

Digital Health in the Circular Economy

Training Course for the Design of Motivational Strategies for a Circular Economy

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Introduction

Dear trainee and fellow interested in a circular economy,

This training course you are about to follow is the result of a beautiful journey called DiCE, Digital Health in the Circular Economy. In this project we designed motivational strategies, with the objective to nudge people to contribute to the circularity process of medical digital/electronic waste (e-waste).

For a contribution to circularity one key element is the return of products. That's why the focus is on motivational strategies to influence the return rate of products; don't break the cycle, which requires a change in behaviour. We, your travel companions on this journey, are proudly sharing our insights, our mistakes and our magic tricks in order to help you with your own adventures.

Our DiCE journey began with the expectation that well designed motivational strategies will engage people in planetary health. The focus of DiCE is on medical e-waste. However, the process of designing motivational strategies may be applied to other sectors as well. Nudges, further also referred to as motivational strategies, could help us improve circularity processes across 4 key aspects:

1. Creating awareness at citizens about the relevance of a more circular economy.
2. Engaging citizens, manufacturers, suppliers and users in the circular economy.
3. Supporting manufacturers in their objectives to reduce the carbon footprint and use of valuable resources by product design.
4. Adjusting regulations and procedures

Within the scope of our project, we were lucky to team up with citizens, hospitals, universities, healthcare networks, manufacturers and SMEs.

We started from scratch by generating ideas in our Sustain-a-thons (Hack-a-thons), then developed prototypes of motivational strategies in an iterative co-creation process and eventually tested the motivational strategies in practice.

This training is however not about these ideas, prototypes or products. It's about the way of working, how to organise a design process, what you can learn, use, implement and experience.

Simply, the training is based on our experiences and the theories applied in the design process of motivational strategies. If you are about to design your own motivational strategies it will be useful. We hope that, as you get along, you get inspired and will be successful in the design of motivational strategies.

Once successful completed this training you can be proud and you will receive a certificate.

We wish you and your team courage and success.

René Luigies

Games for Health

Project manager for GFH in the DiCE Project

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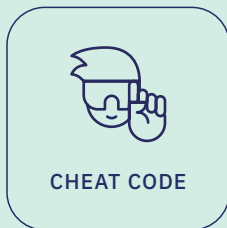
Icons and terms used in this training course

Icons and terms used in this training course

During the training you will find three different icons. These are particular points of interest to make you aware of highlights of extra relevance for your design process. Below an explanation of the meaning of these icons.



Handy tips to help you and your teams get the most out of the design process.



Recaps of key information, plus pointers to relevant sections for revisiting earlier topics.



Highlighting make-or-break moments to guide your Design Process of Motivational Strategies to success.



Terms used in this training course

Below an explanation of the meaning of several of the most important terms used in the training.

Stakeholders

Everybody you and your various teams get into contact with both during and after your design process. Stakeholders vary in importance and influence, but it is important to be aware of who they are. A special section is dedicated to the stakeholder selection. (Determining the Stakeholders and Project Partners)

Project Partners

Organisations that will collaborate to set up your design project and organise the Sustain-a-thons, Co-Creation sessions and Testing Procedures.

Core team members

The people in your various teams who join Sustain-a-thons for the purpose of working on their concepts for the duration of the design process and beyond.

Participants

People that join Sustain-a-thons, Co-Creation Sessions and other parts of the design process to provide your core team members with knowledge and support. They will most likely not join the project for its full duration.

Beyond the training course

Who knows what the world will look like in 3 to 5 years? There's no doubt that planetary health will still be a concern for all humans living on this planet. While new regulations and legislation will come into force, human behaviour will remain one of the main factors to achieve the desired effects.

An adaptation of behaviour of consumers, designers, suppliers, and also of policy makers, regulatory bodies or other influential parties is needed to ensure that objectives for a circular economy will be achieved. With the saying "you can bring a horse to the water, but you cannot force it to drink", motivations to change behaviour have to be developed to make the "horse drink".

Once the proven effective motivational strategies are developed with the support of this training course comes the beyond; implementation and scaling up. Without doubt, with the right solutions this will be successful.

Nevertheless, with this training course, we aim to accelerate progress, making crucial breakthroughs in the circularity process. Since this training course is based on human behaviour in general it is for the benefit of future generations, customers, manufacturers, government bodies, legislators and suppliers in any sectors.

1. Planning the overall project

1.1. The role of gamification in motivational strategies

Before we dive into the specifics of the training course, we want to take a look at the role of gamification in the design of motivational strategies.

Gamification refers to the use of game design elements in non-game contexts to influence behaviour, increase engagement, and support learning or performance outcomes. The instinct to play is built into human beings' DNA. In the design of motivational strategies, gamification has become an important approach because it leverages psychological mechanisms that encourage sustained participation, goal pursuit, and behavioural change.

One of the most influential theoretical frameworks for understanding motivation in gamification is the concept of intrinsic and extrinsic motivation. According to the theory developed by Edward L. Deci and Richard M. Ryan, individuals are intrinsically motivated when activities satisfy three fundamental psychological needs: Competence, Autonomy, and Relatedness (CAR). Well-designed gamification systems can address these needs by allowing users to make choices, providing feedback on progress, and fostering social interaction. However, excessive reliance on external rewards such as points or badges may undermine intrinsic motivation if users begin to focus solely on obtaining rewards rather than enjoying the activity itself.

Game mechanisms can enhance motivation by providing immediate feedback, making achievements

visible, and creating a sense of accomplishment or social engagement. Collaborative challenges and social recognition may be effective.

Motivational strategies based on gamification are widely used in education, workplace training, health promotion, and customer engagement. A great example is Pokémon Go, the motivation to catch monsters stimulates people to more exercise. In educational settings, gamification has been associated with increased student participation, persistence, and enjoyment of learning activities. In organisational contexts, gamified systems can encourage employees to complete training modules, achieve performance targets, and participate in knowledge-sharing initiatives. Health applications frequently use gamification to promote physical activity, medication adherence, and healthy lifestyle choices.

Researchers emphasize that the effectiveness of gamification depends largely on its design. Successful gamification requires alignment between game elements, user characteristics, and desired behavioural outcomes. Different users respond differently to motivational cues, making personalisation an important consideration. Furthermore, gamification should support meaningful goals and experiences rather than merely adding superficial rewards to existing activities.

1.2. Formulating your overall project goal

For your project's overall goal, to improve circularity processes across key aspects, you have to formulate several sub-goals. Before to define the desired change in behaviour of your customers you have to identify those who are relevant for the overall goal, the stakeholder analysis. In order to change behaviour it is essential to define **What** their **current behaviour** is related to circularity processes. For effective motivational strategies customers have to become aware of the relevance of your overall goal and **Why** customers would change their behaviour in order to contribute to circularity.

Once the Why's are being collected, these have to be categorised, since you cannot address all why's. Based on the categorised Why's the final aspect to be addressed is **How** the desired change in behaviour can be achieved; the to be designed motivational strategies.

Here the CAR model is of support. All of the above are sub-goals in your project. For each you may use techniques of play to make it more fun for all stakeholders to contribute and to stay on board. Play will also create more open minds and result in less biased results.

So, we've really racked up the experience points, also known as XP. You'll find handy tips to boost yours throughout this training course! We've found that a co-creative process that involves all the relevant stakeholders is key to designing motivational strategies.

In the next sections we will go more into depth of the steps to be taken.



1.3. The stages of your overall project

The overall project can be divided into several stages. In the DiCE project we identified 13 stages from “Start to Finish”. Figure 1 presents a listing of all stages. Each stage with individual requirements. At the start of the project it is relevant to define the stages and to prepare a Gantt chart based on the defined stages. By doing this all participants can allocate the required time in their calendars to avoid surprises and delays due to shortage in allocated time.

Since allocated time usually is associated with (personnel) cost, defining the stages supports you to

prepare an overall budget for the project. So, it also is relevant to make your best estimate for the time needed per stage.

Below you will find per stage a brief description and indications for the time per stage. Note that this is not fixed, it might differ in your project.

Figure 1. The 13 stages of designing your nudging design project.

1. Internal Preparation
2. Preparing Ethical Approval
3. Planning & Hosting the Hackathon
4. Collecting & Analysing data from all the Hackathons
5. Design a first range of multiple nudges
6. Organize first scrum and sprint sessions
7. Design a second range of a limited number of nudges
8. Organize second scrum and sprint sessions
9. Design the nudges for the small-scale pilots
10. Prepare the small-scale pilots
11. Analyse results of the small-scale pilots
12. Prepare the confirmatory pilots
13. Analyse results of the confirmatory pilots



Be sure to play close attention to the Critical Hits we've included in the stages below. These point out actual and potential pitfalls that we encountered in the design process, so that you can effectively avoid them.



1.3.1. Stage 1: Internal preparation

Within your organisation it is essential to select who will become member of the project team. Assure that all members have the skills, knowledge and commitment to contribute to the project. You may even consider to temporary hire additional members with skills and knowledge which you are missing. Skills and knowledge have to be in line with the project goals.

All members come together to discuss themes to be addressed in developing motivational strategies for a circular economy. Themes may be relevant for the to be designed motivational strategy. What are possible overarching themes?

Overarching Themes	Examples of components
Economic Motivation	Financial benefits, competitive advantage, resource efficiency
Psychological & Social Motivation	Values, attitudes, social norms, recognition, identity
Organisational Motivation	Leadership, culture, employee engagement, innovation
Institutional Motivation	Policies, regulations, partnerships, governance

More detailed themes are listed in ANNEX I: Themes for motivational strategies.

During the team meeting(s) the set up of the Hackathons has to be agreed on between all team members. Setting this up means that you have to decide on:

- Team roles and responsibilities
- Methodology to be applied (see also preparing the process)
- Materials to be used (post- its / pens / Miro board / flipcharts / etc.)

- Make sure you have a check list of all materials, like in ANNEX IX.
- Define who will be listeners during the Hackathon and will prepare the report.

An internal rehearsal with external experts assures all is well prepared and tested. This allows you to test the composition of your team, whether the selected theme fits the goals, the methodology applied during the Hackathons, identify potential shortcomings and collect feedback from the experts.



It's vital to define the project themes clearly during this stage, as this will help you to select the best-suited team members further down the line.

For designing motivational strategies for circularity, stakeholders with specific knowledge and expertise need to be included in each team.

Make sure you have a complete check list of all materials needed. Nothing is as distracting if you miss materials during the sessions.

1.3.2. Stage 2: Preparing ethical approval

Since you may use citizens as participants for your Hackathons and possibly for interviews you have to check if ethical approval is required. Regulations and organisations to apply may differ from countries where your (research) project runs. It is essential that you thoroughly investigate the need of ethical approval.

In the situation where you have to apply for ethical approval you have to prepare a research protocol and consent forms. Considering the fact that it will take

considerable time to prepare this you should start early in the project. The involvement of your project partners is also very relevant. They can support you with reading and revising the protocol.

Don't think that it is an easy job. Experience learns that just submitting the request for ethical approval is not it. In most cases the ethical committee will return the submission with questions. Take into account that the whole procedure for ethical approval may take six months or longer.



Check at the start of the project if ethical approval is required.

If yes, prepare the protocol for the Hackathons and possibly interviews in due time.

Get aligned with your team about the protocol and the approval submission.

Consider the long time ethical approval requires.

1.3.3. Stage 3: Planning and hosting the Hackathon

Each Hackathon lasts one or at most two days. The participants are based on the stakeholder selection, experts and your own team. All participants are divided over teams from the participants present. Assure that there is an equal balance of the type of participants per team.

After the teams have been set, they work through the various sessions of the Hackathon.

For hosting assure that you have a location which can be reached easily by all participants. The room

should be large enough for all participants. In the case you need to split up into teams, preferably arrange separate rooms or that there is enough space to put tables apart at a distance. Further the room should be equipped with a large (computer) screen to share slides or the Miro board. To be preferred is also at least one wall to stick Post-its on or attach the flipcharts with notes.

It seems odd to mention, but please ensure that catering for drinks and light food or snacks is well arranged.



Ensure all team members know they need to be present for the full duration of the Hackathon, rather than having team members switch in and out.

Make sure you've scheduled in enough time for Stage 2: Moonshot Thinking, as it's vital that every team achieves a clearly defined result from this Stage.



1.3.4. Stage 4: Collecting & analysing data from all the Hackathons

As mentioned before adding a listener to the team will assure that during the Hackathon control is taken over the collection of the data. The role of the listener is amongst others to:

- Take notes of remarkable mentions of the participants
- Alert the Hackathon leader for participants who do not actively participate in the discussions. Some people are dominant, others shy and reluctant to speak up
- Collect all notes / Post-its or other materials in the correct order
- Keep the time control over the Hackathon.

Although in some occasions it is not possible, the ideal solution for collecting information is to record the full Hackathon. This enables you to check on peculiar statements later on during the analysis.

Another recommendation is to take photos of all written materials. For example for Post-its there is

an app which help you in organizing the collected information (www.post-it.com) or share it on Trello, Miro or synchronize it across devices.

Once the teams have completed the Hackathon, you should at the end take some time for all participants to summarise and reflect on the process. This offers the added value to collect general feelings which may support the analysis.

You may collect a large amount of information, for example hundreds of reasons/motivations for returning products. Through open and focused coding using the Grounded Theory approach (Charmaz, K., 2014) you can analyse the data. (5.9.1. Constructing Grounded Theory). The constructing grounded theory is a major research method in qualitative research internationally and across many disciplines and professions (Delve, Ho & Limpaecher, 2021). Following the analysis of the data you have to prepare a report to be used for next steps.



Assure you have a system in place to collect all data gathered at the Hackathons.

Make a person in your team responsible for the collection of data.

Schedule sufficient time for the analysis of the data and the report.

In ANNEX II: Examples of reasons / motivations collected in the DiCE project you will find examples of reasons / motivations collected in the DiCE project.

1.3.5. Stage 5: Design a first range of multiple nudges

This is an entirely internal process with the complete and carefully selected team. The main aim is to develop a range of prototypes for the motivational strategies. At first the creative and design experts prepare rough sketches of the prototypes. These can be simple drawings on paper, the basis for internal scrums with the complete team. (6.3. Scrum in the design process). The prototypes don't need to be a near-ready product, as modifications that need to be made are likely to become obvious during later stages.

Most relevant is that all members of the team participate in the scrum sessions. So you will avoid later discussions about the design. Everyone has an opinion. Missing a person's opinion may cause confusion within the team. Appropriate planning in advance is essential, considering the workload of the team members.



Make sure that each team member is aware of the clear definition of what's expected from their prototype.

Make sure that all team members are involved in the scrums will take at least half a day per session. At the end of the scrums all the teams' prototypes should be at a similar level of preparation.

1.3.6. Stage 6: Organize first scrum and sprint sessions

As you now have a range of prototypes in simple drawings on paper you must gather feedback from the customers and stakeholders. The best way is to physically meet with them and your complete team. Practically speaking it may not be possible for the same stakeholders, such as consumers, to be available. Don't worry about it, since different people have different visions. And different visions are relevant, since your motivational strategies are intended for a wide public.

You have to consider that this session will take one full day or two days, depending on the complexity of your project. So start planning this well in advance. In fact, you can do this already at the start of the project based on e.g. a Gantt chart.

You will start the day with a recap of the preceding period to level the playing field. More details about the scrum and sprint session in chapter 7. For settings, data collection and analysis stage 3 and 4 again.



Start planning this session well ahead.

Prepare at the start of the project a Gantt chart which supports you in planning the overall project.

1.3.7. Stage 7: Design a second range of a limited number of nudges

This is about the same as stage 5, with the difference that it will require more sessions and additional participants. Methods applied are also described in chapter 7.

Additional participants invited are experts in behavioural change, business development and circularity. The objective of this session or sessions is to come to a set of 5 - 8 nudges, each of these more specific and more detailed. Simple drawings will not serve the purpose of Stage 8 (below).

It must be clear how where and when the nudges will be applied to enable participants in stage 8 to give more detailed feedback, enabling you to prepare the nudges for the small-scale pilots. It is the final step before the teams can move on to developing their final product and begin the process of validating the nudges in daily practice.





Ensure you add other experts to the team and brief them about the preceding process.

Come to max of 8 more specific detailed nudges.

1.3.8. Stage 8: Organize second scrum and sprint sessions

With the set of nudges the objective of this stage is to come to 3 - 6 nudges to be tested in the small-scale pilots. In this second scrum you should aim at getting the same participants as in the first scrum. It will save time during the session, since participants are now familiar with the project and the initial designed nudges. Even while these may have been redesigned slightly in stage 5.

As the participants are familiar with the project and the process, you may consider having this session online. It saves (travel) time and cost. This does however require optimal preparation. Not just the technique, to assure that all participants have equal

access to internet. Since you cannot use sticky Post-its you should look for digital alternatives, like the Miro board.

Not all participants will be familiar with the digital alternative. Best is to prepare a brief instruction, e.g. a video, which enables the participants to become familiar with the online tool. You must start the session with a short test to get them acquainted. Another benefit is that it will be easier for you to collect the data after the session. You can choose, either have the participants working individual from home, or have them all together in one room with the support of one of your team members.



Objective to finish with 3 to 6 nudges.

Aim to have the same participants as in the first scrum and sprint session.

Well prepare participants with the use of online tools.

1.3.9. Stage 9: Design the nudges for the small-scale pilots

Again, similar to stage 5 this is an entirely internal process with the complete team. The objective is to come to a set of nudges which can be tested in practice in small-scale pilots. Crucial is to add external experts to the team. Experts in circular economy, business development, marketing and human behaviour will not just bring in knowledge, they can also serve as coaches during the Hackathons. Consider other stakeholders you deem to be relevant.

First step is to analyse the results from stage 8. Next is to have the graphic and creative designers to come up with prototypes; no simple drawings, but detailed descriptions of the nudges. This includes materials to be used, like packaging,

labels or other stuff which comes together with the product.

The prototypes, including additional materials will be presented to the experts to enable them to give feedback. A Round Robin session (chapter 6.5) may be appropriate to collect the required feedback.

This feedback will be included in the final design to be tested in the small-scale pilots. Also in this stage consider the design of the small-scale pilots. Overall stage 9 will take several sprints, which have to be needly planned in advance. Consider this stage will take all together about one month.



- Include different experts in the design process.
- Organize several sprints with the complete team and the experts.
- Define materials to be used in combination with the product.

1.3.10. Stage 10: Prepare the small-scale pilots

The set of prototypes, each incorporating different nudges based on motivational theories and human values will be tested in practice in small-scale pilots. These are critical for identifying barriers and facilitators to the successful deployment of waste collection at the individual level. You may even consider to have some in depth interviews with some of the participants supporting you with the analysis to make choices. The data and feedback gathered will be used to iteratively improve the prototypes and strategies, ensuring they are well-suited to diverse contexts. Small-scale pilots involve testing out different solutions at small-scale, rejecting those that will not work and improving the ones that will. The goal of the small-scale pilots is to end-up with 2 to 3 nudges to be tested in the confirmatory pilots.

In order to arrange the small-scale pilots it is relevant to compose a pilot working group. This group meets once a month for a two-hour session, or with shorter intervals. Prior to these meetings, preparatory tasks and specific questions related to the set-up of the scenario of the pilots are distributed to the relevant partners. These meetings are designed to discuss or initiate discussions based on this preparatory work,

ensuring that each session leads to concrete decisions. The discussions are facilitated using an online collaborative platform that outlines the customer journey and the possible scenarios of the confirmatory pilots.

Additionally, separate meetings are organised as necessary to discuss preparatory work with partners before reporting back to the pilot working group. Total preparation time may take three to four months, since it is essential to accurately and efficiently prepare the small-scale pilots. Remember, you can only do these once during the project.

Apart from the in prior stages composed group you have to include a statistician, to support you in the design of the study protocol.

Part of the motivational strategies may be alternative packaging, labels or other materials. These may come from third party suppliers. Apart from the procurement process, the design, preparation, manufacturing, quality checks and potential other steps may take substantial time. Therefore it is of the utmost importance to carefully plan the procurement in order to avoid unnecessarily delays of the pilot's start.



- Set up a pilot working group.
- Include a statistician.
- Incorporate different nudges based on motivational theories and human values.
- Plan sufficient time for accurate and efficient conduction of the small-scale pilots.



1.3.11. Stage 11: Analyse results of the small-scale pilots

The appropriate analysis of the small-scale pilots requires several iterations. A small and dedicated team prepares the first results and presents these to the complete team.

With the remarks and questions from the team this dedicated team must go back to the drawing board, finetune the results and present this again to the other team members.

The discussions should result in a final set of at max 3 nudges to be evaluated in the

confirmatory pilots. It also is relevant to prepare a report (deliverable) of the results. Reading back this report will support you in how the team came to particular decisions. Have this report also reviewed by external (non team members) experts in the field of design, circularity and human behaviour. It will facilitate the design process for the final nudges and adaptation of the final nudges design before you start the confirmatory pilots. The whole process may take about two months.



Preparer a report of the results.

Have external experts reviewing the report.

1.3.12. Stage 12: Prepare the confirmatory pilots

This is one of the most relevant stages. In the confirmatory pilots you will prove the effectiveness of the designed nudges. This stage again has to be an iterative process, like for the small-scale pilots. The team should be the same as for the small-scale pilots.

Several stages within this preparation stage have to be mentioned:

- Design of the study protocol
- Definition of the number of test persons
- Recruitment of the test persons
- Preparing the complete design of the nudges, i.e. not prototypes but final versions to be used in daily life
- Consider a cover story (highly recommended)

A cover story may avoid bias in the results. For example asking participants to test a product without any hints to the return. Since the intention of your confirmatory pilot is to measure the return rates, you must avoid that anything else relates to returning your products. You just want to measure the effectiveness of the nudges.

Recruitment and selection of the test persons needs appropriate planning. Make sure you start as soon as possible. Based on the small-scale pilots you may have identified the characteristics of the

test persons. So, if possible, start the recruitment while the full analysis of the small-scale pilots isn't yet completed.

As for the small-scale pilots, part of the motivational strategies may be special packaging, labels or other materials. For example, a luxury box will less likely be disposed. Or a sticker on the packaging might create awareness for the environmental effects when the product is disposed and ends as landfill. Although some of the procurement process, design, preparation, manufacturing, quality checks and potential other steps already have been accomplished for the small-scale pilots, modifications may be required with which the whole process starts over again. Therefore it is of the utmost importance to carefully plan the procurement in order to avoid unnecessarily delays of the pilot's start.

Considering the complexity of the preparation this stage easily could take six to nine months.



Check if the full team as for the small-scale pilots is still available.

Carefully design the pilot protocol and discuss this in detail with the pilot team.

Start recruitment of test persons in an early stage.

Initiate the procurement of additional materials as soon as design details are known.

Consider the use of a cover story to avoid study bias.

Don't hurry, be precise, since you can do it only once.

1.3.13. Stage 13: Analyse results of the confirmatory pilots

This stage is more or less similar to stage 11. A couple of differences you have to account with:

- The amount of collected data is higher than for the small-scale pilots
- The characteristics of the test persons may differ, e.g. age, education, gender, region where they are based etc.
- Make a sub-analysis of the different characteristics

to implement motivational strategies for the contribution to a more circular economy. It should direct and advise top management for the future. So, have it very thoroughly reviewed, adapt it until the complete team is happy and satisfied. Just take your time. But not too much, say about one month, since top management is expecting your delivery.

The report has to be detailed, with clear graphics & tables, since it serves as a strategic tool for the objectives of your organisation / company



Prepare the report thoroughly since it defines the future strategy of your company / organisation and perhaps even your future.



2.

Determining the stakeholders and project partners

While we now touched all stages of the design process, we'll dive more into detail. Stakeholders and possibly other project partners are crucial in the design process. Too often design projects fall short due to underestimation of their contribution. With the definition of your overall project goal and

an overview of the complete project it is key to buy-in from relevant stakeholders and potential other project partners. To achieve this, you'll need to map your stakeholders, then move on to bringing in your partners and formalising partner agreements.

2.1. Mapping your stakeholders

The success of your project depends on how effectively the parties involved perceive the added value that your ground breaking motivational strategy

will offer. So, first we need to ascertain which groups need to hear about this added value, loud and clear.



Different stakeholders have different wants, needs and levels of influence.

Take these into account right from the start in order to effectively cultivate and leverage your stakeholder relationships.

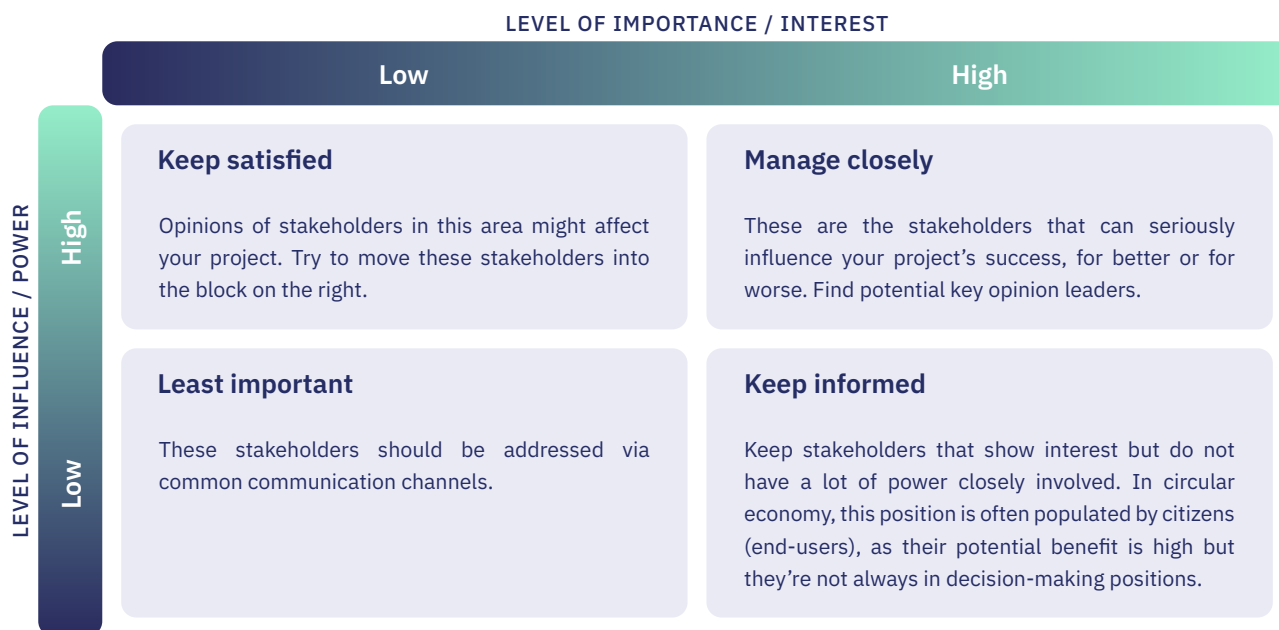
Stakeholder mapping is essential to planning your project activities, directing these towards the right people and safeguarding a successful predicted outcome. To create your stakeholder map, follow the steps below:

- List all the professional and/or social roles of the groups and individuals that you're likely to encounter in the course of your project.
- Listing roles, rather than individual people, allows you to generate an objective view of the situation as it stands.
- It also allows you to create a stakeholder map that's still usable in future, regardless of whether the people in those roles change.

- Rank your stakeholder list in order of priority based on level of importance/interest and level of influence/power:
- This is a key step, as it largely determines how you'll manage your stakeholders.
- High priority stakeholders are prime candidates for inclusion as project partners.
- Low priority stakeholders will likely just be kept updated once in a while.

Below, you'll find an example of how to rank your stakeholders in priority order based on these factors.



Figure 2. Stakeholder ranking based on prioritisation.

2.2. Bringing in project partners

Your Stakeholder Map acts as a shortlist of the key partners that should be involved in your project. The goal is to create a team of project partners that includes a healthy stakeholder mix:

- Several stakeholders with high importance and high influence.
- Several stakeholders with either high interest or high influence.

Now, it's time to persuade your potential project partners to get involved. This may be easier in some

cases than others, but the fundamental rules of the game remain the same.

Potential project partners will come on board if they can see it will provide them with clear added value, such as:

- New knowledge insights
- New products or services
- Financial incentives



In projects aiming to generate non-financial rewards, the potential added value for project partners isn't always clear. You'll want to discuss potential partners' needs to collaboratively identify the right reward for them.

When you're trying to bring certain key project partners on board, you might need to revisit your original Moonshot Thinking to design a goal that encapsulates their objectives as well.

Your Stakeholder Map acts as a shortlist of the key partners that should be involved in your project. The goal is to create a team of project partners that includes a healthy stakeholder mix:

1. Compose a partner agreement to formalise your collaboration. This is formally required for subsidised projects, but it's always

wise to draw up a formal agreement no matter your funding sources.

2. As required, compose any additional agreements on Intellectual Property, ownership of the knowledge obtained during the project, and so on.

3.

The preparation stage

3.1. Setting project expectations to streamline collaboration

In order to form effective, lasting and mutually beneficial relationships with your stakeholders and project partners, everyone needs to know what they can expect from the project in advance. Expectations and aims regarding the project may differ across your stakeholders; this will likely be the case in your project.

So, to later set out actionable objectives and establish reasonable expectations, it's vital you know where all your stakeholders are coming from. We'd recommend sending out pre-project questionnaires to your stakeholders, including questions that will give you detailed information about:

- Stakeholder areas of expertise
- Stakeholder expectations
- Stakeholder commitment
- Stakeholder potential for long-term involvement

This questionnaire can also help to build up stakeholders' investment in the ideas behind the project and its groundbreaking potential in the

circular economy. We'd suggest including questions that encourage participants to:

- Increase their awareness of the project's importance and relevance
- Adopt a suitable mindset for embarking on the project

We found that the ideas Simon Sinek outlines in his book *Start with Why* are helpful for forming the basis of these pre-project questionnaires. When formulating your questions, ensure they're encouraging your potential participants to consider the following factors:

- Why does this project exist?
- Why should I want to participate?
- What is this project going to consist of and am I capable of completing it?
- How can I contribute to this project?
- What will the project's contribution be, specifically to circularity and in a more general sense?
- What will I gain from the project, both short term and long term?



You can use the questions you include in these pre-project stakeholder questionnaires, as well as the information you gain from them, as reflection prompts during and after the project.

3.2. Structuring your preparation stage

This Section will walk you through preparing for the first event in your innovation Stage, the Sustain-a-thon (Hackathon).

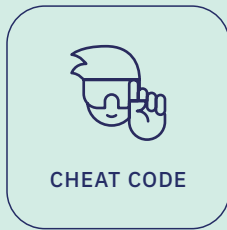
3.2.1. Sharing your Moonshot (4.3. Moonshot thinking)

Before you can begin your design process, you'll need to reel in stakeholders and project partners by inspiring them with a clear goal and vision of how they can use their technical expertise to collaborate on a truly game-changing development. This involves:

- Clearly defining the overall Moonshot of your project
- Sharing this Moonshot idea with potential project participants

By defining and sharing your overall Moonshot with potential stakeholders and project partners, you can generate more relevant interest in your

project and provide a clear basis for stakeholder and project partner expectations.



In our case, we described our overall Moonshot in the DiCE project but didn't include it in the invitation we sent out to potential participants. We'd recommend ensuring you communicate your overall Moonshot idea directly to all potential participants that you contact, as this is the clearest way for them to see the potential added value the project represents for them. Ultimately, this should help to bring in more stakeholders and project partners.

3.2.2. Forming teams

Forming the right teams is key to success in any design process. You need the right mix of knowledge and expertise (depending on the type of project and its objective), high levels of collaboration and interaction and a healthy dose of inspiration and creativity. To ensure you build genuine teams, we'd suggest following the process below:

- Start the design process with a pre-assembled team, or at least several core members that you can build the rest of the team around
- Use potential participants' answers to the pre-project questionnaire to identify gaps in your team's knowledge and expertise
- Use potential participants' questionnaire answers to seek out the support, expertise and stakeholders you need to plug any gaps in your team
- Leverage the process of finding additional expertise to round out your team's capabilities to:
 - Encourage team building
 - Clarify participants' expectations relating to the project and the rest of their team
 - Foster participants' understanding of the design process
- Cultivate participant commitment



Holding an opening session for all project participants where they can discuss their vision for the project is an effective way to boost commitment to the project, share ideas and expertise and facilitate the design process.



Forming a team of people with complementary skills and the ability to work well together is more often than not the defining factor in a project's success or failure.



3.2.3. Pitching ideas (optional)

In order to find the right team members to help you launch your design project and see it succeed, you'll need to clearly articulate and share the problem you're aiming to solve, as well as your ideas for solving it.

To do this, organise a pitch session where participants present their ideas and respond to the following questions:

- How and why have you come up with your idea?
- What makes it innovative?
- How are you planning to make your design a reality?
- What are you aiming at to achieve with your nudges?



Establish a panel or jury to fairly select the best idea for your design project. The jury should also leverage its expertise to highlight potential obstacles to the project's success.

The jury should at a minimum contain members with the following expertise:

- Business development
- Behavioural change science
- Background in circular processing

- Consumer / user
- Design/playful interaction

Using their combined expertise, the jury members will be able to put their finger on any “sore spots” in the teams and their design processes.



It's essential that the panel or jury points out possible challenges in the design process to give participants a clear idea of the level of commitment and perseverance required.

3.2.4. Upping your design process

Once you've moved through all the processes described above, you'll have a team primed to enter the design process with a clear shared goal in mind. Now, it's time to up the team in order to boost the design potential as far as possible.

So, it's time to talk strengths and weaknesses. Each team member will surely bring a hefty amount of expertise to the table, but it's still key to outline:

- A list of the team's expertise gaps or shortcomings
- A list of actions to overcome these gaps or shortcomings before the Hackathons
- A clear timeframe to address the team's shortcomings
- A summary of additional education and/or training that the team needs
- A clear timeframe for holding the Hackathons



XP BOOST

Plugging the expertise or knowledge gaps in each team member with additional education and/or training is a prime opportunity for personal and professional development. For many participants, this could represent a key non-financial reward of the project.



CRITICAL HIT

Ensure the team schedules in clear, achievable timeframes for overcoming shortcomings and organising the Hackathon.



4.

Preparing the design process

Here, we'll lay out the stages involved in the Hackathon methodology and how we carry these forward into Prototype Development.

4.1. The Hackathon (Sustain-a-thon)

Games for Health developed a specific Hackathon concept as a standardised methodology for innovation projects with the integration of elements of play. The Hackathon uses multiple industry-

standard methodologies in a multi-criteria analytical decision-making process. To date, it's been carried out hundreds of times based on the following format:

Table 1. Format for a Hackaton.

Duration	4 – 6 hours
Number of participants	About 20 persons representing all key stakeholders
Outputs	1. Harvest document with the workshop process report 2. Stakeholder debriefing document, including functional description, design sketches and stakeholder feedback



It's vital to have facilitators present at the Hackathon, including domain experts, end-users, a team of skilled game designers, behavioural scientists, script writers, visual designers and technicians.

The Hackathon methodology developed by Games for Health is applied to underpin the design process. The debriefing document consists of a functional description that responds to all queries surrounding the development of new motivational strategies.

The Hackathon consists of 4 major stages:

1. Levelling the Playing Field
2. Moonshot Thinking
3. Design Principles
4. Conceptualisation

4.2. Stage 1: Levelling the playing field

What do we mean by Levelling the Playing Field? Essentially, this step is designed to create a common language among the stakeholders and the design experts in the teams. A shared language in which

all the stakeholders can express themselves and communicate their ideas is key to designing a high-quality solution.

4.2.1. Why do we perform Stage 1?

Experts in the fields of game design and organisational/societal and behavioural change need to understand the stakeholders' knowledge areas to such an extent that they can effectively ideate solutions that fit current and future circular

ecosystems. At the same time, the stakeholders need to acquire working-level knowledge of design and organisational and behavioural change in order to act as involved partners in ideating these forward-thinking solutions.



4.2.2. What methods do we use in Stage 1?

Experts and Stakeholders present their perspectives and reflect on these presentations in a discussion session. This aims to create mutual understanding, in order to ensure that all participants are on the same page. In particular, participants should take some time to hone in

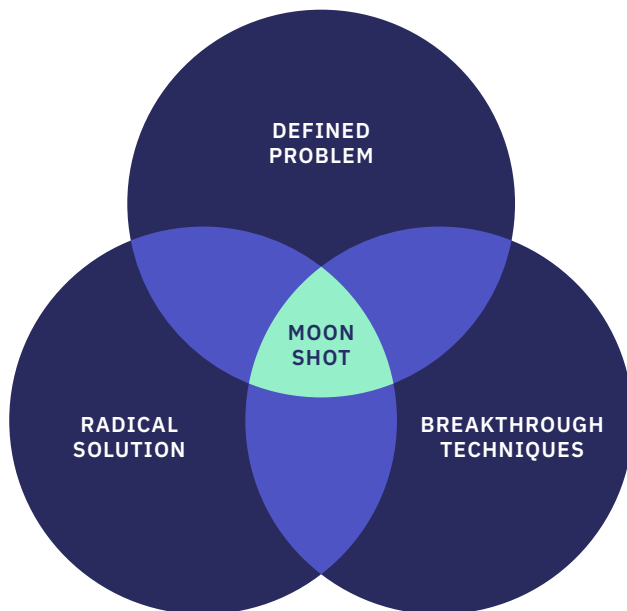
on personas and stakeholder language. Defined personas streamline the process by acting as guidelines to avoid discussions that stay too high-level and general. Personas also act as a useful tool to outline relevant stakeholder language.

4.3. Stage 2: Moonshot thinking

Moonshot Thinking is an adapted version of the scenario-based reasoning methodology developed by NASA to support its Apollo moon landing missions. Originally, NASA engineers envisaged what the astronauts' successful return to Earth from the moon mission would look like. Once they had that scenario in mind, they worked backwards to design what was needed to make it a reality. Many of the groundbreaking tests that were carried out in those early days only make sense if we look at them from this perspective of revolution in reverse: moving innovation forward using the radical approach of looking back.

The term Moonshot Thinking is now widely used to refer to scenario-based reasoning methodologies. Your Moonshot idea lies at the intersection between a problem that's clearly defined, a proposal of a radical solution for it and the breakthrough techniques that show you it might just be possible to bring your radical solution into reality (i.e., it is feasible and executable).

Figure 3. The Moonshot Thinking methodology.



Moonshot Thinking is popular with multiple giants of innovation, including Google which has established X, the Moonshot Factory.

4.3.1. Why do we perform Stage 2?

All too often, we make incorrect assumptions about the organisational/societal and behavioural changes that are needed to solve a particular problem. Using Moonshot Thinking, we can reveal, analyse and evaluate these baseline errors,

learning from them and setting ourselves on the right innovation pathway. This helps to ensure that time and money are invested in the best ideas, right from the get-go.

4.3.2. What methods do we use in Stage 2?

Though there are several ideation techniques (such as opposite thinking, analogy thinking, brainstorm cards, collaborative sketching, storyboarding, etc.), you might apply the Mash-Up method, a fast and fun ideation technique that brings odd or unexpected things together to spark fresh ideas. So, how does it work?

- Step 1: Define your challenge. Write the challenge down as a question (for example: “How can we make finding waste collection points more easy?”).
- Step 2: Come up with two random categories. Choose two completely different worlds. For example, category A: shopping centres B: residential areas.

- Step 3: Make lists. For each category, write down about 10 to 15 associations, elements or words. (E.g. A: large poles, direction signs, flash lights, sound box. B: GPS, residents Wi-Fi signals, waste collection boxes, play fields, kindergarten, mobile apps).
- Step 4: Mix & Match. Now randomly combine a word from list A with a word from list B to generate ideas. What happens if you integrate a Wi-Fi signal (B) with a sound box (A)?

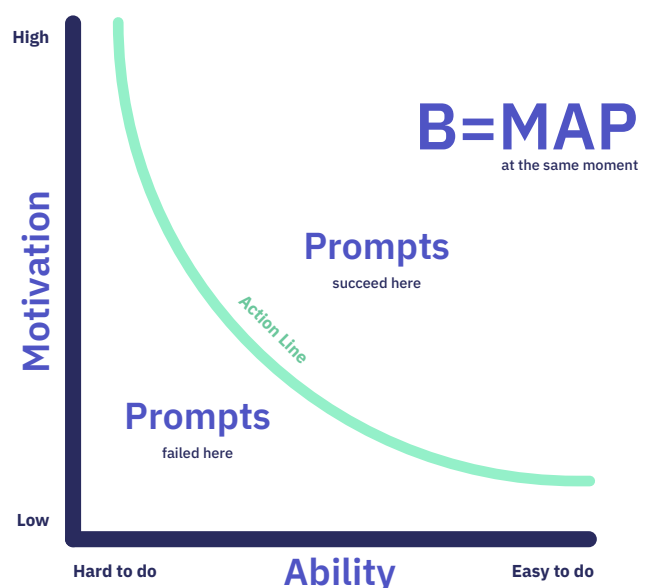
Try mashing up items that seem the most different and see if you can communicate the value of your inventions in ways that are relevant to your design.

4.4. Stage 3: Design principles

During this Stage, we focus on bringing about organisational/societal and behavioural change, as well as the actions of the end users who'll be nudged to contribute to the circular economy. In order to design your desired structural and behavioural change outcomes, you may use the Fogg Behaviour Model.

The Fogg Behaviour Model states that a behaviour occurs when a person has sufficient motivation, enough ability (the behaviour is easy to perform), and receives a prompt that triggers the action at the same time. Whereas the prompt is the nudge. If any of these three elements is missing, the behaviour will not occur. Behaviour happens only when Motivation, Ability, and a Prompt converge at the same moment.

Figure 4. Fogg's Behavior Model.



According to Stanford University Behaviour Scientist BJ Fogg, PhD's model, changing people's behaviour fundamentally hinges on placing prompts in the path of motivated individuals. So, in order for motivational strategies to be effective they need to include elements that effectively prompt motivated users to act.

Another option is to use the Theory of planned behaviour (TPB) as a basis for the design process. The TPB explains behaviour through individuals' intentions, which are shaped by their attitudes, subjective norms, and perceived behavioural control

(Ajzen, 1991). In the context of e-waste, these psychological factors can be complemented by contextual factors such as the convenience of return processes and producer interventions, which may further influence users' willingness and ability to return electronic devices (Hussein Keke et al., 2026). The theory offers a framework that has been useful in explaining and predicting various intentional behaviours in different contexts, like for example e-waste recycling behaviour (Kumar, 2019). The TPB and its application to e-waste return are discussed in more detail in chapter 6.1.

4.4.1. Why do we perform Stage 3?

Your outcome of Stage 2, ideas, words or terms are not in an order, just randomly created. For these to make sense, you have to put them in a theoretical framework, so you can use them for further processing in Stage 4.

For example prints of footsteps in a super market to nudge people into a particular direction like applied during the Covid-19 pandemic, where does this fit in Fogg's model. To what extent does it contribute to motivation and what is the ability to realize this.

For the TPB, what will be the attitude of the users, are there any subjective norms associated with it? Is there a relation with behavioural control or is there a sustainability issue for the manufacturer, like printed footsteps made out of rubber may take considerable scarce natural resources or have a significant impact on the environment after inappropriate disposal.

4.4.2. What methods do we use in Stage 3?

In these sessions, you collect words and activities which motivate and trigger people to change their behaviour. For your project participation actual users and manufacturers will be crucial. There are several ways to collect these words and activities. In one group you can use Post-its where participants pencil down their motivations and trigger factors which will work really well.

Next, the Post-its are collected, placed together on a wall and, in the following interactive general discussion, the perceived most effective ways to influence behaviour are selected.

Make sure that all participants contribute to the discussion. And use the Brainstorm core principles and rules established by Alex Osborn;

Defer Judgment

Creative spaces are judgment-free zones—they let ideas flow so people can build from each other's great ideas.

Encourage Wild Ideas

Embrace the most out-of-the-box notions. There's

often not a whole lot of difference between outrageous and brilliant.

Build on the Ideas of Others

Try to use "and" instead of "but,». It encourages positivity and inclusivity and leads to tons of ideas.

Stay Focused on the Topic

Try to keep the discussion on target. Divergence is good, but you still need to keep your eyes on the prize.

One Conversation at a Time

This can be difficult, especially with lots of creative people in a single room. But always think about the challenge topic and how to stay on track.

Be Visual

Use coloured markers and Post-its. Stick your ideas on the wall so others can visualize them.

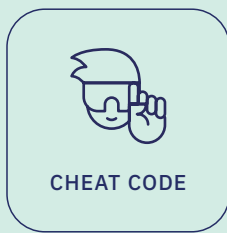
For practical reasons you may also use a Miro board. Again, make sure that all participants give their input and avoid on-line sessions. The interaction is most relevant.

4.5. Stage 4: Conceptualisation

In Stages 1 to 3, the basic outlines of your concept(s) are defined. Stage 4 is where you begin to visualise them by creating a concept storyboard.

4.5.1. Why do we perform Stage 4?

Visualisation is a fundamental step in the design process. The concept storyboard will be a key input for the stakeholder debriefing document.



The stakeholder debriefing document will include a functional description of the proposed nudge, design sketches and stakeholder feedback.

4.5.2. What methods do we use in Stage 4?

A storyboard is a planning tool for visualising and organising ideas. Ideas are pictorially or verbally represented and displayed so that they can be developed, rearranged and discussed. It's a perfect tool for people who want to organise information for proposals, presentations or productions.

Using a storyboard transforms your information into a visual narrative and allows people to experiment with changes in the sequence or storyline during the creative process. Usually, a storyboard is created by an independent observer with sketching skills.



5.

Hosting a Hackathon

Here we'll give a more detailed description for the organisation of a Hackathon.

5.1. Setting your Hackathon goal

It's vital to outline clear goals for your Hackathon, as well as for the project as a whole, to ensure all your participants are on the same page and moving towards a coherent and relevant end result.

Recapping why we're using the Hackathon method is also a useful tool for defining our Hackathon goal.

5.2. Why do we use Hackathons?

In general Hackathons are used for the following reasons:

- To create a space allowing ideation of all possible solutions to a defined problem
- To support participants to divert from familiar thought pathways
- To generate concepts and ideas that truly challenge existing assumptions
- To challenge participants to move beyond their intellectual comfort zone
- To produce truly novel ideas



It's vital to cultivate a Hackathon space where all participants feel welcome, confident and comfortable to share their thoughts and ideas. The more ideas the better at this stage, as you'll narrow the scope further on in the design process.

5.3. Sending Hackathon invitations

Once you've set a clear Hackathon goal, which is defined in the preparation stage derived from your overall project goal, you'll be able to invite participants.

Your Stakeholder Map (2.1.Mapping Your Stakeholders) is a key tool for planning out the participants you invite to take part in the Hackathon, as you should aim to include Stakeholders with a variety of roles.

Your Hackathon invitations should clearly outline what the added value for each participant will be in

order to generate interest and encourage sign-ups. For example, consumers might want to participate if they have particular interest in environmental matters and appreciate the potential for motivational strategies to encourage others to contribute to a more circular economy. Marketing professionals since they like to experience how to differentiate their products with the integration of motivational strategies to gain a competitive advantage. Product designers how they can re-design their product for a better fit with circularity. Even policy makers to get insight into the potential need to adapt regulations.



Your Stakeholder Map lists the professional and/ or social roles of the groups and individuals that you're likely to encounter in the course of your project, ranking them in priority order based on their level of importance/interest and level of influence/power.





Tailor your invitations to each target participant group in order to generate as much interest as possible.

5.4. Gauging participant experience

It's highly likely that the participants you have lined up will have differing levels of Hackathon experience. Some might be Hackathon veterans, while others might be totally new to the concept. Due to this range of experience, you'll likely need to outline the

thinking behind the Hackathon structure when you communicate with participants before the event. That way, they'll know what they need to bring to the Hackathon table and what they can expect to achieve by the end of the event.

5.5. Levelling the playing field for Hackathon participants



Make sure that participants with no previous Hackathon experience feel welcome and supported throughout the design process. This is vital to ensuring that your project benefits from an optimal range of innovative inputs from all the relevant professional and social sectors.

As mentioned before, levelling the playing field means ensuring that every Hackathon participant has equal access to the resources, support, and opportunities needed to compete fairly, allowing success to be determined by creativity, collaboration, and problem-solving rather than unequal advantages. It means creating fair conditions so all participants have an equal opportunity to succeed, regardless of their background, experience. This can include:

- Providing the same datasets, tools, APIs, and documentation to everyone.
- Offering mentorship and technical support equally to all team members.
- Setting clear rules, judging criteria, and timelines.
- Encouraging diverse team members and inclusive participation.
- Ensuring accessibility so participants with different needs can fully participate.

Preparing to level the playing field in a Hackathon starts well before or immediately at the start of the

event. The goal is to ensure participants begin with the same opportunities and can focus on solving the challenge rather than overcoming barriers. These are the key preparation steps:

Provide a common starting point

Share the challenge statement, rules, judging criteria, and schedule in advance e.g. with the invitation for the Hackathon with a briefing letter.

Offer onboarding

Run an opening session to explain the problem, available tools, and expectations. And provide tutorials or sample code for participants who are new to the design process / technology.

Ensure equal access to support

Make mentors and technical experts available to all team members. Use the core project team members for this purpose. Optional is to set up a shared Q&A channel so everyone benefits from the same answers.

Encourage inclusive participation

Help participants form diverse background with complementary skills. Design activities at the start of the Hackathon that welcome both beginners and experienced participants.

Remove unnecessary barriers

Ensure required software, accounts, and access credentials are ready before and during the event. Make materials accessible and provide accommodations where needed.

5.6. Starting with your Moonshot

Sharing your Moonshot (4.3.Stage 2) at the start of the Hackathon event sets the scene for the project and ups the innovation ante on the day. In fact, you'll want to start the day by sharing the Moonshots with the Hackathon participants: the Hackathon Moonshot and the overall project Moonshot.

Each Moonshot respectively outlines the ultimate goal of the Hackathon and of the entire project. As such, the Hackathon Moonshot represents a fraction of the overall project Moonshot, as it's one stage of the whole project process. To clearly present the various Moonshots on the day of the Hackathon and get all your participants inspired and raring to go, follow these steps:

- Present the overall project Moonshot right at the start of the Hackathon event.

An inspiring format is the best way to present an inspiring idea. Think big: what's the best way to present your overall project Moonshot in all its game-changing glory?

- To follow on, distil the overall project Moonshot down to your more specific Hackathon Moonshot (please note that you have split the group of participants in several teams).

The Hackathon Moonshot will depend on the time available for the teams to work on their ideas, as well as the complexity of the problem they're trying to solve

- Allow each team of participants to set their personal goals for the Hackathon based on the Moonshot.



The Hackathon Moonshot should always be ambitious, with scope for the participants to think and work as creatively as they can.

5.7. Supporting participants in problem definition and ideation

Hackathon teams are likely to have a wide range of areas of expertise, as well as differing levels of Hackathon and design experience, in particular related to behaviour. So, you need to support every member of every team through the Hackathon process as needed.

Providing this support will help to ensure participants

remain motivated and committed to the project, enhance the quality of the ideas generated and bring all the teams to the same level of progress by the end of the Hackathon event.

The support available should be specifically directed at helping the teams to achieve their Hackathon goals.



5.7.1. What is problem definition?

Problem Definition is a user-centered process that accurately describes the situation in which the user finds themselves when they are faced with the specific problem you are attempting to solve.

5.7.2. How can we support effective problem definition?

Tools which can be used are stakeholder and empathy mapping. Stakeholder mapping outlines all the stakeholders connected to the problem (See before), while empathy mapping details the related actions, thoughts and feelings of the user.

5.7.3. Why and when use empathy mapping?

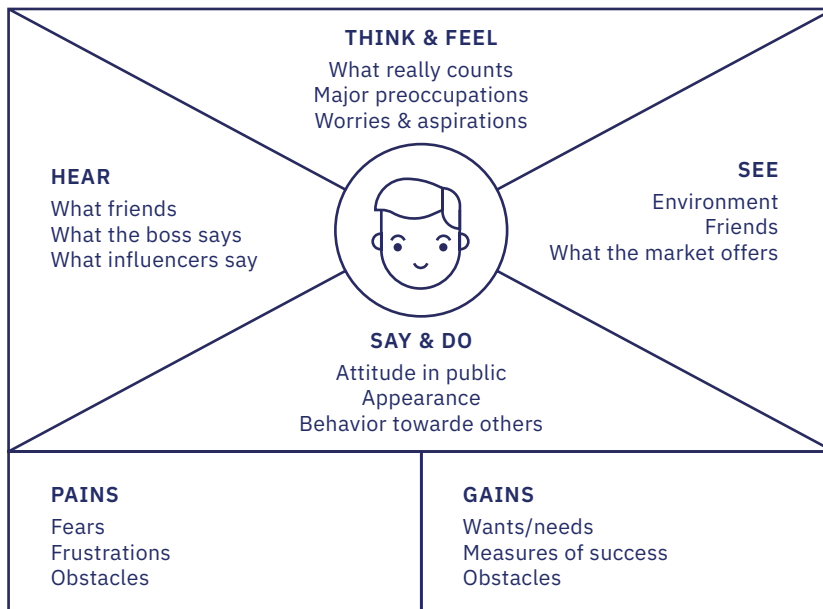
An empathy map helps to understand users from their perspective, identify needs and pain points, design better products, services or experiences, align teams around a shared understanding of the customer and make decisions based on evidence rather than assumptions.

Empathy mapping is commonly created at the beginning of a design development process, after

interviews or customer research, during workshops for brainstorming and problem solving and before creating personas or customer journey maps.

Think of an empathy map as a snapshot of one user's mindset, while a persona describes a representative user in more detail, and a customer journey map shows how that user interacts with a product or service over time.

Figure 5. A typical example of an empathy map.



XP BOOST

You can use an Empathy Map to generate a User Persona for an imagined individual that will benefit from you solving your target problem.

A User Persona can inform your business plan and help challenge and test the ideas the team comes up with.

5.8. Timetabling the Hackathon

For all participants and supporting personnel, as well as the Hackathon host it is relevant to know what time they need to allocate and what the schedule over the days is. With a proper agenda to be provided in advance you will set the expectations and avoid misunderstanding or confusion. In Annex VI you will find an example of a time table for the Hackathon.

Since participants may have to work during day-time, in the example you will see that the Hackathon includes evening time. Starting the first day with an evening session adds the benefit that participants can socialize during the dinner. In Annex IX you will find full details of the Sustain-a-thons organised in the DiCE project.



6.

Analysing the data from the Hackathons

Foundation for the development of prototypes are the results from the Hackathons. The collected data have to be analysed in a structured way to facilitate next steps in the project. Below you will find several options for data analysis related to qualitative research and behaviour. The choice which are the

most appropriate depends amongst others on the amount and kind of data. Now you have to make a choice for your project. Remind that the choice is essential for the design of the prototypes, the outcome is the start for your prototype design.



Select two or three team members to analyse the data.

Let them present the results to the complete project team for feedback and fine tuning.

Prepare a Harvest document (report).

6.1. Constructing Grounded Theory

The Hackathons and interviews might have resulted in a large number of qualitative data to be analysed. Like hundreds of “Why’s”, reasons collected to contribute to a circular economy, The Constructing Grounded Theory approach (Charmaz, K., 2014) is a major research method in qualitative research

internationally and across many disciplines and professions (Delve, Ho & Limpaecher, 2021). Some examples of potential results are in Annex II. The analysis of the data is an effort of some team members. Once completed the results must be presented to the complete team.

6.2. Axial coding

Axial coding is a qualitative data analysis technique used to organize and connect categories that emerge during open coding. It is most commonly associated with Grounded Theory, particularly the approach developed by Anselm Strauss and Juliet Corbin. Axial coding in grounded theory is the process of relating codes to each other, via a combination of inductive and deductive thinking. During the axial coding process, relationships are established between the categories and subcategories that emerged from the focused codes. This allows you to explore the relationships between the identified reasons and delve into the underlying factors related to the

situations, interactions, and consequences that contribute to people’s behaviours. The term axial refers to putting a central category at the «axis» and relating other categories to it.

Overall, the coding approach outlined by Grounded Theory provided a framework for systematically examining and generating a comprehensive understanding of the reasons (Why’s) behind people’s reluctance to properly dispose of their consumer (electronic) products. Annex III present the results of the axial coding based on Annex II

6.3. Matching reasons with values

Results from the Constructing Grounded Theory and the axial coding are to be matched with values. In order to break free from possible gender roles and to better understand the basis for the reasons, all reasons are placed in the Value Wheel by Schwartz (2012).

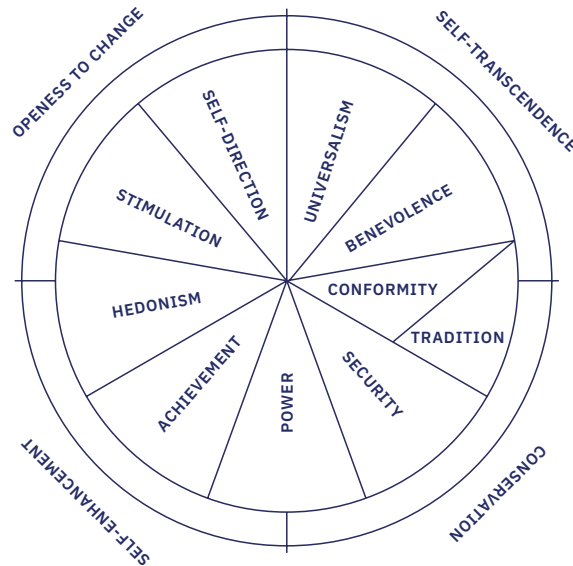
The Schwartz Value Wheel is based on extensive cross-cultural research, involving over 60.000

individuals from 64 nations. It provides a framework for understanding how values guide attitudes and behaviours, and how they relate to one another across different cultures and contexts.

Schwartz’s individually measured motivational types of values (benevolence [BE], universalism [UN], self-direction [SD]) are often considered predictors of people’s pro-environmental behaviour.



Figure 6. Value Wheel by Schwartz.



A more detailed explanation of Benevolence, Universalism and Self-Direction in Annex IV.

In Annex V you will find the results of matching reasons with values for the DiCE project. Take this just as an example.



Based on the outcome of the Hackathons and the data collected you have to choose the appropriate method for the data analysis.

Get a data analyst involved.

6.4. Turning the data into a range of prototypes

It's now time to set your creative designers in action at an internal co-Design Process. Based on the data analysis researchers and creative designers start the co-design process for several conceptual nudging solutions. This is the first design step, preparing sketches (simple drawings) of potential motivational strategies to bring to the co-creations sessions with stakeholders.

The design sprints are an iterative process in which a range of nudging strategies are designed for further exploration in the co-creation sessions. In this iterative process design sessions alternate with feedback sessions within the project team.

The number of sketches should not be limited. They are based on the analysis of the Hackathons, and match with the results of the axial coding.



Do not limit the number of sketches for the prototypes.

Give your creative designers all freedom.

7.

Prototype Development - Foundations

Several theories and methodologies form the foundation for the design of a range of prototypes during the co-creation sessions. It's up to you if you want to apply these. In practice they have been proven to be very useful.

7.1. Theory of planned behaviour

The Theory of Planned Behaviour (TPB) helps explain why people decide to perform a certain behaviour. According to the theory, people are more likely to act when they intend to do so. This intention is mainly influenced by three factors: their attitude towards the behaviour, the expectations of people around them, and whether they feel able to carry out the behaviour (Ajzen, 1991). The TPB has also been used to understand environmentally responsible behaviours such as returning electronic waste (Kumar, 2019; Hussein Keke et al., 2026). The TPB identifies the following components:

- **Attitude** describes whether a person sees returning electronic waste as something positive, useful, or responsible. A more positive view can increase the willingness to return unused or end-of-life devices.
- **Subjective norms** describe the influence of other people. Individuals may be more willing to return electronic waste when friends, family members, or other important people expect or approve of this behaviour.
- **Perceived behavioural control** describes whether people feel able to carry out the return. For example, they need to know which devices can be returned, where they can take them, and how the return process works (Kumar, 2019; Hussein Keke et al., 2026).

Research conducted within the DiCE project shows that these personal factors are only part of the picture. Two additional factors are particularly important for electronic waste return: convenience and producer interventions (Hussein Keke et al., 2026).

- **Convenience** refers to how easy it is for users to return a device. A return system is more convenient when collection points are easy to reach, information is easy to find, and the process does not require too much time or effort. Even people who want to return their devices may not do so when the process is difficult or unclear.
- **Producer interventions** are measures taken by manufacturers to help users return their devices. These can include clear return instructions, symbols on products or packaging, help lines, information about collection points, take-back programmes, or incentives such as trade-in schemes. Such measures can make the return process easier

to understand and remind users that returning a device is both possible and expected (Laequuddin et al., 2022; Hussein Keke et al., 2026).

The DiCE study in Spain, Slovenia, and Belgium also shows that there is no single factor that is equally important in every setting. In Spain, attitudes, social norms, perceived behavioural control, and producer interventions were associated with stronger return intentions. In Slovenia, attitudes and social norms were particularly relevant. In Belgium, convenience was the main significant predictor of return intention. These country-specific results should not be interpreted as statistically confirmed differences between the countries, but they show that the importance of individual factors can depend on the surrounding return system, available infrastructure, and users' experiences with it (Hussein Keke et al., 2026).

Another important finding is that wanting to return a device does not automatically mean that it will actually be returned. Return intention was positively related to reported return behaviour in all three countries, but the results also indicate an intention-behaviour gap. Users may have good intentions but still fail to act when collection points are difficult to access, procedures are unclear, or suitable return opportunities are missing (Hussein Keke et al., 2026).

It is also important to distinguish returning from recycling. Users normally do not recycle electronic devices themselves. Their role is to bring unwanted devices into formal collection or take-back systems. Recycling, refurbishment, reuse, or other forms of recovery happen afterwards. From a user perspective, the crucial behaviour is therefore the decision to return the device in the first place (Hussein Keke et al., 2026).

Overall, effective e-waste management requires both motivated users and well-designed return systems. Positive attitudes and social support can encourage people to participate, but producers and other stakeholders also need to make the desired behaviour easy, visible, and understandable. The findings therefore suggest that successful take-back systems should combine behavioural insights with convenient infrastructure, clear communication, and appropriate producer support rather than relying

on environmental awareness alone (Li et al., 2023; Hussein Keke et al., 2026).

User-oriented green practices are essential in mitigating the negative impacts that arise from the production, use and disposal of (electronic) devices.

Therefore, it is essential to examine user intentions towards engaging in pro-environmental behaviours that can influence the lifecycle of (electronic) devices, including their selection, use, and disposal (Li et al., 2023).

7.2. Apply design based research

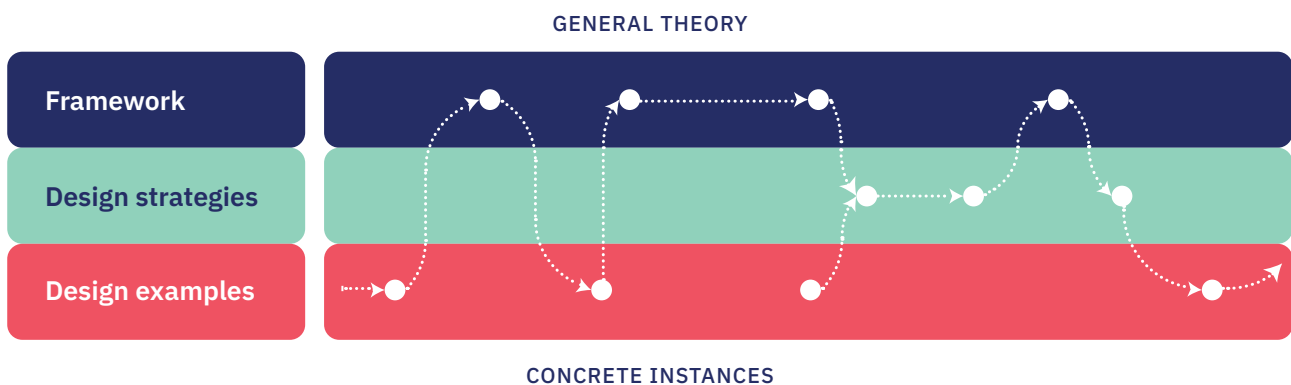
7.2.1. What is design based research?

The development of motivational strategies might be based on a design based approach (Research through Design; Zimmerman, Forlizzi & Evenson, 2007). The intention is to design and develop artefacts (design examples) that can be evaluated with potential users to gain a better understanding of their values, context, drivers, etc. Using an iterative approach where these artefacts are continuously adapted, improved and interacted with, knowledge that can be used by designers to design products in such a way that users naturally

behave in the intended manner and can eventually be abstracted. This abstract knowledge is called intermediate-level knowledge and can consist of design strategies and frameworks.

Although the aim is to develop a solution for a specific product, such as your product, you must develop knowledge about how to design for circular behaviour as a system. Knowledge which in fact can be applied for any product and circular behaviour.

Figure 7. Intermediate-level knowledge residing between theory and instances (image from Boon, B. et al. (2021) as an adaptation of the image by Höök and Lowgren (2012) who coined the term *Intermediate-Level Knowledge* a typical example of an empathy map.



Use design based research to create generic solutions for your project's goal.
In a later stage you might finetune these more specific related to your product.



7.3. Scrum in the design process

In a design process, Scrum is an agile project management framework that helps teams organize and deliver work in small, iterative cycles called sprints (typically 1–4 weeks). Instead of completing an entire design before receiving feedback, designers collaborate closely with developers, product managers, and stakeholders to create, test, and refine solutions incrementally.

Key elements of Scrum in design include:

- **Sprints:** Short work cycles focused on completing specific design goals.
- **Daily stand-ups:** Brief team meetings to discuss progress, challenges, and next steps.

- **Backlog:** A prioritized list of design tasks, features, and improvements.
- **Sprint review:** The team presents completed work and gathers stakeholder feedback.
- **Sprint retrospective:** The team reflects on what went well and how to improve the next sprint.

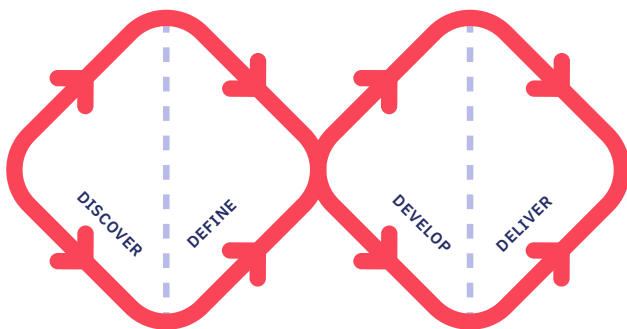
Using Scrum in design encourages collaboration, frequent user feedback, flexibility, and continuous improvement, helping teams create more user-centered and adaptable design solutions.

7.4. Double diamond to structure the design process

In the design process to develop the design examples (the concrete instances in the bottom of Figure 7), the Double-Diamond (Figure 8) is used. The Double Diamond model is based on the classic divergence-

convergence model for the design process developed in the 40's. It describes the steps taken in any design and innovation project, irrespective of the methods and tools used' (British Design Council, 2005).

Figure 8. The iterative design process following The Double Diamond. The Double Diamond by the Design Council is licensed under a CC BY 4.0 license (British Design Council, 2005).



- **Discover:** The first diamond helps people understand, rather than simply assume, what the problem is. It involves speaking to and

spending time with people who are affected by the issues.

- **Define:** The insight gathered from the discovery stage you are used to define the challenge in a different way.
- **Develop:** The second diamond encourages people to give different answers to the clearly defined problem, seeking inspiration from elsewhere and co-designing with a range of different people.
- **Deliver:** Involves testing out different solutions at small-scale, rejecting those that will not work and improving the ones that will.



Use the Double Diamond Model to create structure in your design process
Apply the Double Diamond Model results in your small-scale pilots.

7.5. Round Robin

In order to receive feedback from experts on the prototypes the Round Robin method is most useful. Participants are invited to a Round Robin (Kagan, 2007) session in small groups. In a Round Robin session, design ideas evolve by passing them from person to person. In these sessions, the attendees are divided into groups of four, and each group receives a place on an online whiteboard (Miro) where all prototypes are presented. Every person starts with a different prototype and is allowed to write a critique or concern with the current version.

Once finished writing this concern, each attendee will go to the next prototype and read what the

other person had written. The attendee then has to write a positive aspect, inspired by all the previously mentioned aspects. Each group rotates the prototypes, writing alternatively concerns and positive remarks, until no new input can be given.

Thereafter, the participants, grouped according to their expertise, are involved in a problem-solving session, where they are asked to come up with solutions to the concerns or critique identified in the Round Robin session problems in relation to their own expertise.



8.

Prototype Development in Co-creation (Design Sprints)

8.1. Goal of Design Sprints

The design sprints are an iterative process in which specific nudging strategies are designed, developed and evaluated. In this iterative process design sessions alternate with feedback sessions. This design process involves citizens (consumers / stakeholders) for co-creation and evaluation, and continues on the learnings, outcome and experience from the Sustain-a-thons (Hackathons).

Nudging strategies aim to improve sustainable use of your products. You might use specific examples to design for. Research questions as in Table 2 will serve as guidance for the design sprints to facilitate this design process.

Table 2. Research questions and explanation.

	Research Questions	Explanation
#1	What are the most prominent problems that prevent the citizen from collecting and recycling? What are the nudging strategies that might enable the citizen to collect and recycle?	Discuss and get a deeper understanding of the findings from the Hackathons in order to categorize and identify the most important problems and more appropriate specific nudging strategies.
#2	Which challenge(s) shall we solve and for whom?	Identify priority areas within a specific context, in terms of the most critical moment in the recycle process that needs nudging intervention. To decide which is the most important target group for that critical moment.
#3	What would be the ideal nudging strategies? What are the risks associated with the ideal solutions?	Co-iterate on the nudging strategies and understand the risks and gaps of the ideal solutions (e.g. happy flow versus unhappy flow).
#4	What can be learned from the ideal solutions?	Reflect and get a deeper understanding of the happy flow. Identify potential alternative scenarios for the nudging strategies.

So, with the sketches (simple drawings) for the motivational strategies, based on the outcomes of the Hackathon (the harvest document and

stakeholder debriefing document) and the internal design process, you move on to further Prototype Development in co-creation with stakeholders.

8.2. Prototype Development

Prototype Development is an iterative, agile development process that uses periodical sprints and scrums. Prototype development is both an internal process and a process with the involvement of stakeholders to receive intermediate feedback on the design of the prototypes. It is a co-creation process in optima forma.

Below examples for the set-up of the co-creation sessions. The first is based on full availability of all stakeholders. The scrum sessions are either physical or on-line. Usually, it takes place in the following format (Table 3):



Table 3. Example of classic scrum sessions format.

Duration	2 - 4 hour weekly scrum sessions for all stakeholders with weekly sprint sessions for the design team
Number of participants	Max. 15, representing all key Stakeholders
Outputs	Backlog of new ideas with potential for use in the final version of the nudge; Prototype version of the proposed nudge based on the organisational/societal and behavioural changes it aims to bring about

However, in practice it isn't always possible to use this classic format. The various team members may not be able to take time away from their daily work to attend weekly scrums and sprints, or are all

employed at different locations. So, a revised format (Table 4) may be applied to achieve the same outputs from condensed sprint sessions.

Table 4. Example of adapted scrum sessions format.

Duration	2 scrum sessions (physical or online) for all stakeholders with 2 -3 months interval and several sprint sessions with the design team (physical in person and virtual)
Number of participants	Max. 15, representing all key Stakeholders
Outputs	Backlog of new ideas with potential for use in the final version of the nudge; Prototype version of the proposed nudge based on the organisational/societal and behavioural changes it aims to bring about



Make sure all stakeholders have the chance to submit feedback on the development process and outcome during all scrums and sprints.

Base any decisions regarding developments in the next sessions on this feedback.

8.3. Matching reasons/motivations with the R-framework

With the objective to turn the sketches into more detailed motivational strategies you must get feedback from your stakeholders in the co-creation sessions. Several methodologies will support you in this process. Based on the understandings from the axial coding researchers, creative designers and stakeholders (participants at the co-creation sessions) start the co-design process for more specific nudging solutions.

At the start of the co-creation session they have to depict an end-goal related to the “R’s” of circularity (the R-framework in the circular economy, a hierarchy of strategies for reducing waste and keeping materials in use. Different organisations use slightly different versions (3R, 5R, 9R or 10R). The most comprehensive and widely cited is the 10R framework.

Table 5. The 10R framework.

Refuse	Avoid unnecessary products or materials altogether
Rethink	Use products more efficiently or adopt new business models (e.g., sharing, renting)
Reduce	Minimise the use of materials and energy
Re-use	Use a product again for the same purpose without major modification
Repair	Fix a product to extend its useful life
Refurbish	Restore and update an old product so it works well again
Remanufacture	Use parts from discarded products to make a new product with the same function
Repurpose	Use a product or its parts for a different function than originally intended
Recycle	Process materials into new raw materials for manufacturing
Recover	Recover energy or other value from materials that can no longer be reused or recycled (e.g., waste-to-energy). This is generally the least preferred option

The above is also listed in hierarchy, the most to the least circular.

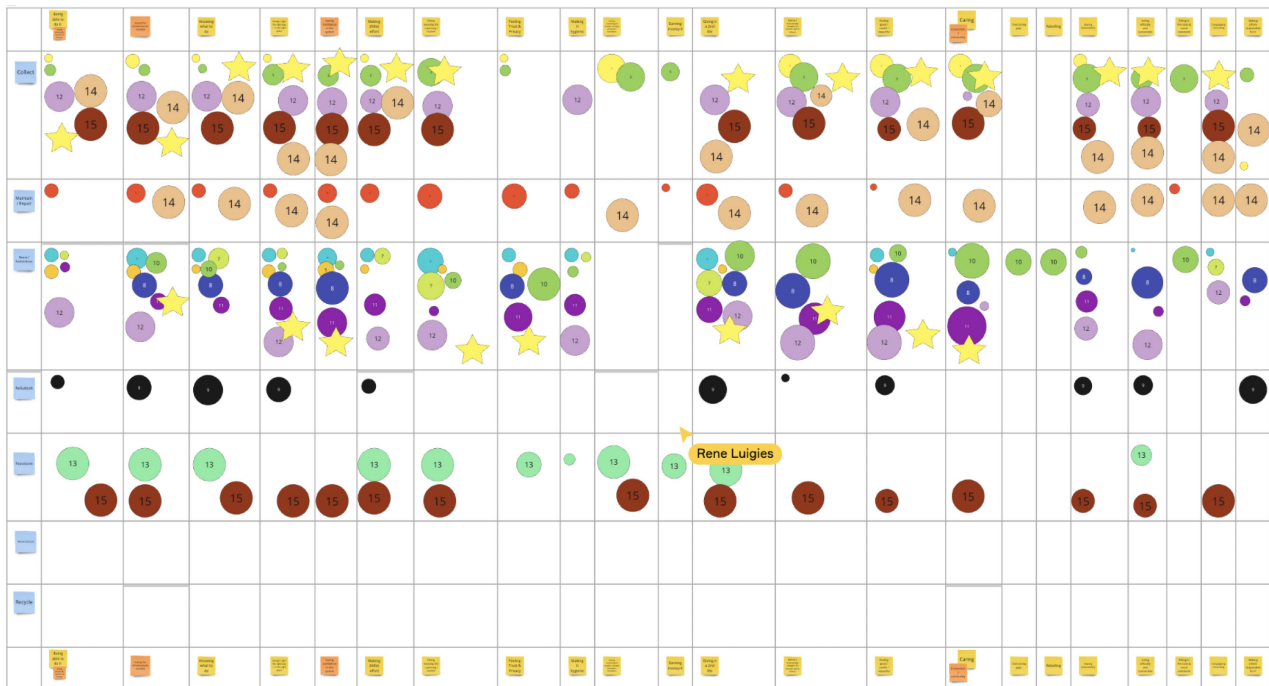
Once the range of “R”s for your product is defined in the co-creation session it is time to match these with the outcome of the axial coding, the reasons/motivations (Annex II). You ask participants to place coloured stickers at the combinations of the

R’s (Y-axis) and the reasons / motivations ((X-axis). Counting the number of coloured stickers this will result in an overview of the most preferred combination of R’s and reasons/motivations.

Figure 8 shows a result of the co-creation sessions in the DiCE project.



Figure 8. Presentation of the matrix for the R-framework and sketched motivational strategies.



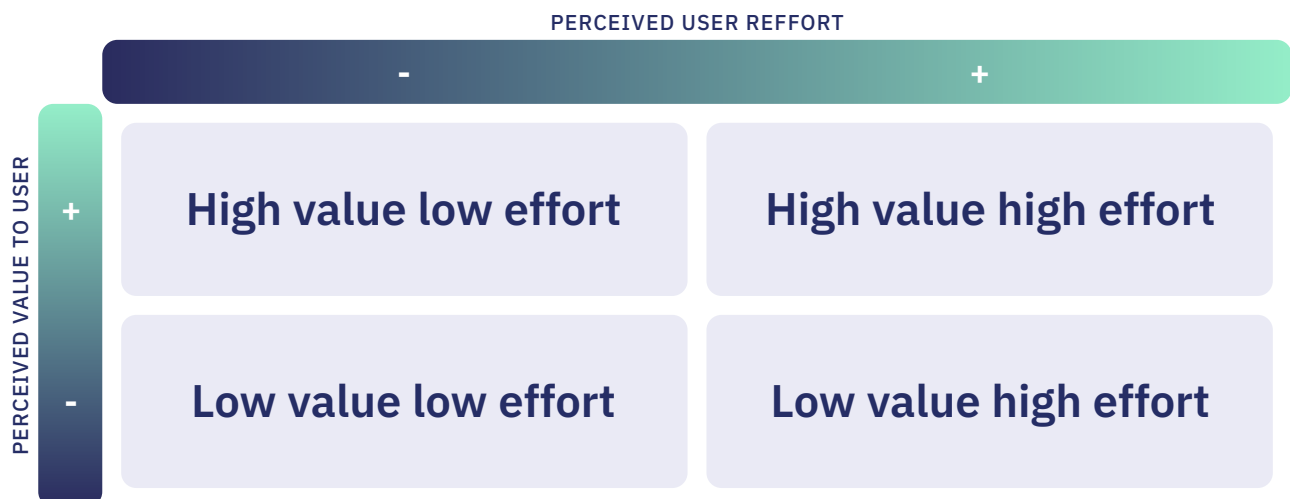
8.4. Feedback on sketches (concepts)

In the next stage of the co-creation session you present the design sketches for the motivational strategies. Give each of them a number. In an open brainstorm session you ask the stakeholders to write on Post-its the number of the sketch and any idea what pops up in their mind in relation to perceived value and perceived effort for the consumer.

negative perceptions. For this purpose you use the categories as presented in figure 9 where participants can put their input in one of the 4 sections. In this session it might even be that participants have alternative suggestions for motivational strategies. Be open for that and take them home.

Ideas can be a positive or a negative perception of the sketches. Use green of the positive and red for the

Figure 9. Rating of perceived value and effort.





Prepare all sheets and materials before the start of the co-creation sessions.

Ensure one of the team members collects all input in case of physical meetings.

Prepare and use a Miro board for online sessions.

8.5. Next design step

So far you have used multiple sketches as prototypes for the motivational strategies. Now you completed the co-creation sessions and collected all input it is time to make a selection of the sketches (simple drawings). You cannot convert all of these into working prototypes. Eventually you must end-up with about 3 – 4 prototypes to be tested in the small-scale pilots. Make your selection is based on the scores related to the R-framework and the perceived value and efforts. This is an internal process with your complete project team. Eventually this must result in a selection of about 6 more specific drawings of the prototypes.

In another scrum session with the same co-creation participants as in previous sessions you present

these more specific drawings. The objective of this session is to collect an overview of the prerequisites for the final design and inspiring design directions, called Motivators and Requirements which will guide you in the next stage,

In Annex X, Design Requirements, you will find an overview of examples for design directions. In bold the design directions which were chosen as the basis for the DiCE project. Annex XI provides a more detailed description of the motivators and requirements, the outcome from the Sustainability and the co-creation sessions.

8.6. Get your company involved

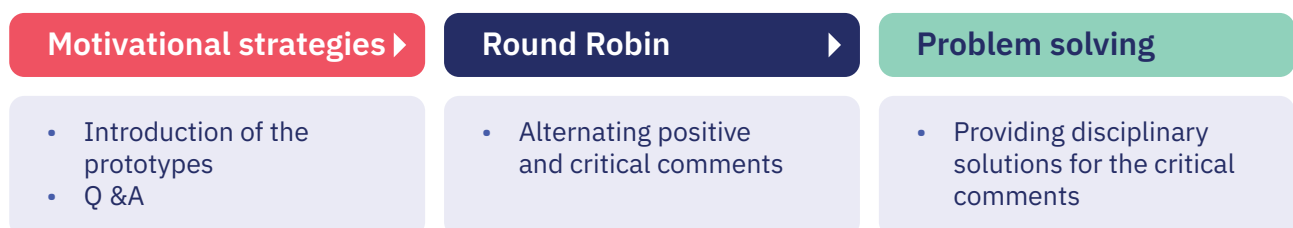
Commitment from your colleagues and management is relevant for success. So, you have to enable them to give feedback in a Round Robin session. Any suggestion, idea, response or comment is welcome. The ideal tool is a Miro board.

Assure that the participants have different expertise. Contributions from financial, marketing, product design and logistics experts are important to bring in feedback from different perspectives. Don't forget to invite top management. Although they will

be reluctant to participate, due to time constraints or other reasons, their commitment to the design of motivational strategies is essential for the sustainability strategy of your company.

As described before, present the prototypes to the participants, make teams of the various experts and allow them to give any kind of feedback on the prototypes. In several rounds enable them to further elaborate on the comments from their colleagues. Figure 10 presents the flow and content.

Figure 10. Visualisation of the methodology used during the feedback sessions with company experts.



8.7. Final design step and production

Now you will have collected all information to prepare the prototypes in order to start the Small-Scale Pilots. This step is the actual design and assembly (production) of the prototypes.

At first the selected specific drawings of the prototypes must be converted into detailed graphical designs, text and lay-outs which can be used for example by external suppliers, like for packaging, labelling or artwork. If this cannot be done “in the house”, make sure you select the appropriate partner. A detailed briefing of your needs and requirements helps you in this process. Don’t pick one, but ask a couple for quotes / offers (budget) and the estimated time line. The latter is relevant for scheduling production and start of the small- scale pilots.

With this detailed graphical design contact potential suppliers/producers of your motivational strategies. The same approach applies as for the external graphical designers. Of importance is that they will provide you with so called MVP’s, Minimal Viable Products for detailed review with your team. Do the MVP’s match your needs, requirements and specifications? Be only satisfied if all applies and make you and your team feel happy! Last step is to order the “products”, the motivational strategies.

Consider that this whole final design and production process needs again several iterations with your team. In combination with the suppliers time lines it may take several weeks to month until all is ready for the small-scale pilots.



Widen the project commitment within your company with experts.

Select the most appropriate external partners where needed.

Allocate sufficient time for the production of MVP’s.

9.

Small-scale Pilots

It is now time to get feedback from the actual users of your products on the motivational strategies (nudges). The goal of the small-scale pilots is to select the most appropriate nudges and wherever necessary identify changes in the design to refine these so you can test these in the confirmatory pilots.

Below a more detailed description of the methodology, procedure and data collection. Please note that these are based on the methodology applied in the DiCE project, so these are guidelines and might be subject to change for your particular project.

9.1. Methodology

Remember that the development of motivational strategies is an iterative process based on diverse ways of data collection. In the small-scale pilots, the first iteration starts with the prototypes of motivational strategies developed based on the inputs collected in the sustain-a-thons, design sprints and co-creation sessions.

In the second iteration you provide the participants with the prototypes redesigned based on the first

touch point and so on till you have completed the final touchpoint. The data resulted from these iterations in the small-scale pilots will be used to define three final motivational strategies for the confirmatory pilots. The final iteration is an internal process with your project team members. In order to avoid that your confirmatory pilots will not be too complex it is recommended to limit the number of final prototypes.



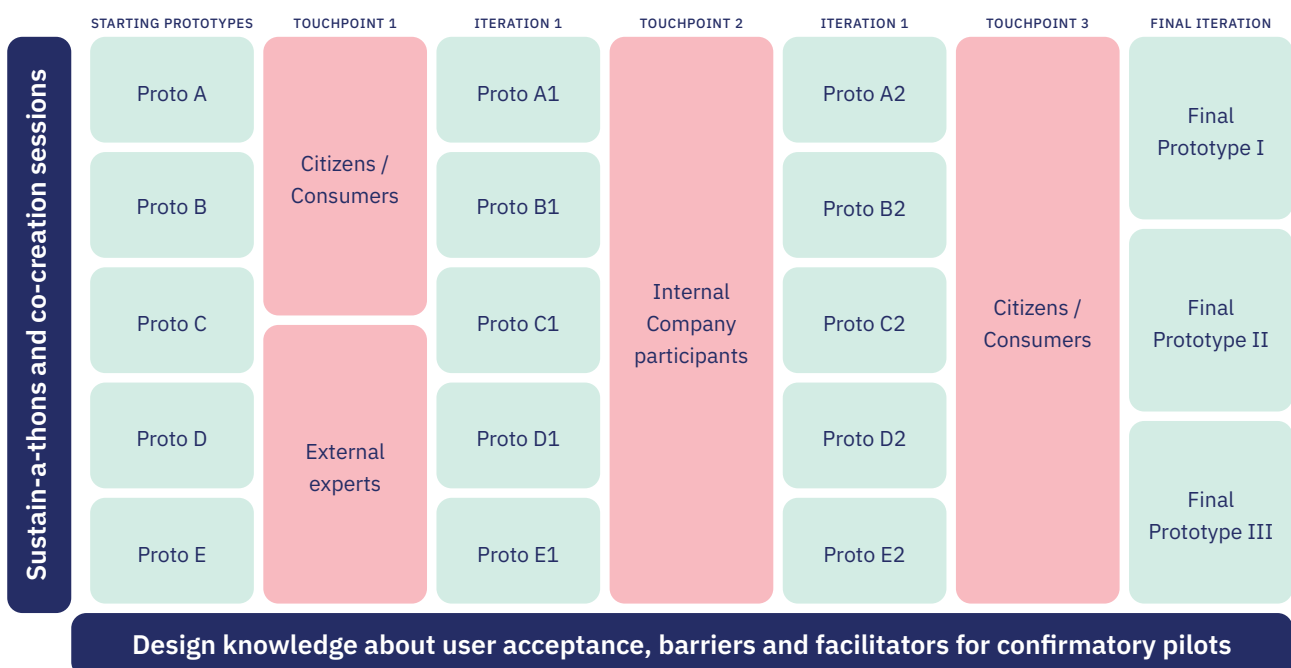
Plan the number of iterations in advance to assure you have sufficient participants.

Touch points are essential for the next design of your prototypes.

Limit the number of final motivational strategies.

Figure 11 describes the process of the different iterations of the prototypes of the motivational strategies during the small-scale pilots.

Figure 11. Process chart of the iterative development of motivational strategies.



9.2. Procedure and data collection

During the small-scale pilots, there are several **touchpoints** with participants. A touchpoint in research is any moment of direct interaction between researchers and participants. There are touchpoints

with citizens and touchpoints with external partners and with your company. Each touchpoint has a different duration and methodology.

9.2.1. Citizens' involvement

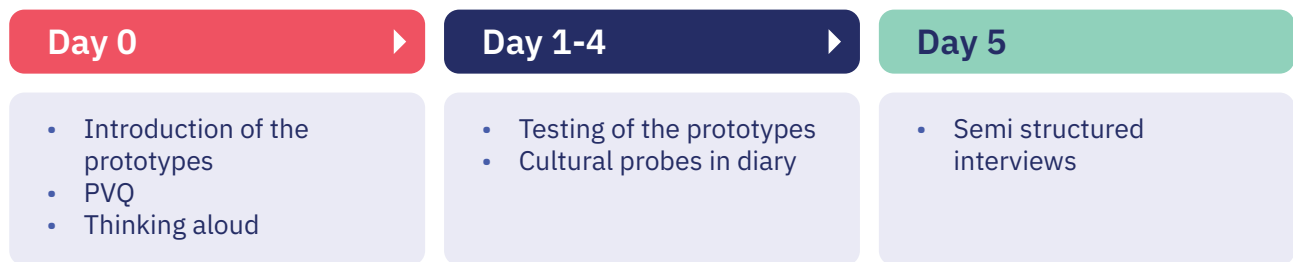
We recommend to involve citizens, your customers, in the pilot with a duration of for example five days. The number of citizens and external experts, and the duration depends on the overall design of the small-scale pilots, the ease of recruitment, their commitment, available time and the complexity of these pilots.

Figure 12 describes the cycle of touchpoints with citizens. Day 0 is used for including the participants

of a household in the pilot and providing information. Day 5 is used to collect feedback on the pilot through a semi-structured interview. During one testing period, different methodologies are used to gather data:

- Portrait Values Questionnaire (PVQ) (day 0)
- Thinking aloud (day 0)
- Cultural probes (days 1-4)
- Semi-structured interviews (day 5)

Figure 12. Visualisation of the methodology used for citizen engagement.



Since personal values play a role in sustainable behaviour, it is important to include a diverse mix

of individuals from the general population and if applicable per country.

9.2.2. Portraits Values Questionnaire

To assess the personal values and understand the characteristics of the citizens involved participants have to complete the 21-item version of the Portraits Values Questionnaire.

The PVQ (Sandy et al., 2003) is a psychological assessment tool designed to measure individual values based on the theory of basic human values developed by Shalom Schwartz. It consists of 21 questions to be answered on a scale from 1 (not at

all like me) to 7 (very much like me) See Annex VII: PVQ Questions and Score).

The PVQ identifies ten broad value types, each representing a different motivational goal. These values are organised into a circumplex model where adjacent values are compatible and opposing values are in conflict. An overview is listed in Annex V, the 10 values of motivational goals.



9.2.3. Thinking aloud

Once participants have completed the PVQ each receives two different motivational strategies prototypes. When receiving these the thinking aloud protocol is initiated. The thinking aloud (or think-aloud) method is a user research technique used in design, and product development to understand how people interact with a product or prototype. Participants are asked to verbalize their thoughts, feelings, and decision-making while they complete a task. Instead of only observing **what** they do, researchers also hear **why** they do

it. It is especially valuable during iterative design because it provides qualitative insights that help designers refine a product before launch.

In short, the think-aloud method lets designers step into the user's mind by combining observation with the user's own explanations, making it one of the most effective techniques for uncovering usability problems early in the design process. Advise is to record the sessions.

9.2.4. Cultural probes

The actual testing of the motivational strategies prototypes starts on day one, using cultural probes. Cultural probes are a common approach for context mapping in qualitative research.

According to the Interaction Design Foundation "Cultural probes are an approach to qualitative user research, where face-to-face research is impractical or inappropriate. They consist of prompts, questions and instructions along with artifacts for recording thoughts and feelings" (Interaction Design Foundation - IxDF, 2022).

Each household in the small-scale pilots receives a cultural probe in the form of a diary with questions and exercises related to the prototypes. The first three days are identical for all prototypes. The final day depends on the prototypes that the customers are testing (see this link: the prompts, exercises and questions used in the diary).

The diary may contain playful and collaborative questions, for example relevant to the following themes:

- Preferred way of recycling: e.g., indicate which way of recycling would be most convenient.
- Evaluation of requirements: e.g., place the requirements in order of importance.
- Evaluation of the motivational strategy: e.g., would the specific information added to the product motivate you to recycle it?
- Creative suggestions: e.g., what stickers would you design to put on the product to remind you to recycle it?

A final step is to conduct semi structured interviews. During the interviews participants are asked to share their experiences and activities with the cultural probes. Record the interviews and summarise these for analysis.

9.3. Analysis

After all is accomplished you must analyse the data gathered during the small-scale pilots. Two types of data are at to be analysed, qualitative and quantitative, depending on the method used in the touchpoints.

The thinking aloud method, interviews, certain exercises from the diary and the data from the first round of feedback with the multi-disciplinary actors contains qualitative data. Qualitative data can be grouped into higher order findings by using the thematic analysis approach (Braun & Clarke, 2006)

in which all statements about a prototype were placed on separate lines and clustered into themes.

Qualitative data from the external experts and your company gathered in the second feedback round can be used more quickly to make changes to the second iteration of the prototypes before testing them.

The PVQ and certain exercises from the diary contains quantitative data. Quantitative data can be transferred to Microsoft Excel to create descriptive statistics (meta data).

9.4. Final Motivators and Requirements

When you completed the Sustain-a-thons and co-creation sessions you defined a set of motivators and requirements essential for the design of the motivational strategies prototypes. Now you have analysed the results of the small-scale pilots it is time to review the set of motivators and requirements and to refine these. The result is the final set of motivators and requirements. These will support you in the design of the final motivational strategies to be tested in the confirmatory pilots.

Annex XIII provides an overview of the final motivators and requirements as derived from the DiCE project. You might use these as a reference.

Interesting exercise will be to first prepare your own set and then compare these with the ones in Annex II. This might bring you to additional ideas for the design of the final set of motivational strategies.

Please note that you will not be able to include each of the motivators and/or requirements into your products motivational strategy. You will have to make a selection of a combination of about three motivators and make a fit with the requirements.

This final selection of motivational strategies will now be evaluated in the confirmatory pilots.

9.5. Collection or Reverse Logistics

Please be aware of the fact that the choice of the reverse logistics, the collection for the return of the products is **not part of this training**. This training is purely intended for the design of motivational strategies. Concerning the reverse logistics, you either may have this already in place for your company/products or you may use existing systems, like postal or delivery services, particular collection points or other options.

However, it is advised to do a brief research on this in your small-scale pilots, for example as part of the cultural probes or the semi structured interviews. You may pick one, two or three systems which are most appropriate for your company/product and investigate which of these has preference of your customers. In any case, for the confirmatory pilots you need to provide a return system for your participants.



You need to have a collection system in place for the return of your products in the confirmatory pilots.



10. Confirmatory Pilots

The confirmatory pilots will build upon the findings of the Sustain-a-thons, co-creation sessions and small-scale pilots. They provide evidence on the feasibility, user acceptance and operational performance of the proposed motivational strategies and logistical feasibility.

The overarching goals of the confirmatory pilots are:

- To compare the effectiveness of different return schemes (with or without nudges (baseline) – quantitative results
- To gain insight into user experience: feedback on nudging strategies and if applicable on collection systems – qualitative results.

The main objective of the confirmatory pilots is to prove the effectiveness of the motivational strategies and to define the most effective one.

For the set-up you may use the same pilot team as for the small-scale pilots. They are familiar with the design process, the design of the motivational strategies, the related product and your objectives.

Condition sine qua non is the support of a statistician to define the design (methodology) of the pilots, the sample size (number of participants to be included) and the participants profile (inclusion criteria).

10.1. Cover Story

Bias in the study results may be caused if the participants know what the objective is of the study, the return rate. Therefore you must consider the use of a cover story, for example that they are participating in a project from a product supplier to assess and compare the useability of different product designs. Each pilot participant will receive several different product designs. Differences could e.g. the colour of the product, the packaging, the instructions for use or any other characteristic.

Then the evaluation will be to provide participants with a questionnaire about the different designs. Since this is a kind of fake research you must include a final interview (debriefing) with the participants to explain the main objectives, measurement of the return rates as the result of the different motivational strategies. This will avoid a potential loss of confidence in your company.



The cover story should not interfere with your research objectives, defining the return rates based on the motivational strategies.

10.2. Study Design

Figure 13 presents a potential study design. The number of periods depend on the number of product designs. The length of each period should be sufficient to enable the participants to return the product. Recommended is at least 4 weeks. Remember, they will not be asked to return the product. The return depends on the effect of the motivational strategy.

The number of participants (Y-axis), the sample sizes, should be equal for the different motivational strategies depending on the required quantity defined by the statistician to achieve a significant difference in the return rates.

You might consider to add a baseline before the first motivational strategy, providing participants with the

different product designs without any motivational strategy and only the cover story.

In addition to quantitative research it makes sense to add qualitative research by questionnaires, for example on usability, on waste management and to collect the experiences of the study participants. Just the numbers of the return rates will not tell you the complete story. For future implementation of the motivational strategies it is relevant to learn more about the “why’s”, “what’s” and “how’s”.

Remember that in practice these may differ from what is defined in the Sustain-a-thons, co-creation sessions and small-scale pilots. Very relevant information for actual implementation.



Figure 13. Draft for the confirmatory pilots (without baseline).

PERIOD 1	PERIOD 2	PERIOD 3
Motivational Strategy 1	Motivational Strategy 1	Motivational Strategy 1
Receive Product Design 1	Receive Product Design 2	Receive Product Design 3
Motivational Strategy 2	Motivational Strategy 2	Motivational Strategy 2
Receive Product Design 1	Receive Product Design 2	Receive Product Design 3
Motivational Strategy 3	Motivational Strategy 3	Motivational Strategy 3
Receive Product Design 1	Receive Product Design 2	Receive Product Design 3

The final study design very much depends on the number of motivational strategies and the overall objective of your project which you have agreed upon within your project team.

For example, do you want to achieve a statistical significance in return rate? And what difference in return rate do you expect between the different

motivational strategies, which might be estimated based on the feedback from the small-scale pilots.

You must consider that the number of participants and motivational strategies have direct consequences for the total cost of your project.

Unlikely is that at the start of the project an estimate of the cost for the confirmatory pilots is feasible.



The design of the confirmatory depends on the outcome of all previous design stages.

Preparation of the confirmatory pilots can only be initiated after completion and analysis of the small-scale pilots.

Budget for the confirmatory pilots very much depends on the number of participants and motivational strategies.

10.3. Logistic challenge

The final confirmatory pilots are a logistic challenge. All components for the motivational strategies and possible product versions have to be prepared and delivered in due time. Depending on the kind of motivational strategies this may require additional (human) resources, like graphic designers, artwork and printing companies, delivery/postal services, legal advisors, ethical committee or other external partners.

It is a true team effort and requires cautious planning. It therefore is essential to get the full commitment

of your complete project team. Make sure that each team member is 100% available in this period. And for the planning consider that there may be delays, for example caused by external suppliers.

Below is a table which may serve as a tool to support you.

Table 6. Actions per external party to prepare confirmatory pilots.

External Party	Actions
Artwork (if not in company) Printing company	Get quotations from several parties (at least from three different parties) Ask for and get sample designs Select one based on quotation and quality Agree on the overall price and delivery time and have this confirmed in writing
Delivery and return collection services	Get quotations from several parties (at least from three different parties) Select one based on quotation and quality Agree on the overall price and delivery time and have this confirmed in writing
Legal advisors (if not in-company)	Non disclosure agreements (needed or not) for external partners Privacy matters and/or insurance for pilot participants Informed consent for pilot participants
Ethical committee	Check if ethical approval is required Provide them with the study protocol Prepare a time line with them

Annex XIV presents an example for the flow from preparation to post the confirmatory pilots.



Assure you have all external advisors on place.

Start as soon as possible with the project team.

Consider the design of all materials of the confirmatory pilots will take considerable time and so the recruitment of the study participants.

10.4. Analysis and Report

Related to the overarching goal the primary outcome measures are:

- How many devices are returned in each country?
 - When using “N” devices, the value between 0 – N
- Exploratory:
 - How often do participants dispose of materials
 - Differences between participants characteristics
 - Preferences & Opinions

It doesn't make sense to come here with a full description of the report based on the analysis of the results. Altogether, there are a couple of main issues



to keep in mind:

- The report is there to define the future strategy of your company related to a circular economy
 - It has to provide top management with information and tools to define that strategy
 - So, not just about what you want to communicate to them but first and foremost, how do you want to communicate this.
- Quantitative data may serve as input for the preparation of a business plan

- Qualitative data may support the SWOT and Risk assessment in the business plan
- The report is easy to understand and read for all other employees, since they may play a crucial role in the implementation of the motivational strategies.

Create the opportunity for feedback and Q&A for top managers and other employees, so make it as a kind of prescription with strong recommendations.

10.5. That's it for now!

We have reached the end of the training course. Whether you have followed this on your own, or with your team, we trust this was a useful experience and exercise.

We will not reward you with a price. The best reward is the full acceptance of the designed motivational strategies and the successful implementation. However, once you have completed all exercises you earn a certificate of performance to hang on the wall of your office.

Please note that we have not included the preparation of a business plan in this training course. That would require too much of your time. Besides, we trust you as a business person will be able to prepare this. And if not, there are other trainings for this purpose.

In the following you find some additional support to be considered as relevant for the overall project.



11.

Support Area

11.1. Team Building and Managing Expectations

The key benefit of assembling multidisciplinary teams for design processes is in fact the variety of ideas and opinions that the team will generate. But, at the same time, these differing interpretations and ambitions could lead to tensions following the Hackathon, if not managed diplomatically.

Effective team building and managing participant expectations are therefore vital components of following up after the Hackathon. Ultimately,

investing time and thought into team building and managing expectations will shore up your project's potential for ongoing success. Developing the idea the team devised in the Hackathon into an actual, tangible product will require high levels of work, commitment and investment (in terms of time, intellect, funds, etc.). It's vital that each team is on the same page when it comes to these expectations, as well as potentially sensitive subjects such as who will officially own the final product.



Avoiding complications is often as easy as starting open conversations on these topics at an early stage.

Managing expectations during the process is very important, as the decisions you make will affect the outcome.

11.2. Supporting your Hackathon teams with on-hand multi-sector expertise

Your Hackathon teams will consist of participants from a wide range of backgrounds and knowledge levels, from retailers to graphic designers, external experts, legal advisors, regulatory advisors, suppliers, consumers, etcetera. Some will come in

with more Hackathon experience than others, but even the veterans might come across topic areas they've never delved into during this particular Hackathon. So, it's wise to have support on hand to guide the event along.

11.3. Ideation with Design Thinkers

It's important that the teams stick to their Ideation for as long as needed to generate a truly novel and insightful idea, without jumping (even subconsciously) to predictable conclusions. Experts

in Design Thinking could coach the teams by suggesting tools and methodologies to keep their creative juices flowing and posing open questions to encourage and optimise their innovation process.

11.4. Generating Novel Concepts with IP Experts

Coming up with new ideas with the aim of developing them into a new product, service or concept inherently creates Intellectual Property (IP). Having an IP expert on hand throughout the Hackathon process can support your teams to open up discussions around the future ownership of IP and how to manage this theme as their design processes progress.

It's not necessary to dive into the details of the various ways of applying for IP at this early stage, as the teams will cross that particular bridge when they come to it. That said, highlighting the topic of IP right from the get-go can facilitate its management further down the line.



XP BOOST

Encourage your facilitating experts to introduce themselves and their professional specialities with presentations to all the teams at the start of the Hackathon. That way, the teams will know who to turn to when questions come up during the event.

11.5. Prototype Criteria

Each team's prototype must be a version of their nudge that can be used in daily practice, either within a consumer setting or at retailer's shop. It goes without saying that this prototype also has to align with the overall project Moonshot. Whatever kind of prototype your teams come up with, it has to fit certain key requirements. In a nutshell, the prototypes must:

- Comply with applicable regulations
- Comply with applicable quality requirements / standards (both ethical and practical)
- Enable the efficacy and efficiency of the product to be tested in practice
- Enable product feasibility testing in retailers shops or at consumers' homes
- Be sufficiently self-explanatory to be able to be used in practice
- Include clear objectives for their proposed nudge
- Have clear parameters set to analyse prototype effectiveness



CRITICAL HIT

Your teams should ensure that major modifications can still be made to their prototypes, without incurring major costs or requiring a complete redesign. The prototypes should also align with the project Moonshot and Hackathon Moonshot.



XP BOOST

Leveraging the expertise of the potential product users (e.g. retailers and consumers) and the other stakeholders on hand during the co-creation sessions will help teams to ace these prototype criteria.



XP BOOST

In reality, the Customer Journey is the Moonshot for the co-creation stage. Encourage your participants to think along the above lines, to avoid any future resistance in practice from e.g. both retailers and consumers. You have to make sure they will get wholeheartedly behind the concept, in order to achieve full acceptance and successfully market it!



Annexes

ANNEX I: Themes for motivational strategies

If you're developing **motivational strategies for a circular economy** (e.g., for research, policy, organisational change, or business implementation), the following themes are particularly relevant:

Behavioural Change and Consumer Engagement

- Understanding what motivates individuals to adopt circular behaviours (e.g., repairing, reusing, sharing, recycling).
- Applying behavioural science, nudges, incentives, and social norms.
- Building awareness and environmental values.
- **Economic Incentives and Business Value**
- Financial motivations for organisations and consumers.
- Circular business models (product-as-a-service, leasing, remanufacturing).
- Cost savings, revenue opportunities, and long-term competitiveness.
- **Stakeholder Collaboration and Shared Responsibility**
- Motivating collaboration across governments, businesses, suppliers, consumers, and NGOs.
- Developing partnerships and shared value creation.
- Building trust and aligning incentives across the value chain.
- **Leadership and Organisational Culture**
- Encouraging employees and management to embrace circular principles.
- Creating a culture of sustainability and innovation.
- Leadership commitment, employee engagement, and internal communication.
- **Policy, Regulation, and Governance**
- The role of legislation, standards, and public procurement in motivating circular practices.
- Extended Producer Responsibility (EPR), tax incentives, and subsidies.
- Compliance versus voluntary commitment.
- **Innovation and Technology Adoption**
- Motivating investment in circular technologies.
- Digital solutions such as product passports, IoT, AI, and blockchain to enable circularity.
- Supporting experimentation and learning.
- **Education, Awareness, and Knowledge Sharing**
- Increasing understanding of circular economy principles among citizens, employees, and decision-makers.
- Developing sustainability competencies.
- Sharing best practices and success stories.
- **Social and Environmental Values**
- Intrinsic motivation based on environmental stewardship, ethics, and social responsibility.
- Community engagement and collective action.
- Creating a sense of purpose beyond economic gains.

ANNEX II: Examples of reasons / motivations collected in the DiCE project

#	Reason/Motivation	Remarks
1	Being able to do it	Having the infrastructure organised (existence of specialised bins). Being physically capable of doing it.
2	Taking (little) effort	Match value with effort to reduce overthinking. Task should be easy to do, while taking into consideration space at home and depending on whether the object is too big. Perceived distance and time investment is critical.
3	Knowing what to do	Reduce complexity to understand what to do with the device, where to take it back.
4	Fitting everyday life / planning / routine	Close or on the way to everyday places, like supermarkets. Matching the schedule of the people (e.g. travel to work, shopping and place being open / available).
5	Doing it right the right way and/or at the right place	Bringing it to the right place, with the certainty that it will be properly taken care of, so the right way. Doing it in a way that feels logical.
6	Feeling Trust & Privacy	Trusting the system, both as keeping privacy of private (medical) data and in the sense that it will be disposed of properly. Transparency of the system.
7	Making it hygienic	Throughout all contact points that end-users have with a product: using it, handing it in for recycling / waste, visiting the landfill where it might end, etc.
8	Sharing responsibility	Working as a community / being part of the community.
9	Earning money	Getting money (or money worth) when returning the device. Selling it back.
10	Giving it a second life	Extending the lifespan of the device by for example giving it to another person, repairing, or modular design.
11	Making it emotionally valuable (to oneself and to others)	Getting something emotional in return, also valuable for others.
12	Caring	Showing respect to the society and to potential future re-users.
13	Feeling good / useful / impactful	Feeling satisfaction, doing something that is useful and that will have a long-term impact.
14	Overcoming gaps	Perceived difficulties in one's situation (e.g. culture, old versus young generations, city versus countryside, norms/standards).
15	Rebelling	Going / acting against the status quo.
16	Having something of quality / visually attractive / Aesthetics	Quality of the product's outlook / aesthetics of the product's outlook is such a way that people like to return it for recycling purposes.
17	Making others responsible for it	Others, such as shops, distributors, manufacturers, etc. should take care of it. It could also be seen as the customer/citizen evading responsibility.
18	Fitting in the rules & social standards	Doing what others do, what is expected from rules, norms, laws.

19	Acting ethically and sustainable	Doing something which is accepted from an ethical point of view and contributes to sustainability (planetary health)
20	Campaigning / Educating	Doing something to educate others. Also, in the sense of someone else should educate others.

ANNEX III: Results of the axial coding

Focused coding	Situation Concrete vs Abstract	Emotional vs Logical	Who takes action	Action to(wards) whom	Consequences (Outcomes of those actions)
Having the infrastructure Being able to do it Being physically capable of	Concrete	Emotional Logical	Self Others	Self	Permanent
Knowing what to do lack of instructions	Concrete	Logical	Self	Self	Permanent
Doing it the right way / in the right place Doing it in a way that make sense	Concrete	Logical	Self Others	Self	Permanent
Making (little) effort	Concrete	Emotional Logical	Self	Self	Ephemeral
Fitting everyday life / planning / routine	Abstract Concrete	Logical	Self	Self	Permanent
Feeling Trust & Privacy	Concrete Abstract	Emotional	Self	Self Others	Permanent
Making it hygienic	Concrete	Emotional	Self Others	Self Others	Ephemeral
Having something of quality / visually attractive / Aesthetics	Abstract Concrete	Emotional	Self	Self	Ephemeral
Earning money €	Concrete	Logical	Self	Self Others	Ephemeral
Giving it a 2nd life	Concrete	Logical	Self	Self Others	Permanent Ephemeral
Feeling good / useful / impactful	Abstract	Emotional	Self	Self Others	Permanent Ephemeral
Making it emotionally valuable (to oneself and to others)	Abstract	Emotional	Self	Self Others	Permanent Ephemeral
Caring	Abstract	Emotional	Self	Self Others	Ephemeral Permanent
Overcoming gaps	Concrete Abstract	Emotional Logical	Self	Self Others	Permanent Ephemeral
Rebelling	Abstract	Emotional	Self	Self Others	Permanent Ephemeral
Sharing responsibility	Abstract	Emotional	Self Others	Self Others	Permanent
Acting ethically and sustainable	Abstract	Logical Emotional	Self Others	Self Others	Permanent
Fitting in the rules & social standards	Abstract	Logical	Self Others	Self Others	Permanent
Making others responsible for it	Abstract	Logical	Others	Others	Permanent
Campaigning / Educating	Abstract	Logical	Self Others	Others	Permanent

ANNEX IV: More detailed explanation of Benevolence, Universalism and Self-Direction

Benevolence is defined as the preservation and enhancement of the welfare of people with whom one is in frequent personal contact. Benevolence plays a crucial role in meeting the three fundamental requirements of human existence: individual biological needs, coordinated social interaction and group survival and flourishing. Its emphasis on local, personal relationships distinguishes it from universalism, which extends concern to all people and nature.

Universalism is characterized by understanding, appreciation, tolerance and protection of welfare of all people and nature. It is part of the self-transcendence domain, which prioritizes the welfare of others beyond one's immediate circle. Universalism plays a crucial role in promoting environmental protection.

Self-direction emphasizes independent thought and action. It is crucial for personal growth and development, encouraging individuals to think and act independently. It supports innovation, creativity and the pursuit of personal goals, which can be beneficial both for individuals and society.

ANNEX V: The 10 values of motivational goals

Self-direction: This value emphasises independent thought and action. Individuals who score high on self-direction value creativity, freedom, and choosing their own goals.

Stimulation: Stimulation values seek excitement, novelty, and challenge in life. People who prioritise this value desire a varied, adventurous life and actively seek out new experiences.

Hedonism: Hedonism centres on pleasure and sensuous gratification for oneself. High scorers on hedonism prioritise enjoying life and indulging in pleasurable activities.

Achievement: Achievement values focus on personal success through demonstrating competence according to social standards. Individuals valuing achievement strive for ambitious goals and seek recognition.

Power: Power values pertain to social status, control, or dominance over people and resources. Those who score high in power seek authority, wealth, and social influence.

Security: Security values emphasise safety, harmony, and stability of society, relationships, and the self. Individuals prioritizing security value family security, national security, and personal safety.

Conformity: Conformity values highlight restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms. High scorers on conformity respect social order and traditions.

Tradition: Tradition values respect, commitment, and acceptance of the customs and ideas that traditional culture or religion provide. People who value tradition uphold and preserve cultural or religious practices.

Benevolence: Benevolence values emphasise the preservation and enhancement of the welfare of people with whom one is in frequent personal contact. High benevolence scorers are helpful, honest, forgiving, and responsible towards others.

Universalism: Universalism values understanding, appreciation, tolerance, and protection for the welfare of all people and nature. Individuals who score high on universalism advocate for social justice, equality, and environmental protection.

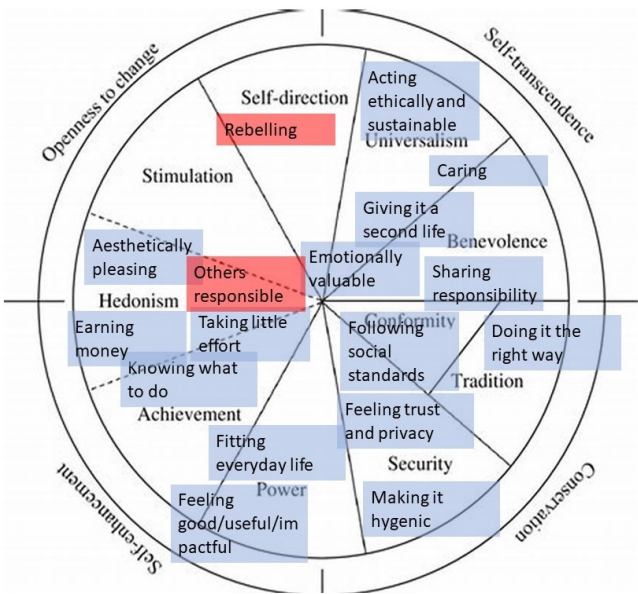
ANNEX VI: Example for a Hackathon time table

DAY 1	
Time	Activity
17:00	Registration - Dinner
17:30	Hackathon Opens
19:00	Introduction of Themes
19:30	Break
20:30	Pitching of Problems
20:45	Forming of Team
21:30	Closing Drinks & Networking
DAY 2	
Time	Activity
08:30	Start
08:40	Inspiration Session – Breaking Ice
09:00	Tools & Methods I
09:30	Hacking
Meanwhile parallel	Coach Training & Briefing
10:00	Start Coaching Teams
13:00	Lunch
13:30	Tools & Methods II
14:00	Continue Hacking & Coaching Teams
17:00	3 Minutes Pitches on Progress
18:00	Wrap up
19:00	Dinner
20:00	Continue Hacking
24:00	End

ANNEX VII: PVQ Questions and Score

Nr.	Question	Very much like me	Like me	Somewhat like me	A little like me	Not like me	Not like me at all
1	Thinking up new ideas and being creative is important to him/her. He/she likes to do things in his/her own original way.	1	2	3	4	5	6
2	It is important to him/her to be rich. He/she wants to have a lot of money and expensive things.	1	2	3	4	5	6
3	He/she thinks it is important that every person in the world should be treated equally. He/she believes everyone should have equal opportunities in life.	1	2	3	4	5	6
4	It's important to him/her to show his/her abilities. He/she wants people to admire what he/she does.	1	2	3	4	5	6
5	It is important to him/her to live in secure surroundings. He/she avoids anything that might endanger his/her safety.	1	2	3	4	5	6
6	He/she likes surprises and is always looking for new things to do. He/she thinks it is important to do lots of different things in life.	1	2	3	4	5	6
7	He/she believes that people should do what they're told. He/she thinks people should follow rules at all times, even when no-one is watching.	1	2	3	4	5	6
8	It is important to him/her to listen to people who are different from him/her. Even when he/she disagrees with them, he/she still wants to understand them.	1	2	3	4	5	6
9	It is important to him/her to be humble and modest. He/she tries not to draw attention to himself/herself.	1	2	3	4	5	6
10	Having a good time is important to him/her. He/she likes to "spoil" himself/herself.	1	2	3	4	5	6
11	It is important to him/her to make his/her own decisions about what he/she does. He/she likes to be free and not depend on others.	1	2	3	4	5	6
12	It's very important to him/her to help the people around him/her.	1	2	3	4	5	6

Nr.	Question	Very much like me	Like me	Somewhat like me	A little like me	Not like me	Not like me at all
	He/she wants to care for their well-being.						
13	Being very successful is important to him/her. He/she hopes people will recognise his/her achievements.	1	2	3	4	5	6
14	It is important to him/her that the government ensures his/her safety against all threats. He/she wants the state to be strong so it can defend its citizens.	1	2	3	4	5	6
15	He/she looks for adventures and likes to take risks. He/she wants to have an exciting life.	1	2	3	4	5	6
16	It is important to him/her always to behave properly. He/she wants to avoid doing anything people would say is wrong.	1	2	3	4	5	6
17	It is important to him/her to get respect from others. He/she wants people to do what he/she says.	1	2	3	4	5	6
18	It is important to him/her to be loyal to his/her friends. He/she wants to devote himself/herself to people close to him/her.	1	2	3	4	5	6
19	He/she strongly believes that people should care for nature. Looking after the environment is important to him/her.	1	2	3	4	5	6
20	Tradition is important to him/her. He/she tries to follow the customs handed down by his/her religion or his/her family.	1	2	3	4	5	6
21	He/she seeks every chance he/she can to have fun. It is important to him/her to do things that give him/her pleasure.	1	2	3	4	5	6



ANNEX IX: Detailed description of the Sustain-a-thons organised in the DiCE project

1.Sustain-a-thons Scenarios

Games for Health - Eindhoven
Contact: rene@gamesforhealth.net

Increasingly more (health care) products contain electronic components. These medical e-waste contain heavy metals (lead, copper, cadmium and chromium), halogens (bromine and chlorine) and brominated flame retardants. Both the mining and (waste)processing of these products have a great impact on our environment and planetary health

During the Sustain-a-thon we invite citizens and health care professionals to explore *how we can reduce the impact of medical e-waste on the environment*. The below questions are central to these explorations, related to behavior, motivation, impact, feasibility and scalability.

Roughly the questions are:

Behavior:

- What do you do with used/end of life (healthcare) products and e-waste?
- How do you reuse it?
- How do you throw it out?
- How do you sell / give away?
- How do you recycle?

Motivation:

- Why do you (not) collect and recycle?
- What do you 'need' to collect and recycle?
- What are challenges / obstacles to collect and recycle?

Impact: How would the returning of products change your day-by-day life/profession?

Feasibility: What would be a practical solution for you to start or keep active in sustainable waste management?

Scalability: What would be a practical solution for your friend to become more sustainable?

- How about your direct neighbours?
- How about your neighbourhood?
- How about your city?
- How about your region?
- How about your country?

In order to explore the above questions we organize 'Sustain-a-thons'. These are days in which we invite important stakeholders (medical professionals and citizens/patients) involved in medical e-waste and have them find answers to above questions by designing solutions. The questions above are hierarchical by design and built towards a better understanding of personal motivations to engage in sustainable (re)use/recycling of products.

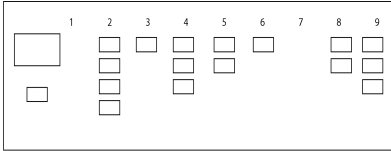
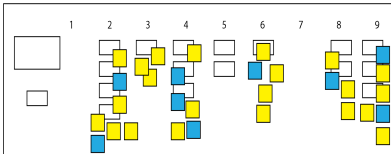
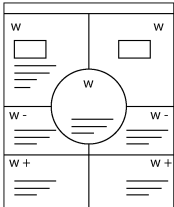
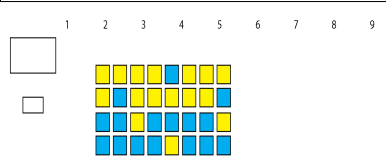
2.Overall planning Sustain-a-thons

At the Sustain-a-thon we invite all stakeholders to one (physical) location. Here they will work together to find solutions to the medical e-waste problem. The focus of these gatherings is highly individualistic / self-centred by design: what would you want / do / care about?

Playbook: Sustain-a-thon

Times are an indication, hosts need to connect to the pace of participants and culture.

When	What Participants do	What the organisation does
		Prep space for Walk-in
9:30 -10:00	Walk-In & Coffee and receive a sticker. Create groups from different colours Blue = Citizen Green = Health Professional	Welcoming participants AV check speaker Have participants sign a privacy/photograph /video/use of data consent
10:00-10:15	Introduction talk on e-waste What is the problem Who are the problem owners / stakeholders Where does the problem occur When do we see most e-waste	Making pictures, You need a screen for showing PowerPoint
10:15-10:25	Get to know each other: 5 min: Write down:	Facilitator helps people to get acquainted. Distribute cards for people to write on before they speak.

	Your name, your profession and your favourite phone. 5 min: Introduce yourself to the group	This way, all answers are short and insightful.
10:25-10:45	Mapping exercise of collection/disposal possibilities. 10 min map deposits of electronic device from the house/hospital 10 min rearrange the map deposits of electronic health product from the house/hospital  Focus is not on scalability. Focus is on personal experiences and figuring out what ones implicit theories are in regard to recycling initiatives. Focus in on doing (vs debating)	The moment participants start: mapping the images, write down on post-its, what they say. This lowers the barriers to write it down on their own. Distribute 'Map' (more info: map of sustainability) Coach groups Have them write down stuff, rather than talk / discuss. Try to steer them away from 'coffee table conversations' Make a picture of the finished Map
10:45-11:00	Mapping the reasons to deposit electronic devices.  Put post-its with a reason: why would you dispose of e-waste here, and why wouldn't you do it?	Distribute the written down reasons to participants and have them put on the map. Then, participants need to describe their own reasons
11:00-11:20	5 W's Divide groups into two groups (3 per group) Participants receive one of the products. Participants choose a situation they want to explore. Participants complete a 5W template. Who, What, Where, Why, Why Not And When would X recycle (e)waste. 	Gather 5W-sheets Film people's response to their templates.
11:20-11:45	Break 	Make pictures / movies Hosts can further probe participants for their implicit theories. Sit down and discuss the session with them informally. Gather the post-its together.
11:45 - 12:15	Problem solution exercise	Prep recording place

	Participant pairs/groups (of 3) take the 5Ws template of others (the completed forms) and design a solution for them. Participants write the solutions on paper (ideas for a possible solution -template)	Make pictures Help groups to put things on paper, try to steer away from discussions (it is more like a brainstorm)
12:15 - 12:45	Pitch writing Participants write down their solution on A3 papers (A Solution Template). Participants prepare a short pitch for their ideas: 1 minute max. per group.	Help participants trim down the solution to a short pitch.
break		
12:50 - 13:20	Pitch time Participants pitch their idea for the other groups	Record and host the pitches
13:20- 13:25	Closing Participants are asked to leave a sticker (they receive 3) on the solutions they like/ support during informal drinks	Gather all material and group them accordingly on the wall 5Ws template A Solution Ideas for a possible solution
13:25- 14:30	Informal Drinks or Lunch (depending on start time and culture) Support/like an idea by leaving stickers while having an informal drink	Make pictures of the completed templates. Put all pitch-movies in a showreel and have it loop during the drinks.

Alternative afternoon/evening program

If it is not possible to recruit people for this program, organizers can set up an afternoon/evening program. Obviously breaks can be created to fit the occasion.

3.Checklists

Checklist - needed for participants

- 5 tables (preferably standing tables) of at least 2m in length where people can gather around
- Chairs / Stools (preferably less than participants)
- Brainstorm material
 - Post Its
 - Pens / Permanent markers
 - Brown Paper
- Template papers (GfH will bring them)
- Stickers where participants can write their name on to stick on their clothes

Checklist - needed for organisation

- Privacy/photograph/video/use of data consent form(s)
- Camera to make pictures (GfH will bring this)
- (video) Camera on tripod - to film the pitches (if possible, arrange for a audio recorder too)
- Microphone & Boxes (depending on the size of the space)
- Computer & Screen/Projector
- Headphones (for editing the recording, and later showcase it during the drinks)
- Space on the wall - to stick the filled-in materials onto

Catering

- Coffee & Bites
- Lunch
- Drinks & Bites

What 'data' to collect

- Consent forms
- Recordings of the pitches
- Pictures of:

- Locations and effort -Problem mapping
 - Motivations for locations - Problem mapping
 - 5Ws templates
- Ideas for a feasible solution
- Solution sheet
- Stickers on the solutions people support
- Complete the data – template

Checklist - needed for the coaches

The most important task of a host is to let participants do the work. This means, you have to listen, ask questions and listen a little bit more. You are not there to portray your ideas, your design directions or perspective. Hosts are there to gather information and help participants reach deeper into themselves to make their implicit theories explicit.

Implicit theories form a belief system that triggers particular **motivations**, leads to different **behavioural pathways**, and shapes how individuals **interpret** and **understand** their experiences. They are often hidden from participants themselves. It is up to you to help them uncover them.

The above workshop partly helps in this process. However, much more important are the coaches. For a session with 30 participants, you need at least 5 organizers/coaches. All trainers need to be proficient in the local language (or English), so that they can receive a training session from a member of Games for Health.

Coaches need to have these, or at least overlapping qualities:

- Keeping track of logistics - timekeeping - catering
- Recording (av, text, or whatever this individual prefers)
- Strong understanding of the content.

They present participants with valuable information about the e-waste problem and help participants to bring the problem down to one small and concrete problem. This expert can come from any field as long as they can portray the main issues, the size and challenges of e-waste. *We can provide coaches with information they should at least address:*

- ✓ a sense of designing problem solutions.

Coaches help participants to make decisions instead of discussing why something would / would not work. They must help participants to build on each other, rather than turn down others' suggestions.

Again these are mere suggestions, find a complementing group of organizers that work well together. The dynamics are more important than the background/expertise of the facilitators.

In order to train the coaches we designed a schedule to prepare them for the first session.

1 month in advance - 1 hour online meeting

- Discuss the workshop checklist
- Assign trainers to a an organizer role/responsibility:
 - Logistics
 - Recording
 - Content
 - Design
- Answer other questions that trainers have.

2 weeks in advance - 1 hour online meeting

- Discuss the progress they have made
 - Logistics,
 - Recording
 - Content
 - Design.
- Discuss any concerns they may have

1 day before the workshop - full evening program

- We meet for dinner and get acquainted with each other.
- After the dinner we go through the workshop (training by example).
- We discuss the next day and finish the latest details.
- We go out for some informal drinks together.

During the workshop.

- We will help out where needed.
- We have a very hands-off approach.

After the workshop

- We go out for dinner and celebrate a well-taught workshop.
- During dinner, we change seats to give one-on-one feedback and discuss future plans.
- We gather personal observations and recommendations for future workshops.

4. Who to invite

For the Sustain-a-thons we organize two workshops in each country. One 'super focused' and diverse and one that is open to everyone: just to get 'numbers'. Everyone present will participate except for the workshop leaders.

Workshops are given in the participants native language. Reporting should be done in English.

The goal of the workshop is to design motivational nudging strategies with playful interaction from the perspective of stakeholders. We have stakeholders engage with each other on the topic of e-waste and co-design possible solutions. The objective is to develop a sustainable and wide implementation of behavioural change to optimize reverse logistics.

This would be the **ideal** group to get together (bear in mind that these are ideal circumstances, just try to get a good diverse group that is outside of your own bubble. We feel that is the most important here)

- Min 7 Health care professionals
 - Nurses in hospitals, home care or nursing homes
 - Medical Specialist / GP or GP assistant
 - Clinical scientist
 - Pharmacist
 - Facility management / cleaning
 - Logistics
 - Purchasing
 - Sustainability department
- Min 8 Other professionals
 - Experts of different kinds of recycling facilities; these people who know more about recycling, remanufacturing, repurpose, bio-cycles, etc.
 - Manufacturers / distributors / medical technology companies
 - NGOs - focused on recycling and/or e-waste (i.e. Red Cross)
- 15 citizens
 - ± 5 (former) Patients who use/have used digital medical products
 - ± 5 Family members/friends or informal caregivers
 - ± 2 with an income below the average
 - ± 1 person with a disability
 - ± 2 with a high education level (MA / BA degree)
 - ± 2 with a medium education level (vocational education)
 - ± 2 with a lower education level (no education)
 - ± 7 with a non-native background, with enough knowledge of the local language
 - ± 7 with a native background

- ± 7 that identify as woman
- ± 7 that identify as man
- ± 3 aged 20 - 30
- ± 3 aged 30 - 40
- ± 3 aged 40 - 50
- ± 3 aged 50 - 60
- ± 3 aged 60+

Please keep in mind that this is an ideal configuration for the workshop, and in practice probably not achievable. If there are kids (min 12 years old) willing to participate, they are more than welcome. But they are not a necessity for the design process since they ask for a radical different design approach than 'grown ups'. The above numbers are suggestions to find participants outside of our normal pool of participants.

The focus of this workshop is on quantity over quality. Try to get 30 participants. Preferably as diverse as possible. If you are able to do two workshops... DO!

5. Training & instructions facilitators

Morning - Map of Sustainability

When

First part of the Sustain-a-thon, for example 10:15-11:20.

Total estimated duration: 75 minutes.

Materials

See in BOX: Materials

- Large piece of brown paper, the 'Map', which has two different e-waste products and the location 'Home' already marked (GfH provides this material)
- Highlighters, permanent markers, pencils
- Cards with locations and empty cards
- Sticky notes
- 5 W-Sheet: Who, What, Where, Why, When

How to play

Part 1:

- Make groups of 6 people and one facilitator.
- Make sure healthcare professionals are grouped together at a Map with a 'Hospital'.
- Gather around the map.
- Introduction: get to know each other first (let people write down their name, profession, and their favourite phone. Let them introduce themselves, also introduce yourself as a facilitator.
- We're going to fill the Map of Sustainability with locations where you can bring **e-waste** to. On the map will be a house or a hospital and two different e-waste products. (such as: electronic pillbox or wearables, biosensors, mobile phone, music box)
- People take cards with locations where they bring one or both of the products. Or they can draw/write down locations on the empty cards.
- Decide together where to place this card on the Map, based on how much effort it would take you to get your products to it. As a facilitator, already write down the why and why-nots the participants mention in keywords for each location (why are they empowered/discouraged to bring/collect the products at this location).
- Keep going with the deck of cards until you all agree there are enough locations on the map. You don't have to use all the cards.
- Take a final look at the map. You can swap or shuffle the cards if you like.
- Now place the sticky notes with why(-nots) on the Map at the locations. You may write down the same reason for multiple locations. Take time for discussions.

Part 2:

- Split your group of 6 into two smaller groups of 3. Stay with your Map, and take a 5W-sheet and one of the two e-waste products.
- Choose one location on your Map that resonates with your group.
- Answer the questions on your 5W-sheet with your e-waste product, location (and sticky notes) in mind. Let people explain/write more in-depth the specifics about the product and the location.

Afternoon - Map of Sustainability

When

Second part of the Sustain-a-thon, for example 12.00-13:20.

Total estimated duration: 80 min

Materials

- Filled in 5W-sheet of other group
- Solution templates
- Highlighters, permanent markers, pencils

How to play

Part 1:

- Make new groups of 3 people. Make sure you are in a group with people you haven't worked with before.
- Your group will receive a random 5W-sheet.
- Have a look at the 5W-sheet and start thinking about some possible solutions for this problem. You can write them down in keywords on the worksheet called: ideas for a possible solution.

Part 2: Decide which of your solutions you like best.

- Create a short pitch that explains the problem and your chosen idea. The pitch should be between 30 seconds and 1 minute long only.

Part 3: +/- 30 minutes

- Pitch your idea for the other groups and place your solution on the wall.
- Your pitch is recorded on video.

Part 4: Closing & during drinks

- Individually, choose which of the presented solutions you want to support (you may also explain why). You can leave your support sticker on the sheet.

6. Appendix - Data collection template

In the data collection template we will gather the insights gained from the session. These are (not limited to) insights in the next three topics

- Behaviour
- Motivation
- Impact

Although the workshops will be held in participants' native language, we ask you to complete the tables below in English.

Behavior What people already do What people would like to do • Example: Difference between collecting/recycling different kinds of e-waste
Motivation concerns both a sentiment as a rational to do stuff.
Sentiment + (why they do/would participate) • Example: Care about the environment • Example: It is fun for XXX • Example: I feel proud
Sentiment - (why they don't/wouldn't participate) • Example: I feel ashamed • Example: It is for poor people
Rational + (why they do /would participate) • Example: cheaper, less effort, • Example: it won't help anyway
Impact How does a solution impact their daily life?

7. Planning & Traveling

We plan the sessions on Friday and Saturday because most people might be available at those moments. If you feel another moment is better, please do so.

When	What
Thursday afternoon / evening	Travel to location
	Hotel

When	What
Thursday evening	Quick/full program run
Friday 10:00-14:30	Workshop One
Friday 16:00	Evaluation with project team
	Hotel
Saturday 10:00 - 14:30	Workshop Two - Quantity over Quality
Saturday 16:00	Dinner with project team
Saturday 22:00	Hotel / travel home
Sunday morning	Travel home

8.Draft of recruitment message

Let's create a better world together: join the Sustain-a-ton

Sign up to co-design sustainable solutions for e-waste.

Recycling, reusing, and changing the world is hard, that is why we do it together!

Sustainability is an increasingly important topic for many of us. And for good reason: every year, we produce 2.12 billion tons of e-waste worldwide. That's a shame, because a large amount can be collected, recycled, refurbished, repaired or reused. This is why you can help! Tell us your thoughts on how we can create a more sustainable world. Sign up now!

Month, Date, Time

Street name, City, Country

Sign up via (Google Form [url]).

During the Sustain-a-ton, you can expect:

- To learn **more about sustainability, recycling processes and e-waste, and why this is important to you**
- To share your thoughts **on how you want to do your part in fighting e-waste**
- A delicious free lunch **(eco-friendly, of course)**
- A first look at innovative ideas **for more sustainability (and the chance to shoot at them!)**
- A networking opportunity **while enjoying a snack and a drink**

EXAMPLE 1 of Recruitment



LET'S CREATE A BETTER WORLD TOGETHER

Join the Sustain-a-ton

January 28| 10:00 uur - 17:00 uur |
Evenementruimte Brussel, België

SUSTAINABILITY IS AN INCREASINGLY IMPORTANT TOPIC FOR MANY OF US, AND FOR GOOD REASON: EVERY YEAR, WE PRODUCE 2.12 BILLION TONS OF WASTE WORLDWIDE. THAT'S A SHAME, BECAUSE A LARGE AMOUNT OF THAT WASTE CAN BE RECYCLED, REFURBISHED, REPAIRED OR REUSED. AND THAT DOESN'T ONLY COUNT FOR CITIZENS, BUT ALSO FOR COMPANIES AND INSTITUTES. THAT'S WHY WE, [PHILIPS, JANSSEN & JANSSEN,], WANT TO GET IN TOUCH WITH YOU TO HEAR YOUR THOUGHTS ON HOW WE CAN CREATE A MORE SUSTAINABLE WORLD.

- LEARN MORE ABOUT WHAT SUSTAINABILITY MEANS
- SHARE YOUR THOUGHTS ON HOW YOU WANT TO DO YOUR PART IN BEING SUSTAINABLE WITH COMPANIES AND RESEARCHERS ALIKE
- A DELICIOUS FREE LUNCH (ECO-FRIENDLY, OF COURSE)
- A FIRST LOOK AT NEW INNOVATIVE IDEAS FOR MORE SUSTAINABILITY (AND THE FREEDOM TO SHOOT AT THEM!)
- A NETWORKING OPPORTUNITY WHILE ENJOYING A SNACK AND A DRINK

QR CODE

EXAMPLE 2 of Recruitment



Join the Sustain-a-ton
Let's create a better world together

January 28th
9:30 - 16:00
Street name
PostCode Brussels
Belgium

SIGN UP TODAY



Sign up to co-design sustainable solutions for e-waste.
Recycling, reusing, and changing the world is hard, that is why we do it together!

Sustainability is an increasingly important topic for many of us. And for good reason: every year, we produce 2.12 billion tons of waste worldwide. That's a shame, because a large amount of that waste can be recycled, refurbished, repaired or reused. And that doesn't only count for citizens, but also for companies and institutes. That's why you can help! Tell us your thoughts on how we can create a more sustainable world. Sign up now!

During the Sustain-a-ton, you can expect:

- To learn more about sustainability, recycling processes and e-waste, and why this is important to you
- To share your thoughts on how you want to do your part in fighting e-waste
- A delicious free lunch (eco-friendly, of course)lity (an
- A first look at innovative ideas for more sustainability (and the chance to shoot at them!)
- A networking opportunity while enjoying a snack and a drink

www.lorumipsup-registrationlink.eu

ANNEX X: Design Requirements

Prerequisites of Design	Inspiring Design Direction
Are able to do it	Norms and standards
Perceive it as a low effort	Suggesting repurpose possibilities
Know what to do	Financial rewards
Feel confident to do it properly	Emotional rewards
Feel it fits with routines and lifestyle	Perceived quality of the product
Feel it is hygienic	Sentimental value of the product
Feel privacy and safety is guaranteed	Altruistic motives
Feel there is commitment from governance	Feelings of being impactful
	The sense of a significant other
	Ethics and sustainability
	Social influence
	A sense of community
	A sense of civic responsibility

ANNEX XI: Motivators and Requirements

Motivators

- **norms and standards:** the tendency of individuals to observe and emulate the behaviours and practices of others within their social group.
- **repurpose possibilities:** opportunities for individuals to transform and reuse a product for different functions or purposes.
- **financial rewards:** monetary incentives provided to individuals for engaging in a specific behaviour, such as returning or recycling products.
- **emotional rewards:** non-monetary benefits that provide individuals with psychological or sentimental satisfaction, such as personal fulfilment or positive associations.
- **perceived quality of the product:** an individual's evaluation of a product's overall excellence or value based on its attributes, performance, and durability.
- **sentimental value of the product:** the emotional attachment an individual places on a product due to its associations with meaningful memories or relationships.
- **altruistic motives:** the drive to engage in behaviours that benefit others, driven by a genuine concern for their well-being rather than personal gain.
- **feelings of being impactful:** the perception that one's actions contribute significantly to positive change or make a meaningful difference in a broader context.
- **the sense of a significant other:** the influence and encouragement derived from close relationships, where actions are motivated by the desire to support, care for, or gain approval from someone personally important.
- **ethics and sustainability:** the commitment to making decisions and taking actions that are morally responsible and environmentally beneficial, aligning with principles of fairness, integrity, and long-term ecological stewardship.
- **social influence:** the effect that individuals or groups have on shaping others' attitudes, beliefs, and behaviours through direct or indirect interaction and persuasion.
- **a sense of community:** the feeling of belonging and connection individuals experience within a group, characterized by shared values, mutual support, and a collective identity.
- **a sense of civic responsibility:** awareness and commitment individuals feel towards contributing positively to the well-being and improvement of their society through responsible and ethical behaviour.

Requirements

- **Requirement 1 : people are able to do it.**

The infrastructure is in place and people are physically and mentally able to display the behaviour. This also means that e.g., a user interface in an app that would remind people to return a product should be easy to use (user-friendly).

- **Requirement 2 : people perceive the behaviour as low effort.** The circular behaviour is not time-consuming or takes up space (e.g., for storing the product). The behaviour fits with daily routines and lifestyle. It is easy to engage in the behaviour because it can be performed as part of other activities and at the time people usually engage in those activities.

- **Requirement 3 : people know what to do.**

Clear and comprehensible instructions are provided, ensuring that people understand the necessary steps and feel confident in executing them correctly.

- **Requirement 4 : people feel it is hygienic and safe.**

People must perceive the handling and return of the product as both hygienic and safe, ensuring their comfort and well-being.

- **Requirement 5 : people feel their privacy is guaranteed.**

People need to know that their privacy is protected, ensuring no personal information is disclosed to unauthorized parties during the process.

- **Requirement 6 : people feel there is commitment from governance.**

People want to feel that they are not on their own; manufacturers, companies, and government entities are taking responsibility alongside them.

ANNEX XII: Suggestions for general questions

- **Probe result day 1:** What feelings did you indicate in your diary for the two versions of the motivational strategies prototypes?
- Is there a difference in what you think of the two versions of the prototypes? Why
- **Probe result day 2:** Can you show me the result of your ranking of what is important for returning the product? Do you feel you would be able to return the product to a collection point? And your partner? Why or why not?
- Do you feel you would know how to return the product to a collection point and how that would work? Would you feel confident to return it properly? And your partner? Why or why not?
- How much effort would you think it would take for you to return the product to a collection point? Would it fit your routines? And your partner? Why or why not?
- Would you feel it is hygienic and safe to return the product to a collection point? And your partner? Why or why not?
- Do you feel that the producer is doing their share to reduce e-waste if you would return the product? And your partner? Why or why not?
- **Probe result day 3:** (ask the first person) At which motivational strategy were you most likely to return the product? Why?
- Did your partner guess this correctly?
- (ask the other person) At which motivational strategy were you most likely to return? Why?
- Did your partner guess this correctly?
- What was your preferred method of reuse or recycling of the product? Why?

ANNEX XIII: Final Motivators and Requirements

Motivators

Norms and standards: People have the tendency to observe and emulate the behaviours and practices of others within their social group and society. Cultural norms and values can be triggered, e.g. by showing how many others are displaying similar behaviours.

Encourage repurposing possibilities: People can be made aware of the possibilities to transform and reuse a product for different functions or purposes. The product can also be designed so repurposing is easily possible.

External rewards: Monetary incentives or other extrinsic rewards can be provided to individuals for engaging in a specific behaviour, such as returning or recycling products. A typical example is a deposit system, which many people recognise.

Emotional rewards: Other benefits that external rewards can be provided to individuals that give them psychological or sentimental satisfaction, such as personal fulfilment or positive associations when they display the intended behaviour.

Perceived quality of the product: An individual's evaluation of a product's overall excellence or value is based on its attributes, performance, and durability. By increasing the perceived quality, people may value the product differently and adapt their behaviour. Notice that this is a subtle design adaptation where the whole cycle should be congruent on a systemic level; e.g., only changing the packaging of the product without changing the product itself, leads to mismatches and irritation.

Sentimental value of the product: The emotional attachment an individual places on a product due to its associations with meaningful memories or relationships can change people's behaviours with it. For example, a customisation of the product may urge people to keep it after use.

Altruistic motives: Make use of the fact that people can be engaged in sustainable behaviours because they feel a genuine concern for other people's well-being rather than personal gain.

Feelings of being impactful: Influence people's perceptions that their actions contribute significantly to positive change for themselves or make a meaningful difference in a broader context.

The sense of a significant other: Make use of the influence and encouragement derived from close relationships, where actions are motivated by the desire to support, care for, or gain approval from someone personally important.

Ethics and sustainability: Make use of people's commitment to making decisions and taking actions that are morally responsible and environmentally beneficial, aligning with principles of fairness, integrity, and long-term ecological stewardship and in line with people's identities.

Social influence: Make use of the effect that individuals or groups have on shaping others' attitudes, beliefs, and behaviours through direct or indirect interaction and persuasion. The difference with norms and standards is that social influence is more fluctuating and can potentially cause behaviours to emerge that are not necessarily in line with societal longer-term norms and standards.

A sense of community: Make use of the feeling of belonging and connection that individuals experience within a community, characterized by shared values, mutual support, and a collective identity. Performing the desired behaviours makes people feel they are part of a community.

A sense of civic responsibility: Make use of the awareness and commitment that individuals feel towards contributing positively to the well-being and improvement of their society through responsible and ethical behaviour. This awareness is not related to specific people, but rather to society as a whole.

Requirements

Requirement 1 : people are able to do it

The necessary infrastructure should be in place, people should be physically and cognitively able to display the desired behaviour, and they should think they are able to do it. There is a logistic, physical and cognitive component to this requirement. Logistically, this means that the right infrastructure is in place. Physically, this means that e.g., people should be able to carry the product or store the product. Cognitively, this means that e.g., a user interface in an app for collecting a product should be easy to use (user-friendly) and that people are convinced they will be able to do it.

Requirement 2 : people perceive the behaviour as low effort

The behaviour fits with daily routines and lifestyle, so people do not experience it as an extra effort, or they feel the extra effort is worth it. It is easy to engage in the behaviour because it can be performed as part of other activities and at the time people usually engage in those activities.

Requirement 3 : people know what to do/what not to do and why

The product clearly shows what to do, ensuring that people understand the necessary steps and feel confident in executing them correctly. The instructions should be integrated in the product, and not separate from it. The instructions should be visual and compelling. The reason why people should engage in this behaviour should be clear.

Requirement 4 : people feel it is hygienic and safe

People must perceive the handling and return of the product as both hygienic and safe, ensuring their comfort and wellbeing. This means that they should not be concerned about handling the product in order to take or send it to a recycling point. However, they also need to be able to trust that others (e.g., other users of the product) will not be harmed. What is considered hygienic and safe is culturally determined, so the handling and return of the product should conform to cultural conventions.

Requirement 5 : people feel their privacy is guaranteed

People must know that their privacy is protected, ensuring no personal information is disclosed to unauthorized parties during the process. Considering that the products have an electronic component, no personal data should be retrievable by others and it should be clear how this is ensured.

Requirement 6: people feel there is commitment from other stakeholders

People need to feel that they are not on their own in taking care of the environment. If they have to display certain behaviours and put in some effort, they want to see that others, like the manufacturers, companies, and governmental entities are taking responsibility alongside them. It should not feel like they have to make an effort while other stakeholders reap the benefits without a comparable effort.

ANNEX XIV: Design flow of confirmatory pilots

Protocol for the design flow of the confirmatory pilots

