Fondúireacht Eolaíochta Éireann
Science Foundation Ireland

Janice Murtagh PhD

Life Sciences Directorate

Enterprise & International Affairs

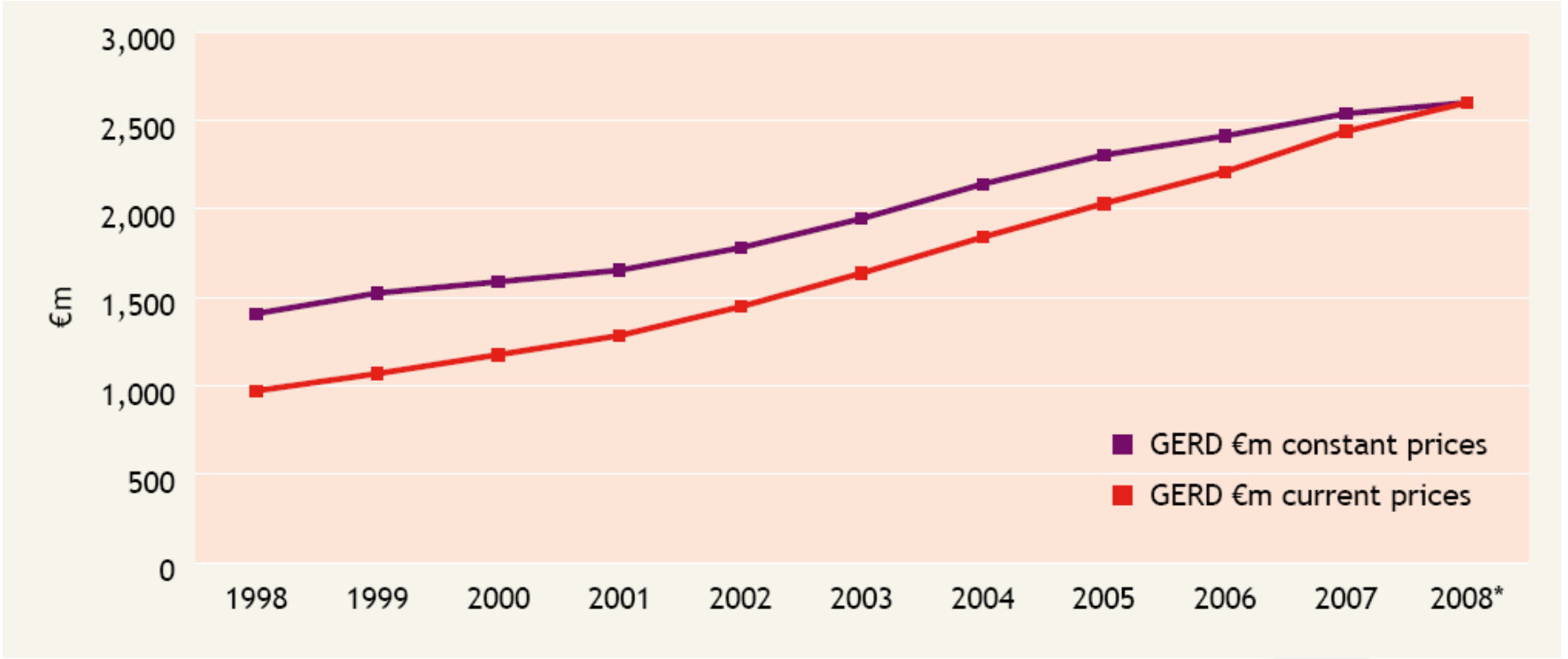
Presentation Overview

- RDI landscape in Ireland
- Science Foundation Ireland (SFI)
- National Research Prioritization Exercise (NRPE)
- Impact
- SFI programmes for early career researchers

RESEARCH AND DEVELOPMENT EXPENDITURE IN IRELAND

Research, Development & Innovation

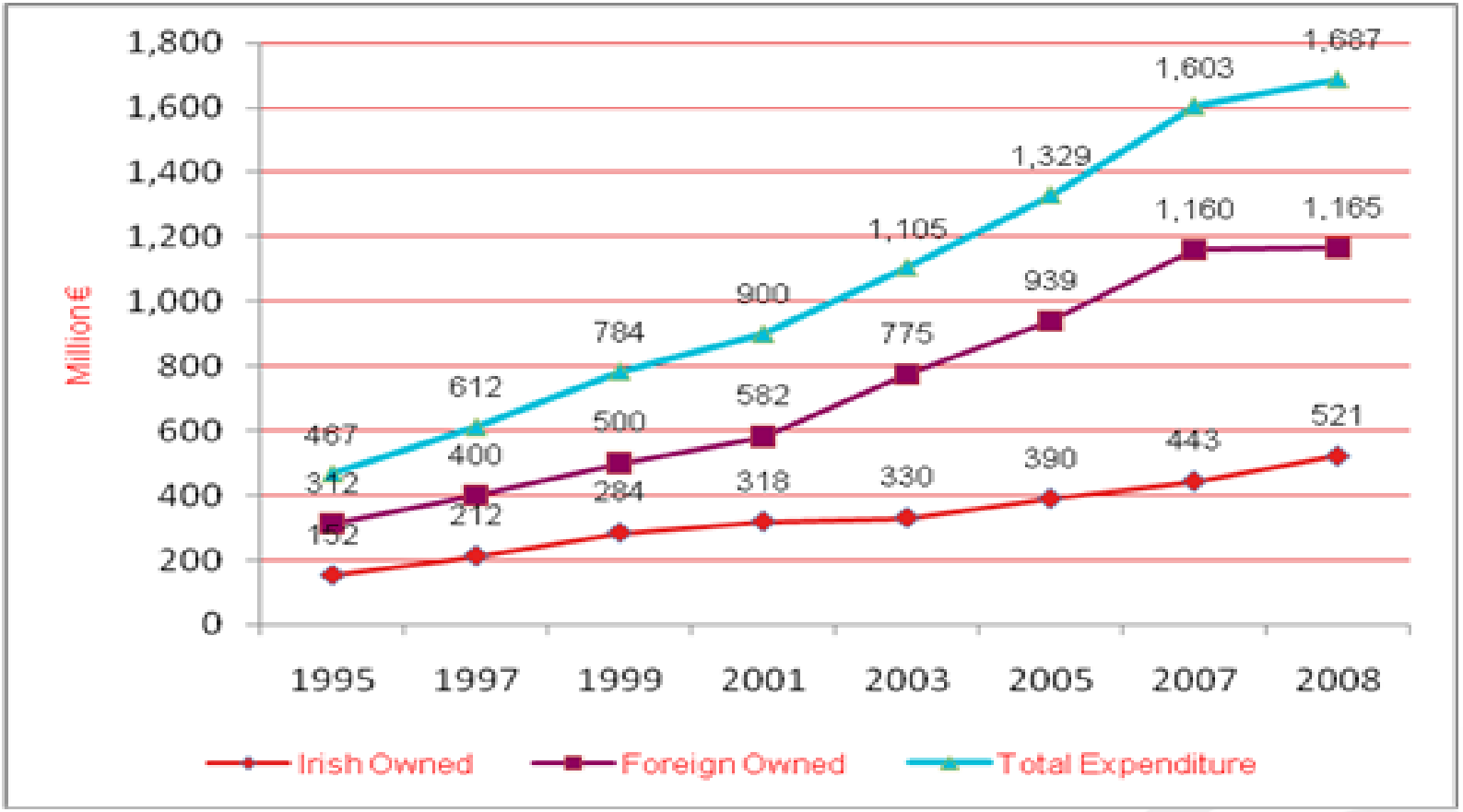
Gross Expenditure on R&D Expenditure, 1998 -2008



Source: Research and Development Statistics in Ireland, 2009 - at a glance

Research, Development & Innovation

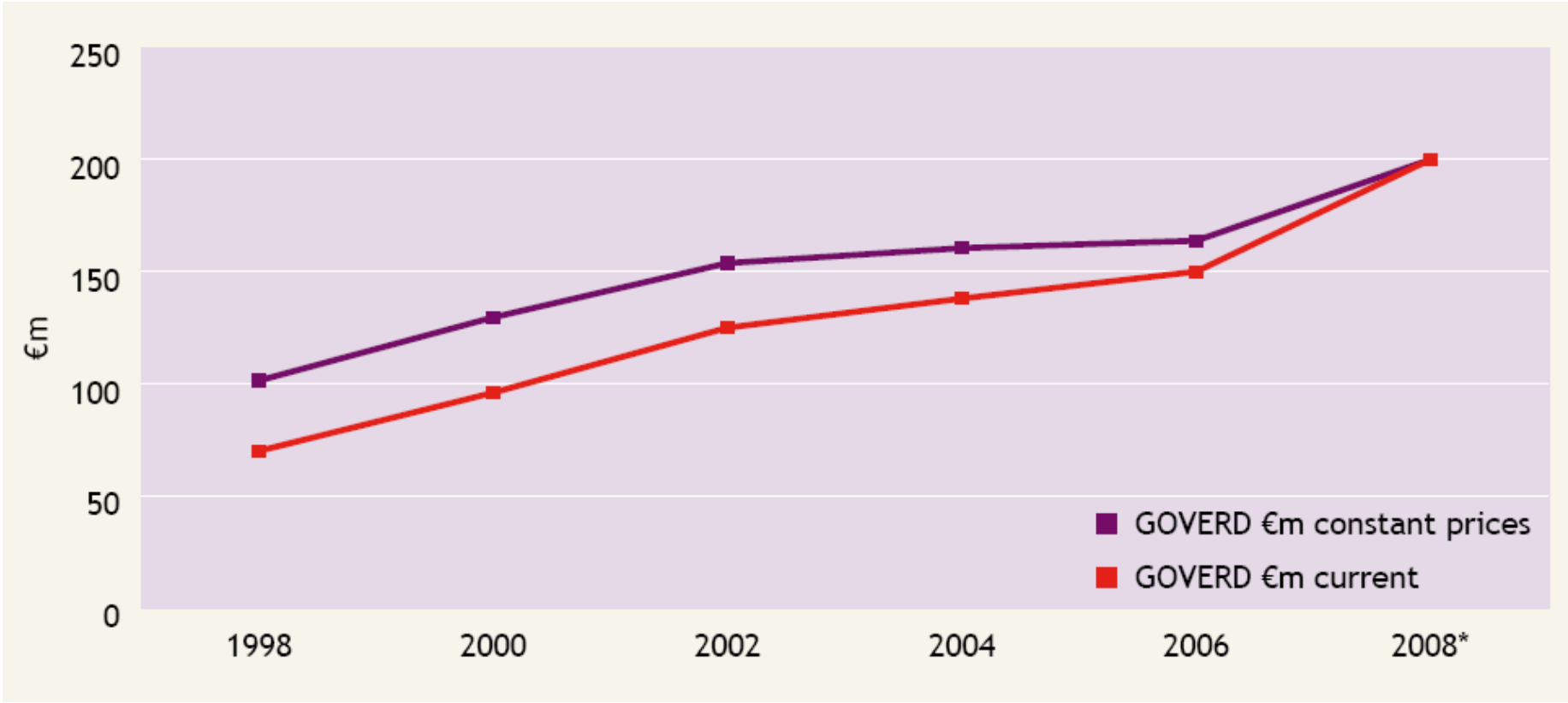
Business Sector R&D Expenditure, current prices, 1995-2008



Source: CSO and Forfás, Business Expenditure on Research and Development, 2007/2008

Research, Development & Innovation

Government Expenditure on R&D (GOVERD), 1998- 2008



Source: Research and Development Statistics in Ireland, 2009 - at a glance

SCIENCE FOUNDATION IRELAND

SCIENCE FOUNDATION IRELAND

- **Founded 12 years ago**

"SFI will build and strengthen scientific and engineering research and its infrastructure in the areas of greatest strategic value to Ireland's long term competitiveness and development."

- **Based on the USA National Science Foundation**
- **> €1.6 Bn committed to date**

Dept. Jobs, Enterprise & Innovation

Fondúireacht Eolaíochta Éireann
Science Foundation Ireland

IDA IRELAND

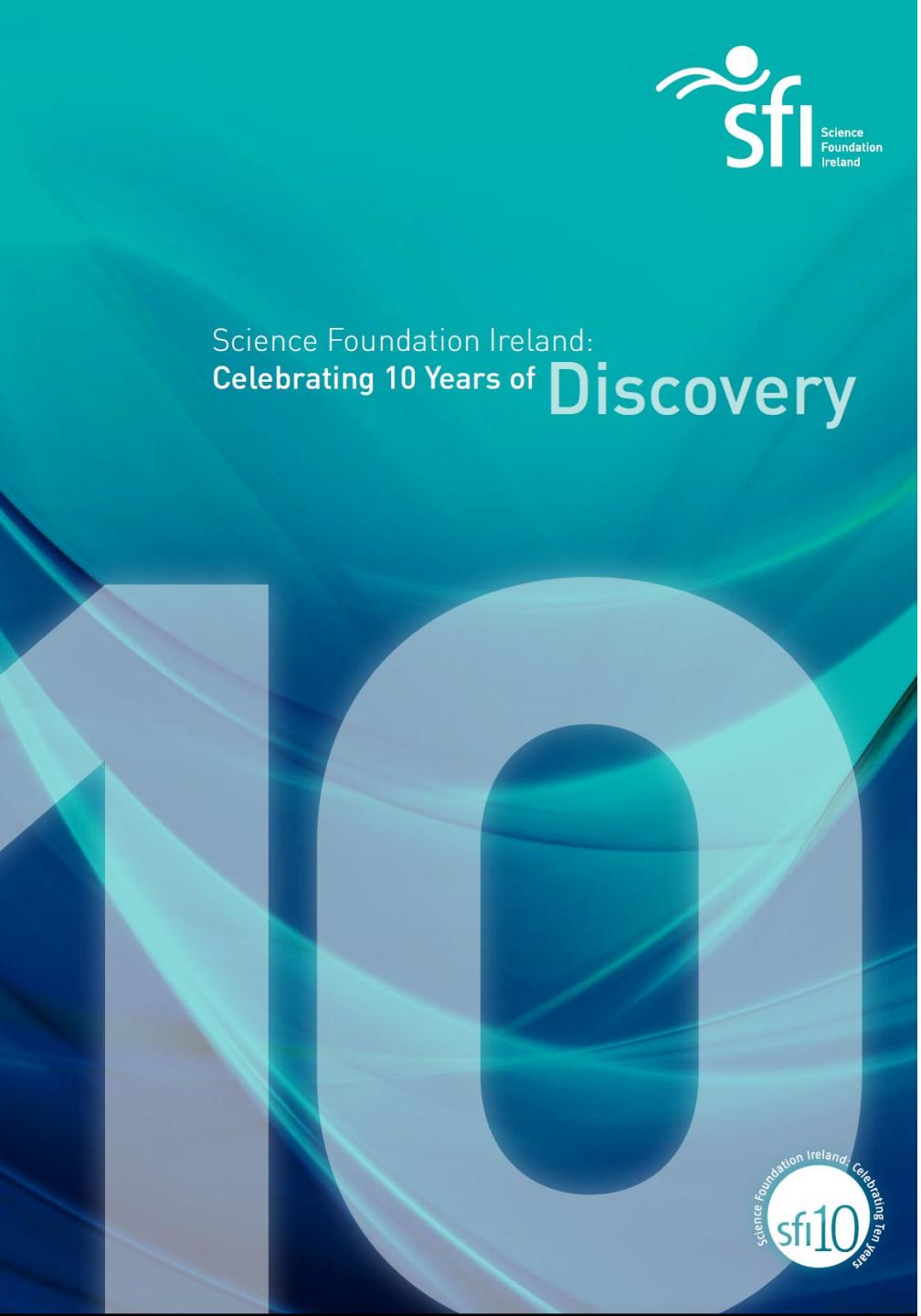
ENTERPRISE IRELAND
Transforming Irish Industry

Forfás

the foundation of the smart economy

Science Foundation Ireland

Science Foundation Ireland: Celebrating 10 Years of Discovery



Science Foundation Ireland

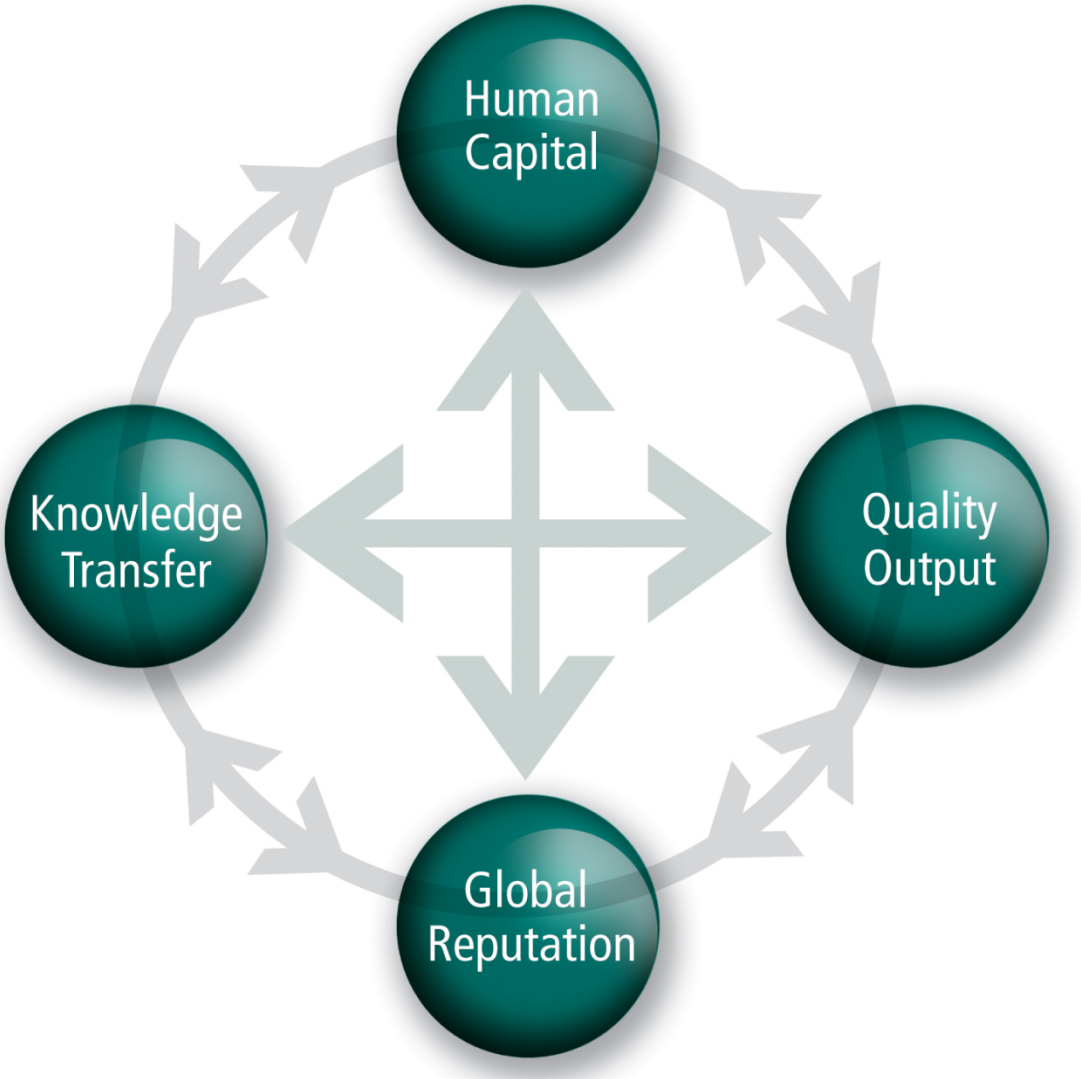
SFI **Vision**

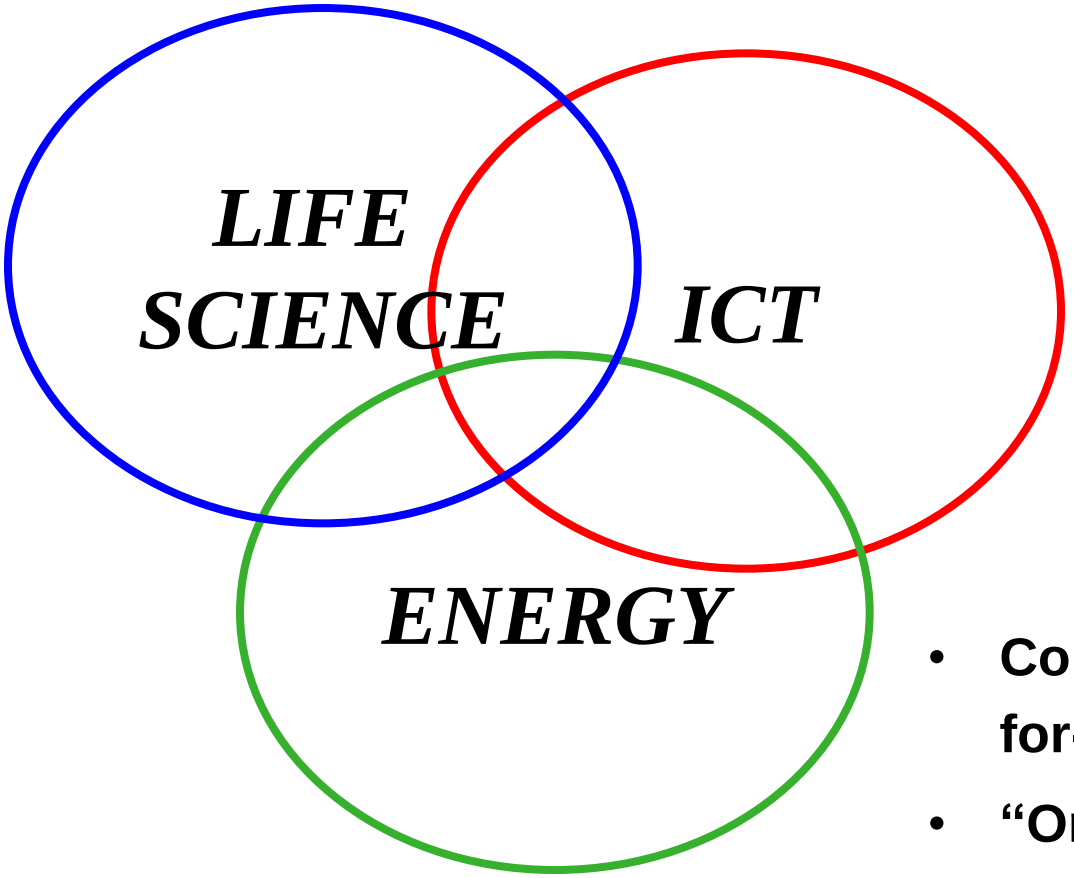
Ireland will be a global knowledge leader that places scientific and engineering research at the core of its society to power economic development and social progress.

SFI **Mission**

SFI will build and strengthen scientific and engineering research and its infrastructure in the areas of greatest strategic value to Ireland's long-term competitiveness and development.

Science Foundation Ireland: Celebrating Ten Years
sfi10

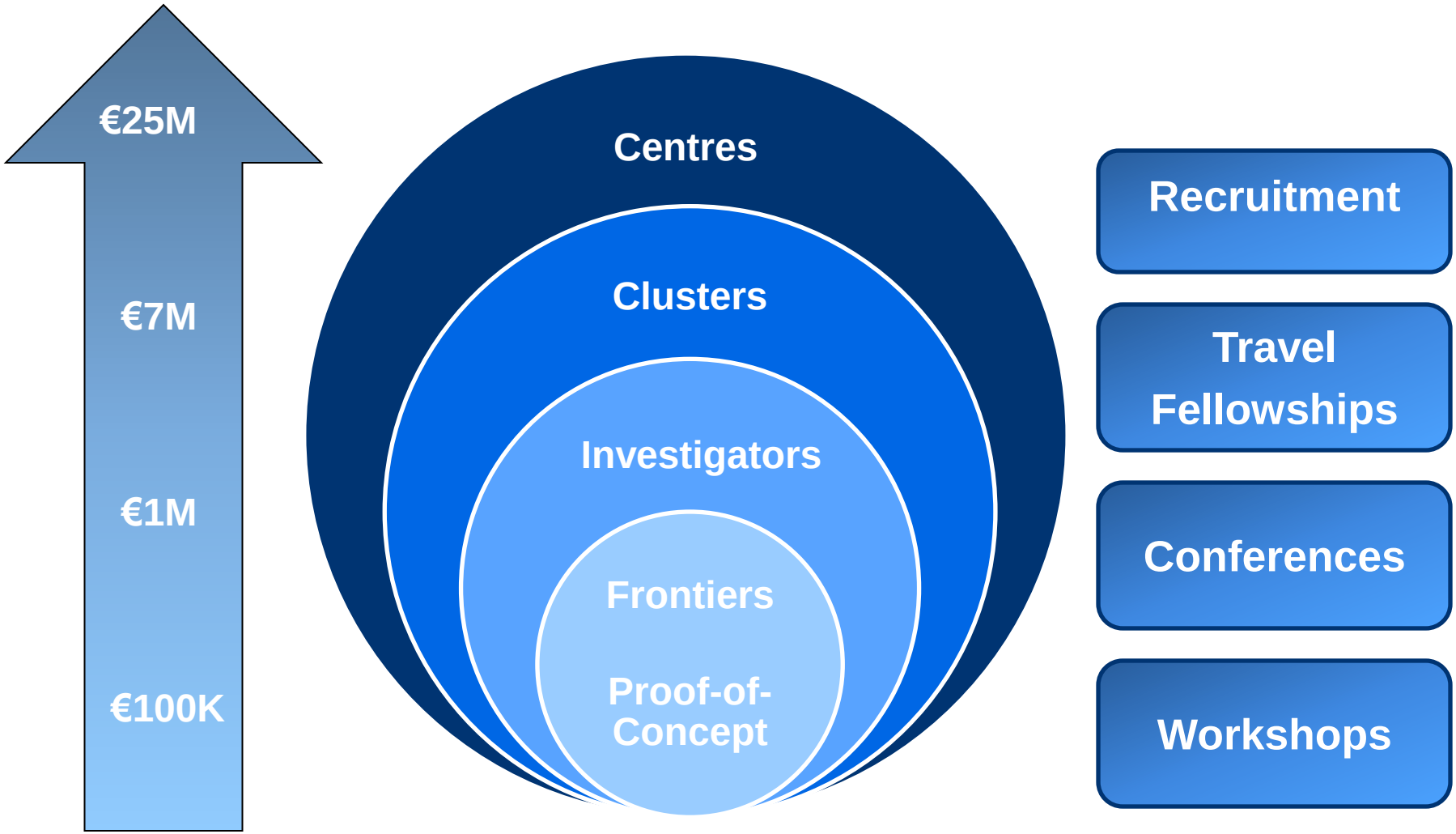

Human Capital
Quality Output
Global Reputation
Knowledge Transfer



Irish Gross Expenditure on R&D
~€2.5 billion/annum
1.6% GDP

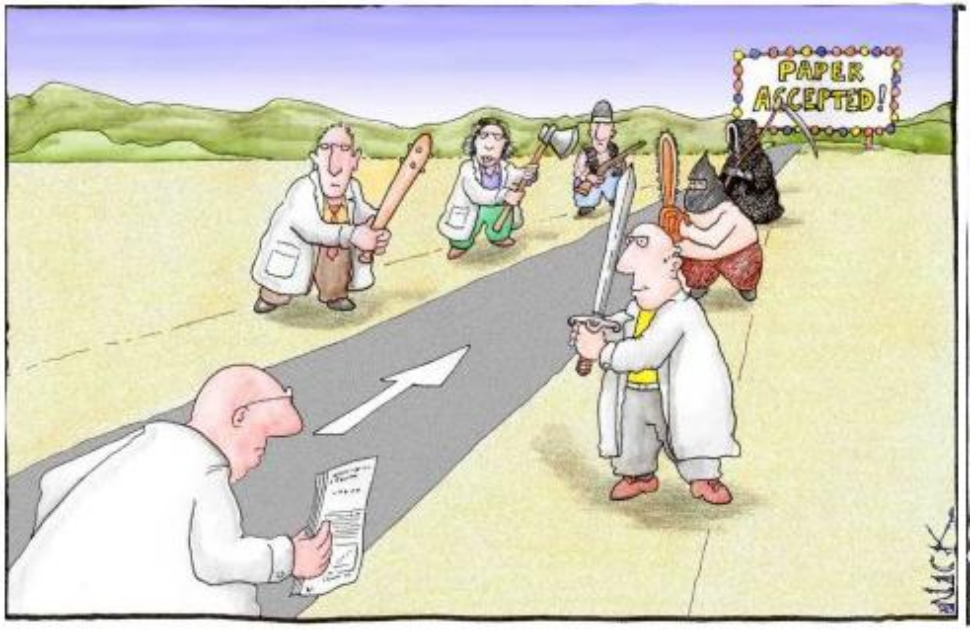
- **Competitive proposals from not-for-profit sector**
- **“Oriented-basic research”**
- **Remit is being extended to ‘basic and applied research’**
- **Quality/Excellence – International Peer Review ONLY**

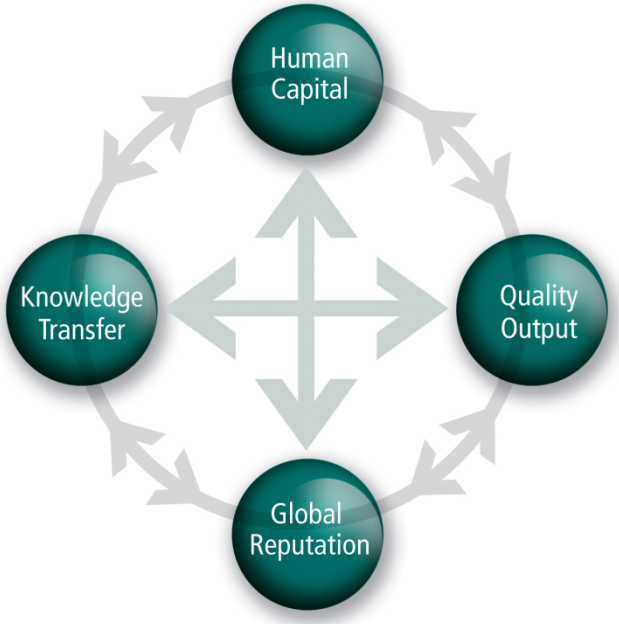
Funding in 2012
~€156M
(2.5% decrease from 2011)


€25M
€7M
€1M
€100K
Centres
Clusters
Investigators
Frontiers
Proof-of-Concept
Recruitment
Travel Fellowships
Conferences
Workshops

Quality Outputs & Global Reputation

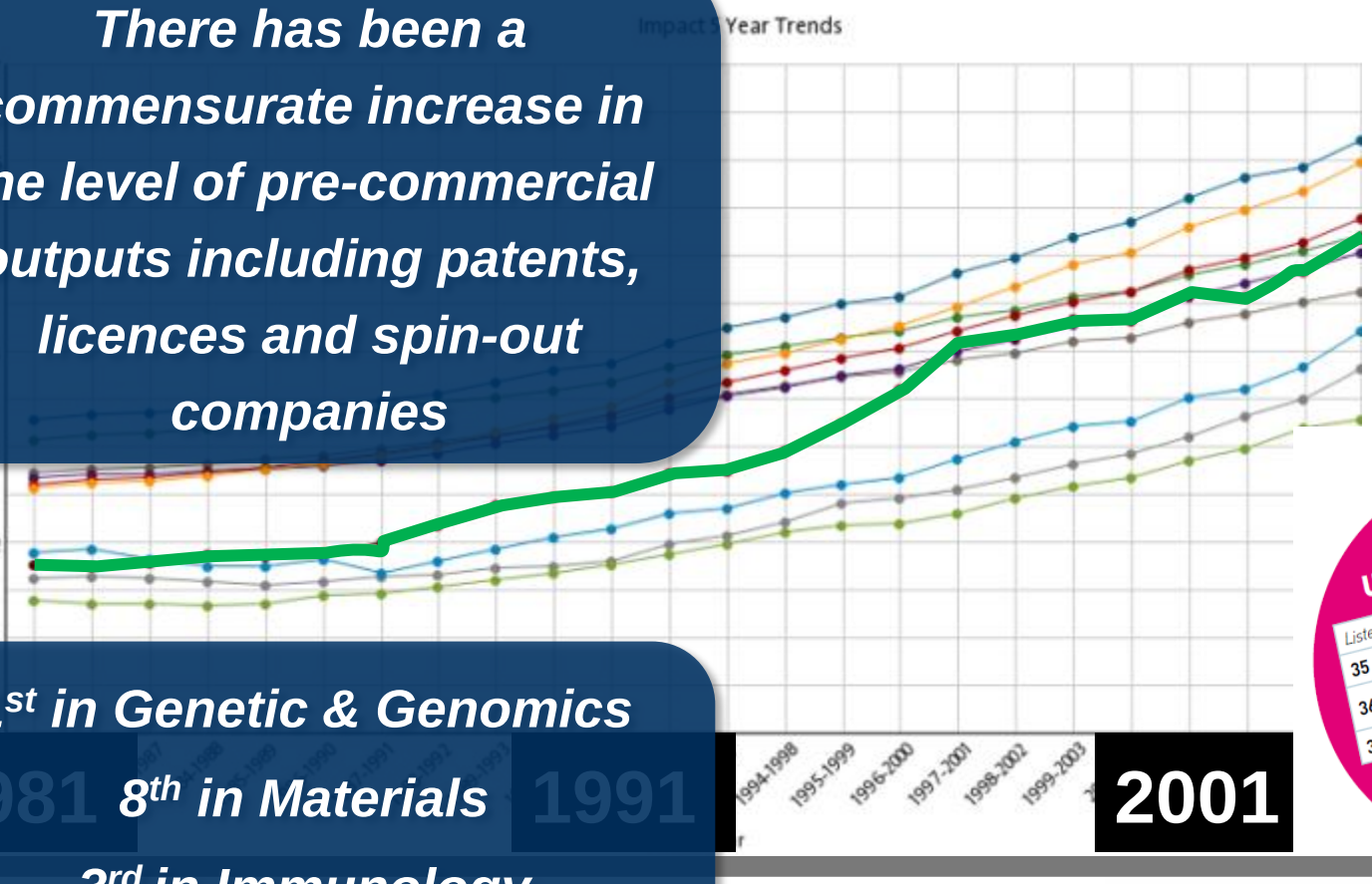
Science Foundation Ireland





Publication Output: Quality

There has been a commensurate increase in the level of pre-commercial outputs including patents, licences and spin-out companies



Publications Table of Country Ranking (Thomson Reuters)

Listed By Citations Per Paper 2010	
1	SWITZERLAND
2	USA
3	DENMARK
4	NETHERLANDS
5	SCOTLAND
6	ENGLAND
7	SWEDEN
8	FINLAND
9	BELGIUM
10	GERMANY
11	CANADA
12	AUSTRIA
13	ISRAEL
14	NORWAY
15	FRANCE
16	WALES
17	AUSTRALIA
18	ITALY
19	NORTHERN IRELAND
20	**IRELAND**

1st in Genetic & Genomics

8th in Materials

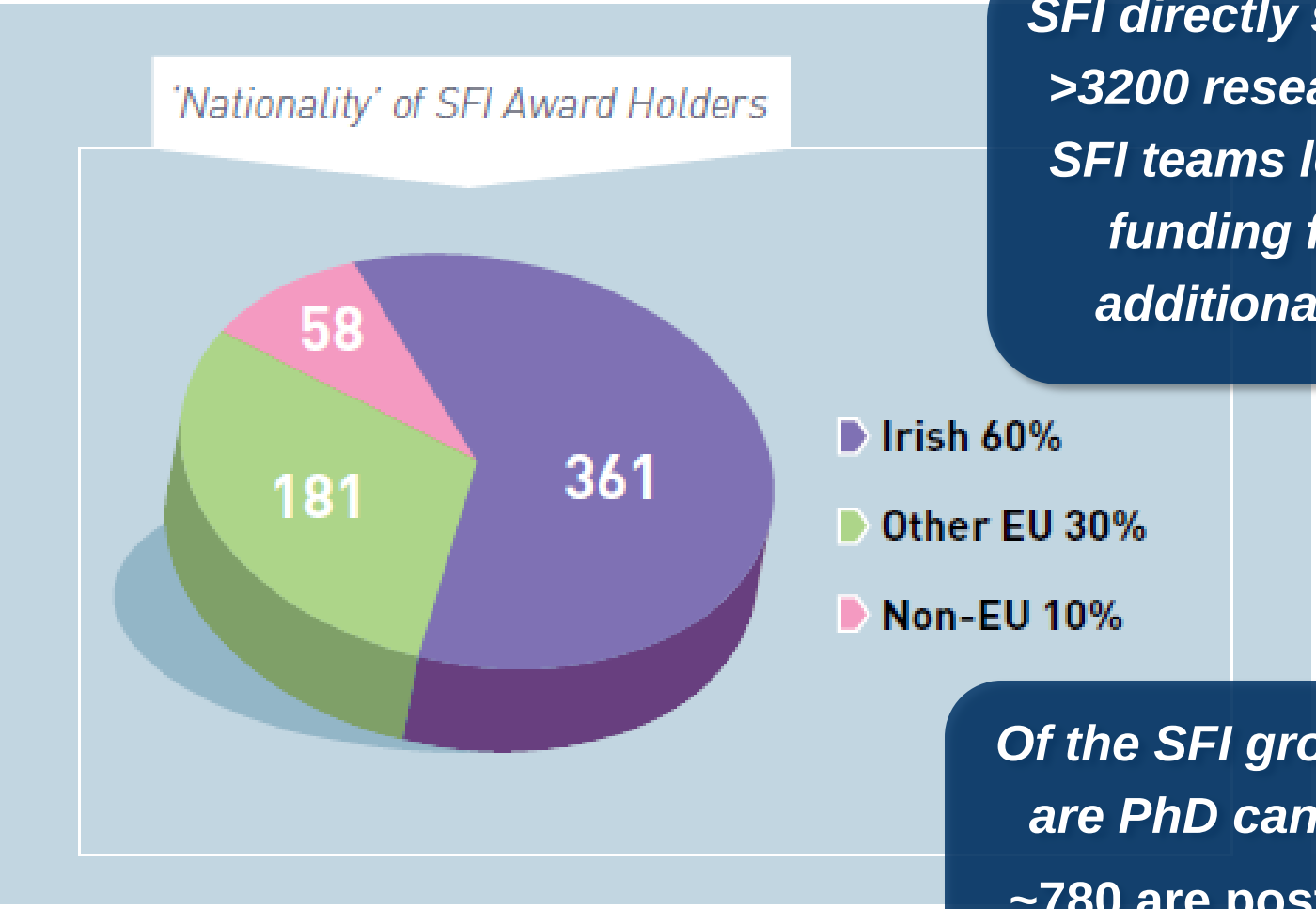
3rd in Immunology

11th in Computer Science

Source: Thomson Reuters InCites March 2010

Bright people at the core

An international team...

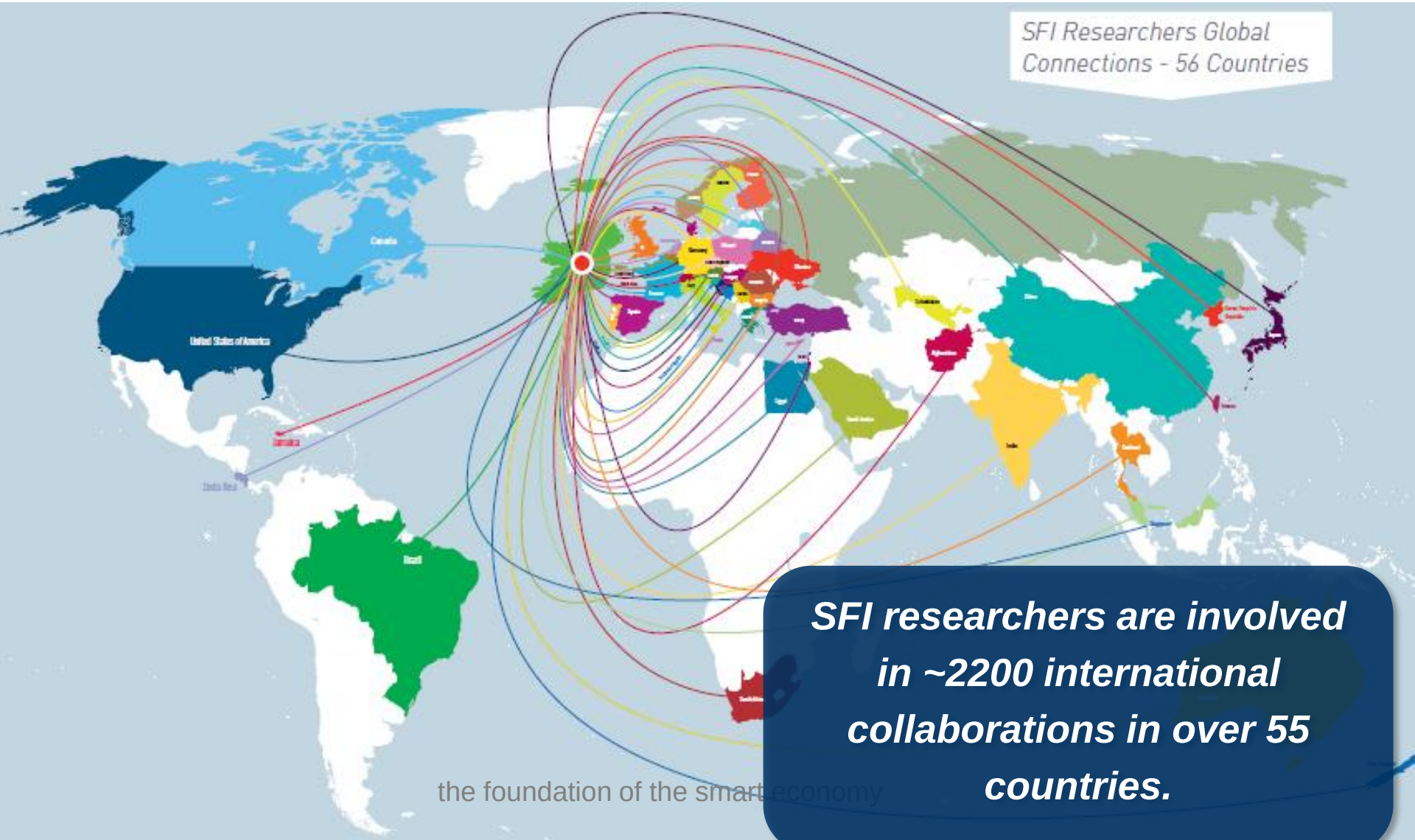


SFI directly supports >3200 researchers; SFI teams leverage funding for an additional 3000

Of the SFI group ~1250 are PhD candidates,

~780 are postdoctoral fellows.

...working across the globe

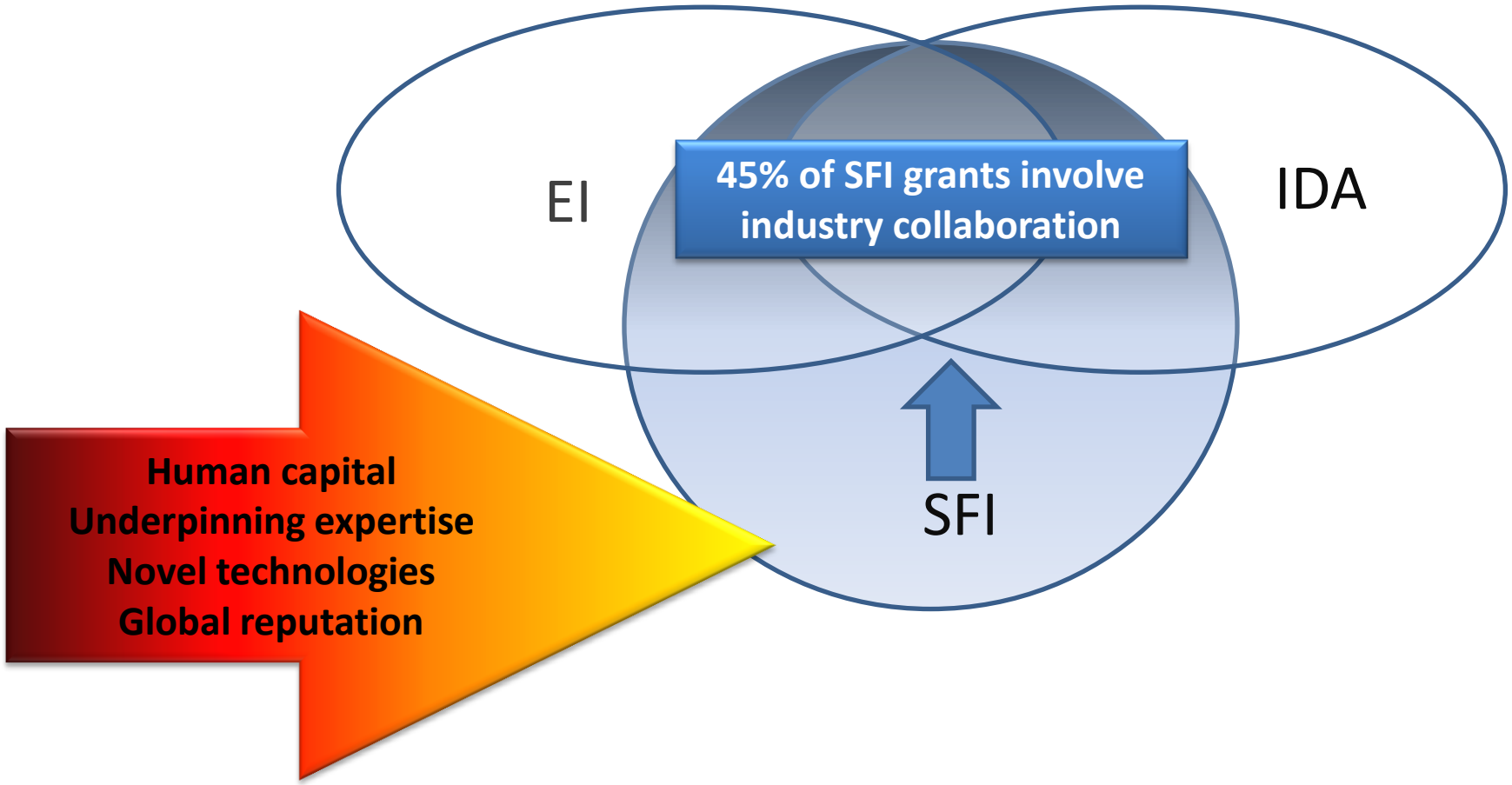


SFI researchers are involved in ~2200 international collaborations in over 55 countries.

Knowledge Transfer

Science Foundation Ireland

SFI & EI/IDA/Industry Partners



Start-up companies

EQUINOME

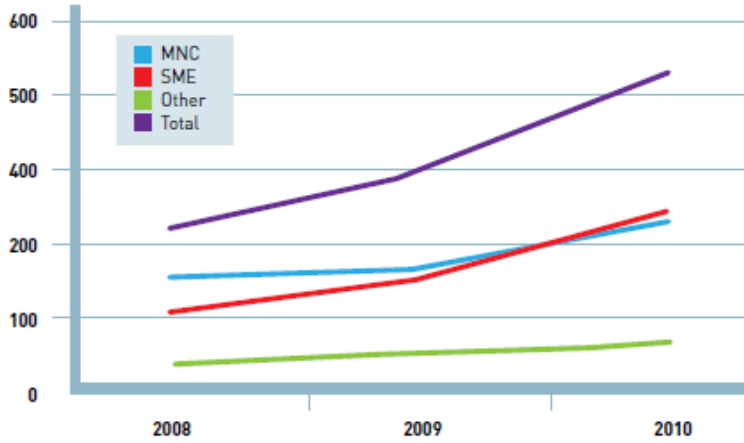
SFI researchers are involved in over 800 collaborations with over 500 companies.

SFI Researchers

- Now collaborate with **237** MNC
- Now collaborate with **245** SME
- The number of collaborations has **doubled** in two years

These collaborations are with both small and large, indigenous and external companies

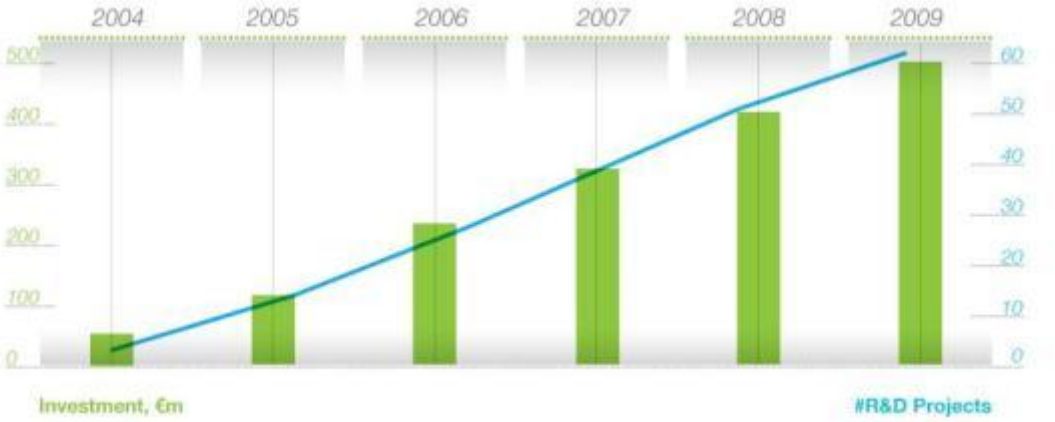
Figure VI *Number of Companies Collaborating with SFI Researchers 2008 -*



National Impacts of R&D

ENTERPRISE IRELAND

IDA IRELAND

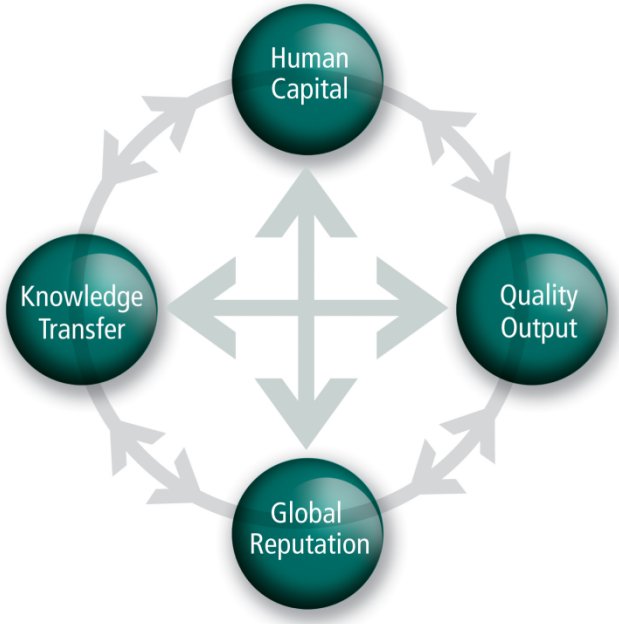


50% of all FDI now linked to R&D – 5x increase since 2006

A small sample of industrial partners

Human Capital

Science Foundation Ireland



Training

Science Foundation Ireland

Postdoc make up large proportion of SFI funded teams

Table III: ***Research Team Composition (SFI Funded Team Members) as at 31/12/2010***

	Number	Category as % of Total
Award Holder	463	15%
Co-Investigators	73	2%
Postdoctoral Researchers	781	26%
PhD Students	1251	42%
Masters Students	81	3%
Technicians	52	2%
Research Assistants	107	4%
Administrators	72	2%
Other Staff	119	4%
Total	**2999**	**100%**

Table 3.1: ***Departing Postdoctoral Researchers in 2010***

Destination	Outside Ireland	% Outside Ireland	Within Ireland	% Within Ireland	Total	% of Total Leavers
Postdoctoral Research in HEI	47	64%	27	36%	74	37%
Industry	9	19%	39	81%	48	24%
Lecturers/Permanent Researchers in HEI	26	60%	17	40%	43	22%
Other	16	57%	12	43%	28	14%
Teachers (primary/secondary)	1	50%	1	50%	2	1%
Specialist Courses	2	100%	-	0%	2	1%
Technicians in HEI	1	33%	2	67%	3	2%
Total	**102**	**51%**	**98**	**49%**	**200**	**100%**

Table 3.2: ***Departing PhD Researchers in 2010***

Destination	Outside Ireland	% Outside Ireland	Within Ireland	% Within Ireland	Total	% of Total Leavers
Postdoctoral Research in HEI	56	70%	30	51%	86	62%
Industry	11	14%	18	31%	29	21%
Other	12	15%	11	19%	23	17%
Technicians in HEI	1	1%	-	0%	1	1%
Total	**80**	**58%**	**59**	**42%**	**139**	**100%**

National Research Prioritisation Exercise (NRPE)

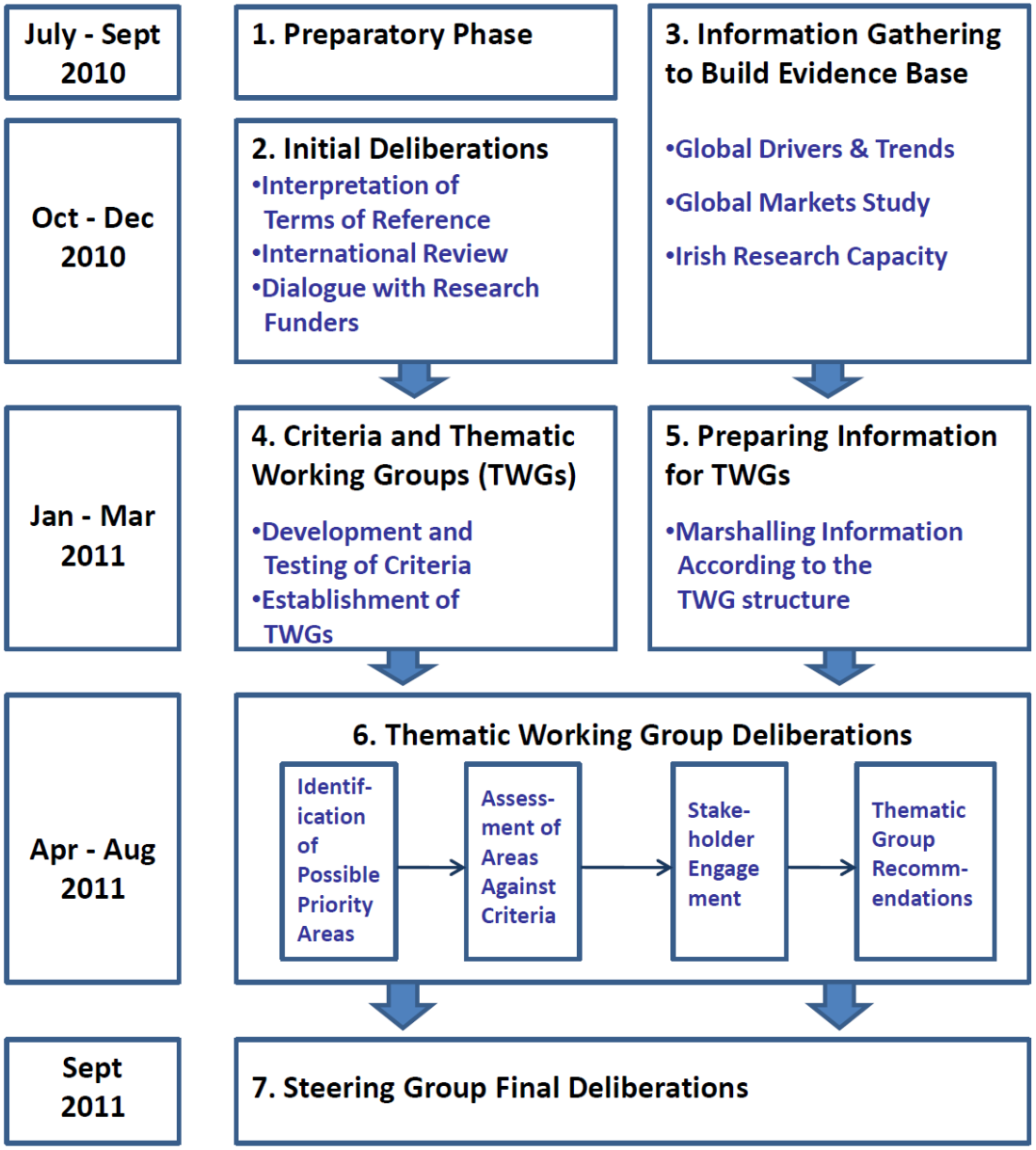
Science Foundation Ireland

Report launched

March 1st 2012

Steering Group Process

Research Support Provided by Forfás



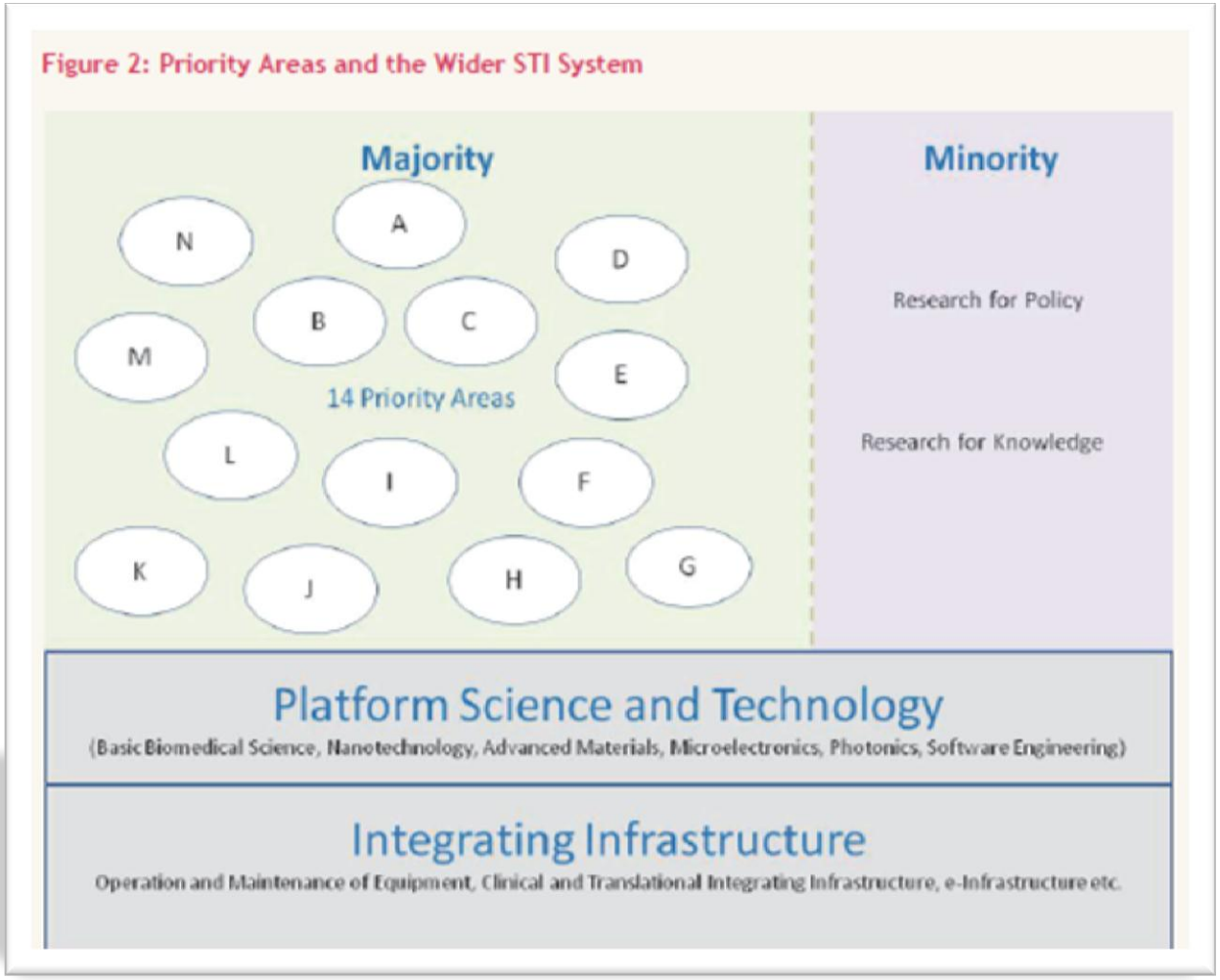
The four high-level criteria for assessing areas…

1. **The opportunity area is associated with a large global market or markets in which Irish-based enterprises already compete or can realistically compete**
2. **Publicly performed R&D in Ireland is required to exploit the opportunity area and will complement private sector research and innovation in Ireland**
3. **Ireland has built or is building (objectively measured) strengths in research disciplines relevant to the opportunity area**
4. **The opportunity area represents an appropriate approach to a recognised national challenge and/or a global challenge to which Ireland should respond**

	The Priority Areas		
A	Future Networks and Communications	H	Food for Health
B	Data Analytics, Management, Security and Privacy	I	Sustainable Food Production and Processing
C	Digital Platforms, Content & Applications	J	Marine Renewable Energy
D	Connected Health and Independent Living	K	Smart Grid and Smart Cities
E	Medical Devices	L	Manufacturing Competitiveness
F	Diagnostics	M	Processing Technologies and Novel Materials
G	Therapeutics - Synthesis, Formulation, Processing and Drug Delivery	N	Innovation in Services and Business Processes

Proposed Division of Research Spend

Science Foundation Ireland



Assessing Impact

Science Foundation Ireland

Conveying Impact

- SFI define impact as the *demonstrable contribution that research makes to our economy and society*; impact is not necessarily immediate

- For most future calls, SFI will require an Impact Statement for research proposals. These are designed to encourage researchers to actively engage in thinking about how their research can be maximised to benefit Ireland's economy and society

  - Inherent impact
  - Potential impact
  - Broader impact

- Who will benefit from this research? How will they benefit from this research?
- On their own the following do not sufficiently express impact:
  - Publications or presenting research at a conference: applicants should be specific as to why that publication or conference is important, does it ensure the potential beneficiaries have the opportunity to engage with the research, and how will this be followed up?

  - Invention disclosures or patent filings: Without being exploited patents are not impacts. Applicants should articulate why that intellectual property is important and how it might potentially be utilised subsequently

Programmes at SFI

Science Foundation Ireland

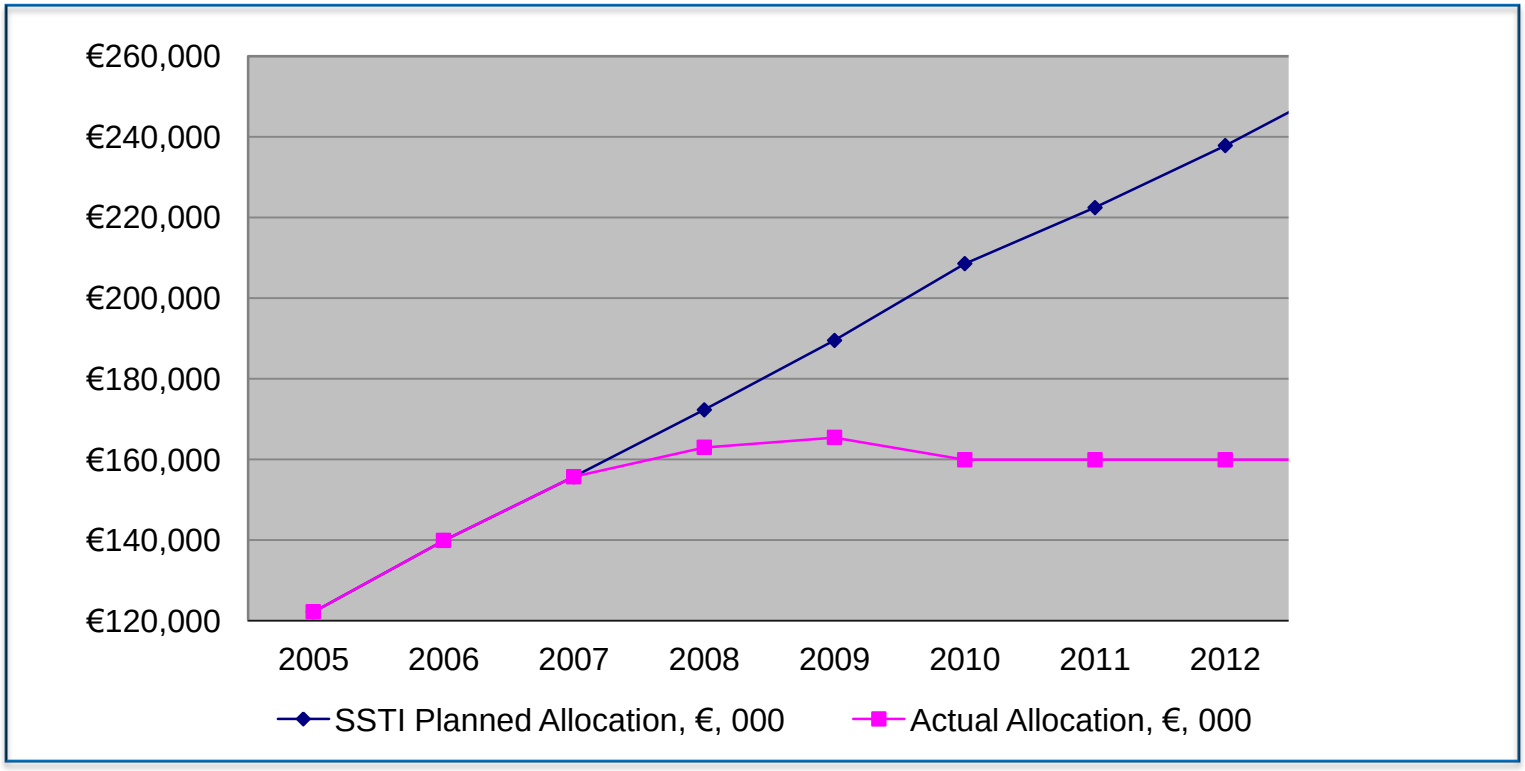
Table II: *Comparison of Active Awards 2010 and 2009*

	Total Number of Active Awards 2010	Total Number of Active Awards 2009	Difference	Difference %
CP	7	7	0	0%
CSET	9	10	-1	-10%
MI	6	6	0	0%
PI	186	149	37	25%
** PICA	3	8	-5	-63%
PIYRA	13	15	-2	-13%
RFP	326	428	-102	-24%
RP	3	6	-3	-50%
** SIRG	14	15	-1	-7%
SRC	20	19	1	5%
US Irl	8	3	5	167%
Total	**595**	**666**	**-71**	**-11%**

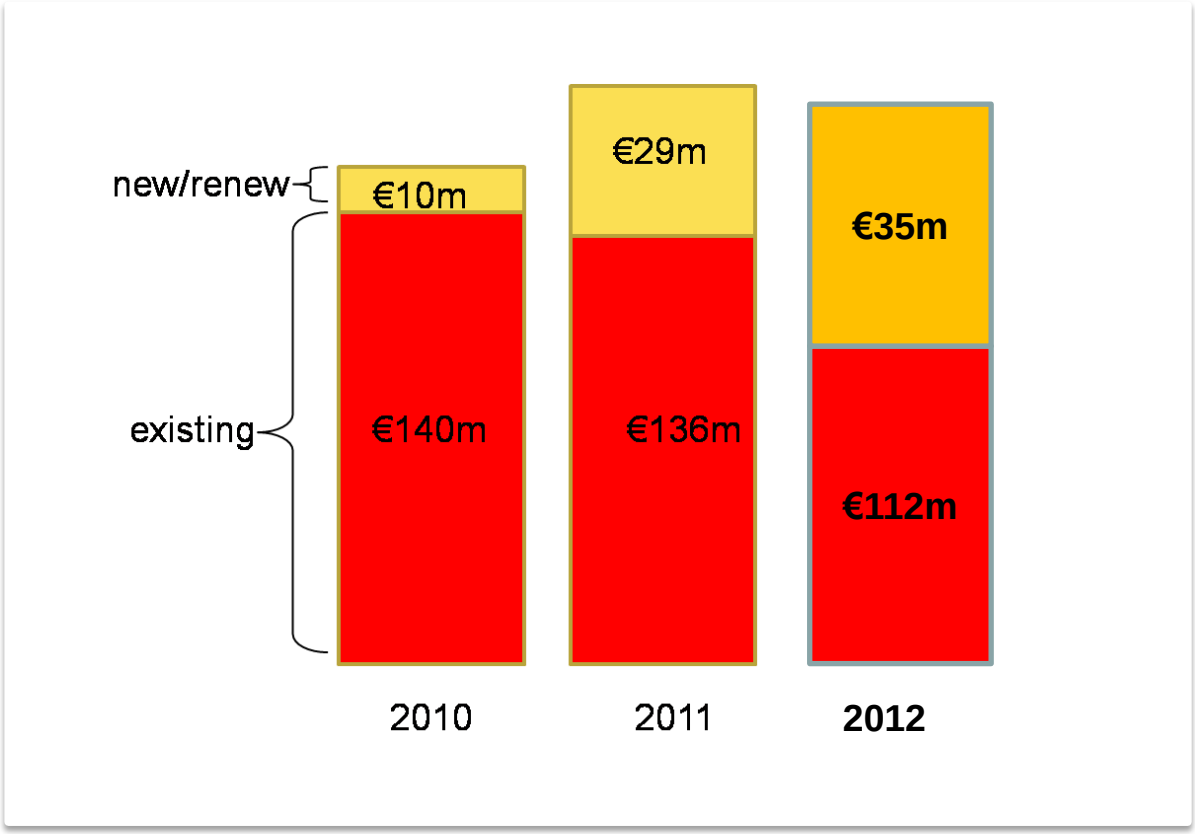
** traditional funding streams suitable for early stage investigators

2012

SFI Grants Budget:
SSTI Planned Allocation v Actual Spend



Government's commitment to RDI



What are we doing/planning to do?**

- Launch of the new Investigators Programme (IvP)
  - Currently closed as applications are under review
  - Combination of 2 previous SFI calls
    - Principal Investigators
    - Research Frontiers Programme
  - 2 Streams – Awards (PI – like) and Projects (RFP – like)

- Launch of the new Centres Programme
  - Stream-lining the previous CSET/SRC programmes
  - Support for industry-academic collaborative research programmes
  - Bids are to be aligned with NRPE

- Launch of an Infrastructure Programme
  - Institutional equipment call
  - Sustainability and capability
  - Bids are to be aligned with NRPE
  - Focused on centralised use of facilities

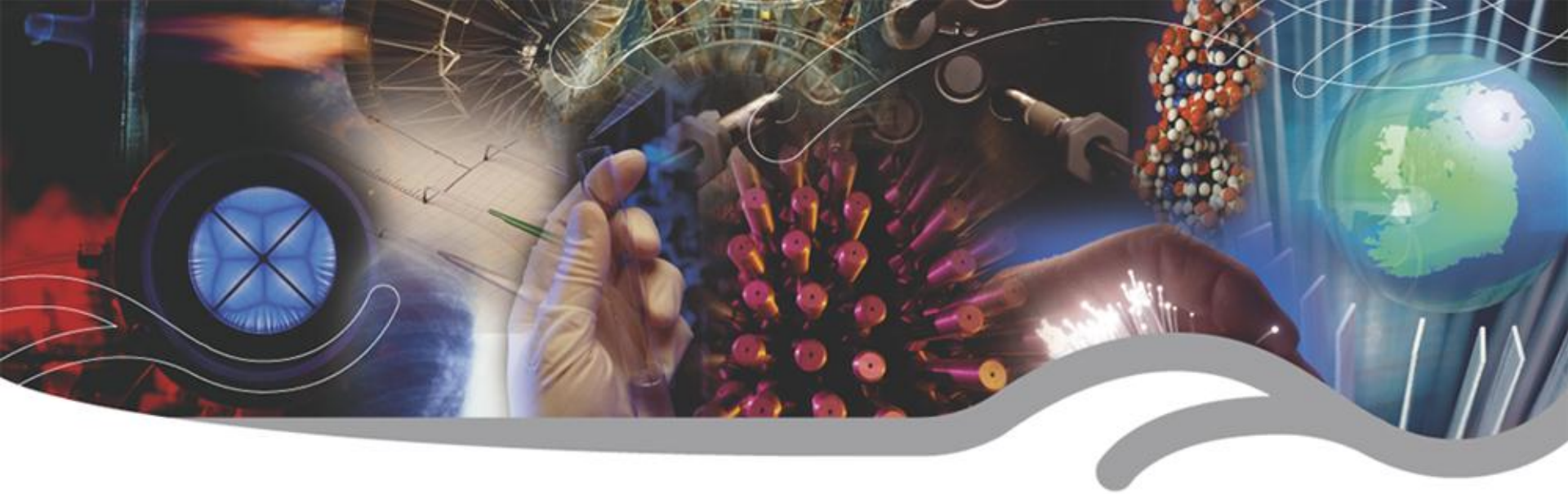
- Launch of the TIDA call
  - A number of changes to be introduced

- Currently Open Calls:
  - President of Ireland Young Investigator Award (PIYRA)
  - Conference & Workshop Programme currently open
  - SFI ERC Support Programme currently open
  - SFI-HRB-Wellcome Trust Biomedical Research Partnership
  - SFI Research Professorship Programme

**Subject to change

SFI Early/career advancement awards

- Investigators Career Advancement Award (ICA)
- Investigators Programme – Project Stream
- Starter Investigator Research Grant (SIRG)
- President of Ireland Young Investigator Award (PIYRA)
- TIDA – eligibility criteria 3: open to postdoctoral researchers in SFI funded research teams



IvP Programme – Awards Stream
ICA Category

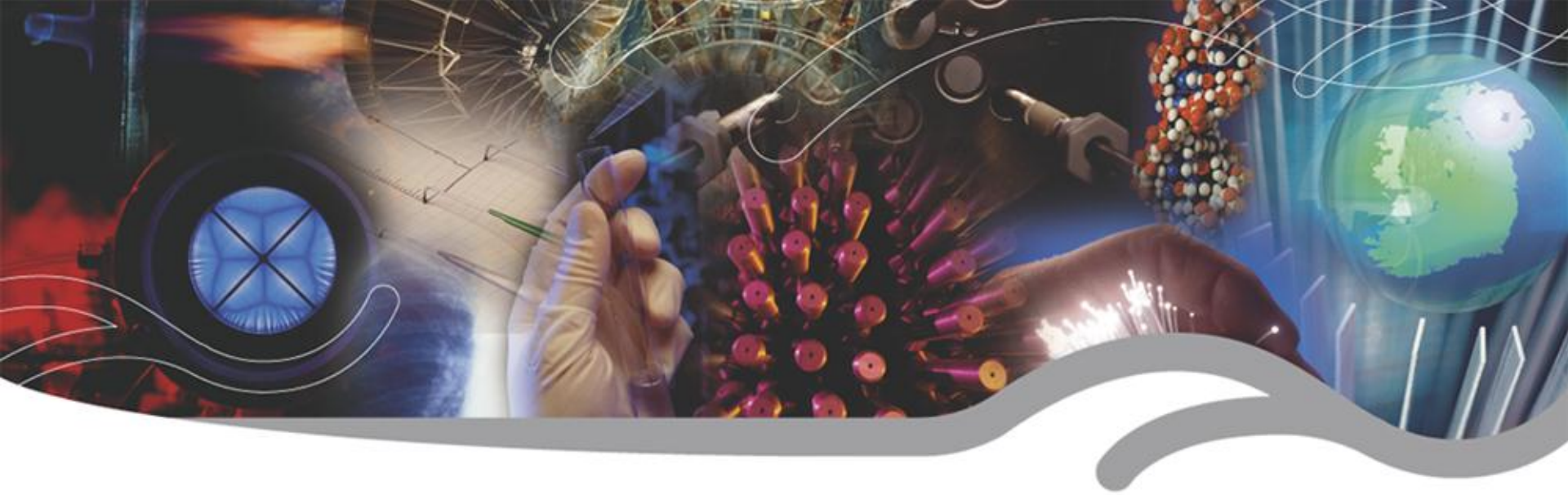
Fondúireacht Eolaíochta Éireann
Science Foundation Ireland

IvP Programme – Awards Stream
ICA Category

- Applicants to the SFI Investigator Programme may, if they choose and are eligible, apply to be evaluated under the SFI Investigator Career Advancement (ICA) criteria
- The aim of the ICA category is to support those researchers returning to active academic research after either a prolonged absence, or those within the early consolidating stages of their independent research career
- 2 separate eligibility categories:

  - **Category 1:** Any applicant who has taken consecutive documented eligible leave (minimum 18 weeks) since 1st January 2004 and has since returned to work. Examples of leave include - Statutory adoptive leave, Statutory parental leave, Statutory maternity leave, Statutory paternity leave. **Applicants who meet the requirements listed under Category 1 must have 5 or more international peer-reviewed articles as senior author**

  - **Category 2:** Permanent or contract academic staff who have returned to an academic research position since 1st January 2007, having worked for a minimum of 2 years in a science or engineering-related industry



IvP Programme – Projects Stream

Fondúireacht Eolaíochta Éireann
Science Foundation Ireland

IvP Programme – Projects Stream

PROGRAMME OBJECTIVES:

- Continue the development of world class research capability and human capital in SFI remit areas that demonstrably support and underpin enterprise competitiveness and societal development in Ireland

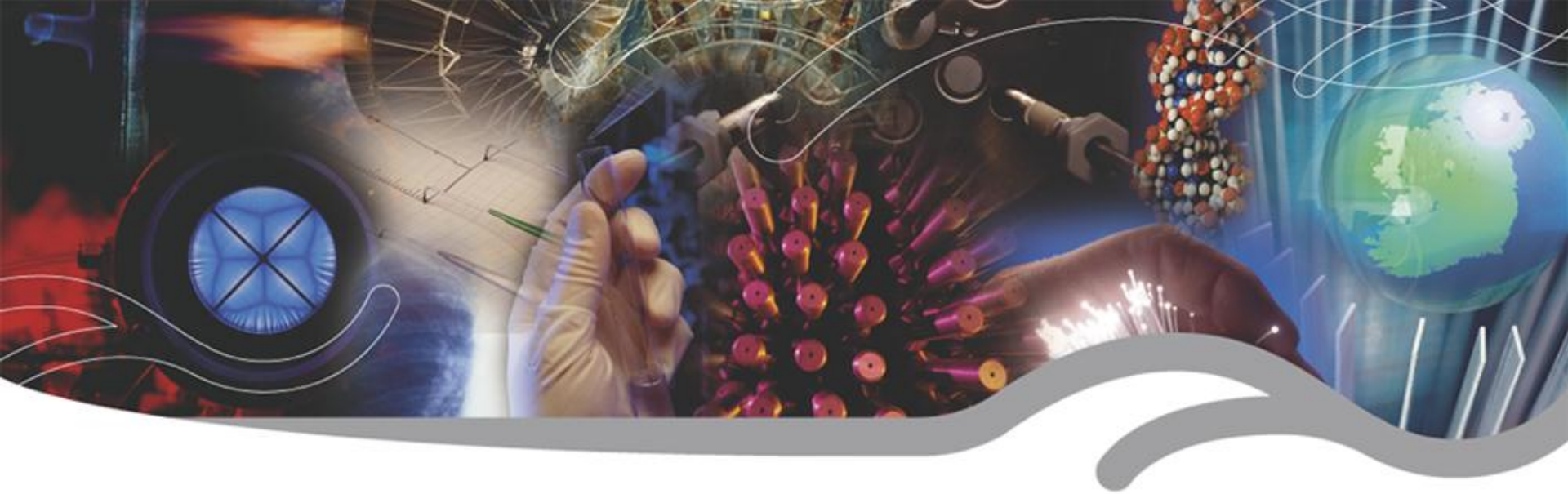
PROGRAMME REMIT:

Investigator Projects are smaller research awards for which senior researchers are eligible, while also designed to provide funding for researchers at earlier stages of their careers

* Applicants must have a permanent contract OR will have a contract that spans the duration of the Project/Award and be recognised as independent researchers with independent lab and office space

** PhD, MD, or equivalent

	Investigator Awards	**Investigator Projects**
Contract *	Yes	Yes
Duration	3 - 5 years	2 - 4 years
Min. No. of years post PhD **	8	3
Min. No. of senior author publications	10	3
Held an independent research grant	At least 1	n/a
Maximum award size ***	€2,500,000	€300,000
Co-Applicants allowed	Yes	No
Investigator Career Advancement Category	Yes	No



Starter Investigator Research Grant (SIRG)

Fondúireacht Eolaíochta Éireann
Science Foundation Ireland

SIRG

Science Foundation Ireland

Objectives of the SIRG Programme

•To enable those at an early-career stage to establish themselves as independent researchers

•To provide the support and infrastructure to carry out novel research in areas that underpin biotechnology, information and communications technology, and sustainable energy and energy-efficient technologies

•To gain important experience towards a full-time academic position, including the supervision of the postgraduate student supported by the award

•To enable the award holder, together with his/her postgraduate student, to carry out their work in Ireland's public research bodies, including universities and institutes of technology

•To offer funding opportunities that help third-level institutions attract and develop researchers and their careers

SIRG

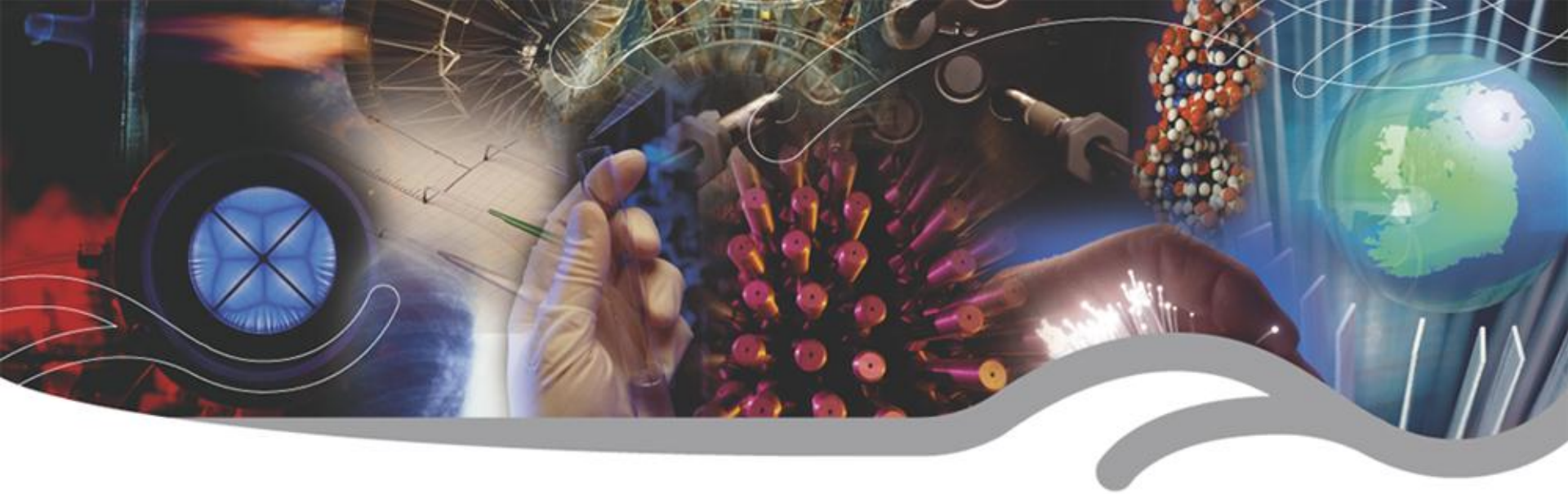
SIRG 2009 : The first successful SIRG award holders (14 in total) are now all in the second year of their awards, and are generally performing very well based on communications with SFI SPMs

SIRG 2011: Call run as a co-funded programme, between SFI and the EC Marie Curie COFUND initiative. 27 awards given – kick off in late 2012

Given that this will be a call co-funded with the EC, significant emphasis placed on international movement of the successful candidates (either foreign nationals moving to Ireland, or repatriation of Irish graduates from overseas). However career stage and required “first-author” publication requirements remained

Opportunities for continued funding for SIRG Award holders: SFI encourages all SIs to look at other funding streams to assist in building up their own research effort. SIs have obtained further funding from the Wellcome Trust, the Irish Cancer Society, other national funding agencies, internal seed funds, and other sources.

SIRG award holders are not able to apply to SFI for other awards until they are in the last 18/24 months of their award.



President of Ireland Young Researcher Award (PIYRA)

sfi
Fondúireacht Eolaíochta Éireann
Science Foundation Ireland

PIYRA

- The President of Ireland Young Researcher Award (PIYRA) is Science Foundation Ireland's most prestigious award to recruit young researchers currently based around the world to carry out their research in third level institutions in Ireland

- The award recognises outstanding engineers and scientists who, early in their careers, have already demonstrated or shown exceptional potential for leadership at the frontiers of knowledge

- Awardees selected on the basis of exceptional accomplishments in science and engineering that underpin biotechnology, information and communications technology, and sustainable energy and energy efficient technologies, and on the basis of creative research plans that are built on work that has attracted international attention

- Help identify the most promising of a new generation of top-tier cutting edge researchers in fields that are critical to Ireland’s economic and social prosperity

PIYRA

Science Foundation Ireland

HISTORY AND OBJECTIVES:

- Retain and recruit the best and brightest young research talent
- Offer highly attractive funding package
- Launched in 2004
- 2004 – 2008 fixed call with panel interviews
- 2008 – 2010 rolling call

VISION AND PLANS:

- Greater commitment from host institution
- Co-funding models
- Improved training and mentorship
- Encourage ICT submissions
- International recruitment

PIYRA – statistics to date

- 211 submissions
- 21 Grants awarded
- 10 active
- Total investment €22,426,640
- PIYRA call is currently open

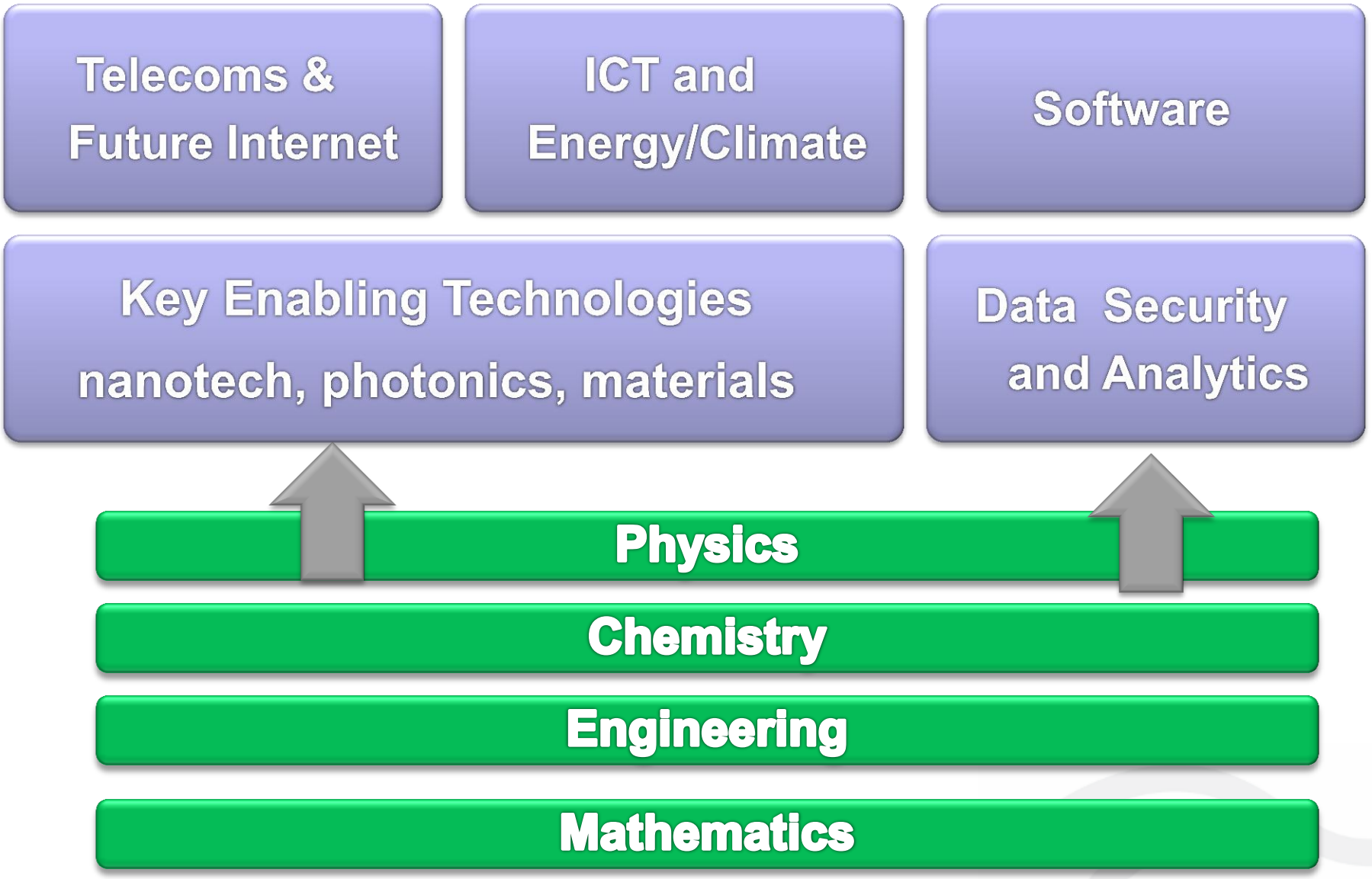
TIDA

Science Foundation Ireland

HISTORY AND OBJECTIVES:

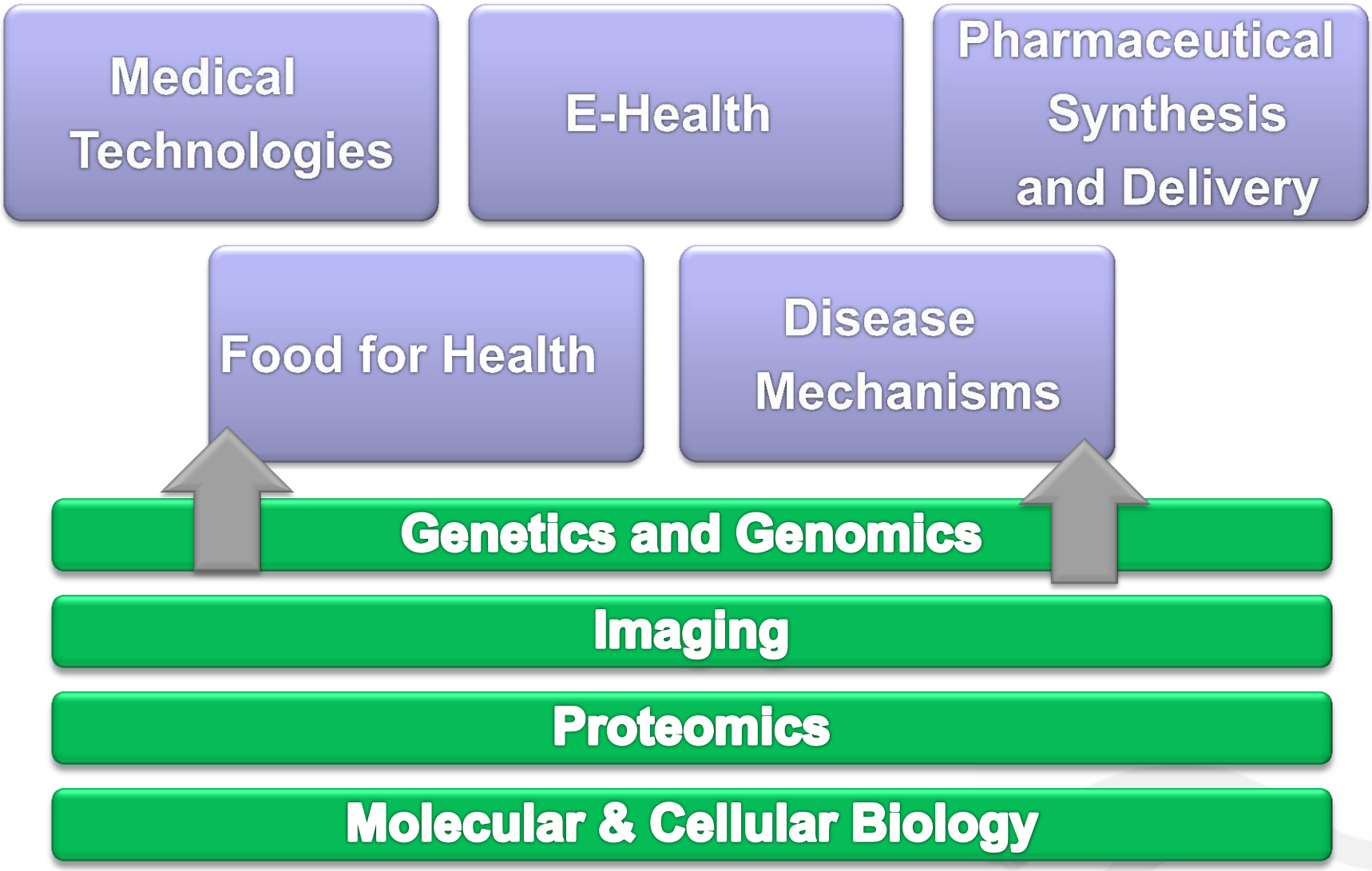
- 12 month Feasibility Study to explore the commercial potential of an idea/technnology
- 100k awards
- Eligibility
  - SFI funded investigator
  - Non-SFI funded investigator with previous history of independent funding and mentorship
  - Postdoctoral researcher in an SFI funded group that wishes to drive an innovative/potentially commercial project
  - Criteria similar to IvP projects in terms of publication
- Changes still to be confirmed
- Call likely to launch in April 2012

SFI's ICT and Energy Orientation



the foundation of the smart economy

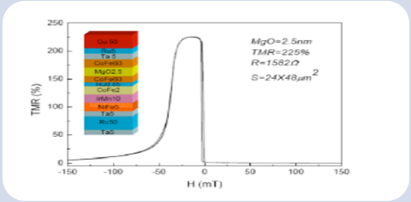
SFI's Life Sciences Orientation



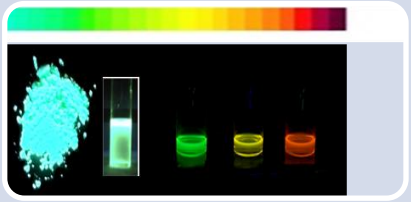
Foundations

Mathematics

Engineering



Physics



Chemistry

Thank You

Contact: janice.murtagh@sfi.ie

Questions?