

Case Studies in Design Informatics 1 – INFR11094

Tutorial 3

Responsible Innovation

In last tutorial...

Choices & decisions	Implications		
	Social	Environmental	Legal
Design process			
Interface design			
Data gathering & use			
Model development & use			
Openness & transparency			

Last time, we explored how to critically reflect on a case study using an ethical design framework.

This week ...

We will explore how we can design technology responsibly through the AREA framework for Responsible Innovation.

We will work on the **planning stage** of a design project and identify actions that we should consider and take during the design process to engage in responsible innovation practice.

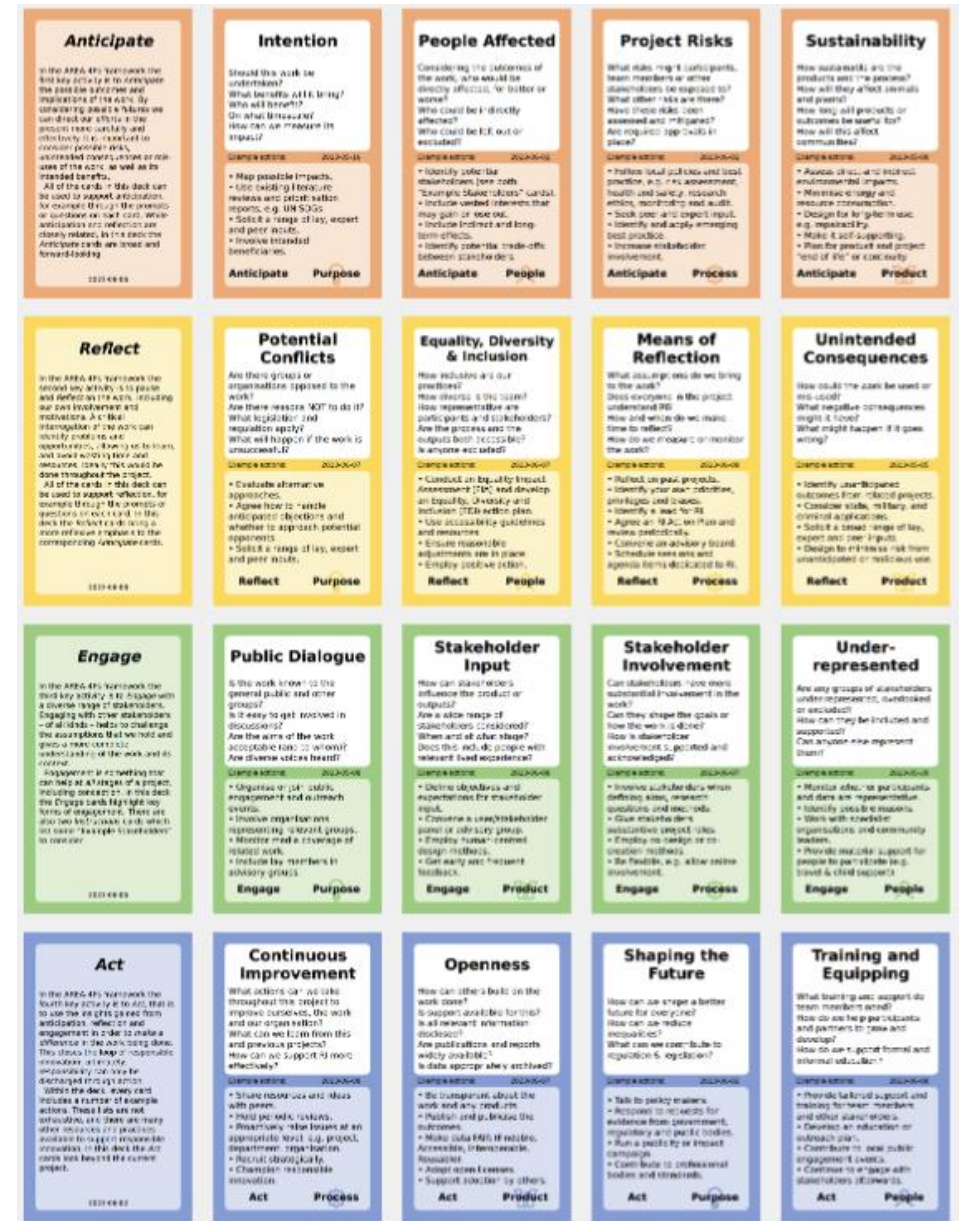
What do you think Responsible Innovation (RI) means?

A		Anticipate
R		Reflect
E		Engage
A		Act

In the rest of the tutorial...

We will explore how can we design technology with Responsible Innovation practices by using the Responsible Innovation prompt cards designed by Horizon Digital Economy Research Institute at the University of Nottingham.

https://miro.com/app/board/uXjVJ2EyGmg=?share_link_id=969636980670



Anticipate

In the AREA-4Ps framework the first key activity is to *Anticipate* the possible outcomes and implications of the work. By considering possible futures we can direct our efforts in the present more carefully and effectively. It is important to consider possible risks, unintended consequences or misuses of the work, as well as its intended benefits.

All of the cards in this deck can be used to support anticipation, for example through the prompts or questions on each card. While anticipation and reflection are closely related, in this deck the *Anticipate* cards are broad and forward-looking.

2023-06-06

Intention

Should this work be undertaken?
What benefits will it bring?
Who will benefit?
On what timescale?
How can we measure its impact?

Example actions: 2023-05-16

- Map possible impacts.
- Use existing literature reviews and prioritisation reports, e.g. UN SDGs.
- Solicit a range of lay, expert and peer inputs.
- Involve intended beneficiaries.

Anticipate **Purpose**

People Affected

Considering the outcomes of the work, who would be directly affected, for better or worse?
Who could be indirectly affected?
Who could be left out or excluded?

Example actions: 2023-06-02

- Identify potential stakeholders (see both “Example Stakeholders” cards).
- Include vested interests that may gain or lose out.
- Include indirect and long-term effects.
- Identify potential trade-offs between stakeholders.

Anticipate **People**

Project Risks

What risks might participants, team members or other stakeholders be exposed to?
What other risks are there?
Have these risks been assessed and mitigated?
Are required approvals in place?

Example actions: 2023-06-02

- Follow local policies and best practice, e.g. risk assessment, health and safety, research ethics, monitoring and audit.
- Seek peer and expert input.
- Identify and apply emerging best practice.
- Increase stakeholder involvement.

Anticipate **Process**

Sustainability

How sustainable are the products and the process?
How will they affect animals and plants?
How long will products or outcomes be useful for?
How will this affect communities?

Example actions: 2023-05-08

- Assess direct and indirect environmental impacts.
- Minimise energy and resource consumption.
- Design for long-term use, e.g. reparability.
- Make it self-supporting.
- Plan for product and project “end of life” or continuity.

Anticipate **Product**

Each activity includes four cards representing four focus areas for designers and researchers to consider when engaging in Responsible Innovation practices.

Activity 1:

Explore the Responsible Innovation cards within your group (10 mins)

https://miro.com/app/board/uXjVJ2EyGmg=/?share_link_id=969636980670

1. Get into groups of 3-4.
2. In your groups, first have a look at the 16 cards in Miro. Each row of the grid shows the card back, which presents a summary of the AREA activity considered by the cards in this row. Each row also includes four card faces, which present examples of questions and actions relevant to this activity in relation to one of the four Ps. Take a few minutes to discuss each row.
3. If anything in the cards is unclear to you, ask your peers or tutor.

Activity 2:

Discussion about priorities for RI in the context of your case studies (50 mins)

In activity 2, we will put the AREA cards into practice to explore ways to approach technology and product innovation more responsibly.



Part One:

Choose a case to work with (10 mins)

In your group:

1. Decide on a case study to work with – i.e., a data-driven technology together with an application domain (e.g., robots in hospitality, LLMs in a particular creative industry, etc.). Try to be specific with the case study you choose. Share your choice with us on Miro.
2. Now, imagine you were developing a design project in relation to your chosen case study, for example developing a new artefact or interface that uses your chosen technology in context of your chosen application domain.

Next, we'll start to think through the process of designing your chosen technology for your chosen context.

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Anticipate **Product**

Part two: Anticipating (10 mins + 5 mins)

Go through the anticipate card group and discuss:

1. Which card is most critical to consider in your design project for your chosen case study? Why is it important? What actions might you take to support this?
2. Show us the card you picked, share your thoughts behind the decision, and what actions you could take in your design project in response to your chosen card.

Reflect

In the AREA-4Ps framework the second key activity is to pause and *Reflect* on the work, including our own involvement and motivations. A critical interrogation of the work can identify problems and opportunities, allowing us to learn, and avoid wasting time and resources. Ideally this would be done throughout the project.

All of the cards in this deck can be used to support reflection, for example through the prompts or questions on each card. In this deck the *Reflect* cards bring a more reflexive emphasis to the corresponding *Anticipate* cards.

2023-06-08

Potential Conflicts

Are there groups or organisations opposed to the work?
Are there reasons NOT to do it?
What legislation and regulation apply?
What will happen if the work is unsuccessful?

Example actions: 2023-06-07

- Evaluate alternative approaches.
- Agree how to handle anticipated objections and whether to approach potential opponents.
- Solicit a range of lay, expert and peer inputs.

Reflect Purpose 

Equality, Diversity & Inclusion

How inclusive are our practices?
How diverse is the team?
How representative are participants and stakeholders?
Are the process and the outputs both accessible?
Is anyone excluded?

Example actions: 2023-06-07

- Conduct an Equality Impact Assessment (EIA) and develop an Equality, Diversity and Inclusion (EDI) action plan.
- Use accessibility guidelines and resources.
- Ensure reasonable adjustments are in place.
- Employ positive action.

Reflect People 

Means of Reflection

What assumptions do we bring to the work?
Does everyone in the project understand RI?
How and when do we make time to reflect?
How do we measure or monitor the work?

Example actions: 2023-06-08

- Reflect on past projects.
- Identify your own priorities, privileges and biases.
- Identify a lead for RI.
- Agree an RI Action Plan and review periodically.
- Convene an advisory board.
- Schedule sessions and agenda items dedicated to RI.

Reflect Process 

Unintended Consequences

How could the work be used or mis-used?
What negative consequences might it have?
What might happen if it goes wrong?

Example actions: 2023-05-05

- Identify unanticipated outcomes from related projects.
- Consider state, military, and criminal applications.
- Solicit a broad range of lay, expert and peer inputs.
- Design to minimise risk from unanticipated or malicious use.

Reflect Product 

Part three: Reflecting (10 mins + 5 mins)

Go through the reflect card set and discuss:

1. What is most critical to keep in mind during the process of working with your case study? Why is it important? What actions might you take to support this?
2. Show us the card you picked, share your thoughts behind the decision, and what actions you could take in your design project in response to your chosen card.

Engage

In the AREA-4Ps framework the third key activity is to *Engage* with a diverse range of stakeholders. Engaging with other stakeholders – of all kinds – helps to challenge the assumptions that we hold and gives a more complete understanding of the work and its context.

Engagement is something that can help at *all* stages of a project, including conception. In this deck the *Engage* cards highlight key forms of engagement. There are also two *Instructions* cards which list some “Example Stakeholders” to consider.

2023-06-06

Public Dialogue

Is the work known to the general public and other groups?
Is it easy to get involved in discussions?
Are the aims of the work acceptable (and to whom)?
Are diverse voices heard?

Example actions: 2023-05-08

- Organise or join public engagement and outreach events.
- Involve organisations representing relevant groups.
- Monitor media coverage of related work.
- Include lay members in advisory groups.

Engage **Purpose**

Under-represented

Are any groups of stakeholders under-represented, overlooked or excluded?
How can they be included and supported?
Can anyone else represent them?

Example actions: 2023-05-30

- Monitor whether participants and data are representative.
- Identify possible reasons.
- Work with specialist organisations and community leaders.
- Provide material support for people to participate (e.g. travel & child support).

Engage **People**

Stakeholder Involvement

Can stakeholders have more substantial involvement in the work?
Can they shape the goals or how the work is done?
How is stakeholder involvement supported and acknowledged?

Example actions: 2023-06-07

- Involve stakeholders when defining aims, research questions and methods.
- Give stakeholders substantive project roles.
- Employ co-design or co-creation methods.
- Be flexible, e.g. allow online involvement.

Engage **Process**

Stakeholder Input

How can stakeholders influence the product or outputs?
Are a wide range of stakeholders considered?
When and at what stage?
Does this include people with relevant lived experience?

Example actions: 2023-06-08

- Define objectives and expectations for stakeholder input.
- Convene a user/stakeholder panel or advisory group.
- Employ human-centred design methods.
- Get early and frequent feedback.

Engage **Product**

Part four:

How to engage with stakeholders? (10 mins + 5 mins)

Go through the engage card group and discuss:

1. Which form of engagement is most critical while developing and designing the technology for your chosen application domain? What actions might you take to support this?
2. Show us the card you picked, share your thoughts behind the decision, and what actions you could take in your design project in response to your chosen card.

Act

In the AREA-4Ps framework the fourth key activity is to *Act*, that is to use the insights gained from anticipation, reflection and engagement in order to *make a difference* in the work being done. This closes the loop of responsible innovation: ultimately, responsibility can only be discharged through action.

Within the deck, every card includes a number of example actions. These lists are not exhaustive, and there are many other resources and practices available to support responsible innovation. In this deck the *Act* cards look beyond the current project.

2023-06-02

Shaping the Future

How can we shape a better future for everyone?
How can we reduce inequalities?
What can we contribute to regulation & legislation?

Example actions: 2023-06-02

- Talk to policy makers.
- Respond to requests for evidence from government, regulatory and public bodies.
- Run a publicity or impact campaign.
- Contribute to professional bodies and standards.

Act **Purpose**

Training and Equipping

What training and support do team members need?
How do we help participants and partners to grow and develop?
How do we support formal and informal education?

Example actions: 2023-06-08

- Provide tailored support and training for team members and other stakeholders.
- Develop an education or outreach plan.
- Contribute to local public engagement events.
- Continue to engage with stakeholders afterwards.

Act **People**

Continuous Improvement

What actions can we take throughout this project to improve ourselves, the work and our organisation?
What can we learn from this and previous projects?
How can we support RI more effectively?

Example actions: 2023-06-08

- Share resources and ideas with peers.
- Hold periodic reviews.
- Proactively raise issues at an appropriate level, e.g. project, department, organisation.
- Recruit strategically.
- Champion responsible innovation.

Act **Process**

Openness

How can others build on the work done?
Is support available for this?
Is all relevant information disclosed?
Are publications and reports widely available?
Is data appropriately archived?

Example actions: 2023-06-07

- Be transparent about the work and any products.
- Publish and publicise the outcomes.
- Make data FAIR (Findable, Accessible, Interoperable, Reusable).
- Adopt open licenses.
- Support adoption by others.

Act **Product**

Part five:

How to act? (10 mins + 5 mins)

Go through the act card group and discuss:

1. What is the most critical action for the innovation process for your chosen case study?
2. Share your thoughts. Show us the card you picked, share your thoughts behind the decision, and what actions you could take in your design project in response to your chosen card?

Wrapping up:

+

**Add your own
concern**

2023-03-16

We have gotten a taste of how to approach technology and product innovation responsibly.

However, something to consider after the tutorial: Is this card deck missing anything? What else can we do to be more responsible during the technology innovation process?

Questions?