Science Foundation Ireland

Centres for Science Engineering and Technology (CSET) June 2010

Rory Jordan

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 Technologie

- 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

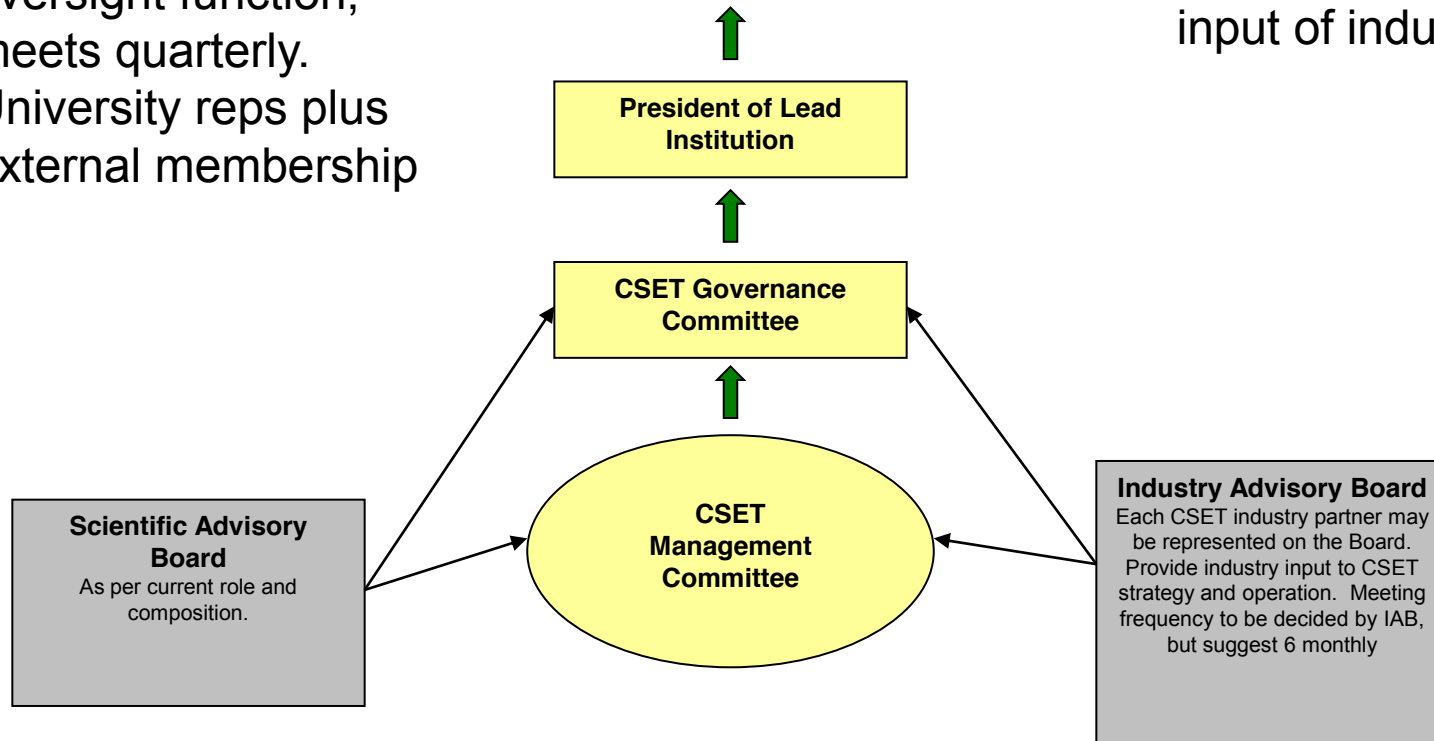| Partial List of Programs/Centers Visited	Stage 1 (basic research)				Stage 5 (product/marketing)		
UK: Tissue Engineering Initiative	▓	▓					
Japan: Advanced Industrial Science and Technology (AIST)	▓	▓					
Korea: Korea Advanced Institute of Science and Technology (KAIST)	▓	▓					
Korea: ERC Program, 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.

President of Lead Institution

CSET Governance Committee

CSET Management Committee

Scientific Advisory Board
As per current role and composition.

Industry Advisory Board
Each CSET industry partner may be represented on the Board. Provide industry input to CSET strategy and operation. Meeting frequency to be decided by IAB, but suggest 6 monthly

Research for Ireland's Future

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 Manger, Sensor Business Resource Center
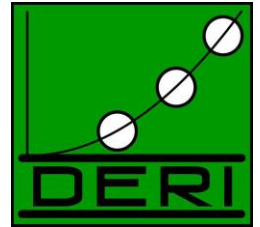**Fellow of the IEEE** (1997)

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
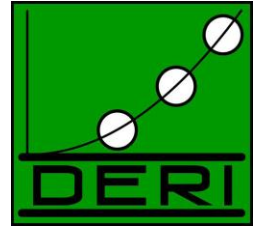
Overview

- 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
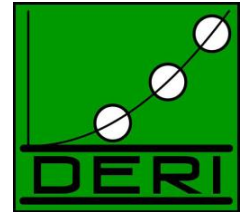
CSET - Translational Function

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

commercialize DERI technology by partnering researchers with entrepreneurs

concentrates on researching and developing new technologies

(**Bizstart**)

(**Advanced Innovative Technology (AIT)**)

Applied Innovations Unit

(**Advanced Translational Research (ATR)**)

(**Advanced Technology Implementation (ATI)**)

implement specific projects meeting Enterprise needs

look for appropriate technologies to fill the needs of commercialization efforts

Courtesy of DERI
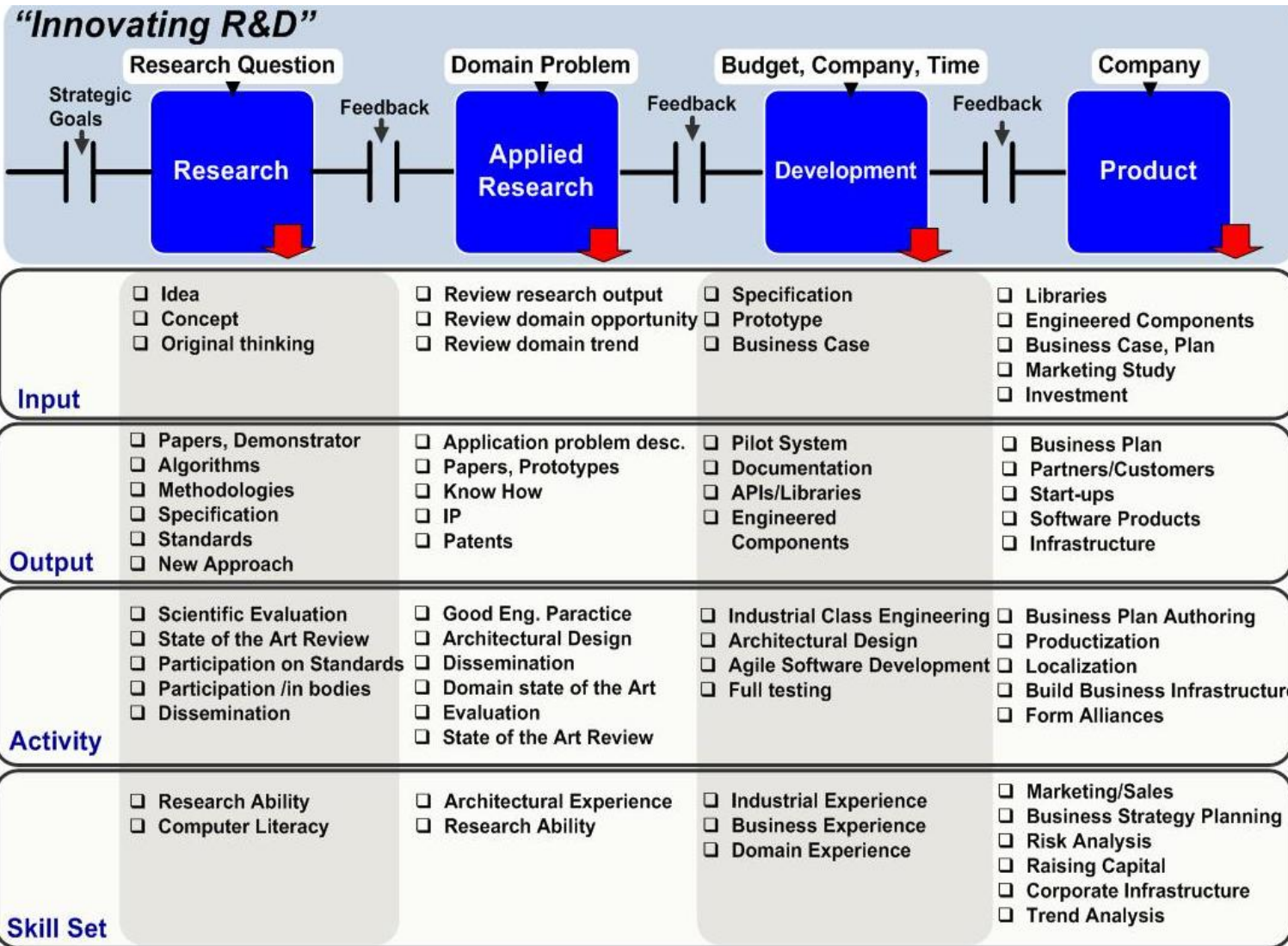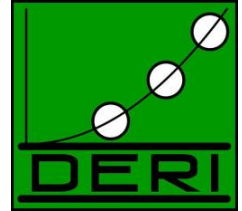
CSET Programme – Industry Partners

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).

SFI CSET Programme

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%

CSET Programme – Industry Partners

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%
Recieved 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

Research for Ireland's Future
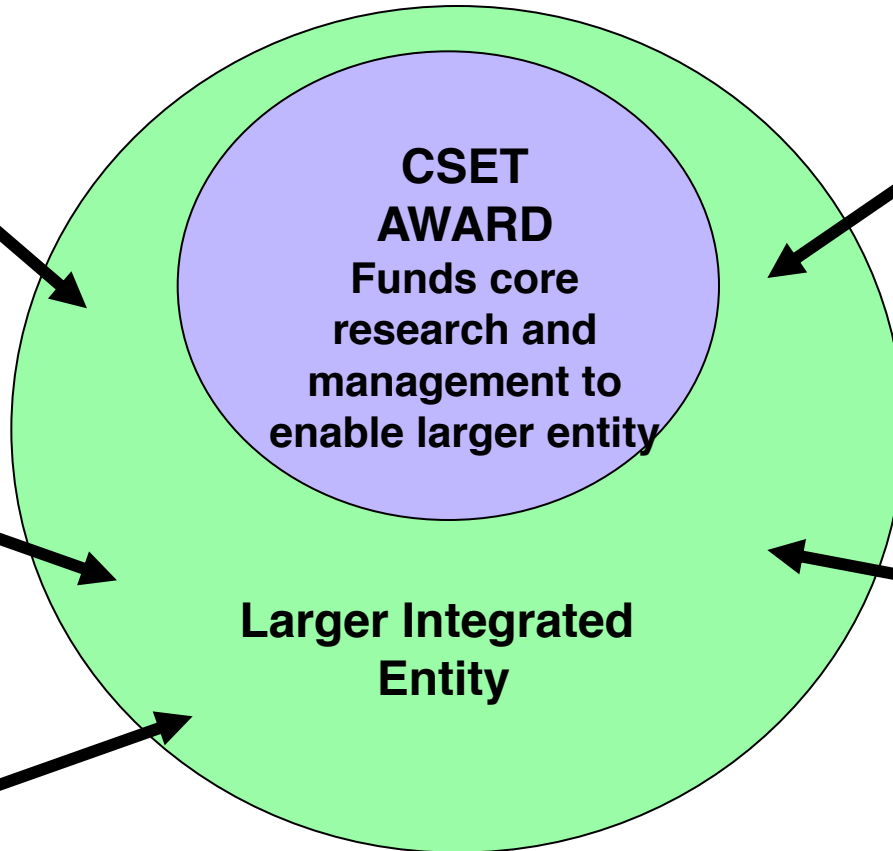
CSET Technology Transfer

• 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