

Target Tracking

Le 9: Ethical Aspects

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Background and Motivation

Ethics

Ethics is the practice of examining what is right and wrong, and understanding how our decisions and designs affect others. It guides us in identifying values, responsibilities, and impacts so we can make choices that are fair, responsible, and aligned with societal expectations.

Why Discuss Ethics in a Target Tracking Course?

- It is always important to reflect on the broader implications and impacts of the systems we design.
- Target tracking influences real people and environments, making potential privacy and safety impacts unavoidable.
- Technical modelling choices (data sources, uncertainty handling, failure modes) can create risks such as bias or misuse.
- Engineers in this domain must be able to justify not only performance, but also societal impact and responsible design.

References on Ethics Canvas

- W. Reijers, K. Koidl, D. Lewis, H. J. Pandit, and B. Gordijn. **Discussing ethical impacts in research and innovation: The Ethics Canvas**. In D. Kreps, C. Ess, L. Leenen, and K. Kimppa, editors, *This Changes Everything — ICT and Climate Change: What Can We Do?*, pages 299–313, Cham, 2018. Springer International Publishing. ISBN 978-3-319-99605-9.
- D. Lewis, W. Reijers, and H. Pandit. **Ethics canvas manual**. Technical report, ADAPT Centre, Trinity College Dublin & Dublin City University, 2017. URL <https://ethicscanvas.org/download/handbook.pdf>.
- The Ethics Canvas. <https://ethicscanvas.org/>. Accessed: 2026-01-25.

The Ethics Canvas: background

- Developed by researchers at the ADAPT Centre to support practical, collaborative ethical reflection in research and innovation.
- Inspired by the *Business Model Canvas*, adapting its visual, team-based structure for identifying ethical impacts early in system design.
- Created to address limits of traditional top-down ethics processes, which struggle in fast-moving fields like AI, IoT, and biometrics.
- Used in classrooms and innovation workshops to help teams map stakeholders, anticipate impacts, and improve responsible design.

The Ethics Canvas

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Ethics Canvas		Project Title:	Date:
Individuals affected Identify the types or categories of individuals affected by the product or service, such as: male/female, user/non-user, age-category, etc.	Behaviour Discuss problematic changes to individual behaviour that may be prompted by the application, e.g., differences in habits, time schedules, choice of activities, services being more individualistic or collectivistic, people behaving more or less materialistic.	What can we do? Select the four most important ethical impacts you discussed. Identify ways of solving these impacts by changing your project's product/service, or by providing recommendations for its use or spelling out more details to guide the values driving the design.	Worldviews Discuss how the general perception of somebody's role in society can be affected by the project.
Relations Discuss problematic differences in individual behaviour such as: differences in habits, time-schedules, choice of activities, etc.	Groups affected Identify the collectives or communities, e.g., groups or organisations, that can be affected by your product or service, such as environmental and religious groups, unions, professional bodies, competing organisations, government agencies, considering any interests they might have in the effects of the product or service.	Group Conflicts Discuss the impact on the relationships between the groups identified, e.g., employees and unions.	Product or Service Failure Discuss the potential negative impact of your product or service failing to operate as intended: technical or human error, financial failure, receiver dissatisfaction, security breaches, data loss, etc.
Product or Service Failure Discuss the potential negative impact of your product or service failing to operate as intended: technical or human error, financial failure, receiver dissatisfaction, security breaches, data loss, etc.	Problematic Use of Resources Discuss possible negative impacts of the consumption of resources of your project, e.g., climate impacts, primary impacts, employment impacts etc.		

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<https://bit.ly/303N0eJ>

Step 1: Identify System and Stakeholders

- Define the system or use case you are analysing.
- Identify all stakeholders: users, affected individuals, bystanders, organisations.
- Clarify goals, motivations, and who benefits or may be burdened.
- Surface early tensions or missing voices.

Step 2: Explore Impacts, Risks and Values

- Map potential positive and negative impacts of your system.
- Identify risks related to data, uncertainty, model behaviour, and possible misuse.
- Discuss relevant values: privacy, fairness, accountability, safety, inclusion.
- Consider edge cases and unintended consequences.

Step 3: Responsibilities and Mitigations

- Define your responsibilities: what you can control, influence, or must monitor.
- Propose mitigation strategies for identified risks and impacts.
- Consider how to reduce misuse or harmful applications.
- Identify next steps: tests, documentation, communication, redesign.

Ethical Canvas: Summary and Structure

Three Steps

- **Step 1: Identify relevant stakeholders**
 1. Individuals Affected
 2. Organizations/Groups Affected
- **Step 2: Identifying ethical impacts**
 3. Behavior
 4. Relations
 5. Worldviews
 6. Social Conflicts
 7. Product Service Failure
 8. Problematic Use of Resources
- **Step 3: Discussing how to address ethical impacts**
 9. What can we do?

The Ethics Canvas

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Project Title:		Date:	
1 Individuals affected	3 Behaviour	4 What can we do?	5 Worldviews
2 Groups affected	6 Relations	7 Product or Service Failure	8 Problematic Use of Resources
9 Group Conflicts			

<https://bit.ly/3030e1j>

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Group Work

Group Work

- Form groups.
- Agree on a tracking use case to discuss.
(Try find something everyone can relate to.)
- Analyze the use case using the Ethic canvas.
- Take notes and send me afterwards.
(Notes does not have to be polished!)
- Be back in time for 20 min common discussions about your findings.
- The Etics Canvas: <https://www.ethicscanvas.org/>

Summary

Summary Group Work

- What use case did you discuss?
- Highlights from the discussion?
- What surprised you?
- What values came into conflict?
- Reflections based on the other groups results?