Peer Review for Industry/Academic Research Collaborations/Projects:
What might we need to do differently?

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SPRING's aim is to better understand important aspects of the peer review process, including decision-making, stakeholder concerns, and outcomes. The goal is to contribute to scholarship in this area and to improve the efficiency, transparency, and equity of scientific funding processes in Irish science.

https://ucdspring.wordpress.com/

Why Industry Academic Collaborations?

- SFI Mission: 'Progress Ireland's Society'
- SFI Call for research contributing Science Policy & Best Practice in Peer Review of grant funding and overall science evaluation
- Lack of literature on;
  - evaluating UIC Grant Funding
  - and in evaluating UIC in terms of societal benefit or the public good
- Backgrounds: UIC involvement, Prior work in bibliometrics
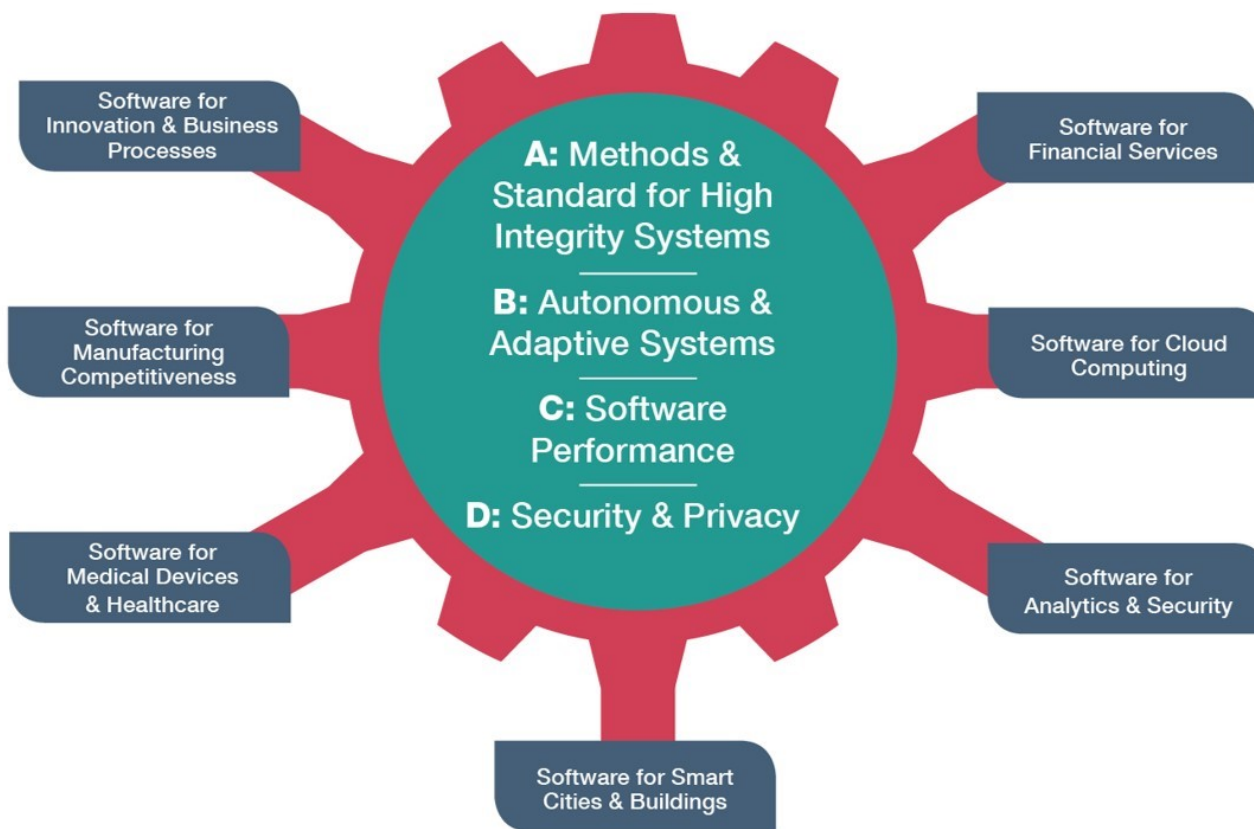
Context:

- In recent years, there has been a growing interest and increasing move towards UIC within Ireland (e.g. LERO) and internationally, posing;
  - Increasing interest & focus in the context of awarding funding grants
  - UIC poses unique challenges for research
  - Renewed questions around policy & best practice in the context of the peer reviewing such proposals.

Study Objectives

- Contribute to Science Policy on Peer Review of UIC
- Establish Best Practice of UIC Peer Review
- Recommendations for SFI

Research Questions

- How have University Industry Collaborations been conceptualised, theorised and discussed in the academic Literature?

- What are the proposed research models or frameworks for industry-academic collaborations?

- What evaluation/measures are applied specifically to Industry-Academic collaborations, grant proposals including peer reviewers?

- What empirical studies have addressed industry-academic collaborations in terms of contributing to best practice? (e.g. emerging consensus)

Method

- Literature review
  - Science Policy Debate/Theory on UIC
  - Models/frameworks of UIC including evaluation
  - Evidence
- Data Collection: Case study of Science Foundation Ireland (SFI)
  - In-depth Interviews with recipients & non-recipients of SFI Industry Academic Fellowship Programme
  - Focus Groups with Industry & Academia
  - In-depth Interviews with SFI
  - Documentary Analysis of SFI documents

Case: Science Foundation Ireland

Science Foundation Ireland funds research in the areas of science, technology, engineering, and mathematics **(STEM)** which promotes and assists the **development and competitiveness of industry, enterprise and employment in Ireland.**

Industry Collaboration
Science Foundation Ireland awards directly supporting

1603 collaborations with industry

(with some companies having more than one individual collaboration)

929 MNC collaborations

674 SME collaborations

Involving
- **399** MNCs
- **491** SMEs

individual companies

* All figures based on 2016 data

SFI/Academia **Collaborations**

There are currently **900+**collaborations with companies

2013: €125m from non-SFI sources

Programmes for Industry

SFI Industry Fellowship

Supports personnel exchange

SFI Partnerships

Supports collaborative research projects of scale

SFI Research Centres

Supports large scale Research Centres in areas of economic importance

SFI Spokes

Supports recruitment of new industry partners and collaborative projects to Research Centres

SFI Research Centres

SFI Research Centres

- World leading, large scale Centres with major economic impact for Ireland

- Funding of between €1m and €5m per year in direct costs over six years

- SFI funds **up to 70%**. Minimum **30% industry investment** at least one third of which must be cash

- **12 Centres** funded, representing **€355m** Exchequer funding and **€190m** industry investment (>300 industry collaborations)

SFI Research Centres Spokes

- Opportunity to become a new Industry or Academic Partner of an existing Centre

- Allows existing Centres to grow and evolve

- Fixed call: competitive assessment, **30% industry contribution**

- Rolling call: proposals assessed on own merits, **50% industry cash contribution**

- Minimum project size €400k, no maximum award size

How is UIC Conceptualised?

- Technology/knowledge transfer;
- Triple helix;
- Open innovation;
- Third mission;
- Commercialization;
- Academic entrepreneurship;
- Knowledge/technology spillover.

How is UIC Critically Discussed?

- Managerial challenges
- Lack of Time
- Cultural misunderstanding
- University inflexibility
- Relationship Maintenance/sustainability
- University support for technology transfer
- *Hidden* Knowledge Transfer being recognised
- Misaligned industry expectations
- Geographic Proximity
- Conflicts of interest
- Research ethics
- Misunderstanding value of technology/innovation developed
- Consulting, Credibility and 'Academic' Washing

How is UIC Critically Discussed?

- **Academic capitalism** – critical political-economic literature.
  - Reduction of university work to goals of industry.
  - Lack of autonomy of university.
  - Administrative/organisational focus on entrepreneurship and commercialisation at the expense of education and advancing knowledge.
  - *This discourse not really playing out in mainstream journals dealing with innovation and tech transfer.*
  - Others argue basic science increases when universities engage in formal/informal UIC.
- **Engaged Scholarship, ELSA, TA**
- **Challenge of** short/mid-term **goals** of industry and longer term goals of academia. Impact this has on **basic science.**
- Influence of **geographic proximity**.
- **Value beyond commercialisation**.
  - Hidden knowledge transfer.
  - Other disciplinary types of knowledge transfer (social) outside of STEM.

UIC Literature Insights

- Broadly from the fields of business and innovation literature.
- Evaluation largely framed in narrow indicator-driven terms relating to revenue generation or skills development.
- Usually constructed from the organisational perspective of the university or industry, and not some other perspective, i.e., society more broadly.
- Calls in the literature to account for 'hidden' impacts and more fine-grained analyses
- Paucity of academic literature evaluating university-industry collaboration in terms of societal benefit or the public good, exceptions include RRI (note SFI mission)
- Some literature from a policy perspective.

Contributions to UIC Literature

Author	Title
Siegel, D.S., Waldman, D.A., Atwater, L.E., Link, A.N. - 2004	Toward a **model of the effective transfer** of scientific knowledge from academicians to practitioners
Geuna, A., Muscio, A. - 2009	The **governance of university knowledge transfer**: A critical review of the literature
Perkmann, M., Walsh, K. - 2009	The two faces of collaboration **impacts** of university industry relations on public research
Perkmann, M., Neely, A., Walsh, K. -2011	How should firms **evaluate success** in university industries alliances? A performance measurement system
Penfield, T., Baker, M.J., Scoble, R., Wykes, M.C. - 2014	Assessment, evaluations, and definitions of **research impact**: A review
Hughes, A., Kitson, M.-2012	**Pathways to impact** and the strategic role of universities: New evidence on the breadth and depth of university knowledge exchange in the UK and the **factors constraining its development**
Al-Ashaab A., Flores M., Doultsinou A., Magyar A. - 2011	A **balanced scorecard for measuring the impact** of industry-university collaboration
Ramos-Vielba, I., Fernández-Esquinas, M., Espinosa-de-los-Monteros, E. -2010	**Measuring** university-industry collaboration in a regional innovation system
Barbolla, A.M.B., Corredera, J.R.C. -2009	Critical **factors for success** in university-industry research projects
Abramo, G., D'Angelo, C.A., Costa, F.D. -2011	University-industry research collaboration: **A model to assess university capability**
Agostino, D., Arena, M., Azzone, G., Dal Molin, M., Masella, C. -2012	Developing a **performance measurement system** for public research centres
Cassiman, B., Glenisson, P., Van Looy, B.	**Measuring** industry–science links through **inventor author relations**
Schaper-Rinkel, P.	The role of future-oriented **technology analysis in the governance** of emerging technologies: The example of nanotechnology
Hanberger, A., Schild, I. -2004	Strategies to **Evaluate** a University-Industry **Knowledge-exchange** Programme
Piva, E., Rossi-Lamastra, C. -2013	Systems of **indicators to evaluate the performance** of university-industry alliances: A review of the literature and directions for future research
Kauppila, O., Mursula, A., Harkonen, J., Kujala, J. - 2015	Evaluating university industry collaboration the European Foundation of **Quality Management excellence model** based evaluation of university industry collaboration
Huang, M.-S., Chen, D.-Z. -2017	How can academic **innovation performance** in university–industry collaboration **be improved**
Albats, E., Fiegenbaum, I., Cunningham, J.A. -2018	A micro level study of university industry collaborative lifecycle **key performance indicators**
Kaklauskas A., Banaitis A., Ferreira F.A.F., Ferreira J.J.M., Amaratunga D., Lepkova N., Ubarte I., Banaitiene N. -2018	An **evaluation system** for university-industry **partnership sustainability**: Enhancing options for entrepreneurial universities
Song X., Zhu Y., Lv F. -2017	Universities-industry collaboration (UIC) **partner selection** based on Grey Fuzzy Evaluation

Models/Evaluation of UIC?

- **Models** of Knowledge Transfer
- **Governance** of Knowledge Transfer
- **Evaluation** of Knowledge Transfer/Exchange
- Critical factors of Impact and Success
- Pathways and barriers to Impact and success
- Identifying and evaluating **Impact and Success**
- Measuring **University Capability**
- Innovation **Performance: Measurement and KPI's**
- **Partners Selection**
- **Partnership Sustainability**
- **Measuring partner relations, e.g.** inventor author relations

Best Practice in Peer Review Process of UIC Research Funding

Responsible Research & Innovation

- Transformation from *'science in society' to 'science for society, with society'* (Laroche, 2011)

- Now a wealth of scholarship on RRI

- It has connections to the literature on research evaluation, sociology of science, and science policy studies.

- It offers a **way of conceptualising the gap in the business/innovation studies literature** which neglects broader societal implications of UICs - e.g., the role of civil society, issues of governance, ownership and control, and ethics.

"Research and innovation must respond to the needs and ambitions of society, **reflect its values** and be responsible...our duty as policy makers (is) to **shape a governance framework** that encourages responsible research and innovation''

(EU Commissioner: Geoghegan-Quinn, 2012)

"Responsible Research and Innovation is a transparent, interactive process by which societal actors and innovators become **mutually responsive** to each other with a view on **the (ethical) acceptability, sustainability and societal desirability of the innovation process** and its marketable products (in order to allow a proper embedding of scientific and technological advances in our society)"

(Von Schomberg, 2011)

- "Responsible Research and Innovation (RRI) implies that societal actors (researchers, citizens, policy makers, business, third sector organisations, etc.) work together *during the whole research and innovation process* in order to better *align both the process and its outcomes* with the values, needs and expectations of society." (EC, 2015)

RRI Influenced by:

- Research Ethics & integrity
- Technology assessment
- Science Technology Studies
- Open Innovation
- Open Science
- Anticipatory governance
- ELSA: Ethical, Legal and Social Aspects of emerging sciences and technologies
- Public engagement
- Participatory Design

Responsible Research and Innovation

- More institutionalised and consistently-applied approach that is inclusive and values-based :
  - Focus on **Purpose** and responding & defining societal **challenges**
  - Need to demonstrate the **'right'** research **'impact'**
  - The **place of public participation** in both;
    - setting research agendas
    - modulating research trajectories towards socially-desirable ends
  - EC recognised key areas for the application of RRI (EC 2012; EC 2015): **public engagement; gender equality; science education; open access; ethics; and, governance, sustainability and social justice**

Transformation from *'science in society' to 'science for society, with society'* (Laroche, 2011)
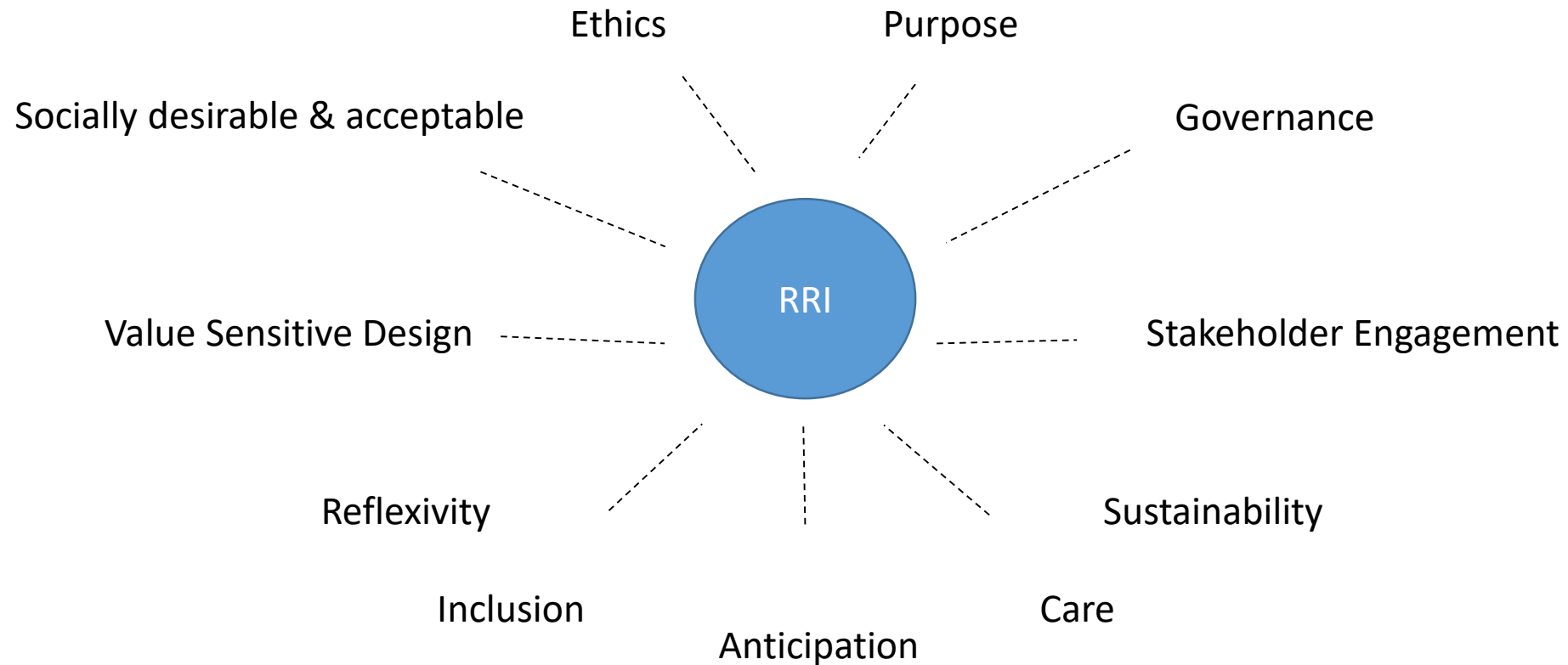
RRI

- **Three emerging features of Responsible Research and Innovation:**
  - Science *for* society: **democratising** the governance of intent
    - Focus on **purposes** of science and innovation, and the underlying **motivations and intentions** for these. Addressing **Europe's societal challenges** with the **'right impacts',** asking question like **what we *do* want it to do**? It asks how the targets for innovation can be identified in an ethical, inclusive, democratic and equitable manner. **Democratically define,** open up and realise new areas of **public value**.

  - Science *with* society: institutionalising **responsiveness**
    - Responsive to society in terms **of setting its direction, and in modulating its trajectory** in the face of the uncertain ways innovation invariably unfolds. Emphasises the **integration and institutionalisation** of established mechanisms of 1. **reflection** (underlying purposes, motivations and potential impacts, what is known and not known?), 2. **anticipation** (explore intended and unintended impacts), and 3. **inclusive deliberation** (through processes of dialogue, engagement and debate with skakeholders) in and around the processes of research and innovation.

  - Reframing **Responsibility**
    - A re-evaluation of the concept of responsibility as a future-oriented, uncertain, complex and collective endeavour. Reframing responsibility in the context of innovation as a **collective**, uncertain and **unpredictable activity** is focussing attention on dimensions of responsibility such **as care and responsiveness** which are **values** and not rules-based, allowing for discussion concerning purposes and accommodating uncertainty.

(Owen et al. 2012)

Insights and Debate: RRI and UIC

- Lack of Industry awareness of RRI and it's implications
- Stronger focus on R&I, lacking in CSR Strategies
- Not established: Whose right impacts? Positive for whom? Serving what interests? Towards what goals? (moral plurality, myth of technology as value free)
- How much co-creation or open-innovation is needed, it's quality, it's public representation?
- Evaluating Public Engagement, and Industry-academic co-authorship
- RRI could be seen to exacerbate the tension between the principle of participation and that of scientific freedom.
- Particular prioritisation of projects in terms of such factors as prestige of applicants and novelty of projects etc. may be rationally considered a more responsible use of public money in the context of value and impact
- There is a risk that bias towards 'Open Innovation' (as one implementation of RRI) lends itself to iterative innovation over disruptive innovation in such contexts as technology development.

Implications for funders: RRI and UIC

- Funders have a leadership role to play in establishing a framework for responsible innovation and its associated expectations, including processes of governance and oversight.

- Also have a role to play in promoting the development of capacity for responsible innovation, through programmes of education and training.

- Innovation is a collective process that requires a collective approach to responsibility.

- Mechanisms in place for evaluation after awarding funding, to 'modulate research trajectories'.

- **Q: How to implement RRI into UIC funding evaluation?**

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Thank You!

- Feedback and Suggestions
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