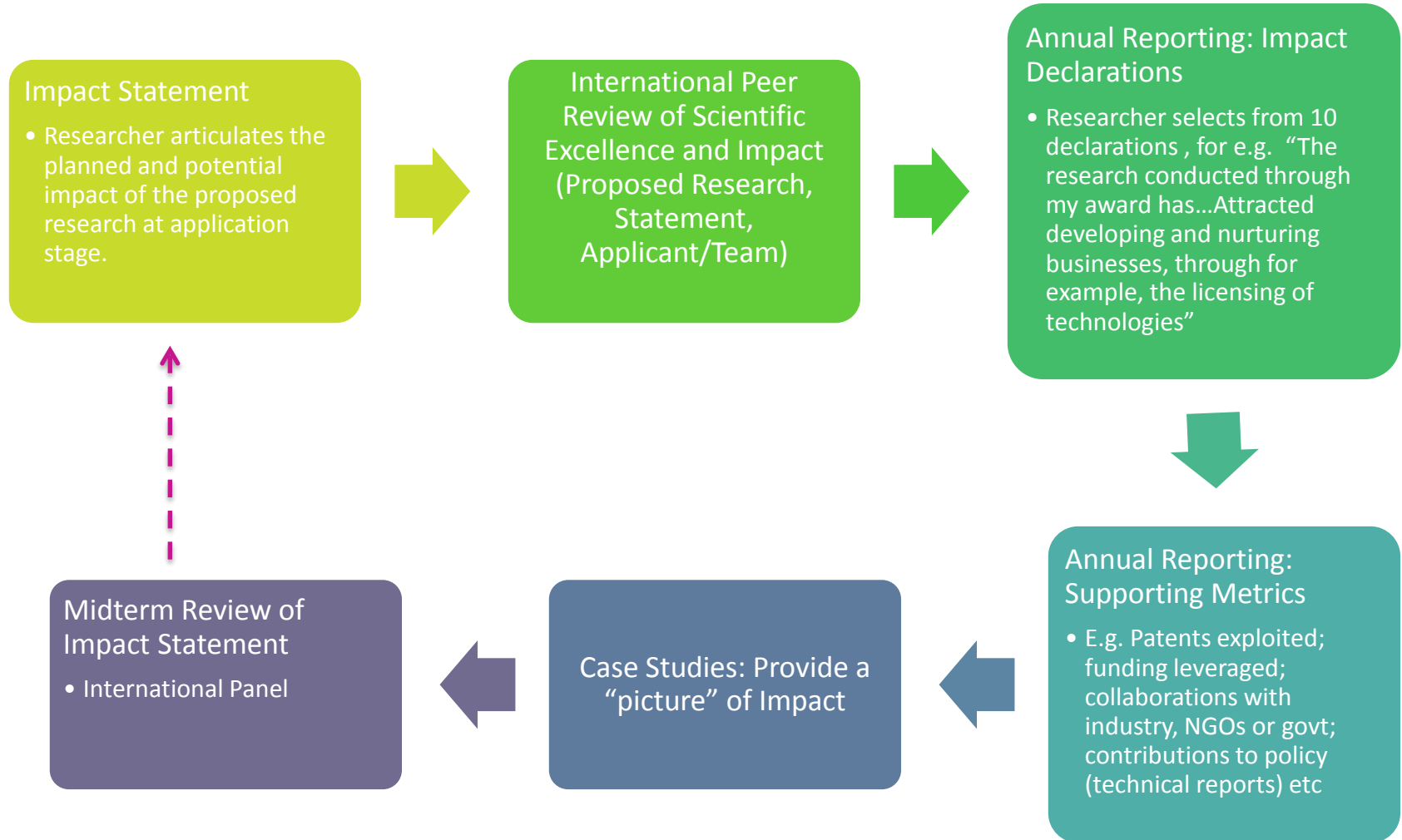
- Collaboration of seven advanced economies of similar scale population.
 - Ireland, New Zealand, Finland, Israel, Denmark, Singapore, later joined by Switzerland.
- *“Broadening the Scope of Impact: Defining, assessing and measuring impact of major public research programmes, with lessons from 6 small advanced economies” (2015)*

“Broadening the Scope of Impact”

- This report was prepared by the Science and Innovation group of the Small Advanced Economies Initiative (SAEI). The SAEI brings officials and experts from New Zealand, Israel, Singapore, Denmark, Finland, and Ireland together to consider policy issues of common interest where the perspective of small size influences policy choices.
- The objectives in preparing this report were:
 - To provide a common language for the concepts surrounding impact and impact assessment across countries
 - To share lessons in the implementation of impact evaluation, particularly at the allocation stage
 - To help improve the analysis of impact through the use of tools and metrics and to gather better information across all impact areas
 - To provide opportunities for the use of common metrics and so enable cross-country comparisons in future analyses



How do we measure Impact?



The process may vary according to programme size and objectives

Ex-Ante Evaluation of Impact

- Impact Statements in Applications for Funding
- Researchers asked to articulate the value of their research to Ireland
 - Encourages researchers to think about how to maximise impact and how to engage users of their research
- Detailed guidelines provided
 - Plain English
 - How will you engage users / beneficiaries of your research
 - Implementation plan
 - Milestones / deliverables
 - What does a good / poor impact statement look like?

Guidelines: Common Characteristics of High Quality Impact Statements

- Good knowledge of the **relevant beneficiaries of the proposed research** and the **NEEDS of this sector**
- Clear description of how the applicant intends to **reach and engage with the beneficiaries** of the research, including **clear deliverables** and **milestones**
- **Genuine inclusion of appropriate collaborators** in the research programme, especially in the application area of the research if interdisciplinary in nature
- **Involvement of beneficiaries and end users from the outset** taking this input into the design of the research programme. Industry collaborators may not be *a requirement* but where appropriate is encouraged
- Brief description of **track record and relevant accomplishments for training researchers, knowledge exchange** and impact-generating activities in the context of the proposed research project
- Good knowledge of **national priorities and activities** in the relevant areas
- Applicant demonstrates **clear commitment to maximising the impact of their research**
 - **CREDIBLE implementation plan – ‘PATHWAYS to IMPACT’** including **realistic timelines and stakeholders**

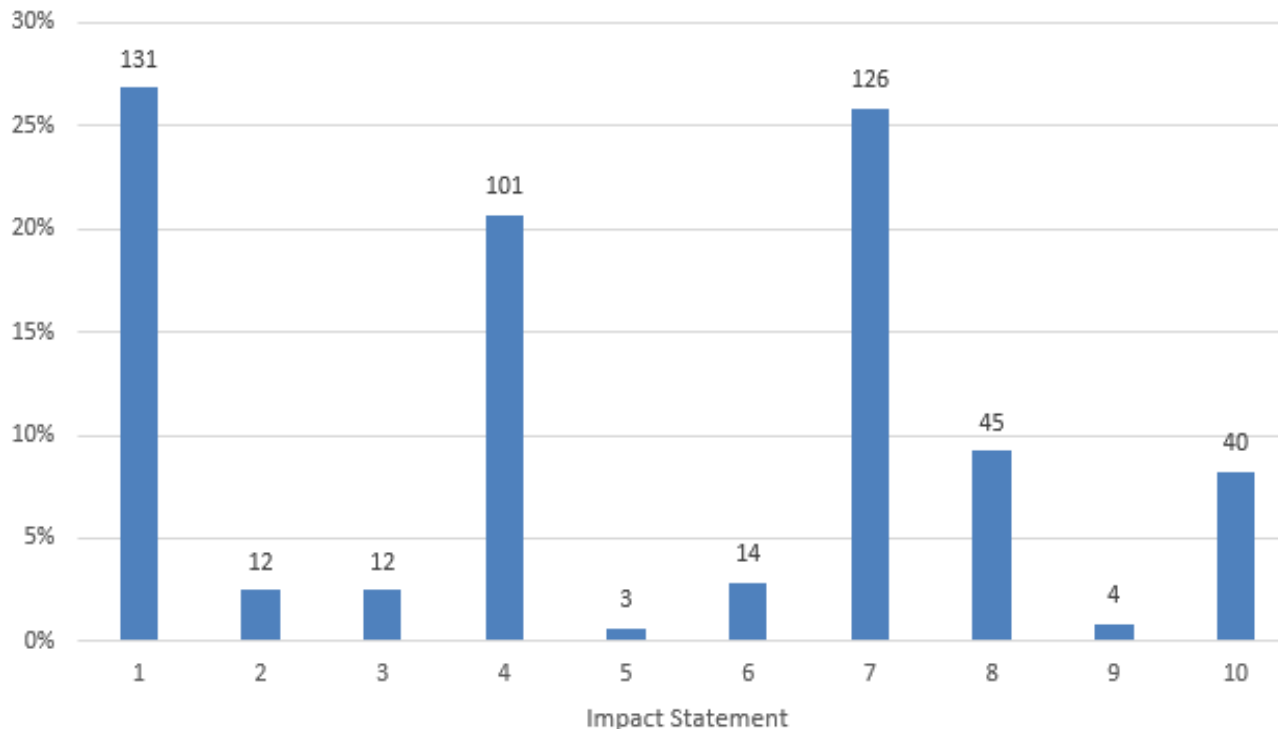
International Peer Review: Impact Review Criterion

- The **impact review criterion** is:
 - *Quality, credibility and relevance of the impact statement, including the likelihood, scale and value of societal and economic effects on Ireland as a result of the proposed research.*
- The impact statement should answer the following questions
 - **Who** will benefit from this research?
 - **What plans** will you put in place to **increase the chances of economic and societal impacts** from the proposed research?
 - Over what **timeframe** might the benefits from your research be realised?

Annual Reporting

- Quantitative and Qualitative
- Key Outputs imported from annual research outputs survey, with additional narrative
- Impact Declarations – 10 statements to rank up to 5, with further commentary required.
- Sample statements:
 - The research conducted through my award has attracted developing and nurturing businesses, through for example, the licensing of technologies *[Economic and Commercial]*
 - The research conducted through my award has attracted international scientists and talented people *[Human Capacity; International Engagement]*
- Researchers expected to reference any outputs that show progress on the pathway to impact.
- Option to declare that no impact has yet been realised.
- All impact statements relate back to the 8 pillars of the Impact Framework
- Impact Tracker for development of case studies

All Awards



In 2013/4, the majority of SFI awardees declared that their primary impacts related to -

- [1] the leveraging of international funding
- [7] contributing to Ireland's international reputation
- [4] and the hiring / attracting of talented people

40 researchers declared that their research has not yet realised any significant impact (statement [10])

Annual Research Outputs Data

- At the start of each year all active researchers (and a growing number of inactive researchers) report outputs from their research during the previous year
- Attribution to SFI awards
- Allows SFI to look at outputs in a holistic way across all programmes
- Inputs into
 - Quantitative element of Annual Reports;
 - Research Centres reporting on progress against KPIs;
 - SFI reporting on progress against KPIs
- Attempts to capture longer term outputs – challenging
- Captures data beyond publications
 - Collaborations (national and international, academic and non-academic)
 - Input into Technical / Policy documents
 - Commercialisation data – patents, licences, inventions, standards, spinouts
 - Team development and movement to other sectors
 - Leveraging of funding (private and public)

Mid-Term Progress Review

- Larger awards undergo mid-term progress reviews
- Research Centres report half yearly against pre-agreed KPIs
- Reviewers score progress against the original impact statement with reference to indicators of impact

Case Studies

- Annual reporting and metrics – demonstrate progression towards impact
- Ultimate impact reported via Case studies - emanate from further analysis of:
 - Annual Reports
 - Research Outputs
 - Media, Post Award Team contact with researchers

Thomas Swan licenses AMBER's graphene technology



- Researchers at AMBER have been collaborating with Thomas Swan Ltd. for over two years
- The company, a major independent manufacturer of performance and speciality chemicals, has invested €750,000 in the centre to date
- A licence agreement has been signed between AMBER and Thomas Swan to scale up high quality graphene production

THE IMPACT: The discovery will transform the way many consumer and industrial products are manufactured.

- The material has a multitude of potential applications
- Potential to lead to high value manufacturing jobs
- Extremely rapid uptake by industry
- High impact co-publications with industry in top journals

A diagnostic test for pre-eclampsia will lead to significant improvements in the health of mothers and babies



Louise Kenny (Director, INFANT) developed a diagnostic test for the early detection of pre-eclampsia as part of her 2008 SFI PI award.

IP was developed and licenced to a UCC spin-out company
Metabolomics Diagnostics

The Impact: The discovery will lead to significant improvements in the health of mothers and babies

- *Metabolomics Diagnostics* has **grown significantly**, predominately due to its association with the INFANT Research Centre. Specifically Louise Kenny has supported investor pitches with the company's CEO resulting in their recent success in securing €750,000 of investment from SOS Ventures, AIB Seed Capital Fund and Enterprise Ireland HPSU
- The significant involvement of Prof Kenny in these efforts was recognised by EI awarding her with the Life Science and Food Commercialisation Researcher of the Year Award for 2013. It has also led to the **successful** coordination of an FP7 grant application by Prof Kenny

Trinity's Gene Medicine Spin-Off Genable Technologies Sold to Spark Therapeutics

- Genable Technologies, Irish biopharma company spun out of research of Jane Farrar, Pete Humphries and Paul Kenna in ocular genetics in Trinity developing new gene therapies to treat “dominant” genetic diseases using technologies initially.
- Arises from research supported by multiple sources including Science Foundation Ireland, the Health Research Board, Fighting Blindness Ireland, Foundation Fighting Blindness (USA), Enterprise Ireland, the Wellcome Trust, the European Research Council (ERC) and EU framework programmes.
- *Genable Technologies* collaborated with Spark since 2014 in the development of a therapeutic program that targets one of the most prevalent forms of inherited retinal disease (IRD).
- **The Impact:** Transaction with Spark Therapeutics will progress the clinical development of RhoNova™ for the treatment of autosomal dominant rhodopsin linked retinitis pigmentosa (RHO-adRP), a leading cause of inherited blindness.

Modernising the Curriculum: Coding for the next generation



Clare McInerney (Education and Outreach Manager, Lero Irish Software Research Centre) commissioned by National Council for Curriculum and Assessment (NCCA) to develop Continuing Professional Development Training programme for the first official 100-hour Junior Cycle Short Course in Coding in conjunction with Junior Cycle for Teachers and Intel.

- Responsible for introducing Scratch, a visual programming language that makes it easy to create digital content, to Irish schools.
- Facilitate the Scratch Competition for school students which has resulted in a staggering increase in school participation in coding.
- Over 3,000 teachers have completed Scratch training.
- Host computing summer camps aimed at young women from the age of 14 years to encourage more female participation in IT.
- Clare one of 2015's Google Rise Award winners, a prize supporting organisations that encourage girls and under represented students in extracurricular computer science programmes.

The Impact: Modernising the Irish curriculum and increasing the numbers (and diversity) of students participating in coding.

The Magna Carta for Data – Charting the way for citizens' rights in Big Data research



- Leading the discussion on data ethics in Europe is the Science Foundation Ireland **Insight Centre for Data Analytics**.
- Co-director of the Centre **Prof Barry O'Sullivan** is heading up Insight's **Magna Carta for Data** initiative which aims to objectively weigh the benefits of data research to the public with the privacy and data protection rights associated with this increasingly pertinent field of research.
- Following extensive consultation, in November 2015, Prof O'Sullivan presented the concept of the Magna Carta for Data at the Alan Turing Institute in Oxford University.
- Extends not only to business, health science and computer science community but social sciences and the humanities
- The scale of the initiative shows Ireland is very much leading the field in terms of data ethics, at the same time highlighting the draw of Ireland as a frontrunner in data analytic research.
- Presented at the UN Headquarters an overview of data analytics and the challenges posed by Big Data in both the developed and developing worlds.

The Impact: Influencing policy in Europe and internationally and raising the international reputation of Ireland in the field of Data Analytics

Programmatic Reviews

- Independent external review of programme
- Programme for evaluation selected on the basis of programme timeframes and maturity
- Data provided from Research Outputs Data, Annual Reporting, stakeholder interviews

Impact Reporting Awards

- To be announced at Science Foundation Ireland Science Summit
- Not simply recognising impact
- Recognises the *reporting* of impact which facilitate the development of case studies

Thank you

www.sciencefoundationireland.ie

Impact declarations

- 1. The research conducted through my award has enabled me to leverage international funding through industry/collaborative research*
- 2. The research conducted through my award has resulted in the start or expansion of a company which has resulted in the creation of high value jobs*
- 3. The research conducted through my award has attracted developing and nurturing businesses, through for example, the licensing of technologies*
- 4. The research conducted through my award has attracted international scientists and talented people*
- 5. The research conducted through my award has resulted in a new policy being implemented and/or an improvement to the delivery of a public service*
- 6. The research conducted through my award has resulted in societal impact by enhancing the quality of life and health of Irish citizens*
- 7. The research conducted through my award has developed the country's international reputation*
- 8. The research conducted through my award has resulted in the creation of employment through the production of a highly educated and relevant workforce in demand by industry and academia*
- 9. The research conducted through my award has impacted in other areas not reflected in the choices provided, for example by enhancing the creative output of Irish citizens*
- 10. The research conducted through my award has not yet realised any significant Impact*