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MANUAL for a CO-CREATION PROGRAMME

Research version:

Exploring the applicability and viability of a new innovation, and giving direction to research to increase impact

A co-creation programme for meaningful stakeholder involvement

To give directions to the development, regulation and implementation of new technologies

Innovations like new technologies can be disruptive and have a whole range of consequences, negative (risks) as well as positive (benefits), or neutral changes. They can change the world in ways that are sometimes hard to predict, but especially negative consequences must be anticipated and mitigated as much as possible.

The development, implementation and regulation of new technologies, including a broad assessment of the consequences, thus needs an inclusive process that involves all relevant stakeholders – ranging from those responsible for regulation, production and implementation as well as those expected to make use of the results and those speaking for the effects on environment or social structures.

This inclusive approach has taken the form of a co-creation programme, and can enable policy makers, researchers and industries to make legislative and application-oriented choices that are relevant, feasible and acceptable for the majority of those involved.

Its main objectives are to pinpoint the hurdles and cues for acceptance and uptake, and find solutions with regulatory interventions, communication strategies, targeted financing of research, practical developments and guidelines, conditions for implementation, etc.

CO-CREATION PROGRAMME IN FOUR PHASES

1. Explore

- ✖ Map consequences and alternatives
- ✖ Map stakeholders
- ✖ Evaluate consequences per stakeholder

2. Involve

- ✖ Prioritise stakeholders for involvement
- ✖ Involvement strategy
- ✖ Roll-out

3. Assess

- ✖ Identify hurdles, cues & potential
- ✖ Validate
- ✖ Prioritise

4. Co-design

- ✖ Find solutions, improvements & mitigation strategies
- ✖ Validate

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Toolbox added to the manual

The manual describes the different steps in more detail and indicates what results to expect in each step. It also highlights the key points for each step, as well as tips and tricks for each step. Accompanied with the manual you can also find a toolbox, which contains more practical tools and step-by-step walkthroughs of certain parts of the programme.

The toolbox contains:

1. Explore

2. Involve

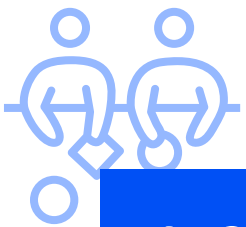
Consequences mapping tool

Stakeholder mapping tool

Co-creation toolbox

Communication & recruitment toolbox

3. Assess



4. Co-design

Co-design toolbox

Exploring the applicability and viability of a new innovation, and giving direction to research to increase impact

In a research context, the programme can be used to:

- ✖ Explore the applicability and viability of a new innovation (technologies, methods, processes, compounds, …): Putting the innovation in a broader context and exploring the real-world barriers to implementation and uptake.
- ✖ Give direction to research to increase impact: Setting and finetuning the research questions, challenging the relevance and ensuring to focus on the true needs of the market and/or end users.

This application of the programme is mostly aimed at academic researchers, however it can also be applied in explorative research in an industry environment.

Expected outcomes

- ✖ A clearer view of the context and the added value of the research
- ✖ A better understanding of the real-world implications, needs and practical barriers for implementation
- ✖ A more systemic outlook on the role of the research / innovation in addressing challenges

Important notes

- ✖ The programme is especially useful for research with a clear objective for use in the real world. Very fundamental research, aimed primarily at understanding a process, is out of scope, as user engagement is not essential in this phase.
- ✖ On the other hand, do not wait until you have (a validated) proof of concept. It is perfectly feasible to engage with only an idea to show for, even with citizens (consumers) or farmers.

Main pitfalls and attention points

- ✖ Objectivity: Challenging your research can be confrontational, and remaining objective in this context can be very difficult, especially when it is a topic that you already devoted many years to. Involve a neutral external party that can openly and objectively capture and convey the message.
- ✖ Openness and flexibility: In research projects, especially related to funding objectives, it may be difficult to switch course and change your research plan based on the results of the stakeholder interactions.
- ✖ Budget restrictions: Because this is not the expertise or main focus point of most researchers in technical and exact scientific fields, the time and budget allocated for stakeholder interactions is often underestimated or even non-existent. Make sure stakeholder interactions are part of your research plan and foresee the budget needed to do it properly.
- ✖ Access to stakeholders: Many stakeholder groups are not part of the researchers' usual network, and engaging a diverse and representative sample may prove difficult. Collaborate or contract networks and partners that have sufficient access to these stakeholder groups.

Before starting

Before launching the trajectory of the programme, the organising team should confirm five things:

Case
What research, innovation or implementation challenge is being discussed?

Room for influence
What can still change as a result of the trajectory, and what is already fixed?

Ownership
Who is responsible for organising the trajectory, synthesising the results, and converting them into action?

Central question
What must the trajectory help decide, improve, validate, or redesign?

Decision context
Who will use the results afterwards and for which decision or next step?

Without these elements, stakeholder engagement risks producing interesting conversations but not usable results.

The concrete output of this start-up step is a short case brief, an agreed trajectory objective, and a named owner for follow-up.

Note about time and budget requirements

- ✖ Not every case needs a full-scale programme.
- ✖ The different steps in the programme can be executed on several scales. The extent of each step (for example the number of interactions) can be determined by the available budget and time.
- ✖ For smaller or earlier-stage questions, a lighter route can still be useful if it remains disciplined.

Warning

This step is important to reassure that the purpose of the engagement is to listen and act upon the findings. Real engagement requires openness towards change in the initial plan.

1. Explore

1.1 Mapping consequences & alternatives

What to map:

- ✖ Consequences of (large-scale) implementation of the innovation

POSITIVE Consequences (benefits)	NEGATIVE Consequences (risks)
NEUTRAL Consequences (changes)	POTENTIAL Alternative applications

- ✖ Different dimensions
  - Effects on safety for health, environment and sustainability
  - Socio-economic effects
  - Direct and indirect effects
  - Short-term and long-term effects

Why mapping consequences?

- ✖ The potential benefits, as well as the potential risks of an innovation are an important driver of uptake and implementation.
- ✖ Mapping the risks and benefits against those of other solutions gives important information on the viability and relevance of your research in the real world.

How to map?

Consequences mapping tool

Compare

- IMPLEMENTATION of the innovation
- NO IMPLEMENTATION of the innovation (original)
- ALTERNATIVE SOLUTION(S)

Attention point

Mapping alternatives is especially relevant in a research context, but the outcome can seriously challenge the relevance of your research. Be prepared to change course if necessary.

Tip

Apart from information found in literature, consulting or brainstorming with peers within and outside your research field might reveal interesting insights about the implications your innovation could have, as well as potential alternative applications.

Result

- ✖ The different types of effects of implementation; positive, negative and neutral effects
- ✖ The current and alternative ways to solve the same problem
- ✖ Potential alternative applications for the innovation

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The toolbox contains:

1. Explore

1.2 Mapping stakeholders and their influence

Initial mapping from the quintuple helix (5H)

Who to consider:

Start from the quintuple helix, and consider for each category:

- ✖ Stakeholders targeted (potential users and beneficiaries)
- ✖ Stakeholders indirectly or unintentionally affected
- ✖ Stakeholders that can 'make or break' the innovation

Mapping and evaluating INFLUENCE of the stakeholders

Aspects of influence to discuss:

POSITIVE Influence (push)

NEGATIVE influence (set back)

Influence on each other

Evaluate: **Degree of influence** (1-5)

How to map & evaluate?

Stakeholder mapping tool

Tips & tricks

- ✖ Most stakeholder mappings also focus on interest of the group. In this context, interest is not a crucial dimension but is part of the 'influence' dimension. Consider this 'interest' aspect when evaluating the degree of influence.
- ✖ Include external parties (preferably linked to the different categories in the 5H) in this exercise to get multiple perspectives, and a more complete view on who your stakeholders are.

Result

- ✖ An overview of the stakeholders involved, targeted, unintentionally affected and potentially benefitting from the innovation
- ✖ The level and type of influence they have on your innovation

1. Explore

1.3 Evaluation of consequences per stakeholder

Analysis and matching with the consequences mapping

Stakeholder list ← **Consequences list**

Evaluating the AFFECT of the stakeholders

POSITIVELY Affected (benefits)	**NEGATIVELY Affected (risks)**
Degree of benefit (1-5)	**Degree of risk** (1-5)

How to map & evaluate?

Stakeholder mapping tool

Attention point

The consequences mapping does not attribute weights to each individual risk or benefit. Since the objective of this exercise is not making a risk-benefit assessment, but pinpointing the most crucial stakeholders for engagement, a rough estimate is sufficient. This estimate can be based on the amount of different risks for the stakeholder, and an estimate of the importance of these risks.

Tips & tricks

- ✖ Use the template from the stakeholder mapping tool to collect all the information per stakeholder.
- ✖ Not every stakeholder needs the whole process, some stakeholders can be eliminated early on when relation to the innovation is neutral and of little influence.

Result

- ✖ The (expected) effect of implementation of your innovation on different stakeholders

2. Involve

2.1 Prioritise stakeholders for engagement

Who to engage?

Prioritisation based on:

- **Degree of risk** (1-5)
- **Degree of benefit** (1-5)
- **Degree of influence** (1-5)

Enabling prioritisation:

Prioritise:
1. **High risk + benefit**
2. **High influence**

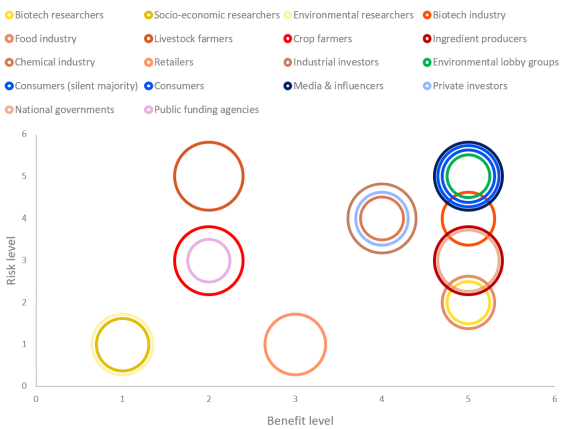
How to prioritise?

Stakeholder mapping tool

With calculation

Stakeholder	Benefits	Risks	Influence	R+I	B+R+I
Environmental researchers	1	1	4	5	6
Biotech industry	5	4	3	7	12
Food industry	5	2	3	5	10
Livestock farmers	2	5	5	10	12
Crop farmers	2	3	5	8	10
Ingredient producers	5	3	5	8	13
Chemical industry	4	4	2	6	10
Retailers	3	1	4	5	8
Industrial investors	4	4	5	9	13
Environmental lobby groups	5	5	2	7	12
Consumers	5	5	4	9	14
Media & influencers	5	5	5	10	15
Private investors	4	4	3	7	11
EU government	5	3	5	8	13
Public funding agencies	2	3	2	5	7

Visually



Attention point

The stakeholders identified as most crucial for engagement are often not part of your 'usual' network and may be hard to reach and engage. Yet it is important to focus on those most relevant for engagement, and not resort to those easiest to engage.

Tip

Include external expertise or channels to reach the intended stakeholders.

Result

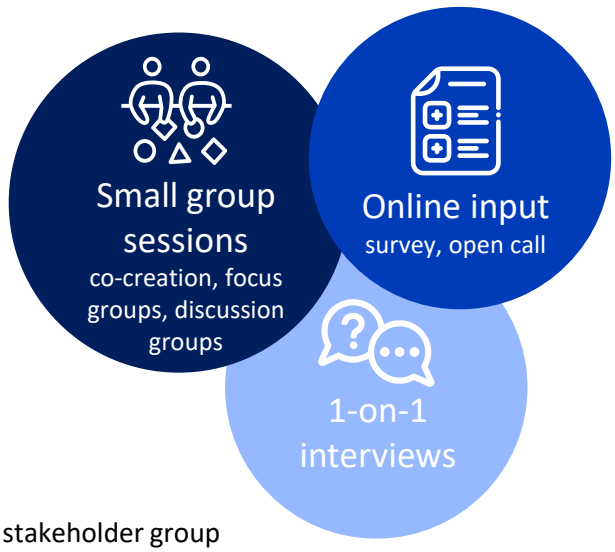
- ✖ An overview of how stakeholders are affected and how important they are for the adoption and implementation of the innovation
- ✖ A priority list of stakeholders most relevant for engagement

2. Involve

2.2 Set up involvement strategy

How to engage?

In this phase, stakeholders are best engaged separately, as each group may require a different approach and communication strategy.



Mode of interaction

Mode of interaction is dependent on:

- ✖ The size and diversity of the stakeholder group
- ✖ Personal opinion versus professional stance
- ✖ Time and budget available
- ✖ Competition dynamics between members of the stakeholder group

Mode of interaction	Best used when	Attention points
Small group sessions: • **Co-creation sessions** • **Focus groups** • **Discussion groups**	• Participants are free to state personal opinions. • A constructive dialogue and discussion are possible, i.e. there is no competition between participants or their mutual challenges are bigger than competition effects. • The stakeholder is large and diverse, with many differences in backgrounds and opinions.	• Different and relevant profiles are present in a well-balanced group. • Ensure that everybody's voice is heard. • Create a comfortable and safe environment that ensures honest feedback. • The goal is to listen and capture different opinions, not convince.
One-on-one interactions (in-depth interviews)	• Participants speak from an official point of view, as representatives for an organisation. • Certain personalities are hard to engage in constructive dialogue (not respecting of others' opinions). • Competition and confidentiality issues between participants may hinder openness.	• These stakeholders have potentially high impact on the perception of consumers/society. • The goal is to listen, not discuss. • Pay attention to framing and expectation management.
Online input: • **Quantitative surveys** • **Open calls**	• The stakeholder is large and diverse, and has many differences in backgrounds and opinions. • There is limited budget for physical interactions.	• Target group (input providers)may not be sufficiently large, representative or diverse. • Use non-steering formulation of questions (surveys).

2. Involve

2.2 Set up involvement strategy

How to engage the right persons?

Profiling & recruitment

How you approach your recruitment (targeted versus untargeted) has a great influence on the profiles that participate in interactions.

	Pros	Cons
Open call (untargeted)	• Unlimited input • Non-discriminating	• Large self-selection bias • Missing out on hard to reach voices
Closed invitations (targeted)	• Representation of population • Also targets hard to reach voices	• Not everyone is invited • Might be difficult to engage targeted groups

Profiles to consider within stakeholder groups, proportional to the composition of the group:

- ✖ Age, gender and cultural diversity
- ✖ Various educational backgrounds (scientific & technological literacy)
- ✖ Openness towards new innovations and technologies

How to communicate & recruit?

Communication & recruitment toolbox

Tips

- ✖ Involve external party with access to the stakeholder groups, a neutral position and a critical eye.
- ✖ If you do not have expertise in non-expert (layman's) communication and co-creation, get external guidance.

Attention points

- ✖ Objectivity needs to be safeguarded.
- ✖ In this phase it is not advised to mix stakeholder groups.
- ✖ Outline the power the stakeholders have in the engagement process in order to manage expectations correctly.

Result

- ✖ A strategy for involving each stakeholder group:
  - Who should be involved
  - How should they be involved

2. Involve

2.3 Roll-out involvement process

Setting up the central questions

1. What is your general perception of the innovation and the specific case?
2. What is the potential (direct and indirect) impact of the technology (innovation), both in general and on you specifically? Positive (benefits) / Negative (risks) / Neutral (changes)
3. What are alternative ways to solve the same problem, and how do the risks and benefits compare?
4. Are the proposed mitigation measures adequate? Are there conditions to become more acceptable?
5. What types of communication would work for you? What type of messages, wordings or narratives and through which channels?

Setting up the sessions

Ideal group size:
8-15 participants.

The setup decides the reliability of answers:

- ✖ Indirect questioning and exercises
- ✖ Contextualisation: make concepts as 'tangible' as possible with examples, demonstration materials, real-world applications, …
- ✖ Stepwise approach

Your communication approach during the session influences input:

- ✖ Use layman's terms to make sure everyone understands what is being discussed.
- ✖ Focus on 'why?'.
- ✖ Be as neutral as possible: the goal is to listen, not to convince.

Setting up flow and exercises?

Co-creation toolbox

Timeline

A streamlined process for a co-creation session should take about 6-8 weeks. Participants need to be invited 4-8 weeks prior to the session.

Attention points

- ✖ Interactions may be confrontational: an outside moderator can safeguard objectivity and act as a buffer.
- ✖ Avoid common biases and factors interfering with openness, such as peer pressure or politeness answers, judgement or intimidation through your set-up.

Tips & tricks

- ✖ A relaxed atmosphere supports honest input.
- ✖ Serve food and drinks for a welcoming environment.

Result

- ✖ Outcomes of the interactions with each stakeholder group

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3. Assess

3.1 Identify hurdles, cues & potential

Analysis: qualitative versus quantitative	
Qualitative	Coding and clustering List recurrent themes and ideas No quantification
Quantitative	Statistical analysis Clustering of open answers Correct for representativeness of the population

Hurdles

- ✖ Risk factors, negative consequences or unwanted side effects, including indirect & socio-economic effects
- ✖ Acceptance issues
- ✖ Bottlenecks, loopholes & counterproductive elements
- ✖ Negative perceptions and associations (in wordings and narratives)

Cues

Elements that could overcome the hurdles:

- ✖ Trade-offs
- ✖ Requirements for viability and conditions for acceptance
- ✖ Concrete needs linked to specific application areas
- ✖ Solutions and mitigation strategies for hurdles
- ✖ Positive perceptions and associations (in wordings and narratives)

Potential

- ✖ Opportunities and benefits for different application areas

Attention points

- ✖ The group is optimized to represent maximum diversity, but is not representative for your population.
- ✖ Do not attempt to quantify the data, even though it is tempting to do so. Clear (quantitative) tendencies should be interpreted as an indication that needs to be validated quantitatively, not as facts.
- ✖ Analysis of qualitative data is prone to bias: Be vigilant of your own opinions and biases, and do not to let them interfere with the analysis.
- ✖ Consider the implications and limitations of your set-up (see also in co-creation toolbox).

Tips & tricks

- ✖ Let at least two people analyse the data, and use AI as external validation.
- ✖ AI can support clustering and identification of recurring themes, but should never be the sole analysis tool.
- ✖ There is more data than what is being said, written or drawn:
  - Things not being said
  - The way things were said
  - Facial expressions, physical behaviour and body language.

Result

- ✖ A list of hurdles that could hinder the uptake and success of your innovation, and cues that could form the basis of implementation and communication strategies to overcome them
- ✖ Potential alternative applications or positionings for your innovation

3. Assess

3.2 Validate hurdles & Prioritise

Validation is essential to verify the data from the assess phase, which is based on qualitative data and cannot be quantified

Validate with:

- New surveys: They can validate the qualitative findings and allow for quantification (how many people have a certain perception or opinion?).
- Results from similar research: Previous findings can either validate or contradict current findings. If contradictions occur, pinpoint the differences that may cause these contradictions.

Prioritise:

- What can be tackled now, and which elements need further investigation or evidence?
- Focus on hurdles that can be resolved with (your) research.
- Which hurdles and findings could become part of your research question?

Attention points

- A literature search can provide information on similar research, but can be outdated or give different results due to cultural differences or slight nuances in the case.
- The target group needs to be relevant and representative.
- Keep in mind there is are significant biases in surveys.

Tips & tricks for validation with surveys

- There are plenty of market research companies with access to large pools of consumers with a diversity of profiles for surveys, who can also provide support in the set-up of these surveys.
- For validation with other stakeholders than consumers, such as farmers and industry, collaborate with clusters and representative organisation to collect sufficient data.
- Open-ended questions give better information on spontaneous thoughts and priorities than closed questions, and are now easy to process with AI.

Result

- Validated and quantified results
- Most important hurdles and cues (with the most potential impact)

4. Co-design

In a research context, phase 1-3 are the most important to add onto your trajectory. After the third phase, you can move on to the research workplan, which will now be more focused on dealing with the identified hurdles or further exploring the pathways with the most potential.

The Co-design phase becomes in this regard redundant, although further stakeholder interactions are encouraged to ensure the results are relevant and usable.

In case co-design sessions are considered, consult the toolbox for ideas on the approach.

Setting up co-design sessions?

Co-design toolbox

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