

**UNDERSTANDING REVERGING
IN VISUAL THINKING**

Graduation report
by **Alix Jansen**

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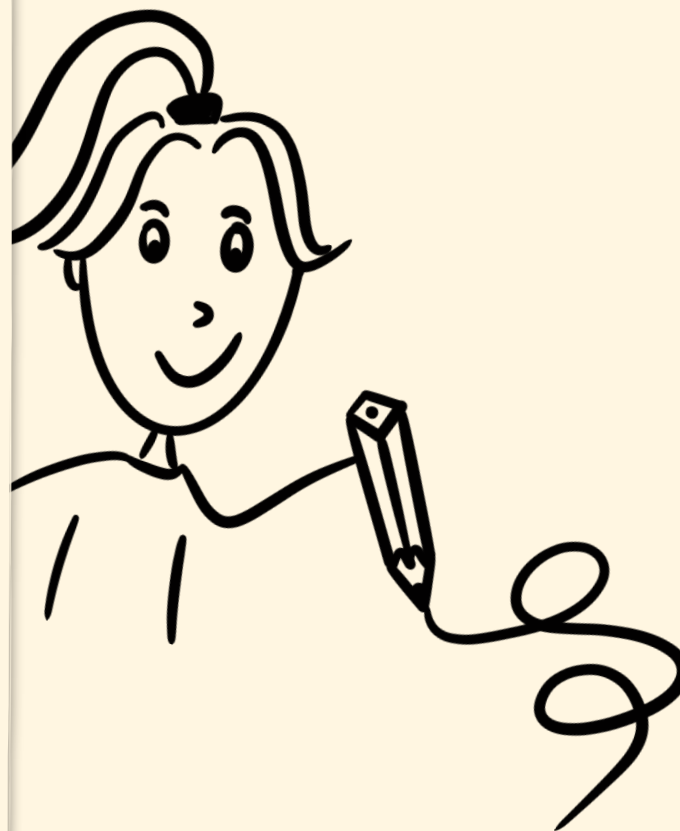
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DATE

17th of May, 2022



I DREW ALL THE VISUALS IN THIS REPORT MYSELF

Some images were adapted from specific sources, they are always mentioned in the caption.

PREFACE

Dear reader,

The time has come to introduce you to my last project as a student.

First, I would like to thank Flatland Agency for allowing me to do my graduation in their context and giving me the freedom to work on a topic that sparked my interest.

The fact that I could do my graduation project in the context of visual thinking kept me motivated throughout the whole journey. Being able to improve my visual thinking skills by observing Flatland's magician work! Using sketching as the main tool to assist my thinking process made it fun and engaging although the topic was getting very theoretical at some points.

In addition, to the inspiring context, I was working in, I am also very grateful for the support I had from my supervisory team throughout the entire journey.

To talk in my project's terminology:

Willem, I would like to thank you for your diverging powers. When inspiration was needed, you always had a book to read, a person to talk to or a metaphor to spark my imagination.

Milene & Katrina, I would like to thank you for being the perfect reverging duo by providing interesting discussions and managing to align your thoughts and feedback at all times.

Milene, thank you for motivating me to draw and telling me I was able to (especially to convince me that there is no need to be as wizardry as the Flatland pros). And I am also grateful for the fact that you were very mindful and were always able to provide me with hyper-detailed and constructive feedback on my deliverables.

Katrina, thank you for introducing the interesting topic of reverging. Your knowledge regarding the topic of reverging helped me a lot to create a better understanding of my thesis. And also, a big thanks for keeping on reminding me to make the links between theory and practice and visa versa.

Last but not least, thank you, Iren, for your ability to converge and help me digest all the information, findings, and feedback. A big thanks for being a trusted conversation partner and always being available to tackle emergencies and celebrate milestones at any given moment in the project.

Finally, I would like to thank my roomies, friends, and family for making it all worth celebrating and supporting me along my entire 'student journey', which has come to an end.

Now let's dive into the world of visual thinking and reverging ...

Enjoy reading!

Alix

EXECUTIVE SUMMARY

The project is done in the context of the visual thinking Agency Flatland. The aim of this project was to explore reverging in the context of visual thinking.

Reverging is the phase that bridges the diverging and converging phases in creative facilitation. The goal of reverging is to revisit and rearrange the options generated in the divergent phase to create a better understanding of all the options to select the best ones in the converging phase.

The initial design statement was to make reverging more deliberate at Flatland instead of implicit at Flatland. As reverging is a deliberate activity (Kalina, 2018; Heijne & van der Meer, 2019).

DISCOVER

To better understand the project's topic, a literature review, interviews with Flatland, and case studies have been conducted.

The literature review concluded that reverging is essential for creating a shared understanding of the options generated in the divergent phase. Moreover, it was found that sketching and visualizing help externalize (tacit) knowledge. This enables the sharing, grounding, manipulation, and generation of ideas. Finally, transdisciplinary learning and knowledge creation can be supported by boundary objects, allowing the translation, transfer, and transformation of knowledge.

The interviews with Flatland reveal the different skills and characteristics needed as a facilitator or illustrator at Flatland, why visual thinking works according to Flatland, and how they would identify reverging in the Flatland process.

The case studies disclosed that the Flatland methodology is more a process flow to hold on to instead of a strict step-by-step plan that needs to be followed. Additionally, it revealed the success factors, risk factors, and requirements for fruitful reverging in visual thinking.

DEFINE

Based on the findings from the discovery phase of the project a general model was constructed to bring all the findings together. The general model served as the starting point for the design requirements and opportunities.

In addition, reverging at Flatland has been described and analyzed more in-depth. The analysis revealed that there was no common knowledge about the concept of reverging. However, it was found that reverging was done at Flatland, but more unconsciously rather than deliberate. Two types of reverging moments at Flatland have been identified: (1) reverging exercises done with the client during a session and (2) the activity called whiteboarding, which is a separate session without the client to make thinking steps based on the output from the previous session.

This project focused on the second type of reverging moment because it is a formatted and formulated phase at Flatland, setting a clear boundary for highlighting the problems and developing a design. The main difference between reverging at Flatland compared to the rules described in theory is that it is done without the client. This may lead to the not-invented-here syndrome, which often results in the client's difficult acceptance and implementation of the outcome, according to Buijs & van der Meer (2013).

DESIGN BRIEF

Based on the output from the general model, design opportunities have been identified. The chosen opportunity for this project was to guarantee client ownership by involving the client more in the whiteboarding reverging process. A design statement and requirements have been formulated to guide the final design's creation.

Additionally, the metaphor of a magic map maker has been formulated to describe the selected opportunity. This narrative was used to make the findings from the research more concrete and get the conversation started.

DESIGN

Different creative sessions have been held to come up with the starting point for a solution to guarantee client ownership. Based on the input from the co-creation sessions different minimum viable products were created iteratively. These have been discussed with Flatlanders and adapted according to the feedback obtained during the iteration rounds.

DELIVER

The final design, the whiteboarding tool, consists of three sub-parts:

- I. The Flatland workstyles, based on the narrative of the metaphor of the magic mapmaker, balancing the map maker and wizard workstyle throughout the entire process
- II. The Flatland journey is adapted from their current setup of the general project flow. The whiteboard phase was not included yet. The Flatland journey aims at making that explicit. Revealing the problem in the focus area (whiteboarding phase) of reverging steps happening without the involvement of the client and therefore the client potentially lacks ownership of the final outcome
- III. In order to solve this problem finally the Whiteboard canvas has been developed to help Flatland involve the client in the whiteboarding phase and make their reverging steps explicit so they can be shared and discussed with the client.

CONCLUSION

The impact of this project was created through (1) the research, (2) the metaphor, and (3) the tool.

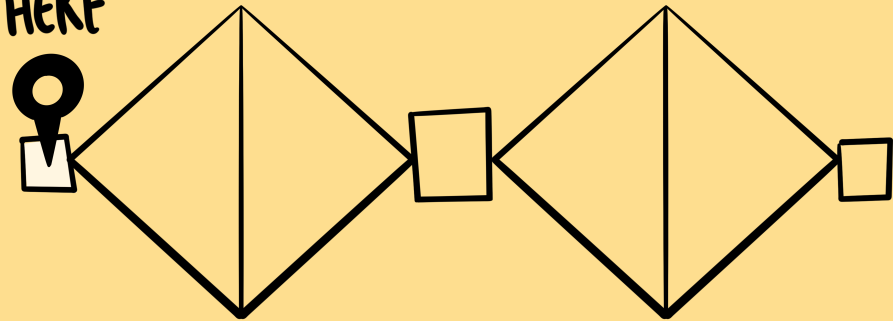
1. The research highlighted the discrepancy between the literature and Flatland's way of working. The gap served as the initial starting point for giving recommendations to Flatland and coming up with the final design.
2. The metaphor served as a narrative for Flatland to talk about the highlighted problem and reflect on their workstyle.
3. The whiteboard tool served as an intervention to do the whiteboarding in a more structured manner with the client's involvement. The canvas has been tested with members of the Flatland team and is ready to be used in Mural, Photoshop, or real life!

To conclude the project, the limitations have been highlighted, and future research directions have been proposed.

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YOU ARE
HERE



CHAPTER 1 INTRODUCING THE PROJECT

CONTENT

COMPANY CONTEXT
STAKEHOLDER CONTEXT
LITERATURE CONTEXT
PROJECT GOAL
APPROACH OF THE PROJECT
REPORT STRUCTURE

COMPANY CONTEXT

The project was done in the context of the visual thinking agency Flatland. To facilitate the understanding of the project, this section will further clarify what Flatland does, how they position themselves and how they work.

Flatland and visual thinking

Flatland is a visual thinking agency based in Rotterdam, born ten years ago as 'Jongens van de Tekeningen', in English 'Boys of the drawings'. At first, their core business was helping companies visualize during meetings or sessions (graphic recording). Throughout the years, they changed their name and focus. They adopted a more collaborative way of working and co-creating. Nowadays, most of their projects consist of different sessions in which they provide the full facilitation and organization of the creative process in addition to the visual support.

What they do – products and services

Flatland offers three different types of trajectories of their clients. Most of the projects are a mix of two or all three of the propositions.

- **Strategy**
Help the client to build a clear and strong visual story about the current or future strategy.
- **Change activation**
Help the client to activate change in their organization by visually communicating why and how change is needed.
- **Innovation trajectories**
Help the client implement their ideas or strategy by creating visual materials that support innovation's implementation.

Additionally, in the last years, they decided to focus on more long-term projects and partnerships in order to follow up on the implementation of their projects and increase their potential impact.

Their mission and positioning

Considering the collaborative approach as the core of what Flatland offers their client their current mission as a company is:

“Drawing a better world together”

- **Drawing**
refers to the use of visualization and visual thinking to dismantle complexity and create clarity.
- **A better world**
refers to their Social Development Goal (SDG) focus and the fact that they want to increase the number of long-term collaborations with clients to realize this.
- **Together**
refers to their co-creative approach where the client and eventually its target group or users are involved in the creative process.

Additionally, as a visual thinking agency, they position themselves as more analytic than creatives and more engaging than strategy consultants.

Their way of working/methodology

At Flatland there is no fixed way of working, however, they have developed the Flatland methodology (see fig. 1) that helps with the creation of a structured process and selling the different subparts of the project to their clients. The generic steps that are mostly included are the following:

- **Clarity phase**
Creating clarity of all client's thoughts and info.
- **Story phase**
Putting the pieces together to prototype the story.
- **Validation phase**
Validating the the story with the client and users.
- **Delivery phase**
Finalizing the product so it is ready to go.

Different roles at Flatland/company structure

Flatland enjoys a more or less flat hierarchy, there is a top management team that guides and steers the company, however, the employees also have their say and input. Five different roles within a project are identified: (1) sales lead, (2) project lead, (3) facilitator, (4) illustrator, (5) designer. It is important to be aware that one person can take multiple roles within the same project.

The first two roles are more on the practical side of the project, financial aspect, and the overall achievement of the project. While the last three roles are more about the execution side of the projects. The facilitator is responsible for the process, while the illustrator is more responsible for the content and the outcome. Regarding the designer role, there is still some inconsistency within the company on whether it should be a separate role or a combination of the facilitator and the illustrator.

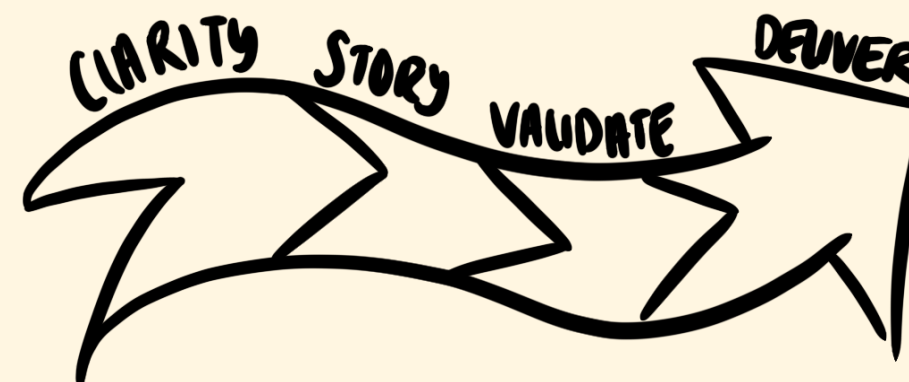


Fig. 1: Flatland methodology

STAKEHOLDER CONTEXT

This section will elaborate on the project stakeholder in order to create a better understanding of the parties and people involved in the project. The stakeholder map is provided in figure 2.

Company stakeholders

Primary stakeholders

From the Flatland team, the primary stakeholders are the two company mentors, Iren and Willem. Their role was mainly to guide and coach me throughout the process and give feedback and input related to the company and project in general. In the end, the research and the final outcome of the project should be relevant and useful for all the current and future Flatland employees. Therefore, their help and feedback have been considered throughout the entire project.

Secondary stakeholders

Finally, the Flatland clients are also of great importance as the final outcome should be directly or indirectly beneficial for the value that Flatland delivers to them. Throughout the project, interviews and feedback sessions have been conducted with four different clients in order to also include their perspectives and feedback on Flatland's work.

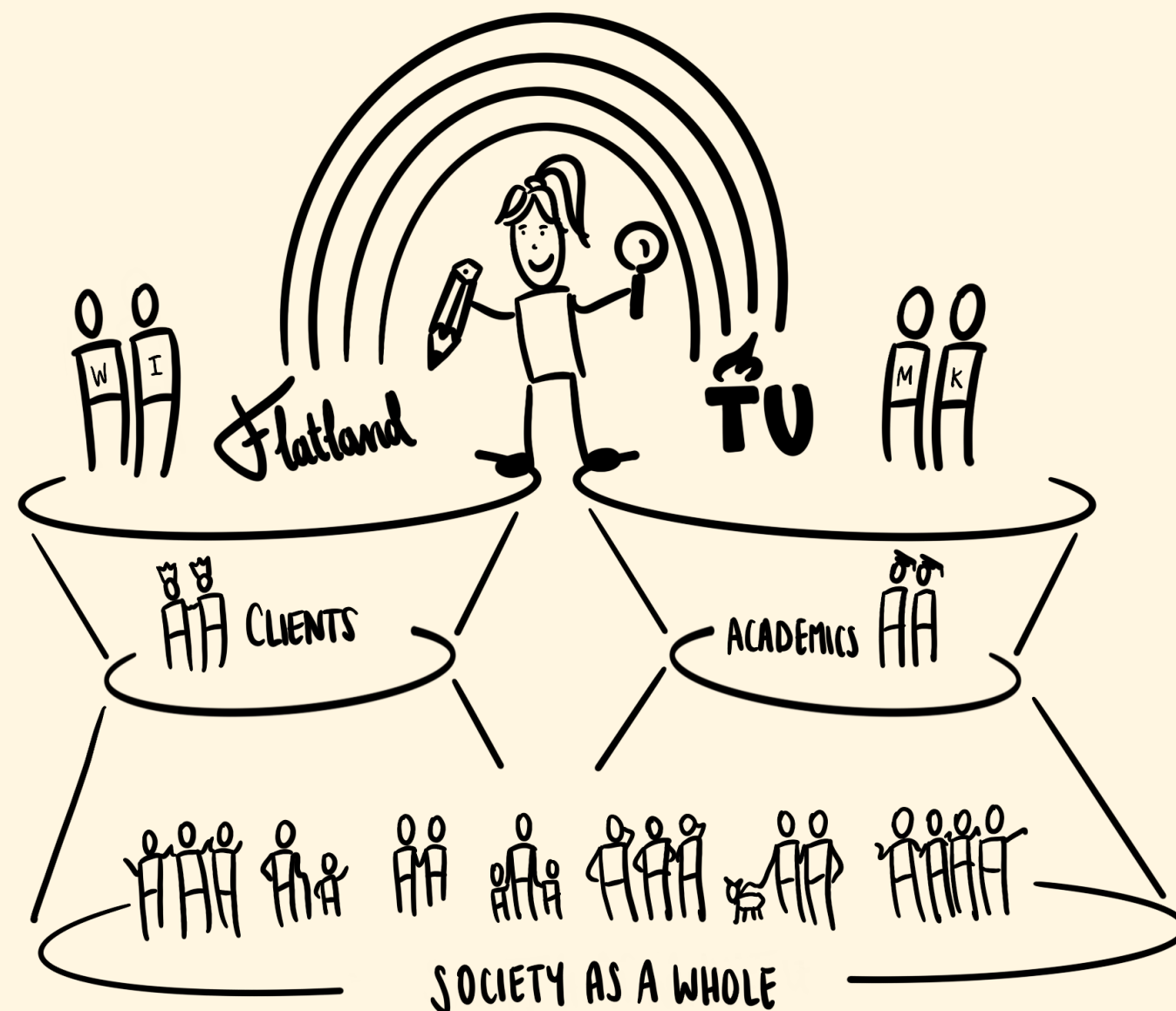


Fig. 2: Stakeholder map of the project

Academic stakeholders

Primary stakeholders

The two coaches who guided me throughout this graduation project were the primary stakeholders of the university. Both have an interest in creativity in general. Milene (chair) has additional experience in the field of visual thinking while Katrina (mentor) has more experience in the field of creative facilitation and reverging in general.

Secondary stakeholders

The focus of this research is mainly in the field of creative facilitation and visual thinking. Therefore, the goal of this project is to also bring new potential insights and connections between theory and practice that can be useful for academics both in the field of creative facilitation and visualizing and eventually for innovation in general.

Indirect stakeholders

Flatland's focus is directed toward SDG-focused innovation by helping organizations to rethink their business as usual approach in order to contribute to a better world. By focusing on creating a positive impact with their projects, 'society as a whole' might be able to benefit from their impact in the longer run.

PROJECT GOAL

Literature gap addressed

The relatively new topic of reverging emerged from the literature field of creative problem solving and creative facilitation in general. Heijne & van der Meer (2019) refer to it as the phase between the diverging and converging stages in the creative diamond. However, reverging has not yet been analyzed in the context of visual thinking and visual facilitation in specific. Therefore, this project will explore reverging in the context of visual thinking. To better understand this specific context, this project will review and bring the literature regarding creative facilitation & reverging and *sketching & visual thinking* together.

Additionally, existing literature mentions that sketching helps create a shared understanding in collaborative design settings. However, little research has been done on the role and functioning of sketching as a continuous activity in a collaborative setting (Boedhoe & Badke-Schaub, 2017). Therefore, this project will further explore the role of sketching within inter or transdisciplinary collaborative sessions. To create a more in-depth understanding of transdisciplinarity and how knowledge is created and transferred in this setting, literature about *transdisciplinary learning & the role of boundary objects* has been reviewed.

Aim of the project

The aim of this project is to **understand reverging in visual thinking** (As mentioned in the initial project brief see Appendix A).

The problem that this project is addressing is described by elaborating on the current versus the desired situation. Both situations are described below and illustrated in figure 3.

• The current situation

Flatland does reverging implicitly and intuitively. There is no common ground about the topic yet nor a shared understanding about how they currently do it or should do it.

• The desired situation

Flatland wants to do reverging more explicitly and deliberately. They want to change this by creating more awareness about the concept of reverging in visual thinking and how they do it at flatland. In addition, they would benefit from having a common understanding and language about the concept to enable communication about the topic internally, with newcomers and their clients.

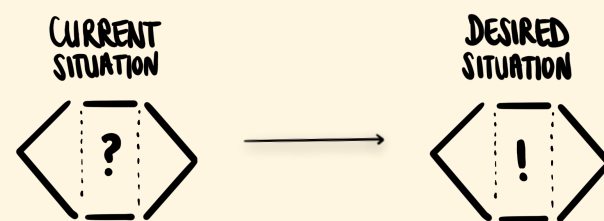


Fig. 3: The current situation versus the desired situation regarding reverging

Relevance of the project

The following two reasons indicate the relevance of making reverging a deliberate rather than an unconscious activity:

First, to ensure a project's success, proper implementation and use of the final output by the client are crucial. To do so all the participants from the client team need to agree to the final shared mental model and content created. Reverging is a key activity to do realize this as it enables revision and rearrangement of all the options.

Second, reverging is a deliberate activity (Heijne & van der Meer, 2019; Kalina, 2018) by only doing it in an unconscious or implicit manner it is difficult to create a common understanding of the concept. This also makes it hard to create awareness among the Flatland team about the concept. By generating a common understanding and language about the concept, internal and external communication can be enabled about reverging and its importance (see fig. 4).

Research questions

The initial assignment as defined in the project brief consisted of key questions that needed to be answered in order to solve the problem or achieve the desired situation. The main research question is:

How can a more deliberate reverging approach support Flatland in their facilitation processes?

In order to answer the main research question the following sub-questions need to be answered:

1. **What characterizes a good facilitator, illustrator (and designer)?**
2. **What is considered fruitful reverging?**
3. **What are the different steps needed (process) for reverging in visual thinking?**
4. **How to create awareness about the process of reverging and the different steps or rules?**
5. **How to create a common ground and language about the process of reverging, to ease the communication with newcomers, peers, and clients?**

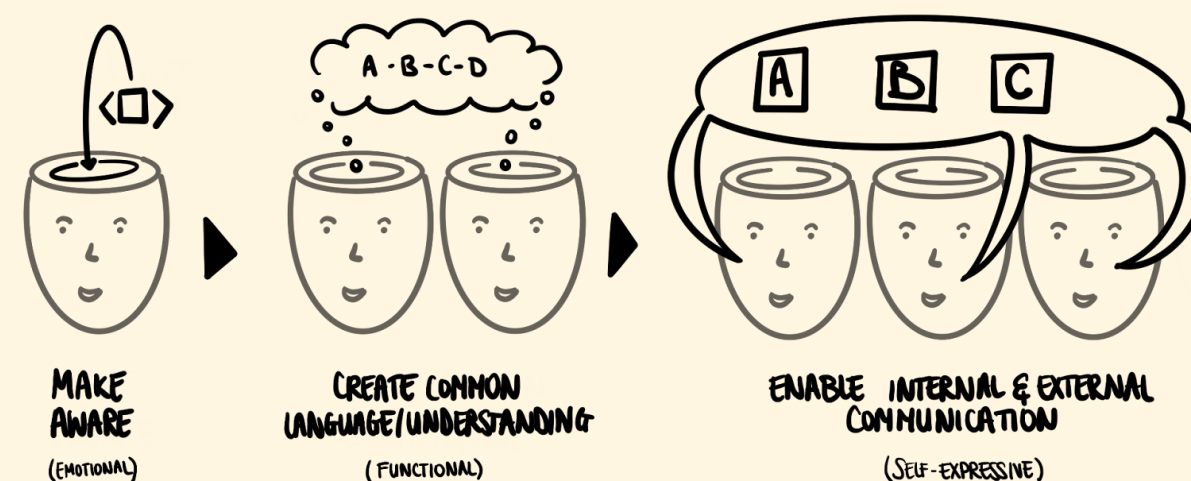


Fig. 4: What needs to be done in order to create deliberate and conscious reverging

APPROACH OF THE PROJECT

The project's setup is built based on the double diamond approach (British Council, 2019). The project consists of two main parts: Part I, the Research & intervention phase, and Part II, the Design & outcome phase (see fig. 5). The more detailed information about how the research was conducted and the design was created can be found in the chapters referring to each specific project phase.

Part I – research & interventions

- Set up literature review.
- Conduct interviews with Flatlanders.
- Conduct explorative interviews with experts.
- Set up case studies for four finished Flatland projects and interviews with Flatland & client.
- Creation of the general model
- Set up final analysis of reverging at Flatland.

Design brief

- Identify and select opportunity areas.
- Redefine the design goal.
- Setup design brief en requirements.

Part II – design & outcomes

- Explore the chosen design opportunity.
- Co-creation session with Flatlanders, TUD students, and designers from other agencies
- Development of the final concept in multiple iteration rounds with Flatlanders.
- Evaluate whether the final design meets the requirements from the design brief.
- Test the concept with Flatland
- Set up the implementation plan.
- Finalize the design to make it a usable and all-around concept.

Weekly prototyping

Although this explanation of my approach insinuates that the development/design part chronologically comes after the discover and define phase, I chose to start early with designing. This is done by developing weekly prototypes that help make the research findings actionable. The main reason for choosing this approach is to avoid paralysis by analysis in the development phase. The main prototype of the first diamond was the general model (see appendix F) created to integrate all the findings from the research to set up the final design brief. The main prototype of the second diamond was the creation of the final tool (see appendix K).

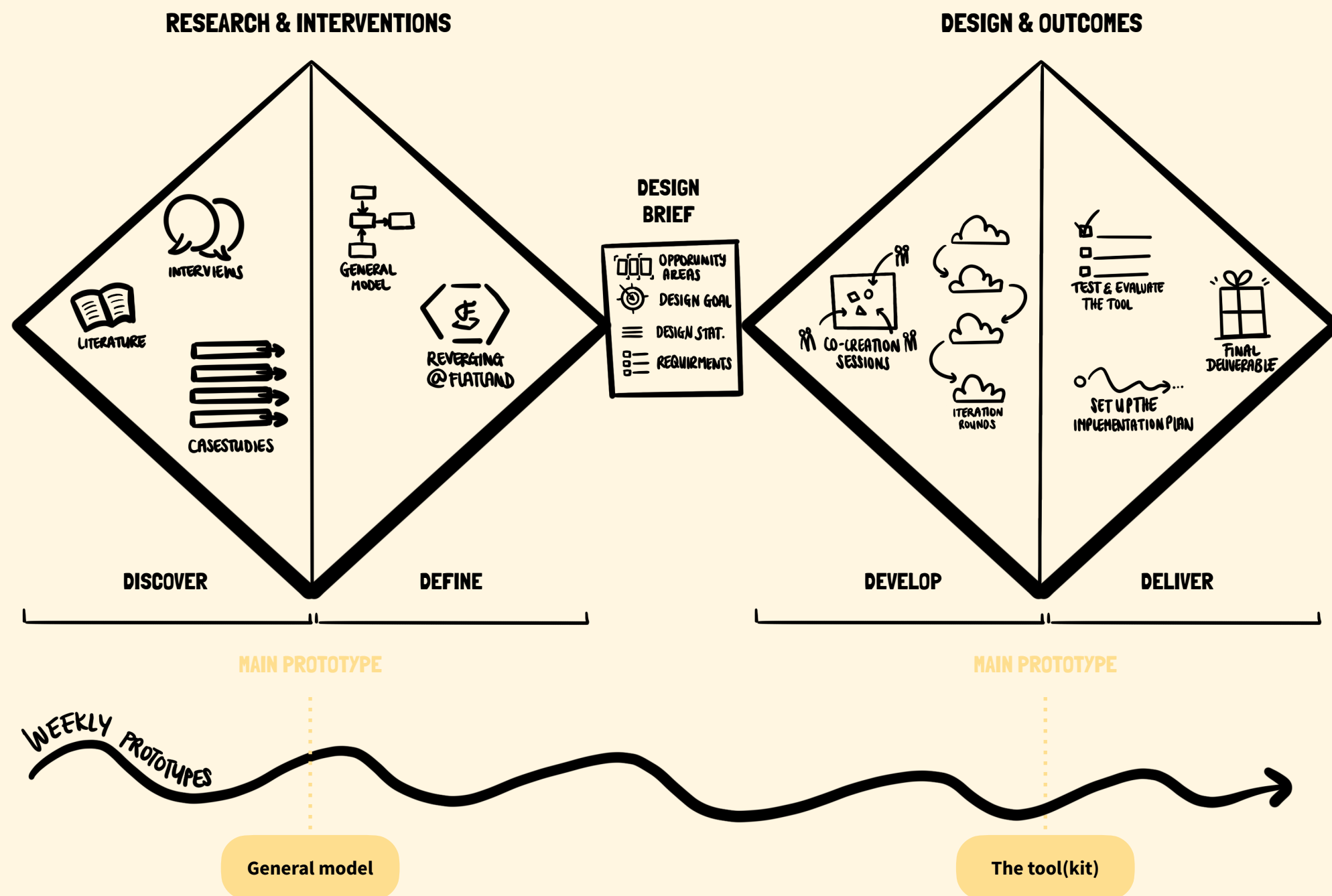


Fig. 5: The approach of this project

REPORT STRUCTURE

The approach used for this project is according to the double diamond. The double diamond consists of the four consecutive stages: discover, define, develop and deliver (British Council, 2019). Therefore, the report's structure is built according to these four stages.

Three chapters have been added to facilitate the interpretation and understanding of the project flow. In the beginning, an introduction chapter is added to create a basic understanding of the project context. In the middle, the design brief chapter makes the bridge between the first and the second diamond by specifying the design opportunities, goals, and statement. Finally, in the end, a conclusion chapter has been added to conclude the project and share the final recommendations and findings.

>> The colors used to indicate the specific chapters in figure 6 match the colors used for each chapter's title and conclusion page in the report.

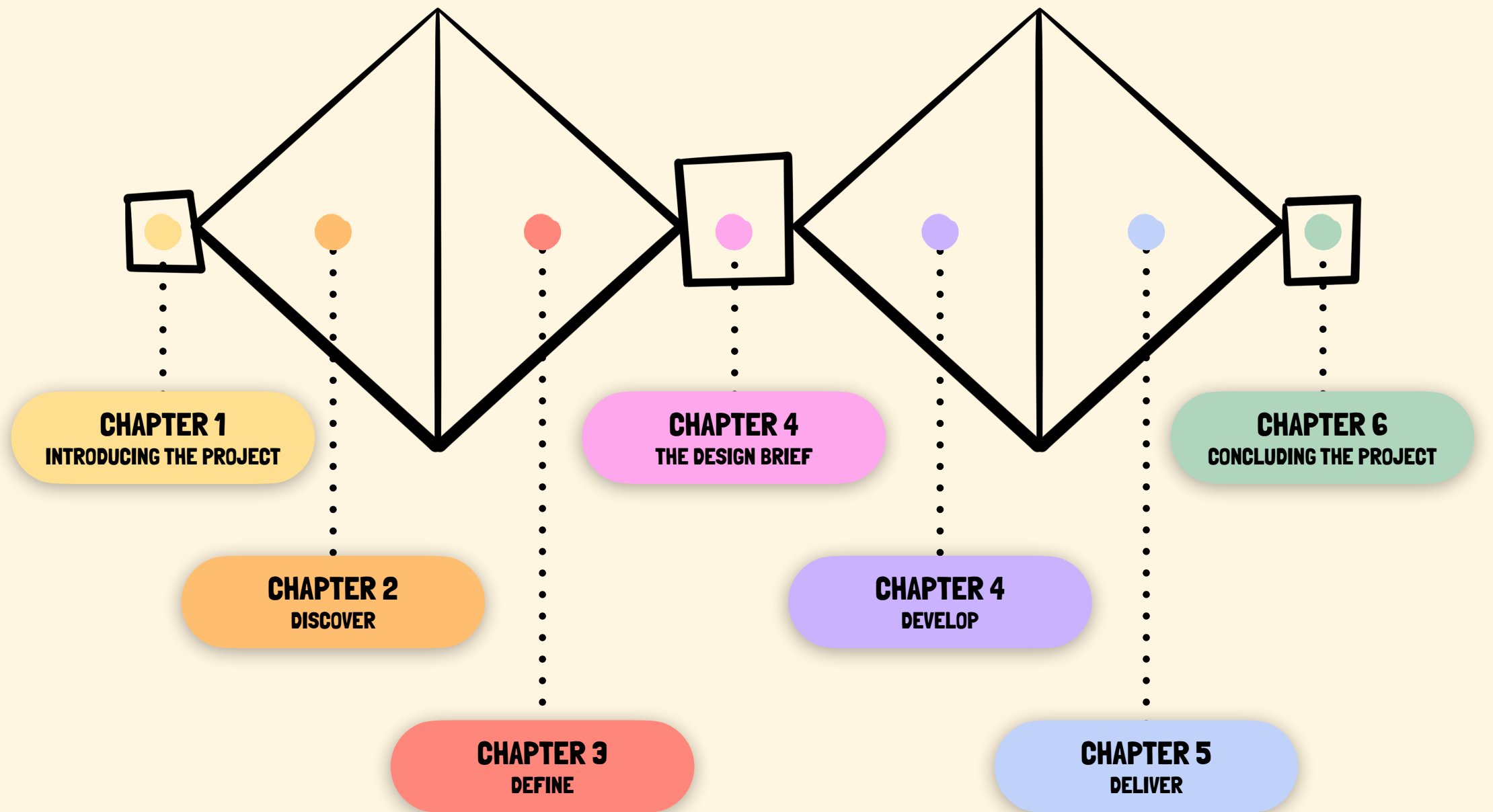


Fig. 6: The structure of the report

MAIN TAKEAWAYS

INTRODUCING THE PROJECT

WHAT? – actions

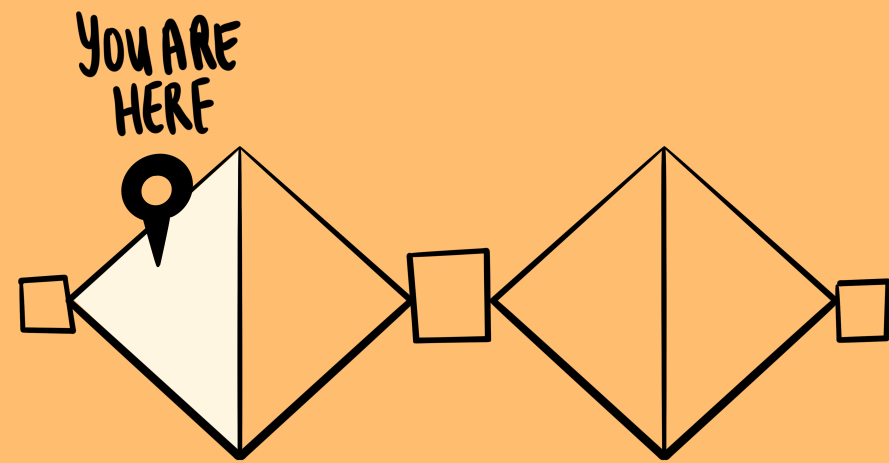
This chapter introduced the project's general context (literature context, company context, stakeholders involved, and the project's aim). In addition, the project flow and the different stages have been mapped out. The approach used in this project is the Double Diamond (British Council, 2019) which consists of a consecutive DISCOVER, DEFINE, DEVELOP & DELIVER phase.

SO WHAT? – findings

The main contribution of this section is the general introduction of the project's aim and relevance that served as a basis for this project. The project will aim to understand reverging in visual thinking and help Flatland do reverging in a more deliberate instead of implicit manner. The introduction sets the project's boundaries regarding the theory, practice, and questions that need to be answered towards the end of the project.

NOW WHAT? – next steps

The information in this chapter serves as a starting point for the **DISCOVER** phase that will further explore the topic (in literature), the company Flatland (general observations and interviews), and their methodology and client's perspective (case studies).



**CHAPTER 2
DISCOVER**

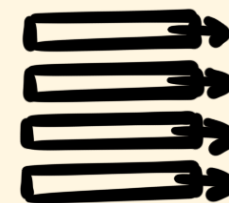
CONTENT



LITERATURE REVIEW



INTERVIEWS WITH FLATLAND



CASE STUDIES

LITERATURE REVIEW

Why a literature review?

The literature review of this project has focused on three main literature fields **(1) creative facilitation & reverging**, **(2) sketching & visual thinking**, and **(3) transdisciplinary learning & boundary objects**. A separate chapter has been dedicated to all three topics. The main goal of the literature review is to get familiar with and create an understanding of the current theory that is relevant for this project. Furthermore, conducting a literature review will enable the comparison and connection with theory and practice later on in the project.

All three topics are reviewed in a separate chapter. At the end of each chapter, the key findings that relate to Flatland have been listed, and the main takeaways are summarized in a one-page visual.

What is discussed and why?

The first chapter reviews literature about visual thinking and sketching in general while briefly touching upon visual facilitation, which is a form of facilitation guided by means of visual representations or sketches (Boedhoe & Badke-Schaub, 2017). The main reason for including this chapter is the fact that the research takes place in the context of Flatland, a visual thinking agency.

The second chapter dives deeper into creative facilitation in general, what is it, and why it is useful? Later it zooms in on the specific phase in the creative facilitation process, 'Reverging', the concept that will be analyzed in this thesis within the context of visual thinking. Next, the key rules and mindset for facilitating and executing fruitful reverging are explained. Lastly, the link between reverging and acceptance finding is described.

The third chapter elaborates on transdisciplinary learning and knowledge creation. Transdisciplinarity refers to an approach where people from different disciplines and backgrounds collaborate, which is a must for solving today's wicked problems. Later the definition and role of boundary objects in knowledge creation are described. Finally, a brief look is taken at how Flatland's visual representations could fulfill the role of a boundary object. The topics of the last chapter are of great importance in this project's context, as Flatland aims to solve more complex and sustainability-focused problems that require this transdisciplinary approach. For this reason, the creative sessions hosted by Flatland are often attended by multiple different actors with distinct backgrounds and perspectives; therefore, it is interesting to look at the potential role of boundary objects in assisting this co-creation and collaboration.

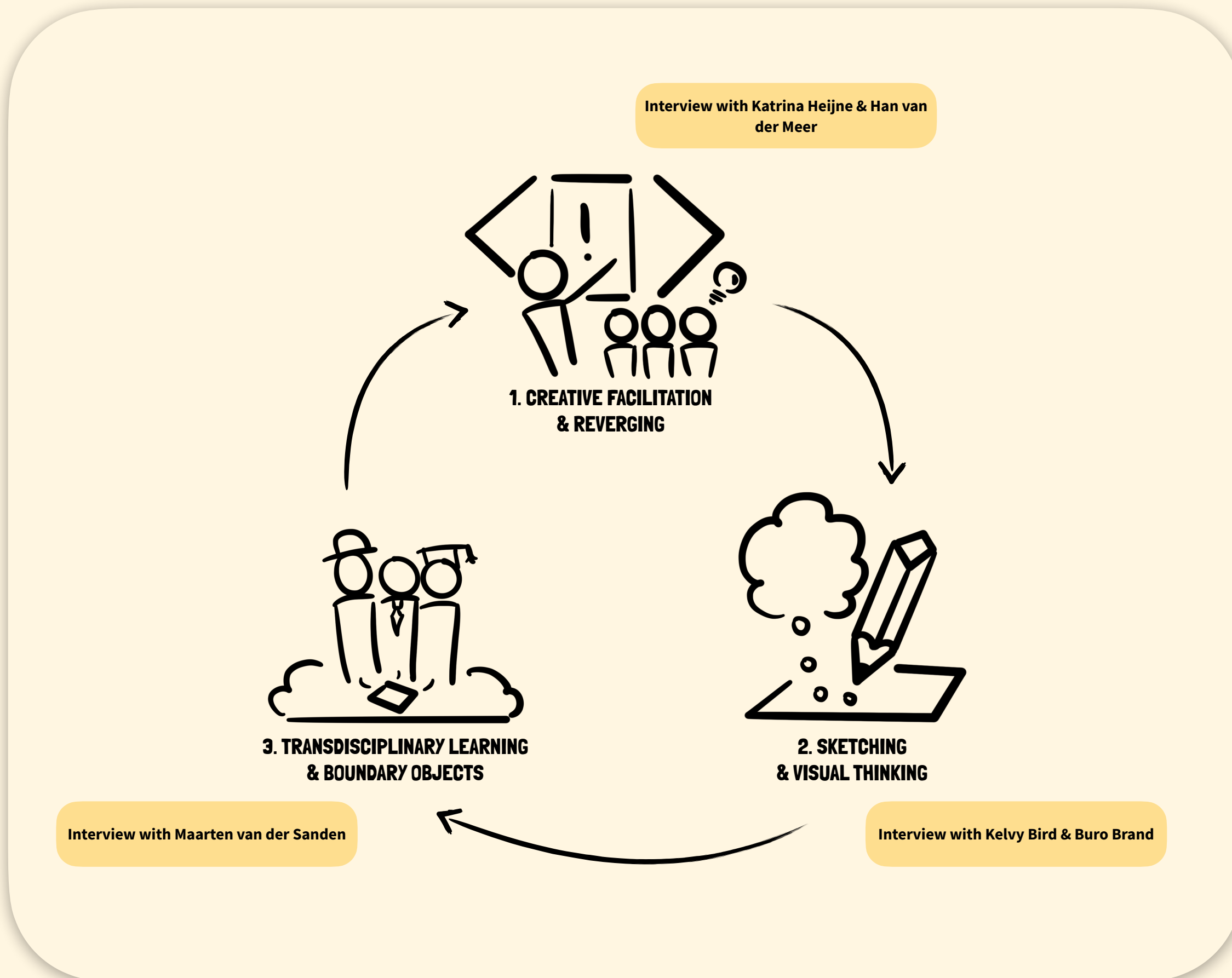


Fig. 6: Overview of the literature topics

CREATIVE FACILITATION & REVERGING

This project focuses on how reverging is done in visual thinking. Therefore, this chapter will further define the concept of reverging and creative facilitation in general. Moreover, it will specify where reverging is coming from and how fruitful reverging needs to be done (according to theory) to achieve the best results, create shared understanding, and generate acceptance finding.

What is creative facilitation?

Creative problem-solving (CPS) is a problem-solving approach or technique for solving more open-ended problems or questions (Heijne & Van der Meer, 2019). The difference between creative problem-solving in comparison with other problem-solving approaches is that it consists of two sub-phases or sub-activities: diverging and converging (Guilford, 1950). The first activity is diverging; this is about generating as many new ideas and options as possible without judging them. The second one is converging; this is about selecting the best fitting solutions to solve the question or problem. Together these two activities form the creative diamond (see fig. 7) (Guilford, 1950).

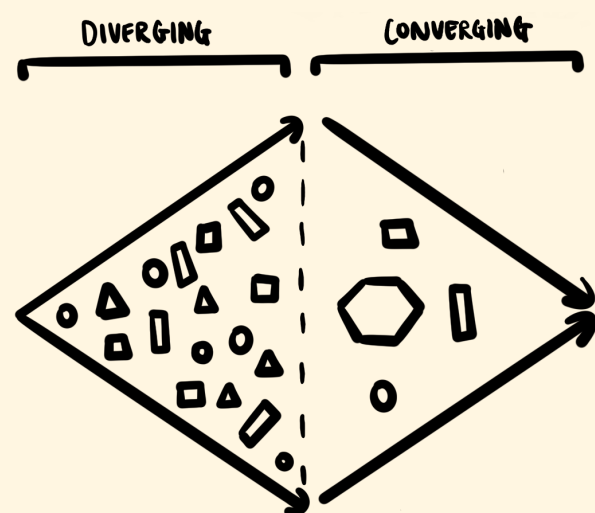


Fig. 7: Creative diamond based on Guilford (1950)

Creative problem solving is considered a group activity including different actors with specific responsibilities. In order to ensure the quality of the session's outcomes, it is essential to properly separate and manage those roles throughout a project or a session. The participants involved in the session are called the resource group. They are responsible for the generation of the content.

Finally, creative sessions require a facilitator to assist the resource group and problem owner by organizing and guiding the process of the session to generate quality content and outcomes (Heijne & Van der Meer, 2019). The execution of such a facilitator role is called creative facilitation (Tassoul & Buijs, 2007).

Where is reverging coming from?

The previous section described the creative diamond consisting of two phases or steps: diverging and converging. However, in reality, it is found that performing divergent thinking (generating as many options as possible) and convergent thinking (selecting the few best options) consecutively is challenging for the human brain as it relies on different neural mechanisms requiring other brain activity (Hommel, 2012). Moreover, jumping immediately to converging is difficult due to a lack or loss of overview of the generated content for the facilitator and the resource group. Therefore, most facilitators have found conscious or unconscious ways to tackle this ambiguous situation (Tassoul & Buijs, 2007).

The following paragraph will give a short overview of different descriptions of what happens between diverging and converging; the three following interpretations of this transition zone will be discussed: the (1) **groan zone**, (2) **emerging**, and (3) **reverging**.

Groan zone - After generating new ideas and sharing different perspectives (diverging), it is very common for participants to have different opinions and points of view. This conflict in perspectives can be experienced as uncomfortable, unpleasant, and frustrating within the resource group. Kaner et al. (2005) refer to this in-between phase as the groan zone (see fig 8). In this situation, the facilitator's role is to guide the group to do its best thinking and take enough time to thoroughly discuss and encourage the creation of shared understanding despite the discomfort. Taking time to go through this groan zone is crucial for the creation of sustainable agreements, which serve as a fundament for meaningful collaboration in the creative session (Kaner, 2014).

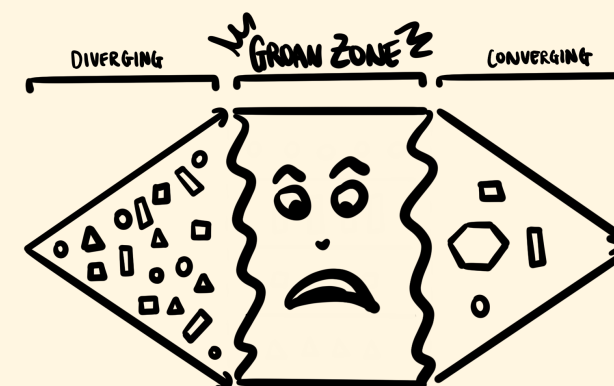


Fig. 8: The groan zone adapted from Kaner et al. (2005)

Emerging - Other more popular literature describes the in-between phase as the exploring or emergent thinking phase, also known as the middle part of the double-sided pencil introduced in the Gamestorming book (Gray, Brown & Macanufo, 2010) where emergent thinking happens (fig. 9). Kalina (2018) also adopted the term 'emerging' to describe the gap between divergent and convergent thinking. The author describes the primary goal of emergent thinking as preparing and allowing for incubation, letting 'the unconscious' mind work after the conscious mind has finished its work (Guilford, 1979). However, Kalina (2018) emphasizes that emergent thinking is different from incubation as it is a more active and deliberate activity.

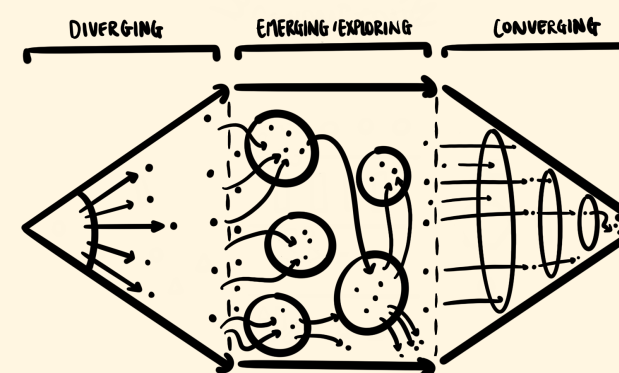


Fig. 9: Emergent thinking adapted from Gray, Brown & Macanufo (2010)

Reverging - The last and more recent approach to describing the in-between phase has been introduced by Heijne & Van der Meer (2019) as the "reverging" phase. This description builds further on Tassoul and Buijs' (2007) introduction of the active and deliberate activity of clustering as a mental break between the two phases, diverging and converging.

Clustering is not about new adding ideas. Instead, it is about revisiting and reviewing all the options generated in the divergent phase and creating a systematic overview by grouping the generated ideas into different clusters. Heijne and van der Meer (2019) stated that apart from clustering, there are also other techniques or activities to do so (e.g., sequencing (presenting back), gallerying (C-boxing technique)). Therefore they consider reverging more as a separate phase of the creative diamond, rather than a single activity or technique to bridge diverging and converging. The revised version of the creative diamond, which includes reverging, is referred to as the creative diamond 2.0 (see fig. 10).

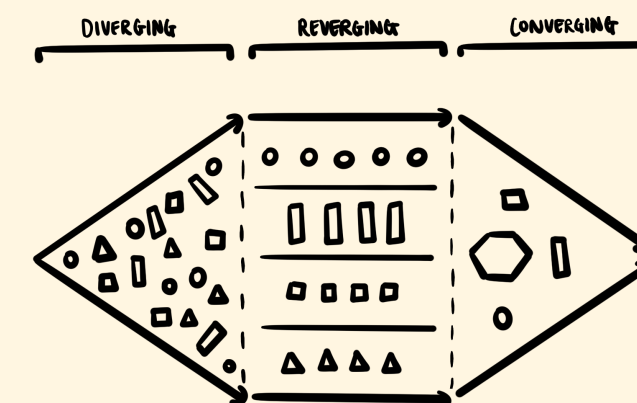


Fig. 10: Creative diamond 2.0 including reverging adapted from Heijne & van der Meer (2019)

This thesis will focus on the last description of the in-between zone, as reverging given by Heijne & van der Meer (2019). The two main reasons for this choice are the fact that reverging is described as a clearly defined separate phase in the creative process, with set boundaries, clear goals, defined rules, and the mindset needed to perform it properly.

In addition, it covers aspects of the two first approaches. On the one hand, it includes the need to create shared understanding as described by Kaner et al. (2005) in the groan zone. On the other hand, it stresses that it is a deliberate rather than an unconscious activity, as Kalina (2018) mentioned in the emergent thinking description.

What is reverging and how is it fruitfully done?

The goals, rules, and mindset of reverging will be clarified in this section. This is done to develop a more in-depth understanding of the chosen interpretation of the zone between diverging and converging.

The main activity of reverging is to collaboratively revisit and rearrange the option generated in the diverging phase. Revisiting the options helps create a better understanding of the generated content, while rearranging helps create more structure and, thus, an overview. This activity of revisiting and rearranging options is done in order to achieve the main goals of reverging, namely:

- reveal and refine the problem and solutions space
- reset mind and process
- resource group dynamics

For reverging to be fruitful and to support the generation of good outcomes in the converging phase, the facilitator must adopt an **inquiring mindset** (Heijne & Van der Meer, 2019).

Aditomo et al. (2011) define inquiry as an investigative activity. Similarly, Schon (1984) describes the world of inquiry as a source of discovery rather than a trigger to action. Furthermore, inquiry is defined by persistent questioning (Pascale, 1990) instead of being instruction-driven (Lasley, 1998). The main goal of using an inquiring approach is to construct knowledge and understanding; an instructor can facilitate this (Spronken-Smith, 2007).

To adopt an inquiring mindset, it is crucial to leave time and space in the session for investigating the participant's questions (Whitlock and Brugar, 2017). In addition, the facilitator needs to encourage participants to understand and conceptualize the information that is already presented (from the divergent phase). Heijne & van der Meer (2019) suggest that the facilitator can do this by probing questions that ask for more explanation or clarification about an idea or topic, such as 'Could someone tell us more about this option?'

The reason for adopting an inquiring mindset is the fact that in order to revisit and rearrange the options in the reverging phase, the resource group needs to understand the meaning of generated content. Therefore, unclear or less elaborated ideas must also get more attention. The resource group needs to ask questions and be open-minded and curious so the chance of survival in the converging phase of all ideas increases (Heijne & van der Meer, 2019).

In addition, three key rules for executing successful reverging are described: (1) be jointly active, (2) listen responsively and (3) move circularly.

1. Be jointly active - All the participants of the session or process need to participate in the reverging phase to create shared understanding by revisiting and rearranging the options. If a participant would be absent for a moment and would only look at the results, she or he would miss much tacit knowledge gained by the others which emerged during the reverging interaction and discussion. The lack of tacit knowledge and information created during the reverging phase could eventually lead to a more difficult acceptance finding of the final outcome (more on this in the next section).

2. Listen responsively -The discussion during reverging is what creates shared understanding. For the discussion to be fruitful, it is important to listen to each other by focusing on understanding each other's ideas and perspectives instead of answering or judging. The facilitator needs to be careful and strict to avoid discussions that do not contribute to the goals of reverging. Discussions that fit the reverging criteria are only about explaining and understanding eventual relations between options; they are not about judging or selecting them.

3. Move circularly - Due to the amount of content generated in the divergent phase, starting to reverge can be overwhelming and uncomfortable. Reverging is not a linear process but rather an iterative process. Therefore the good news is it does not matter where the process begins. Just start. Sometimes this might be hard at first, but the value will come along through the emergence of new connections and relations, and the chaos will be uncluttered.

Acceptance finding

The emphasis on creating shared understanding among all members of the resource groups is an important element for the creation of acceptance finding of the final outcome or solution. Acceptance finding is partially content-related, based on the quality of the idea or solution itself (Do I like the solution?). However, it is found that the organization of the process to get to an idea or solution is even more important in creating acceptance finding (Heijne & Van der Meer, 2019).

Buijs & Van der Meer (2013) stress the importance of acceptance finding in new product development and the implementation of innovation. According to the authors, a common cause of the lack of acceptance finding of innovative ideas is due to the *not-invented-here* syndrome - "I do not see the use of this idea since I miss the info on how it was conceived and why it is brilliant after all" (Buijs & Van der Meer, 2013, p. 103).

For the facilitator to overcome this problem, different solutions are proposed by Buijs & van der Meer (2013). Before the project starts, the main thing to do is to thoroughly think together with the problem owner about who is needed in the resource group to implement the final solution. Therefore, making sure that the resource group is properly composed, is one of the facilitator's responsibilities to ensure acceptance finding at the end of the process. During the process, it is important to explain to all participants of the session, members of the resource group, why they are involved and what is expected from them throughout the project. In addition, during a session or project, reverging can be important in creating shared understanding and involving everyone's ideas, including the less detailed or obvious ones (Heijne & Van der Meer, 2019). After the session, acceptance finding can be enhanced by reflecting on whether additional members are needed for the implementation and eventually extending the resource group in a follow-up session if needed.

In addition to an adequately composed resource group, the successful acceptance and implementation of ideas and innovations also require (a) person(s) such as the problem owner. The problem owner is responsible for solving the problem and implementing the solution in practice. Innovation and management research refers to this person described as a 'problem owner' with multiple terms, including product or innovation champions, innovation ambassadors, or change agents (Beckett & Berendsen, 2015).

The main reason for having people who fulfill this role is to ideate, promote, and implement new ideas and realize innovations in practice (Howell & Boies, 2004). In the absence of such a product or innovation champion, innovative ideas might not reach their full potential (Schon, 1969).

How do these findings relate to this project and Flatland?

- In order to do proper reverging in creative facilitation, it needs to be considered as a separate phase and not a subpart of diverging or converging. This phase of reverging has clear rules that need to be followed to execute it properly in order for it to be fruitful.
- The key rules and mindset for fruitful reverging, in theory, are they applied properly at Flatland, and if not what is done differently? This will be further discussed in section 3.2.
- It is important to keep in mind that the roles throughout the whole project and different sessions need to be clear and specified. First, the selection of an appropriate resource group is essential for ensuring the implementation of the outcome. Second, the need for a clear problem owner (or team) that is responsible for solving the problem is crucial. Lastly, being aware of your responsibility as a facilitator to guide and organize the process which is important to ensure the implementation of the final outcome.
- Be aware of the importance of selecting the people needed for the implementation of the final outcome for the resource group. Discuss and assess this with the client's team problem owner. In addition, be aware of the *not-invented-here* syndrome that could eventually impede acceptance finding throughout and after the project.

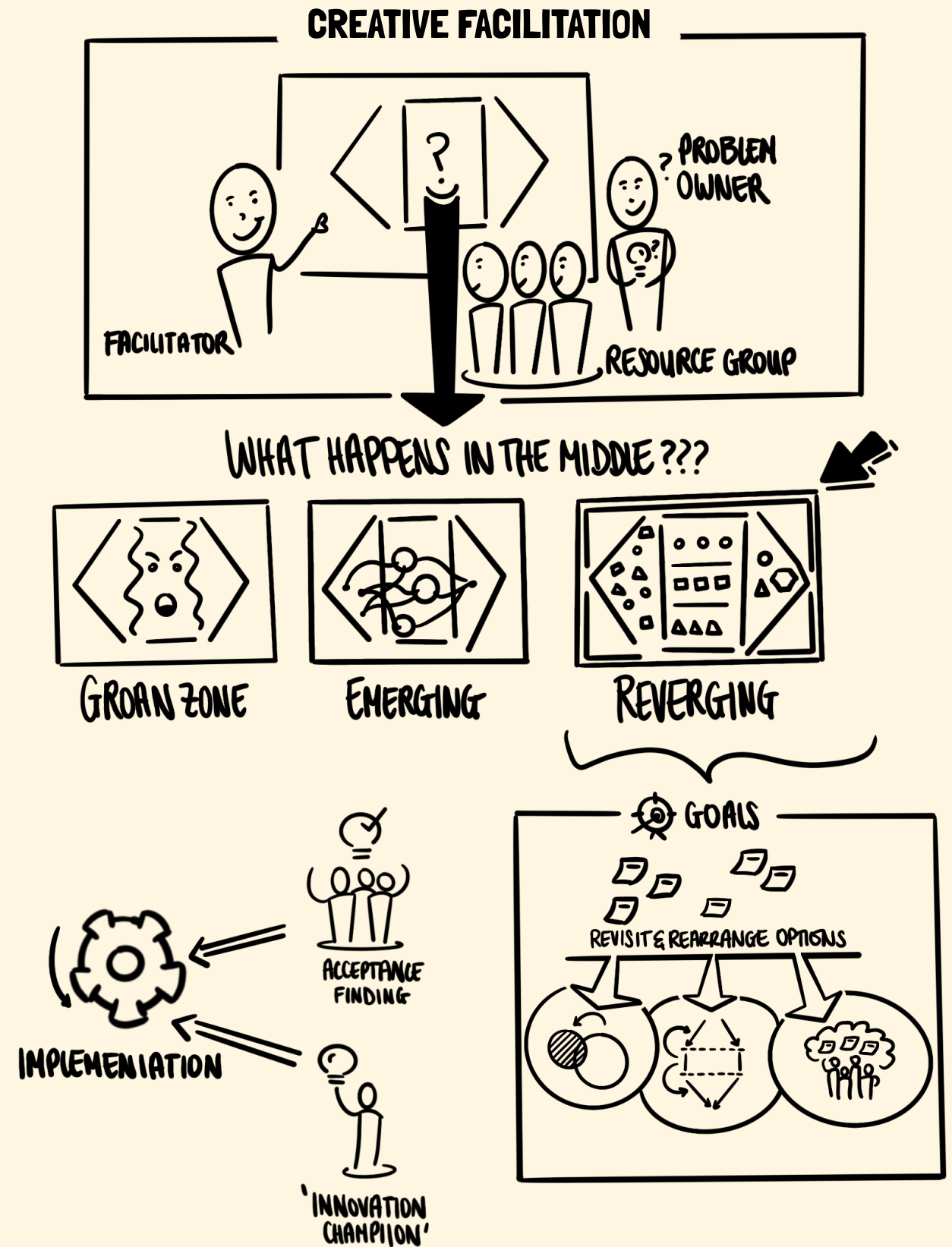


Fig. 11: Visual summary of part 1 - Creative facilitation & reverging

SKETCHING & VISUAL THINKING

The previous chapter has explained creative facilitation and reverging; the following chapter will elaborate more on sketching and visual thinking. Since this project is about reverging in the context of visual thinking, it is essential to have a clear idea of what it is and how one can benefit from using it, and how it might differ from only using verbal representations.

In addition, this project addresses visual thinking in the reverging process, which is by definition a collaborative process. Therefore, it is essential to consider sketching and visual thinking as a group effort and not an individual activity. However, in Flatland's context, sketching is not done by the sessions' participants themselves. Instead, it is done by a Flatland team member (illustrator role), who interprets the verbal cues and input of the client and tries to picture what they have in their mind through sketching. This situation is slightly different from a situation where a person (or designer) draws his thoughts himself.

What is sketching?

Sketching is described as a way to express ideas or thoughts in a tangible form, literally “pressing out” ideas on a drawing surface (McKim, 1972). Research emphasizes that sketching is not about the final representation of a preformulated image or idea but is instead it is about the process of searching for such an idea (Goldschmidt, 1991). Similarly, design thinking research considers sketching as ‘a means to spur creative thought’ (van der Lugt, 2005). The word used for sketches during the Italian renaissance, ‘*pensieri*’ meaning ‘(little) thoughts’ when literally translated (Olszewski, 1981), is an implicit indication that the notion of considering sketching as a way of thinking or generating thoughts rather than merely the production of creative output has been there for many centuries.

What is visual thinking?

The concept of visual thinking builds further on the activity of sketching by explicitly linking sketching to thinking. McKim (1972) described visual thinking as a triple activity (see fig. 12), consisting of the interaction between

- (1) seeing, what we see with our eyes,
- (2) imagining, what we imagine in our minds,
- (3) idea sketching, what we sketch with our hands.

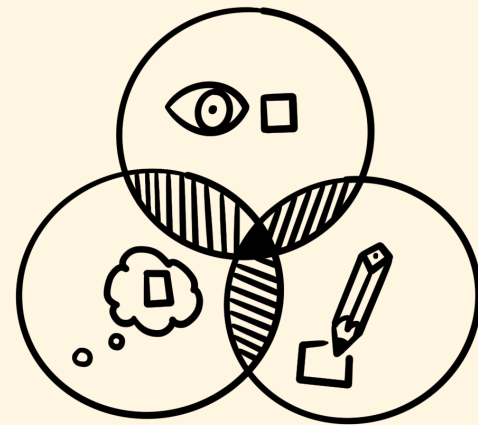


Fig. 12: Visual thinking as a triple activity based on McKim (1972)

From an individual to a collaborative activity

In the past, sketching was considered a solitary activity, while nowadays, it has also been described as a more collaborative or group activity (Boedhoe & Badke-Schaub, 2017). An example to indicate this shift of perspective is Bucciarelli (1988), who claimed earlier onwards that sketching was a solitary activity and later expanded his perspective, mentioning that sketching in a collective or collaborative context could serve as a boundary object (Bucciarelli, 2002). The definition and role of boundary objects in an inter/transdisciplinary environment will be further discussed in the next chapter.

What is the power of sketching and visual thinking?

To better understand the purpose of researching reverging in the context of visual thinking, different reasons why sketching (and visual thinking) could be helpful or powerful for solving complex problems have been identified.

To create a concise overview of the different ‘powers’ of sketching in a group setting, four main categories or reasons have been identified based on Cherubini et al.’s (2007) summary of why designers use sketches. In this summary, the four reasons for designers to sketch are: (1) to share, (2) to ground, (3) to manipulate, and (4) to brainstorm.

To better understand the functioning of the different ‘powers’ of sketching, it is important to acknowledge that sketches and visualizations entail explicit knowledge and express some implicit or tacit knowledge (Goldschmidt, 1991; Weber & Mitchell, 1995). Explicit knowledge can (verbally) be expressed, while tacit knowledge is considered knowledge that cannot be verbally expressed or is considered too obvious to be expressed (Henderson, 1991). A more in-depth- definition of explicit and tacit knowledge is given in the next chapter.

(1) To share - communicate

Sketches play an essential role in communication because they enable the externalization of internal thought by making explicit and tacit knowledge visible to the sketcher and others (Cherubini et al., 2007). According to (Tversky et al., 2013, p.79), sketches act like ‘public representations of thought’. Therefore, they can be shown and shared with others, such as clients, stakeholders, and people from different disciplines (Pipes, 2007).

(2) To ground - create a common understanding

Making (individual) frames or mental models explicit and visible facilitates the negotiation towards a shared frame or team mental model (Hey, Joyce & Beckman, 2007). Furthermore, visual representation assists in making the implicit thoughts and ideas explicit and creates clarity regarding the ambiguous interpretations in human communication (Cherubini et al., 2007). Therefore, sketches serve as a ‘highway’ to develop shared understanding or reach common ground, as Boedhoe & Badke-Schaub (2017) described.

(3) To manipulate - reinterpretation and iteration

The externalization of an (individual) mental model on a drawing surface enables the manipulation of the externalized knowledge between individuals collaboratively (Henderson, 1991). These (collaborative) manipulations happen through the different reinterpretations of the visual representation, which are made possible due to the ambiguous nature of sketches (Cherubini et al. 2007). These new interpretations, in their turn, create new insights and knowledge which can be reinterpreted again, leading to new directions and opportunities for generating ideas (van der Lugt, 2005).

Schon (1984) describes these manipulations as ‘moves’, the designer’s moves produces unintended changes which give the situation new meanings, the situation talks back. The drawn world serves as a context for experiment and stimulates an iterative conversation between what is produced and the thinking process of the designer.

This process is also described as the ‘feedback loop’ between externalized pictorial representation and the internal representations in a persons’ imagery (Goldschmidt, 2003). McKim (1982) also refers to this iterative feedback loop as the ETC - Expression of ideas, Test by carefully evaluating ideas, Cycle by returning to another round of idea-expression with the insights gained in the testing

The manipulations can include the specific action of adding or changing elements of the initial frame or sketch (Yang et al., 2019), rearranging the elements of the initial frame or sketch (Self & Pei, 2014), and restructuring the elements a manipulation that is very hard to do with imagination solely (Verstijnen & Hennessey, 1998).

(4) To brainstorm - generate new ideas

As mentioned in the previous ‘power’ of sketching, the iterative nature of sketching allows the discovery of new directions and opportunities for generating ideas. The first reason for this could be that visual representation enhances the ability of humans to recall and remember earlier ideas, making it easier for a group to build further on that idea (Van der Lugt, 2005; Yang et al., 2019). Second, new ‘things’ that do not exist yet are hard to describe with the existing words in our vocabulary, making verbal recall impossible. Therefore, visualization can be a great support for creating and exploring new things that do not exist yet (Goldschmidt, 1991).

Is visual better than verbal representation?

Having mapped out the ‘powers’ of sketching in the previous section, the reader might be wondering, ‘is visual better than verbal?’. The answer is No.

The literature describes that none of both representations is superior. The power lies in using visual and verbal representations simultaneously (Paivio, 1986).

To start with, in most cases, sketches that only contain visual elements might be hard to understand for non-designers or outsiders and therefore remain very implicit or individual. In general, visualizations ask for a (verbal) explanation, and in most cases, sketches are visualizations combined with textual annotations to help the reader or external people to understand the visualization (Ariff et al., 2010). In addition, combining visual and verbal communication increases the chances of survival of a team’s mental model as it is made more explicit (Yang et al., 2019)

Additionally, these findings link to the dual coding theory introduced by Paivio (1986). The theory emphasizes the importance of combining visual and verbal representations, claiming that human memory processes verbal and non-verbal information in a different system. Therefore, to recall information in the longer term, it is beneficial to store information in both the verbal and non-verbal (visual) system, so the information is dual coded. Moreover, coding the information in both the visual and verbal systems will enable the rise of associations and connections between the two representational systems.

These findings are also supported by more popular literature such as the concept of ‘Vivid thinking’ in the book Blah blah blah written by Dan Roam (Roam, 2011), the writer of visual communication and business visual thinking bestseller books. Vivid thinking refers to **VI**sual + **VE**rbal **IN**ter**DE**pendent thinking. This concept claims that a person only truly understands something if they can both express it verbally (talk or write) and visually (draw) so other people can see it both in their visual and verbal minds.

Finally, in the context of facilitation in specific Boedhoe & Badke-Schaub (2017) emphasize that a creative session that is supported by visual facilitation (where the facilitator constructs and adapts the sketch based on the interpretations of the communication with the participants) is often better for creating a shared understanding and common ground. However, it is crucial to notice that a shared understanding does not necessarily lead to more innovative ideas.

How do these findings relate to this project and Flatland?

- Consider that visual thinking in creative facilitation might be a better tool or way of working to share, ground, and manipulate ideas than to brainstorm in order to generate novel and innovative ideas
- Visual thinking helps externalize both explicit and tacit knowledge, enabling the reinterpretations of the sketches leading to different iterations and new directions.
- In the sessions facilitated by Flatland, a member from the Flatland team visualizes his or her interpretation of what the resource group is saying and discussing. Therefore, it is important to notice that the resource group is not sketching their own mental model or frame. Instead, it is more about visualizing the interpretation of the shared mental model or team frame and coming to a consensus of what it may look like.
- Flatland does use visual thinking in creative sessions. Their sessions are visually and verbally supported, and so are their final outputs. The success of using both verbal and visual representations lies in employing the right mix of visual and verbal representations to achieve the benefits of dual coding, allowing for easier recall and the possibility to make associations and connections across both the visual and verbal system.

SKETCHING & VISUAL THINKING

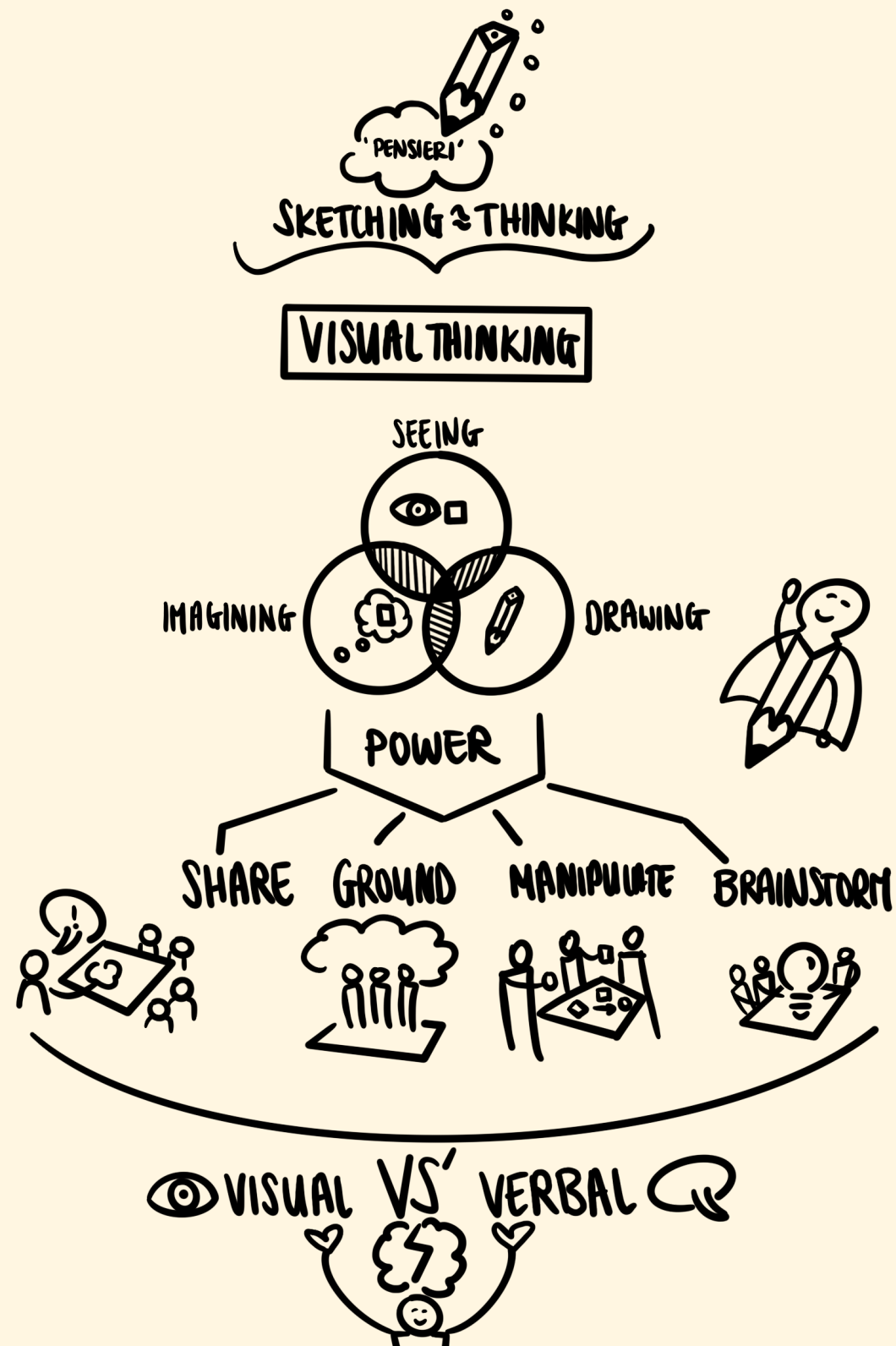


Fig. 13: Visual summary of part 2 - Sketching & visual thinking

PART III

TRANSDISCIPLINARY LEARNING AND BOUNDARY OBJECTS

The previous chapters elaborated on reverging and visual thinking. This chapter will dive deeper into how knowledge is created in transdisciplinary settings and how boundary objects can assist in this creation of knowledge. Transdisciplinary learning (literally learning across different disciplines) is covered in the literature review because Flatland's client teams often consist of people from different disciplines, departments, or organizations.

The following chapter will address how different perspectives and knowledge from different disciplines can merge in order to create a shared mental model that allows the creation of new knowledge. Creating a shared mental model (and knowledge) is an essential step in collaborative sessions and the reverging process as it helps to put people on the same page and generate knowledge and solutions together. Finally, all the chapters are brought together by examining how visual representations can assist the creation of knowledge and how a sketch or 'praatplaat' can serve as a boundary object for creating shared understanding and thus common knowledge.

What is transdisciplinary learning? Why is it important?

'Cross-disciplinary' is the overarching term to describe work that involves more than one discipline. 'Transdisciplinary' is the most advanced form of cross-disciplinarity (Wall & Shankar, 2008). It transcends the known disciplinary structures in both the academic and professional world by integrating the work of the different team members and disciplines.

The general benefits of applying a more transdisciplinary approach lie in the fact that transdisciplinarity is collaborative, creative, blurs the boundaries of disciplines, and enables the generation of new knowledge and solutions that could not emerge in multidisciplinary or interdisciplinary environments (Palmer et al., 2009).

Solving today's 'wicked' problems, such as social and sustainability-related problems, requires a transdisciplinary approach due to their complex interconnected nature (Brown, Harris & Russell, 2010). To solve these problems, prior knowledge and assumptions need to be questioned and rethought. Mishra et al. (2011) suggest that transdisciplinary learning is about creating knowledge that transcends a specific discipline supporting the integration of different forms of knowledge, solutions, and points of view.

The knowledge creation model

The terms explicit and tacit knowledge have been used in the previous chapter. To enable a more in-depth understanding of how knowledge is created, a clear description of each level of knowledge will be provided.

Explicit knowledge is a person's knowledge that can be transmitted in a formal, verbal language (Polanyi, 1966). This level of knowledge is only the tip of the iceberg of the entire body of knowledge (Sanders & Stappers, 2012) because people know more than they can tell (Polanyi, 1966). Most of a person's knowledge is more implicit. This level of knowledge is referred to as tacit knowledge. Tacit knowledge entails the things a person implicitly knows but cannot express (Sanders & Stappers, 2012) or something a person considers too obvious or trivial to express (Henderson, 1991). As mentioned in the previous chapter, visually representing thoughts (i.e., sketching) can support the expression of nonverbal tacit knowledge (Henderson, 1991). The figure below visually represents the two different levels of knowledge considered in this project (fig. 14).

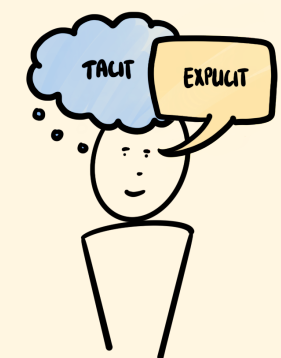


Fig. 14: explicit and tacit knowledge representation in this project

Next, based on the two different levels of knowledge defined, the literature review presents how knowledge is created according to previous research. According to Nonaka & Takeuchi (1995), knowledge is created in the social interaction between these two types of knowledge, explicit and tacit. This social interaction is referred to as 'knowledge conversion' (Nonaka & Takeuchi, 1995). The SECI-model identifies four different modes of conversion, (1) Socialization, (2) Externalization, (3) Combination, (4) Internalization. The different modes are described below, and figure 15 illustrates how the different modes interact.

The first mode is socialization, which converts tacit to tacit knowledge. In this mode, individuals share their tacit knowledge with others without using explicit language but through (unconscious) observation, imitation, and practice. The second mode, externalization, is making tacit knowledge explicit to be shared with others to become a basis of new knowledge. Making an individual's tacit knowledge more explicit creates material for discussing and negotiating the shared mental model (Hey, Joyce & Beckman, 2007). Externalizing can, for example, be done by sketching (Goldschmidt, 1991).

The third mode is combination, converting from explicit to explicit knowledge. It is done by combining different bodies of explicit knowledge, which can be from within or outside the given context or organization. This combination of explicit forms of knowledge allows for reconfiguration of existing information, leading to the creation of new information. The last mode is Internalization, making explicit knowledge tacit by internalizing externalized knowledge into an individual's tacit knowledge base. By internalizing explicit knowledge, an individual's existing knowledge or mental model/frame is modified, forming a base for new routines. Verbalized or visualized documentation helps individuals to internalize explicit knowledge and enrich their tacit knowledge.

It is essential to notice that knowledge creation in or across different organizations is not created by the organizations themselves. Instead, the knowledge is created by the individuals within or between organizations who interact with each other. Nonaka & Takeuchi (1995) depict this with the 'knowledge spiral' at the center of the SECI-model. First, starting at an individual level and moving up to the group, organizational and inter-organizational level.

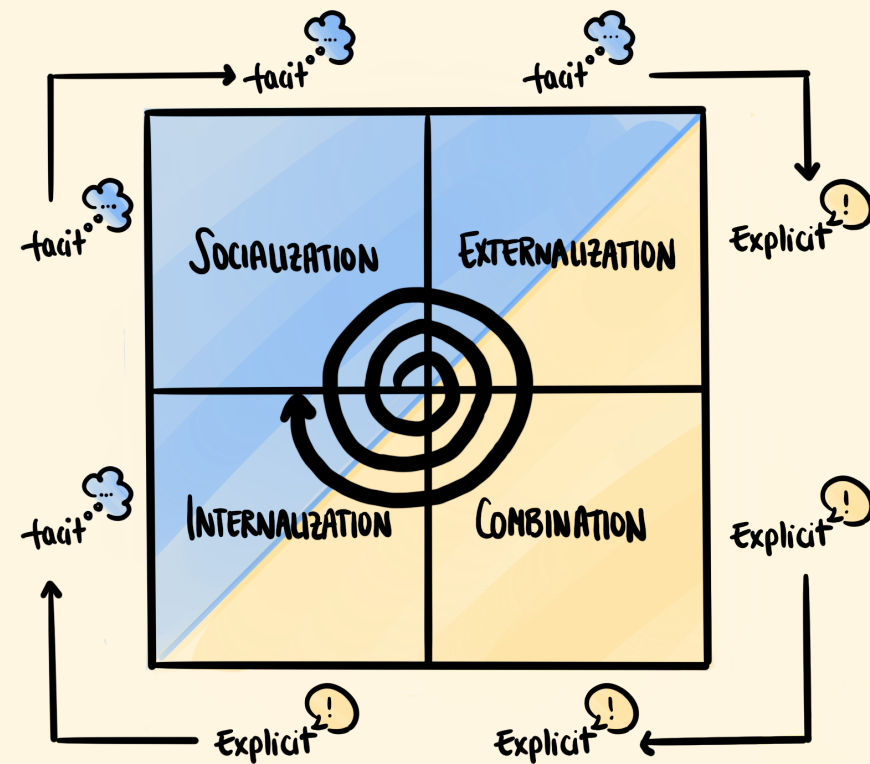


Fig. 15: SECI- model of knowledge creation based on Nonaka & Takeuchi (1995)

Boundary objects

As mentioned in the sketching and visual thinking chapter, research shows that sketches are able to become boundary objects in interdisciplinary creative sessions (Boedhoe & Badke-Schaub, 2017). To build further on this finding, this paragraph will elaborate more on the importance and function of such boundary objects.

Polanyi (1966) suggested that "human beings create knowledge by involving themselves with objects". Later research specified that boundary objects are 'artifacts' that enable knowledge transfer, translation, and transformation (Carlile, 2004). For an artifact to serve as a boundary object and to enable the creation of knowledge, it needs to meet two 'contradictory' characteristics: rigidity/ robustness and fluidity/ plasticity (Star & Griesemer, 1988).

On one hand, the artifact or object should be rigid or robust enough so individuals with different perspectives can give a common meaning and identity to the object. This characteristic allows for the generalization of findings, meaning that all the people involved can relate and recognize their point of view on the object. At the same time, the artifact also needs to be fluid or plastic enough for the different individuals involved to fit their own perspectives and give their own meaning to the object. Therefore, the object should be able to adapt to the (mental) needs of each individual or group interacting with it.

When linking this relatively abstract description of a boundary object back to the powers of sketching (i.e., to share, to ground, to manipulate, to brainstorm), the following hypothesis is suggested. The robustness or rigidity can be found in the fact that a sketch can assist in externalizing and thus sharing ideas and knowledge (to share) in order to eventually create a shared understanding of a specific subject (to ground). Sharing and grounding ideas rely more on the fact that sketching supports the whole team to think in a similar direction and converge the different perspectives or mental models. Furthermore, the flexibility/fluidity can be found in the fact that sketching allows for various reinterpretations and iterations (to manipulate) of an idea and thus the creation of new ideas or knowledge (to brainstorm). These two powers of sketching on their side rely more on the flexible aspect of sketching, bringing new interpretations and ideas to the table resulting in the diverging of different perspectives.

How do these findings relate to this project and Flatland?

- Flatland is actively concentrating on acquiring SDG-focused projects. These more complex and 'wicked' problems require a transdisciplinary approach. This means that the client team (resource group) needs to be transdisciplinary enough to achieve the needed outcome and facilitate its implementation to create the intended impact.
- Flatland can significantly help with the externalization and internalization of knowledge in the knowledge creation process. Visualized representations help externalize explicit and tacit knowledge (externalization), and visualizations also help with recalling and creating connections with previous knowledge (internalization).
- Flatland should keep in mind that when they create a visual representation that should fulfill the role of a boundary object, it should be both plastic and robust enough. The main capability of such a boundary object is that it supports the transfer, translation, and transformation of knowledge within the client team.

TRANSDISCIPLINARY LEARNING & BOUNDARY OBJECTS

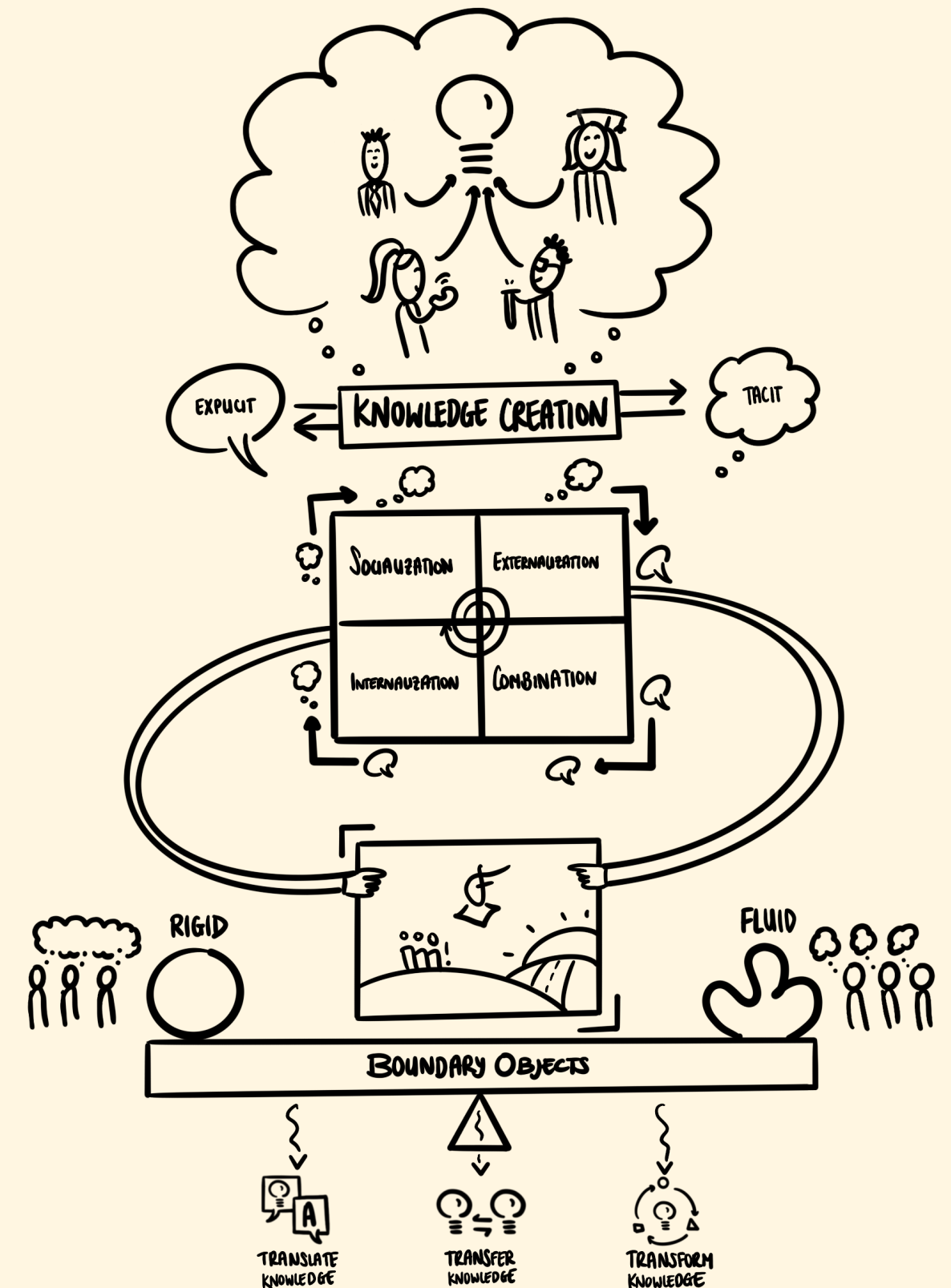


Fig. 16: Visual summary of part 3 - Transdisciplinary learning & boundary objects

INTERVIEW SETUP

Why interviews?

Before the interviews, unstructured observations of different sessions took place to better understand Flatland's way of working, how they organize a session, how they interact with the client, etc. However, these observations were personal interpretations of single sessions and did not allow for the creation of an understanding of how Flatland employees perceive their own work. Therefore, ten semi-structured interviews were conducted with members of the Flatland team. These interviews created more understanding of how different Flatlanders look at and reflect on their work.

Participant selection

The main goal of the interviews was to generate an overview of the different perspectives within Flatland; in order to achieve this, it was essential to have a diverse mix of participants. Therefore 10 participants from the Flatland team were selected based on the following criteria:

- **Role: illustrator vs facilitator**

As mentioned in the introduction, the two main roles during the projects are the illustrator and facilitator role. Most employees at Flatland tend to have a profile and skills that are more fitting to one of the two roles. Therefore, five employees of each profile have been interviewed.

- **Years of experience: senior vs junior employees**

Since Flatland is celebrating their 10th anniversary this year, some employees have already been there for some time (>2years), while others recently joined the team (<2years). Five of each have been interviewed to compare whether there is a difference in perspective between new joiners or more senior Flatlanders.

- **Educational background: Industrial Design Engineering (IDE) vs non-IDE background**

Around half of the team has a background in Industrial Design Engineering. According to the management team, those who have are keener on using structured approaches and clear methodologies. The other half of the team has diverse backgrounds, such as art academies or more business-related studies. Therefore, it is interesting to hear the opinions and perspectives of both groups, 6 out of the 10 participants have an Industrial Design background.

Questions asked

The interview consisted of three main parts: (1) questions about personal skills and role at Flatland, (2) questions about creative facilitation with the support of visual thinking, (3) more specific questions about reverging. The complete interview guide can be found in Appendix B.

Analysis

The qualitative data analysis consisted of three main steps, as described on the right page and in figure 17. As Flatland employees had little prior knowledge about reverging and had more experience with visual thinking, the analysis mainly focuses on the visual thinking aspect of the research.

The main goal of this data analysis was to answer the following questions to serve as an input for the general model (see section 3.1).

- Functional level:**
The functioning of visual thinking
- As what could visual thinking function?
- The purpose level:**
The purpose of visual thinking
- Why does Flatland use visual thinking?
- The collaborative level:**
The power of visual thinking
- For what can it be beneficial in a collaborative process?
- The individual level:**
The skills needed as a facilitator and illustrator
- What skill or characteristics do you need as a facilitator or illustrator >

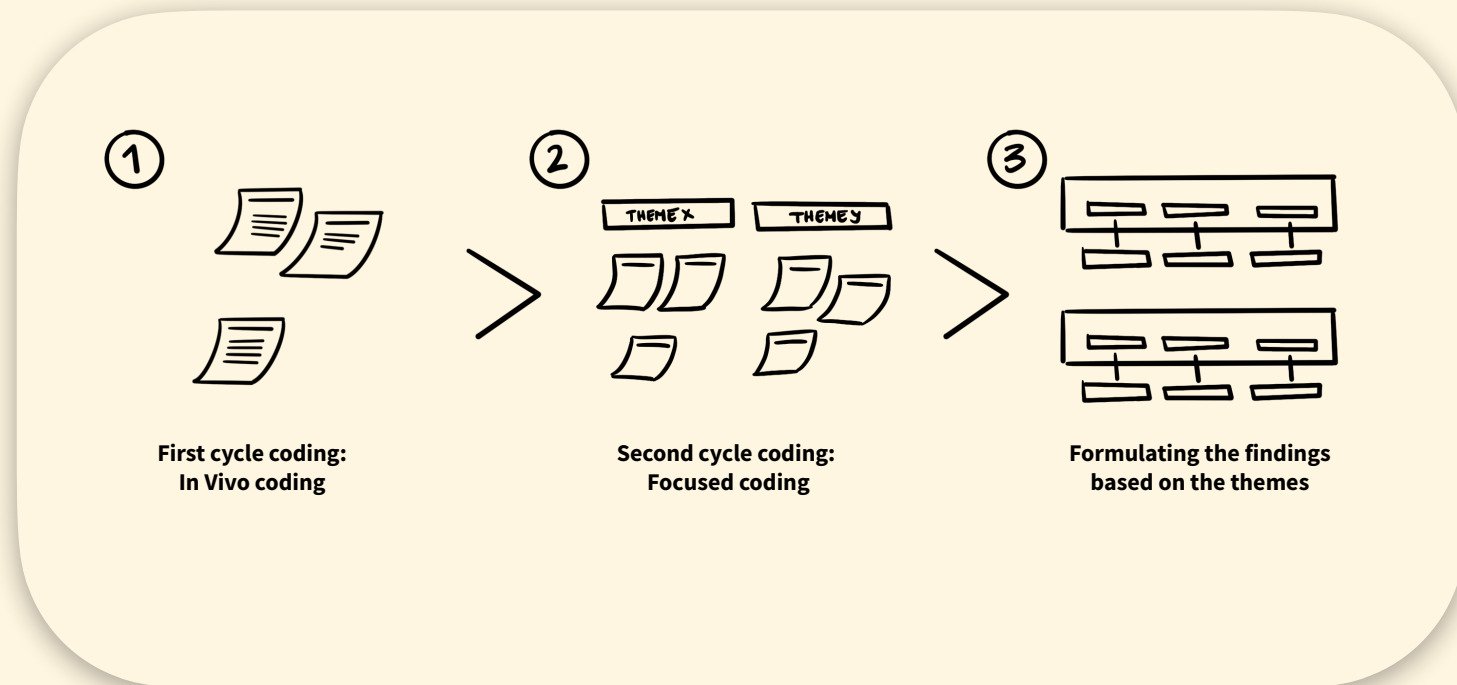


Fig. 17: Three main steps of the interview data analysis

1. First cycle coding - In Vivo coding

The answers to the interview questions have been collected through memos in the form of post-it notes on a Miro board (see appendix C). These memos represent the verbatim, In Vivo codes (Charmaz, 2014), of the participants' answers. The reason for analyzing the verbatim of the participant is that it allows for the analysis of the perspective or knowledge of a specific (sub)culture (Saldana, 2013), in this case, the Flatland culture or perspective.

2. Second cycle coding - Focused coding

In a later stage the codes from the first cycle served as the data for forming higher-level codes (themes). Based on the interpretation of the In Vivo codes from the first cycle the most salient categories were identified. The identification of these categories was done through focused coding (Charmaz, 2014), the most significant and frequent codes from the first cycle. Finally, the categories were identified within the different levels described above (functional, purpose, collaborative, and individual levels). This coding process happened in an iterative and reflective manner throughout the discovery process.

3. Formulating the findings

The core categories for each level were used as the foundation for formulating the answers to the questions above. The final categories/output served as the basis for the visual thinking part of the general model that will be further described in the DEFINE section.

Limitations

The interviews revealed many insights about how Flatland employees do and perceive their work. However, while talking with the Flatland team, it became clear that this interview was only about their perspective and did not include their client's perspective. Additionally, since most interviews triggered more a personal reflection, it remained challenging to extract information regarding the Flatland way of working or process flow. Therefore it was difficult to come up with generalizable findings regarding the Flatland process. Therefore, case studies have been conducted (see section 2.4) to get a better idea of the client's perspective and find more generalized findings regarding the flatland way of working.

Key findings

The insights from the interviews will form the visual thinking part of the general model, which is further described in the **DEFINE** chapter. The findings are discussed on the next page. All categories or answers are supported by interview quotes and linked to the literature from the literature review.

In addition, to the analysis of the interview data, the findings have also been discussed iteratively with the company mentor.

INTERVIEW FINDINGS

This section will elaborate on the findings that emerged from the interviews. These findings are formed based on the main categories for each level that emerged from the codes during the analysis (see Appendix C for the clusters). The findings are supported by quotes that were mentioned during the interviews. Where possible the findings were linked to literature from the literature review. The findings were used to build the left side - the visual thinking part of the model.

A. The functional level

This section will elaborate on the different functions of visual thinking that were given during the interviews with the Flatland employees.

1. as a mental process

Visual thinking can be regarded as a way to activate mental processes such as memorizing, thinking, reasoning or imagining. Sketching helps to externalize people's mental models and thoughts shaping an individual or a group's mental process.

"Drawing helps me to make my mental model public and to make it negotiable with the client to work on it." - Flatland illustrator

"The capacity of the human mind is overrated, what visualization does to get things out of your head is the very first and best thing to do." - Flatland facilitator

2. as a tool

Visual thinking has also been mentioned to be a tool that supports people's thinking and the creative process. Flatland emphasizes the need for considering visual thinking as a tool rather than the final output, as it is meant to help people throughout the process to come to the final product or outcome.

"A 'praatplaat' is a tool, not a product, it should be used as a conversation starter that helps people to communicate their vision or story." - Flatland facilitator

"You need to trust that you can lean on your drawing skills and really see drawing as a means, not an end."

3. as a goal or output

Finally, visual thinking has also been mentioned as the goal or final output. While this function is less emphasized than visual thinking as a tool as the Flatland employees mention that the process towards the final drawing or outcome is at least equally important.

"As an illustrator, you see the drawing as a means but also as an end goal... seeing when something is finished at different drawing levels."

"Visual thinking is also about really working it out into a cool deliverable."

Defining sketching or visual thinking as a mental process is most in line with the literature review. Goldschmidt (1991) emphasized that sketching is not about the final representation of an image, so it is less about seeing it as the final goal or output. Instead, it is about the process of searching for such an idea.

B. The purpose level

This section specifies the primary purposes of visual thinking mentioned by the Flatland employees during the interviews. Additionally, it was based on the purposes given by Flatland in their own 'storybook'. The final themes have been linked to literature from the literature review.

1. Draw to think

Drawing helps individuals and groups to think. Making abstract thoughts explicit supports the creation of a shared or collective understanding.

"Helps them to get out of the abstraction and think what do I mean with that." - Flatland facilitator

"Empowers the creation of a shared image, by facilitating collective imagination because it makes the things people have in their head tangible." - Flatland Illustrator

The fact that sketching or drawing assists thinking has been highlighted in the literature. Olszewski (1981) referred to this as the 'Pensieri' the Italian word for 'little thoughts' used as a synonym for sketches during the Italian Renaissance. Additionally, it links to the claim that sketching is considered a means to spur creative thought (Van der Lugt, 2005).

2. Draw to collaborate

Visual thinking in a group context can also be beneficial for empowering collaboration within teams. It might be a new way of working, helping people break out of their old thoughts and patterns.

"Sometimes people already have a whole history of collaboration which might lead to biases. By making things external and using a different way of working (visual thinking) together, it can improve the quality of the collaboration." - Flatland facilitator

"We act as a kind of mirror and try to be neutral... by making thoughts explicit and visible for each other. This can enable reflection within the client team." - Flatland illustrator

The literature review confirmed that in the past sketching was considered a more solitary activity, while nowadays it has been described more as a collaborative activity (Bucarelli, 2002; Boedhoe & Badke-Schaub, 2017).

3. Draw to share

Drawing is also considered useful to share thoughts and ideas. In the context of Flatland, this happens during the process but also at the end, when the final outcome is used to share the message to the rest of the organization.

"We make all kinds of visual assets that are meant to be shared with an even larger group after it has been conceived." - Flatland illustrator

"Drawing allows you to develop a shared image, and decreases the room for miscommunication." - Flatland facilitator

Cherubini et al.'s (2007) review mentioned that sharing was one of the four main reasons why designers sketch. These sketches can be shared with clients, stakeholders or even people from other disciplines (Pipes, 2007).

C. The collaborative level

This section will elaborate on how the Flatland employees perceive the power of visual thinking at a collaborative level. The four main powers identified have also been linked to literature from the literature review.

1. Make it circular instead of linear

Writing and speaking are considered more linear activities with a clear beginning and end. In contrast, drawing and visual thinking break this linearity and allows one to see things more in an interconnected or systemic way.

"Visual thinking is the tool that can break free from linear thought processes. When writing, there is a clear beginning, middle, and end; which is a linear way of telling information unless you are very good at writing." - Flatland illustrator

"Visual thinking allows us to go back to what we have drawn based on what we have heard. This enables the facilitator to suggest 'this is what I picked up from your conversation' and then the client can clarify feedback or ambiguities." - Flatland facilitator

The literature does not highlight this finding. However, Shah et al. (2001) confirm this finding by explaining that sketches group information spatially, allowing people to see new connections between the data. While in more sentential data, information is serially linked, making it more probable for people not to see some connections or relationships

2. Make it dual coded

Flatland emphasized that the power of visual thinking also lies in the fact that they use visual representations in addition to verbal communication in both their sessions and deliverables. Using these two streams of communication empowers the creation of shared understanding.

"It is very nice to use a combination of images and words. Images enable many possible interpretations; by combining this with words, you can form a more focused collective image." - Flatland illustrator

"The illustrator and facilitator really need to be a team. Together they are the hub for communication. The facilitator mainly guides the verbal flow while the illustrator focuses on the visual or more metaphorical flow." - Flatland facilitator

This finding links to the dual coding theory introduced by Paivio (1986); using both the visual and verbal system is essential for endorsing the recall of information in the long term and facilitating the emergence of connections and associations between the visual and verbal system.

3. Make abstract concrete

By having to visualize what the client discusses or mentions; there is a need to make it more concrete. Flatland needs enough information that is concrete and specific enough to draw something. In case the illustrator misinterpreted what the client was trying to say, visualizations assist the group in giving feedback, making edits, and clarifying their thoughts.

"We draw it out and force them to explain it until the other people in the session can understand it." - Flatland illustrator

"Buzzwords such as 'support' ('draagvlak' in Dutch) are terms everyone can agree about because they don't mean much. In most cases, due to this, people talk past each other. By visualizing, you become more concrete in what you say." Flatland illustrator

Goldschmidt (1991) highlighted the usefulness of sketching because it does not only embed explicit knowledge but also helps express more tacit or underlying knowledge. This links to the fact that more abstract or implicit ideas are made more explicit or concrete.

4. Make it actionable

Visual thinking and sketching help the client to make their thoughts and findings more actionable. It can assist in decision making, it can trigger reflection or help create consensus.

"We try to capture the common thread of a broader story by actually doing sessions with the client that help to uncover what is going on. It is something that the client has to experience actively so they propagate it to the rest of the organization." - Flatland illustrator

"Visual thinking helps remove cognitive burdens for the client, so they get an overview of the information and knowledge that is out there and so it becomes manageable." - Flatland facilitator

This connects to Carlile's (2004) finding that boundary objects can help in the translation, transfer, and transformation of knowledge. Additionally, this actionability empowered by sketching is also represented in Cherubini et al's (2007) four reasons why designers sketch: to share, ground, manipulate and generate ideas.

D. The individual level:

This section will elaborate on the main skills that are considered crucial for both the facilitator and illustrator role according to the Flatland employees themselves.

>> The skills needed as a facilitator

1. Creating structure

The first skill needed as a facilitator is the ability to make well-structured planning, project plan, and project overview. Making sure the process runs smoothly is the facilitator's main responsibility. By creating and maintaining the right structure the facilitator is also guaranteeing that the agreed objectives are met towards the end of the project.

"The facilitator is responsible for designing creative sessions that are in line with the project's goal." - Flatland illustrator

"Preparation is key, it is important to make sure that the planning is set up for the entire project including the different phases and deadlines." - Flatland facilitator

2. Being flexible

The interviewees mentioned the importance of being structured without losing flexibility. As a facilitator, you have to be able to go with the flow which sometimes means that you have to pivot or deviate from the planning or structure if needed. The facilitator interviewees mentioned that sometimes it can be hard to find the balance between creating structure and being flexible enough, as some people have the tendency to over-plan or micromanage.

"The planning must be flexible, and you must be able to deal creatively with that flexibility, if an approach does not work you need to be able to adapt quickly and come up with a new approach." - Flatland facilitator

"I am so discipline-driven that sometimes I get stressed from a session that runs late or deviates from the initial plan, sometimes I tend to over organize and micro-manage." - Flatland facilitator

3. Asking the right questions

To dive into the client's context and understand their perspective, one of the key skills as a facilitator is to ask the right questions to extract the needed input for the drawing. One participant mentioned the importance of designing the questions up front to ask the right questions and obtain the required information. In addition, asking the 'right' questions is also crucial for understanding and responding to the group dynamics during the sessions.

"When you prepare questions before a session, they are completely different from the questions you come up with during a session. Pre-designed content-dependent questions enable you to get people to think about the right things." - Flatland facilitator

"The facilitator is more concerned with the course of the session and the client's content, more in the client's reality without being preoccupied with the drawing. You could see the facilitator a bit as the client's psychologist." - Flatland illustrator

"You need to be good at public speaking and dare to ask questions for directing the group and their energy." - Flatland facilitator

>> The skills needed as an illustrator

1. Adopting an open attitude

As an illustrator, it is very important to be interested and eager to learn more about multiple different topics and problems. As an illustrator, you mostly do not know everything about the client's context or problem yet. Therefore, you need to adopt an open attitude towards the client to understand their problem better.

"Being open to new ideas and the client's feedback. Do not commit to your first sketch or cry when it is not right." - Flatland illustrator

"You need to take pleasure in understanding other people's problems and be willing to help people in their unique situations, even if the problem is similar to what you have seen in previous projects." - Flatland illustrator

2. Drawing quickly

The definition of a good drawer in visual thinking (at Flatland0 differs from the definition of people in general. It is not about making something beautiful or in your own style. Instead, it is about creating something functional that helps the client their thinking. In order to achieve this, the central aspect mentioned was being able to draw quickly.

"You need to be able to draw quickly in order to participate in the discussion." - Flatland illustrator

"To be a good drawer you need to be at the level that you can draw everything as a sketch and quickly. It does not have to be artistically good, it needs to be clear and functional." - Flatland illustrator

3. Listening carefully

While the facilitator mainly takes the lead in the conversation and asks questions during the session, the illustrator listens carefully and draws accordingly. Sometimes having to hold themselves from talking to better understand the context that needs to be visualized.

"You need to listen to what is being said and consider whether it has an impact on the drawing and how the things have been structured so far in the sketch." - Flatland illustrator

"If I want to ask or steer something, I just wait... you tend to fill gaps for the client very quickly, but the content belongs to them. The client should feel discomfort if there is a gap." - Flatland illustrator

CASE STUDIES SETUP

Why case studies?

The interviews did not provide information regarding the client's perspective of Flatland's work, and limited information collected information regarding Flatland's work approach and process. Therefore, a case study was conducted to mitigate these issues. The first reason for using this method was to collect more structured data about Flatland's process and way of working to set up a general model that brings the individual findings together (see section 3.1). The second reason was to obtain the client and Flatland's perspectives on the same project to compare the different points of view.

Case selection

Four different cases were selected based on the following criteria: The project needs...

(1) a different project leads for all 4 cases

To compare different perspectives and approaches within Flatland.

(2) to be recent (<6months)

To make recalling specific moments and how things happened less difficult for the participants.

(3) to be finished

To be able to reflect on the final outcome and whether the client was satisfied.

(4) preferably follows the Flatland methodology

This refers to the general methodology used by Flatland (see section 1.1) which includes a clarity - story - validate - deliver setup. Selecting cases that follow this approach will facilitate the comparison of the cases and the assessment of the current 'Flatland methodology'.

The selected cases are projects for the following organizations: Telecom, Branch Bureau, Evides, and CZO. More details about the projects can be found on the right page in figure 18. A case timeline has been created for all four cases to demonstrate an overview of the main events, quotes, and conclusions for each case. The timelines were constructed based on the Flatland approach and therefore divided into the subphases; clarity, story, validate and deliver.

Materials analyzed

The majority of the information for building the cases has been collected through semi-structured interviews. First, an interview was conducted with the Flatland project lead to have a chronological overview of the project's process. Later a follow-up interview was conducted with the client's problem owner, the person responsible for the project.

In addition to the interviews, digital files which include the different iterations and the final product, were explored. Where applicable, interactions and communication between Flatland and the client, such as email conversations, were also investigated.

Questions asked

In the first place, the Flatland team's project lead was interviewed to get a general overview of the project and the process. Later, a similar interview was conducted with the problem owner of the client team. The interview guides can be found in appendix D.

The interviews consisted of the following four main parts:

1. The power of visual thinking in the project
2. Going through the entire process of the project
3. Follow up and implementation
4. General learning: tips and tops

Analysis

The case studies have been analyzed mainly to generate findings of what is needed for (fruitful) reverging in visual thinking.

1. Interview input was used to construct timelines, which can be found in appendix E.
2. Key takeaways were formulated for each case; these can be found in the next section, section 2.5.
3. The success factors were highlighted in green, the risk factors in red, and the requirements for fruitful reverging in visual thinking in yellow.

Finally, the insights were used to create the middle part of the general model, which will be introduced in section 3.1.

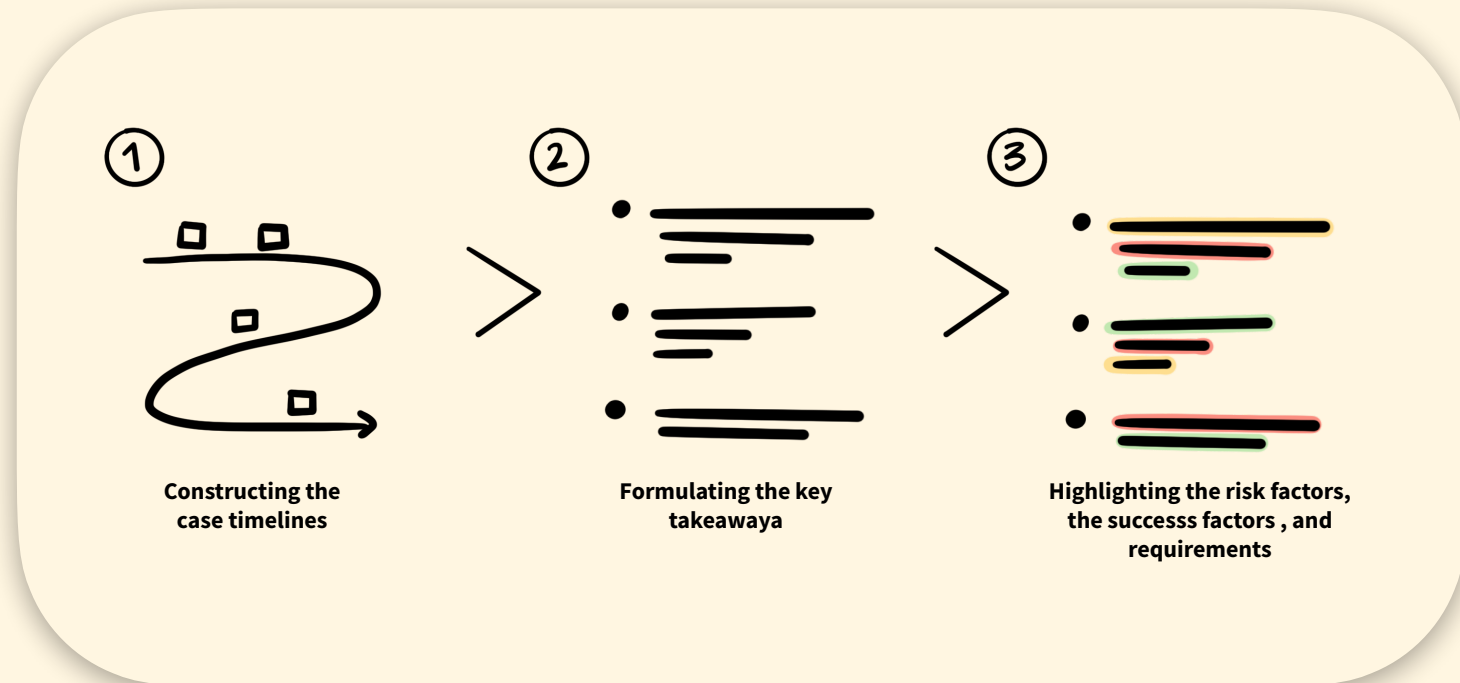


Fig. 18: Three main steps of case study data analysis

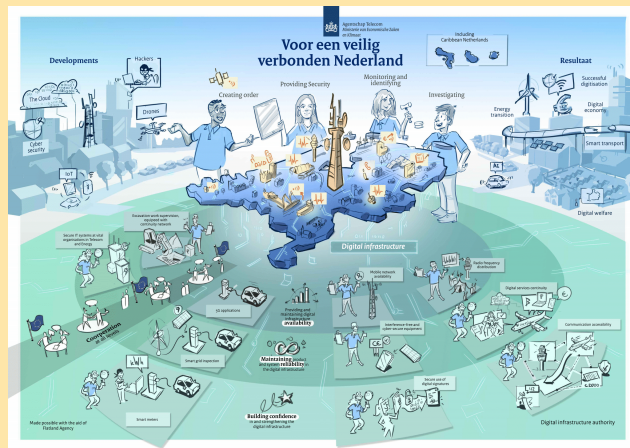
Limitations

To ensure the possibility to check-in and have an overview of the communication with the client, all cases selected were cases that ended on a positive note. This stresses less what could go wrong during a project, as the client is enthusiastic about the final output. Therefore they probably recall more positive than negative experiences and moments from the project, resulting in possible positivity bias (Hoorens, 2014). Lastly, I wasn't there in person during the process, so all the case study data is based on what the project lead and client lead could recall and remember from the project. Therefore, the group dynamics during the project could not be actively observed.

The key findings

The key takeaways and its conclusions are explained in section 2.5. For each case, key takeaways have been formulated. From these takeaways, the success factors, risk factors, and requirements have been extracted. The final results emerging from the case studies will serve as the basis for creating the central part of the general model, the basis for fruitful reverging in visual thinking. The general model will be introduced in the **DEFINE** chapter.

TELECOM



WHY VISUAL THINKING?

Sharpen future vision and mission

GOAL FINAL OUTPUT

Inform and start the conversation

FORM FINAL OUTPUT

'Praatplaat'

IMPLEMENTATION

'Krantje', website, café, puzzle

SPECIAL

30+ people in the story session

BRANCH BUREAU



WHY VISUAL THINKING?

Communication and creating an overview

GOAL FINAL OUTPUT

Inform the clients about the different possibilities

FORM FINAL OUTPUT

'Praatplaat'

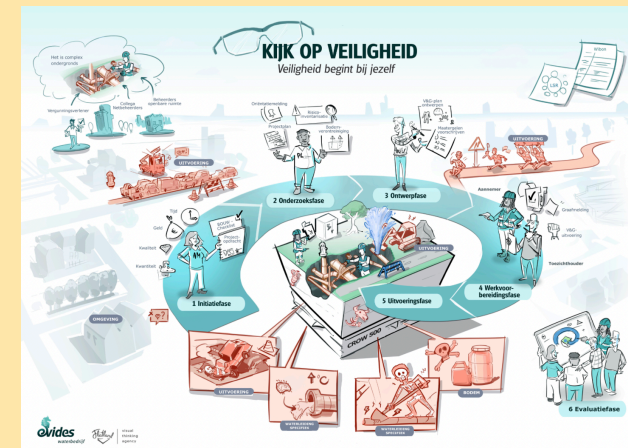
IMPLEMENTATION

Shared on social media and in the newsletter

SPECIAL

The facilitator and illustrator was the same person

EVIDES



WHY VISUAL THINKING?

Communication and creating awareness

GOAL FINAL OUTPUT

Create a mindset shift in the employees' thinking

FORM FINAL OUTPUT

Interactive, clickable pdf

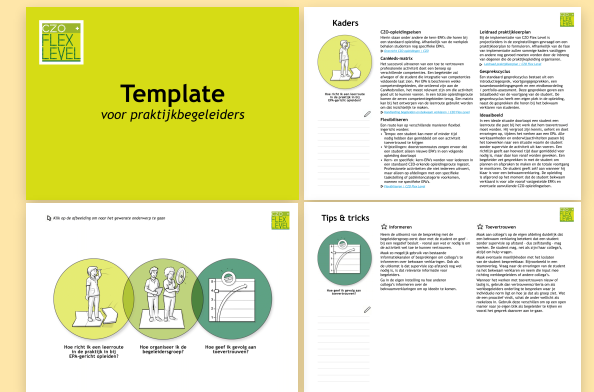
IMPLEMENTATION

Teams background and in the newsletter

SPECIAL

-

CZO FLEX



WHY VISUAL THINKING?

Exploration of the materials needed

GOAL FINAL OUTPUT

Create a clear story to inform the trainers

FORM FINAL OUTPUT

Manual for training people in the organization

IMPLEMENTATION

Manual used by the trainers and in training

SPECIAL

Think tank session with different experts organized by the client

Fig. 19: Overview and project information of the selected cases

CASE STUDY TAKEAWAYS

This section will elaborate on the findings that emerged from the case studies. A set of key takeaways has been formulated for each case. The **success factors**, **risk factors**, and **requirements** for fruitful reverging in visual thinking are highlighted in the corresponding colors green, red and yellow.

At the bottom of the right page figure 20 summarizes the success factors, risk factors, and requirements that have been identified based on the main takeaways from the case studies. These will serve as the input for the general model that will be introduced in the next chapter.

MAIN TAKEAWAYS – TELECOM

- The group size of the client team varied numerous times throughout the different sessions. In the kick-off and clarity session, the core team is present. Later more people or the user group are involved in testing and validating the concept in the story and validation session. In the final delivery stage, only the core group is often present as they are the **advocates of the final outcome**. The Flatland project lead referred to this concept as ‘the snowballing effect’, as you involve more and more people in the project to amplify the idea or strategy.
- There is enough **time needed between the different sessions to allow for incubation** and digestion of the information of the sessions in the whiteboarding session for instance.
- Everything said that is not drawn in the drafts or final sketch is not documented, resulting in the **illustrator having a lot of power**. Therefore, it is important to trigger the client's reaction so that if something is missing or wrong it can be adjusted by the illustrator.
- When sketching or presenting prototypes during a session, it is crucial to **give the client the feeling that they can always give their input or make new iterations**. It is essential to provide the sketch with an unfinished look and feel to empower iterations. Calling the drawing a ‘draft’ instead of the ‘product’ until the very last phase helps to give the client the feeling that it is still unfinished and could benefit from additional feedback and iterations.
- Flatland described that they go into their Flatland ‘cave’ after leaving a session with the client and the importance of **balancing what you do with and without the client** throughout the project. In this cave, the Flatland illustrator comes up with the first ideas, and later the illustrator and facilitator brainstorm together in a so-called ‘whiteboarding’ session. When returning to the client it is important to present back what has been designed in that ‘cave’.

MAIN TAKEAWAYS – BRANCH BUREAU

- **Personal interest and knowledge about the project's topic** is an absolute plus for making the project development smoother because you lose less time in understanding the client's context and you are able to draw more easily along with the client.
- In most cases, there are different people or parties involved in the project, which all have their own interests and priorities. Therefore, it is important to bring all those perspectives together. In order to do this properly, it is also important to **have the people with the right expertise** involved in the session to spark fruitful discussions and make the right decisions.
- There was **not much time for exploring additional iterations** or further finalizing the deliverable due to the limited budget the client had for the project.
- This project only had one person from the Flatland team working on it due to circumstances. The person had to fulfill both the illustrator and facilitator roles. In this case, it was doable, however, it is clear that for facilitating the process and drawing along it is preferable to have a different person for each role. Having two (or more) Flatlanders onboard also enables **internal discussion and reflection about the project or process**, which is very valuable throughout the process.

MAIN TAKEAWAYS – EVIDES

- When the client knows what they want or what they are looking for before starting the project, it helps make the process and delivery of the final outcome smoother. Additionally, this really **helps calculate the needed time and budget for the process**.
- It is crucial to **avoid the client lacking ownership** by keeping in mind that the content belongs to the client at all times and that Flatland should not fill things in or make assumptions in their place. The client is the one that gives the answers, not the Flatland team. In this project, Flatland gave the client team specific tasks or homework to provide them with content-related input and ensure the client would have a feeling of ownership of the outcome.
- Keep the **kickoff canvas / holy cross central throughout the whole project**, it is important to bring it back so the goal remains the same throughout the entire project and you don't lose the focus which is crucial as you have limited time to round off a project.
- **Having a structured process** helps the client understand what is happening in the creative process and what is expected from them. The structure also ensures a successful outcome, as all the design steps and decisions have been made at a precise moment in the creative process.

MAIN TAKEAWAYS – CZO FLEX

- Flatland emphasized the **need for (a) product owner(s)** that owns the project, also referred to as the core team or ‘kleincommittee’. This smaller group is needed to reflect on the sessions, define the next steps and make the final decisions to move on. They are the core team for getting the so-called ‘snowballing process’ started.
- The client expressed that they did not know whether Flatland also had much expertise in guiding and facilitating the design process. **Knowing that Flatland is also an excellent process facilitator** they would eventually consider hiring Flatland for more process guidance instead of focusing so much on product development.
- The facilitator from the Flatland team was absent during a part of the project, so the illustrator had to take over on his own. The client mentioned that this impeded the process a little bit as they really experience a difference in the guidance of the process, resulting in **the dependence on Flatland and client group expertise**.
- Some projects are a long-term trajectory with multiple materials that have to be developed. But the first part of the project is always to look better at what is needed and test what works by making more low-fidelity prototypes to **validate and encourage reflection** on the ideas and needs of the user group.

SUCCESS FACTORS

1. The client and Flatland team have a personal interest and prior knowledge about the project's topic.
2. Calculation of an adequate timing and budget for the project.
4. Having in-group ambassadors or problem owners in the client team
5. The client trusts Flatland's process and guidance

RISK FACTORS

1. Dependence of expertise of the client and Flatland team.
2. Time pressure and budget constraints.
3. A lack of client ownership.
4. The power and biases of the illustrator.

REQUIREMENTS

1. Stick to the kickoff canvas.
2. Embrace structure.
3. Empower modularity.
4. Balance in/out group.
5. Encourage reflection.

Fig. 20: The success factors, risk factors and requirements identified from the case studies

MAIN TAKEAWAYS

DISCOVER

WHAT? – actions

This chapter aimed at discovering and exploring reverging in visual thinking. A combination of insights from theory and practice have been gathered. The three primary sources of information were:

- **The literature review** mainly gave an overview of how creative facilitation & reverging, sketching & visual thinking, transdisciplinary learning & boundary objects are defined in the theoretical context. At the end of every chapter, the relation to Flatland's way of working is mentioned.
- **The interviews** created a general overview of how Flatlanders describe their way of working and their perception of visual thinking, creative facilitation, and reverging in their work.
- **The case studies** generated more focused data about the process flow of past projects at Flatland and how the Flatland methodology (clarity, story, validate, deliver) is used in practice. In addition, the case studies also entail the client's perspective, which was missing in the interviews.

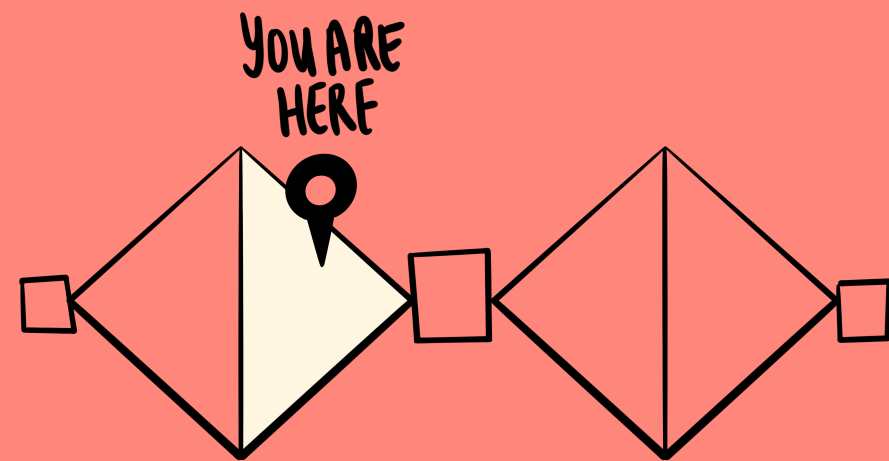
SO WHAT? – findings

From the different information sources, the following findings emerged:

- **The literature review** concluded that reverging is the phase that bridges, diverging and converging in creative facilitation. Moreover, sketching and visualizing are found to help externalize (tacit) knowledge. This enables the sharing, grounding, manipulation, and generation of ideas. Finally, transdisciplinary learning and knowledge creation can be supported by boundary objects, allowing the translation, transfer, and transformation of knowledge. These boundary objects can be considered as the visual representations made by Flatland.
- **The interviews** reveal different skills and characteristics needed as a facilitator or illustrator at Flatland, why visual thinking works according to Flatland, and how they would identify reverging in the Flatland process.
- **The case studies** revealed that the Flatland methodology is more a process flow to hold on to instead of a strict step-by-step plan. Additionally, it revealed the success factors, risk factors, and requirements for fruitful reverging in visual thinking.

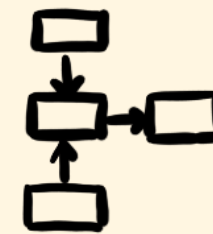
NOW WHAT? – next steps

The information from the literature, interviews and case studies will serve as the primary input for the next phase, **DEFINE**. Finally, the main results from the discovery chapter will be brought together in the general model to make the findings more actionable to form the basis for the final **DESIGN BRIEF**. The general model will elaborate on the findings from the interviews and case studies and link this to the literature. Additionally, the next chapter will also give a more in-depth description of how reverging is done or interpreted at Flatland based on the findings from this section.



CHAPTER 3
DEFINE

CONTENT



THE GENERAL MODEL



REVERGING AT FLATLAND

THE GENERAL MODEL

A general model (see fig. 21) was created to analyze and bring all the key findings from the discovery section together. The general model was the main prototype of the first part/diamond of the project, the evolution and different iterations of the model can be found in appendix F. Throughout the process, the model has been discussed, tested, and co-created multiple times with the company mentor.

Why a general model?

The aim of the general model is to convert the individual findings from the literature review, interviews, and case studies into one integrated model that summarizes and synthesizes the findings of the entire qualitative research. The model aims to bring information about visual thinking (left side of the model) together with reverging (right side of the model) to create an overview of this project's central topic, namely: **understanding reverging in visual thinking**.

How does it work?

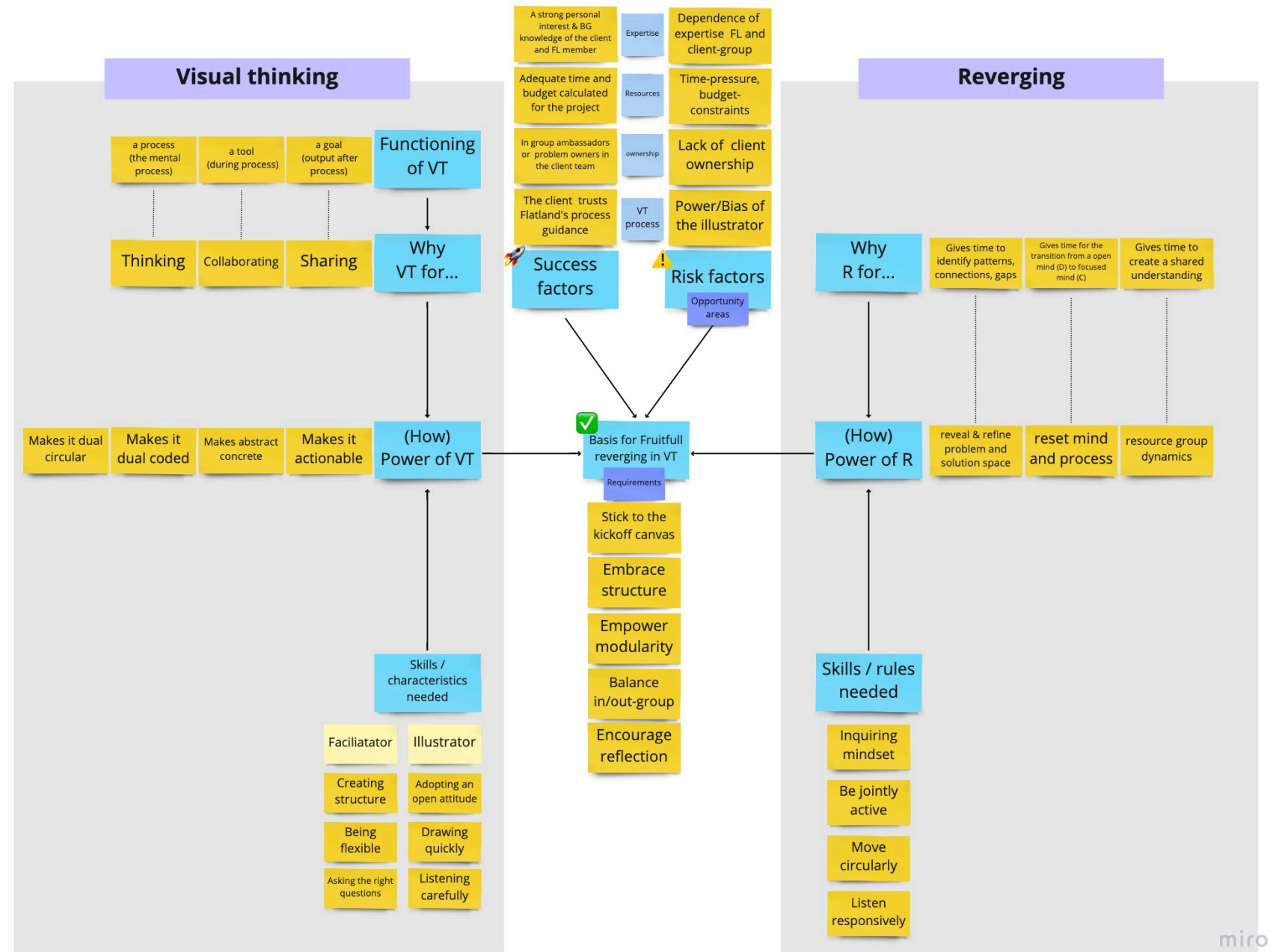
The model consists of two 'axis'. From left to right it brings visual thinking and reverging together. From top to bottom it differentiates the findings for the individual level, collaborative level, and purpose level.

From left to right, bringing visual thinking and reverging together

- **Left-side - visual thinking**
- **Center - basis for fruitful reverging in visual thinking**
- **Right-side - reverging**

From top to bottom, the model consists of three different levels

- **Purpose level:**
The top-level is more about the goal of visual thinking and reverging and for what it can be used.
- **Collaborative level:**
This level is mainly about the power of visual thinking and reverging on a collaborative level.
- **Individual-level:**
This level includes the skills and attitudes of an individual needed for doing and facilitating visual thinking and reverging.



miro

Fig. 21: the final general model

How was the model built?

This section will briefly explain how the general model was built and what data from the **DISCOVER** chapter was used to create the three subparts of the model: visual thinking, reverging, and finally, the basis for fruitful reverging in visual thinking.

Visual thinking

The visual thinking part mainly emerged from the main findings of the interviews conducted with Flatland employees, discussed in section 2.3. The findings have also been linked to literature from the literature review.

Reverging

For the reverging part, the literature review was mainly relevant. The reason for this is the fact that the concept of reverging was not known yet at Flatland and therefore, the direction and description from the theory were used.

The reverging part in specific has been revised with Katrina, the university mentor and co-author of the book Road Map for Creative Problem Solving Techniques, which introduced the concept of reverging to make sure it fits the current description of reverging according to previous research.

The basis for fruitful reverging in visual thinking

Last, the case studies brought visual thinking and reverging together at the model's center. The case study's main takeaways are summarized and discussed in section 2.5.

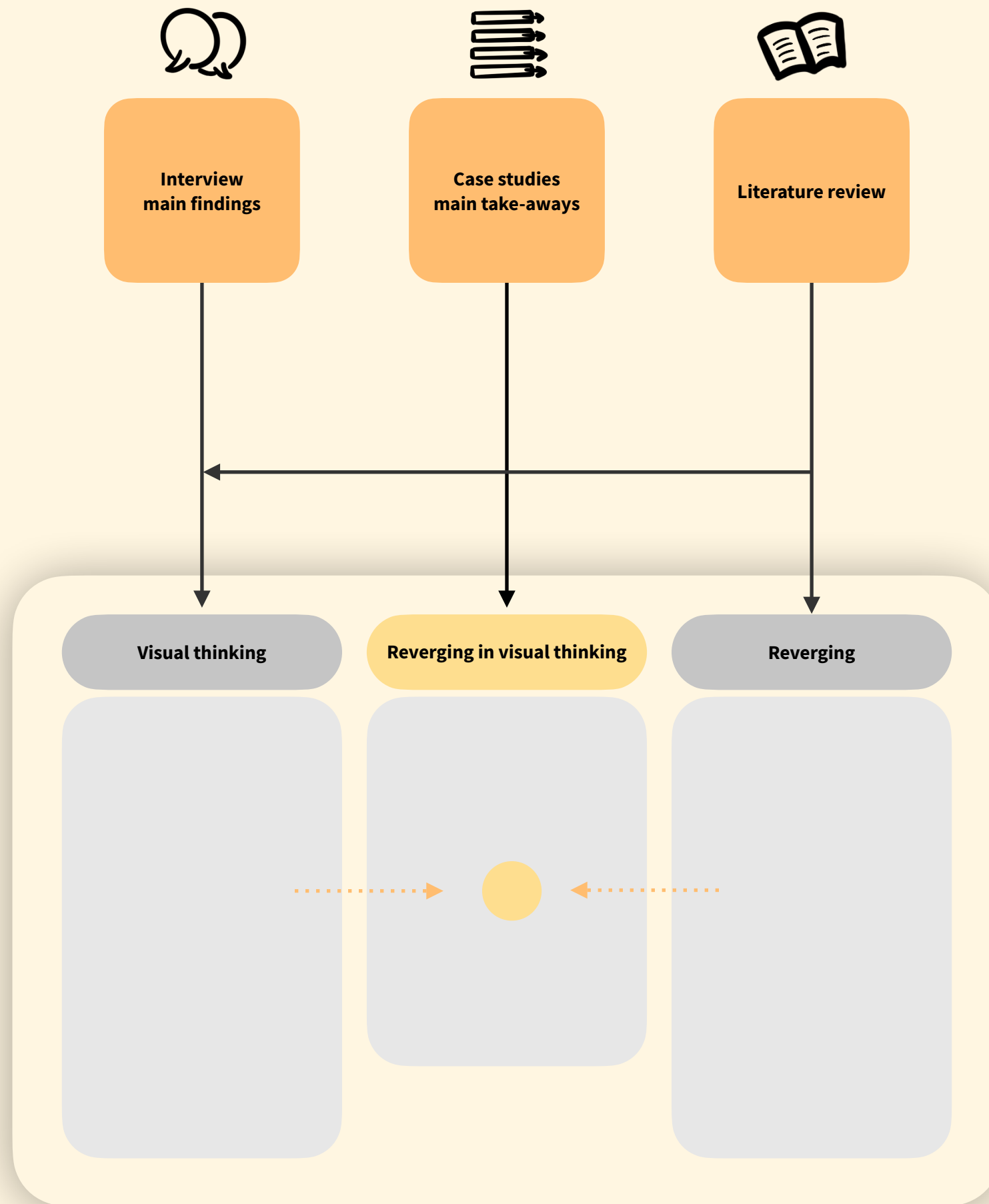


Fig. 22: How the general model was constructed

Limitations

The strength of this model is also its weakness, as it aimed at generalizing all the findings from the discovery phase; some loose elements might be left out of consideration and therefore missing in the model. In addition, because it is simplified and generalized, the findings might not apply to all projects or situations. The goal of the model was to entail as much general info as possible so it would cover most but not all situations. Lastly, as this is the first model or study that specifically aims at combining visual thinking and reverging, there is room for improvements and adaptations in the future.

How will it be used later on?

The core of this general model is that it brings the findings of visual thinking and reverging together. The model serves as a basis for the next chapter, the **DESIGN BRIEF**. First, the risk and success factors will create the fundament for identifying the opportunity areas for the design phase (section 4.1). Second, the basis for fruitful reverging building blocks will serve as the key element for setting up the general design requirements the final design should meet (section 4.4).

REVERGING AT FLATLAND

In addition to the general model, a more in-depth analysis of how reverging is done at Flatland has been constructed. Two different types of reverging moments will be discussed: (1) reverging in sessions with clients and (2) the internal whiteboarding sessions.

Flatland's prior reverging knowledge

The term or concept of reverging was not known at Flatland yet; a few employees linked it to the emergent thinking phase from the double-sided pencil in the book *Gamestorming* (Gray, Brown & Macanuso, 2010). However, when presenting or explaining reverging, most employees showed significant interest and admitted it was done implicitly or unconsciously. Flatlanders would refer to it as a 'sudderperiode', the English translation for 'incubation period'. As mentioned in the literature review, incubation is a more unconscious activity, while reverging needs to be done deliberately (Kalina, 2018; Heijne & van der Meer, 2019).

This section will further analyze how reverging is done at Flatland to create a better understanding of reverging in the context of visual thinking in specific.

Reverging moments at Flatland

The interviews and case studies revealed two main types of reverging moments at Flatland: (1) in the session with the client and (2) in-between two sessions without the client. Both types are described below.

1. In the sessions (with the client)

The first type of reverging occurs during a session where some clustering, sequencing or gallery exercises are done with the session participants. If and how it is done differs from project to project, there are no fixed 'reverging moments' planned in the specific sessions (clarity, story, validate, deliver). This type of reverging is more comparable to the regular approach of reverging in creative problem solving, as described by Heijne & van der Meer (2019).

"Sometimes we cluster during a session with the client and we already have a first concept based on those clusters towards the end of the session. This is really comfortable because you know you are doing things right." - Flatland facilitator

2. In-between two sessions (without the client)

The second type of reverging activity at Flatland is called 'whiteboarding' (see fig. 23). In this activity, the Flatland project team (mostly consisting of a facilitator and illustrator) comes together without the client. This moment tends to happen a few days after the session; this gives the Flatland team some incubation time to digest the input from the session. The main goal of the whiteboarding session is to make sense of the final output of the previous session and to create a first draft or iteration of a concept starting from there.

"We also need this room to think for a while, the 'sudderperiode'. We need some simmering time to see what we can make of all that info. This way, we can chew through that content with a smaller group." - Flatland facilitator

This project will focus on the second reverging activity type, 'whiteboarding'. The three main reasons for this decision are that it resonates more with the Flatland team, it is a unique phase specific to Flatland's work approach and it is a clear and formatted phase that helps to demarcate the boundaries of this project.

- First, when presenting the concept of reverging to the Flatland team, the whiteboarding phase was the first thing that popped up in their minds. It resonated the most with them and created a clear image of what reverging is or potentially could be.
- Second, whiteboarding is a unique phase 'invented' by Flatland. It is specific to their context and the activity of visual thinking and, therefore, in some respects, different from generic creative facilitation sessions. Partially because in general creative sessions, the resource group is responsible for the content and the facilitator for the process (Heijne & van der Meer, 2019). While at Flatland, they also have the responsibility of delivering a concept or product, making them co-responsible for creating the final content.
- Lastly, the whiteboarding reverging phase is a more clearly formatted and formulated phase by Flatland. It occurs in nearly every project guided by multiple flatland members. This sets a clear boundary for the concept of reverging at Flatland, facilitating the analysis of the potential problems, the development of an adequate design, and the testing and implementation of the final design.



Fig. 23: Whiteboarding in action

WHITEBOARDING

This section will elaborate on the activity of whiteboarding and why, when, and how it is done at Flatland.

What is 'whiteboarding'?

Whiteboarding is an internal meeting (1-2 hours approximately) where the Flatland project team comes together a few days after a session. The goal of the meeting is to make sense of the input and insights collected during the session and bring all the different pieces together.

Why does Flatland 'whiteboard'?

The meeting serves as a moment to make the first steps for the next phase or session. The results can include:

- A draft of the first concept setup.
- Further development of the story.
- Explicit expectations for the next session.

"We actually went into our cave for a while, and we need the thumbnails to show the client what happened in that cave. It should be clear enough for them which thinking steps we made. In theory, we could have involved the client in all the steps we make or have made, but it slows down a lot. There is an acceleration of the process because we go into our Flatland cave for a while."
-Flatland facilitator

When does Flatland 'whiteboard'?

The most common moments in the process for planning a Whiteboarding session are after a clarity or story session. When it happens between the clarity and story session, the goal is often to create a first concept or sketch based on all the input gathered in the clarity session. Suppose a whiteboarding meeting is planned between the story and validation/delivery session. In most cases, this meeting will aim to tweak or adapt the concept based on all the input and feedback gathered in the story session.

How does Flatland 'whiteboard'?

Directly after the session, a short debrief moment takes place for the facilitator and illustrator to share their first impressions and ideas. Later, the illustrator might take some time to draft out this first idea to prepare for the whiteboard session. The whiteboarding session takes place a few days later to allow for incubation. First, each member of the Flatland team shares their thoughts and reflections about the last session. Afterward, they work together on the story by literally whiteboarding together on a whiteboard; an example is given in figure 23 on the previous page. With the final output of the whiteboard session, the illustrator can finetune this to a presentable concept that is ready to be shared in the next session with the client. This process flow is visualized in figure 24.

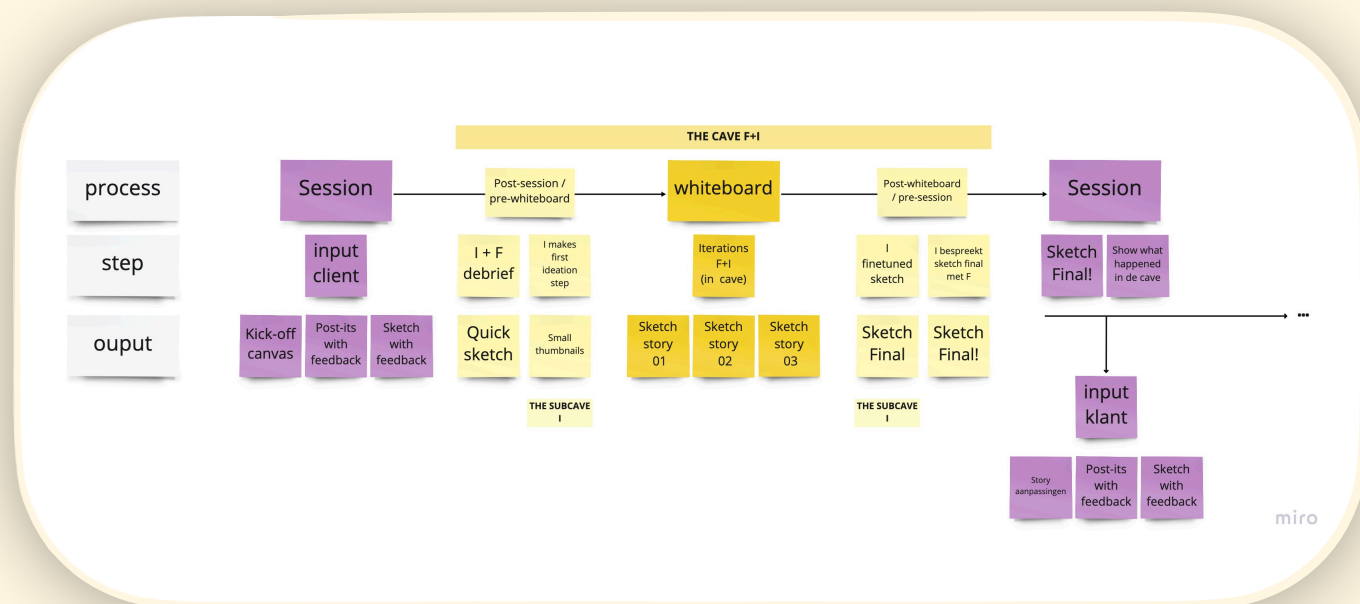


Fig. 24: Simplified process flow of whiteboarding in-between sessions

THE RULES AND MINDSET AT FLATLAND

This section discusses how the different rules and mindsets needed for reverging, according to Heijne & van der Meer (2019), are applied at Flatland during the whiteboarding sessions.

✓ Mindset: Inquiring mindset

One of the key skills/characteristics of the facilitator is to ask the right questions to 'empty the heads of the clients' to create a fruitful discussion and test assumptions during the session.

However, from the interviews with the Flatland team, it was clear that the questions asked to the client differ regarding the role. The facilitator tends to ask more open-ended and context-related questions that emerge from the client's conversation. In contrast, the illustrator asks more confirmative questions that arise from the sketch he or she is drafting.

"The facilitator is asking questions in the conversation with the client regarding their context and content, while I am more listening and occasionally asking confirmative questions in relation to the drawing." - Flatland illustrator

✗ Rule 1: Be jointly active

Flatland and the client are indeed jointly active during the sessions with their clients. However, the client never attends the whiteboard session, as it is an internal meeting. Flatland considers it as part of the service and expertise they deliver to the client. They believe that doing it internally makes it more efficient as it allows them to make many thinking steps without client resistance.

"In theory, we could have involved the client in all the steps we make or have made, but it slows down a lot. There is an acceleration of the process because we go into our Flatland cave for a while." -Flatland facilitator

Flatlanders have stated the potential danger of excluding the client from the whiteboard session during the interviews. The problem that could arise is the possible lack of client ownership towards the end of the project. This problem links to the not-invented-here syndrome described in theory by Buijs & van der Meer (2013), which can impede the process of acceptance finding.

"With the whiteboard session, we are going to take steps and think ahead of the client. But sometimes this creates a problem at the end of a project. It can be difficult to get them towards the final step. For instance, how do they explain their own 'praatplaat'?. Sometimes it is still difficult because the client might lack ownership and is lagging a bit behind." - Flatland illustrator

✓ Rule 2: Listen responsively

One of the key skills/characteristics mentioned, especially for the illustrator, was listening carefully. However, this happens during the sessions when the client is asked to give feedback or input. As the client is not attending the whiteboard session, there is no possibility to listen responsively to the client during the whiteboard session. It is only possible for the facilitator and illustrator to listen responsively to each other.

In addition, a difference between generic creative facilitation and creative facilitation in the context of visual thinking regarding listening is responsively was mentioned. When reverging in the context of visual thinking, the response is partially given visually by visualizing the new input or scrabbling on the previous sketch instead of giving a verbal response.

"By scrabbling with a new color (usually red), we indicate the changes that the client mentions during the feedback moment at the beginning of the next session, so they immediately see a visual response on the sketching surface." - Flatland facilitator

✓ Rule 3: Move circularly

As visual thinking is about creating a visual representation done by the hand of the Flatland illustrator. This means the iterations are not only done in the sessions with the client but also outside of the sessions when whiteboarding or finetuning and creating the deliverables.

The danger here is not that iterations are missing but that the iterative thinking or steps made without the client (i.e., during whiteboard session) remain unclear; therefore, finding acceptance might be challenging.

"Some people are making too many iterations without the client, making it hard for the client to understand what is happening behind their back. But also, some people are too focused on timekeeping and not taking enough time to explore different iterations." - Flatland facilitator

Conclusion

To conclude, Flatland does in some way apply the rules and mindset of reverging throughout the process. However, the main friction found regarding the rules of reverging was the fact that they do the whiteboarding without involving the client. Therefore they are not being jointly active and they do not consistently share their iterations (move circularly) with the client.

MAIN TAKEAWAYS

DEFINE

WHAT? – actions

First, the general model was introduced. The primary goal of the general model was to bring all the findings from the previous chapter together in a structured and actionable overview. The model brings visual thinking (left side) and reverging (right side) together (center). Second, this chapter further defined how reverging is currently done at Flatland in specific. Subsequently, it was checked whether Flatland executes reverging according to the mindset and rules proposed in theory by Heijne & van der Meer (2019), and if not, what they do differently.

SO WHAT? – findings

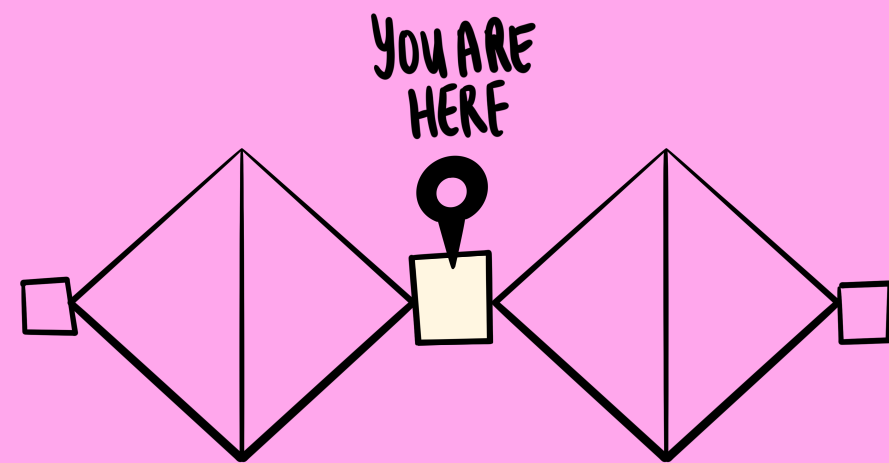
The general model created consists of three different levels: the individual level, the collaborative level, and the purpose level. Finally, it mentions the success factors, risk factors, and the elements (or requirements) needed to form the basis for fruitful reverging in visual thinking.

There was no common knowledge about the concept of reverging. However, it was found that reverging was done at Flatland, but more unconsciously rather than deliberate. Two types of reverging moments at Flatland have been identified: reverging exercises done with the client during a session or the activity called whiteboarding which is a separate session without the client to make thinking steps based on the output from the previous session. This research will focus on the second type of reverging moment because it is a formatted and formulated phase at Flatland, which sets a clear boundary for highlighting the problems and developing a design. The main difference between reverging at Flatland compared and the rules described in theory is that it is done without the client. This may lead to the not-invented-here syndrome, which often results in the client's difficult acceptance and implementation of the outcome, according to Buijs & van der Meer (2013).

NOW WHAT? – next steps

The general model (especially the middle part) will serve as the basis for setting up the **DESIGN BRIEF**, in the next chapter. The risk factors identified will serve as the starting point for pointing out the opportunity areas. The basis for fruitful reverging elements will mainly be used for setting up the list of requirements, that should be met by the final design.

The reverging at Flatland section already gives a first impression of how reverging is done in practice in the context of visual thinking. The second type of reverging identified in this chapter, whiteboarding, will be the main focus area for the rest of the project.



CHAPTER 4 DESIGN BRIEF

CONTENT



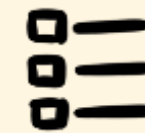
DESIGN OPPORTUNITIES



THE DESIGN GOAL



THE DESIGN STATEMENT



THE REQUIREMENTS

THE DESIGN OPPORTUNITIES

Three opportunity areas have been identified for the second phase of this project, which focuses on designing and delivering the final solution. The three main opportunities for designing the solution were built based on the four risk factors (red) identified in the general model during the analysis (see section 3.1).

The opportunity areas

The three opportunity areas or solution spaces (in blue) were the following: ensuring content expertise in both the client and Flatland team, allocation of appropriate resources to give reverging a place in the process, and a lack of ownership and power and bias of the visualizer are combined into one opportunity area because they have an indirect influence on each other. > Guarantee client ownership.

The selected opportunity area

Finally, one opportunity area has been selected to continue the design phase. A solution will be designed in the project's next phase for the selected opportunity.

The main reasons for the selection of "Guaranteeing client ownership" as the go-to opportunity area are the following:

- (1) This opportunity area has the most influence during the design process, the other two or more are a matter of upfront preparation, alignment, and communication.
- (2) The risk of the client lacking ownership can benefit from a design intervention to mitigate this risk, rather than a more practical intervention like the other two opportunity areas.
- (3) The feeling of ownership, which is partially linked to acceptance, is an important variable during the process (of reverging). It influences the chance or extent to which the final outcome will be accepted, implemented, or considered a success by the client.

In addition, interventions have been formulated for the first two opportunities areas. These will be discussed in the final recommendations in section 7.1. The opportunity areas could serve as directions for future exploration and research.

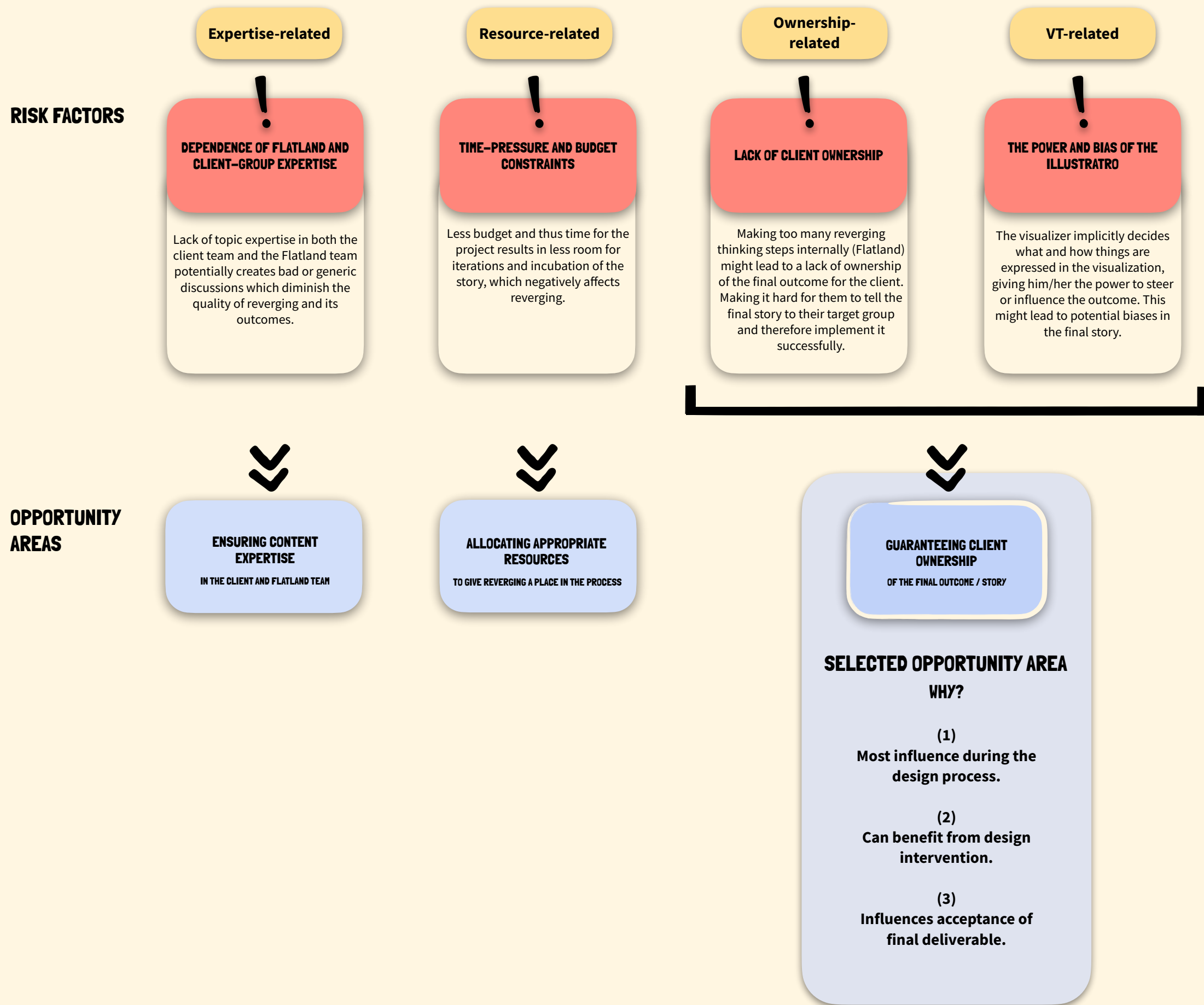


Fig. 25: Overview of the risk factors and opportunity areas

THE PROBLEM METAPHOR

A metaphor is used to communicate the message of the identified problem and to serve as a source of inspiration for a new solution (Delft design guide, 2014).

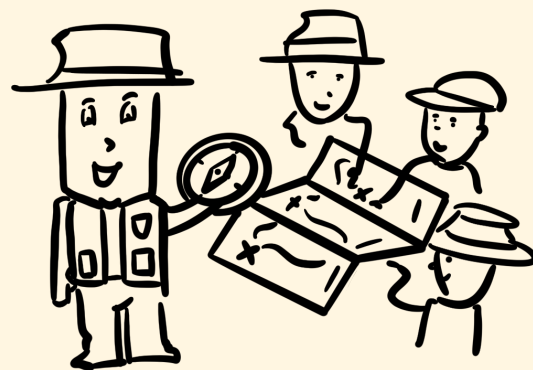
The initial metaphor

To get a better grip on the reframed problem and the chosen opportunity area, “**Guaranteeing client ownership**”, a metaphor was created based on an interview that was conducted with Flatland.

The metaphor emerged from one of the interviews with a Flatland employee who mentioned the importance of mapmaking based on an old story about a group of soldiers being lost in the Alps. Suddenly one of the soldiers found a map in his pocket. With that map, they managed to find the way back. However, later on, the map seemed to be a map from the Pyrenees instead of the Alps. The moral of this story is ‘It is better to have an incorrect map than no map’.

The metaphor used for this project illustrates the **map-maker versus the wizard’s work style**. The following is suggested in the context of the chosen opportunity area, which emerged from the risk of the client lacking ownership. Being the wizard who brings magic to the table could be considered a problem or danger, although it can be more impressive, efficient, or practical (as explained in the quote below). Therefore, it is encouraged to perceive Flatland as the map-makers rather than the wizards to develop a good-fitting solution for guaranteeing client ownership.

“We usually do clustering without the client. With the client, it sometimes feels a bit awkward and less effective. We have collected all the information from the customer in the clarity session, with the whiteboard session we are going to take steps and think ahead of the client. But sometimes this creates a problem at the end of a project. It can be difficult to get them towards the final step. For instance, how do they explain their own ‘praatplaat’?. Sometimes it is still difficult because the client might lack ownership and is lagging a bit behind. But it’s also nice not having to do everything with the client because if you have to take the client all the way with you to be able to make big steps, you won’t get very far.” - Ex-Flatland illustrator



THE MAP-MAKER

The map-maker encourages others to look at their environment, recognize things and orient themselves. He co-creates the map with his fellow explorers (read clients), which creates a sense of ownership and trust in their own expertise and experience. The explorers now know how to navigate their way and arrive at their final destination.

> Flatland enables communication by charting (imperfect)maps of the reality and potential future. The map reflects the mental model of the group in a way that is relevant for every single person in the group, empowering a shared mental model. The goal is to make a map that is clear enough to know how to proceed in order to be actionable.

VS



THE WIZARD

Most of the time, the wizard is doing his ‘magical stuff’ in the Enchanted Forest. From time to time, he comes to the village to bring some magic by bringing imagination and inspiration to the citizens (read clients) who are subjected to the rules and norms from the King’s court and lack imagination to predict their future or solve their problems. How this magic happens will always remain a secret to the citizens.

> Flatland brings magic to the client by inspiring them and visualizing the future or potential solution they couldn’t imagine or illustrate. The Flatland team makes some thinking steps internally without involving the client, making it hard for the client to understand the process and feel complete ownership of the final outcome.

The revised metaphor

However, when discussing the metaphor with Flatland employees, their first reaction was: but we want to be wizards, we want to bring magic as well! Reflecting on this comment, it is true that the power of visual thinking also lies in the fact that it is fun, engaging, and sometimes impressive. Therefore, the metaphor has been tweaked by merging the two personages into one the ‘**magic map-maker**’. The iteration of the story behind the metaphor that was done in collaboration with a Flatland employee can be found in appendix G.



THE MAGIC MAP-MAKER

The conclusion is that there are situations where it is better to act like a map-maker and others where bringing magic would be more appropriate. Therefore, an approach that combines the two ways of working is ideal. To illustrate this, a third personage has been introduced: the magic map maker!

Fig. 26: The metaphor

THE DESIGN GOAL

Based on the research in the first phase of the project, the initial problem statement has been reframed and narrowed down (see figure 27).

The initial problem

At the beginning of the project “*Making reverging a deliberate activity at Flatland*” was the design goal formulated.

- **Current situation:** Flatland does reverging implicitly and intuitively. There is no common ground about the topic yet not a shared understanding about how they currently do it or should do it.
- **Desired situation:** Flatland wants to do reverging more explicitly and deliberately. They want to change this by creating more awareness about the concept of reverging in visual thinking. In addition, they would benefit from having a common understanding and language about the concept to enable communication about the topic internally, with newcomers and their clients.

The reframed problem

After the research, the design goal has been reframed to “Guaranteeing client ownership of the final outcome to increase the acceptance finding and chance of implementation”

- **Current situation:** Flatland makes thinking steps without the client, during the reverging process, which are sometimes not completely clear to the client. This potentially results in the client lacking ownership of the final outcome or story. Therefore, it makes it hard for the client to tell the story to the intended target audience and implement it in practice.
- **Desired situation:** The client’s mental model is included throughout the reverging process and the overall process and thinking steps made are in accordance with the client’s mental model. By doing this the client perceives himself as the owner of the story or outcome, enabling the client to share the story as the design intended with the target audience. Finally, this results in higher chances of implementation making Flatland’s work more impactful and successful in the end.

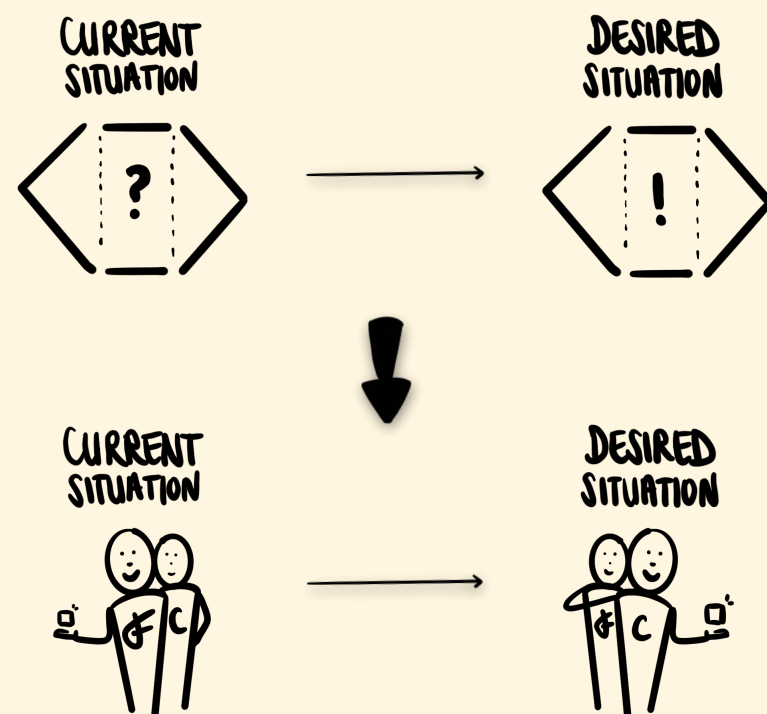


Fig. 27: The reframed problem

Link to literature

The problem of the client lacking ownership of the outcome because Flatland is doing some reverging steps without them has been linked to literature from the literature review.

Link to acceptance finding

Buijs & Van der Meer (2013) highlighted the problem of not involving people throughout the entire development process with the Not-invented-here syndrome. This syndrome refers to people being critical and less willing to accept ideas when they miss information about how it was conceived and why it is a good idea.

Heijne & van der Meer (2019) emphasized the importance of being jointly active in the reverging phase in specific. This implies that all the participants need to take part in the reverging process. This is essential for creating a shared understanding of the different options. If a person is absent for some time, that person might be missing tacit knowledge to understand the thinking steps and final outcome.

Link to knowledge creation

By completely excluding the client from the whiteboarding sessions, Flatland increases the potential risk of more difficult acceptance finding and creation of shared understanding due to missing tacit knowledge to understand the thinking steps. An interesting connection can be found when linking this to the knowledge creation model introduced by Nonaka & Takeuchi (1995).

The externalization of tacit knowledge generated during the reverging phase by making it explicit (i.e., through visualizations (Goldschmidt, 1991)) enables the expression and sharing of one’s mental model. Later on, the externalized knowledge can be internalized by the same or other individuals, converting the explicit knowledge into tacit. This is where the new knowledge becomes a part of their mental model, and acceptance to implement Flatland’s products can be created.

Link to boundary objects

Carlile (2004) introduced boundary objects as objects that can support the translation, transfer, and transformation of knowledge.

In the reverging or whiteboarding phase, it could be beneficial to introduce a tool or intervention that could assist in doing this to guarantee client ownership.

However, to guarantee the proper functioning of the boundary object, it must be rigid enough so all the participants can give a shared meaning to it. On the other hand, it should also be fluid enough so everyone can have their own interpretation of the object. Finding the right balance between rigidity and fluidity of the boundary object is connected to the ‘magic mapmaker’ metaphor. The mapmaker empowers rigidity, aligning and making people look in the same direction. The wizard empowers fluidity, allowing everyone to give their own meaning and fitting their own perspective (to manipulate and brainstorm).

THE DESIGN STATEMENT

The design statement was built based on Van der Horst’s (2018) positioning statement. The statement consists of (1) product category, (2) target group, (3) functional benefit, (4) emotional benefit, and (5) self-expressive benefit.

In this project, it is used to phrase the design statement in a structured way. Moreover, it highlights the different levels of benefits that need to be fulfilled with the final design. The **final design statement** is the following:

- (1) **Design a tool(kit)***
- (2) **For flatland (and their clients)**
- (3) **That helps them to ensure the inclusion of the client’s mental model throughout the whiteboarding / reverging process.**
- (4) **And thus guarantees the client’s perceived ownership of the final outcome**
- (5) **Allowing Flatland to become a more impactful and successful firm**

**The reason behind describing the product category as a tool(kit) is that tools in design thinking are meant to help organizations move with more creativity and efficiency in innovation processes. This links to the final design goal of helping Flatland guarantee client ownership in the whiteboarding phase of the creative process (Tschimmel, 2012).*

THE DESIGN REQUIREMENTS

This section will specify the design requirements that the final design should meet. These design requirements are used to qualitatively express the personality of the to-be-designed product (Hekkert & van Dijk, 2011). Reverting-related and more general requirements have been identified.

The general design requirements

The general design requirements came forward during the analysis of the qualitative research. At the center of the general model, 'the basis for fruitful reverging in visual thinking' was depicted. This element consisted of five different sub-elements which represent the design requirements for the final design. These requirements are illustrated below in figure 28.

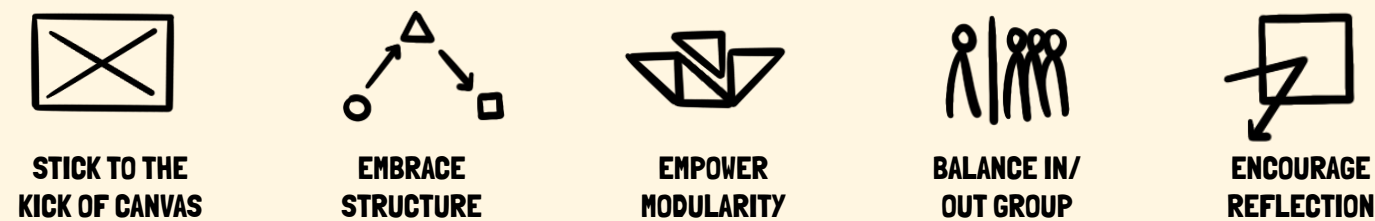


Fig. 28: the general design requirements

STICK TO THE KICK-OFF CANVAS

The design should fit the current frame of reference (kick-off canvas) and stimulates the Flatland team to stick to it throughout the whole reverging phase although it can sometimes be messy or bring discussions that deviate from the path or final goal.

The research highlighted the importance of having a clear frame of reference for achieving the final goal of the project and not shifting the path midway. Currently, Flatland does this by using the 'Kick-off canvas' template' throughout the project, this one-pager serves as a guide for keeping the end goal and target audience in mind and staying on the right path without going out of scope.

EMPOWER MODULARITY

The design should create an environment that invites the client to feel free to change, add or extract elements according to his/her needs or mental model. In addition, it should enable a system that allows for iterations and validations until the client is satisfied.

This requirement might seem contradictory to the previous one, it is about keeping the design and process flexible and open (while not forgetting the structure). Although some concepts or prototypes are being created it is important to keep them open and modular enough to stimulate iterations and validations according to the client's needs. This is important in order to motivate the client to give input and include their thinking to create a greater sense of ownership.

EMBRACE STRUCTURE

The design should fit Flatland's current structure & methodology and should motivate Flatlanders to apply it in their projects.

The 'Clarity < Story < Validate < Deliver' setup which flatland is currently using helps them to give their projects a basic structure and communicate the approach taken with the client. Applying this structure leads to the creation of an overview that indicates what is there already and what is still lacking. Despite the fact that this setup suggests a linear flow, it is important to stay flexible throughout the process and be open to iterations and adaptations all along the way.

BALANCE IN/OUT GROUP

The design should create an environment that invites the client to feel free to change, add or extract elements according to his/her needs or mental model. In addition, it should enable a system that allows for iterations and validations until the client is satisfied.

This requirement might seem contradictory to the previous one, it is about keeping the design and process flexible and open (while not forgetting the structure). Although some concepts or prototypes are being created it is important to keep them open and modular enough to stimulate iterations and validations according to the client's needs. This is important in order to motivate the client to give input and include their thinking to create a greater sense of ownership.

ENCOURAGE REFLECTION

The design should enable the Flatland team to reflect on their projects and process internally but also with their clients to have an idea about the implementation and success of their final outcome.

The need for reflection during the process of reverging is important to get insights about whether the client is feeling enough ownership and whether he/she has the feeling things are going in the right direction. Reflection at the end of the process (follow-up) is mostly relevant to have an idea about whether the final outcome is being properly implemented and if it is truly creating an impact in order to ad

How the requirements will be used?

The requirements will be used as a starting point for the first co-creation session, this is explained more elaborately in section fixme of the DESIGN chapter. Additionally, the DELIVER chapter will elaborate on which part of the final design meets the specific requirements and how.

The reverging-related requirements

In addition to the general design requirements, reverging-related requirements have been defined. It is crucial that the final design helps the Flatland team to remember and follow the rules and mindset of reverging. Therefore, a separate requirement set has been developed to make sure reverging can be done properly with the help of the design. The requirements are depicted below.

In addition to the general requirements that the final design should meet it is also important that it helps the Flatland team to remember and follow the rules and mindset of reverging. Therefore, a separate requirement set has been developed, as shown in the figure below (see fig. 29).

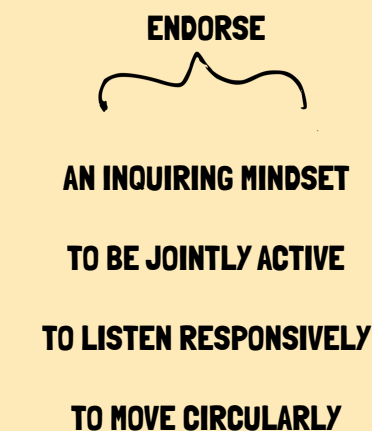


Fig. 29: The reverging-related design requirements

MAIN TAKEAWAYS DESIGN BRIEF

WHAT? – actions

The design brief is formulated to narrow the project scope described in the first chapter. The design brief consists of three different opportunity areas identified based on the risk factors described in the general model. From these three opportunity areas, one area has been selected. The rest of the project will focus on designing a solution for this problem/opportunity. Moreover, the goal, the design statement, and the requirements the final design should meet are formulated. In addition, a metaphor that emerged during an interview with a Flatland employee has been used to describe the chosen problem/opportunity better.

SO WHAT? – findings

The three opportunity areas were: (1) Ensuring content expertise, (2) Overcoming time and budget constraints, and (3) Guaranteeing client ownership. Finally, the last opportunity has been selected as it is the opportunity that would benefit most from a design intervention and has the most influence during the design process.

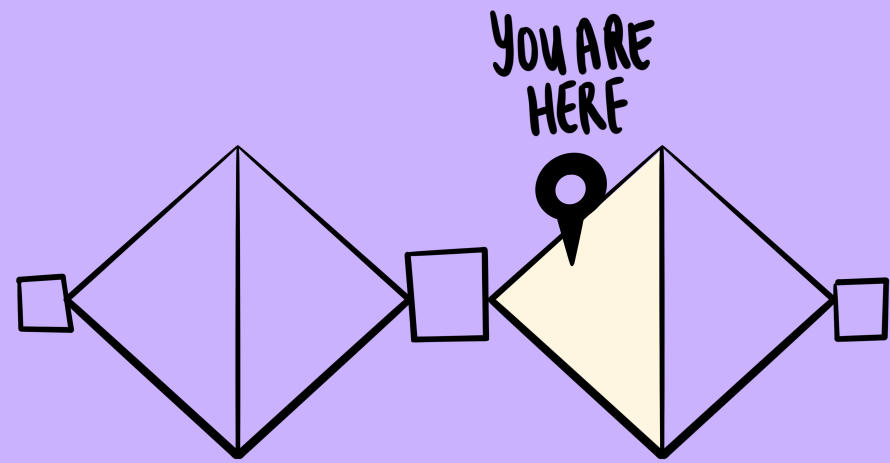
To better understand the problem situation, the metaphor of a mapmaker's way of working versus the one of a wizard is compared. The metaphor concludes that Flatland is a mix of both and, therefore, is a 'magic map-maker'. The design goal has been revised according to the chosen opportunity. It describes that creating an enhanced feeling of ownership of the outcome during the process is needed for the client to ease the acceptance finding and implementation of the final solution.

The final design statement is worded as: *Design a tool(kit) for flatland (and their clients that helps them to ensure the inclusion of the client's mental model throughout the whiteboarding / reverging process. And thus guarantees the client's perceived ownership of the final outcome. Allowing Flatland to become a more impactful and successful firm*

The design requirements have been identified based on the need for fruitful reverging which emerged from the research and were formulated in the general model. Additionally, endorsing the application of the key rules and mindset of reverging has been added as a main requirement for the final design. This is done to encourage Flatland to apply those rules and mindset of reverging in their practice.

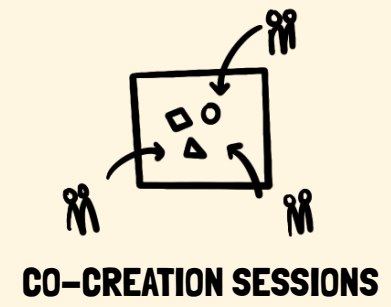
NOW WHAT? – next steps

The final design brief will serve as the starting point for the **DEVELOP** phase. It defines and outlines the revised scope of the project. The final design should be an answer to the design goal and statement and should meet the design requirements from this chapter.



CHAPTER 5 DEVELOP

CONTENT



5.1 CO-CREATING THE TOOL

This section will elaborate on how the starting point for the design of the final tool was developed through 4 different types of co-creation sessions. The setup of the co-creation phase is described below, and the different co-creation sessions are discussed in detail in the following pages.



REQUIREMENT CO-CREATION

To kick off the **DEVELOP** phase of the project the first co-creation session that was held with four students.

The goal was to come up with ideas to meet the general requirements of the **DESIGN BRIEF**.



OWNERSHIP CO-CREATION

To ideate about potential solutions to solve the problem of the client lacking ownership three sessions were held. Two sessions were attended by designers from other design agencies. The last session was held with two Flatland employees.



CONCEPT CO-CREATION

The final co-creation session was organized to come up with concepts that could serve as starting points for the final solution. This session was held with five members from the Flatland team.



REFLECTION WITH MENTOR

Finally, after all the different types of co-creation sessions took place, a reflection moment was held with the company mentor. This discussion revealed that the top three ideas from the final co-creation session did not completely propose an answer to the given problem. Therefore, a new starting point for the iteration rounds was generated during this session.



REQUIREMENT SESSION

To kick off the **DEVELOP** part of the project the first co-creation session that was held was the requirement session.

The goal

Come up with new refreshing ideas for meeting each requirement that could eventually lead to potential ideas for a first concept that meets the design requirements. Note: The reversing requirements were not yet included in the project at that time, so the session was purely based on the general design requirements.

The setup

The session was held in real life with four TU Delft students from different faculties. The session consisted of the following activities:

1. Starting with an introduction of the session and explaining the problem and context.
2. Explaining the different requirements, and what they exactly mean.
3. Plenary reversing the requirements in negative how might we statements to do reversed brainstorming.
4. Finding solutions in pairs for the negative how might we statements (red postits).
5. Inverting the solutions to positive solutions in pairs (green postits).
6. Presenting the final, most promising solutions to the whole group.

The outcome and key takeaways

The complete outcome of the session can be found in appendix H, for all five requirements different solutions or suggestions were generated the most inspiring ones are listed below.

• Stick to the holy cross

(a) Take enough time to analyze the problem, (b) keep the holy cross central and use it at all times throughout the project, (c) use the holy cross as a reflection tool to check if everyone is still aligned.

• Embrace structure

(a) Indicate a problem owner or responsible person for decision making, (b) plan moments for impulsive input, (c) preparation is key: upfront communication and dive into client content (d) documentation is essential to keep track of what happened and what is still needed.

• Empower modularity

(a) Plan feedback moments, (b) more feedback needed for less modular elements, and (c) show iterations so the client knows it was not perfect at first glance.

• Balance in/out group

(a) Let the client present and do some work aswel, (b) weekly updates and meetings.

• Encourage reflection

(a) Plan reflection meetings, (b) make a case deck at the end of a session or project, and (c) summarize #Lessonslearned.



OWNERSHIP SESSIONS (3x)

To further build on the problem of lacking ownership and finding solutions to overcome or solve these sessions have also been held with designers from other design agencies.

The goal

- Checking if other designers in different contexts and at other agencies also experience similar problems regarding ownership and if yes, how do they solve or avoid these?
- Getting inspired by how others overcome and solve the lack of client ownership.
- The outcome from the designers was linked to how the flatlanders experienced it. Check whether the findings from the sessions with the other designers resonate with Flatland (newcomers) and if they have any additions to these findings

The setup

Two sessions were held online with two designers from other design agencies. The designers were working for included Koos Service Design, Design Innovation Group, Business Model Inc, and Reframing Studio. Later a similar session was held with two Flatland employees; see figure 31 for the overview of the sessions.

The session consisted of the following activities:

1. Briefly explaining the problem found in the research of my project: lack of client ownership.
2. Asking the participant to come up with situations where they experienced a lack or loss of ownership and present this to each other.
3. Reflecting on how they did or would solve it in the future.
4. Brainstorming on how to react once the client is already lacking ownership (reactive).
5. Brainstorming on how to proactively avoid the loss of client ownership (proactive).

The outcome and key takeaways

The final outcome of the three co-creation sessions can be found in appendix I.

• Project management and ownership are linked

Guaranteeing client ownership is very much related to many project management-related factors such as communication, stakeholder management, expectation management, planning, making agreements, defining responsibilities, etc.

• When to guarantee client ownership

Ownership can be enhanced before, during, and after the project or a session. Depending on when the client ownership needs to be enhanced in the project, the activity will differ. For example
> upfront = set up expectations and success factors
> during = let the client actively participate
> after = let the client present the final outcome

• Let the client participate and co-create

Ask questions instead of giving answers by letting the client actively experience and participate and co-create together.

• Involving the decision-makers is key

The key decision-makers need to be involved to ensure ownership and the implementation of the final outcome. A difficulty that came forward was that these people often tend to be higher up in the hierarchy and those hard to schedule the meetings with as they tend to be very busy.

• No measurement for ownership

It isn't easy to objectively measure ownership. Therefore a participant suggested looking for cues and signals that indicate this lack of ownership. Examples included: a client that is not very involved and finds everything 'fine', people not showing up, or not doing their homework.



Fig. 30: Requirement co-creation session

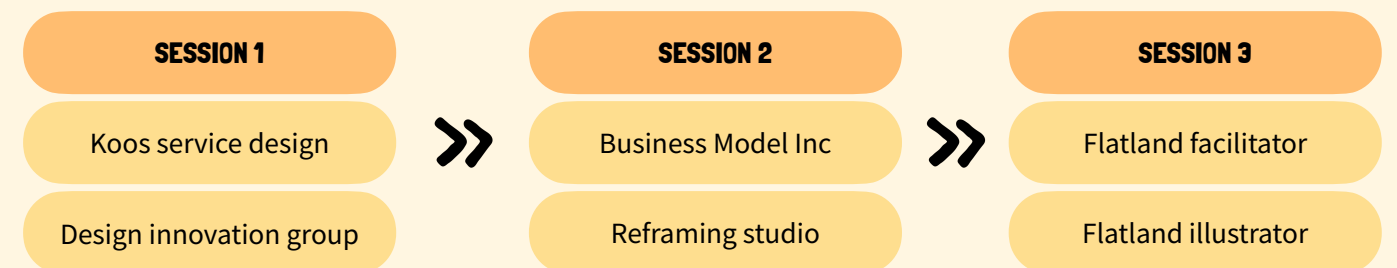


Fig. 31: The three compositions of the participants of the ownership sessions



CONCEPT CO-CREATION SESSION

The third co-creation session was conducted to come up with the concepts that could serve as the input for the final solution.

The goal

- Come up with a starting point for the final concept.
- Getting a clear view on what Flatland sees as ownership and how they could enhance the creation of it before, during, and after a project.

The setup

The session was held in real life at the Flatland office with five members of the Flatland team.

The session consisted of the following activities:

1. A presentation about the research findings and the design opportunity, guaranteeing problem ownership was given.
2. Everyone was asked to draw a one-pager with their definition of ownership and present this back to the group
3. Brainstorm was organized into three categories: how to create ownership before, during, and after the project.
4. These ideas for each idea of the three categories were clustered plenary.
5. With a heart (like the most), a head (most logical), and a hand (most practical) the participants could dot vote on the ideas they liked the most.
6. Finally, the three most selected ideas have been put together to serve as a starting point for the final design.

The outcome main-takeaways

The final output of the session can be found in the appendix J.

Ownership

- The participants had different interpretations of the concept of ownership, including being proud of the final outcome, defending the outcome, showing some resistance, working together on a mutual goal, feeling responsibility, completely understanding something, etc.
- The participants expressed that ownership is hard to measure and that so far there is no metric to assess the level of attained ownership so far.
- Finally, the session's outcome emphasized that apart from reverging with the client, there are multiple other ways to achieve ownership.

Final top 3 ideas



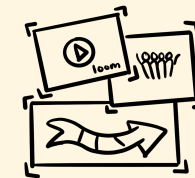
1) Co-creating a visual project plan

Creating a visual project plan together with the client, so the client feels more ownership of the project. This is done by highlighting the different decision-making and evaluation moments in the process.



2) Clearly agreeing on engagement

A responsibilities segment is added to the kick-off canvas to ensure the client is involved and willing to show full engagement. This will assist in clearly managing expectations and giving the client an active role from the beginning onwards to ensure his involvement and thus ownership.



3) Using visual tools for documenting & updating

Using more visual tools such as short videos and pictures to share the process' evolution with the entire client team (and eventually user group) to create ownership along the entire process.



REFLECTION WITH MENTOR

After all the different co-creation sessions took place, a reflection moment was held with the company mentor as the top three ideas from the final co-creation session did not 100% fulfill the role of a good starting point for the final concept.

Why not?

- **Reverging is missing.** The solutions were more an answer to the creation and guarantee of client ownership. The stimulation of reverging was hardly represented in the proposed solutions.
- **Lack of precise focus area.** The co-creation sessions focused on the whole project duration making it hard to compare the different options. Therefore, a more precise focus area is needed to create a fitting final solution.
- **Open-ended and loose ideas.** In all three co-creation sessions, much time was spent on ideating and little time was given for reverging and converging. This led to very open-ended and loose ideas that were hard to work out into more concrete concepts.

Focus shift

During the reflection moment with the company mentor, the decision was made to focus more on the whiteboarding phase in specific. Therefore the final tool starting point for the creation of the final tool will focus more on whiteboarding and the fact that the client is not involved during that phase.

Design starting point

During the reflection session, the sub-parts of the design have been defined to serve as a starting point for the iteration rounds. The sub-parts were:

- (I) A description of the Flatland workstyle to inform Flatland about how to balance the map maker and wizard workstyle in order to be a magic map make.
- (II) The Flatland customer journey to demonstrate the different phases in the Flatland process and emphasizes the whiteboard phase, which has been underexposed so far.
- (III) A reverging canvas to help Flatland to apply the magic map-making workstyle in whiteboarding sessions by involving the client in the reverging process and applying the rules of reverging.



Fig. 32: The concept co-creation session at Flatland

THE ITERATION ROUNDS

The final design has been developed based on the design starting point that was created during the reflection with the company mentor after the co-creation sessions. The final design has been developed in four consecutive iteration rounds, each leading to an improved minimum viable product (MVP). The (enlarged versions of the) outcomes of the different iteration rounds can be found in appendix K.

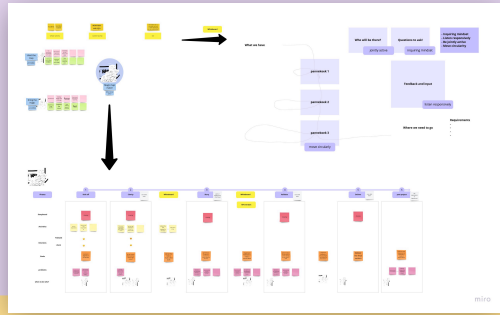


Fig. 33: MVP 1, the starting point

MVP1



The first setup was based on the reflection round with the company mentor. The design would consist of (I) the description of the Flatland persona, (II) the flatland customer journey with the different phases, and (III) the reverging canvas.

MVP 1 has been further developed into MVP 2 in order to be able to share it with Flatlanders to gather feedback.

The main adjustment that had been made was turning the customer journey timeline into a more engaging treasure map to make the design more engaging.

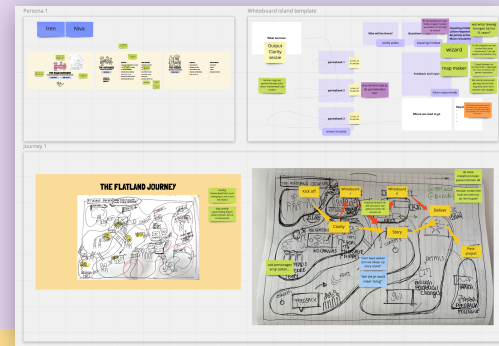


Fig. 34: MVP 2

MVP 2

Two Flatlanders were asked to give their feedback on MVP 2. The main insights from the feedback are stated below.

Part I

- Instead of being a persona, it is more a work approach or work style. One single person should be able to apply both work styles and know when to use which.
- Reduce the number of characteristics to a maximum of five to make it concise.

Part II

- This idea of having the different phases in an island shape works well. However, the composition of all the islands looked messy. The Flatland employee proposed to position 'regular' Flatland phases on one line and add the whiteboard phases on top and below so it would emphasize that it is the focus area and a 'new' part of the journey.

Part III

- The canvas does not only stimulates the wizard to become more a map maker by documenting and following a structured approach, it also forces the mapmaker to make more iterations and act more like a wizard.

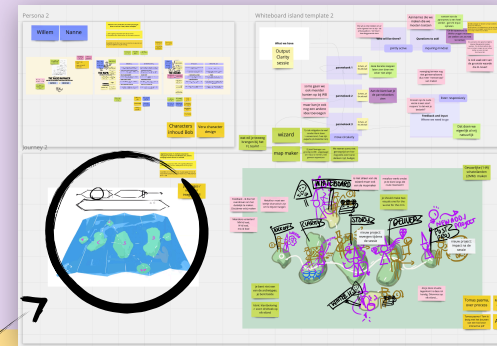


Fig. 35: MVP 3

MVP 3

Two Flatlanders were asked to give their feedback on MVP 3. To gather additional feedback, it was also presented during the greenlight meeting.

Part I

- Make sure that people don't see the mapmaker as the facilitator and the wizard as the illustrator.
- It is important to refer to the map maker and the wizard as a workstyle and not a persona. Otherwise, people might think that you are bound to one of the personas while it is about balancing and shifting between the two work styles.

Part II

- The metaphor of the treasure map makes it confusing as it does not fit with the metaphor of the magic mapmaker.

Part III

- The canvas does address all the aspects of reverging, however, it is not clear when it should be used or how.
- The current format of the canvas was not very inviting to fill in. A way to make it more clear should be found.
- To ensure proper reverging is done, it was suggested to add trigger questions for applying the different reverging rules

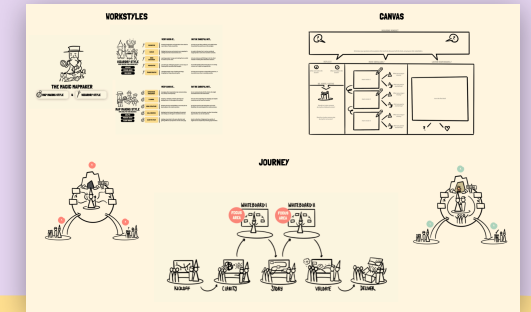


Fig. 36: MVP 4, the final design

MVP 4

Based on the feedback on MVP 3, the final design has been created. The design will be presented and further discussed in the next chapter, **DELIVER**.

MAIN TAKEAWAYS

DEVELOP

WHAT? – actions

First, different types of co-creation sessions were executed to develop potential ideas that could serve as a solution for the opportunity identified in the **DESIGN BRIEF** of the project: guaranteeing client ownership. The four different types of co-creation sessions were held include:

- A session to ideate about how the design could meet the general design requirements formulated in the design brief.
- Three sessions to ideate about how ownership can be created. Two sessions with designers from other design agencies and one session with Flatlanders.
- A final session to co-create the starting points for the final concept in collaboration with Flatland.
- A reflection with the company mentor.

Second, three different iteration rounds have been executed. In each round, an MVP was presented and discussed with Flatlanders. Based on the feedback, the MVPs were adapted.

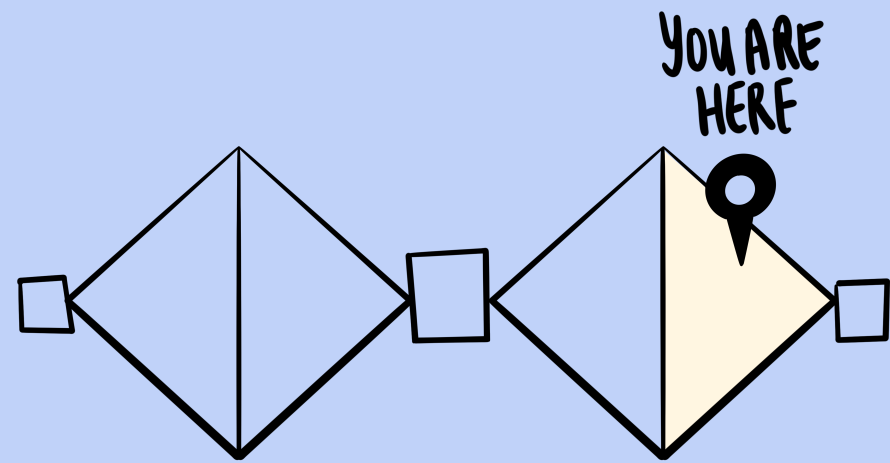
SO WHAT? – findings

The three first co-creation sessions did not propose an answer to the design statement as the solutions focused too much on creating ownership. Therefore, the reverging element was missing. Based on this gap, the reflection session with the company mentor aimed to provide a fresh starting point for developing the final design.

The fresh starting point outlined the three sub-parts of the final design (MVP1): (I) the Flatland workstyle(s), (II) the Flatland journey, and (III) the reverging canvas. These three different parts have been created iteratively according to feedback from Flatland and the university coaches in order to create the final design (MVP4).

NOW WHAT? – next steps

The development process has led to the creation of the final design presented in the next chapter, **DELIVER**. To create a more in-depth understanding of the final tool the next chapter will discuss how the design should be understood, used, and implemented by Flatland.



CHAPTER 6 DELIVER

CONTENT



INTRODUCING THE TOOL



EVALUATING & TESTING THE TOOL



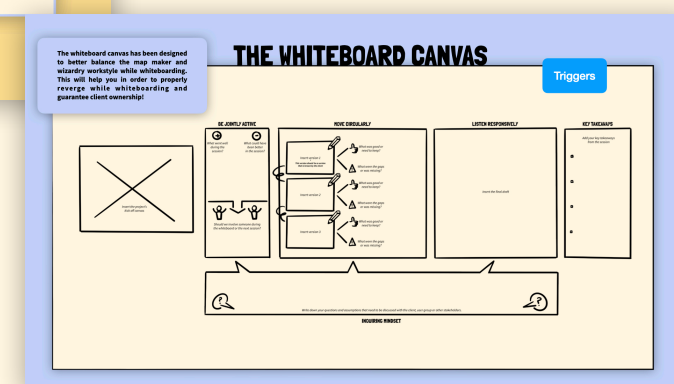
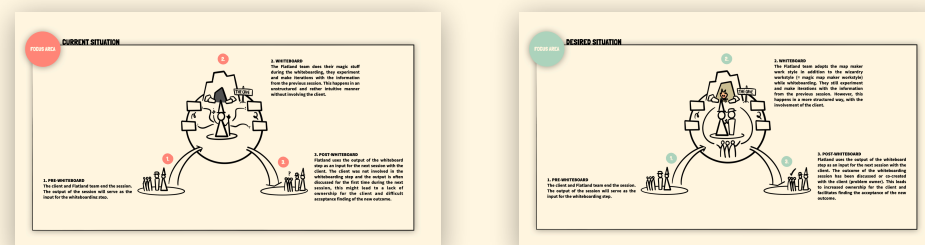
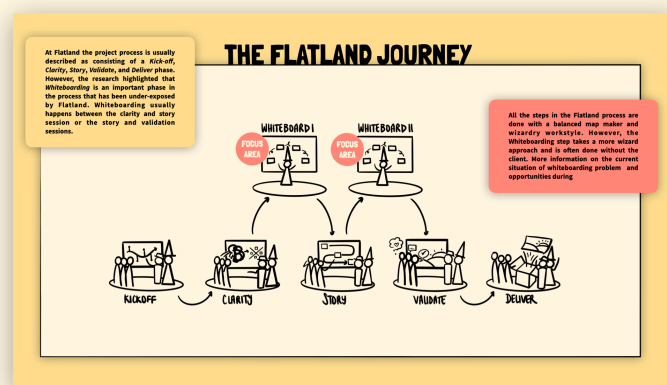
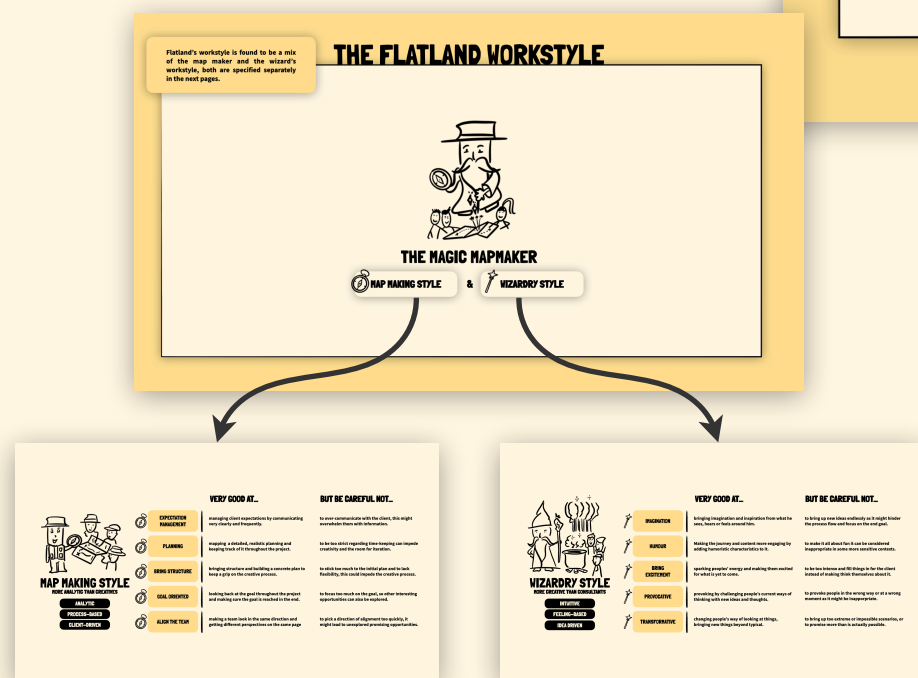
THE IMPLEMENTATION PLAN

INTRODUCING THE TOOL

This chapter will elaborate on the final concept delivered. The final design consists of three different subparts (see fig. 37), (I) the Flatland workstyles, (II) the Flatland journey, and (III) the whiteboard canvas. All parts will be separately discussed. Moreover, how the different sub-parts of the concept fit with the requirements defined in the design brief (section fixme) will also be addressed.

Lastly, the deliverables will all be brought together at the end of the chapter in the activation and implementation plan. This plan will guide Flatland on using and implementing these tools appropriately in their work routines to create acceptance finding of my tool :-).

Link to the interactive pdf



I. The Flatland workstyle(s)

The first part of the deliverable visualizes and elaborates on the Flatland workstyle: the magic map maker workstyle, which is about finding the right balance between being a mapmaker and a wizard.

II. The Flatland Journey

The second part of the deliverable outlines the Flatland process (kick-off, clarity, story, validate, deliver) with the whiteboard sessions as key additions to the process. This journey aims at informing the Flatland team about the current situation versus the desired situation regarding the whiteboarding phase of the process.

III. The whiteboard canvas

The last deliverable is not about informing the Flatlanders but serves as a tool to use as an intervention or support in the whiteboarding phase. The tool aims at encouraging Flatland to whiteboard in a more structured (mapmaker) way and keeping the key rules and mindset for proper reverging in mind while not losing the magical touch of the wizardry approach.

Fig. 37: The final whiteboard tool

I. THE FLATLAND WORKSTYLE(S)

The Flatland workstyles deliverable (see fig. 38) elaborates on Flatland’s way of working, the so-called ‘Magic Mapmaker’ by elaborating on the two metaphors of the mapmaker and the wizard.

The goal

The first part of the tool is mainly informative and aims at:

- (1) helping Flatland employees see the benefits of each workstyle and what can be a potential danger if leaning too much on one workstyle.
- (2) supporting Flatlanders in finding the right balance between charting the map and bringing the magic throughout their project.
- (3) balance the team by finding the perfect combination of a mapmaker and wizard workstyle combo.

How it works

The top page on the right is the general description of the flatland identity. Users can get more info on the map-making style or wizardry style by clicking the shadowed buttons.

Once on the page of the specific workstyle, five strengths are described of that work approach. In addition to the particular strengths, the potential danger of overdoing that specific activity or skill is mentioned.

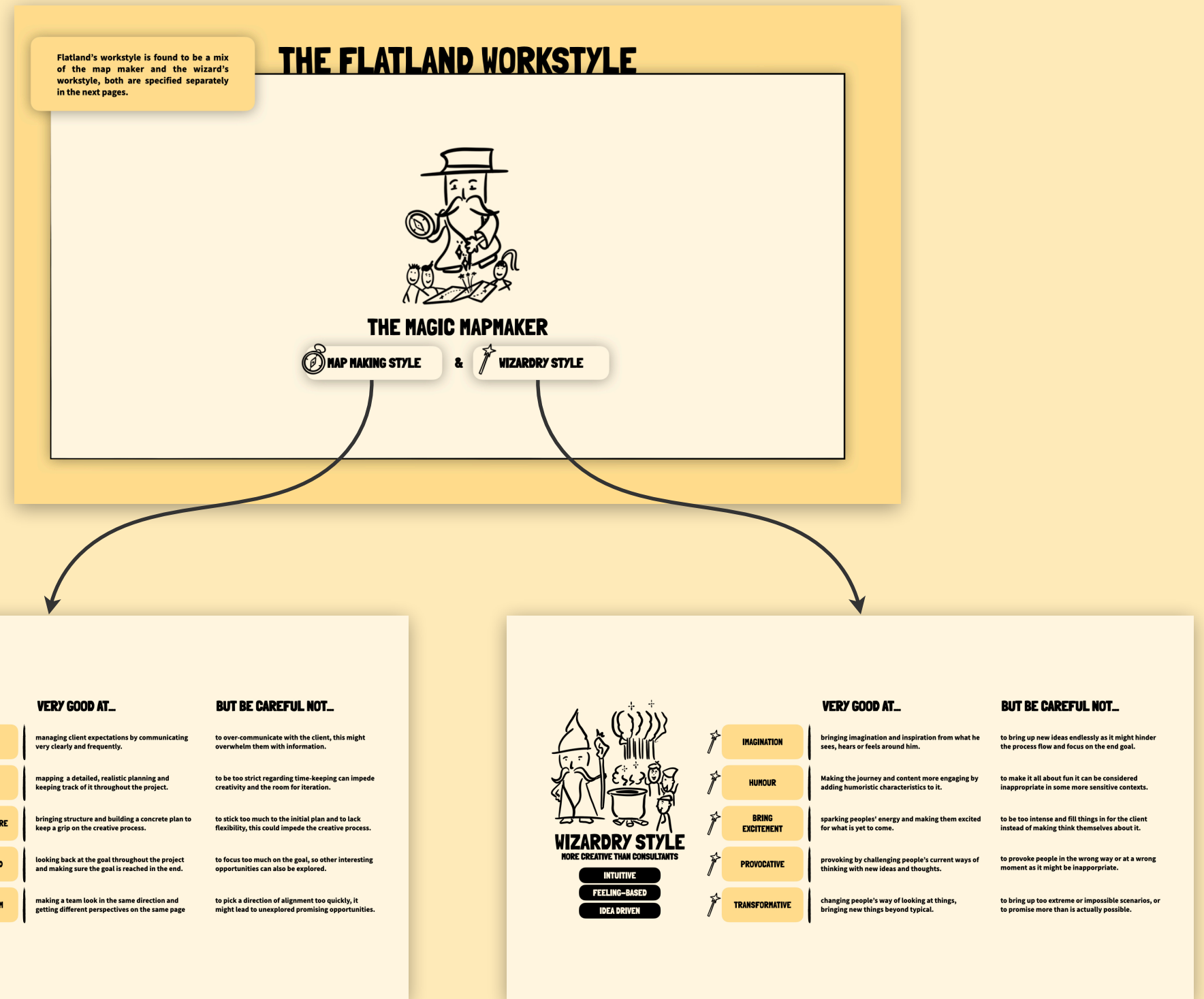


Fig. 38: The Flatland workstyles

II. THE FLATLAND JOURNEY

The Flatland journey deliverable (see fig. 39) visualizes the different phases of the Flatland projects. This map adds and emphasizes the whiteboarding phases in the Flatland journey.

The goal

The second part of the tool is more informative and aims at:

- (1) creating an overview of Flatland’s process, with the whiteboard phases made explicit.
- (2) showing the focus area of the tool, namely the whiteboarding phases.
- (3) zooming in on the focus area and explaining the current situation vs. the desired situation in order to achieve client ownership/acceptance finding.

How it works

The Flatland journey is illustrated with the additional whiteboarding phases added, which are the focus areas of the tool.

The journey highlights that in all the phases of the process, there is a balance between the mapmaker and the wizardry workstyle. However, in the whiteboarding phase, the wizardry workstyle seems way more dominant than the mapmaker workstyle. The tool zooms in on this problem in ‘the whiteboard’ phase. The current and desired situation regarding the problem (depicted below the journey) are further explained on the next page.

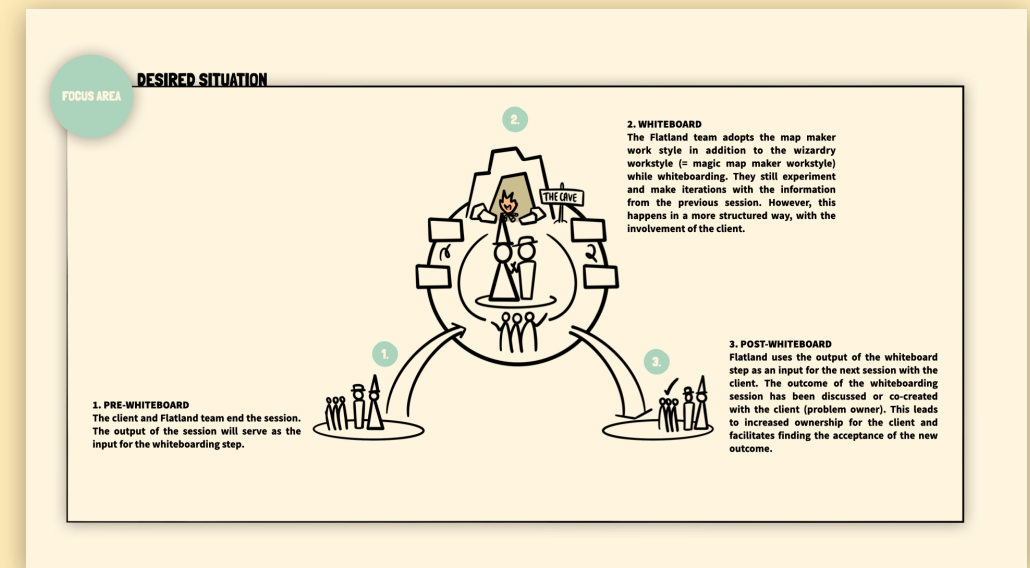
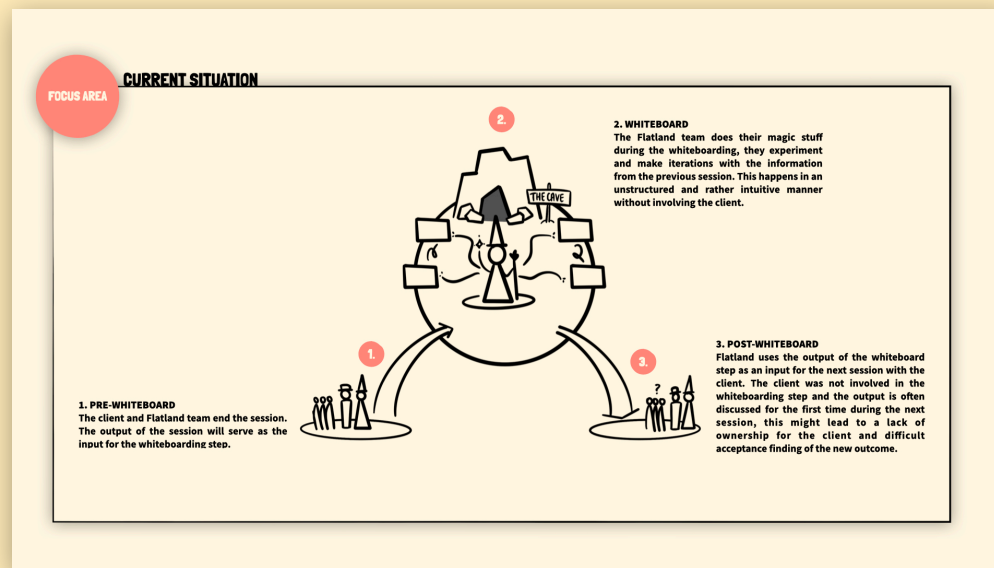
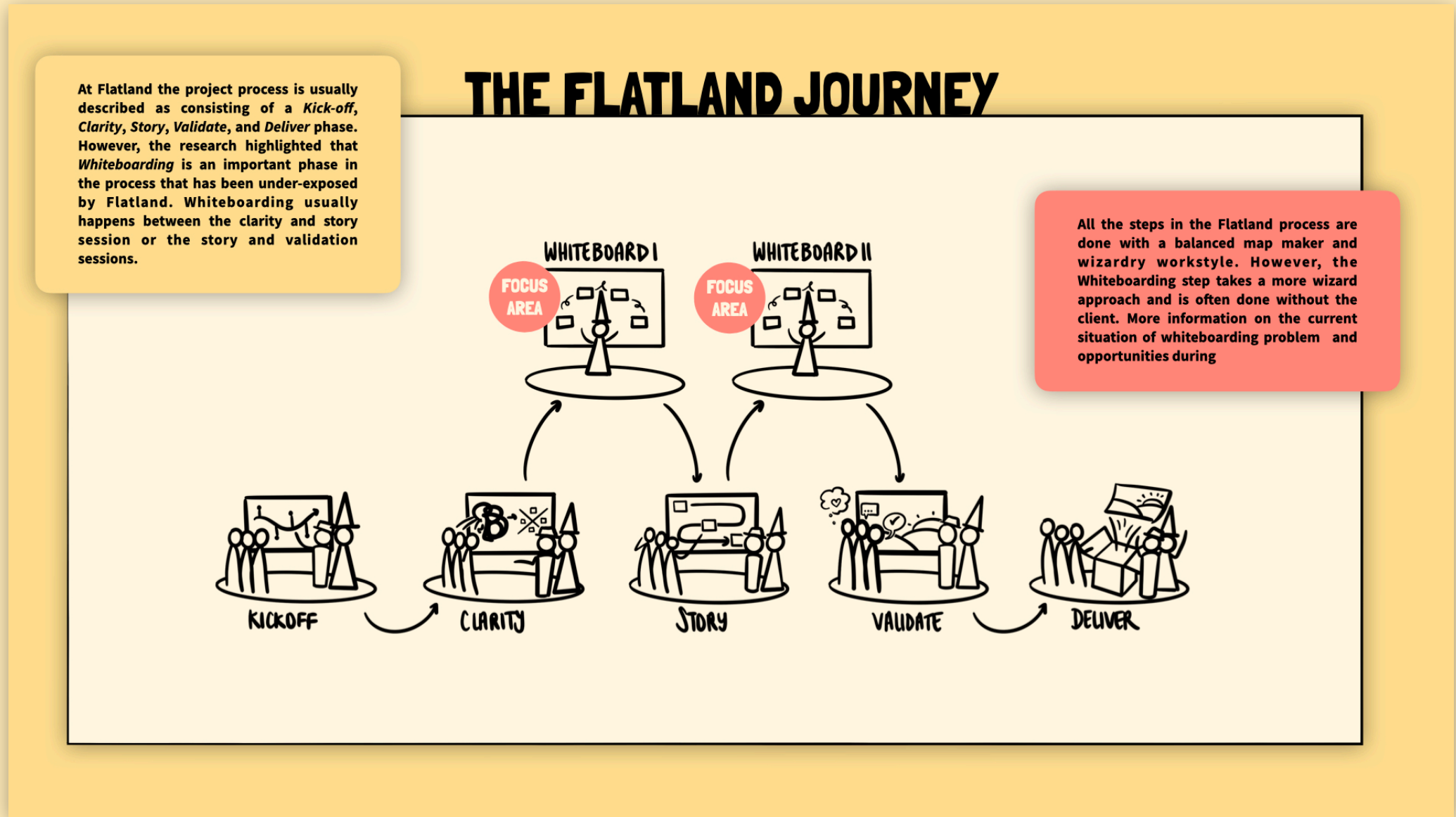


Fig. 39: The Flatland journey

THE CURRENT SITUATION

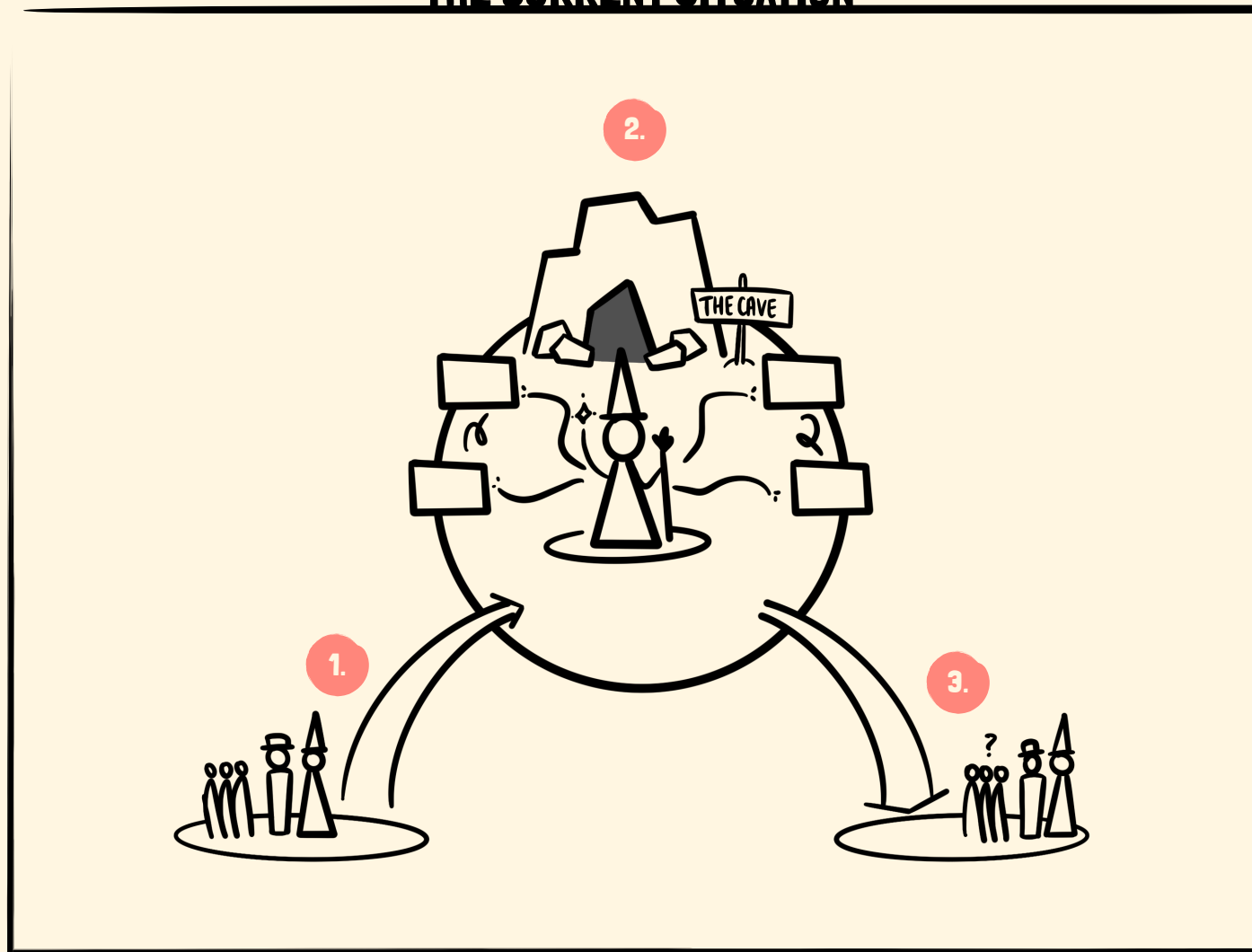


Fig. 40: The current situation

When zooming in on the whiteboarding phases in the Flatland journey, the current problem detected is that the whiteboarding is done with a more wizardry workstyle. The scenario is described below and illustrated in figure 40.

1. PRE-WHITEBOARD

The client and Flatland team end the clarity or story session. The output of that session will serve as the input for the whiteboarding step.

2. WHITEBOARD

The Flatland team does their magic stuff during the whiteboarding; they experiment and make iterations with the information from the previous session. This happens in an unstructured and relatively intuitive manner without involving the client. Flatland refers to this as doing magic things in 'the cave'.

3. POST-WHITEBOARD

Flatland uses the output of the whiteboard step as an input for the next session with the client. The client was not involved in the whiteboarding step, and the output is often discussed for the first time during the next session. This might lead to a lack of ownership for the client and a difficult acceptance finding of the new outcome.

THE DESIRED SITUATION

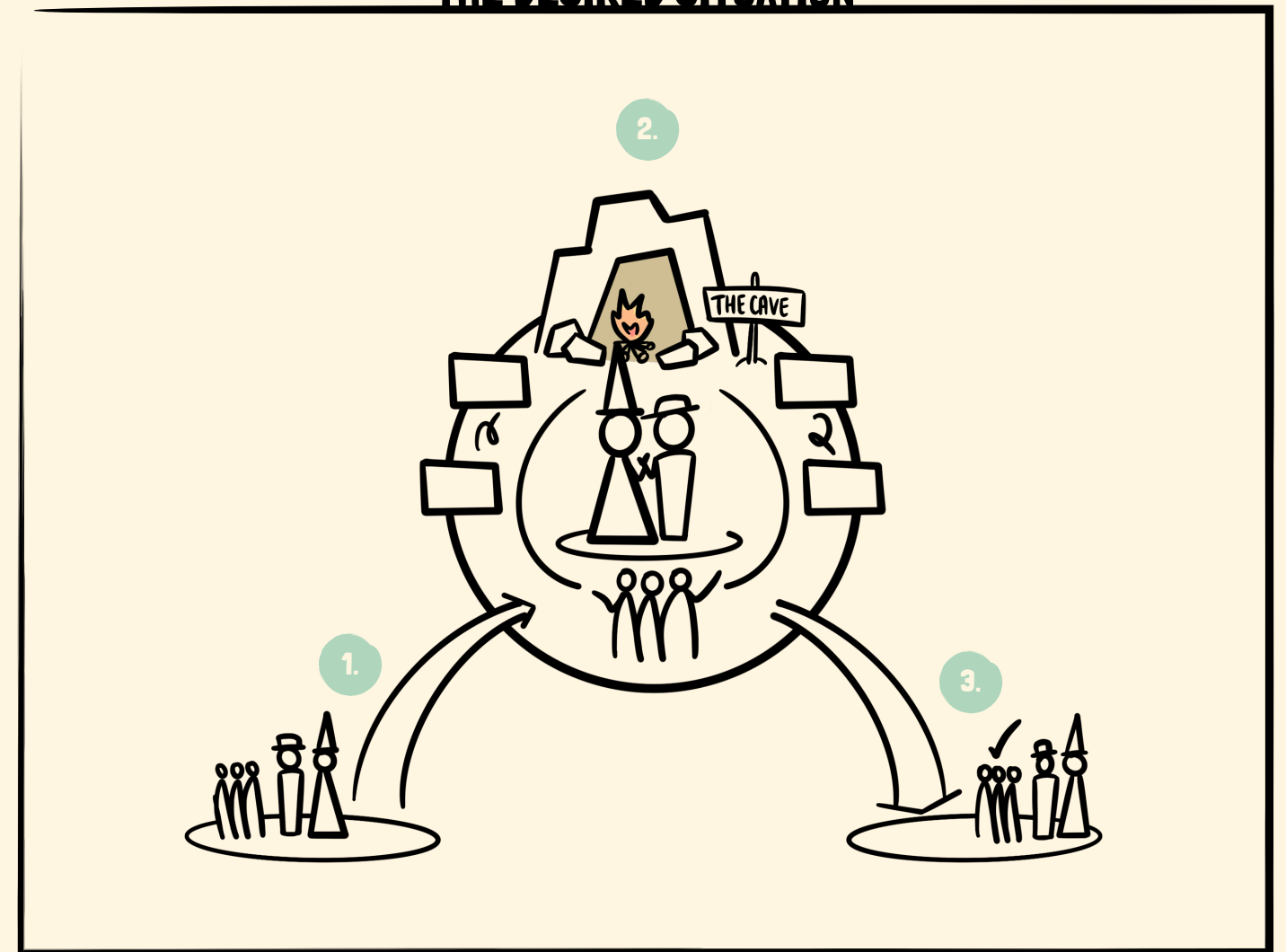


Fig. 41: The desired situation

When translating the current problem that occurs in the whiteboarding phase into an opportunity or solution, there should be a more balanced approach between the mapmaker and wizardry workstyle to make Flatland the Magic Mapmakers at all times. The desired situation is described below and visualized in figure 41.

1. PRE-WHITEBOARD

The client and Flatland team end the clarity or story session. The output of the session will serve as the input for the whiteboarding step.

2. WHITEBOARD

The Flatland team adopts the map maker work style in addition to the wizardry workstyle (= magic map maker workstyle) while whiteboarding. They still experiment and make iterations with the information from the previous session. However, this happens in a more structured way, with the client's involvement. The client can be involved by showing them what happened in 'the cave' or by literally involving them in the whiteboard session.

3. POST-WHITEBOARD

Flatland uses the output of the whiteboard step as an input for the next session with the client. The outcome of the whiteboarding session has been discussed or co-created with the client (problem owner). This leads to increased ownership for the client and facilitates finding the acceptance of the new outcome.

III. THE WHITEBOARD CANVAS

The whiteboard canvas (see fig. 42) is a tool that the Flatland team can use as the actual intervention during whiteboarding sessions. The tool emphasizes the rules of reverging as described by Heijne & van der Meer (2019).

The goal

This last part of the tool is the actual intervention designed to solve the problem depicted in the Flatland journey. The tool is a canvas that aims at:

- (1) encouraging Flatland to do whiteboarding more deliberately and in a structured manner instead of unconsciously or intuitively.
- (2) making thinking steps explicit and documenting the process so it can be discussed and shared with the client. This can help Flatland involve the client in the Reverging process to guarantee ownership.
- (3) stimulating the Flatland team to take time and effort to explore new ideas and make new iterations based on the input that was already present.

How it works

! Throughout the whole whiteboarding process, write down the questions or assumptions that you would like to ask or test with the client, user group, or other stakeholders.

1. Add the kickoff canvas that has been designed at the beginning of the project.
2. Reflect on the previous session: What went well? What could have gone better?
3. Think about whether someone from the client team should be involved in the whiteboarding session, next session, or another meeting to increase the chances of accepting the final concept.
4. Add the last versions of the concept or input (the client should know it) and make possible iterations of the version.
5. Reflect on what you liked or missed in each version or iteration. These pros and cons could serve as a starting point for new iterations.
6. Continue iterating and add the final draft presented to the rest of the client team or in the next session. This will be the draft where the feedback will be sketched on.
7. Finally, write down the key takeaways from the whiteboard session that must be discussed in the next session or meeting.

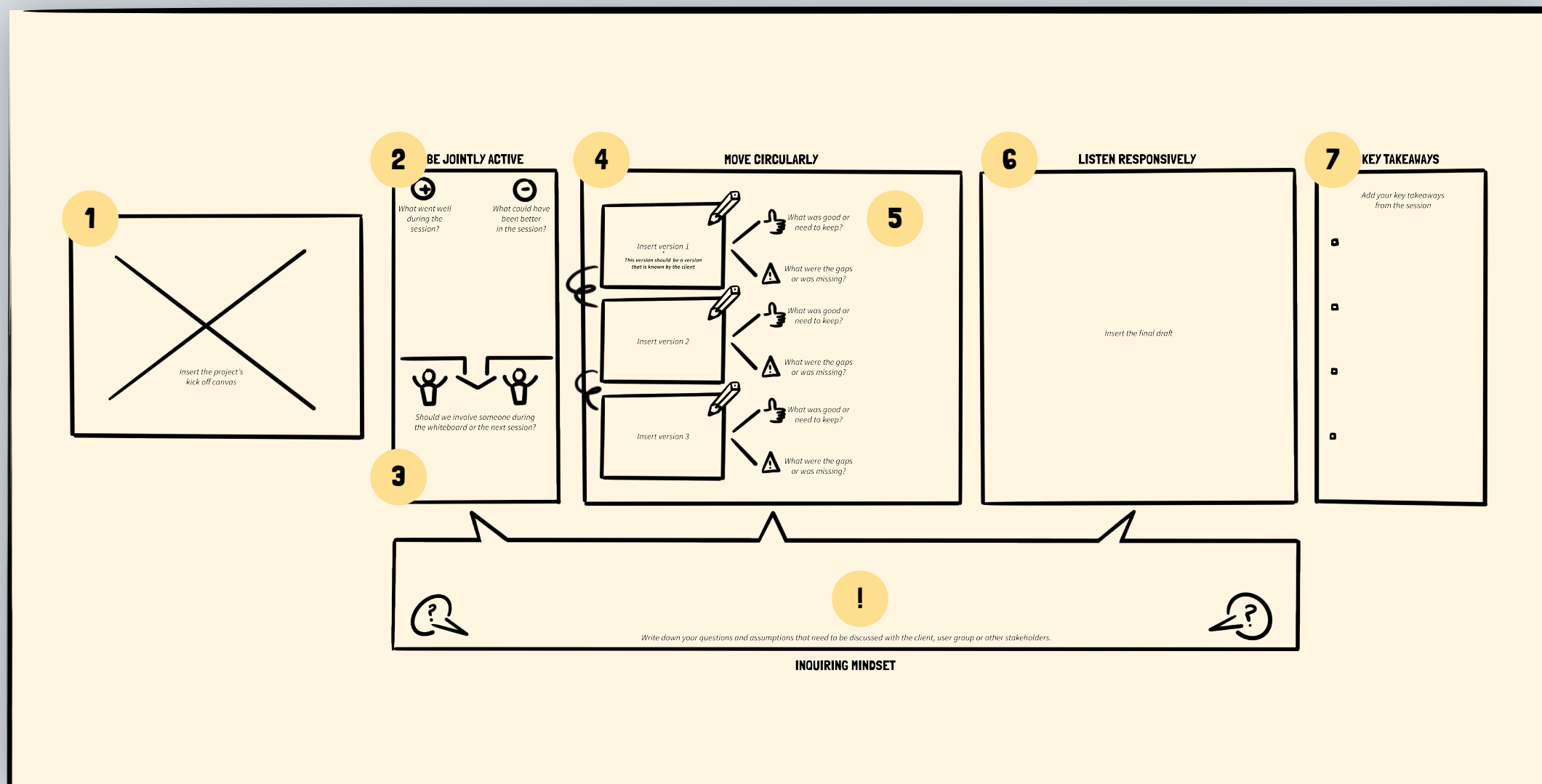


Fig. 42: The whiteboard canvas

The numbers of the how it works steps correspond with the numbers in the yellow dots that were added to the canvas.

THE INQUIRING MINDSET

- What information are we missing to continue?
- Are there any questions we still have for the client, user group, or other stakeholders?
- Are we sure we are not making any assumptions? If yes, what are the assumptions?
- Have asked enough 'Why?'. If not ask: Why? to dig deeper.

BE JOINTLY ACTIVE

- Who else do we need to talk to or involve in the project/session?
- Is there a crucial person missing that is needed for the creation and implementation of the deliverable?
- Is there someone or a group of people that needs to be updated?
- If there is any information missing, who do we need to obtain the missing information?

MOVE CIRCULARLY

- Did we explore enough options or do we need more?
- Did we look back at previous versions to come up with new iterations?
- Did we try to combine multiple good things from different iterations into one concept?
- Is there a completely different idea that we still want to try out?

LISTEN RESPONSIVELY

- How are we using the client input in the final draft?
- Did we listen to everyone's feedback? What did the client say/is the client saying?
- Does the final draft fit with what the client is saying? What is missing?
- Have we used the need to keeps from the different iterations in the final draft?

Trigger questions have been formulated in the blue boxes to stimulate the reverging mindset while whiteboarding.

EVALUATION OF THE CONCEPT

This section will elaborate on how the Whiteboarding tool meets the design requirements mentioned that were specified in the **DESIGN BRIEF**.

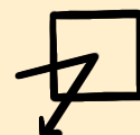
Does the tool meet the general design requirements?

How the final design meets the general requirements is discussed separately for every requirement in figure 43.



EMPOWER MODULARITY

Forcing the users to add different iterations and reflect upon them empowers the modularity of the final design. Showing the different (unfinished) versions invites to make changes and allows for iterations and validations until the client is satisfied.



ENCOURAGE REFLECTION

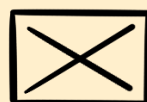
By asking to reflect on the previous session but also on different iterations, the tool encourages reflection on the project and process. However, it has not been tested with the client yet (only with Flatland). Section 7.1 will further discuss this limitation.

ENDORSE



INQUIRING MINDSET

The whiteboard canvas forces the user to think about any information that is potentially still missing and should be obtained from the client, user group, or other stakeholders. This is essential to avoid making assumptions about the client's context.



STICK TO THE KICKOFF CANVAS

The tool enables Flatlanders to insert the project's kickoff canvas to help to stick to it throughout the whiteboarding phase. So the user keeps on referring back to the initial goal, message, target group, and means that were discussed in the clarity session (first session of the project).

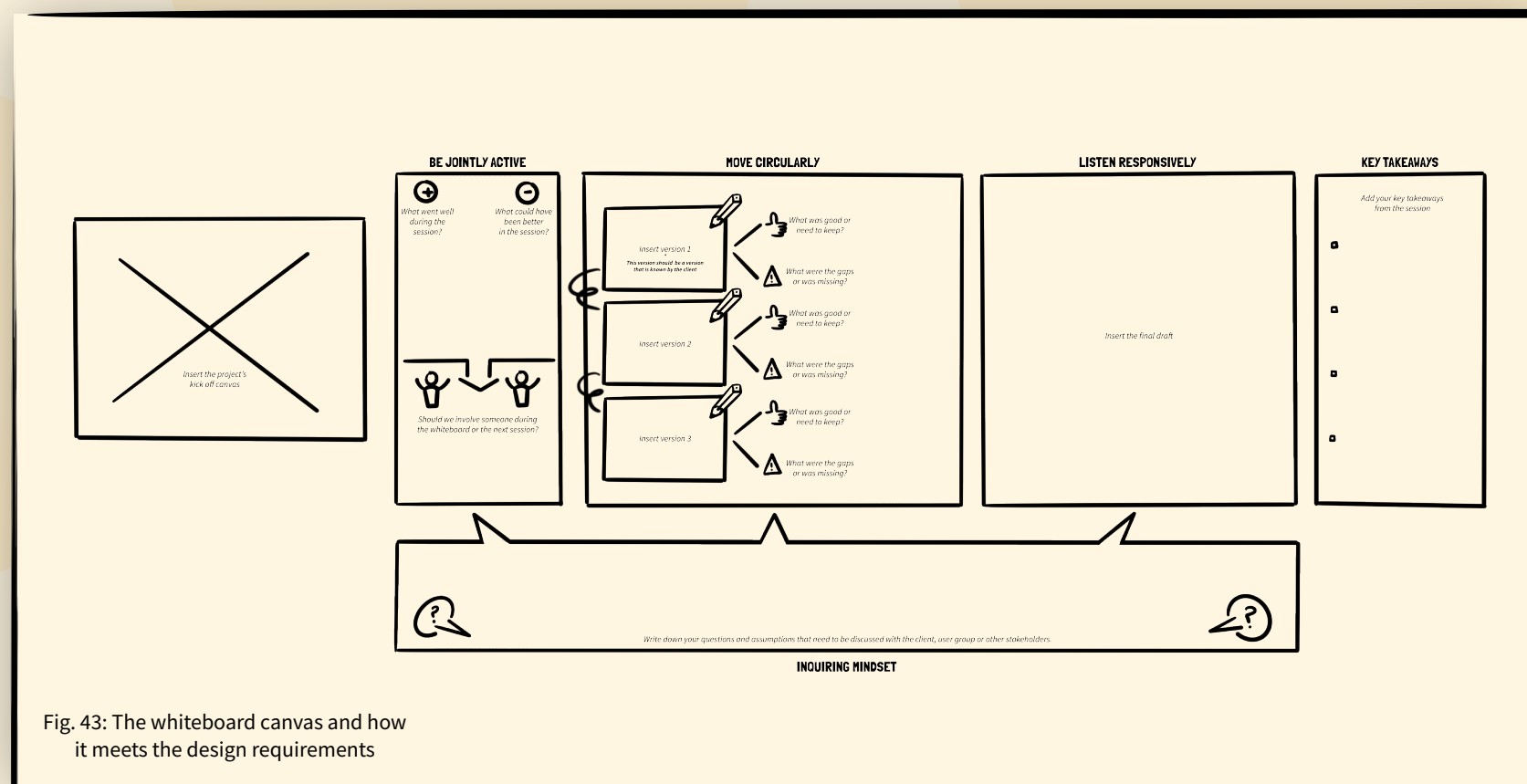


Fig. 43: The whiteboard canvas and how it meets the design requirements



BALANCE IN/OUT GROUP

The jointly active section aims at making Flatland reflect on whether they should involve someone else (client) or not. However, it is not clear yet when or to what extent it should be done. This limitation is further discussed in the recommendation section (section 7.1).



EMBRACE STRUCTURE

The overall tool helps to execute whiteboarding in a more structured approach. The different elements served as reminders of the rules of reverging. Despite the structure, the participants used their own imagination to fill in and use the canvas.

TO MOVE CIRCULARLY

The whiteboard canvas encourages the user to make or add different iterations of the concept in the canvas. Showing unfinished in-between prototypes seemed to inspire the users to create new iterations.

TESTING OF THE CONCEPT

This section will elaborate on how the Whiteboard canvas was tested and perceived by the members of the Flatland team. Only the last design of the toolkit was tested intensively and will be discussed in this section, as it is an intervention tool rather than informative like the Flatland workstyle and journey. The testing was needed to make sure the intervention is effective and can be done smoothly, the entire results can be found in appendix L.

Test 1: Mural

The session was held online in Mural without the client. It was meant to organize the information gathered in the clarity session to discuss it later on with the client. The completed canvas can be found in figure 44.

General feedback and insights

- The tool serves as a reflection tool, to reflect upon the previous session.

"A very nice tool it also helps a lot like a reflection tool - Flatland facilitator A very nice tool it also helps a lot like a reflection tool." - Flatland facilitator
- The tool also helped Flatland 'to see the light' and to create structure after an overwhelming session.

"I had quite a bit of an overwhelmed feeling after the session but when I see it like that I think nice we did a good job!" - Flatland facilitator

- The tool helped to make the whiteboarding session more focused

"Instead of immediately shooting ideas out of nowhere, you take time to go over everything and think." - Flatland facilitator
- The tool helped to document thinking steps made during the whiteboarding session.

"Sometimes the whiteboard session turns out to be a very long reflection session and we forget to document everything, so after the session, you just think shit what now?" - Flatland illustrator

- Add the possibility to add the kick of canvas because otherwise, you might not refer back to it and lose the direction of the main goal that needs to be achieved.

Insights

- Working in Mural enabled the Flatland duo to first have a moment of reflection on their own, and later discuss together and add input accordingly.
- In most cases, the Illustrator has to further develop on its own, to make a more finalized version of the sketch, the canvas will not necessarily assist in making this iteration but rather document and justify the different choices and iterations.

Test 2 : Photoshop

The second test was executed in Photoshop during an online whiteboarding session between the story and delivery session. The session was without the client because the illustrator already discussed the needed changes with the client and wanted to update the facilitator about the changes. The final canvas can be found in figure 45.

General feedback and insights

- The goal of the canvas needed to be clarified

"Wat is het doel van dit canvas: beter en gestructureerder: Whitboarden door te documenteren en gericht aan de slag te gaan." - Flatland illustrator
- The fact that multiple iterations could be added

"1,2,3 versions; I like the fact that you can bring things back from earlier in the process." - Flatland Illustrator
- Add some space to write down some key takeaways you want to share with the client or a person that did not attend the whiteboarding session.

"After the whiteboarding session, you actually want to give the main take-aways or findings to the client or other people that were not actively involved in the whiteboarding session. Therefore, I would suggest adding a little box for the top 3 takeaways, that really need to be discussed because sometimes you forget what were the main insights you wanted to discuss." - Flatland Illustrator

- Many things have been done earlier in the project, but sometimes the Flatland team does not actively remember or doesn't know where the file is. It is a pity not to use information or ideas that have been thought of upfront. The canvas helps to avoid this problem and supports the survival of the ideas.

"We are often inclined to throw our earlier sketches or versions away. It was cool to see that by adding our previous versions of the design, we were inspired by ideas we had at the beginning and otherwise would forget. it really inspired us to iterate towards a more wholesome design that related to the first version." - Flatland facilitator

Insights

- Working in Photoshop enabled the Flatland duo to draw more on the canvas and create a setup for the improved version of their sketch.
- The illustrator will mostly be the one opening the canvas in Photoshop and filling it in. Therefore it is important that he/she also includes the facilitator's input (or client).
- The duo could not find or remember if they made a kick of canvas at the beginning. Additionally, the illustrator sent the latest version but forgot that this happened. The canvas helped to document and reflect on what had been done and shared already.

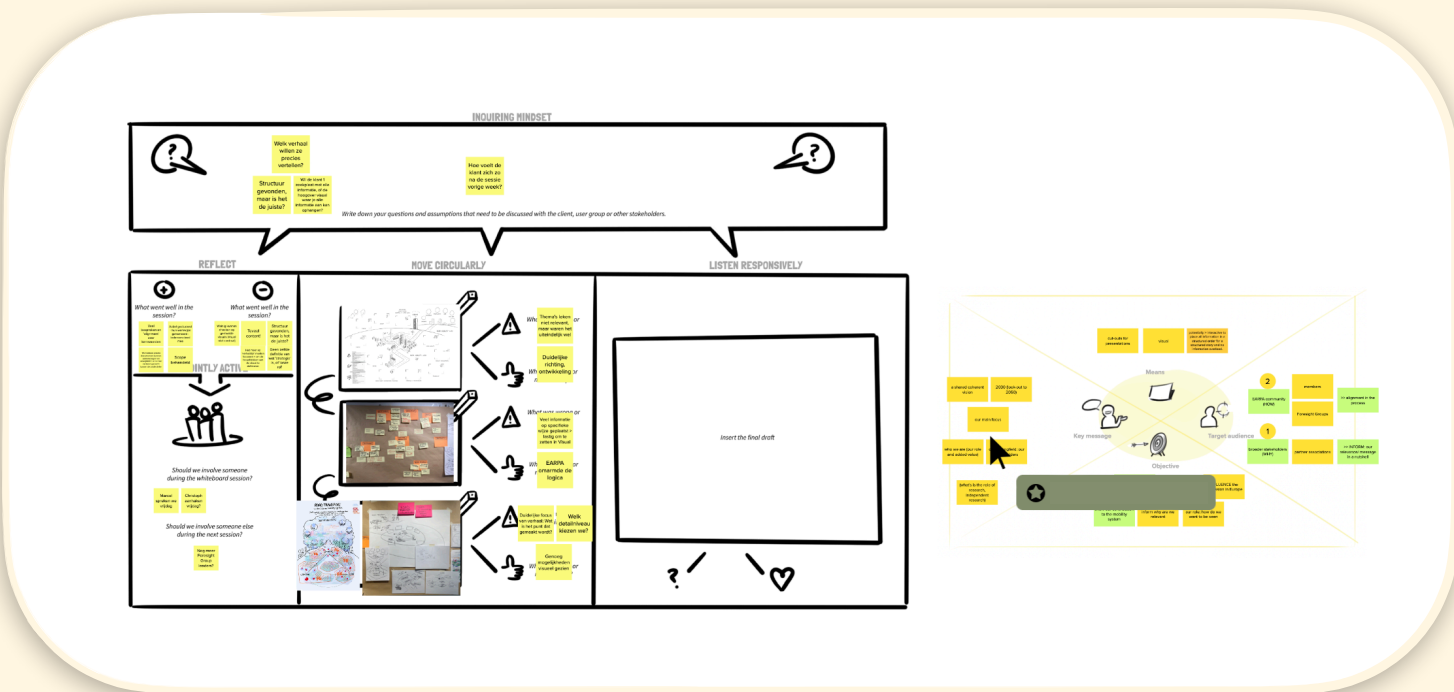


Fig. 44: Canvas Test 1 in Mural

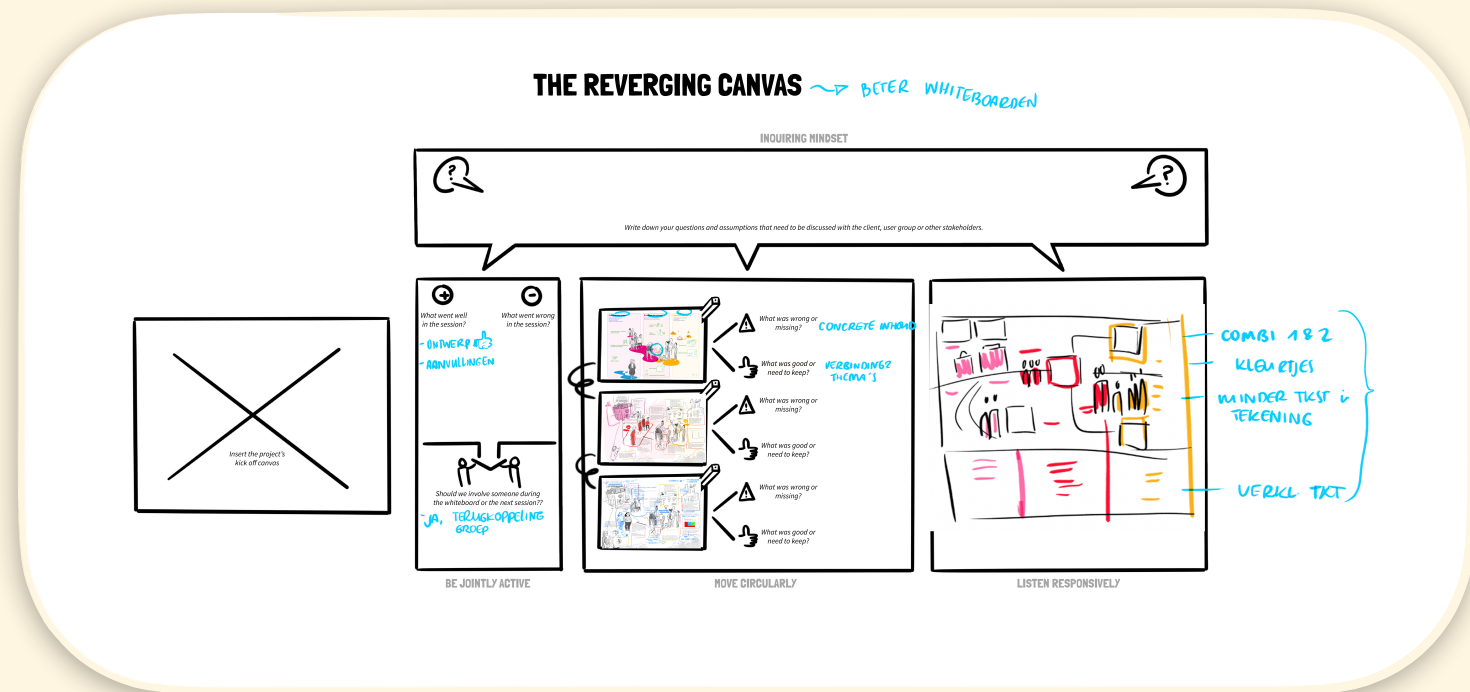


Fig. 45: Canvas Test 2 in Photoshop

Test 3 : Real life

The last test was held during a real-life whiteboarding session between the clarity and story session. The Whiteboard canvas was printed on A3 paper so the participants could use it during the session. The final canvas can be found in figure 46.

General feedback

- The different components of the canvas were perceived as logical and fitting with the current Flatland WB approach.

"It is very logical, and I like the elements and the structure... This fits my current way of whiteboarding."
- Flatland facilitator

- The fact that each version could be assessed by stating the pros and the cons helped in creating the later designs.

"How could we combine the good of the different versions?" - Flatland facilitator

- The main goal of the canvas was to solve the problem of Flatland adopting too much of the wizard workstyle in the whiteboarding phase. However, the test revealed that it also empowers the mapmaker to bring more magic by forcing them to thumbnail.

"I see myself more as a mapmaker than a wizard, and indeed it challenged me to make more thumbnails." - Flatland facilitator

- The canvas helps to make thinking steps more explicit in order to present and discuss them with the client (or other people) while thinking about information or assumptions that is need, where the client's input is needed.

I also think it is a useful tool to help us make our design steps more explicit. And to ask more questions to the client, instead of making assumptions.

De besluiten die je hebt genomen en zoektocht laten zien, maar ook wat je nog niet weet en waar je niet mee verder kon

Insights

- In real life, you do look at the same thing (shared screen in teams) Therefore it is hard to keep the canvas central or in mind. The Flatlanders were keener on scrabbling on the whiteboard, rather than on the A3 canvas.

- The little A3 canvas did not grab much attention especially when the Flatland duo moved to draw on the whiteboard. One of the Flatlanders proposed to use flexible magnet strips with the different elements of the canvas on it. This could enable them to use them on the whiteboard and move them around according to their wishes and needs.

Final insights

To conclude, some final insights of the tests have been formulated by specifying WHO, WHAT, WHY, HOW, and WHEN it is used.

WHO? - Based on the feedback and reactions, it is clear that some employees embrace using a template more than others and will be more likely to use it and see its value.

WHAT? - It is a guiding tool; it is not meant to force people to complete the whole canvas step by step. The tool is made so that it should help people remember the different actions needed in a whiteboard session and structure thoughts and the whiteboarding process.

WHY? - The feedback during the tests highlighted different functionalities of the test and why it could be helpful.

1. Reflection: the tool helps to reflect in a structured manner on the previous session and the different iterations designed.
2. Documenting: the tool facilitates the documentation of the design and thinking process. By making this process explicit, the selection of specific options can be backed.
3. Creating structure: the tool helps create a structure and overview of the thinking process, enabling ideation that builds further on what is already there. This eventually leads to an increased chance of survival of ideas.
4. Iteration: the tool stimulates the exploration of different options and coming up with new iterations based on previous drafts.

HOW? - Whiteboarding happens in real life or online. Therefore the template has been made available in Mural, Photoshop, and real life.

- **Mural** works best as a reflection and conversation tool for a more in-depth and individual reflection as all the people in the whiteboarding session can add their own input to the canvas.

- **Photoshop** works best as a documentation tool where previous versions and edits can be added. Additionally, as it is the software that Flatland loves the most for making their products, it will trigger the creation of new sketches and ideas. However, only the person sharing the screen (mostly the illustrator) is able to add, write down or draw things. This makes it hard for the others to add visual information to the sketch.

- **In real life**, whiteboarding tends to be 'the most hardcore' as there are no constraints regarding the drawing space, and everyone can simultaneously add their own input on the board. However, it is hard to keep the focus on the canvas as it is relatively small compared to the physical whiteboard. Ultimately adding previous drafts and iteration is more difficult than in an online session as it needs to be a physical draft, which eventually requires upfront printing.

WHEN? - Lastly, it was clear from the different tests that there is a difference between a whiteboarding session taking place between the clarity & story or between the story & validation session. The first is more about making sense of the information obtained in the clarity session and trying to make the first draft for the next session (see tests 1 & 3). While the second is way more about assessing the different versions developed to come to a final draft to present in the next session (see test 2).

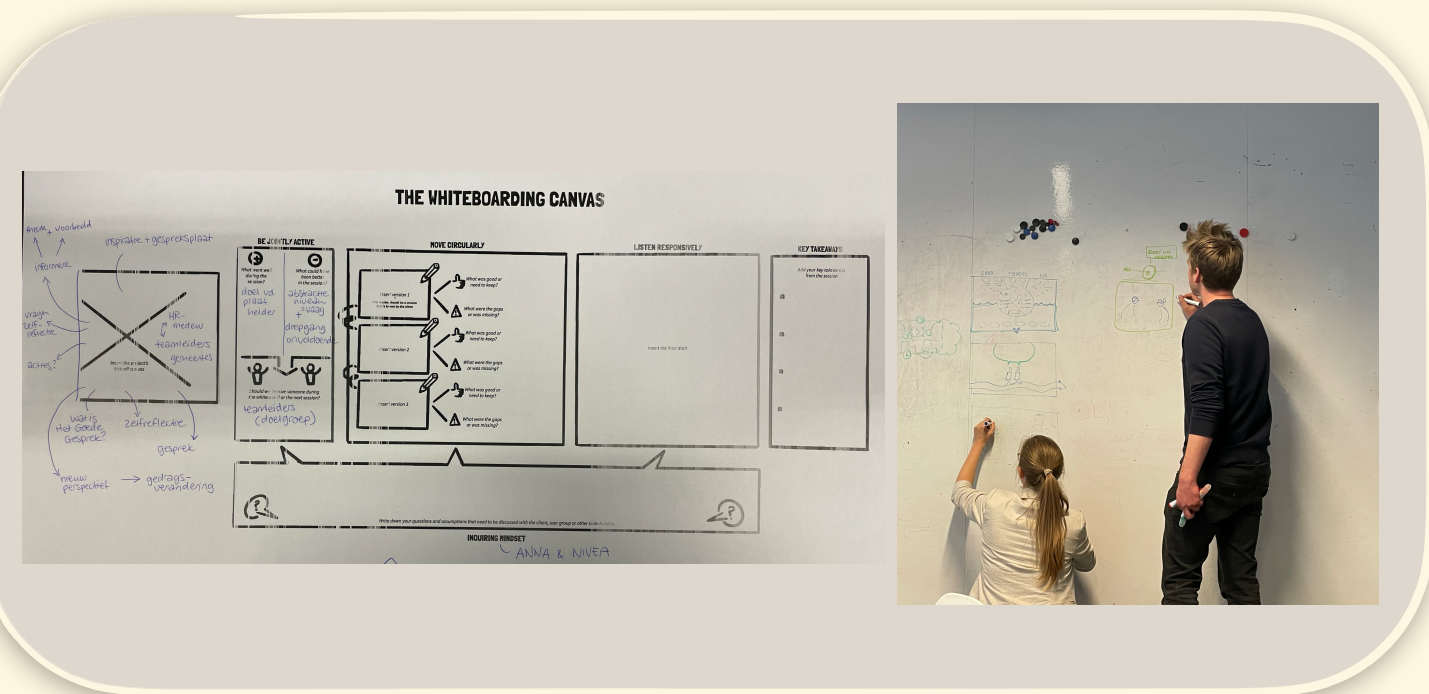


Fig. 46: Canvas Test 3 in real life

IMPLEMENTATION PLAN

The implementation plan (see fig. 47) has been established to describe how flatland can implement the tool in their daily practice and process flow. The implementation plan consists of three consecutive phases: **Hear it**, **Believe it**, and **Live it**. These phases are based on the Activation Curve model introduced by Xplane (Xplane, 2021). The actions are described for the product owner, Flatland employees, client, and the tool itself.

Keep in mind that the plan has been made as guidance for implementing the whiteboarding tool for the Flatland employees in general. However, the timing might differ for every single employee as some will be keener to believe or live it than others.

Hear it – May 2022

Create awareness & understanding of the problem in the whiteboarding phase of the process.

Alix is the product owner until May and will instruct Iren to follow up starting from mid-May. The first tests with the tool have been conducted, and the employees who tested the tool are forming the pool of early adopters and eventually ambassadors for the implementation of the tool. In the Huddle XL (weekly company meeting at Flatland) the tool was introduced to the whole Flatland team. A Notion page was created with all the info needed and the tool and canvas are made available in Mural, Photoshop, and real-life format to be used in the Whiteboarding sessions.

Believe it – June 2022

Create acceptance & make people ready to defend the cause.

After the Flatlanders have used the whiteboarding tool in whiteboarding sessions, the product owner will gather feedback from the users and adapt the tool accordingly (if needed). FAQ (frequently asked questions) can be answered on the notion page. Additionally, the product owner will plan a moment in the Huddle XL to remind the team to do the whiteboarding WITH the client to take it to the next level. When whiteboarding has been done with clients another feedback round can be planned to also gather client feedback to see if the canvas needs to be adapted according to their needs.

Live it – July 2022

Make it a part of the workflow & implement it in day to day routine.

In the last phase, the goal is to have the canvas embedded in the day-to-day routines of Flatland. This should help Flatland do reverging more deliberately and with the client's involvement throughout the whiteboarding phase to guarantee client ownership. If the employee feedback reveals that the canvas is still challenging to use, it might be helpful to set up a training session to go through the canvas together and show how it can be used. Furthermore, it is essential to inform newcomers about how the tool can help avoid the lack of client ownership.

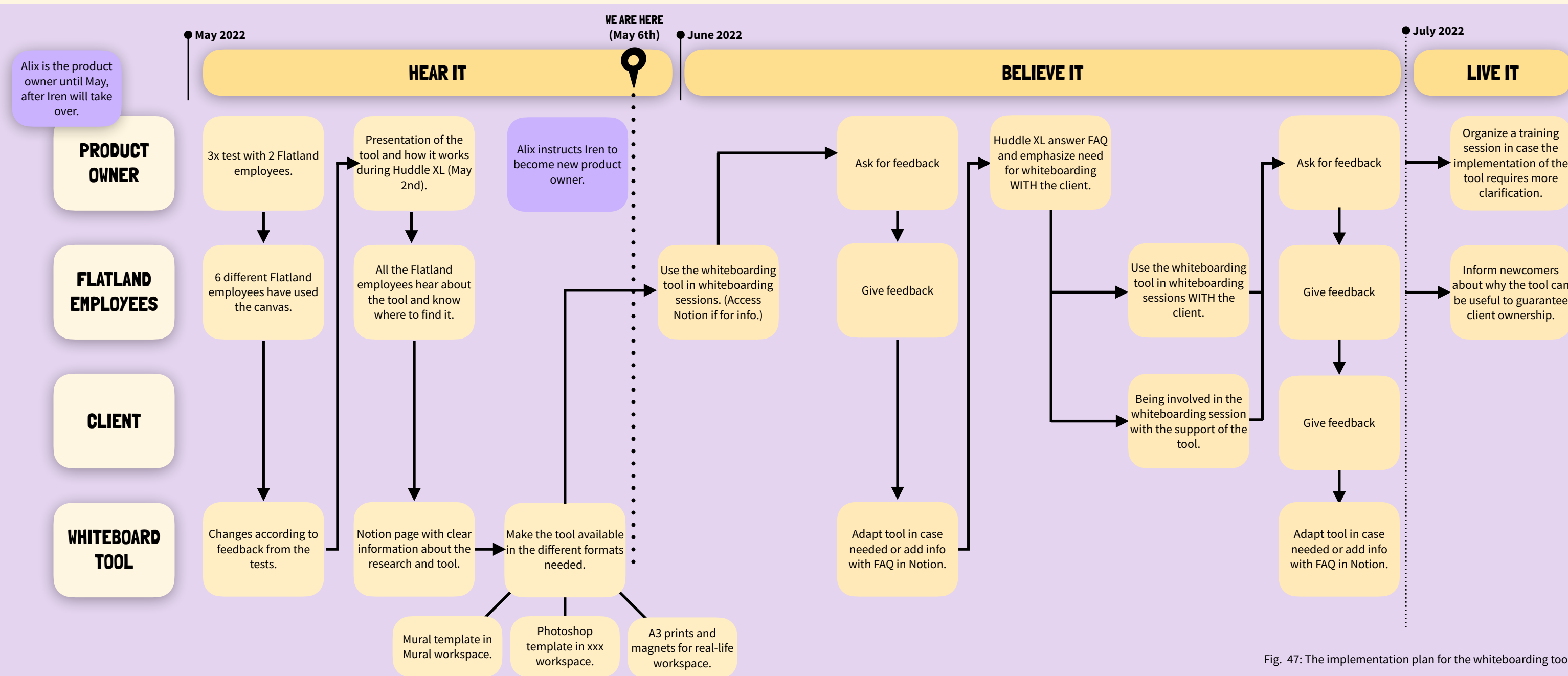


Fig. 47: The implementation plan for the whiteboarding tool

MAIN TAKEAWAYS DELIVER

WHAT? – action

The final concept and its subparts emerged from the **DEVELOP** phase. This chapter specified the goals, the functioning, and how the design meets the requirements of the **DESIGN BRIEF**. The three different sub-parts of the final design are the following:

- I. The Flatland workstyle(s) was designed to inform Flatland about the workstyle of the Magic Mapmaker and how it requires between the Mapmaker and Wizardry workstyle and what these embody.
- II. The Flatland journey was designed to inform Flatland about the revisited Flatland process that includes whiteboarding sessions in addition to the kickoff, clarity, story, validation, and delivery.
- III. The whiteboard canvas was designed as the final tool that will help to avoid the problem of lacking client ownership because too many reverging steps are done magically without the client during the whiteboarding phase.

The whiteboard canvas tool has been tested in three different whiteboarding sessions with Flatland employees (1 in Mural, 1 in Photoshop, and 1 in real life). Finally, an implementation plan, with the needed steps for Flatland to undertake has been established to further implement and incorporate the tool into Flatland's work routine.

SO WHAT? – findings

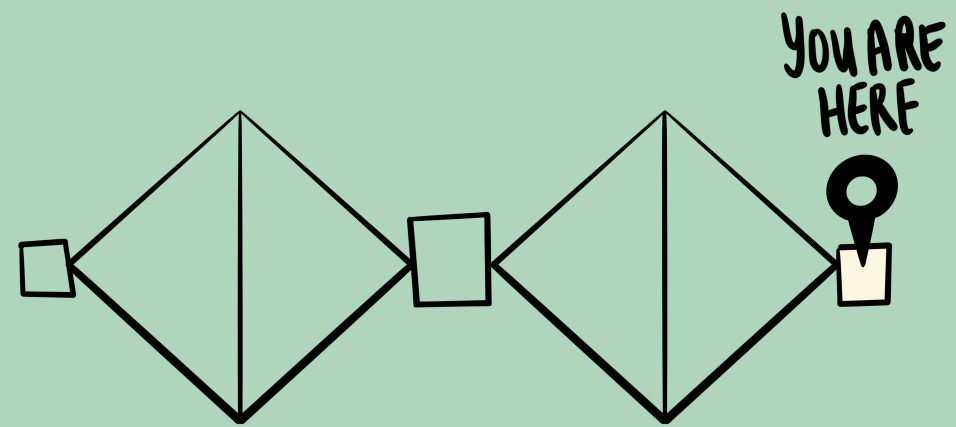
The goal of the tool was to help Flatland in solving the identified problem in the design brief, guaranteeing client ownership by doing more deliberate reverging. The testing of the canvas revealed that making thinking steps explicit helped Flatland to revisit and rearrange the options (and increase the chance of survival of earlier generated options) and be reminded of the rules of reverging.

Additionally, the validation revealed that the different formats lead to different uses of the canvas. Mural seemed to be more beneficial for working or reflecting together and documenting the design process. Photoshop was useful for the creation of new iterations. However, only one person can draw and share the screen simultaneously. It remained hard to keep the focus on the canvas in real life, but it worked best to work together and 'whiteboard' based on each other's input.

The implementation plan elaborates on the steps Flatland employees and the product owner (iren) need to make to further implement and embed the tool in flatland's day-to-day work.

NOW WHAT? – next steps

The next chapter, **CONCLUDING THE PROJECT**, will discuss what the final design has accomplished and how it links to the theory, provide some recommendations, and highlight the limitations that could benefit from some additional research.



CHAPTER 7

CONCLUDING THE PROJECT

CONTENT

RECOMMENDATIONS & LIMITATIONS

DISCUSSION

PERSONAL REFLECTION

RECOMMENDATIONS & LIMITATIONS

To follow up on the delivery phase, this section will highlight the limitations and final recommendations that emerged from the project. This section could serve as a starting point for future development and research on reverging in the context of visual thinking.

With or without the client?

The suggestion of involving the client in the whiteboard process was made. However, it is important to remember that the suggestion does not necessarily mean that everything needs to be done with the client from A to Z. Instead, this research emphasizes the need to involve the client more in the reverging process. The following recommendations are proposed if involving the client completely in the whiteboarding phase is not possible.

First, inviting the entire client team to the whiteboard session can be experienced as counter-productive. Therefore, a suggested alternative is only to invite the problem owners, or client leads to the whiteboard session. Hence, they feel ownership and can pull the acceptance finding towards the rest of their team.

Second, only partially involving the client in the whiteboard session is proposed as another possibility. Some of the Flatlanders that have tried whiteboarding with the client and mentioned that they opted for a mid-whiteboard session with the client. This gave them reverging time both with and without the client.

Lastly, if any reverging steps are done without the client, Flatland should be aware of the potential risks and mitigate these by making their thinking steps explicit to be able to show and discuss them with the client.

However, this project could not reveal when exactly it is suggested to do the whiteboarding with or without the client. Therefore, additional research is needed to set up parameters or criteria to see when it would be most appropriate to do the whiteboarding with or without the client. Some suggestions regarding the requirements to be researched in the future include:

- The problem owner and client team's attitude.
- The degree of comfort of the Flatland team.
- The relationship between Flatland and the client team.
- The type of project.

Measure how ownership affects implementation

The whiteboard canvas has been successfully tested with Flatland. However, the tool has not been tested yet with the client. Therefore, it was impossible to measure if the tool led to increased client ownership and thus acceptance finding.

Buijs & van der Meer (2013) mention that a higher acceptance finding of the final idea or outcome is essential to increase the chances of implementation. However, this project could not disclose whether there is a direct or objective relation between the degree of ownership and the extent to what the final outcome is implemented. For this reason, additional and more quantitative research is needed to reveal if there is a causal effect between ownership and implementation in the context of Flatland and visual thinking in general.

Follow up to check if the intended impact has been achieved

Flatland is willing to focus more on projects that have an impact on the SDGs. Therefore, it is crucial to deliver effective and impactful materials and follow up on whether their materials have been effective or have created the intended impact.

At the moment, the Flatland process ends after the delivery phase, and little effort is made to check whether the products are used and if they are appropriately used to create the intended impact. Therefore it is suggested to add a reflection session with the client after the project has been delivered to have an idea about the implementation and success of the final outcome.

Additionally, it would be beneficial to offer the client advice on how they can successfully implement the product made by Flatland. Recommendations include helping the client to:

- to find a place to put the materials so all the users can access it, and keep reminding them where they can find it.
- to find a way to hand out the materials to the users in an engaging way and via multiple channels.
- to help the client to train the people who will have to use the final materials.
- to get feedback from the users on how they are using the materials, and eventually improve them if needed.
- to ask the users if changes or other materials are needed, this could lead to potential new projects for Flatland!

Ensure client and Flatland expertise

The first design opportunity given in section 4.1 was to ensure topic expertise in both the client and the Flatland team. A lack of expertise could diminish the quality of reverging and its outcomes. Reverging is about creating a shared understanding of the options generated; having people with adequate knowledge in the team can help foster reverging.

How client and Flatland expertise can be ensured could benefit from additional research. However, some first-hand interventions suggested are:

- Ensuring content expertise through upfront communication, having the right people in the team, and aligning the team.
- When new or more people join the project (e.g. story session) inform them upfront by sharing documents or giving them homework.
- Creating a canvas or extra segment in the proposal that emphasizes the need for having the right people involved in the project.
- Create an overview of all the different expertise and interests in the Flatland team so it is easier to match specific profiles to a particular project.

Allocating appropriate resources – opp 2

The second design opportunity that came forward in section 4.1 was the need for allocating an appropriate time and budget. To little budget leads to less time for the project resulting in less space for reverging. Therefore, enough time should be scheduled between the sessions to allow for incubation and iterations and reverging to be fruitful.

More research is needed to reveal how budget and time could be properly allocated to benefit reverging. Some initial recommendations are:

- Allocating appropriate resources is a matter of upfront communication and explaining the value of drawing over time and reverging.
- Not planning multiple sessions right after each other and minding the need for incubation periods is crucial.
- Re-assessing if resources are still sufficient for the needed iterations and validations throughout the process.
- Create an extra section in the proposal deck or calculation sheet for reverging moments.

Reverging during client sessions

Lastly, the scope of this graduation was narrowed down to the main reverging step at Flatland, namely whiteboarding (as explained in section 3.2). However, little has been revealed about the current and future potential of reverging during the clarity, story, and delivery sessions. Therefore, the final direction for future research proposed is how reverging works and could be magnified within the creative sessions with the client.

DISCUSSION

Reflection on the initial design goal

At the beginning of this project, Flatland did not know the concept of reverging and had no structured approach to reverge. Therefore the initial design goal was to create awareness about the idea of reverging in the first place. Secondly, the project aimed to help Flatland do reverging more deliberately instead of implicitly. This is emphasized by literature as reverging is considered a deliberate activity (Heijne & van der Meer, 2019), in contrast to incubation which is more intuitive (Kalina, 2018).

The whiteboard canvas tool serves as an intervention to help Flatland apply the key rules and mindset of reverging. Additionally, the tests reveal that the canvas setup allows Flatland to do reverging in a more structured and deliberate manner.

Reflection on the reframed design goal

Later in the project, the design goal was reframed. The reframed goal emphasized the need for guaranteeing client ownership by involving the client throughout the reverging process. This finding links to literature emphasizing the problem of participants lacking tacit knowledge if reverging is done without them (Heijne & van der Meer, 2019). Finally, missing information about how something was conceived could lead to the not-invented-here syndrome, meaning people who were not involved in the creation process are less willing to accept and implement the outcome (Buijs & van der Meer, 2013).

The final tool stimulates to make thinking steps made in the reverging process explicit. Finally, this helps the client or others to internalize the information and thus accept the new information or knowledge in their current mental model.

Relevance for Flatland

This project's relevance was manifested in three different ways: with **the research**, **the metaphor**, and **the tool**.

The research pointed out that whiteboarding without the client could lead to the client lacking ownership of the outcome. This links to the fact that not involving participants throughout the process could lead to a more difficult acceptance finding of the final outcome (Buijs & van der Meer, 2013). Based on this finding, Flatland was encouraged to engage the client more in the whiteboarding phase.

Exhibit A: Employees tried it out whiteboarding with the client and were very enthusiastic about it.

“The facilitator and I called in a client mid-whiteboard session. This gave us a bit of time to explore different systems and metaphors on our own, which we then relayed back to test with the client; it worked really well.” - Flatland illustrator commented in a Teams meeting

The metaphor of the magic mapmaker helped make the research findings less abstract and get the conversation started.

Exhibit A: A Flatland employee even used the terminology in a different context when discussing their current project in a company Teams meeting to depict the need for an approach that employs documenting the thinking process.

“Speaking about being a mapmaker or a wizard, we want to document these brainwaves and adopt a more mapmaker workstyle in this project.” - Flatland facilitator commented in a Teams meeting

The tool helped Flatland in the whiteboarding phase to execute proper reverging by being reminded of the reverging rules and mindset from theory (Heijne & van der Meer, 2019). Additionally, the canvas allows making the (tacit) thinking steps during the whiteboarding phase explicit. The tests revealed that making the thinking steps explicit helped the participants to reflect on and build further on the thinking.

Exhibit A: The Flatland employees who tested the tool were enthusiastic about it and shared their positive experiences with the rest of the company.

“The whiteboarding canvas worked really well for me and the facilitator.” - Flatland illustrator commented in a Teams meeting

Relevance beyond Flatland, design

This paragraph will briefly elaborate on how the findings of this project corroborate with the insights from theory.

Jointly active

Heijne & van der Meer (2019) described ‘being jointly active’ as one of the main rules for reverging. The rule emphasizes the need for involving all the participants throughout the entire reverging process. However, this project revealed that in the context of visual thinking this might be different. In some cases, visual thinkers also expressed the need for some individual or internal reverging space.

This finding is supported by design literature describing that in design teams, there is also a need for individuals to seek inspiration on their own (Dankfort, Roos & Gonçalves, 2018). To put this in the context of Flatland, this activity of seeking inspiration individually could link back to the illustrator (and facilitator) going to their ‘cave’ in-between sessions.

Making explicit

Making the tacit thinking steps from the reverging process more explicit with the whiteboard canvas helped increase the chance of survival of ideas in the process. Furthermore, making the thinking steps explicit enabled Flatland to share the findings from the whiteboard session with others, helping them in their turn to internalize the thinking steps and knowledge created during the whiteboard session.

This links to the knowledge creation model introduced by Nonaka & Takeuchi (1995), which highlights that externalizing and internalizing are two main phases in the process of knowledge creation. These are the phases where tacit and explicit knowledge interact.

Boundary objects

The whiteboarding canvas tool was designed to find the right balance between the map maker and the wizard workstyle during the whiteboarding phase. This implies that on the one hand it should aim at structuring and documenting the thinking process (map maker workstyle), while on the other hand, it should encourage the user to come up with new iterations (wizard).

This is in line with the description of boundary objects given by Star & Griesemer (1988). The definition emphasizes that a boundary object should be robust enough so individuals can give a common meaning to it (map maker) while being fluid enough so people can fit their own perspectives (wizard).

Additionally, when connecting this to the reasons why designers sketch given by Cherubini et al. (2007) it is suggested in this project that the map maker workstyle enables sharing and grounding of ideas (robustness), while the wizard empowers the manipulation and brainstorming of ideas (fluidity).

Visual thinking influence on creative facilitation

Finally, this project has explored reverging in the context of visual thinking but little has been revealed on what could be the influence of using visual thinking for reverging (beyond the context of Flatland, and more in regular creative facilitation sessions).

This paragraph will highlight how the powers of visual thinking on a collaborative level, which were defined in section 2.3 based on the Flatland interviews, could be beneficial for reverging.

Make it circular instead of linear

Sketching enables one to think in a more circular or systemic way, which is more difficult with writing and speaking (Shah et al., 2001). This could help reveal potentially new interesting connections and patterns in the reverging process to move circularly.

Dual coded

Sketching also enables dual coding of information. Dual coding helps people to recall information (Paivio, 1969), which could assist to increase the chance of survival of the options generated in the diverging phase. Additionally, dual coding allows for making connections and associations between the visual and verbal representational system. These connections could serve as interesting input for the reverging phase.

Make abstract concrete

Sketches do not only embed explicit knowledge but also help express more tacit or underlying knowledge (Goldschmidt, 1991). This could help to make ‘sparks’ or ‘germs’ of ideas more concrete to increase the chance of survival of ideas in the converging phase.

Make it actionable

Finally, sketching was expressed by Flatland as making thoughts actionable. It can help trigger reflection, create consensus or make decisions. When used as a boundary object a sketch could assist in the transfer, translation, and transformation of knowledge between different individuals (Carlile, 2004). This can be of great importance for creating shared understanding when reverging.

All in all, there are multiple reasons for applying visual thinking in creative facilitation, so just do it!

PERSONAL REFLECTION

The project has come to an end. Therefore, it is time to wrap up the project and take some time to reflect on the graduation journey and the personal learning goals that have been established at the beginning of the project.

Create value and make an impact

My main goal was to create a truly valuable output for Flatland. At first, I was very focused on creating a useful tool for Flatland. However, during the project, I realized that sharing research findings is also valuable. In the end, I think that I managed to create an impact with the project by (1) advising Flatland to involve the client more in their whiteboarding sessions, (2) introducing the metaphor of the magic mapmaker enabling Flatland to discuss my thesis topic engagingly, and (3) the whiteboard canvas helping them to reverge more deliberately to create client ownership!

Let's get visual!

During the project, I forced myself to draw as much as possible. Although sometimes the drawing speed and skills of the Flatlanders were intimidating, I realized that drawing in the context of visual thinking is absolutely not about making pretty stuff. Instead, it is a way to better grasp complex things and share thoughts with others. Additionally, I would like to thank the people at Flatland for inspiring me and taking the time to instruct me on how to make better drawings.

Creating weekly prototypes

At the beginning of the project, my goal was to make weekly prototypes. I did not have a structured plan about why or how I wanted to make these. This resulted in quite some chaos making all the different prototypes. Finally, the main prototypes I worked on were the general model (diamond I) and the tool (diamond II).

Although I think I managed to prototype and iterate way more than I did in past projects. Looking back at this project, it would have been beneficial to define better what prototypes I wanted to make and for what purpose. In future projects, I should work on a more specific prototype plan for each phase of the process with a clear approach and end goal.

Manage client and coach expectations

The collaboration with Flatland went very well. The company mentors were very engaged throughout the entire process. As the context was very specific 'reverting in visual thinking', it remained hard to think out of Flatland's context. Nonetheless, they also pushed me to think on an academic level and link the literature to their context.

The collaboration with the coaches from the university was very smooth. The bi-weekly meetings with the two coaches really helped me grasp the shared expectations instead of ping-ponging from one to the other. The coaches stressed the importance of letting them know when things were not going well or as expected; I tried to do this as much as possible.

Wellbeing

During the first months, I helped Rebecca Price with her research about Designer Resilience. It came forward that mental wellbeing among graduating students at IDE is a significant issue. Therefore I introduced the following mantra (as a joke) to my friend who was also graduating "we are going for a 10 for wellbeing". Soon we realized it was making sense since many people at IDE experience graduation as the worse rollercoaster of their studies. I don't think any good project should come along with mental discomfort. This project taught me the importance of celebrating achievements, setting realistic goals, and surrounding myself with the right people.

Bye bye!

Now it is time for me to go and apply all the things that I have learned during this project in the real world. I would love to thank all four coaches for their unique input and guidance throughout the entire project. I had a pleasant journey, and I am very grateful that I could work on a topic in a context that I enjoyed a lot. I am delighted that I could finish my studies like this!



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