

Science Foundation Ireland

**Centres for Science Engineering and Technology
(CSET) June 2010**

Rory Jordan



science foundation ireland
fondúireacht eolaíochta éireann

SFI - A Few Facts and Figures



- Year of establishment: 2000
- Funded through Department (Ministry) of Enterprise, Trade and Employment
- Sister agencies; IDA Ireland, Enterprise Ireland, FORFAS
- SFI Research remit:
 - Life Sciences
 - Information Communication and Emergent Technologies
 - Sustainable Energy and Energy Efficient Technologies
- Number of Employees: 54
- Annual Budget: €176 m (2009)
- Total Funding Commitment to date; 550 Research Groups, 2,500 Researchers

SFI CSETs - Overview

- **SFI funding:** up to €25m (€5m/yr), over 5 yrs, renewable once.
- **Partnerships with industry:** 20% cost share (particularly people)
Real intellectual partnerships
- **Strategically important to Ireland Inc.:** advancing BioT and ICT
- **True centre:** whole greater than sum of parts, synergy...
- **Research excellence:** potential to be best in world – “edge”
- **Outstanding Director**
- **Important Education & Outreach component**

CSET Programme – Universities and Centres



- 7 Universities in Rep Ireland – shown
- Currently 9 CSET Centres
- All in National Focus areas
- Multi-university nature of CSETs
- Up to 5 universities collaborating in a single Centre
- All Centre's have host university

SFI CSET Programme Overview



Evaluation:

External scientific peer review + national strategic review

Progress reviews on average every 18 months

Panel of 6 - 7 onsite for 2 - 3 days examine all aspects of operation

Currently

9 Centres in programme opened since 2003

481 Researchers (of which 204 are PhD students) CSET award funded

(Note: > 1000 in leveraged entities)

€27.6M invested by SFI in 2009

€185M total investment by SFI since 2003 (€245M currently committed)

€65M from industry, €45M from other public funding and €16M from foreign public funding

80 Current industry partners with 32 onsite industry researchers.

Overall growth to >136 Industry Partners in leveraged collaborations

CSET position in R&D Spectrum

Partial List of Programs/Centers Visited	Stage 1 (basic research)		Stage 5 (product/marketing)		
UK: Tissue Engineering Initiative					
Japan: Advanced Industrial Science and Technology (AIST)					
Korea: Korea Advanced Institute of Science and Technology (KAIST)					
Korea: ERC Program, National Core Research Centers (NCRC) Program					
U.S.: Engineering Research Center Program					
Japan: Institute for Nano Quantum Information Electronics (CINQIE)					
Belgium: International Microelectronics Center (IMEC)					
Korea: Samsung Institute for Advanced Technology (SAIT)					
UK: Energy Futures Lab					
UK: Leeds Particle Science Institute					
Ireland: (CSET)					
UK: Innovative Manufacturing Research Centers (IMCRC) Program					
UK: Warwick Manufacturing Group					
UK: Rolls Royce Vibration Technology Center					
Germany: Fraunhofer Institutes					
Belgium: Flanders' Mechatronics Technology Centre					
China: National Engineering Research Center (NERC) Program					
Korea: Institute for Advanced Engineering					

Research for Ireland's Future

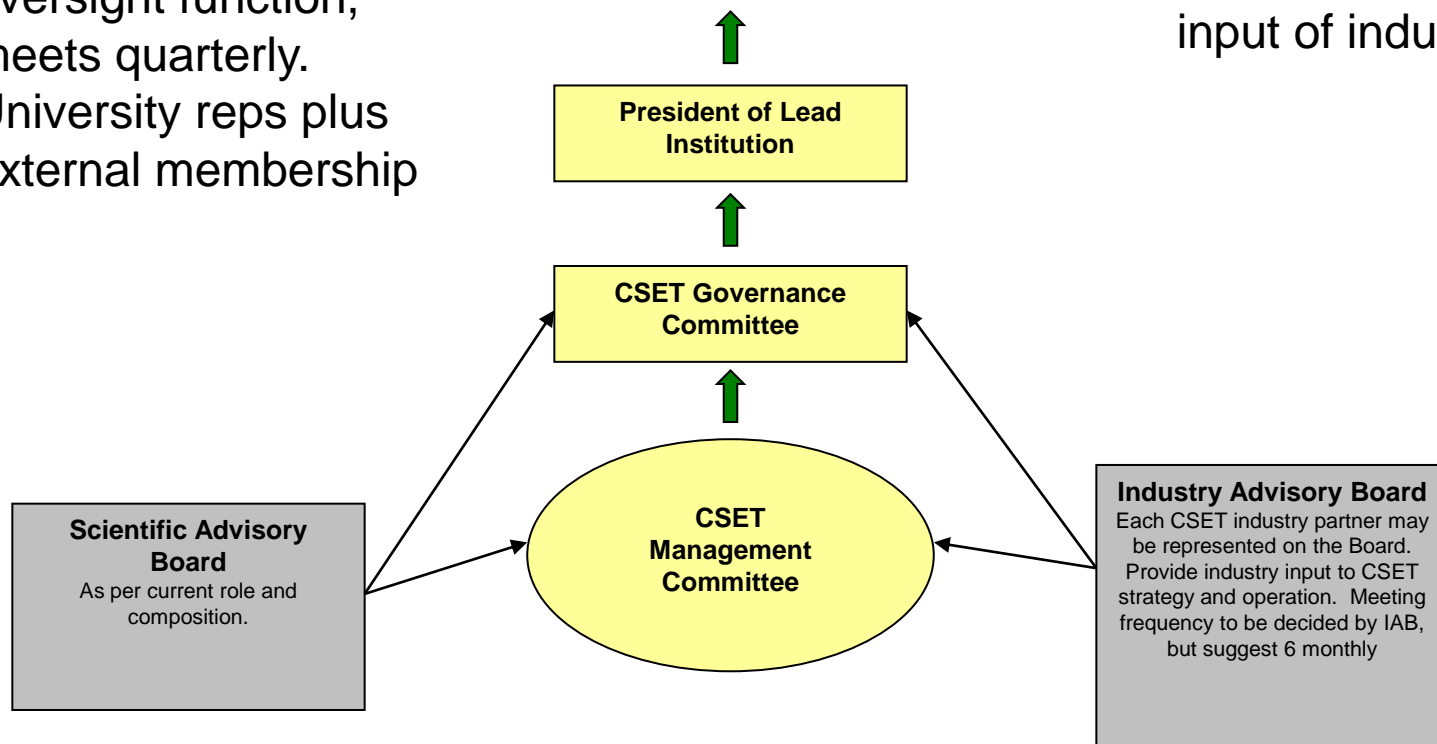
Courtesy of NSF

CSET Programme - Governance

Governance Committee – Primarily oversight function, meets quarterly. University reps plus external membership



Industry Advisory Board – recent addition, scalable input of industry partners.



CSET Programme – Centre management



Required Roles or functions

Scientific Director – Centre vision, scientific direction, strategy

Operational Director – Infrastructure, staffing, finances, funding, metrics

Industrial Liaison – Contact point, industry partners growth, manage relationships

IP Manager – Invention disclosures, researcher education, multiple projects IP management.

As Centre develops - dedicated Integration Managers, FP7 Co-ordinators, Commercialisation Managers

Also additional roles and support can be centre specific – e.g. large equipment, animal facilities, trials etc.

Roles then feed into units/committees which incorporate relevant stakeholders.

‘Translational Roles’ very important – academic/industry culture

Integrating academic - industry worlds

UK – Professors of Practice,
NSF ERC – Industrial Liaison
CSET - Commercialisation Development,

UK - Professors of Practice

Backgrounds

Business skills, technical expertise & research interests
High-tech entrepreneurs with strong academic credentials

Positions (half time) in Business School within Science City themes

Activities

Awareness-raising of user needs, commercial strategies
Liaise with departments & schools and external partners
Teaching & seminar programmes
Communication & marketing strategies
Knowledge transfer activities & policy formulation
Shaping relationships between science community & Business School

Senior Ex-Industry Professionals

NSF: ERC Industrial Liaison Officers



Erik Sander Particle Engineering Research Centre ERC
University of Florida

- Director of Industry Programs

NASA, Lockheed Martin, General Electric, and Pratt & Whitney
Project manager and Technology Transfer



Jim Williams, Data Storage Systems Center
Operations Director & Industrial Liaison Officer
Seagate

- Former Research Director of Advanced Technology



Joe Giachino, Wireless Integrated MicroSystems ERC
Ford Motor Company (1976 – 2001)

- Program Manager, Sensor Business Resource Center
- Fellow of the IEEE (1997)**



CSET - Translational Function

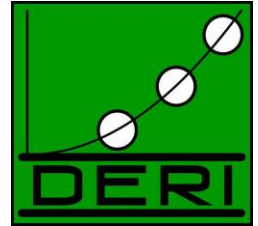


Case Study: DERI CSET (www.deri.org) Web Science

CEO role (Mike Turley)

Applied Innovations Unit – Manages the academic- industry integration

Run by Bill McDaniel (Adobe Snr. Scientist, CTO and CRO for many companies) Ex-Industry professionals.

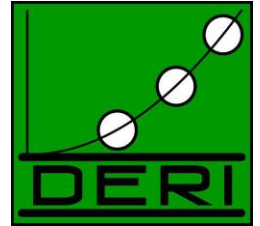


STRATEGY

- Leverage world-class research expertise at DERI in commercial exploitation
- Blend research, industrial, and entrepreneurial experience from DERI team members
- Partner with leading industrial partners, high-potential start-ups (HPSU), and CEOs
- Produce quality-driven software, patents, licensing, spinout,spin-in companies

CSET - Translational Function

DERI CSET (www.deri.org) Applied Innovations Unit



Overview

- Strong team with proven track record in industry and academia
 - 1 Senior Researcher, 6 Lab leaders, 15+ Researcher engineers
- All funding is project-based
 - Wide portfolio of projects - 6 Active projects, 2 under review
 - Continuity achieved by overlapping projects
- Diverse industrial partnerships including start-ups, SME, and MNC.
 - 12 Active industrial partners, 2 in proposal stage
 - 1 Spin-in (2 in discussion stage)
 - A number of researchers in pre-spin-out phase

CSET - Translational Function

DERI CSET (www.deri.org) Applied Innovations Unit

*commercialize DERI
technology by partnering
researchers with
entrepreneurs*

Bizstart

*concentrates on researching
and developing new
technologies*

**Advanced Innovative
Technology (AIT)**

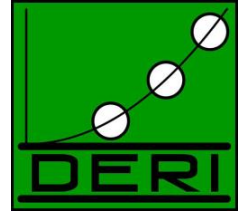
Applied Innovations Unit

**Advanced Translational
Research (ATR)**

*look for appropriate
technologies to fill the needs of
commercialization efforts*

**Advanced Technology
Implementation (ATI)**

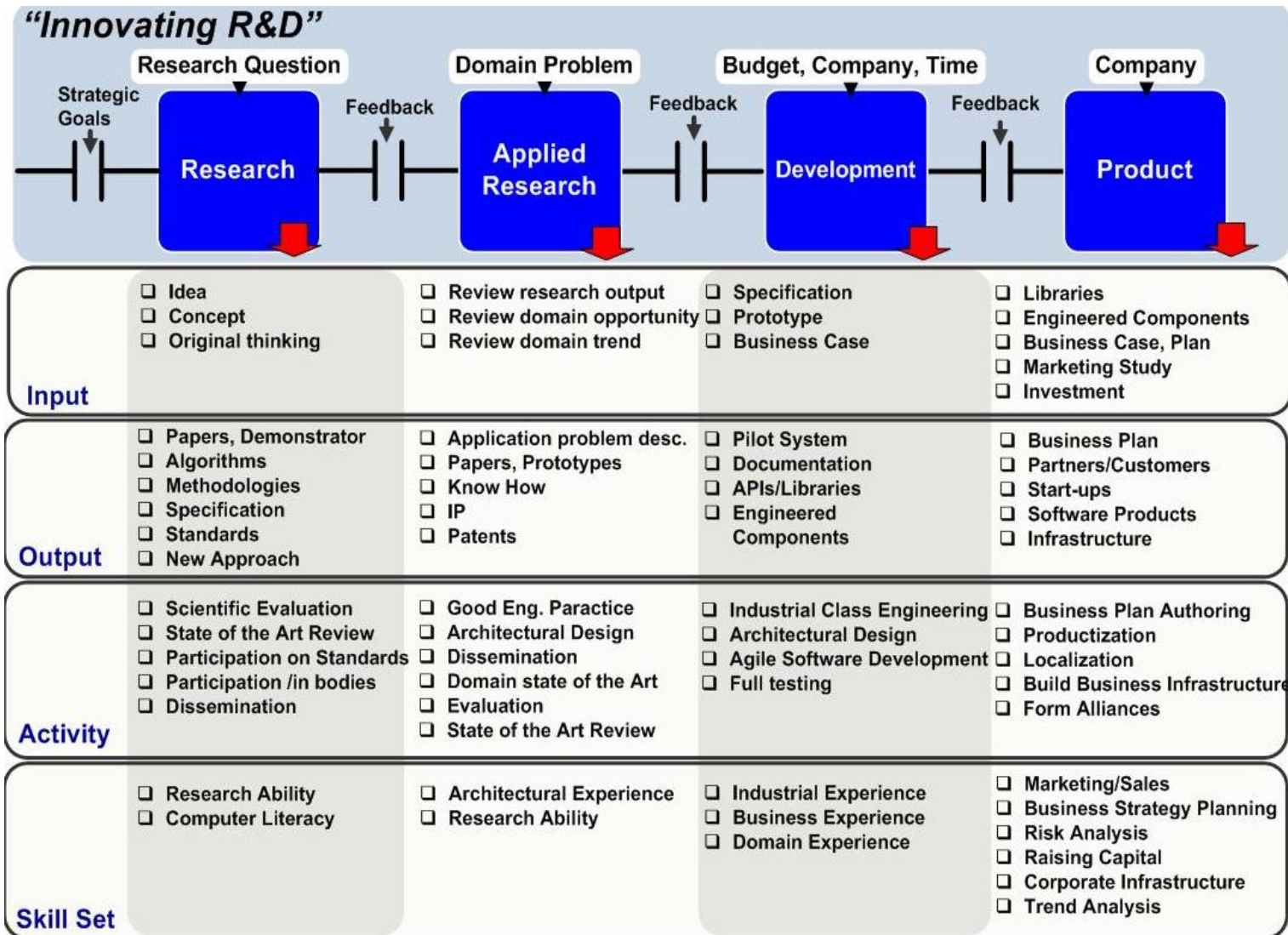
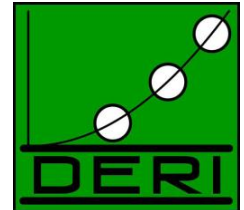
*implement specific
projects meeting
Enterprise needs*



DERI CSET - Filling the GAP between Research and Commercialisation



Science foundation ireland
 ndúireacht eolaíochta éireann



Research for Ireland's Future

Courtesy of
 DERI

CSET Programme – Industry Partners

80 Current industry partners in programme cost share

Cost share dominated by MNC's

Smaller number of SME's and start-ups involved

Centres have >216 Industry Partners in leveraged collaborations

More focus on indigenous SME involvement – Supported by EI

NOTE: Where you are on research spectrum and duration of commitment will determine industry partner profile.

Original CSET model and remit of use-oriented basic research has favoured larger industry partners (long term, resources required).

Carried out a recent Industry partner survey to get full picture of nature of industry interactions

Note: Breakdown by MNC/SME important in interpretation of needs

Industry partner Contribution/extent of involvement

Annual Contribution	Breakdown
Less than 10k	24%
10k - 50k	16%
50k - 100k	12%
100k - 250K	20%
Greater than 250k	28%

CSET Programme – Recent Industry Partner Survey

Is Obtaining Company Approval for Participation in a CSET (or academic collaborative project) more difficult now than it was 3 years ago

Yes	48%
No	8%
The same	16%
Not Applicable/New Project	28%

Is so, why? Primary Reasons were..

- Market Conditions
- Resource limitations/budget tightening
- Understanding of the ROI/Internal competition

CSET Programme – Industry Partners

At the time that your company first decided to participate in the CSET, can you rate the following in terms of influence on the decision.

	Primary reason	Very Important	Important	Not important	Not interested in this aspect
Access to new ideas/know-how	52%	36%	12%	0%	0%
Access to intellectual property	4%	24%	36%	28%	8%
Access to equipment/facilities	8%	16%	4%	52%	20%
Access to CSET students as prospective new hires	4%	13%	33%	38%	13%
Access to CSET expertise	28%	24%	40%	4%	4%
Opportunity to interact with other companies in the CSET	20%	28%	36%	12%	4%
Opportunities for joint projects	8%	40%	28%	20%	4%
Other	50%	17%	0%	17%	17%

Has your company, as a direct result of your participation in the CSET:

	Yes	No	Don't Know
Obtained access to new ideas, know-how or technologies?	80.00%	20.00%	0.00%
Received direct technical assistance from the CSET?	41.70%	58.30%	0.00%
Hired a CSET student or graduate?	25.00%	70.80%	4.20%
Improved a product or process?	28.00%	64.00%	8.00%
Increased interaction with other companies through participation in the CSET?	58.30%	41.70%	0.00%
Provided customers with improved technical information?	17.40%	69.60%	17.40%

CSET Programme – Growing Industry Partners

Indigenous Industry

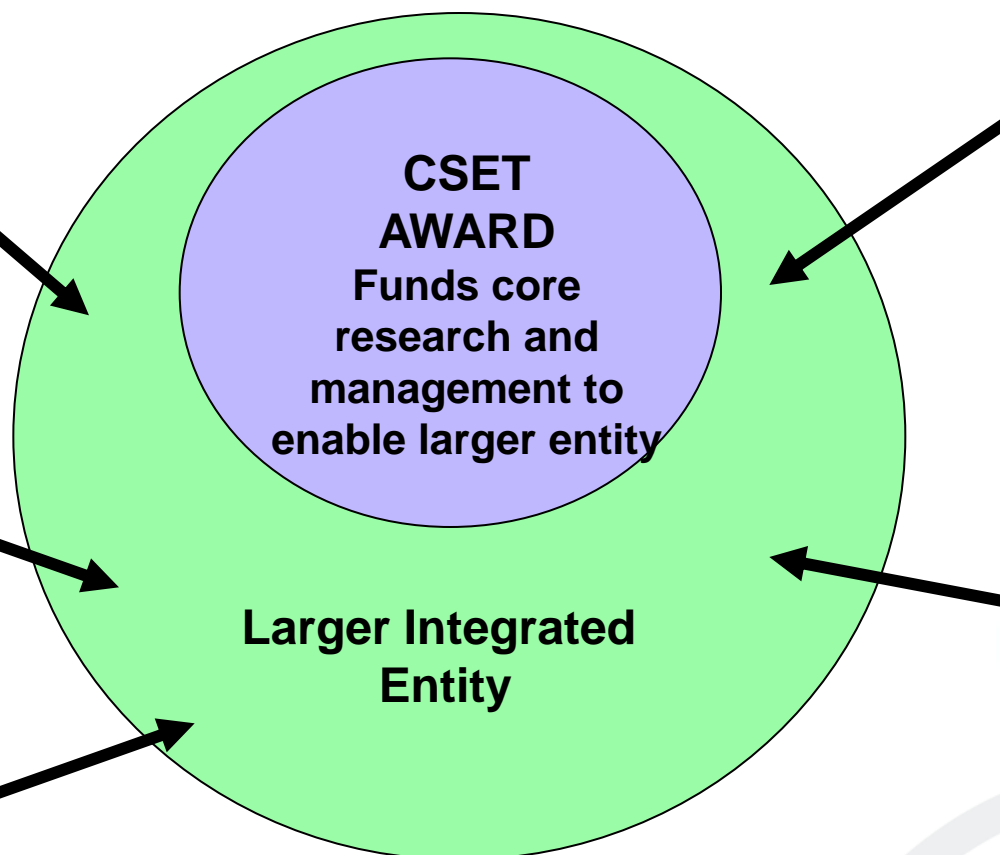


FDI



Sponsored
research

Networking



CSET Technology Transfer

- CSET TT and commercialisation activities go through the university Technology Transfer Office.
- Joint funded by state body (Enterprise Ireland) and University
 - Manage university owned IP assets – agents for licensing IP, university IP policies
- Create relationships, partnerships and opportunities.
- Educate research community on sound IP practices.
- Moving into company incubation and business support.
- CSETs
- Dedicated TT person for each Centre – joint funded position
- Liaison in multi-university Centres, centre IP management etc.

CSET Technology Transfer - Outputs

Tangible Metrics measured, SFI targets set in conjunction with CSET management and Technology Transfer Offices

Commercialisation outputs to date (Very crude , 42 centre years, various stage of maturity)

122 Invention disclosures

65 patent applications in system

10 patents awarded

11 license agreements signed

24 Technologies approved for additional funding

4 Spin out companies produced










11 spin out processes initiated

Plus intangible benefits, knowledge, ideas...

CSET Programme – Some of the Lessons learned

- One size does not fit all – Life Sciences/ICT
- Common goals and expectations important
- Structures should be scalable
- Direct communication with stakeholder groups
- Takes long time to build relationships/reputations
- Centres have been agents of change – bring everyone along
- Biggest benefits are intangible

10 SFI CSETs

Systems Biology Ireland	
	APC - Alimentary Pharmabiotic Centre, UCC
	BDI - Biomedical Diagnostics, DCU
	REMEDI - Regenerative Medicine, NUIG
	DERI – Web Science, NUIG
	Lero - Software Engineering, UL
	CNGL – Localisation Technologies, DCU
	CLARITY – Sensor Web, UCD
	CRANN – Nanoscience and technology, TCD
	CTVR - Telecommunications, TCD