**Engineering and Physical Sciences
Research Council**

EPSRC

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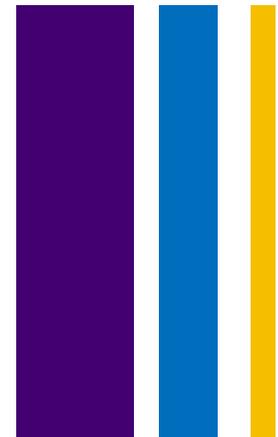discovery and innovation

EPSRC and Responsible Research and Innovation

Dr Neil Viner, Director of Programme Delivery, EPSRC

The story so far

- 2008 - 2010 Research Council-Led Public Engagement
- 2010 - 2013 development of EPSRC's Framework for Responsible Innovation
- Since 2013, Supporting Researchers to implement the Framework for Responsible Innovation
- What Next?

First Steps in Public Engagement

Public Engagement – Nanotechnology for Healthcare

2008, Public Engagement to help set research priorities in this area

'An extensive public consultation was undertaken on nanotechnology and healthcare and this was used to inform the EPSRC Strategic Advisory Team and subsequently to help investigators to develop proposals whilst addressing societal concern. **The outcome of the exercise is to fund ten excellent multifunctional research projects** sthat involve: physical scientists, chemists, chemical engineers, clinicians and social scientists.' 2009

In response to this dialogue, and emphasising dimensions of **inclusive deliberation and responsiveness**, EPSRC CEO Dave Delpy stated:

'This dialogue has certainly overcome some of the criticisms levelled at previous exercises – by setting the dialogue in the context of concrete questions explicitly linked to a policy decision [goals of a EPSRC funded call for research proposals in nanoscience] it has produced some interesting results that were of significant help in setting research priorities' (Science in Parliament, 2011)

Public Engagement – Synthetic Biology

- **2009 commissioned jointly by EPSRC and BBSRC**

- Findings from the dialogue showed there was conditional support for synthetic biology- while there was great enthusiasm for the possibilities of the science; there were also fears about control; who benefits; health or environmental impacts; misuse; and how to govern the science under uncertainty.

- **What Innovation Looks Like Under These Circumstances**

- There is a need to develop a **different type of conversation that leads to innovation:** informing synthetic biology in new ways and **involving people** (citizens, consumers, other users) not just at the end of the process but throughout.

- There was a need for a new style of leadership of science: with those running organisations such as the research councils to champion new ways of working, that help shape research by enabling it to be informed by social values.

Developing a Framework for Researchers

Development of EPSRC's Framework for Responsible Innovation

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- **2010- 2012 EPSRCs Societal Issues Panel** (comprised of representative stakeholders) reviewed Responsible Innovation in the light of the public engagement exercises.

- This work was also shaped by **reviewing a geoengineering research project** (joint funded by EPSRC, NERC and STFC).

- This work was also informed by research led by Prof Marina Jirotka and Prof Bernd Stahl which included a study to **explore how ICT researchers perceive and realise their responsibilities and what was needed to foster a culture of Responsible Research and Innovation in ICT research** (Framework for Responsible Research and Innovation in ICT – FRRICT).

- In parallel Innovate UK rolled out its responsible innovation framework for commercialisation of research findings in Synthetic Biology

2013 EPSRC's Framework for Responsible Innovation

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- Responsible Innovation is a process that seeks to promote creativity and opportunities for science and innovation that are **socially desirable and undertaken in the public interest**.

- Responsible Innovation acknowledges, **that innovation can raise questions and dilemmas**, is often ambiguous in terms of purposes and motivations and unpredictable in terms of impacts, beneficial or otherwise.

- Responsible Innovation creates **spaces and processes** to explore these aspects of innovation in an open, inclusive and timely way.

- This is a **collective responsibility**, where funders, researchers, stakeholders and the public all have an important role to play.

- It includes, but goes beyond, considerations of risk and regulation, important though these are.

2013 EPSRC's Framework for Responsible Innovation

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▌▌ A Responsible Innovation approach should be one that continuously seeks to:

▌▌ **Anticipate** – describing and analysing the impacts, intended or otherwise, (for example economic, social, environmental) that might arise. This does not seek to predict but rather to support an exploration of possible impacts and implications that may otherwise remain uncovered and little discussed.

▌▌ **Reflect** – reflecting on the purposes of, motivations for and potential implications of the research, and the associated uncertainties, areas of ignorance, assumptions, framings, questions, dilemmas and social transformations these may bring.

▌▌ **Engage** – opening up such visions, impacts and questioning to broader deliberation, dialogue, engagement and debate in an inclusive way.

▌▌ **Act** – using these processes to influence the direction and trajectory of the research and innovation process itself.

Supporting Researchers with Responsible Innovation

Implementation of Responsible Innovation – Quantum Technology Hubs

- "Thinking Ahead to a World with Quantum Computers" is a Landscape Report about Responsible Research and Innovation in Quantum Computing which identifies challenges and makes recommendations about how to handle them
- Led to **Public Dialogue report on Quantum Technologies, 2018**
  - Highlighted general public support but also a 'desire for governance mechanisms to be created which consider wider societal implications and ensure there is adequate regulation and enforcement in place prior to commercialisation of quantum technologies.'
  - 'Whilst good governance was important, they did not want to see regulation stifle innovation … or disadvantage the UK in the international area.'

Implementation of Responsible Innovation

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- **CDT Call, 2013** encouraged applicants to include Responsible Innovation* elements into their training

- In 2017, ICT theme commissioned **ORBIT** to support ICT researchers to implement Responsible Innovation

- Healthcare Technology **Impact and Translation Toolkit** – includes suggested activities researchers can request support for and encourages researchers to engage with stakeholders including the public

- Synthetic Biology
  - **Roadmap published in 2012** included plans to ensure that this technology continues to be developed in a socially responsible fashion.

What Next?

Future Plans and Opportunities (EPSRC)

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- **AREA framework** introduced 5 years ago and is now well-established

  - Remains appropriate and timely → more important now than ever (for example with the ISCF)
  - A strategic pro-active approach has been agreed by EPSRC and work is being planned to remind, refresh and raise awareness (both internally and externally)

    → *"shot in the arm for responsible innovation.."*

  - Ensure Responsible Innovation considerations are taken into account as part of current **Strategic Delivery Planning.**

- Mandatory requirement in **EPSRC 2018 CDT call** for students to receive training in Responsible Innovation.

- Responsible Innovation has an underpinning positive role in supporting the delivery of the **Industrial Strategy** – ISCF challenges involving EPSRC all have a Responsible Innovation element to take into account enabling the research proposed to be better defined and outputs more likely to be more in tune with stakeholders' needs, opportunities and concerns

Future Plans and Opportunities (UKRI)

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- Will enable greater co-ordination including for **interdisciplinary research**

- UKRI Strategic Prospectus (May 2018) sets out four 'foundations for excellent research and innovation' – of particular relevance is:

    'Creating a strong and responsible culture is crucial to enable the best research and innovation and to gain and maintain public trust. We will use our position as the largest public sector funder of research and innovation in the UK to lead positive behavioural change both nationally and internationally.'

    Priority areas for UKRI in this space include research and innovation ethics; conduct; reproducibility and analysis.
- Opportunity to join up with continuing IUK work

What next for Responsible Innovation?

- The challenges of anticipating impacts of research are increasing along with the pace of change and delivery, so Responsible Innovation is likely to become more important.

- It is too early to tell what the impacts are of the work done so far. However, individual champions have made a difference to how this approach has been adopted at institutions.

- We have a responsibility to justify the trust that taxpayers have in the researchers and research we fund.

- We seek to fund outstanding science that our public can help to shape, trust and be proud of.

- **A question to consider today: How will we know if we have been successful?**