



# **Why Responsible Innovation? Because We Can.**

**Erik Fisher**

**Towards Responsible Research & Innovation Eco-Systems**

**EARTO Annual Conference 2019**

**Espoo, Finland**

# *Responsible Innovation*



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- Taking collective care for the future, through stewardship of innovation in the present.

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- Taking collective care for the future, through stewardship of innovation in the present.
- Anticipation
- Inclusion
- Reflexivity
- Responsiveness

# Why Should RTOs Adopt RI?



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- Power
- Distribution
- Politics



# Objections to RI

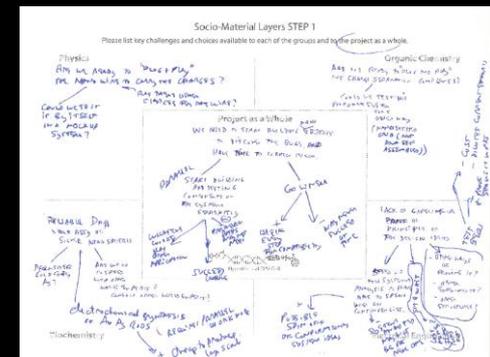
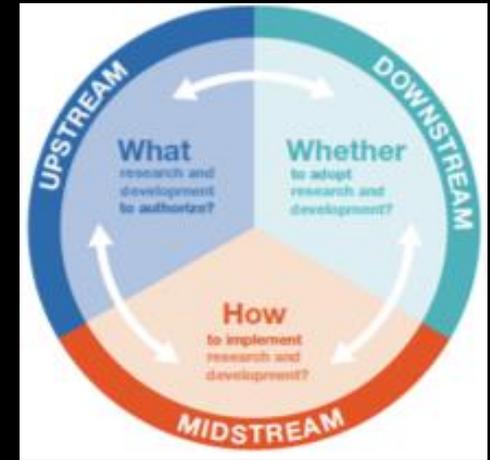
- Serendipity
- Accountability
- Incentives



- **RTO managers want to know:**
  - ◆ Is RI possible?
  - ◆ Is RI useful?
  - ◆ Will it hinder productivity?
  - ◆ Under what conditions does it work?



# STIR Tools



- Socio-Technical Integration
- Socio-Technical Integration Research
  - ◆ STIR analyst
  - ◆ Decision Protocol
  - ◆ Midstream Modulation

# Modulations

- **Learning**
  - ◆ System thinking
  - ◆ Mindfulness
- **Value Deliberations (Care)**
  - ◆ Value elucidation
  - ◆ Value expansion
- **Practical Adjustments (Creativity)**
  - ◆ Generating and acting on novel ideas
  - ◆ Altering science and innovation practices
  - ◆ Strategic and behavioral changes



# Learning

- **Pre-study:** 1 of 5 innovation managers view integration as “part of the job”



Sci Eng Ethics  
DOI 10.1007/s11948-012-9411-6

ORIGINAL PAPER

## Midstream Modulation in Biotechnology Industry: Redefining What is ‘Part of the Job’ of Researchers in Industry

Steven M. Flipse · Maarten C. A. van der Sanden ·  
Patricia Osseweijer

Received: 16 April 2012 / Accepted: 8 October 2012  
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**Abstract** In response to an increasing amount of policy papers stressing the need for integrating social and ethical aspects in Research and Development (R&D) practices, science studies scholars have conducted integrative research and experiments with science and innovation actors. One widely employed integration method is Midstream Modulation (MM), in which an ‘embedded humanist’ interacts in regular meetings with researchers to engage them with the social and ethical aspects of their work. While the possibility of using MM to enhance critical reflection has been demonstrated in academic settings, few attempts have been made to examine its appropriateness in industry. This paper describes the outcomes of a case study aiming to find out firstly whether MM can effectively be deployed to encourage and facilitate researchers to actively include social and ethical aspects in their daily R&D practice,

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(Flipse et al. 2013)

# Learning

- **Pre-study:** 1 of 5 innovation managers view integration as “part of the job”
- **Post-study:** 5 of 5 innovation managers view integration as “part of the job”



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(Flipse et al. 2013)

# Creativity



- Experimental setup is enhanced
- Disposal practice is improved
- New catalyst is adopted for nanoparticle synthesis
- Revived research project becomes successful

(Fisher 2007)



# Care + Creativity

$t_1$  Will “put [battery stack] on side of house”

$t_2$  Could consider “preferences of homeowner”

$T_3$  Talks with homeowner

$t_4$  Locates battery stack *inside* garage



# Learning

“I feel like [talking with the homeowner is] out of our range because we are just electrical engineers and we’re supposed to just be producing wire diagrams and stuff.”



# Creativity



“Reflections on responsible innovation generated novel ideas for antenna structures and nanoparticle synthesis.”

(Fisher et al. 2010)

**OPINION**

## CORRESPONDENCE

**Research thrives on integration of natural and social sciences**

Emerging collaborations between social and natural scientists face challenges, as you acknowledge (*Nature* **462**, 825–826, 2009). But, like A. D. Manning and J. Fischer in Correspondence (*Nature* **463**, 425; 2010), you sidestep a practical question that keeps many laboratory doors closed: what if interactions with ‘soft’ scientists harm the quality of my ‘hard’ research?

Rather, efforts to enhance scientific creativity and societal responsiveness can be mutually reinforcing.

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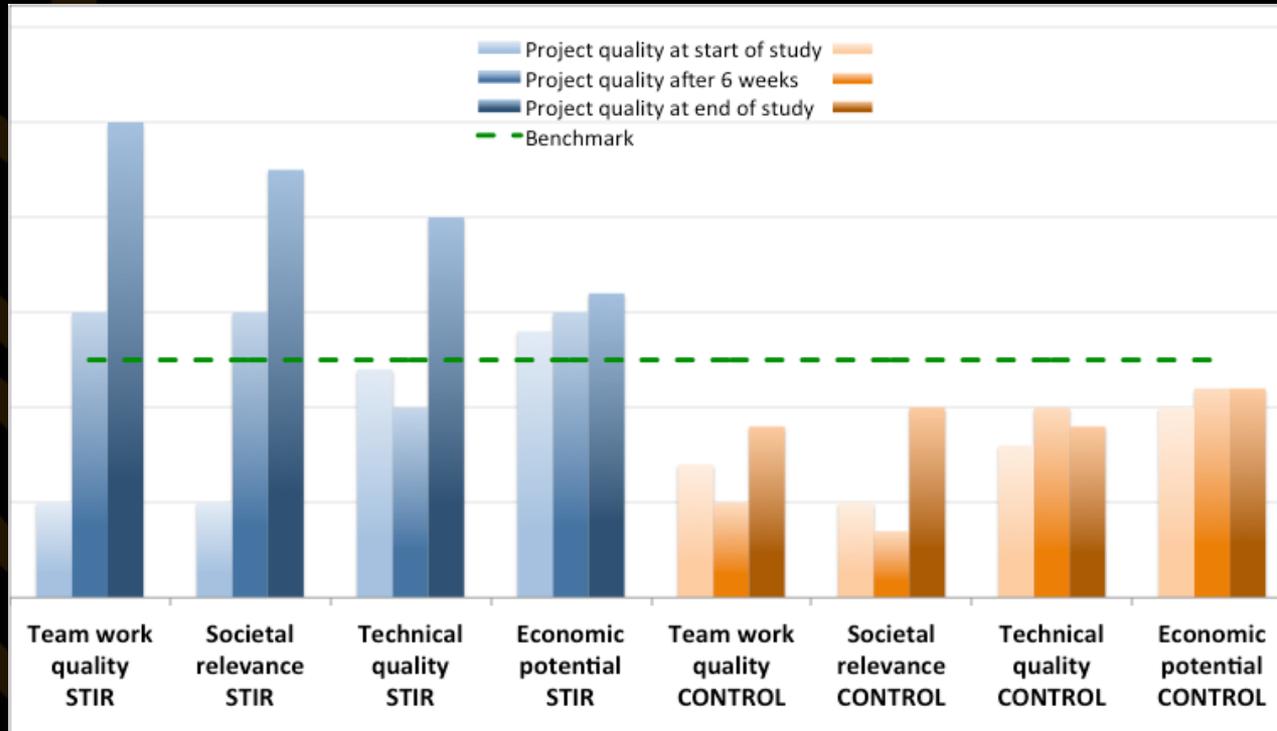
# Care + Creativity



- Research group debates, then collectively alters safety practices



# Creativity



- Innovation managers perceived integration to be “functional and useful.”
- Integration “measurably improved” R&D performance.



# STIR Enabling Conditions

## **Structured**

Stabilize expectations

## **Open-ended**

Inquire and explore

## **Embedded**

Part of daily routines

## **Sustained**

Evolve over time

## **Independent**

Social scientists as guests

## **Voluntary**

Scientists can opt out

## **Temporary**

Agreed-upon ending point

## **Intensive**

Link dialogue to decisions

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# Responsible Innovation

- **Is possible, can enhance R&D value**
  - ◆ Contrary to fears that it harms innovation
  - ◆ Desirable changes may not appear immediately
  - ◆ Effects may take time and cascade
- **Builds responsibility *and* innovation capacities**
  - ◆ **Elucidates choice**
    - Speeds up learning
    - Recognize problems earlier
  - ◆ **Empowers creativity**
  - ◆ **Integrates long term strategic goals and stakeholder values into everyday work practices**



Responsible Innovation:

Why? Because We Can!



# THANK YOU

[cns.asu.edu/research/stir](http://cns.asu.edu/research/stir)



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