

THE ETHICS CANVAS

Handbook

A handbook for educators, entrepreneurs, engineers and designers who are seeking to build ethically informed solutions to real-world problems –

Written by: Wessel Reijers, David Lewis, Arturo Calvo, Killian Levacher, Farnoosh Mohri.

The Ethics Canvas is an intuitive tool that helps you to:

- Brainstorm about the ethical implications of a project and represent them in a canvas
- Analyse the ethical concerns of a project and find suitable solutions
- Join the community, learn from similar use cases and share your experiences

Use-contexts of the Ethics Canvas Handbook

This handbook can be used to better understand the different aspects of the Ethics Canvas. It explains how the Canvas can be used, what the different boxes represent and it presents an Ethics Canvas use-case. Moreover, the handbook can be used as a valuable tool for organising training in ethics of Research and Innovation (R&I).

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The Ethics Canvas: the basics.

Definition of the Ethics Canvas

- The Ethics Canvas is an easy to use collaborative tool that assists in the identification, analysis and solving of ethical impacts of research and innovation projects. It is both suitable for offline use, as a paper canvas, and for online use, as an online collaborative tool.

Explanation of the Ethics Canvas

- The Ethics Canvas is a pragmatic approach to integrate ethics into R&I processes.
- Its design is embedded in established approaches, such as the Ethical Impact Assessment¹ approach and the Value Sensitive Design² approach.
- It is mainly inspired by the Business Model Canvas method, which is the most widely used method in business development to collaboratively work on designing a comprehensive business model.
- It encompasses the central, visual Ethics Canvas that is both available on print and as an online application; this Ethics Canvas handbook and a preparatory lecture design.

Central terms

- Ethical impact: An ethical impact can be both an effect of a technological application on a human being or a collective of humans as well as an impression, understood in relational terms, which is perceived as having a normative character. It is therefore not merely a consequence of the use of a technology, but rather a type of relation that is constituted between a human or a collective and a technology.
- Stakeholder: A stakeholder can both be understood as a certain type of individual (a demographic) and as a collective (group or organisation) that has a “stake” (normative concern) in the ethical impacts of a technological application. This goes beyond the utilitarian idea of “interest” because a stakeholder can have concerns for side effects of the design, production and introduction of a certain application without him- or herself being directly affected by it.
- Remedial action: A remedial action is a concrete practical interference in the R&I process in which your application is designed, which has the purpose of mitigating

The Mosaic of the Ethics Canvas

The central canvas design consists of different building blocks that are related to each other according to three central stages: setting the narrative, discussing the potential ethical impacts and discussing the remedial actions for these impacts.

¹ See Wright, D. (2011). A framework for the ethical impact assessment of information technology. *Ethics and Information Technology*, 13, 199–226.

² See Friedman, B., & Kahn, P. (2002). Value sensitive design: Theory and methods. University of Washington Technical, (December), 1–8.

Ethics Canvas		Project Title:		Date:	
Individuals Affected <i>Identify the types or categories of individuals affected by the product or service, such as men/women, user/non-user, age-category, etc.</i>	Changes in Individual Behaviour <i>Name problematic differences in individual behaviour such as differences in habits, time-schedules, choice of activities, etc.</i>	Social Conflicts <i>Capture possible social conflicts that could be caused by the project, such as labour conflicts, minority/majority conflicts, ethnic conflicts, etc.</i>	Organisation or Group Interests <i>Identify relevant ethical interests that other organisations or groups might have in your project, such as environmental, privacy, justice interests.</i>	Organisations and Groups Affected <i>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 companies and government agencies, considering any interest they might have in the effects of the product or service.</i>	
	Changes in Individual Relations <i>Name problematic changes in relations between individuals, such ways of communication, frequency of interpersonal contact etc.</i>	Resolving ethical impacts <i>Select the four most important ethical impacts you discussed. Identify ways of solving these impacts by changing your project's product/service design, organisation or by providing recommendations.</i>	Public Sphere <i>Discuss how the general perception of somebody's role in society can be affected by the project, e.g. people behaving more individualistic or collectivist, people behaving more or less materialistic.</i>		
Products and Services provided <i>Name the different types of products and services that your project will provide</i>	Impact of product or service failure <i>Capture the potential negative impact of your product or service failing to operated as intended, e.g. technical or human error, financial failure/receivership/acquisition, security breach, data loss, etc.</i>	Impact of resource consumption <i>Capture possible negative impacts of the consumption of resources of your project, e.g. climate impacts, privacy impacts, employment impacts etc.</i>	Resources needed <i>Capture the consumption of energy, raw materials, human resources, financial capital, social capital (trust, tolerance...), marketing capital (reputation, brand...), privacy and personal data needed by your product or service.</i>		

The Ethics Canvas is adapted from Alex Osterwalder's Business Model Canvas. The Business Model Canvas is designed by Business Model Foundry AG. This work is licensed under the Creative Commons Attribution-Share Alike 3.0 unported license. To view a copy of this license, visit <https://creativecommons.org/licenses/by-sa/3.0/>. To view the original Business Model Canvas, visit <https://www.businessmodelfoundry.com/canvas/>.

Figure 1: The Ethics Canvas.

1. The first stage: setting the narrative.

First, users of the Ethics Canvas are asked to stage the narrative within which their discussion of the ethical impacts takes place. This means that they need to establish which stakeholders play a role, what kind of product and services as results from the R&I process that is discussed and what resources are needed for this R&I process to function.

1.1 Individuals

- Discuss relevant types of individuals that might be affected by your application.
- These can be defined according to certain demographics, such as gender, race, ability/disability, etc.

Individuals are very important to consider when discussing the ethical impacts of your application. When considering technologies, philosophers and social scientists have argued that architectures such as bridges can have negative impacts for certain demographic groups or types of people, that data-mining algorithms can have certain biases towards such groups and that technologies can severely influence the daily life and habits of different types of users. Before you can discuss the ethical impacts of your application on the daily rhythm, the character and the behaviour of individuals, you need to know who these individuals are, to imagine yourself in the position of one of the stakeholders you discuss.

A type of individual should be considered if individuals in question are:

- Directly affected by your application (as users, as producers)
- Indirectly affected by your application (by others using, producing it)
- Disadvantaged by your application (by not having access, by being discriminated against)

1.2 Groups and Organisations

- Discuss the relevant social groups and organisations that might be affected by your application.
- These can be defined by considering certain institutions (state, company, school), and certain civil society groups (religions, activist groups, interest groups).

Groups and organisations are often important stakeholders in the consideration of ethical impacts of your application, because they often voice the opinion of a considerable number of people and are involved or try to influence decision-making processes. Governments and companies often formulate laws and guidelines to minimise negative ethical impacts, such as pollution and child labour, and civil society groups actively engage with questions of minimising such impacts. As with individuals as stakeholders, you would need to know which organisations or social groups might be affected by your application before you engage in a discussion about the ethical impacts they might have an interest in.

A type of group or organisation should be considered if:

- It is directly affected by your application (as for instance a competitor)
- Might be indirectly affected by your application (such as the state, losing or gaining taxes)
- Is directly interested in one of the activities that goes along with the production and distribution of your application (such as an environmental, social interest)

1.3 Products and Services

- Discuss the different types of relevant products and services that would be enabled by your application.

In order to know what kind of specific ethical impacts can be expected, you first need to consider which products and services would be offered when introducing it into society. For instance, would an imaging application be used for medical imaging or for body scans on the airport? Or would your data-mining tool be used to gather meta-data about scientific papers or about people's insurance details? You should make this explicit, before you can discuss the ethical impacts of the respective products and services.

1.4 Resources and people needed

- Discuss what resources are used in order to design your application and successfully introduce it into society

Some of the ethical impacts you should discuss do not result from the application(s) of your R&I project, but rather from the use of resources and the work of people in the process of coming to these applications. The consumption of natural resources, such as energy, scarce raw materials and components that are made in other countries, and of personal or social resources, such as leisure time and personal privacy, can have ethical impacts that are related to the supply chain mechanisms in which these resources are embedded. Also, the conditions of people (in-) directly working for the realisation of your application can be considered as ethical impacts.

2. *The second stage: discussing the potential ethical impacts.*

Second, once the basic elements of the narrative are in place, your group should engage in a discussion in which you should consider the ethical impacts of your application. Each of the following boxes considers a specific type of impacts that your application might have, each of which is related to the elements you identified at the earlier stage of “setting the narrative”.

2.1 Changes in behaviour

- Discuss problematic differences in behaviour such as differences in habits, time schedules, choices of activities, etc. Also, you can think of changes in character, such as someone becoming more individualistic or more social.
- Try to imagine yourself in the position of one of the types of individuals that might be affected, in order to better reason towards possible ethical impacts for each of these types of stakeholders.

One of the more direct and everyday types of ethical impacts is change in behaviour. These impacts often go unnoticed, but can nonetheless have great impacts on the life of a specific stakeholder. Some stakeholders are therefore already explicitly protected (consider for instance the ban on alcohol for people younger than a certain age). It is argued for instance that people using social media become more forgetful and spend less time on other activities because of extensive social media use. In popular culture, the effects of technological applications on behaviour are often made very explicit, by naming phenomena such as “Glassholes” (about Google glass users) and “Tinder date” (a date arranged through the Tinder platform which entails a specific set of online behaviours).

2.2 Changes in relationships

- Discuss problematic changes in relations between people, such as ways of communication, frequency of interpersonal contact, types of friendship, etc.
- Also, you can think of differences in relations because of a change in authority-relations (for instance, a manager having more power because he has access to your personal data).

Changes in relationships between people constitute a second type of ethical impacts that often go unnoticed but can be very important in everyday life. Consider for example the way in which the microwave has influenced the character of the modern

family by abolishing the traditional family dinner, or the way in which the anti-conception pill has influenced sexual relationships between men and women and also between people of the same sex. You can also consider the way in which technologies influence the relation between people in a position of authority and people in a position of lesser authority. Quantified-self technologies, for instance, can have ethical impacts on the work floor because your boss might want you to change your personal habits in order to raise your productivity.

2.3 Group interests

- Discuss relevant ethical interests that other groups might have in your project; such as environmental, privacy, justice interests.
- These interests are often related to certain activities that you need to engage in to develop your application, such as using resources, and to certain aspects of the design of your application.

Some ethical impacts don't occur on the level of individuals, but rather on the level of society as a whole. For instance, whenever pollution happens because of an R&I process, an entire society can be affected by it. Also, whenever a technology design does not guarantee the privacy of its users, society as a whole might be affected (consider for instance the Yahoo! data leaks). Consider therefore ethical impacts that might not only impact specific types of individuals, but society at large.

2.4 Public Sphere

- Discuss how the general perception of somebody's role in society can be affected by the project, e.g. people behaving more individualistic or collectivist, people behaving more or less materialistic.

Some ethical impacts don't have a material form, but can be characterised by describing a change in culture, or in the public sphere. For instance, it is argued that online commerce services such as Amazon and E-Bay have made people more materialistic. Some of these changes are very obvious, such as addictions. It is for example that certain computer games are designed to make people addicted. Consider therefore ethical impacts that are not tangible, but can rather be described as changes in culture or collective patterns of behaviour.

2.5 Product or service failure

- Discuss negative impacts of failure of your products or services such as technical failure, human failure, etc.

Most ethical impacts you have considered are related to your application when it functions properly. However, what kind of ethical impacts can be expected when your product or service fails? For some technologies, such as nuclear power plants and online payment systems, failure can have disastrous impacts. For other technologies, failure can lead to more subtle effects but might still be quite problematic. Consider for instance the failure of translation software to translate an important medical protocol from one language to another.

2.6 Use of resources

- Discuss the negative impacts of the consumption of resources of your project, e.g. climate impacts, privacy impacts, employment impacts.

Applications that are developed in R&I projects invariably need investments of resources to be designed, produced and introduced into society. The use of these resources can have ethical impacts, for instance the use of energy, which contributes to the overall problem of climate change, or the use of rare metals that could contribute to the exploitation of workers in third world countries. Responsible use of resources is central to the ethical development of applications, and therefore it is crucial to first consider what kinds of ethical impacts could result from the use of resources of your project.

2.7 Social conflicts

- Discuss possible social conflicts that could be caused by the project, such as labour conflicts, minority conflicts etc.

Some ethical impacts arise because different social groups or organisations are getting into conflict with one-another because of the introduction of a new technology. For instance, the introduction of the Uber application has caused a conflict between the labour unions of Taxi drivers and the Uber Company. Also, the introduction of surveillance drones by police forces has caused a conflict between national police organisations and privacy organisations. Consider therefore what kind of social conflicts could possibly arise because of the introduction of your application.

3. The third stage: discussing remedial actions.

Third, once you have “mapped” all the ethical impacts of your application, you can start thinking about ways in which the negative ethical impacts might be mitigated. You can think about what your team could do, for instance by considering changes in the design of your application or in the organisation of your business plan. Also, you can think about what society as a whole could do, for instance by proposing new policies.

3.1 Resolving ethical impacts

- Select the four most important ethical impacts you discussed. Discuss ways of solving these impacts by changing your project’s product/service design, organisation or by providing recommendations.

Arguably, engaging in ethical reflection is only effective when this reflection eventually leads to remedial actions: changes in technology design, organisation or policies that help mitigating the negative ethical impacts of your application. Consider therefore what changes in design, strategy and direction could mitigate the most important ethical impacts you collaboratively described.