Master's Thesis, Delft University of Technology

More Connected Than Ever

Value connection through a Sciffle Box game with ChatGPT

Wendy Wen

Master Thesis | Design for Interaction
Delft University of Technology
Faculty of Industrial design engineering

August, 2023

Author

Xin Wen(Wendy)
Student number 5556945

Chair supervisor

Derek Lomas
Delft University of Technology

Mentor supervisor

Ianus Keller
Delft University of Technology

Company supervisor

Anko Elzes
Ijsfontein, Amsterdam

Client

Jan Willem Huisman

Ijsfontein, Amsterdam

Executive Summary

Background

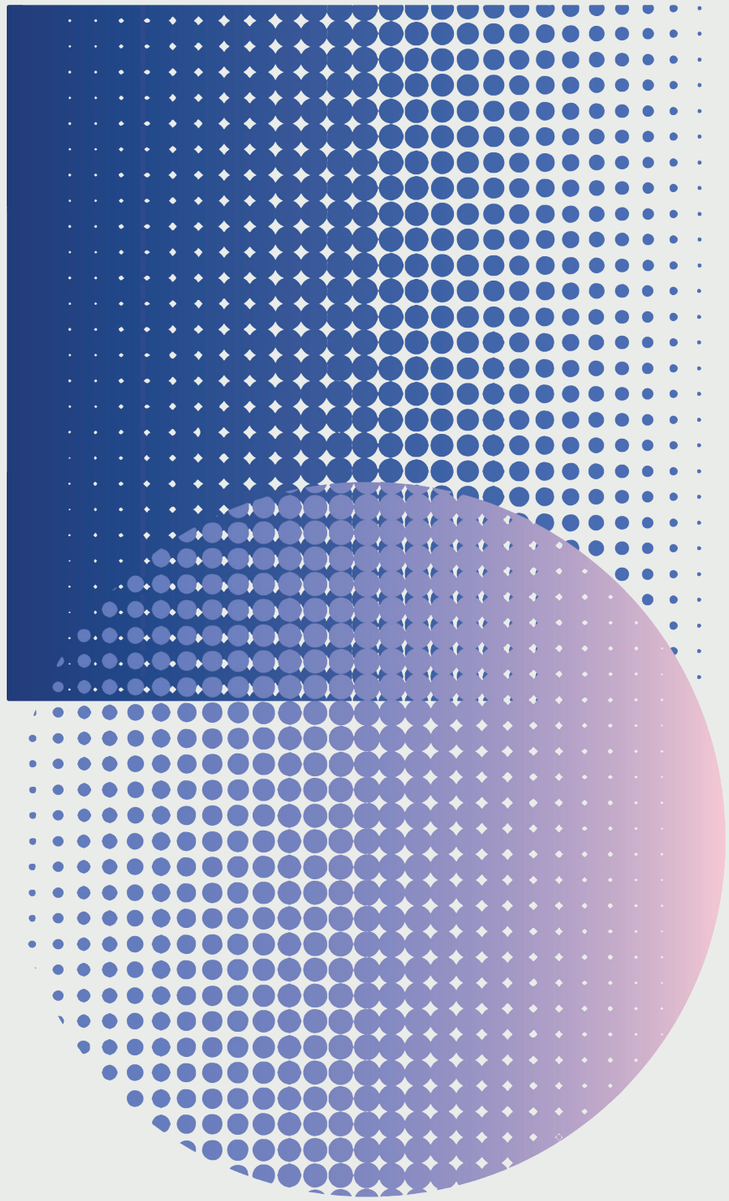
This master's thesis focuses on developing a game that utilizes ChatGPT and the Sciffle Box to guide players in discussing their understanding of corporate values and connecting more deeply with corporate values based on their own human values. Values are abstract and challenging to comprehend. In corporate value training, personal values are often disregarded, resulting in a reduced impact. This project aims to unpack these abstract human values, rendering them more accessible for understanding and communication. By integrating ChatGPT and the Sciffle Box, value communication can become more playful and immersive. Through the connection to their own values, the design has the potential to create a greater impact on employees, fostering a deeper connection with their corporate values.

Research and design

The study employs a five-stage methodology to investigate the symbiotic potential of the Sciffle Box, human values, and value communication through gaming. This journey involves a literature review focused on understanding values and corporate values, along with research on the Sciffle Box and its contextual use. Three co-design sessions are conducted with master students at Delft University of Technology, identifying various contexts using a value based Sciffle Box game. Insights are synthesized into an opportunity map, followed by iterative design of five prototypes, culminating in the deployment of the most effective design. The final prototype is built with Unity on the Sciffle Box, evaluated by seven staff of Ijsfontein. The final design mapped out five different working dilemmas that are merged in five narratives presented by non-game players played by ChatGPT. Each dilemma has a behaviour goal which matches the corporate values. Players are divided into four teams; each team will have five different human values cards that can only be used once. By applying those values cards, players need to discuss with their team on what is their understanding of corporate values. In the end, each team will present their solution and vote for the best value that can solve the dilemma and match with corporate values. Non-game players will provide feedback based on the value that got the most votes.

Evaluation and discussion

The integration of the Sciffle Box and ChatGPT elevates user engagement and comprehension of values. The application of different value theory, demonstrated in the selection and categorization of values, ensures a comprehensive spectrum is represented, fostering nuanced, meaningful discussions among participants. The utilization of ChatGPT showcases AI's potential in enhancing value-focused game play, generating contextually relevant feedback, and enabling valuable, interactive dialogues. Moreover, the project bridges the gap between personal and corporate values found in conventional corporate training, prompting users to align their individual values with corporate ones, a catalyst for behavioural changes that harmonize personal aspirations with organizational objectives. While limitations do exist, such as the finite range of value cards and the reliance on ChatGPT's feedback accuracy, the project's key findings underscore substantial potential for the Sciffle Box as a tool for effective value communication and awareness in a corporate context. Further research can be done to explore how to use AI technology in various ways (text/audio/video) in corporate training serious games, how to stabilize its performance, and support meaningful conversations. Simultaneously, additional research can discover more value structures that can support value communication in context.



The data transmission speed record between computers is 319 Terabits per second. Human speech transfer information 39 bits per second. But with this skill called talking, humans manage to build languages, kingdoms, and civilizations.

We thought technology will bring us closer. We finally have information accessible anytime in any way we want with the internet. We can access a massive amount of information, and with the speed of technology, we can know each other with one click on the screen.

But we still feel so lonely.

It seems no matter how fast we get information through technology, we are only more isolated and pushed away from others.

What if the way to bring us closer is not through speed, but rather to slow down and have a conversation?

With the power of value, we are able to talk about what really matters to us and explore each other's universe. By switching the role of technology, it is not only a platform but also a guide to help us touch the core of our values. Let's have meaningful communications, share what is important for us with people you care about, in a new and playful way.

At the end of the day, I hope you can feel more connected than ever.

Wendy Wen

Content

Introduction

In the contemporary landscape of evolving technologies, a critical challenge looms—effective communication of human values within corporate environments. The abstract nature of values often obstructs seamless understanding and integration, resulting in value conflicts or a disjointed connection between personal and organizational values. Addressing this disparity is important, as it directly influences employee engagement, company culture, and the alignment of individual aspirations with overarching objectives.

In response to this pressing need, the synergy of the Sciffle Box tool and the AI model, ChatGPT, emerges as a transformative solution. The Sciffle Box offers an innovative platform for engaging employees in meaningful and playful interactions, while ChatGPT's capabilities provide a new solution for customize Sciffle games, enabling context-rich feedback and guidance. This amalgamation bears the potential to not only bridge the gap between personal and corporate values but also to imbue the value communication process with playfulness and immersion. To delve deeper into the intricacies of this dynamic, the forthcoming literature review will dissect the essence of values, their role in corporate settings, and the significance of their effective communication. The ensuing exploration will pave the way for incisive research questions, driving the methodology to uncover innovative strategies that could reshape value communication and significantly impact organizational cohesion and growth.

The primary objective of this research is to develop efficient strategies that foster value communication via gamification within the Sciffle Box platform. This overarching goal will be achieved by addressing several key questions. Firstly, the study will delve into a comprehensive understanding of values - their definitions, characteristics, and identification methods. Secondly, the research will explore the Sciffle Box in terms of its physical build-up, marketing strategies, and the various games that utilize it as a platform. The study will then investigate potential contexts where Sciffle Box can be utilized effectively to promote value connections among users. Finally, the research will focus on devising game mechanics and rules that can stimulate and enable effective value communication among players. Through answers to these sub-questions, this study aims to provide an integrated approach to promote value communication via the Sciffle Box platform.

To answer the research questions, a comprehensive five-stage methodology is implemented to explore the potential of Sciffle Box in value communication. It began with a research phase that provided a foundational understanding of human values and the Sciffle Box. This was followed by opportunity exploration sessions, leveraging a deck of design space cards to garner diverse perspectives. Subsequently, these insights informed the construction of an opportunity map in the definition phase. Through iterative design, several prototypes were developed, leading to a final delivery stage showcasing the most promising design. In the end, the final prototype is evaluated and the key findings of the project is discussed.

Chapter 1 presents the detailed methodology and research questions driving this study, setting the foundation for the exploration of Sciffle Box in value communication. In Chapter 2, a comprehensive literature review on values and corporate values is conducted. Field studies pertaining to examining the Sciffle Box, corporate training, and the analysis of three Sciffle Box games are presented in Chapter 3. Chapter 4 captures the co-design sessions, facilitated by design space cards, leading to valuable insights. The outcomes of these co-design sessions are synthesized into an opportunity map. In Chapter 5, which delineates the design challenges, refines the scope of the project, and sets specific design goals and criteria. Taking the study further, Chapter 6 outlines the design iteration process, where five diverse concepts are developed and scrutinized. The design and development of the final promising prototype are elucidated in Chapter 7. Chapter 8 engages in an evaluation process involving seven Ijsfontein staff members, while also evaluating the performance and stability of ChatGPT. Chapter 10 concludes the study, summarizing the key findings, reflecting on the limitations of the project, and mapping out potential areas for future research.

Chapter 1: Methodology

This chapter outlines the multifaceted methodology implemented in investigating the potential of the Sciffle Box in value communication. The methodology encompasses five stages: research, opportunity exploration, definition, design iteration, and delivery. The research phase afforded an understanding of human values and the Sciffle Box, thus forming the basis for further stages. Co-design sessions in the opportunity exploration phase gathered a rich variety of perspectives, facilitated by a deck of design space cards. The insights obtained guided the construction of an opportunity map, which proved instrumental in the definition phase. The iterative design phase resulted in several prototypes, with the design, demonstrating the most promise proceeding to the delivery stage.

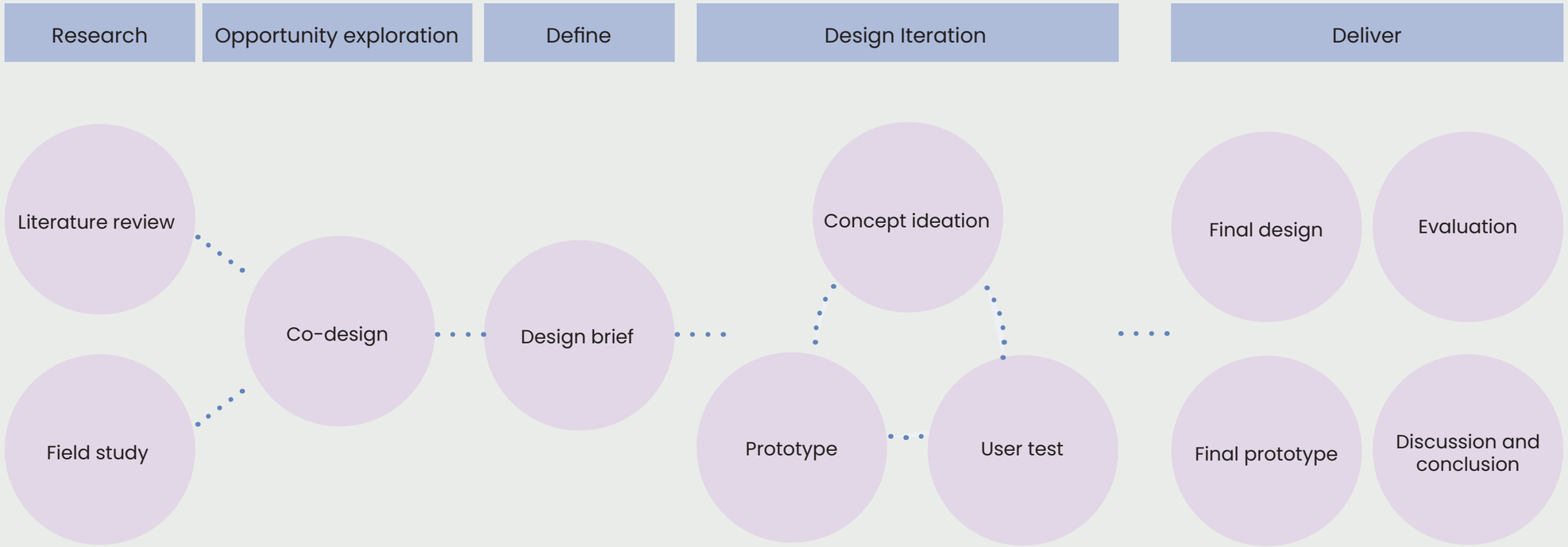


Figure1.1 : Overview of the design method in this project.

1.1 Method

The methodology of this project consists of five stages: research, opportunity exploration, define, design iteration, and deliver (Figure 1.1).
It began with research to understand the use of a Sciffle Box game to promote values. In the research phase, the objective was to understand human values and the Sciffle Box game. This phase involved a comprehensive literature review on human values and a field study including various case studies on the Sciffle Box. The data gathered from this phase were crucial in providing a foundation for further exploration.
Following the research, the opportunity exploration phase was initiated. The aim during this phase was to delve deeper into the potential use of Sciffle Box games to encourage value communications. To achieve this, a co-design methodology was adopted to allow various perspectives about values and Sciffle Box games to be considered. Recognizing the potential difficulties participants may face when dealing with abstract or unfamiliar concepts, a set of design space cards was developed. These cards were designed based on the insights from the research phase and aimed to facilitate participant contributions in the co-design workshops. Outcomes from the co-design sessions led to the emergence of an opportunity map which showcased potential uses of the Sciffle Box in promoting human values. The map acted as a guide in choosing the most relevant design topics and helped in defining the design objectives.
The next phase, the define phase, involved selecting a particular direction from the opportunities identified on the map, the problem was defined and together with the defined design goals and criteria from the design brief. Once the design goal was clear, the design phase began involving iterative stages of concept development, prototyping, and testing. Feedback from these stages then informed and guided the subsequent concept designs.
In the final stage (delivery), a final design was established. The acceptability of this design was evaluated based on criteria of feasibility, desirability, and viability. The project was then drawn to a close with the discussion and conclusion sections that summarized and clarified the primary project findings.
This research aims at answering the following questions:

Main Question: How to promote value communication through gamification on the Sciffle Box?

- Sub-question 1: What are values?
1a: What are the definitions of values?
1b: What are the characteristics of values?
1c: How to identify values?
1d: What are corporate values? Why are they important?
- Sub-question 2: What is the Sciffle Box?
2a: What is the physical build-up and marketing strategy of the Sciffle Box?
2b: What are the games that build on the Sciffle Box?
- Sub-question 3: Under what contexts can the Sciffle Box promote value connection?
- Sub-question 4: How can the game mechanics and rules be structured to promote value communication among players?

Sub-question 1 is answered by literature review in chapter 2. Sub- question 2 is answered by field study in chapter 3. Sub-question 3 is answered by co-design session results in chapter 4 and sub-question 4 is answered by design iteration in chapter 6.
In the field study of the Sciffle Box, data was gathered primarily through interviews with various professionals in Ijsfontein, including designers, project managers, and the product owner. Each conversation was duly recorded, transcribed, and analysed to extract key insights. During the co-design sessions, guided discussions were also recorded and transcribed for further study. In addition to this, user tests were conducted to gather feedback on design iteration. These tests made use of

semi-structured interviews, which were subsequently recorded and transcribed. As part of these user tests, a questionnaire was deployed to gain further insight into the effectiveness of the design according to predetermined criteria. This methodical approach ensures a comprehensive understanding of the use case and performance of the Sciffle Box in value communication.

1.2 Conclusion

To conclude, this chapter presents an account of the systematic and logical approach taken in this research study. The design opportunity of employing a Sciffle Box game was demystified and made increasingly precise as the project passed through the stages of research, opportunity exploration, definition, design iteration, and delivery. From gathering foundational data to synthesizing insights and prototyping design options, a steady course was steered towards making value communication palpable through the gamification on the Sciffle Box. The final design, evaluated against a set of carefully chosen criteria, represents the culmination of the combined, iterative processes. The primary findings from the research are subsequently highlighted in the discussion and conclusion sections of the project.

Chapter 2:
Literature review

Answered following research questions:

• Sub-question 1: What are values?
1a: What are the definitions of values?
1b: What are the characteristics of values?
1c: How to identify values?
1d: What are corporate values? Why are they important?

This chapter is dedicated to a comprehensive exploration of the concept of values, focusing on three key aspects: understanding what values entail, the methodologies employed in their identification and what are corporate values. Values, as a noun, encompass a wide array of meanings, ranging from cost and usefulness to intriguing qualities and influential principles guiding the behaviours of individuals and communities. Diverse academic disciplines contribute to the conceptualization of values, presenting different perspectives that shape our comprehension of this fundamental construct. This chapter seeks to elucidate the essence of values and their significance across different domains. Additionally, we delve into the intricacies of identifying values, examining the challenges and approaches that facilitate this critical process.

2.1 What are values?

Value, as a noun, encompasses a multi-faceted nature, comprising diverse dimensions, as articulated by Macmillan Dictionary (n.d.). It embodies various connotations, such as denoting the cost of a product or service, indicating the degree of usefulness, implying an intriguing and captivating quality that an entity possesses, and even signifying the principles and beliefs that profoundly influence the behaviour and way of life of a particular group or community.

Within the realm of academic exploration, values are subject to multifarious interpretations, varying across different disciplines, including philosophy, sociology, psychology, economics, marketing, and others (Sidorchuk, 2015). This diversity of perspectives leads to the categorization of values rather than presenting them as a singular and universal concept. For instance, from a philosophical standpoint, values can be approached objectively, signifying their existence independent of human acknowledgement. According to this view, the value of an object remains intact, irrespective of whether it is recognized by human beings. In contrast, subjectivism, advocated by philosophers like Nietzsche and others, contends that the perception of value is "ultimately in the eye of the beholder." As per this subjective stance, individuals possess different understandings and interpretations of values, rendering them inherently personal and contextual (Boenink & Kudina, 2020).

In the context of marketing, the concept of value assumes a central role as an ideal model for achieving consumer satisfaction through the exchange of goods and services. It extends its influence beyond individual consumers to encompass social groups, companies, and associations, shaping their life orientations and motivational frameworks (Sidorchuk, 2015).

Venturing into the domain of design, Bos-de Vos (2020) embraces the complexity of values, recognizing their dual essence as

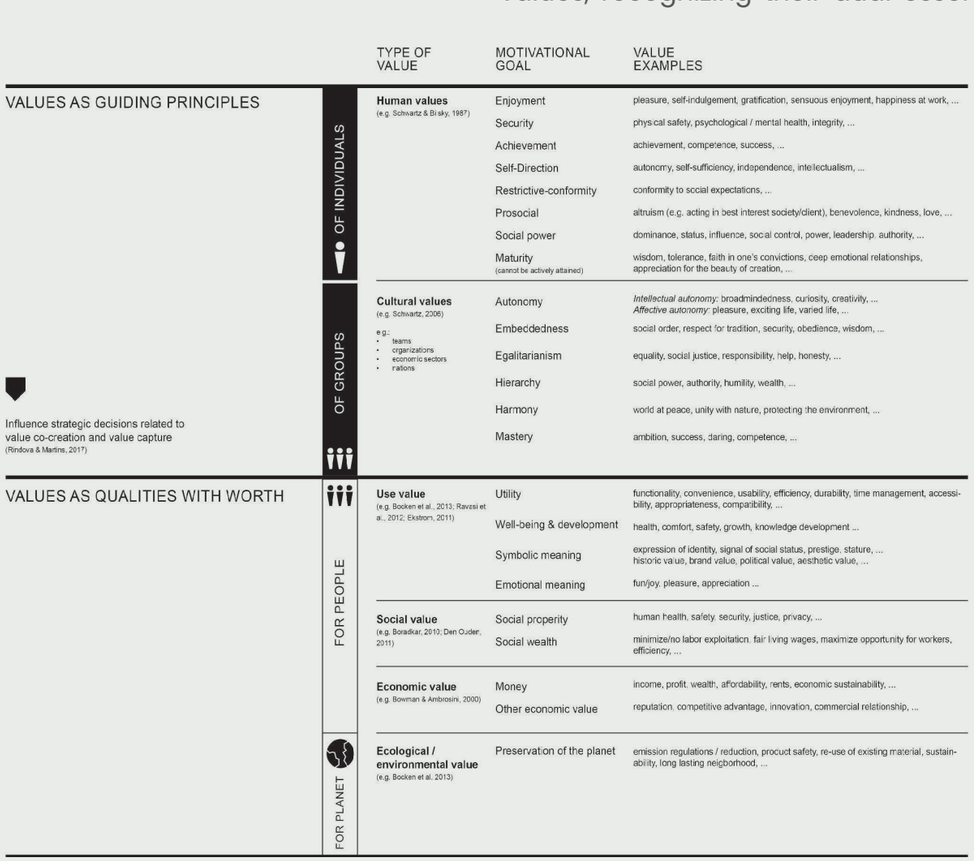


Figure 2.1: Bos-de Vos value structure(Bos-de Vos, M. 2020)

guiding principles and qualities of worth. She draws from a myriad of disciplines, such as psychology, sociology, anthropology, and philosophy, along with economic and management perspectives, to elucidate the manifold aspects of values in the design process (Figure 2.1). The presented framework is a compass for designers, facilitating the integration of values into their creative endeavours while remaining cognizant of the broader context and interconnectedness of various guiding principles.

From a psychological vantage point, Schwartz (2012) delves into the dynamics of values, explicating their intrinsic connection to human desires and their role as potent motivators driving human actions. These values also serve as criteria, intricately guiding the selection and evaluation of actions. Furthermore, values exhibit a hierarchical ordering, varying in importance and adapting to the shifting contexts of diverse situations.

Muzikante and Reņģe (2011) contribute to the discourse by uncovering the predictive nature of values, as demonstrated in their research on values-attitude-behaviour relations. The study reveals that values can significantly influence behavioural outcomes, including choices made during elections, everyday actions, and consumer preferences. This highlights the profound impact of values in shaping individual and collective behaviours across diverse domains (Muzikante & Reņģe, 2011).

Embracing the richness of divergent interpretations and perspectives, the exploration of values contributes to a profound understanding of human behaviour, moral principles, and decision-making processes across diverse disciplines. The multifaceted nature of values enriches our comprehension of their pivotal roles in shaping human interactions, cultural dynamics, and societal structures.

2.2 How to identify values?

The identification of values represents a crucial endeavour, and researchers have explored various methodologies and approaches to achieve this task. Pommeranz et al. (2012) emphasize the significance of self-reflection in the process of identifying human values at the individual level. However, they acknowledge that individuals possess varying degrees of self-reflection ability, necessitating the provision of guidance and support to facilitate the expression of values. To aid individuals in recognizing their values, the authors propose the implementation of value-reflection systems that adhere to specific requirements. These systems should offer concrete steps for reflection and identification, allowing individuals to ground their abstract values into a more comprehensive understanding. Moreover, the environment for communicating values must be safe and trusted, fostering an atmosphere where individuals can express their values without fear of judgment, and promoting individual truthfulness (Pommeranz et al., 2012).

Verbeek and Tijink (2020) contribute to the discourse by presenting a structure for integrating ethics into the design process of technology through the lens of values (Figure 2.2). Within this framework, values play a pivotal role in analyzing technology within a particular context. Stakeholders can identify values based on contextual knowledge by describing specific technological elements and unpacking their various effects. A deeper comprehension of the diverse importance assigned to various values emerges through exchanges with different stakeholders. This value communication links the present situation with an envisioned future, facilitating the ideation of actions aligned with these identified values (Verbeek & Tijink, 2020).

Boenink and Kudina (2020) argued that values are not directly available for reflection or discussion but rather require a thoughtful process of identification. They highlight the importance of recognizing values within the specific context of responsible research and innovation. Current approaches to value identification often involve a mere review of political documents, leading to a focus on balancing and fitting values into predetermined contexts (Von Schomberg). Alternative-

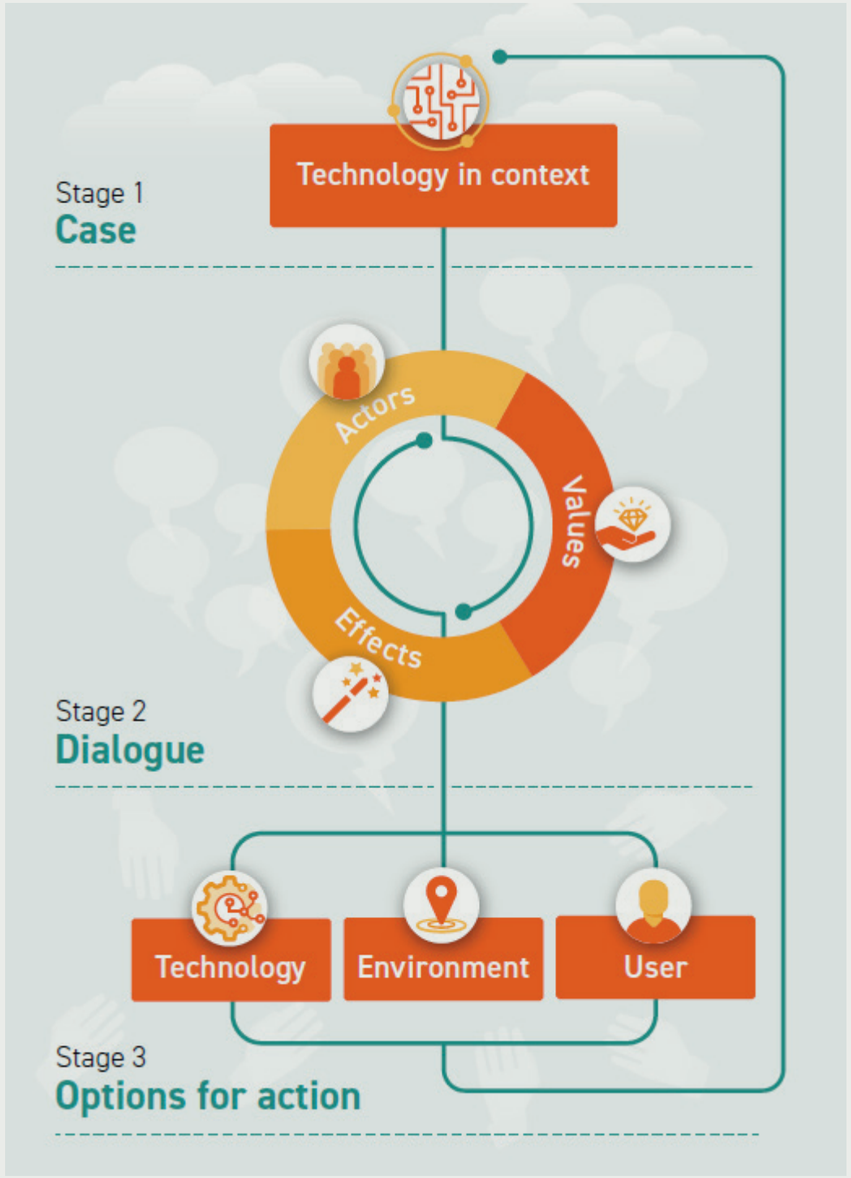


Figure 2.2: Using values in guidance ethics approach (Verbeek & Tijink, 2020).

ly, some approaches assume that reflection and discussion on proposed innovations are sufficient to capture the values of all stakeholders involved (Stilgoe et al.). However, Boenink and Kudina contend that values are deeply embedded in past experiences, gaining meaning in relation to specific contexts and challenges.

Moreover, values are significantly influenced by the material, social, and cultural environment, dynamically shaping and being shaped by the surrounding context. Consequently, the understanding of what is considered valuable varies across different contexts and over time, even if the same value terms are used (Boenink & Kudina, 2020). In light of these dynamic and ever-changing characteristics of values, conventional practices that rely on abstract values or rigid scenarios, such as surveys, fail to capture the interactive and fluid nature of values.

To truly identify values, Boenink and Kudina advocate for qualitative and interpretative methods that contextualize values within specific experiences and situations. This approach recognizes that values emerge from the collective interactions of individuals and communities within their environment. The methodological process should refrain from isolating values but instead, emphasize understanding the interactive character of values and their embeddedness in the social and material context. Researchers must adopt a collective and inclusive approach, engaging with stakeholders from diverse backgrounds and perspectives, to grasp the multifaceted nature of values within a given context. Embracing the complexity of value identification, researchers should recognize that there is no single definitive viewpoint to understand values comprehensively (Boenink & Kudina, 2020). The dynamic self of values necessitates an ongoing and adaptive exploration, fostering a deeper appreciation of the multifarious roles that values play in shaping and informing human actions and behaviours.

2.3 Corporate training and corporate values

Corporate training, defined as a learning activity administered by companies, is intended to enhance various dimensions of occupational performance. Corporate training is believed to improve agility between the company and staff, raising staff motivation and engagement, and increasing working efficiency and productivity (Valamis, 2023).

The practice of corporate value training features prominently within most corporate training initiatives across various organizations. Corporate values, often referred to as the guiding pillars of an organization, are aimed at expediting decision-making processes, bolstering team formation and collaboration, and setting out principles for client communication (Hotjar, 2023). Corporate values play a pivotal role in engaging stakeholders in the process of brand co-creation. When organizations align their values with stakeholder expectations, they foster authentic relationships and meaningful interactions, enhancing brand identity and reputation (Hatch & Schultz, 2017). At the same time, well-defined and authentic values can contribute to ethical decision-making and behaviour (Kaptein & Schwartz, 2008).

Any terminology aligning with the company's objectives can be identified as a corporate value. A notable example is Netflix, where values such as "Judgment, Communication, Curiosity, Courage, Passion, Selflessness, Innovation, Inclusion, Integrity, and Impact" are embraced (Netflix Jobs, n.d.).

However, corporate value training offers benefits while presenting challenges. Previous research establish that human values are vague, diverse and interactive. Traditionally, corporate training often comprises presentation slides outlining corporate values and behaviour expectations aligning with these principles. Such sessions frequently overlook the personal values of employees and the varying contexts within which these values are applied. The delivery of values through merely introductory terminology often fails to create a distinctive connection between employees and

their corporation's values, thereby impairing the potential impact of these training sessions.

At the same time, Noe, Tews, and Dachner discuss the concept of learner engagement in workplace training. They examine the challenges of maintaining employee motivation and active participation in training programs (Noe,Tews & Dachner, 2010). It is challenging to keep staff engaged in corporate value training.

2.4 Conclusion

In conclusion, this review highlights the pivotal role of values in shaping human behaviour, serving as motivating factors and criteria that guide actions. Their hierarchical ordering and context-dependent prioritization add to their dynamic and interactive nature, which is influenced by and, in turn, shapes the surrounding environment. In this way, values can also be used as lenses to explain human behaviors in specific contexts.

The process of identifying values necessitates the use of qualitative and interpretative methods, accommodating diverse viewpoints and encouraging personal truth. By contextualizing the exploration within specific challenges and experiences, and facilitating reflection through concrete steps, researchers can gain a comprehensive understanding of the multifaceted nature of values. Embracing the complexity of values enhances our grasp of their profound impact on individual and collective behaviours across diverse domains.

In the end, corporate training plays a pivotal role in enhancing occupational performance by fostering agility, motivation, and productivity among employees. While corporate values are instrumental in guiding decision-making, promoting collaboration, and shaping an organization's identity, their effective integration through training can present both benefits and challenges. The practice of corporate value training, when thoughtfully designed to align with individual and organizational values, holds the potential to bridge the gap between employee engagement and the embodiment of core principles. However, it is essential to address the nuances of personal values and diverse contexts to ensure a meaningful connection between employees and their organization's values, ultimately maximizing the positive impact of training efforts.

Chapter 3:
Context of Client and Goals

Answered following research questions:

• Sub-question 2: What is the Sciffle Box?
2a: What is the physical build-up and marketing strategy of the Sciffle Box?
2b: What are the games that build on the Sciffle Box?

This chapter is dedicated to a comprehensive exploration of the concept of values, focusing on three key aspects: understanding what values entail, the methodologies employed in their identification and what are corporate values. Values, as a noun, encompass a wide array of meanings, ranging from cost and usefulness to intriguing qualities and influential principles guiding the behaviours of individuals and communities. Diverse academic disciplines contribute to the conceptualization of values, presenting different perspectives that shape our comprehension of this fundamental construct. This chapter seeks to elucidate the essence of values and their significance across different domains. Additionally, we delve into the intricacies of identifying values, examining the challenges and approaches that facilitate this critical process.

3.1 The Sciffle Box and Ijsfontein

Ijsfontein is a company that provides playful learning experiences. They design and develop (mainly digital) interactions from serious games for staff training to interactive experiences in museums (IJsfontein, 2019). It is found that Ijsfontein recognizes the potential for developing the Sciffle Box based on client demands. The solution they offer involves tangible interactions combined with digital facilitation. While the primary request from clients is for a training or team-building game within their organizations, the Sciffle Box can also be utilized in various other contexts such as museums, educational settings, events, or as a family game platform.

"The box can be used in (areas like) training, museum, (we can) use in an event as an ice-breaking game, even in the consumer market: a family playing board." (Participant 2)

"The idea now is that we will create more into like a separate product with like, some standardized games, of course, and try to sell that as a more of a like a white label product." (Participant 3)

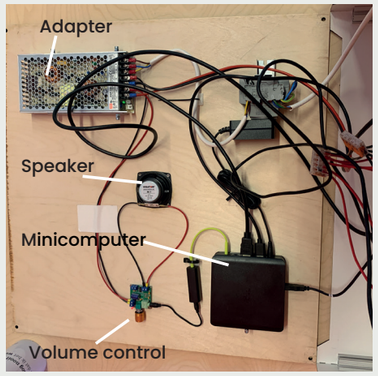
Ijsfontein has successfully tailored the Sciffle Box to meet existing client needs; however, the goal is to develop and transform this product into a more mature platform capable of tapping into a larger target market. Therefore, they want to use this project to explore different opportunities using the Sciffle Box, making it more competitive in the market. At the same time, all the games on the Sciffle Box are designed and developed based on clients' specific needs, which cost lots of working hours. Ijsfontein wants to streamline the customization and adaptation process for Sciffle Box games.

For the physical build-up (see Figure 3.1), the Sciffle Box contains four scanners, a 24 *24 Led matrix, a speaker, and a minicomputer inside. It can function as a normal computer (with Bluetooth, Wi-Fi connection etc.) But usually, it is set up as when the button is switched on, one specific game will be turned on without the computer interface. Players can start playing by switching one button.

Two semi-structured interviews are done with the project manager and product owner of the Sciffle Box. SWOT (strength, weakness, opportunity, threat) analysis is done based on the interview insights.

Currently, Ijsfontein primarily focuses on the internal employee training market and tries to create more white-label games with the Sciffle Box. Corporate training is the main market for Ijsfontein and the Sciffle box. It includes information giving like company on-boarding and teaching new skills. Or it can aim at aligning employees with the company culture like corporate values and behavior requirements.

When it comes to the challenges addressed in Chapter 2, the Sciffle Box solved the challenge by providing a game experience simulating the desired behavior in a game environment, therefore providing a connection from current behavior to a desired behavior. But a deeper value connection between personal values to corporate values still need to be addressed more in Sciffle Box games.



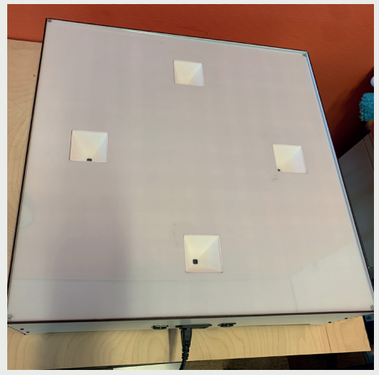


Figure 3.1 Physical build-up of the Sciffle Box.

The Sciffle Box faces direct competition from conventional face-to-face training services. However, its distinctive value proposition lies in its ability to leverage digital experiences to enhance physical training sessions while maintaining a strong emphasis on social interactions. By seamlessly blending digital elements with the training environment, the Sciffle Box offers a unique and engaging platform that combines playfulness with a focus on fostering meaningful social interactions.

The strengths of the Sciffle Box lie in its ability to reintroduce physical learning through a playful and accessible experience. Additionally, it facilitates large group workshops without requiring a multitude of trainers. When compared to traditional physical training, the Sciffle Box offers increased accessibility, ease of play, and the capacity to accommodate more participants per session. Furthermore, it combines digital learning elements with physical and social interaction, giving players more autonomy in learning.

"The (sciffle) box is able to facilitate very large events and workshops that can have 100 people attending. It also combines social interaction with digital facilitation together." (Participant 2)

"(Compare to traditional training) So it's less like sending from one person to like the whole room, but make it more engaging, to also perhaps learn from each other." (Participant 3)

However, the Sciffle Box also possesses certain weaknesses. Unlike face-to-face training, it offers less flexibility in adjusting training strategies for each session. The technology utilized in the Sciffle Box may be perceived as less innovative, and the presence of a digital screen may occasionally distract players from the intended focus on social interaction.

"The technology is very simple and easy to copy. The screen is a huge distraction from social interaction itself. Things tend to be more complex to be better but our vision is to be as simple as possible." (Participant 2)

One prevailing trend is the increasing desire for more physical interaction. This extends not only to the workplace, where individuals seek physical training, team-building, and collaboration but also to informal settings, where people simply desire more physical play and social interaction with others.

One potential threat to the Sciffle Box is the rapid development of new technologies such as mixed reality (MR) and artificial intelligence (AI). These advancements create opportunities for different types of training, which may impact the demand for the Sciffle Box in the future.

Ijsfontein aims to expand its presence in the corporate training market while exploring opportunities in diverse contexts such as museums and events. Currently, clients are required to purchase the Sciffle Box with a pre-installed game. However, Ijsfontein envisions transitioning towards a service-based model in the future. This would allow clients to select their desired game and rent the Sciffle Box for a specified duration. Additionally, Ijsfontein plans to establish partnerships with the traditional training industry to offer enhanced training services to clients. This strategic collaboration would provide a comprehensive solution that combines the unique capabilities of the Sciffle Box with the expertise and resources of established training providers.

"We want to rent the box instead of owning it. The box is only used when the company want to train, which will be several months. We want to develop our business model with partnership, where you collaborate with face-to-face training organizations and help them provide a variety of training across different areas using the box." (Participant 2)

3.2 Game study ABN ARMO: Energy transfer game

Interview questions can be seen in Appendix B (Page 136)

S
STRENGTHS

• Accessible, easy to play, and allow more people to join for each session.

• Combine digital learning with physical/social interaction.

• Guide social interaction but players still have the freedom to express themselves in their way.

W
WEAKNESS

• Less flexible in adjusting training strategy in each session.

• A digital screen can distract players from the focus of social interaction.

O
OPPORTUNITIES

• People want to have more physical training, team building and physical collaboration.

• More physical interaction, more tangible play and social interactions.

• Provide a new way to gain qualitative data.

T
THREATS

• The development of new technologies (e.g. MR/AI) brings more opportunities for different types of training.

Figure 3.2: SWOT analysis of the Sciffle Box.

- Goal: The goal of the game is to achieve a lower carbon footprint together.

- Learning goal: encourage players to make decisions collectively.

There are four parties in the game: Industry, Government, Housing and Electricity. Industry, housing and electricity want to reduce their CO2 level and still provide products that can satisfy needs. The Government is in charge of the taxes and allowances, it wants to keep the support rate of the people high enough to be elected next year.

The game will be played with 8-20 players and 1 facilitator. Players will be divided into four teams randomly, each team containing 2-5 people. Team Industry, Housing corporation, and Electricity have action cards that can balance their use of fossil, and renewable energy, demand for electricity, efficiency for production, and cost of production. The user interface can be seen in Figure 3.2. They need to balance their production, profit, cost and CO2 level. All the actions have a certain cost and can get subsidies from the government team. At the same time, the team Government will influence taxes (income tax, CO2 tax and profit tax), provide subsidies and take actions to control CO2 levels. The goal of the Government is to make sure their support rate is high enough to support them getting elected next year. During the game, players will find out that other parties' decisions will influence their situations (some actions will increase electricity demand and make it the electricity party hard to reach the demand) and they need other parties' support to reach the goal (To achieve some actions, e.g. Housing corporation want to apply the action "Heat network with residual heat from Industry" The industry must invest in supplying residual heat and the government must invest in pipelines before this action becomes effective.)

The game is played based on years, each year is 3 minutes and the number of interest, economic growth and consumer price index will update each year. Players need to take action in turns but they are free to decide if they want to take action each year and who can take action first.

In the end, when all the parties reach their CO2 goal and the Government still has enough support, the players win. There is no round limit in this game, players can play until they win or set a timer (e.g. two hours of playtime) and see how far they reached the goal.

In the image one the right you can see the physical set-up of the game (Figure 3.3),

3.2.1 Takeaway from this case study:

1. The story aspect of the game is connected to the working environment with the player. ABN ARMO uses this game internally to encourage communication when making decisions but also uses it as a marketing tool to explain the process and express the value of "together".
   At the same time, a gaming context close to the working context is designed to help connect the behavior change inside the game to reality.

They (ABN ARMO) also feel like we need to be facilitating this (energy transfer) and be part of the transition and help people out as an uh, consulting party. And so they feel an obligation also for company responsibility. So it's actually work contact related. It's business to business. So they play it internally, but also with clients and also on events related to the energy transition. And so they use it also as a marketing tool.

2. Value conflicts are created in the game mechanics to encourage discussion and drive collaboration. Players can not achieve the goal if they do not work together when making decisions, which is the ideal behavior change in the game.

And I was playing electricity, and they started asking me more and more and more electricity, and I couldn't keep up, because I didn't have money to invest in new, uh, energy productions. So I was, uh, completely lacking in the demand. So I had to tell them, stop, stop asking for more electricity. Maybe later, not now I can't keep up. But that's actually what the discussion that we need.

More game details can be seen in Appendix C(Page 137)

Figure 3.3 Digital interface of the energy transfer game.

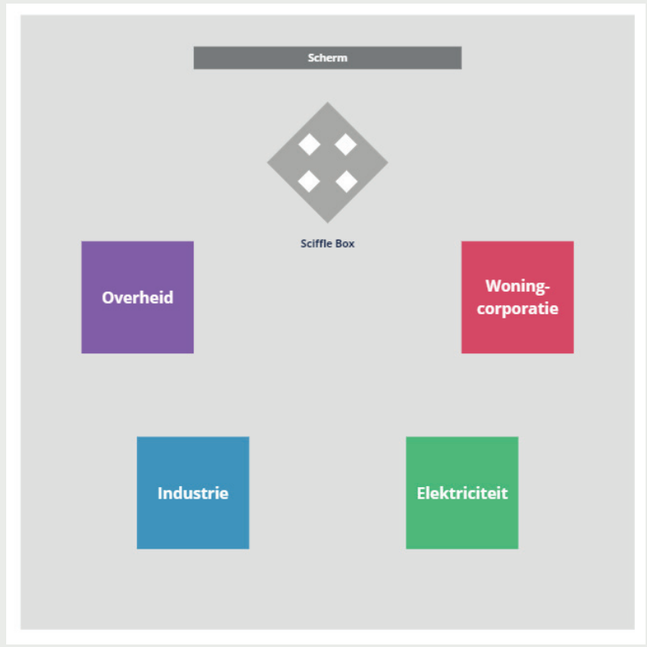


Figure 3.4 Physical setup of the energy transfer game.

3. The goal of the game is not to win itself but achieve the learning process. The facilitator in the game is also guiding players through the learning process, instead of telling them what to do in the game to win. Eventually, if the players did not win the game, the learning process can still be enhanced by reflecting on why we are not winning.

(Speak as a facilitator) Okay, I see something going wrong, stop for a moment. I can explain, but also stimulate. I see this. I see it on the screen. I see this happening. Is anyone aware of this? Look at it. I think you should do something about it. Or I see a good discussion going on here. So be stimulating, you want these people to go in the right direction. Don't give them the answers. So you only guide them.

4. The players in the game can come from different backgrounds, they are not familiar with each other, or there are from different levels in the company, but the game mechanics/story can immerse the players and connect them to play together (in a team or different teams). At the same time, the theme is understandable for users from different backgrounds to provide a universal play experience.

If they all know each other? Not necessarily. It could be cross-department. Yeah, the play is also with all kinds of levels. Of course, people related to the energy transition or even not related at all (will play this game).

5. The card deck of actions are able to help people process information in a smaller unit at their own speed. The cards in this game are an important interface of the game that people try to understand first.

They're getting a deck of cards, and what they do, they have their own table and (they all) put out the cards. (They try to understand) What cards do I have? What decisions can I make? And times running (in the game). So they are not in that hurry.

3.3 Game study Ceva: the million-mile journey

- Goal: Players will be divided into four teams, together they will work together to deliver packages and get as many miles as possible within the time limits.

- Learning goal: For employees to learn about the company values and story. The four values are Boldness: being bold and ambitious; Excellence: being the best version of yourself; Exemplary: being an example; Imagination: thinking outside the box. The company want employees to collaborate with each other and align their values with the company values and behave according to the company values.

Ceva Logistics wants to create the best service for its customers. Within the company, they are on a journey together to reach this goal. As a logistics company, they travel miles to deliver. Therefore, their mission is called the million-mile journey to become the best logistics company. In the game, players are also practicing this mission by processing packages and delivering them together. If the package is successfully delivered, they can get miles. The goal is to get as many miles together as possible.

The game will be played with 8-16 players and 1 facilitator. Players are divided into four teams: Ocean, Air, Ground and Warehouse. All teams have their own scanner on the Sciffle Box. On the screen, each team can see packages coming in, waiting to the processed. The package will have a shape and number on it, the screen will also show which team should be processing it in what order (Figure 3.4).

To process the package, players need to find the right package physically and scan it on the Sciffle Box followed by the "IN" card on their own scanner. Then the package is processed and will start its journey in one of the lanes and it will show when it needs to be delivered. To deliver the package, players have to scan the package again followed by the "OUT " card. Some packages can be delivered by one team, but some have to be delivered by different teams together. In this case, when one team deliv-

ered the package successfully, the other team have to check in again.

Besides delivering the packages, sometimes other situations are happening. To solve it you have a limited amount of time to scan the parcel again followed by the card with the right solution. Every team has their own set of solution cards at their station (with the same actions, the details of actions can be seen in the Actions cards session under Technology).

The physical setup: Each team will have their own scanner that only that team can use. All the packages will be on the pipeline table, and the action cards will be in the hands of each team. The setup can be seen in Figure 3.5

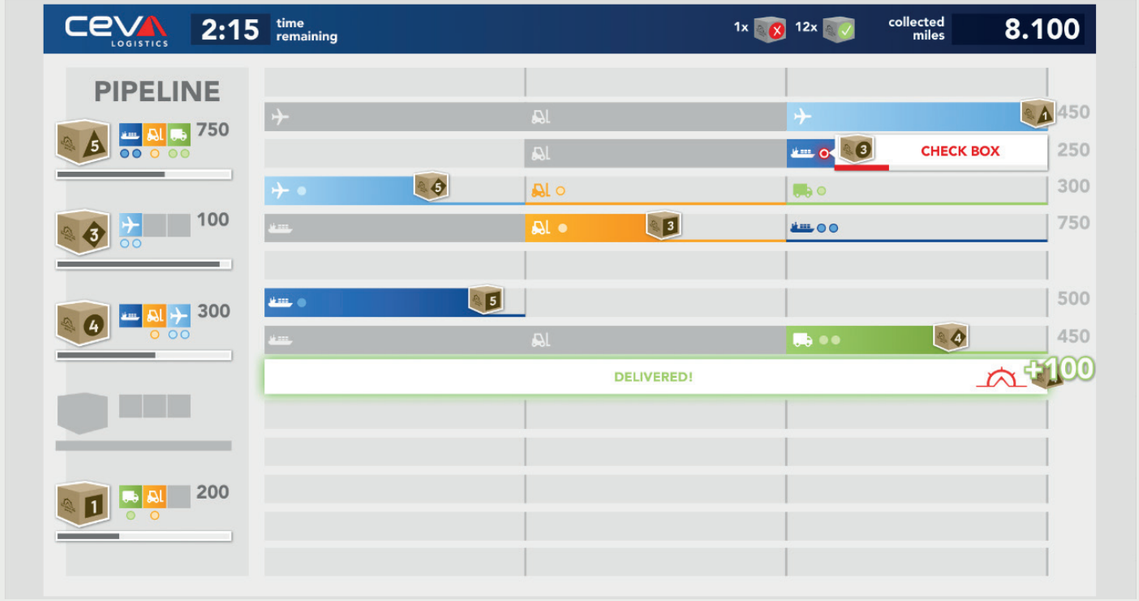


Figure 3.5 User interface of the Ceva game.

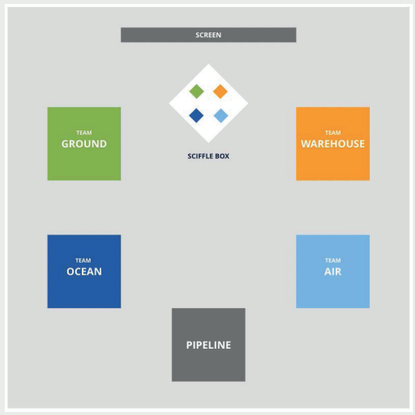


Figure 3.6 Physical setup of the Ceva game.

3.3.1 Takeaway from this case study:

1. The game simulated the working environment in reality. The goal of understanding values is to adapt them to daily work. Therefore the game help players experience the behavior, then identify the values and understand the values.

"It should stimulate a desired behavior in relation to the values. It's a simplified simulation, and there are dilemmas in there that should be recognizable for the players, so they could relate to it. It should be related to the also the logistics issues. So you're creating behavior that can be related to the values."

2. It is important to give players the autonomy to learn and reflect on the game and its values. In this way, they can have the freedom to express/analysis their understanding of values and deepen their learning journey.

"They have their own area to talk about them or do something about them. And what we want to see is that players are experiencing and discussing the values."

3. The reflection sessions are done by reflecting on how the game went, what behavior helps with the game and what behavior needs to be changed in order to create a higher score. Reflecting based on their behavior can bring a deeper understanding of the promoted values.

4. By integrating observation and guided reflection into the play experience, players are empowered to engage in self-driven learning, leading to more impactful outcomes. This approach provides players with the autonomy to reflect and analyse their experiences in their own unique way. By encouraging active reflection, the Sciffle Box facilitates deeper understanding, promotes critical thinking, and enhances the overall learning process. Through this integration, players can derive powerful effects from their play experiences, resulting in meaningful personal growth and knowledge acquisition.

5. Prior to playing the game, players are introduced to the new company values, establishing a foundation of familiarity. The game is then utilized to strengthen connections and deepen understanding among participants. Its primary objective is to provide players with clear instructions on how to align their behaviors with corporate values in their daily work. By actively engaging with the game, players are expected to undergo a meaningful behavior change that transcends the virtual realm and is reflected in their real-life actions. The game serves as a catalyst for bringing tangible and lasting changes in individuals' behaviors and attitudes, fostering a culture that aligns closely with the desired corporate values.

3.4 Game study NS: Open day quiz

- Goal: In this game, players need to find the right question in the area, answer the question correctly and gain as many points as possible.
- Leaning goal: Leaning and reviewing the information the new employees learned about the company and their work.

Players play in teams and try to answer questions quickly and accurately for higher ranks. 30 quiz posters are hanging in the NS office (Figure 3.6). They have different difficulty levels that can be seen in the right corner. One big screen and the Sciffle Box are located in the middle of the location (Figure 3.6) . Participants are grouped into teams, bestowed with unique playing cards to signify their identities in the game. Teams can range from a minimum of 2 to a maximum of 5 members, with a cap of 20 teams and 100 participants permitted per game. On the screen, each team have their own user interface. They can see which number of questions they have to go to, and what score they have. At the same time, they can see how much time is left for play and how many scores other teams are having.

Each team have six cards, they are A,B,C,D which are used to answer questions, a double score card to double the score of the answered question and a skip card to skip a question. These two cards can be only used once during the game.

Players need to find the correct question poster, figure out the right answer, go back to the Sciffle Box and scan their answer then receive feedback. At the end of the game, the Top teams will be displayed on the screen.

3.4.1 Takeaway from this case study

Figure 3.7 Quiz poster example of the NS game.

Figure 3.8 Physical setup of the NS game.

1. The design uses competition to motivate players not only to win but also to gain knowledge. By making the team's scores visible, the design creates a motivating environment where teams can learn from and challenge each other.
2. Using surprise elements like joker cards can bring more fun to the game play experience and provide an extra layer than just a quiz mechanism.
3. Dividing teams and doing individual tasks symmetrically can scale up the game and also provide a consistent experience for each team.

3.5 Conclusion

In conclusion, this chapter delves into a study of Ijsfontein, the Sciffle Box, corporate training and three associated games. The analysis shows that Sciffle Box games effectively facilitate learning, encourage collaboration, and foster behaviour changes, while also maintaining engagement and interest. Corporate training, provide benefit on better staff engagement and efficiency but also have challenges of weak value connection from personal level. These games, whether focused on energy transfer, a corporate values journey, or a knowledge-boosting quiz, use differing strategies to align game play with specific goals. The Sciffle Box's strengths, including facilitating large group workshops, enhancing the accessibility of training, and merging digital learning elements with social interaction, provide a unique gaming experience. Its potential weaknesses and competition challenges have also been scrutinized to offer potential areas for development and innovation. These findings contribute to an understanding of the nature and potential applicability of Sciffle Box games. They underline the importance of balancing between gaming and learning experiences and offer guidance on how to incorporate human values into a Sciffle Box game, ensuring that future game designs can deliver both meaningful and playful experiences.

Chapter 4:
Ideation and Co-design of Value Based Sciffle Box Games

Tackled following design challenges:

- Determining the various contexts in which a Sciffle Box game can enhance value communication.
- Establishing a co-design structure to discover diverse contexts more effectively.

After reviewing the literature and the Sciffle Box, the potential contexts for applying a values-based Sciffle game remain unknown. To broaden our understanding of these contexts, collaborative co-design sessions were conducted, involving students from various design disciplines. However, the participants' lack of familiarity with the Sciffle Box and abstract values posed challenges, resulting in limited relevant outcomes. To address this issue, a card deck was developed to assist those without a background in game design.

The outcomes of these sessions were summarized in an opportunity map, which highlights the contexts for enhancing value communications using the Sciffle Box.

4.1 Design of the Sciffle Box ideation cards

After a trial workshop on ideating value-based games, it is found that values are very abstract concepts; people are not aware of their values even values are guiding our everyday behavior. At the same time, most of the participants are not familiar with the Sciffle Box, together with game design. It is very hard to generate ideas that combine both values and Sciffle Box games. To provide more guidance and structure, a set of ideation cards are designed to provide more structure in the co-design sessions.

The initial version of the cards implemented in the design was adapted from the work of Karac in 2018 (Figure 4.1). Further refinement of the cards' efficacy in various categories was conducted through an analysis by Lomas and others in 2021. This suggests that these ideation cards potentially enhance the creative ideation process for designers. Given the theme of this project, an array of value cards and what can Sciffle Box do cards have been incorporated into the original design. This inclusion is guided by the value framework proposed by Bos-de Vos in 2020. With more specific values and functions, participates will have more concrete materials to design with (Figure 4.2).

These cards underwent testing with game designers associated with the Sciffle Box to understand their impact on the ideation process. Designers were encouraged to use these cards in a flexible manner to conceptualize a novel game, grounded in the concept of 'value', that could be facilitated through the Sciffle Box.

The test results revealed several challenges:

- Aligning action cards with the Sciffle Box's social interaction focus.
- Comprehending and selecting abstract value categories.
- Potential overlap between play style and theme choices.
- Managing the extensive number of cards.
- Requiring clear design objectives for effective card utilization in game development.

Figure 4.1: Cards categories that were adapted from Karac, M. (2018)

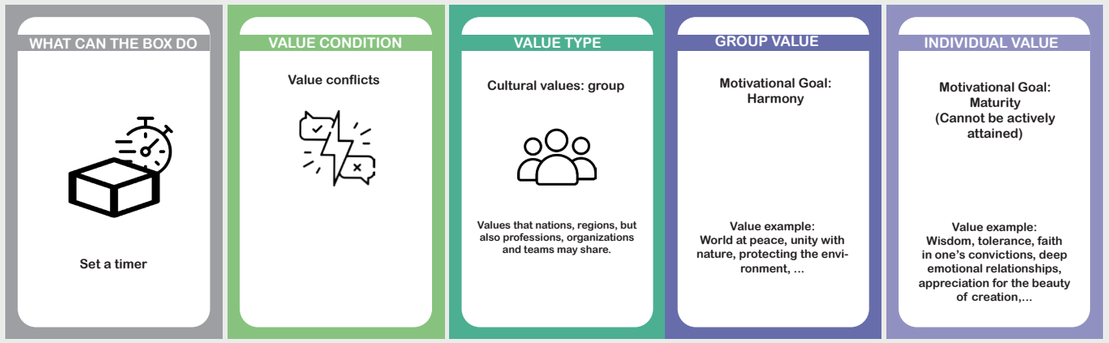


Figure 4.2: Cards categories are created based on research on Sciffle Box and value theory.

Based on the key findings, a new draft of the cards is designed (Figure 4.3). The card categories are reduced to action, game type, game pleasure, human values, what can sciffle do and learning goal.

Values are very diverse, the broad diversity of values suggests that there could be a potentially infinite number of value cards, creating a challenging task to condense such a vast number into a manageable set of cards. To solve this problem, the value theory proposed by Schwartz, S. H. (2012) serves as the foundation for the adaptation of values into the game cards. In Schwartz's value theory, values are divided into eight different categories. Therefore, the cards are designed based on those categories that covers all human values. These cards encompass a comprehensive list of human values, providing valua-

Figure 4.3: New card deck.

Full card deck can be seen in Appendix D(Page 144)

Figure 4.4: A play test session in Ijsfontein.

ble guidance to designers when creating a value-based game. In the updated version of what does Sciffle Box do cards, special attention is given to enhancing social interactions among players to enhance the strength of Sciffle box, while still considering the inclusion of physical actions that are possible when playing with the Sciffle Box.

To further enhance the learning experience, different types of learning goals have been defined: ideation, analysis, and communication. Ideation involves using values to explore new design possibilities, allowing designers to reconsider the alignment of their designs with specific values. The analysis focuses on understanding the values present in a given situation and the diverse values held by different stakeholders. Communication addresses how the game can assist users or stakeholders in effectively expressing their values. Designers can choose a specific learning goal and then design a game that effectively achieves that particular goal, providing a targeted and purposeful learning experience. By incorporating value-based cards and defining distinct learning goals, designers are equipped with a structured approach to infuse values into the game play.

The deck of Sciffle Box cards has been updated through collaboration with Sciffle Box designers, ensuring comprehensive coverage of diverse possibilities. By involving the designers in the card development process, a wealth of expertise and insights has been incorporated into the deck. This collaborative effort guarantees that the cards offer a wide range of options and potential outcomes, enhancing the versatility and richness of the game play experience. The updated deck of Sciffle Box cards serves as a valuable tool for users, providing them with a robust resource to explore various game play scenarios and effectively align the game mechanics with the desired objectives even if they have not worked with the Sciffle Box before.

With This new draft of the cards, more testing and workshops are done with 5 designers and 3 non-designers (Figure 4.4). They were asked to first pick a learning goal and then apply the cards freely to design a value-based sciffle game.

The key findings are as followed:

- Testers find it challenging to create concrete games without specific contexts, despite the usefulness of learning goals for starting game development.
- The absence of a clear structure for applying cards leads to tester uncertainty and overwhelm, stemming from excessive freedom in decision-making.
- Identifying values proves difficult for participants, who may be unaware of their presence in daily life, and directly inquiring about their use in design can be abstract.
- To address these challenges, interactive activities like storytelling, visual aids, and group discussions can be incorporated into workshops to naturally explore values and enhance understanding in game design contexts.

Based on the new input, the card deck of learning goals has been transformed into three distinct characters, each with its narrative (Figure 4.5). This narrative-based approach aids testers in designing their games and processing information in a more engaging manner. The characters provide a framework for testers to connect with and understand the learning goals in a relatable context, enhancing their creativity and problem-solving abilities.

A structured framework for applying cards is developed to assist testers in making informed decisions during the game design process (Figure 4.6, 4.7). The following order is suggested for card selection, moving from the most abstract to the most detailed aspects: Game Type, Game Pleasure, Action and What Does Sciffle Do. For each category, testers can pick a maximum of three cards. By following this structured order of card selection, testers can design their games step by step, starting from defining the game type and pleasure, moving on to the actions players can take, and finally considering the capabilities of the Sciffle Box. This approach provides a clear framework that ensures comprehensive coverage of the game design process, helping testers make informed decisions and create well-structured and engaging game play experiences even without experience working with games and Sciffle Box.

These workshop materials are designed to assist testers in narrowing down their design focus, selecting key elements, and refining their game ideas. By following this structured approach, testers can develop games that align with specific technologies, contexts, and stakeholders while effectively incorporating learning goals. The workshop includes interactive activities and collaborative feedback sessions to encourage creativity and refinement of

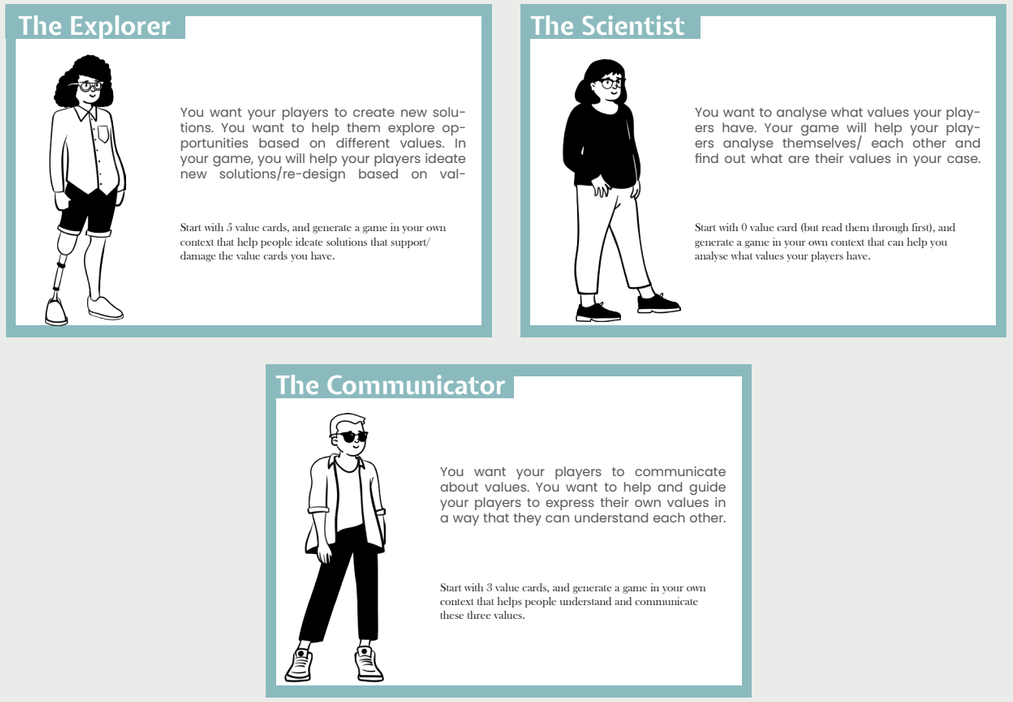
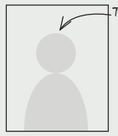


Figure 4.5: Character cards help players narrow to a specific context.

Figure 4.6: The order to select cards (from top to bottom).

Full workshop setup and results in Appendix F (Page 170)

Gamification with sciffle box to boost value communication.



I am _____

I am interested in researching/ working on this area:

_____

_____

1. This technology/ activity... is my focus of today:
(e.g. AI image generation, building social housing...)

_____

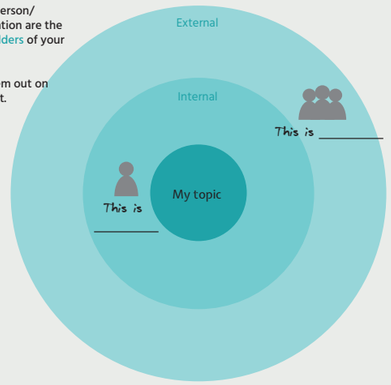
2. This technology/activity will be applied under this context:
(e.g. Healthcare, education, production...)

_____

_____

3. Which person/ organisation are the stakeholders of your topic?

Map them out on the chart.



My Design

My character is _____

My target group (s) _____

The desired outcome of my game is:

_____

My Game (fill in after final discussion)

1. Players: (Players need to be 2-16 people can be divided into 1-4 teams. Each team should have 2-4 people.)

In my game, there will be _____ players in _____ team(s).

2.

Cooperative
Players work together to achieve the game's goals.

Or

Competitive
Players compete between teams or individuals.

3. To play the game, players have to _____

_____

If I sketch it out, it will look like this...

Figure 4.7: Context mapping material of the workshops.

game concepts.

4.2 Workshops 1 and 2

Two workshops were conducted with a group of seven students from Delft University of Technology who are pursuing various directions within the field of industrial design engineering (Figure 4.8). It is worth noting that the participants had differing levels of gaming experience and had not previously worked with game design or the Sciffle Box.

The workshops aimed to address the following objectives:

1. Explore the Contexts Supported by Value-Based Serious Games: The first goal was to identify and understand the contexts in which value-based serious games can be effectively utilized. Participants engaged in discussions and activities to uncover potential areas where these games could have a significant impact.
2. Investigate Game Mechanisms for Value Communication: The second goal focused on exploring various game mechanisms that facilitate effective communication of values. Participants analysed and discussed different strategies and approaches that can be employed within serious games to convey and reinforce values.
3. Utilize the Sciffle Box for Value Communication: The third goal centered around exploring how the Sciffle Box can contribute to value communication. Participants examined the features and capabilities of the Sciffle Box, brainstormed ideas, and discussed potential ways in which the Sciffle Box could be leveraged to enhance the communication of values within serious games.

The workshops were recorded, and subsequently, the transcripts were coded and analysed for further development and insights.

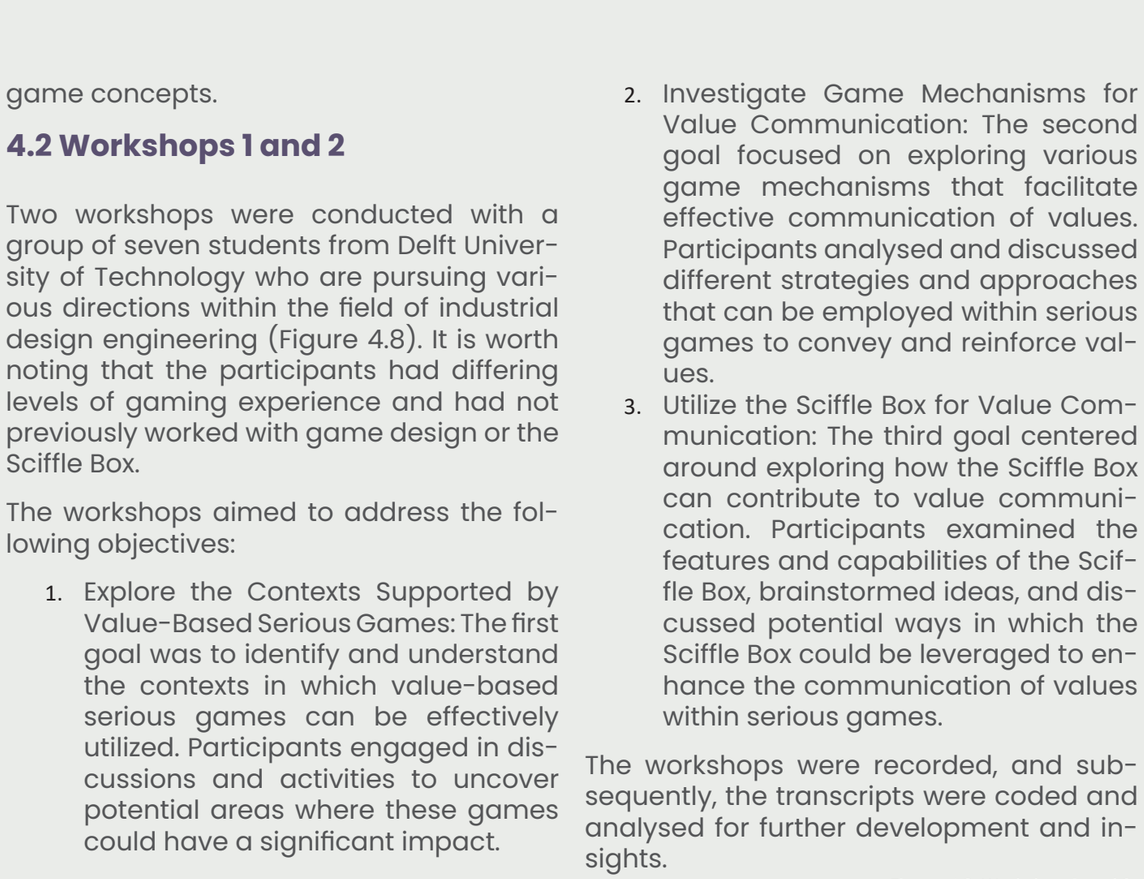


Figure 4.8: Workshop 1 and 2.

The key challenges and feedbacks are as followed:

1. Filling out Workshop Materials:

- Players struggled with defining design goals due to unclear context and stakeholders.

- Linking abstract values to design topics proved difficult, requiring more explanations for clarity.

"The first part was not too hard for me (Filling in design context and stakeholders) because I have started my research and have a clear image of what to do. "(A1)

"I am still figuring out what can be my graduation project and I have many possibilities in my mind, it is hard to just pick one."(A3)

"It is very abstract and I do not know what is the relationship between my design topic and values."(B2)

3. Limited Sciffle Box Interaction:

- Absence of hands-on experience with the Sciffle Box restricted understanding of its functions.

- Selection of cards depicting the box's capabilities occurred without deep comprehension of its potential.

4. Comparative Ease of Card Selection and Game Design:

- Designing games and card selection were more engaging than context mapping.

- Clear learning goals facilitated card selection.

- Icons on cards aided faster processing.

- Varying levels of game familiarity required differing levels of assistance.

In order to address the different contexts a value-based Sciffle game can be used, all the cards selected by each participant, along with their respective game designs, were collected and subjected to analysis. The findings of this analysis are outlined below:

The analysis revealed that the context of using value-based Sciffle games encompassed a wide range of technology development areas, including AI generation, mixed reality, automation systems, and 3D printing (Figure 4.9). Additionally, human interaction topics such as cyber well-being, text-based emotion communication, and decision-making in co-design settings were also mentioned. These findings highlight the diverse areas in which value-based Sciffle games can be applied, bridging the gap between technology and human interaction to create meaningful and engaging game play experiences.

The analysis revealed that designers perceive simulation as the most effective approach to facilitate players' communication of values (Figure 4.10 in the next page). By creating a simulated environment within the gaming experience, players can immerse themselves and project their values more effectively, leading to clearer communication. Designers also acknowledged that game mechanics allowing for exploration and presenting different possibilities provide a unique opportunity for players to experiment with various values in a gaming context. Additionally, actions such as comparing and observing were recognized as powerful tools to aid players in communicating their values. These findings highlight the significance of designing game play elements and mechanics that facilitate the expression and exploration of values, enabling players to engage more deeply with the game experience and effectively convey their personal values.

Regarding the Sciffle Box, the role of a facilitator is deemed crucial for facilitating value communication. The analysis highlighted that showing and documenting different inputs from all players were considered the most important functions of the facilitator during the game. This emphasizes the significance of capturing and acknowledging the diverse perspectives and contributions of all participants. Additionally, providing information and feedback, as well as guiding the game, were recognized as helpful roles for the facilitator.

The game ideas generated during the

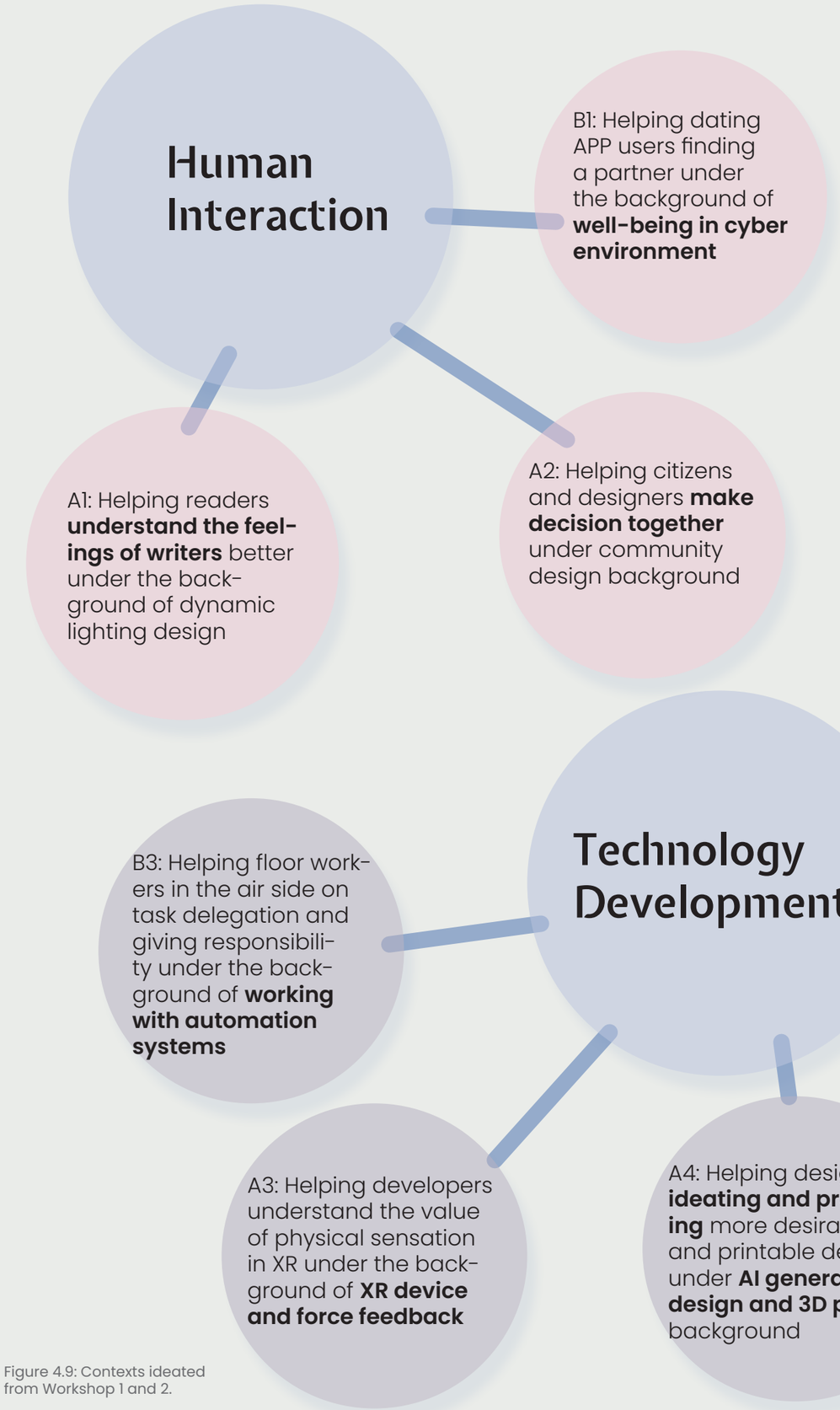
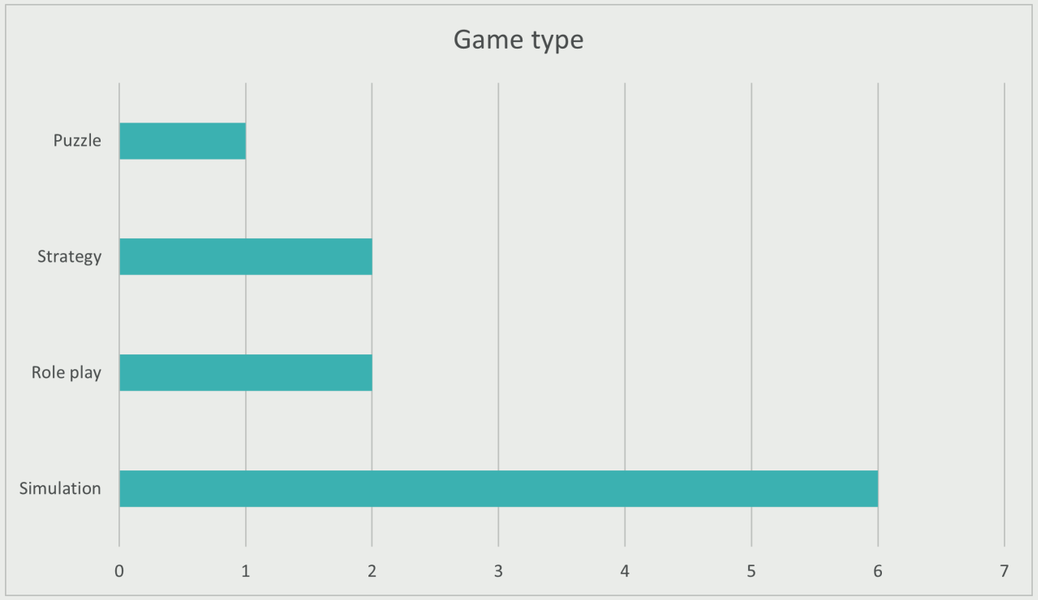
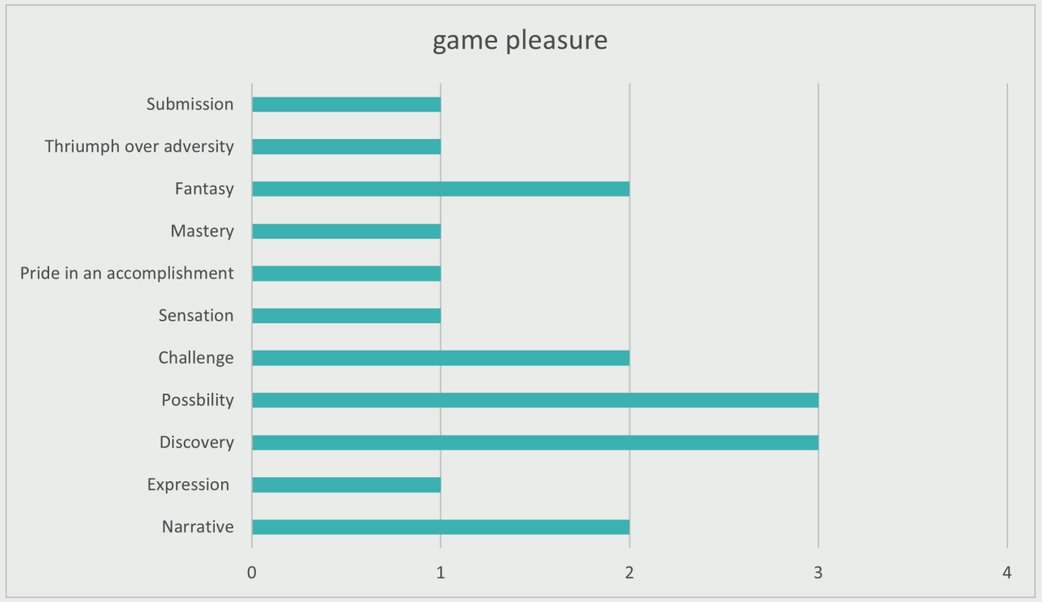


Figure 4.9: Contexts ideated from Workshop 1 and 2.





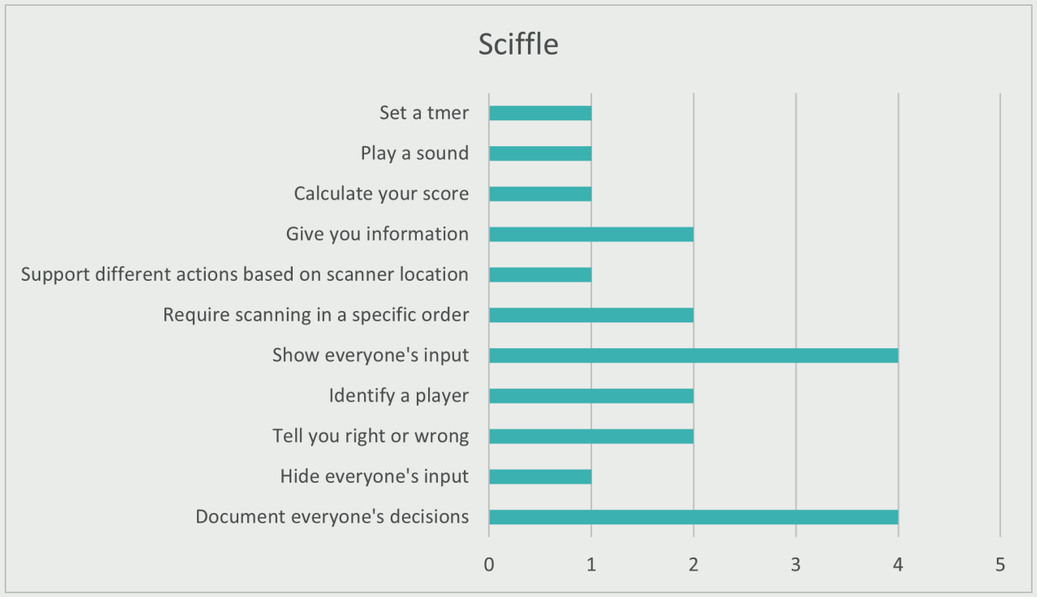


Figure 4.10: Cards used in workshops 1 and 2 were analysed by category.

workshops may not be fully playable with the Sciffle Box, but they have provided valuable insights into the key elements of value-based Sciffle games. Building upon these insights, the focus of the next workshop will be to develop more detailed game ideas that align closely with values and leverage the capabilities of the Sciffle Box. This next phase aims to refine the game concepts and explore how they can effectively integrate values and the unique features of the Sciffle Box to create engaging and meaningful game play experiences.

4.3 Workshop 3

To enhance the focus on values and the Sciffle Box in the games, several changes have been implemented to solve the design challenges that were found in workshop 1 and 2.

Firstly, a sensitizing opening is conducted with the Sciffle Box, allowing testers to engage in a value-related game that showcases the key characteristics of values and introduces basic interactions with the Sciffle Box. The game is developed based on the NS quiz game on the Sciffle Box, wherein each tester is given two cards, A and B. Playing individually, they answer questions that appear on the posters. These questions are variations of the famous trolley problem, where testers must make decisions on which side to save. The score in the game is based on the number of "killings." Following the game play, a discussion is held to explore the reasons behind the testers' decision-making process.

Additionally, to deepen their understanding, the key characteristics of values are introduced. Testers learn that values are abstract, dynamic, and diverse in nature. By incorporating game play and introducing values in this way, testers are able to learn about both the Sciffle Box and values through hands-on experience. This approach deepens their understanding and facilitates a smoother session.

Second, to make the game design the main focus of this workshop, the topics of design and learning goals are pre-defined by me. They were given as tasks and testers have to apply cards to solve the problem. There are two tasks in this workshop, from easy to hard. Testers will be divided into pairs and design a game with the sciffle ideation card deck together.

To further streamline the card selection process and facilitate ease of use, the value cards have been simplified (Figure 4.11). Instead of character cards, testers will now given tasks that align with their game design topic. During the workshop, testers will first proceed to apply the ideation cards in a sequential order based on the tasks. Then they will choose up to two value cards that they consider most important for their specific topic. After that, testers will be required to incorporate the selected values into their game designs and test the resulting games with their own chosen values. This shift in focus emphasizes the central role of games in value communication and provides testers with the opportunity to experiment and refine their games accordingly. At the end of each round, each team will have the opportunity to present their game ideas, allowing for peer feedback and constructive discussions.

As a result of the workshop (Figure 4.12), six playable game ideas were developed that exhibited a strong connection with the Sciffle Box, focusing specifically on values communication. These game ideas not only provided engaging game play experiences but also offered valuable insights into the projects at hand.

Furthermore, all of the game ideas were subsequently refined to align more closely with the research topics, ensuring that they effectively addressed the objectives of the study. These game ideas will be utilized to summarize the opportunity map in the next chapter, consolidating the potential avenues for exploration and highlighting the possibilities for further development and implementation. The game ideas serve as valuable contributions that inform and shape the subsequent stages of the research.

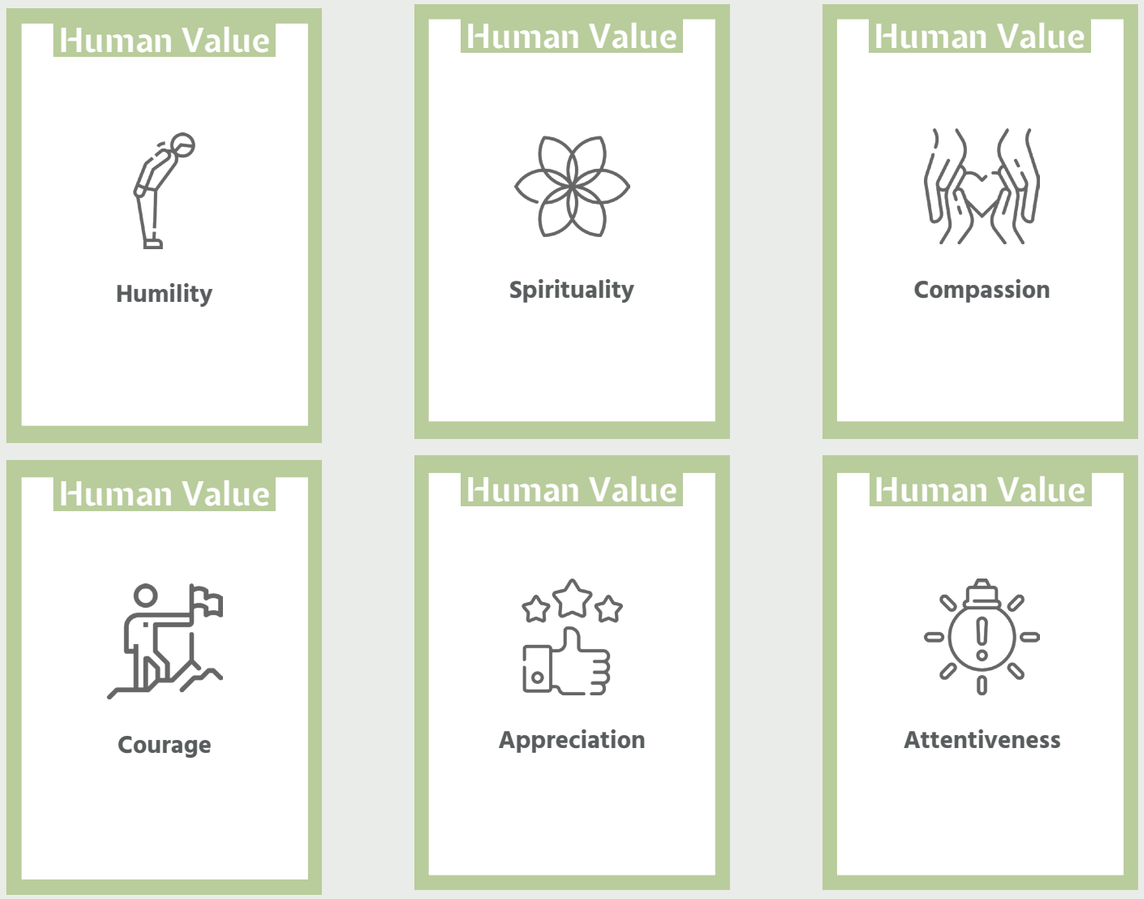


Figure 4.11: Updated value cards example.

Figure 4.12: Workshop 3 with the Sciffle Box.

4.4 Co design results: Opportunity map of value communication

Following an extensive exploration phase, various contexts for using the Sciffle Box for value communication were identified and mapped out (Figure 4.13). This collection of ideas was then consolidated into an opportunity map. While the design goal was defined explicitly around the use of the Sciffle Box and values, numerous uncertainties still existed surrounding the specifics of the design implementation - such as, the identities of the players, the educational objectives, the location of game play, and the potential involvement of technology. The opportunity map provided a means of anchoring the project, offering a more specific context for design execution.

4.4.1 Value communication between human

Communicate human values to connect individuals

Values can bring people closer by connecting common values or understanding different values.

Case example:

You are a new university student during the introduction week. You are in a group with new/old students, the game should encourage everyone to express what is important in their life (human values).

Game example: Figure 4.14.

Communicate individual human values in a working context to enhance understanding between co-workers

Communicating human values can help collages understand each other better in a working context, it can also help people in different power hierarchies empathies with each other. This can help better collaboration and smoother communication.

Case example: You want to have a more comfortable working environment. The game should encourage you and your collages to express what is the most important thing for them in daily work (human values in a working context), then found out value alignments/conflicts and co-collaborate based on the similarities and differences.

Communicate individual human values to help complex decision making

A complex decision may include ethical dilemmas or a wide range of stakeholders holding very different opinions. Communicating individual values can help stakeholders see why people are holding their opinion, recognize value conflicts and bring a deeper understanding of the problem.

a. Supporting define problems: Understand the values of different stakeholders and map out the design space.
b. Supporting collective decision-making: Having stakeholders at the same table and making decisions together by understanding their values, and the values of other people in the context and finding a common ground.

Case example: The city government considering the implementation of a new transportation system. To make a complex decision like this, the city government would need to gather information about the potential benefits and drawbacks of the new transportation system. They might need to consider factors like cost, environmental impact, potential disruptions to existing transportation systems, and the impact on residents and businesses.

You are invited to a discussion session to discuss this plan as a resident together with government workers and other residents (from different areas that may be influenced by this implementation). The goal of the game is to help everyone at the table communicate what is the most important for them in this context (their values) and to find common ground.

Game example: Figure 4.15 (Next page).

Value promotion

Helping people prioritize certain values in the context. To promote certain values, it is necessary to first understand values, recognize current values on an individual level and has a strong drive on why they should

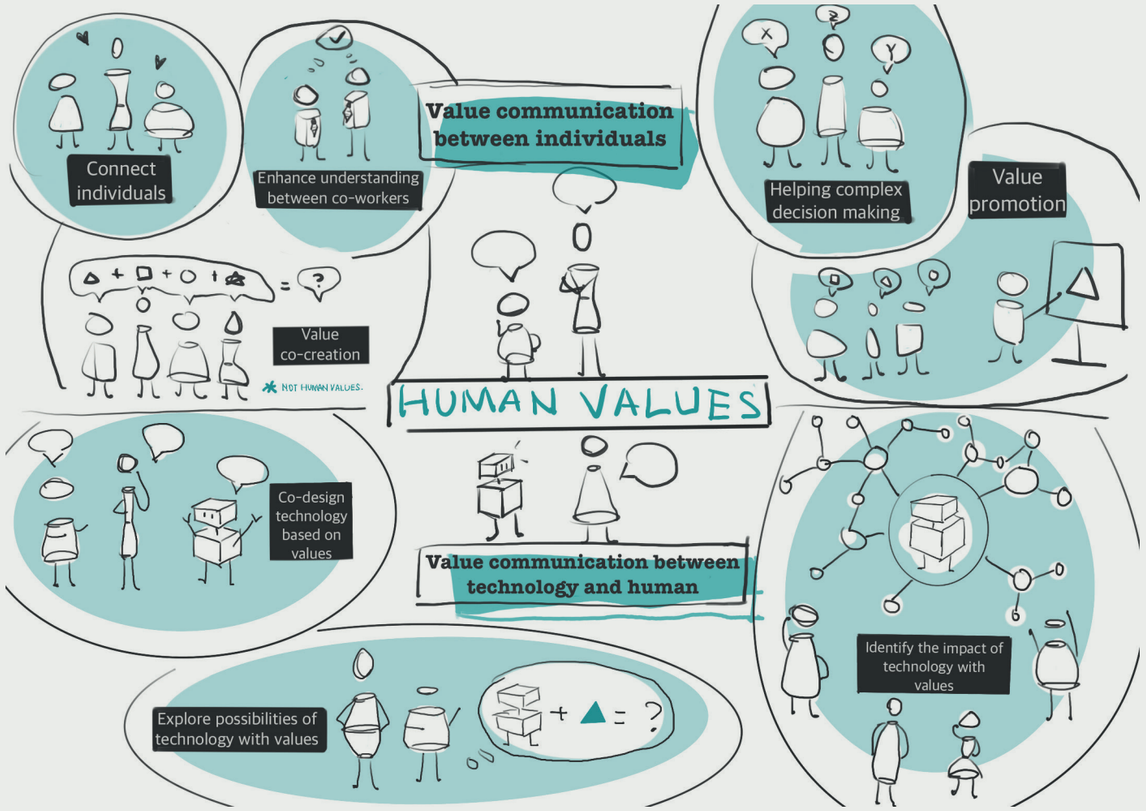


Figure 4.13: Opportunity map of different contexts using the Sciffle box for value communication.

Figure 4.14: Game example for using values to connect individuals

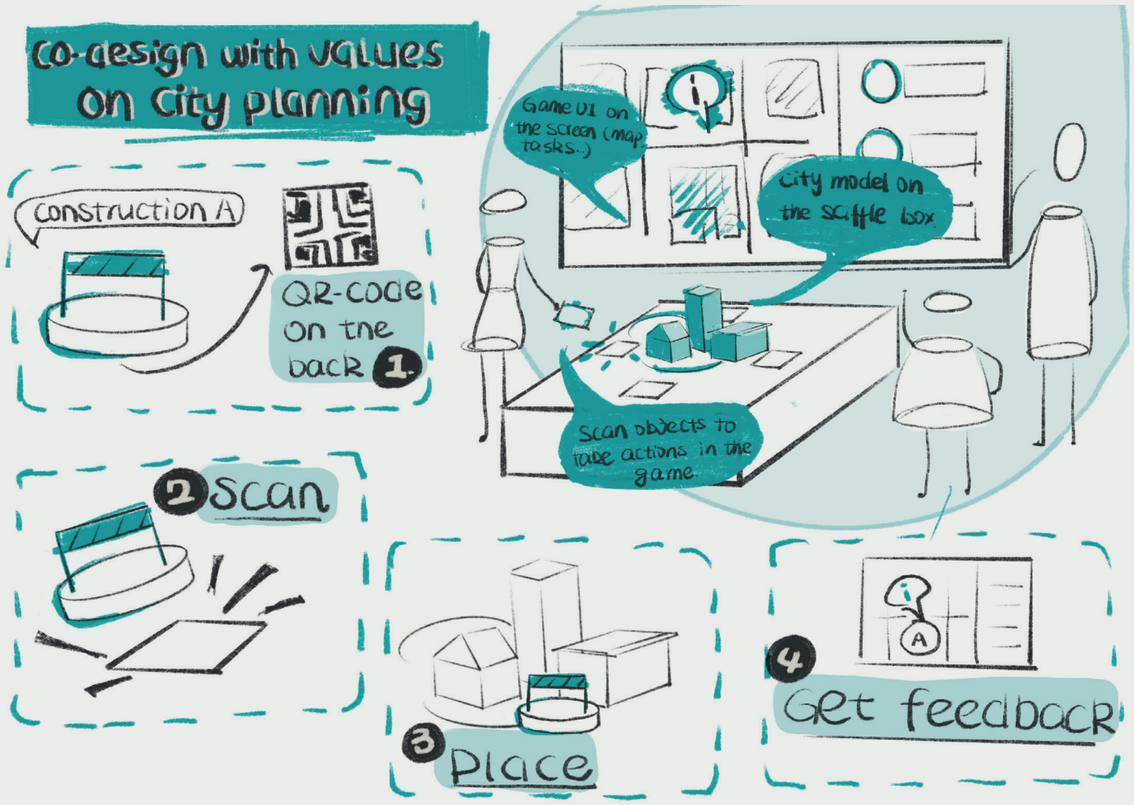


Figure 4.15: Game example for using values to co-design on city planning.

prioritize the other value.

Case example: You want to promote the value of “well-being” in Dutch families with children between 8-12 during grocery shopping. By understanding values, you want these families to identify what are their values while shopping and help them prioritize the value of “well-being” during shopping.

4.4.2 Value communication between humans and technology

Technology brings influence human values on both individual and social level.

Co-design technology based on human values

Human values can bring a deeper understanding of needs, and developing technologies based on the human values of different stakeholders can bring inclusiveness to design and provide a better user experience.

Case example: You want to develop a lamp that can satisfy the aesthetic needs of the customers in the market. By communicating what value they found the most important in a lamp design, you want to help designers, technicians and users to co-design together and understand the needs of each other.

Ideate possibilities of technology based on human values

New technology can be developed by ideating based on different human values. This can drive the development of innovation and bring stronger human-technology relationships. Values can help technology more human-centered.

Case example: Ideate the development of an AI chat box based on a variety of human values under an educational background.

Explore the pros and cons of the technology

Using technology will bring different types of effects. Values can help to identify those effects and call for actions to change the negative effects. (Verbeek&Tijink, 2020).

Case example: Based on human values, analysis of the pros and cons of using sentiment analysis under the context of social media.

4.5 Conclusion

In conclusion, the journey through this chapter has provided a comprehensive exploration of the design process for value-based Sciffle Box games. The chapter began by examining the complexities inherent in designing such games, particularly considering the abstract and dynamic nature of values. Abstract values will present challenges for participants unfamiliar with Sciffle Box and game design. This realization prompted the development of a structured card deck to guide the ideation process and streamline game design.

The introduction of ideation cards marked a pivotal point, fostering the integration of values into game design. The evolution of these cards, from their initial adaptation to their enhancement through collaboration with Sciffle Box designers, underlined their efficacy in facilitating creative ideation processes. These cards offered a bridge between values and game mechanics, acting as a tangible tool for participants, regardless of their familiarity with game design.

By delving into the feedback and insights gleaned from co-design workshops, this chapter provided valuable revelations. The iterative nature of the card design process, shaped by the experiences of participants, brought clarity to the sequential card selection approach. The insights drawn from participants’ interactions with the Sciffle Box cards guided the development of a more efficient and engaging workshop structure for creating value-based Sciffle games.

Furthermore, the third workshop highlighted the transformative potential of incorporating gaming experiences to learn about values and the Sciffle Box. The sensitizing opening, followed by the focused workshop tasks, effectively guided participants to design games rooted in value communication. The connection between values and game play was strengthened, accentuating the role of the Sciffle Box as a facilitator of value-driven interactions.

The chapter’s culmination lies in the opportunity map, a manifestation of the diverse contexts where value-based Sciffle games can flourish. It is clear that these games have the potential to bridge gaps between technology, human interaction, and values. The map encapsulates the essence of this research, illustrating the myriad pathways that lie ahead for further exploration and development.

Chapter 5:
Design Brief

Scoped the project with a specific context, and defined the main problems and design challenges that need to be solved.

This chapter delves into a problem definition involving Ijsfontein and TU Delft, two key stakeholders. Ijsfontein aims to enhance Sciffle Box's market competitiveness through human values, emphasizing adaptability and user-friendliness. TU Delft seeks innovative value communication methods to address the complexity of human values through games. This synergy leads to a design focus on human-to-human and corporate value communication. The subsequent sections establish a comprehensive design framework, merging Sciffle Box gameplay's strengths with ChatGPT technology, all while prioritizing nuanced value communication.

5.1 Problem definition

This project involves two primary stakeholders: Ijsfontein and TU Delft (Figure 5.1). Ijsfontein aims to leverage human values to enhance the competitiveness of Sciffle Box in the market. Their goal is to make Sciffle Box games not only user-friendly but also easily adaptable and customizable. On the other hand, TU Delft seeks to investigate innovative methods of value communication that consider the intricate nature of human values. They aim to utilize games as a means to elucidate the abstract aspects of values.

To address the shared interests of both entities, the design focus has been established on two aspects: human-to-human value communication and corporate value communication. Firstly, human-to-human value communication constitutes a foundational element of all value interactions. Secondly, corporate value communication aligns with one of the principal applications of the Sciffle Box. Conventional corporate value training often neglects the crucial link between individual values and organizational values. Therefore, this design direction effectively caters to the requirements of both stakeholders involved in the project.

Additionally, the introduction of AI chat box technology, specifically ChatGPT, into the Sciffle Box environment adds a new dimension to the game play experience. By leveraging the Sciffle Box as a platform for tangible and social AI interactions, the role of the Sciffle Box as a facilitator is enhanced. This integration not only promotes engaging and dynamic game play but also increases the flexibility and adaptability of the game production process. The Sciffle Box provides an incredible opportunity to make ChatGPT interaction tangible and sociable.

To synergize these three design factors within the game, it's crucial to harness the unique strengths of each factor and strategically weave them together to foster meaningful interactions that maximize their collective benefits (Figure 5.2).

Simultaneously, insights gleaned from field studies have revealed a notable deficiency in the conventional approach to corporate value training. This deficiency pertains to the failure in establishing a substantive connection between the personal value systems of employees and the overarching corporate values. This disparity has resulted in a lack of relatability and efficacy in the transmission of corporate values. Consequently, this project is directed towards a specific objective: to establish a bridge between corporate values and individual values, thereby fostering a robust and diverse collaboration of values. The underlying intent is to heighten awareness of values within the organizational milieu, facilitating the organic integration of corporate values into the personal value frameworks of staff members. This integration, in turn, is anticipated to naturally guide behavioral adaptations towards alignment with the defined corporate values.

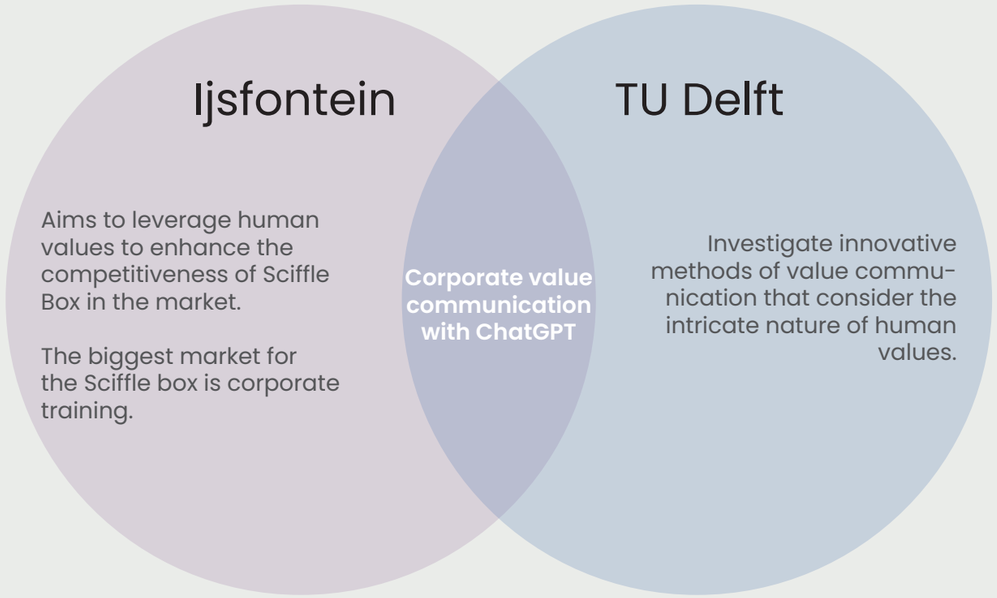


Figure 5.1: Stakeholder's needs.

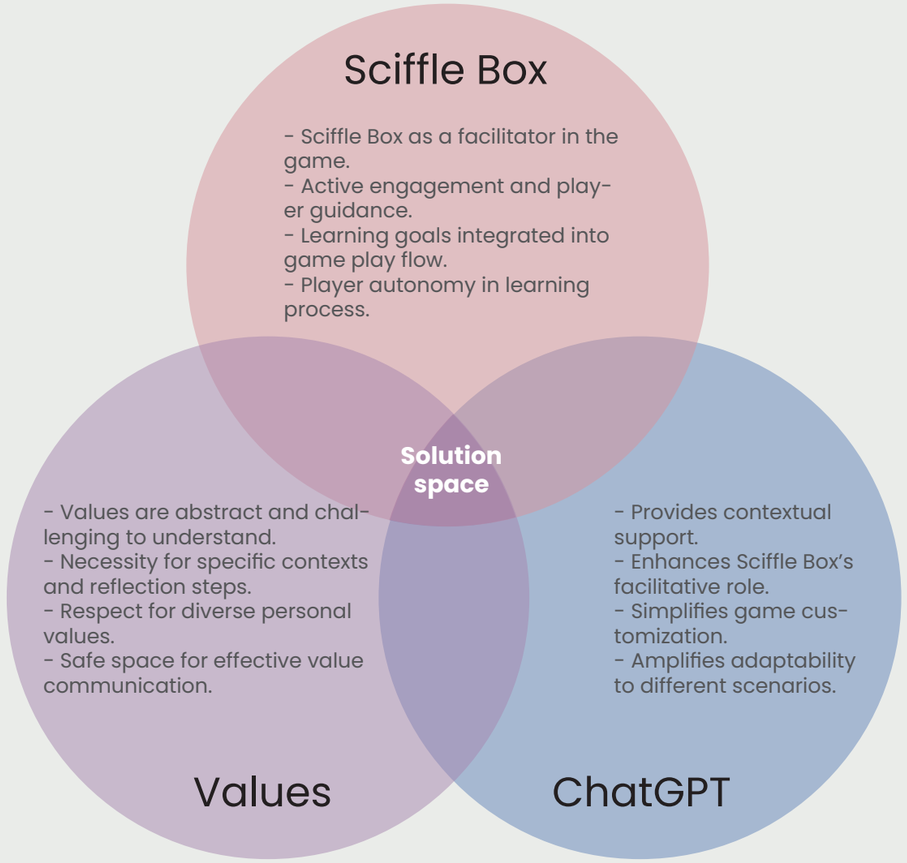
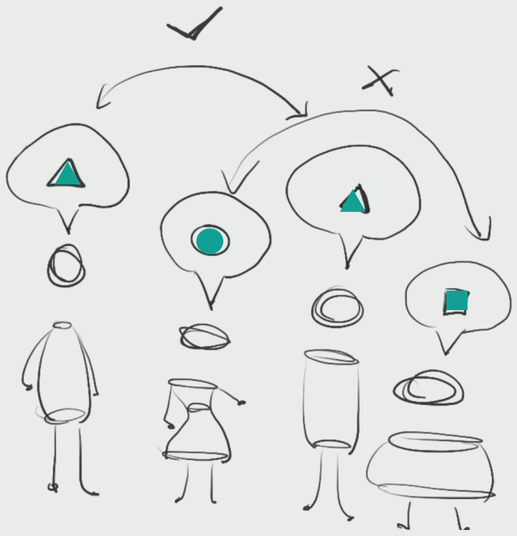


Figure 5.2: Defining solution space.

5.2 Design goal

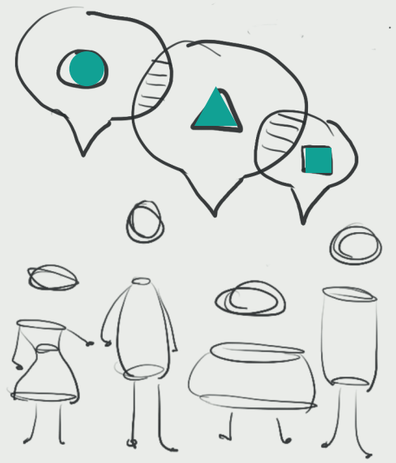
Develop a Sciffle Box game supported by ChatGPT technology that enhances value awareness, fosters value connection, and aligns with corporate values, promoting a culture of inclusivity and collaboration in the workplace.



5.3 Design Context:

In this design context, the game involves **8-20 participants**, divided into **four teams** consisting of 2**-5 players each**. This player range is derived from insights obtained during the field study, where 2-5 players per team is identified as an optimal number for effective Sciffle Box usage. Fewer than 2 players would render the box less necessary for facilitation, while exceeding 5 players per team might lead to difficulties in maintaining engagement within time constraints. The choice of four teams is to create a smaller and secure space for players to freely express their values.

The game is specifically designed to emphasize and reinforce corporate values within a company setting. It's noteworthy that the players should be already **familiar with each other** and work collaboratively, a dynamic that potentially fosters greater **comfor**t in sharing personal value perspectives. This familiarity can further amplify the game's impact, as playing among colleagues could extend the game's influence into their daily work interaction.



5.4 Criteria

In Chapter 2 of the literature review, it became evident that values possess an abstract and intricate nature, often challenging to comprehend. As a response, it becomes imperative to furnish explicit contexts and structured reflection processes. This approach respects the diverse spectrum of personal values and serves to cultivate a secure environment for effective value communication.
Chapter 3's field study yielded insights affirming that the Sciffle Box should assume the role of a facilitator within the game. This entails active engagement and guidance of players throughout the game play journey. Integrating learning goals seamlessly within the game's flow empowers players to immerse themselves in the learning process autonomously.
Lastly, the role of ChatGPT is to provide valuable contextual support, thus enhancing Sciffle Box's facilitative role. This, in turn, simplifies the customization of the game, amplifying its adaptability to varying scenarios and requirements. By harmonizing these findings, the design framework is poised to holistically address the challenges and opportunities inherent in value-based game play experiences.
Those findings during the research phase are then translated into design criteria and testable targets (Table 5.1). At the same time there are some more research questions needed to be answer:

1. How stable is the ChatGPT performance during game play?
2. How to adapt the game quickly and easily into different company?
3. How relatable is the dilemmas that generated by ChatGPT?

5.5 Conclusion

In conclusion, the collaboration between Ijsfontein and TU Delft underscores the potency of diverse perspectives in shaping the contours of design innovation. This chapter has illuminated a design context that prioritizes both human-to-human and corporate value communication, with a spotlight on leveraging ChatGPT technology within the Sciffle Box environment. Through a careful assimilation of findings from literature review and field study, a comprehensive design goal and criteria have emerged. The envisioned game stands as a nexus of value awareness, connection, and alignment, with the overarching aim of nurturing an inclusive and collaborative workplace culture. By capitalizing on the strengths of each design factor and harmoniously weaving them together, the project embraces the challenge of making abstract values tangible, fostering meaningful interactions, and facilitating genuine learning experiences.

Criteria	Testable target
1. The game should focus on social interaction between players.	Players are having meaningful conversations about their understanding of values.
2. The Sciffle Box and ChatGPT should help facilitate the game with a meaningful role.	Players are able to finish the tasks in the game by scanning cards and will receive logical feedback from ChatGPT.
3. All players should be able to engage with the game.	All players are included in discussions.
4. The learning experience should be immersed in the flow of playing.	The play flow should not be interrupted by the facilitator.
5. Players should have the autonomy to learn about values.	Corporate values and values will not be defined with "a right answer" before or during the play.
6. The game should create a safe environment to promote personal truth and open communication.	Players should be comfortable sharing their own understanding of values.
7. The game should introduce the concept of value and help employees connect to corporate values from their own values.	Players should understand more about values and connect more with corporate values.
8. The game should increase the awareness of values.	Players should be more aware of values in their working environment.

Table 5.1: Criteria and testable target.

Chapter 6:
Design Iteration

Addressed following design challenges:

- How can the game mechanics and rules be structured to promote value communication among players?
- How to make players compare different values without making the game too competitive?
- How to use value cards in games so they can provide enough guidance but not hard to process?
- How to encourage players step out of them comfort zone of values and connect different meanings of values?

Throughout the design iteration phase, a comprehensive exploration encompassing 5 distinct game concepts is undertaken, rooted in the outcomes derived from testing and development. This chapter, guided by the design goal and criteria, aims to tackle the challenge of transmuting intricate and varied values into coherent and digestible game elements. Concurrently, the complex task of harmonizing game mechanics with the inherent expansiveness of values is addressed via testing and refinement.

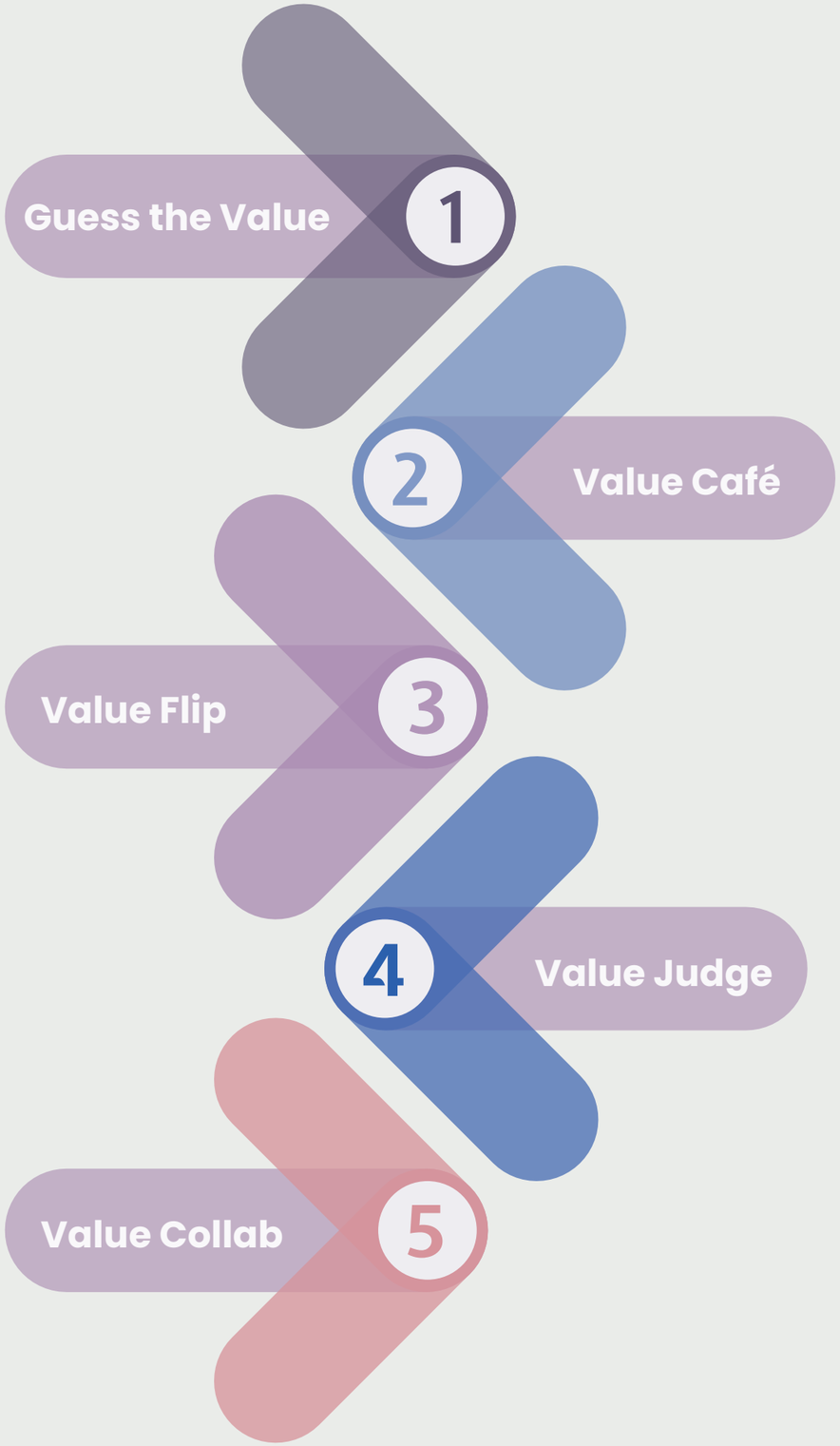


Figure 6.1: All concepts that were developed and tested in this chapter.

6.1 Concept 1: Guess the value

After the ideation phase, different ideas are merged, and the first concept is developed and tested (Figure 6.1).

In this concept, four players are divided into four teams, playing independently. Each player will have a deck of 19 value cards (Figure 6.2) adapted from Schwartz (2012), covering all human values and providing a diverse choice for players.

The game involves presenting ten dilemmas in a working environment on the screen, along with four example solutions (Figure 6.3). Each option is represented by a specific colour on the Sciffle Box. Players need to select the best solution according to their beliefs, identify the value card that drives their decision, and scan it on the Sciffle Box scanner with the corresponding colour.

After all players have finished scanning their cards, the Sciffle Box will guide them in a random turn to reflect on why they made their selection without mentioning the value they picked. Meanwhile, the other players have to guess which value was selected by the player reflecting. Players who guess the value correctly will receive a connection point with the player reflecting. The game will continue until all ten dilemmas are completed.

At the end of the game, there will be an analysis of which values were selected most frequently by each player, providing valuable insights into their decision-making processes and value orientations.

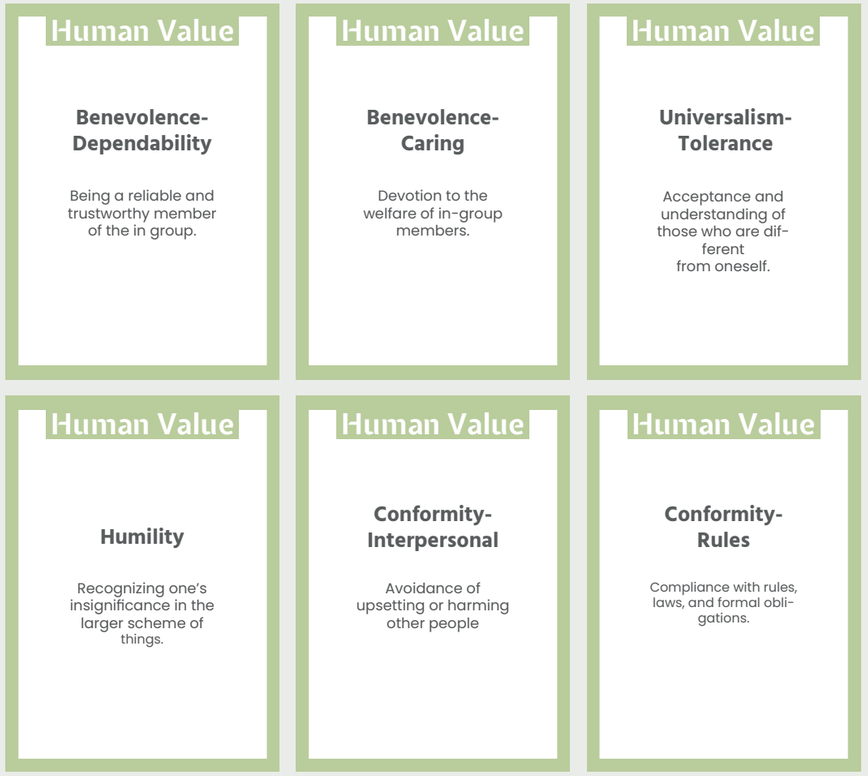
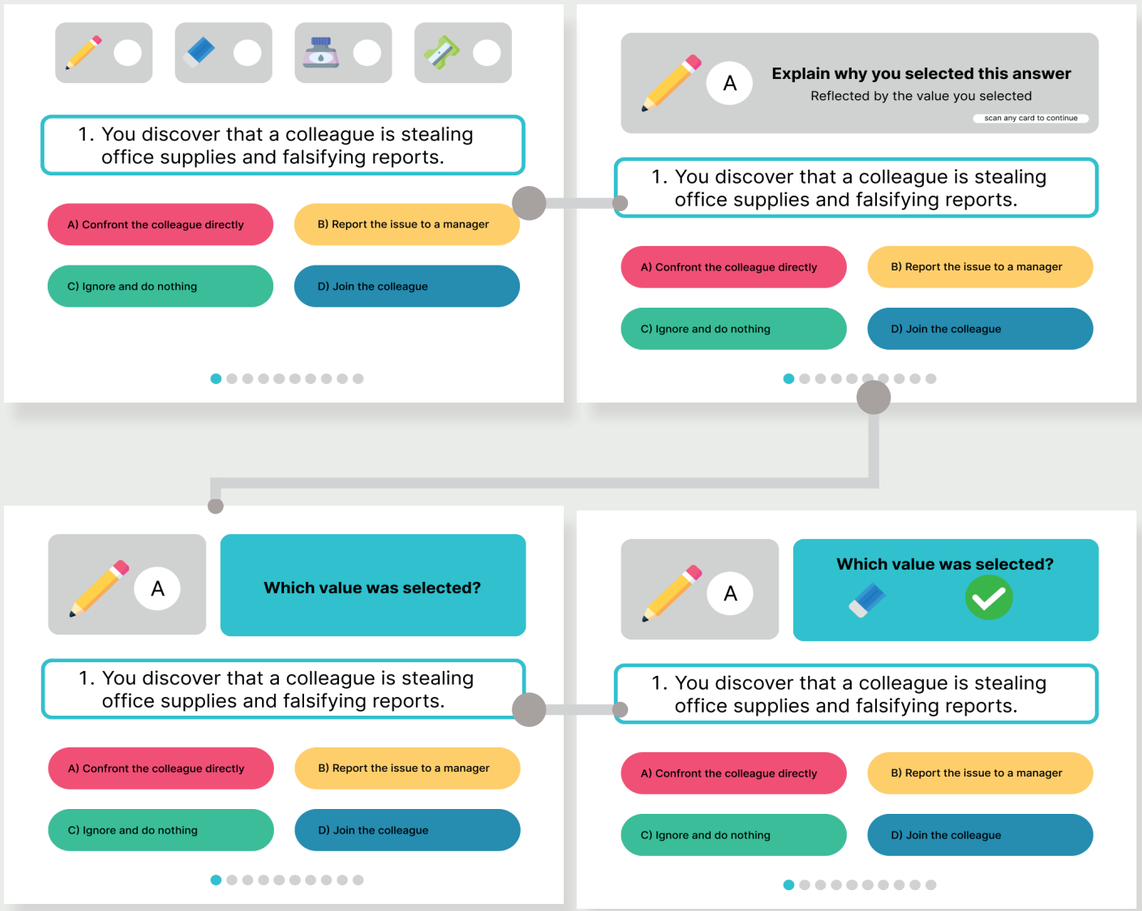


Figure 6.2: Value cards example used in Concept 1.

Game flow



Game result

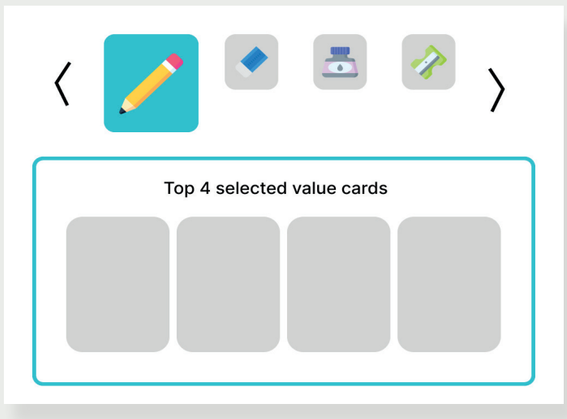


Figure 6.3: Concept 1 game UI.

6.1.1 Test

In the testing phase of the "Guess the Value" concept, a Figma prototype with physical cards and a Sciffle Box mock-up was utilized (Figure 6.4). The dilemmas were generated using ChatGPT, and the game was tested with three workers from Ijsfontein.

During the testing session, participants played the game using the prototype and physical cards, engaging in the decision-making process presented by the dilemmas. Observations are done during the session. Following the game play, a group interview was conducted to gather qualitative insights and deeper reflections on the players' engagement with the game and the value connections they experienced during the session.

The following feedbacks are gained from the testing session:

1. The value cards are very hard to process, which took a lot of time to pick and think. The cards should be less or simpler.

"I first have to read, then I have to think about what they (the value cards) mean to me. Then I have to make a decision. It took me a long time." (Participant 1)

2. During testing, the inclusion of dilemmas in a working context and reflection on values increased participants' awareness of values. Guessing values broadened their mindset, exposing them to diverse perspectives. Overall, this fostered a profound learning experience, promoting value connection and communication in the corporate setting.
3. The game can provide more game dynamics and narratives. Players can get more engaged in the play experience and therefore have a better learning journey.

"Are they (players) running? Do they have their own table? Why do they need to guess each other's values? If you put this in a narrative it will make more sense." (P2)

In the end, compared to the design criteria, the game is less focused on corporate value but rather on value connection between colleagues. It also needs to be scaled up to allow more players to Participant in a session.

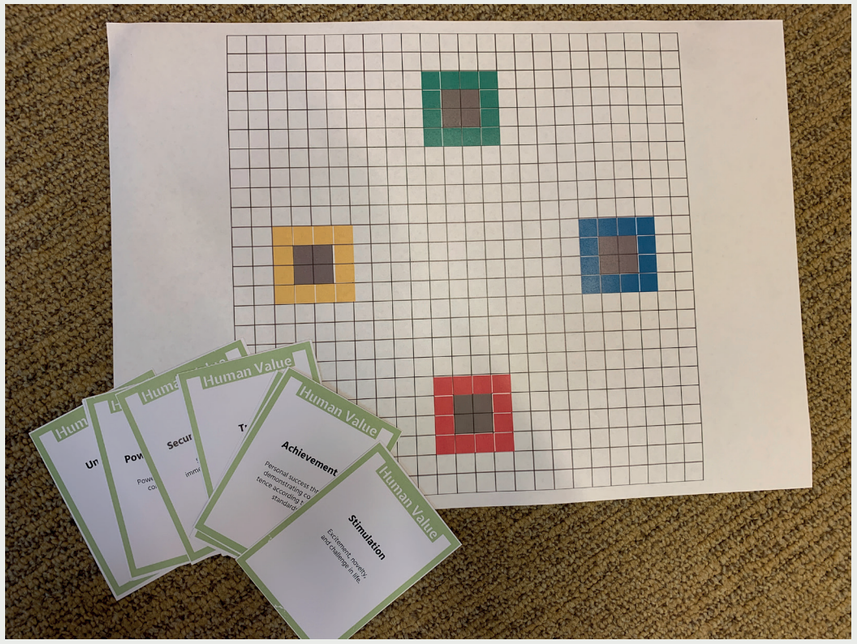


Figure 6.4: Concept 1 test mock-up.

6.2 Concept 2: Value Café

Based on the feedback, a new concept is developed. In this concept, the game is scaled up by having four teams playing simultaneously with one Sciffle Box and screen. At the same time, the game is put into a narrative where the players work in a café and they have to serve coffee and give advice to their customers about their problems at work. The value cards are updated with more understandable values and images to help players process and select. The 20 value cards are still adapted from the 10 value categories of Schwartz (2012). Two example values are picked from each value category to cover the diversity of values in the game (Figure 6.5).

In the game "Value Café," players are divided into four teams, each comprising 2-5 members. Each team operates independently, with their own screen and clients. Each team is represented by a specific colour on the Sciffle Box. They can only interact with their own scanner on the Sciffle Box. However, the scores of all four teams are combined to achieve the common goal at each level. Players need to find value cards that match the same initials to serve coffee to clients. This is to help players navigate through the 20 value cards and get familiar with the values.

During the game, clients share their dilemmas with the players, and the players must scan one or two value cards to provide honest advice. The clients then give their feedback, expressing their understanding of the values scanned, and assign a score accordingly. The game consists of two levels, each with three dilemmas. An introduction and tutorial are provided at the beginning of the game to help players become acquainted with the game mechanics. Between the levels, a strategic break is designed to highlight the importance of values and further enhance the learning journey (Figure 6.6 in page 70).

6.2.1 Test

The test is done with a Figma model, physical cards and a Sciffle Box mock-up. When players "scan" a value, the facilitator will put the value into ChatGPT, generate first-person perspective results and paste it into the Figma model. Three workers in Ijsfontein tested this game, they played on the same team. Observations are done during the session. A group interview is conducted after the play test to evaluate the play session(Figure 6.7).

The feedbacks are as followed:

1. The learning experience should be more immersed in the play, rather than rely on the facilitator to talk about what should players learn. Players should not know what they are supposed to learn before the play, they should learn it through playing.

> *"It was more like a presentation during the game, you should find that (the characters of values) by yourself (during playing)." P2*

2. It can be confusing and distracting when the screen are having four game play together at the same time. The four teams should talk about the same dilemma. In this way, they can have a more diverse understanding of other teams' values toward the same dilemma.

> *"I think I'd also want to know what other teams' answer is when I select. Also, I think that will also give more influence on my selection." P3*

3. Adding more rules or limitations can present more game dynamics in the play.

> *"Maybe switching rolls, maybe adding weight to different cards so each card will have a different effect on the score. Adding rules can make it more playful". P1*

4. The game mechanism is separated from the value communication. The narrative and game should be more about values.

> *"For me, the serving coffee parts seem unnecessary, like if we are talking about values then why do we still have to serve coffee? In the end I just lose interest in it and let my teammate handle the coffee." P3*

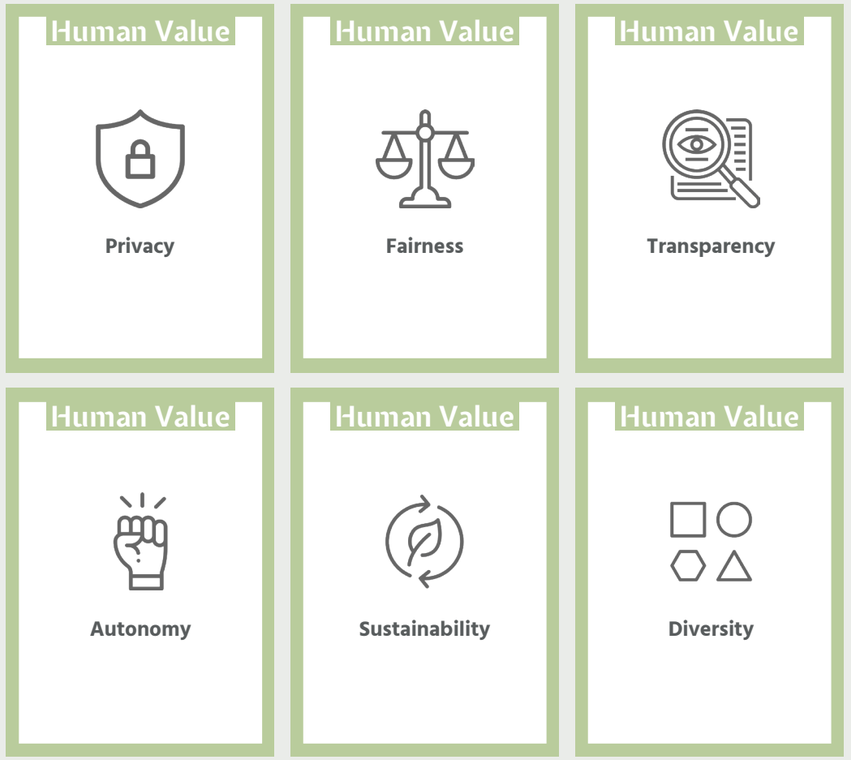
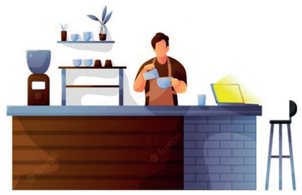


Figure 6.5: New value cards.

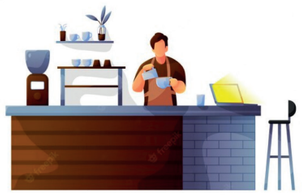
Figure 6.7: Testing concept 2.

Intro

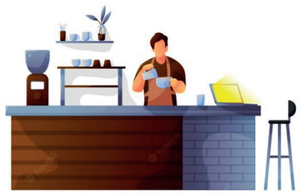
Welcome baristas! Today you will work together to serve the customers, with coffee but also more.



Here at the coffee place, we also maintain good relationships with customers. Sometimes we listen to their problems and give our advice.

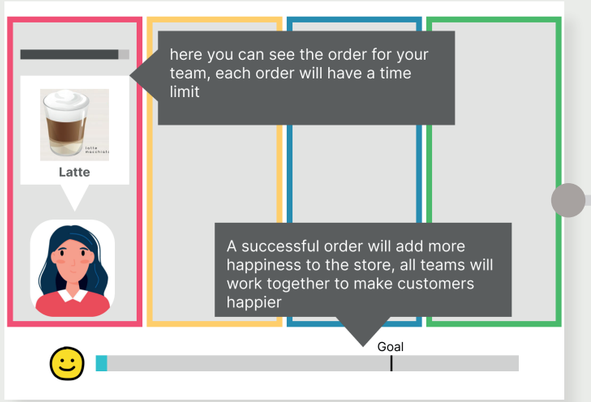


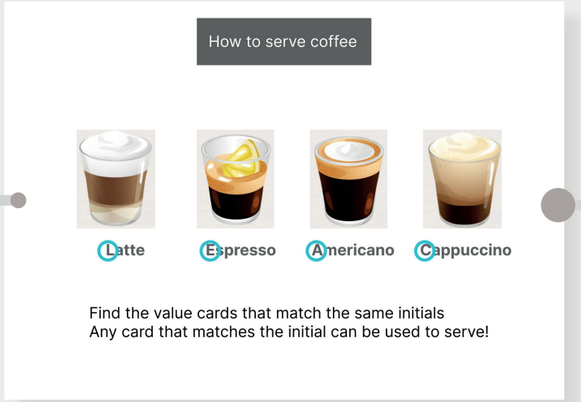
Each team has 20 value cards. Values are the motivations of our actions, we all act according to our values. Using values helps us communicate at a deeper level with customers, and with each other.

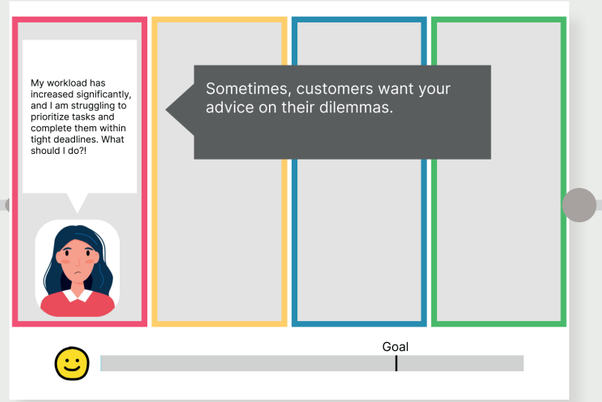


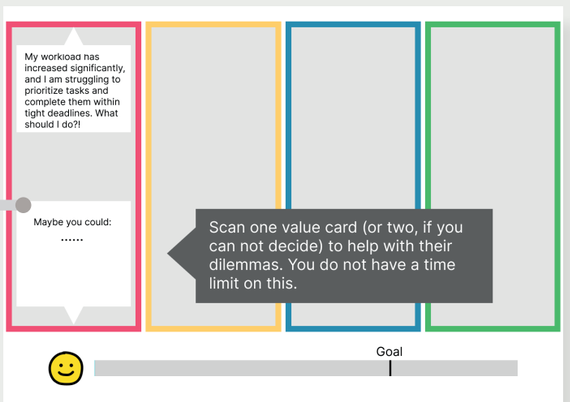
There are no right or wrong answers!
Discuss what different values **mean for you** with your team and give customers your honest advice.

Tutorial

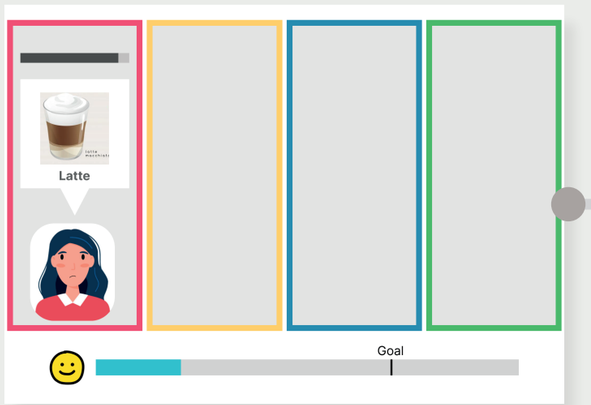


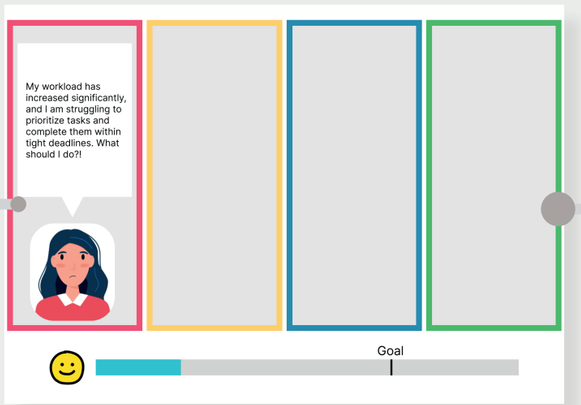


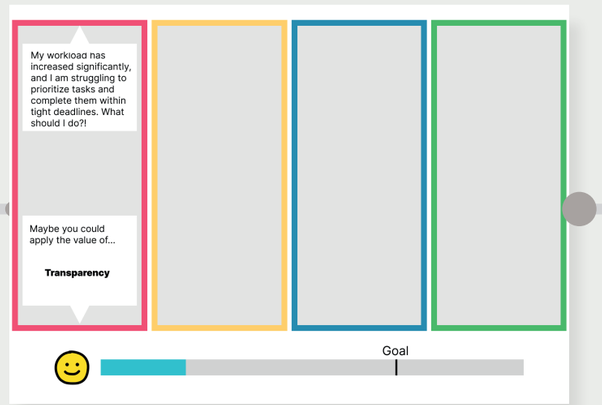




Serving clients example: team red







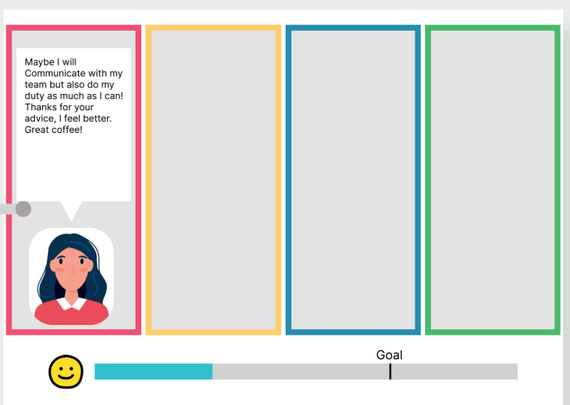


Figure 6.6: Concept 2 game flow.

Upon evaluation of the game “Value Café” against the established criteria, it is evident that the game offers an engaging and exciting learning journey about values. Players are about to have meaningful conversations during the game, discuss what value is the most important to them under specific contexts and share their personal understanding of values. Players are able to share and communicate freely, with an open mind about other people’s value definition.

However, one area for improvement is to draw more focus on connecting with corporate values. While the game introduces players to diverse values through the 20 value cards, it could further emphasize the alignment with the specific corporate values of the organization.

6.3 Concept 3: Value Flip

Based on the feedback, a focus on value narratives and communicating corporate values are taken in this concept. In this concept, players work for a “No problem company”, where they have to apply values to solve the problems of their clients. At the same time, now four teams will work with the same client (dilemma) and present their solution by scanning on their own scanner on the Sciffle Box.

A new game element is introduced to add depth and strategy to the game play (Figure 6.8). Each team has two states: positive and negative. In the positive state, players select a value that aligns with the client’s problem, earning a positive score. Conversely, in the negative state, players must choose a value that causes the worst outcome in the situation, resulting in a negative score. Each team will have their own score. When players scan the value, ChatGPT will generate a suggestion to the client based on the value scanned. To switch their team’s state or affect other teams, players can play a function card during each round (Figure 6.9 in next page). Teams start with two function cards and receive a new one each round, but they can only play one function card per round.

Another update is now each client comes with a dilemma and a corporate value. The corporate value is introduced as their behavioral goal. This means that players need to place value cards that not only can solve the problems but also behave according to this goal.

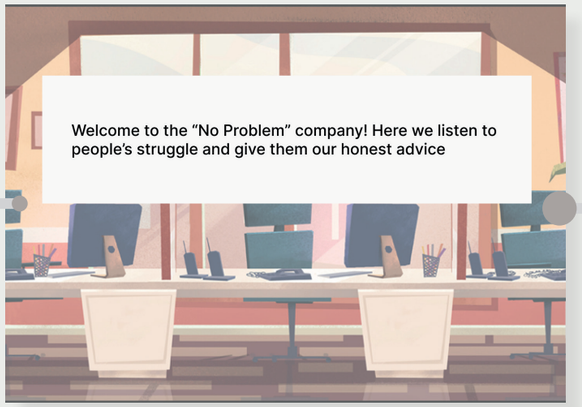
6.3.1 Test

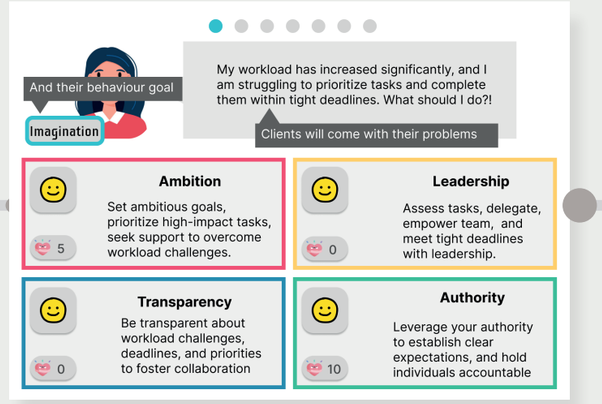
This concept is tested with a Figma model, physical cards, physical state boxes and a Sciffle Box mock-up. The testing involved four workers from Ijsfontein, who were divided into two teams of two. The facilitator will mock up the ChatGPT interaction by pasting the reaction in the Figma model on location.

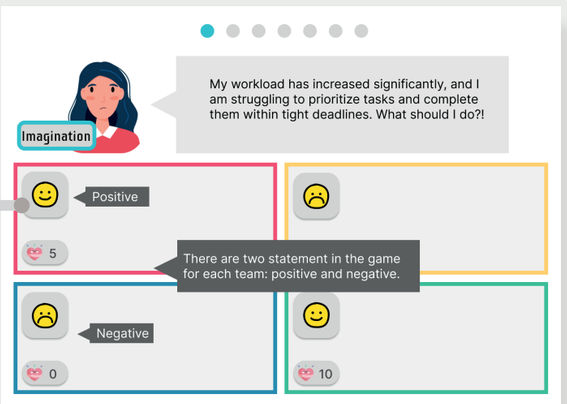
The feedback is presented as followed:

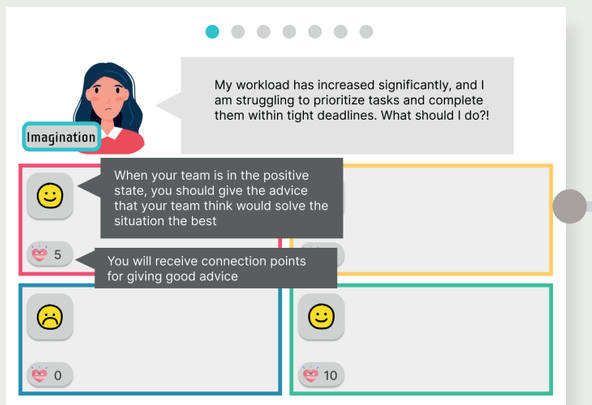
1. It is difficult to pick a card especially when it is in the negative state. At the same time, you do not have feedback on whether what you selected is right or wrong. Which leads to confusion. The same problem happens to the scoring system, players do not know what to expect, therefore they are confused about what happened.

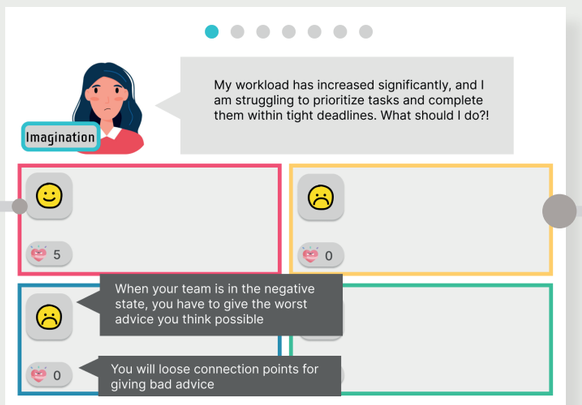
Game intro











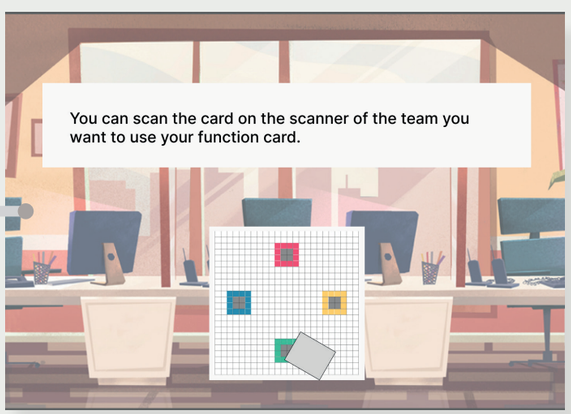


Figure 6.8: Concept 3 game flow.

"It was very hard to pick which value will damage (the situation), I think it was also just very limited for me. What is a bad value? Tradition maybe?" P2

"I am still confused about the scoring like I do not know what to expect." P3

2. When players can a value, they have already discussed it with the team. Each team will have their own agreement on the meaning of certain values. But the feedback ChatGPT gives back mat does not reflect their discussion and has a different explanation about the value.

"Like we thought challenge is you go challenge others in this situation, but then GPT said it is accepting the situation like a challenge. It was not what we talked about, and it just feels like what we think doesn't matter. "P1

3. The order of action should be clearer. Players should be guided closely on when to do what.

"I wasn't sure when you can scan a function card, can you do it anytime you want or you can only do it at a certain point?" P2

4. The feedback for the four teams together with the dilemma made the screen very text heavy. Players have to spend a lot of time and energy on reading. It is easy for them to disengage. Players should focus on having a conversation instead of reading.

"I look at the screen now it is with a lot of text. It's very text-heavy. I think they should spend the time talking about value instead of reading all the text."P3

5. Introducing corporate values as behavior goals in the game can not only bring a connection between employees and corporate values but also bring more focus to the conversation.

In the end, the majority of the game elements aligned with the established design criteria. However, some areas required further attention and refinement to enhance the overall game play experience. The game mechanism should allow more autonomy in learning. There should be less text in the game and the scoring system should be easy to understand.

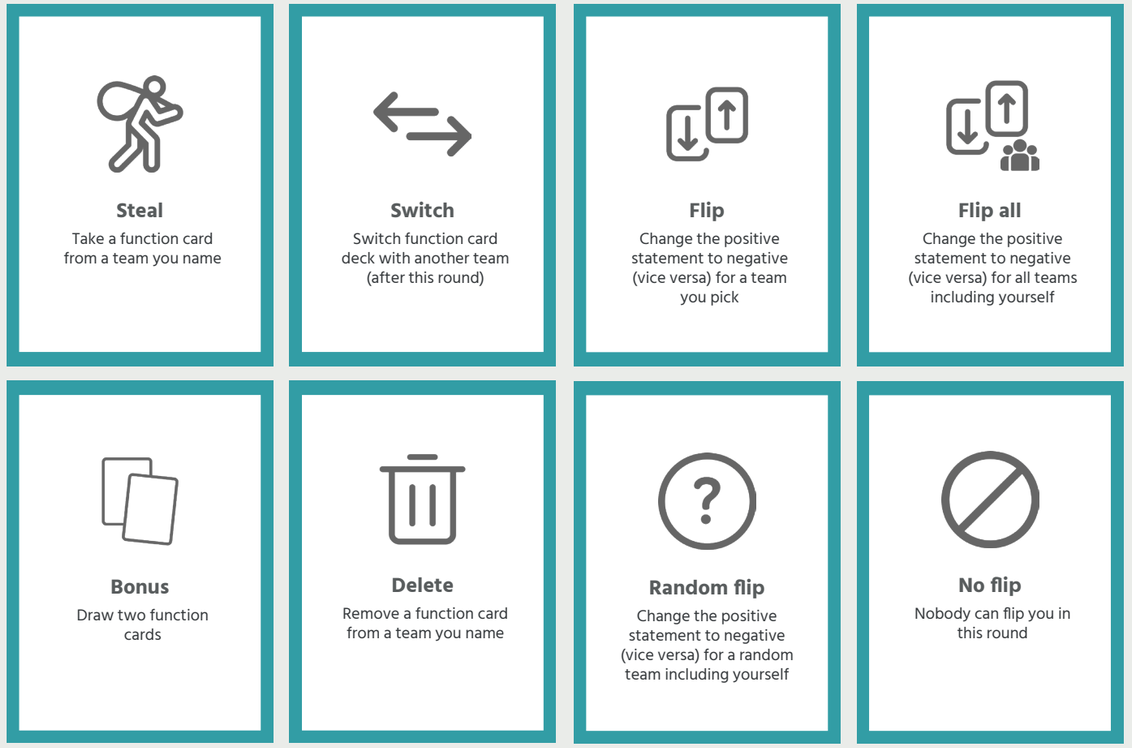


Figure 6.9: Concept 3 function cards.

Figure 6.10: Concept 3 testing.

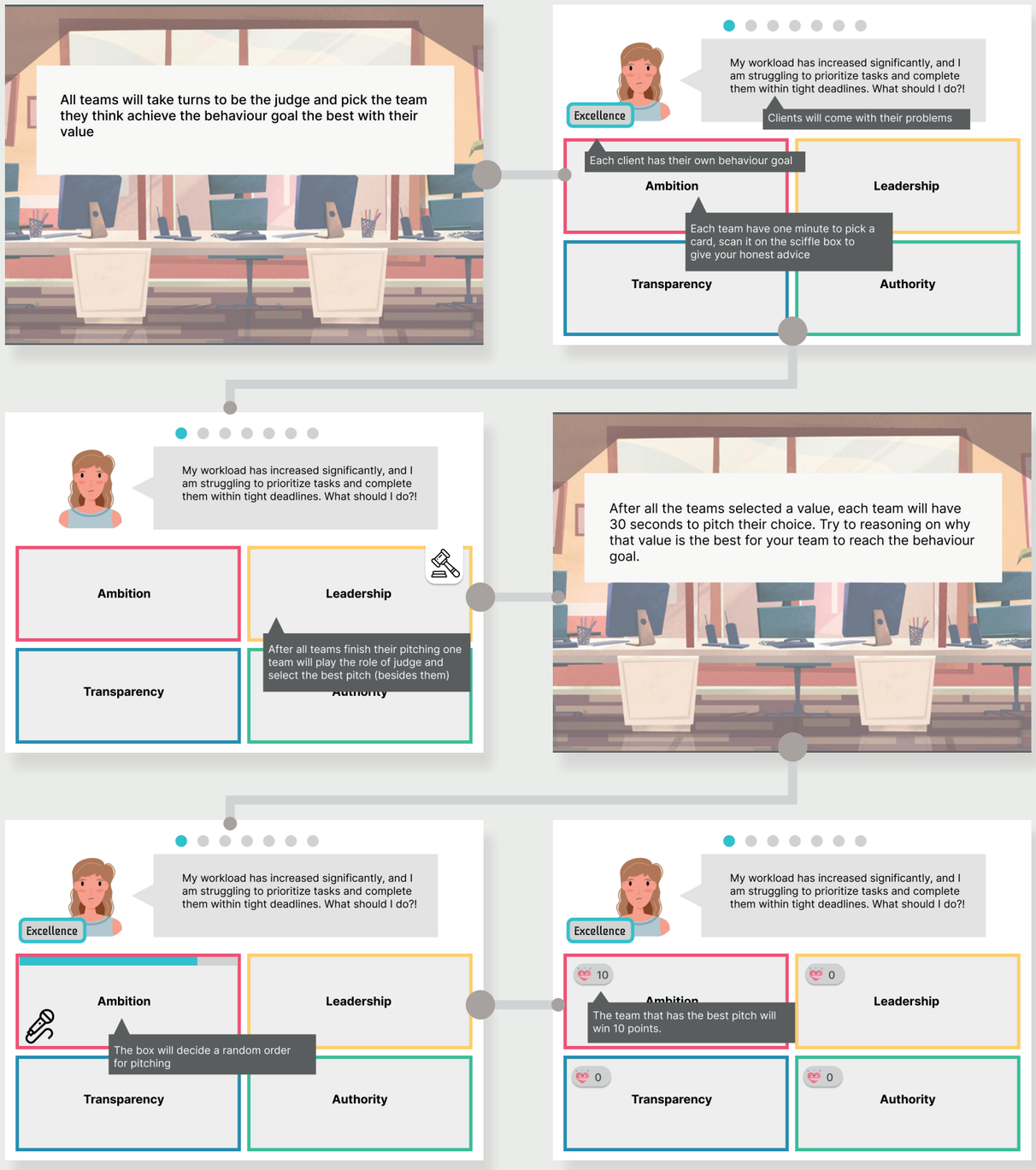


Figure 6.11: Concept 4 game flow.

6.4 Concept 4: Value Judge

In this game concept, players are granted the power to engage in a compelling and strategic experience where they will take turns judging the best value solution for clients' dilemmas. Divided into four teams, each comprising 2-5 players, participants will have their individual scores as they work to address clients' working dilemmas based on corporate values.

The game play involves each team selecting a value card from a deck of 20 values. Subsequently, they will have 60 seconds to pitch why their chosen value is the most effective solution for the given dilemma (Figure 6.11). Then a judging team will be selected by the Sciffle Box, and the judging team, unable to vote for their own team, will determine the best solution, granting the selected team a score.

Adding to the excitement, players have access to function cards that can be played after all teams have pitched and before the final judgment (Figure 6.12). The judging team cannot play a function card. These function cards enable players to gain scores by correctly predicting the winning team or doubling their score if selected. With each round, players receive new function cards, fostering adaptability and strategic thinking.

The game also features an interactive element where players interact with ChatGPT, who acts as the client, providing feedback on their decisions. The selected value will be sent to ChatGPT, and it will send a reaction back to the screen for players to understand what happened.

In this case, the new development of the game allows a game mechanism that is easier to understand, allowing players to have meaningful interaction with ChatGPT without it taking away the freedom to define their own meaning of values.

6.4.1 Test

The Value Judge version of the game was briefly tested with all the stakeholders on board (two mentors from the university, the product owner and a mentor from the company) (Figure 6.13). A Figma model, physical cards and a Sciffle Box mock-up

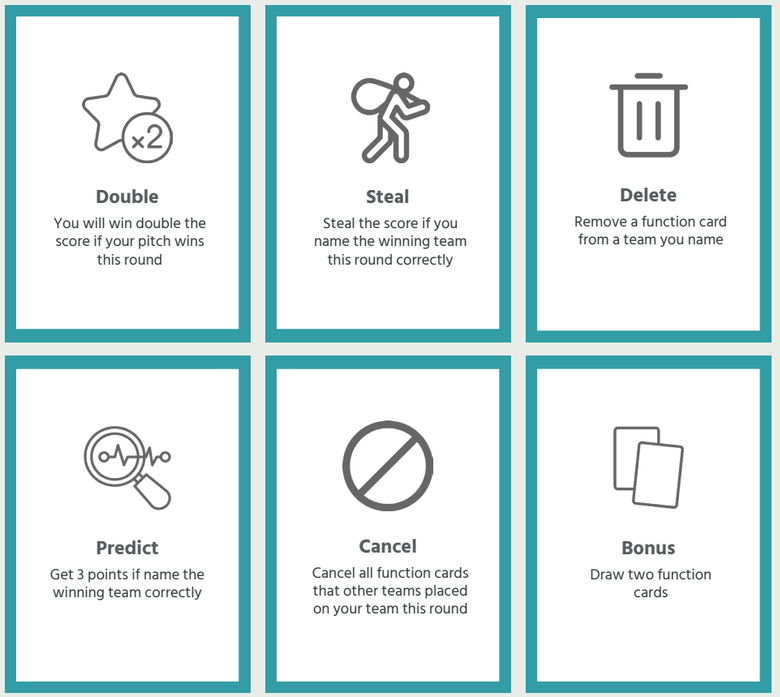


Figure 6.12: Concept 4 function cards.

are used in the test. Observations are done during the session, followed by a discussion session after. The following feedback is gained to develop the game further:

1. In this game concept, the role of the judge adds an element of competition, making the experience highly competitive with individual team scores further enhancing the competitive nature. However, this power hierarchy may undermine the safe environment needed for players to freely express their understanding of values.
2. The game's focus on encouraging players to assert that their value is the best can be counterproductive to the initial design criteria. This ownership of selected value cards can lead to personal attachment and biased judgments. To address this, involving ChatGPT as the judge and limiting the cards deck can encourage more strategic decision-making and foster an open-minded approach.
3. The presentation aspect of the game serves well in prompting players to express their personal understanding of values and facilitates comparison and connection with diverse interpretations of values.

Compared to the design criteria, this game concept effectively involves ChatGPT and Sciffle Box in meaningful roles without compromising players' autonomy. It successfully centres on value connection and corporate value alignment. However, to further improve the game, it could promote value diversity and foster a value cooperation mindset. This would encourage players to appreciate the diversity of values and collaborate to find the best solutions collectively.

Figure 6.13: Concept 4 testing.

6.5 Concept 5: Value Collaboration

Based on the feedback from the stakeholders' adjustments are made:

1. To introduce more strategy and foster an open-minded mindset, the deck of 20 value cards will be divided into 4 decks, with each team starting with 5 random cards. With five dilemmas within the game, each value card can only be used once, requiring players to carefully connect their values to the dilemmas and behaviour goals during presentations. This strategic limitation encourages thoughtful decision-making and promotes an open-minded approach to problem-solving.
2. To create a more engaging and interactive experience, all players will share the same score. Each team will still pick a value and present their reasoning for why it can solve the dilemma and achieve the behaviour goal. However, the judging process will change as each team now votes for the team they believe has the best card for solving the dilemma. The chosen value will then be sent to ChatGPT for feedback, providing a randomized grade to inform players whether the client liked the solution or not.
3. Building on the previous concept, each team will retain their two function cards. These function cards add an exciting element to the game, allowing teams to play one card each round to verify their value card deck, aiding them in finding the best solutions for the dilemmas (Figure 6.14).
4. To enhance the overall gaming experience, a more developed game UI will be implemented. This UI will provide clearer guidance on the gaming process and offer improved information arrangement for better interaction quality. The enhanced UI design will contribute to a more enjoyable and user-friendly experience for all players.
5. The narratives are improved to make the story more understandable and logical. The "No problem department" is a department inside Ijsfontein (or another target company), where people who work in Ijsfontein will go seek help for their problems. In this way, when non-game-player in the game mentions clients, that means the clients of Ijsfontein, in-

Figure 6.14: Concept 5 function cards.

Game flow

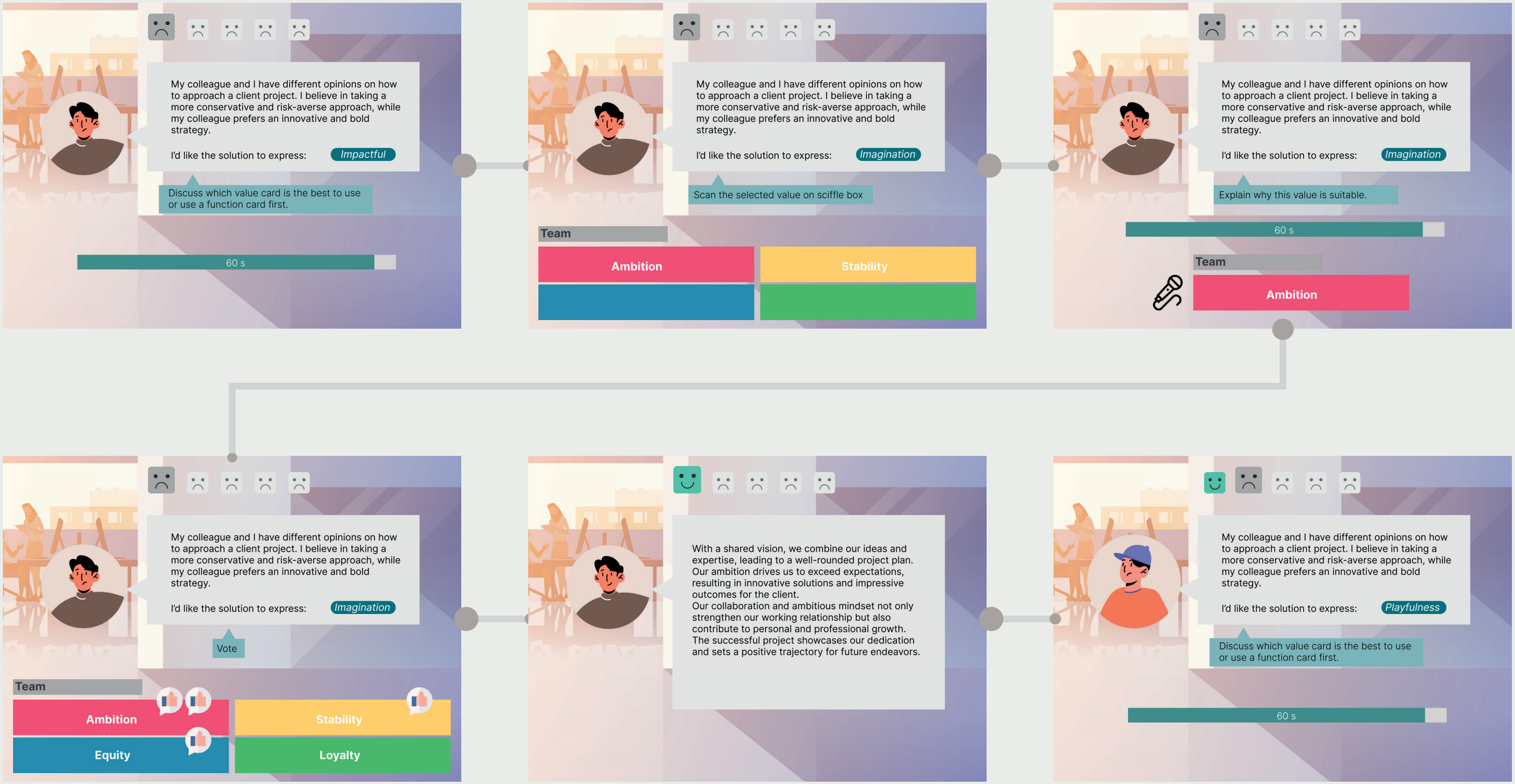


Figure 6.15: Concept 5 game flow.

stead of themselves as clients. At the same time, it brings more reasoning on why they want to behave according to the corporate values since that non-game-player also works in Ijsfontein, their problems are similar to what players are facing in everyday life.

By incorporating these modifications, the game concept becomes more strategic, open-minded, and interactive, offering an engaging and fun experience for all players involved (Figure 6.15). The new judging mechanism and function cards further enhance the competitive aspect while ensuring players remain focused on creative problem-solving and value connection. With a clearer game UI, the entire gaming process becomes more streamlined and immersive, elevating the overall engagement and enjoyment of the game.

6.5.1 Test

The test is done with four Ijsfontein workers, a Figma prototype is used together with physical cards. Observations are done during the test. After the text, a questionnaire is used to evaluate the development of the design. The result can be seen as followed (Figure 6.16).

It can be argued that the game serves most of the criteria well. The game can guide players to have meaningful conversations around personal understanding of values and provide enough space for players to connect with different values. The mechanism for voting can still bring competition element in the game but the fact that all teams are working towards one goal: serving colleagues to make them happy makes the competition beneficial to the game. Players can actively engage with the game through different stages.

To bring more value awareness and value connection with corporate values, some explanation about behavior goals in the game are corporate values and immersing those in the game play are required. At the same time, the wording during facilitation can be essential for the game play. One example is the word pitch will bring more competition to players than the word explains or present.

After this text, the main game structure is settled, leaving the details to be further adjusted. This concept was then built on Unity and tested in an evaluation session.

6.6 Conclusion

Throughout this chapter, the aim was to overcome challenges in integrating abstract values into engaging game play while fostering value connection and corporate value alignment.

The challenges included:

1. Converting abstract values into relatable game elements.

2. Maintaining player engagement through immersive narratives and game play dynamics.

3. Balancing competition with value communication and player autonomy.

4. Aligning game play with corporate values while promoting open-mindedness.

The solutions involved:

1. Simplifying value cards and focusing on value connection.

2. Streamlining game play dynamics, reducing text-heavy interactions, and improving engagement.

3. Incorporating strategic limitations, interactive judging, and function cards to enhance player autonomy.

4. Ensuring alignment with corporate values, immersive narrative, and refined game play elements.

These solutions collectively refined the main game prototype, addressing challenges and improving the integration of values in an engaging and corporate-relevant context.

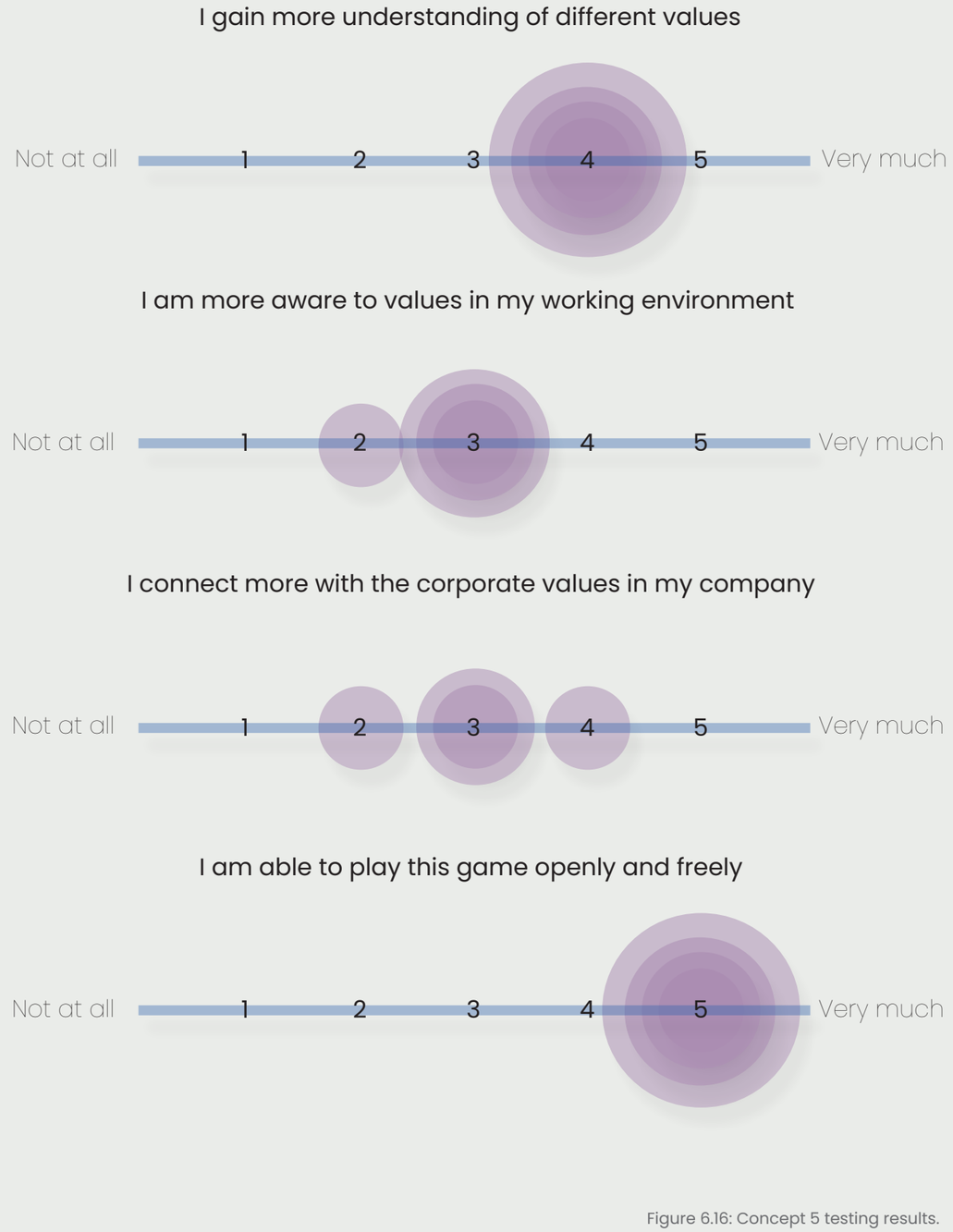
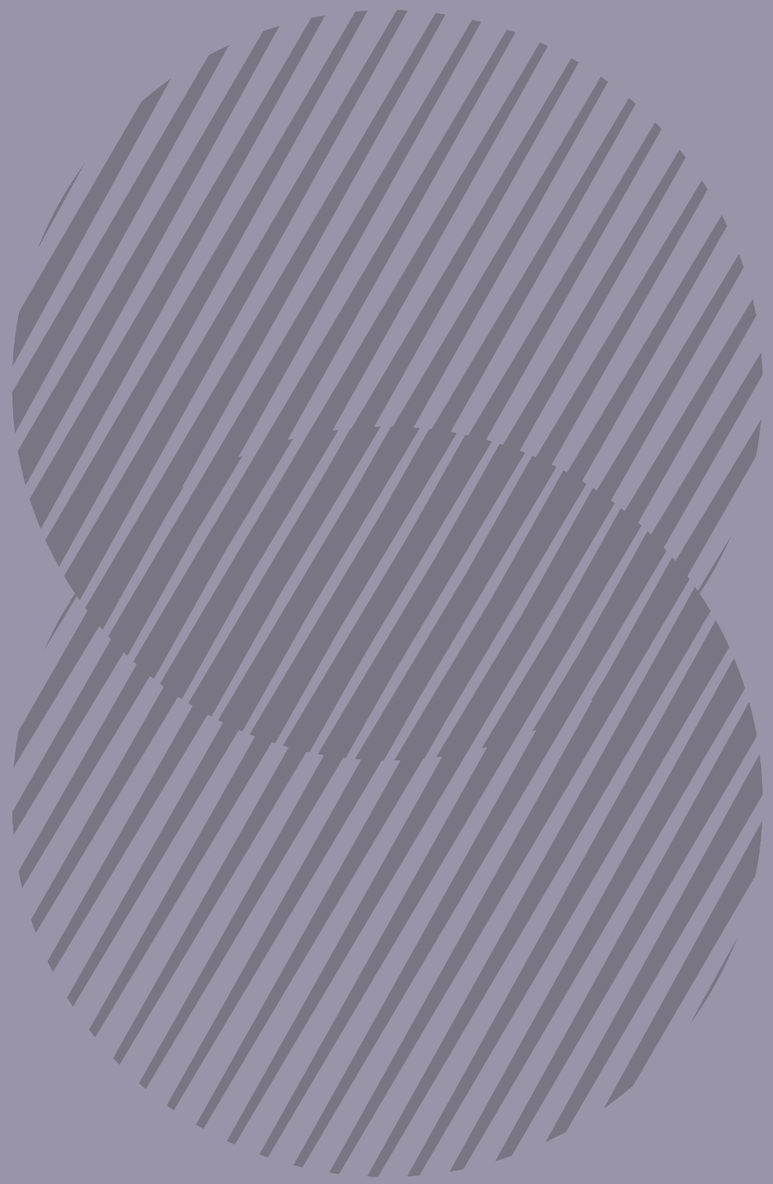


Figure 6.16: Concept 5 testing results.



Chapter 7: Prototyping

Addressed following design challenges:

- How to connect ChatGPT with the Sciffle Box?
- How to shape the performance of ChatGPT?
- How to adapt the game quickly and easily into different company?

This chapter delves into the technical aspects underpinning the final game prototype development. The prototype, built using Unity and incorporating the ChatGPT-powered coding tool, Cursor, enhances prototyping efficiency but also introduces an innovative programming approach for designers. Moreover, diverse prompts for ChatGPT are examined to furnish the game with context that resonates meaningfully.

7.1 Code Build-up

The last game prototype is built on Unity, utilizing the ChatGPT-powered coding tool called Cursor(Figure 7.1, 7.2, 7.3). This prototype is connected to the ChatGPT 4 model using the OpenAI C#/.NET SDK, OpenAI-API-dotnet, which offers an easy way to interact with OpenAI's services in .NET applications.

The OpenAI-API-dotnet library provides various functions, including API interaction, data models for handling API responses, configuration options for API keys and settings, and error handling for API requests.

Additionally, the connection between Unity and the Sciffle Box is facilitated by the Ijsfontein library called Ijsfontein Sciffle Box. This library includes the SciffleboxController class, responsible for managing the connection to the Sciffle Box and handling its events. It allows for connecting and disconnecting from the Sciffle Box and raises events when the connection status changes or when a message is received from the Sciffle Box.

The SciffleboxMessage class represents a message received from the Sciffle Box and contains information about its type (e.g., scanner, button), associated number, and text content.

The SciffleboxConnectionStatus enum represents the current connection status of the Sciffle Box, such as Connected, Connecting, Disconnected, or Disconnecting.

The SciffleboxMessageType enum defines the types of messages that can be received from the Sciffle Box, such as Scanner, Button, LED, or Unknown.

With these two libraries working together, the prototype can communicate with ChatGPT via Wi-Fi and interact with the Sciffle Box during the game experience, providing seamless and engaging game play.

The GameContext.cs file plays a central role in the game application, serving as a reference and construction point for various game elements. It holds essential information such as team scores and selected team cards. It registers all the data and methods, and when needed, different game states will call those data and functions to achieve certain functions.

Key components of the file include:

- Class Definition: The GameContext class is defined with public properties and methods to interact with the game state.
- Private Fields: Several private fields store game configuration, cards, UI elements, state machine, API, and game state data.
- Constructor: The constructor initializes private fields, sets up the state machine, and registers event listeners.
- Public Methods: Public methods allow interactions with the game state, such as setting questions, adding scores, adding messages, submitting chat messages, and clearing messages.
- Private Methods: Private methods handle game logic, including scanning, card handling, control card management, and confirmation processes.

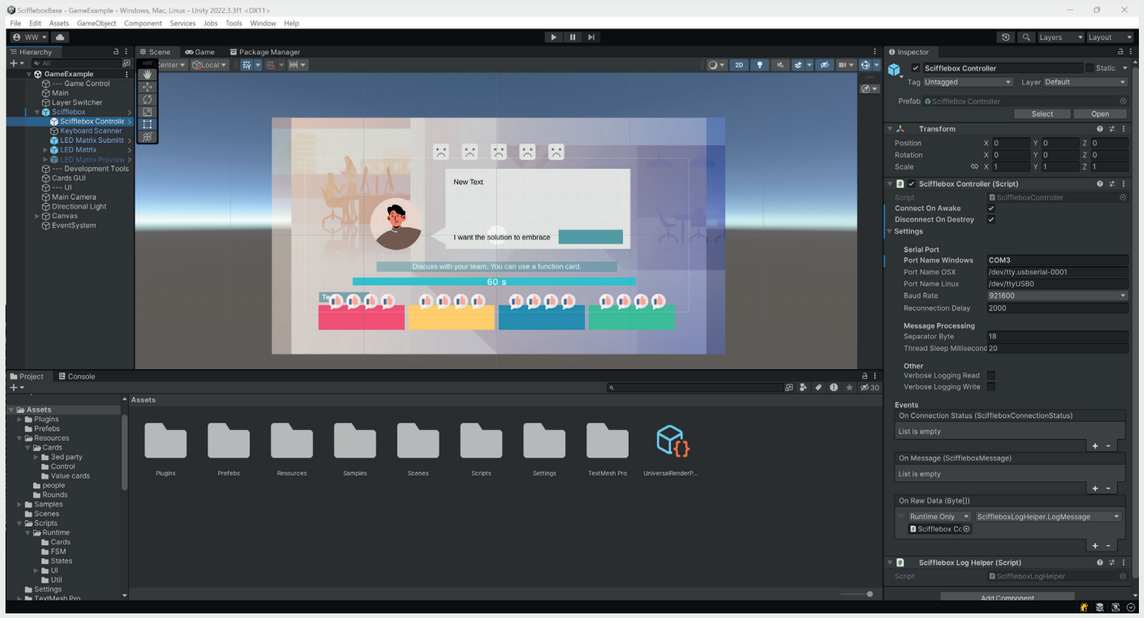
This class effectively manages the game state, handles game logic, interacts with external components like Sciffle Box and OpenAI API, and ensures smooth game flow through the state machine.

In the GameContext.cs file, a state machine (finite state machine or FSM) is utilized to manage the game's behaviour and computation. The state machine is represented through the IStateMachine<GameState> interface, which helps organize and control the game's various states and transitions.

Using the state machine allows for a structured and efficient management of the game's behaviour, enabling smooth transitions between different game states and ensuring the game progresses in a coherent and logical manner. This approach enhances the overall functionality and organization of the game application.

The prototype is divided into seven states:

Figure 7.1: Unity project.



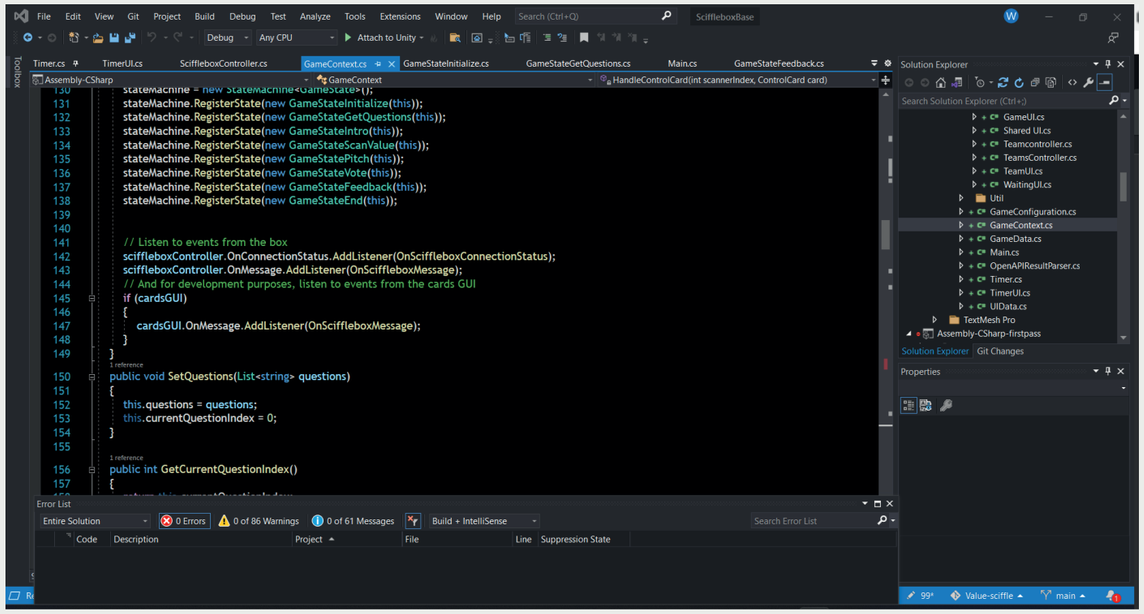


Figure 7.2: Scripts in visual studio.

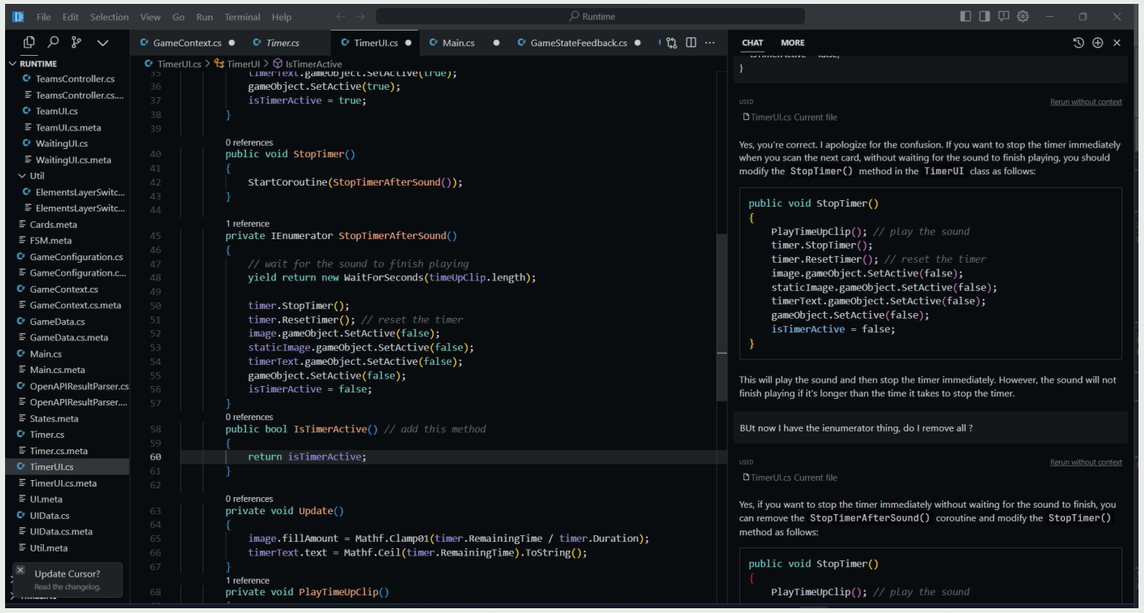


Figure 7.3: Coding with Cursor.

Introduction state, Scan value state, Pitch state, Vote state, Feedback state and End state. Each state process and save data supporting each step in the game process.

7.2 ChatGPT

Ensuring seamless integration of ChatGPT within the Unity prototype presents a critical challenge—eliciting pertinent responses that convey the right information at the appropriate junctures. A prime obstacle lies in tailoring ChatGPT's output to provide only the necessary content without extraneous details. A typical instance entails crafting prompts for generating specific game content, like dilemmas, where extraneous text could potentially disrupt the game flow. Striking this balance necessitates refining the prompt to yield precise results.

Several strategies are employed to achieve this alignment between ChatGPT and the game's requirements:

1. Specific Requirements: Formulating precise prompts with specific instructions to guide ChatGPT's output. For instance, delineating requirements like generating stories and scores without additional commentary ensures that only the essential content is produced.

2. Iterative Testing and Refinement: Iteratively testing prompts and identifying common errors to refine the prompt structure. Explicitly specifying what not to include in the response further enhances result accuracy.

3. Task Sequencing with Confirmations: While ChatGPT has the capacity to perform multiple tasks sequentially, risks of inaccuracies arise. Implementing confirmations at critical junctures mitigates potential errors. For instance, after generating dilemmas, seeking confirmation before proceeding minimizes missteps.

4. Dynamic Feedback Generation: ChatGPT's ability to produce varied responses for different dilemmas is harnessed. By scanning facilitator-generated positive/negative/middle prompts, the tone of feedback can be controlled, aligning it with the scanned prompt's intent.

5. Parser for Text Extraction: Recognizing the challenge of ChatGPT introducing conversational text, a Unity-based parser is devised. This parser effectively isolates and displays only the required information while excluding extraneous elements. The parser processes the text after a specific marker, such as "Dilemma:", and selectively displays the pertinent content during game play.

Through the strategic implementation of these solutions, the hurdle of precise integration between ChatGPT and the Unity prototype is effectively addressed. This approach ensures that players receive the relevant information while circumventing potential disruptions caused by unnecessary conversational text, thereby enhancing the overall game play experience.

At the same time, to make the game easily adaptable and customizable, the prompt is made in a way that Chat GPT will generate dilemmas based on the company. By changing the company names, it can provide suitable dilemmas for corporate training across different industry.

Here you can see some examples of dilemmas in different companies with the same prompt but different company names.

Netflix: "My team and I are responsible for vetting new release recommendations. We have stellar content pending for release but not enough slots for the quarter. How do I allocate the limited slots and prioritize content without compromising various genres that cater to our diverse viewers?"

Ceva: "Our logistic company leverages multiple transportation methods. However, recent pressure to reduce our carbon footprint demands a shift towards more sustainable practices. How should I balance cost efficiency and sustainability?"

NS: "As a platform coordinator, I frequently handle rush-times when platforms get exceptionally crowded. There's pressure to keep trains on schedule, but overcrowding raises serious safety concerns. How do I ensure safety without disrupting the schedule?"

7.3 Conclusion

In conclusion, this chapter has dissected the intricate technical elements that define the final game prototype. The fusion of Unity and Cursor, guided by the OpenAI-API-dotnet library, underscores a synergy that drives sophisticated interactions with OpenAI's services. The symbiotic relationship between Unity and the Sciffle Box, mediated by the Ijsfontein Sciffle Box library, fortifies the prototype's capacity for immersive engagement. The GameContext.cs file, harnessed by the prowess of a state machine, stands as the linchpin in orchestrating seamless transitions between diverse game states. This technical tapestry forms the foundation upon which the prototype's game play experience is woven, culminating in a cohesive and captivating journey for players. Integrating ChatGPT into the Unity prototype necessitates refining prompts to elicit focused responses while circumventing irrelevant text. Through specific instructions and a parser for text extraction, this challenge is met, ensuring players receive pertinent information without disruption.

Chapter 8:
Final Design

Addressed following research question:

- How can the game mechanics and rules be structured to promote value communication among players?

This chapter unveils the finalized design of the game play, where participants engage in a dynamic journey within a simulated environment that harnesses values to navigate intricate workplace predicaments. The following sections elucidate the mechanics that drive this immersive experience, highlighting the strategic integration of values and decision-making processes.

Video Link
https://youtu.be/-8q_W_AJtv0

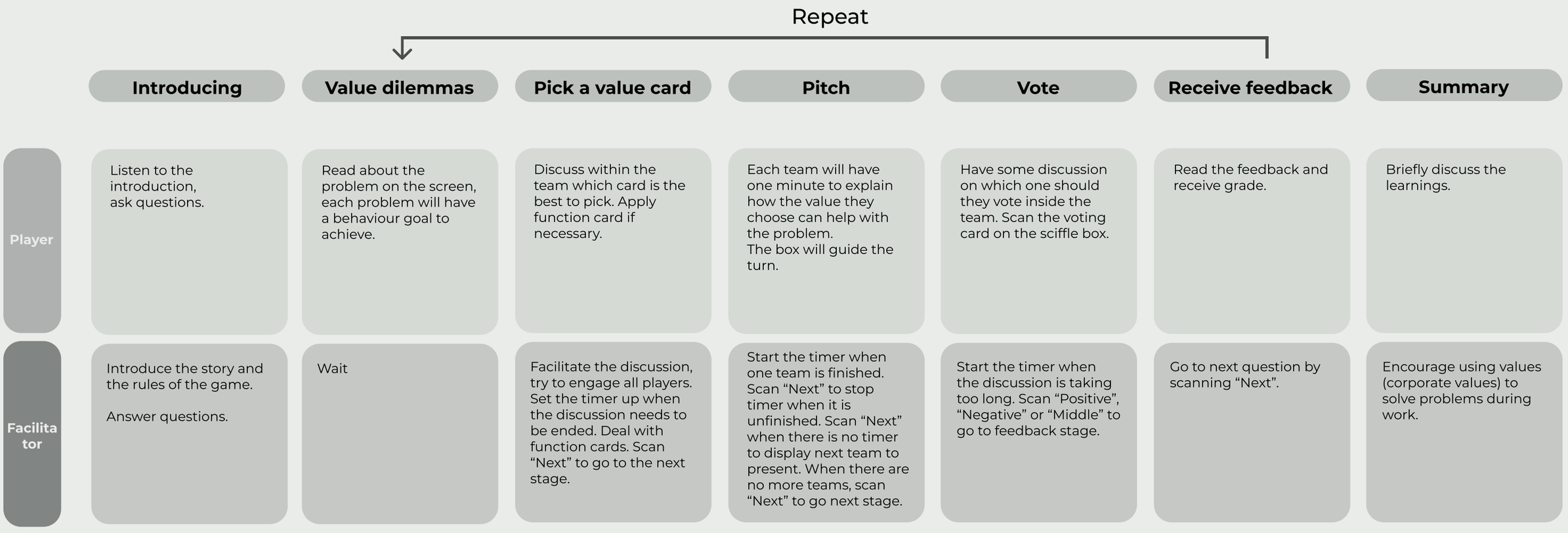


Figure 8.1: full user journey of No Problem Department.

8.1 No Problem Department

The full game process can be seen in Figure 8.1.

Game UI can be seen in Figure 8.2 (page 96), 8.3 (page 98).

As the game initiates, a preparatory screen prompts players to mute their mobile devices and await the session’s commencement, contingent upon the presence of all participants. The unfolding of the game is prefaced by an introduction, extending a warm welcome to all players as they embark on a transformative journey within a new department dedicated to harnessing values to surmount workplace dilemmas. This introduction phase not only lays out the game’s foundational rules but also offers an immersive exploration of the key user interface components, furnishing players with a comprehensive understanding of their functions.

The game play proceeds with the division of participants into four distinct teams, each consisting of 2 to 5 players. Every team is equipped with a unique set of five value cards and three function cards. Crucially, each card may be used only once throughout the game, introducing an element of strategic decision-making. The value cards are a set of 25 cards that adapted from Schwartz (2012), covering all human value categories to provide diverse value selection. Since players will have limited values to chose from, function cards are used to switch around the value cards or get more cards to find the best solution.

Upon this foundation, the game formally commences, guided by the presentations of five colleagues, each detailing a distinct workplace dilemma. These dilemmas are further nuanced by the integration of specific behavioral objectives, aligned with the organization’s core corporate values. Following a thorough comprehension of the presented challenges, players huddle within their respective teams to deliberate and meticulously select a value card that not only resolves the dilemma at hand but also adheres to the overarching corporate values.

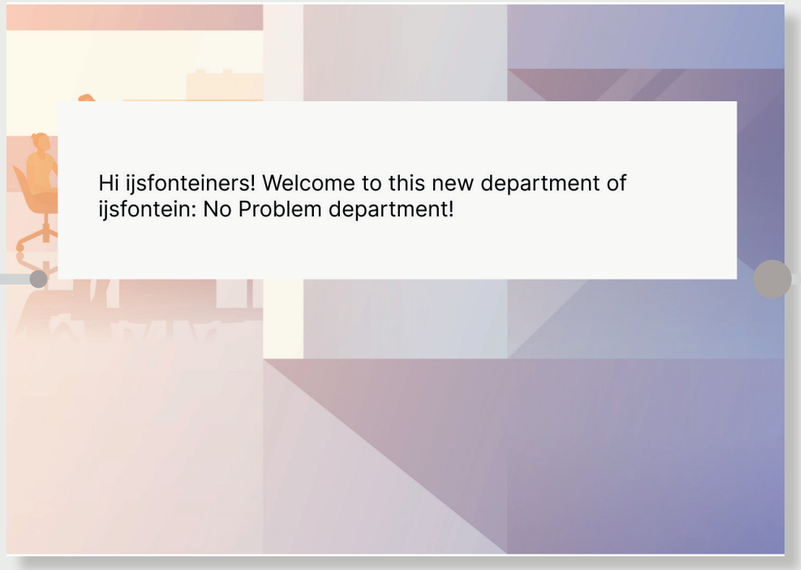
In instances where discussions appear protracted, a “Timer” card may be activated by the facilitator, initiating a 60-second countdown to spur timely resolutions. Subsequently, the chosen value card is scanned on the Sciffle Box’s scanner, color-coded to match each team’s unique identity. The resultant aggregate data is displayed on a central screen, presenting a collective visualization of the teams’ selections.

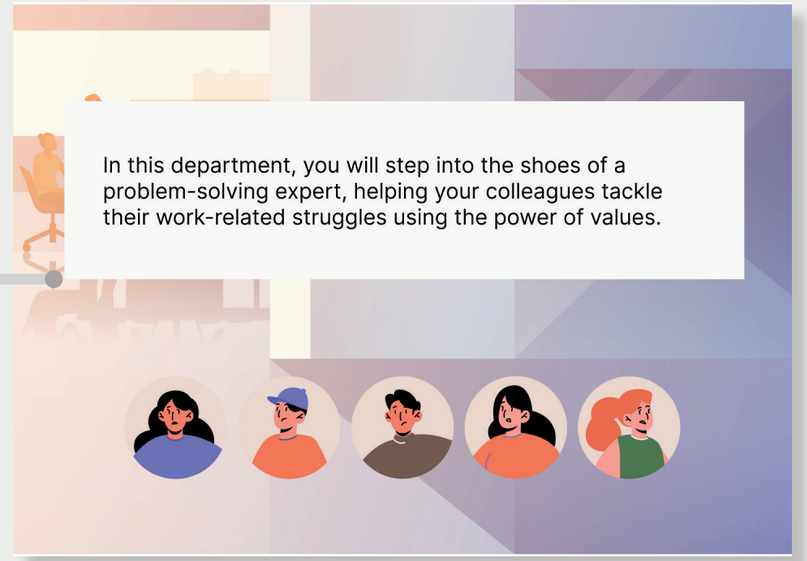
The ensuing phase introduces an element of spontaneity as the Sciffle Box autonomously designates a team to elucidate their rationale behind the chosen value. A 60-second window challenges teams to succinctly present their insights, making a good argument with time monitoring facilitated through the timer card. Once all teams have presented, the game transitions to a voting stage.

During this pivotal moment, each team exercises their voting privilege by selecting the value they deem most adept at resolving the dilemma. A collaborative team discussion culminates in the decision to scan their chosen value onto the scanner, corresponding to the respective value card. The Sciffle Box computes the votes, forwarding the value with the highest count to ChatGPT

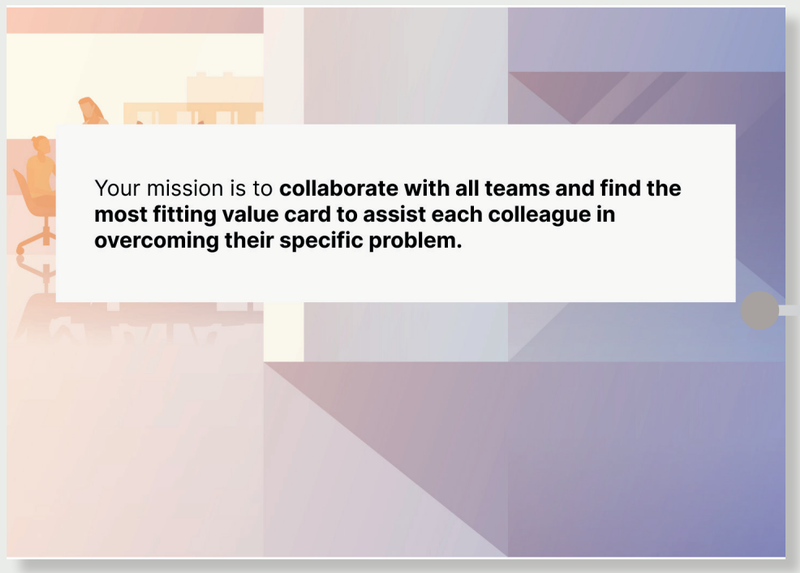
Figure 8.2: Introduction UI of No Problem Department.

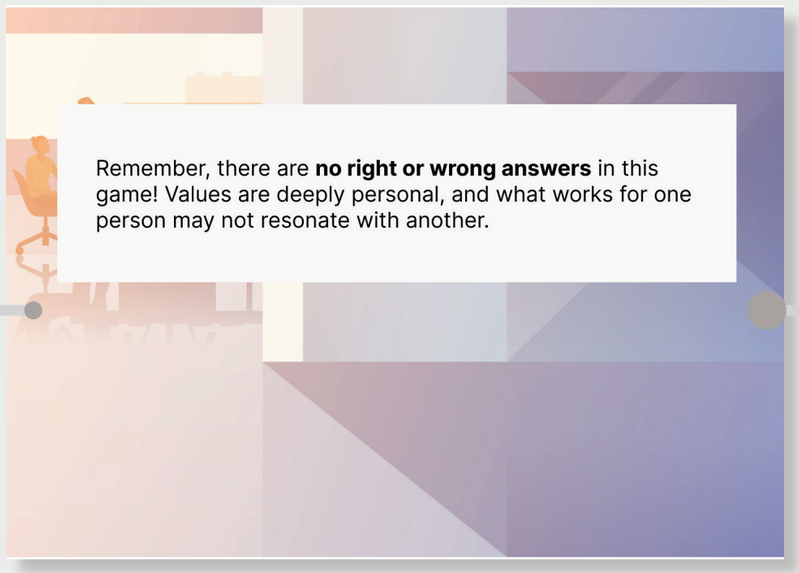
Introduction





Explaining rules with animation.....





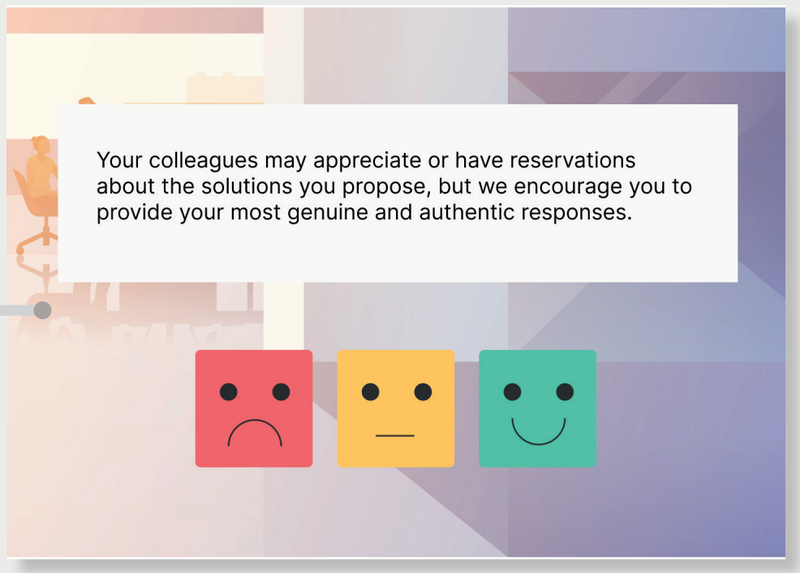


Figure 8.3: UI in different stages of No Problem Department.

Discuss and pick value stage

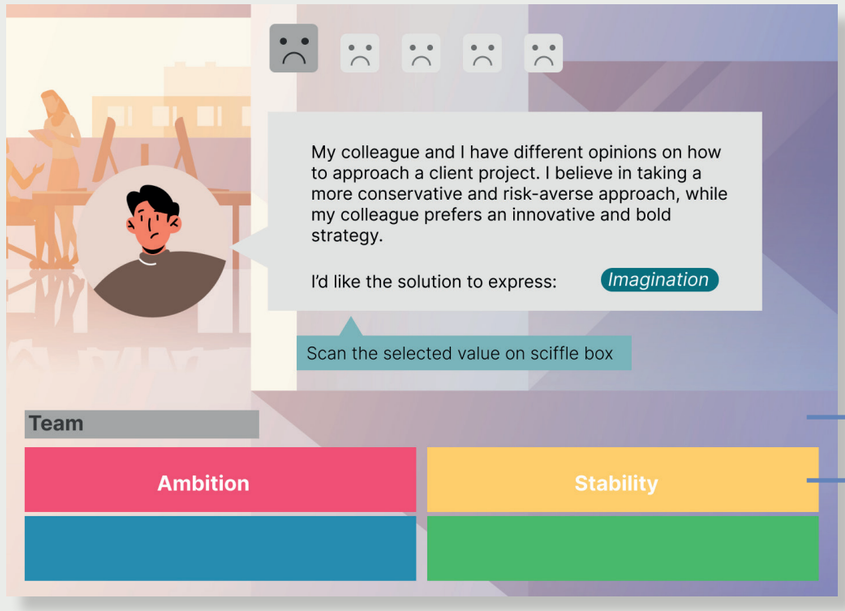
Progress Bar

Dilemma

Behaviour Goal (Corporate Values)

State Guide

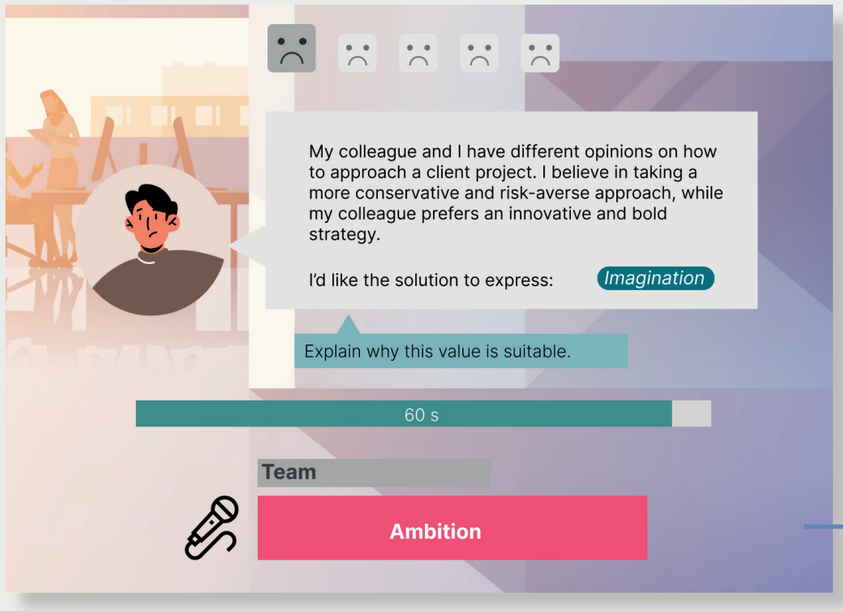
Timer



Teams

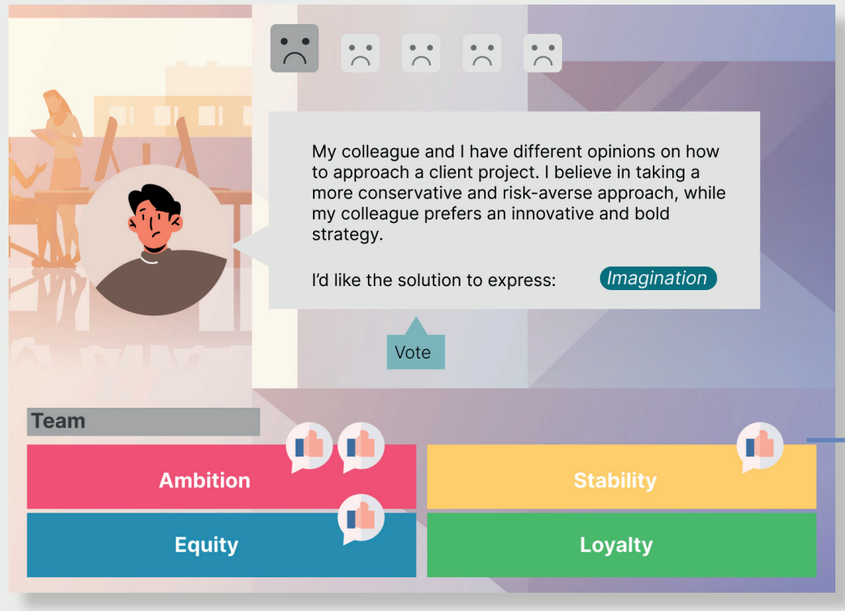
Scanned values

Presentation stage



Presenting team and their value

Voting stage



Voting results

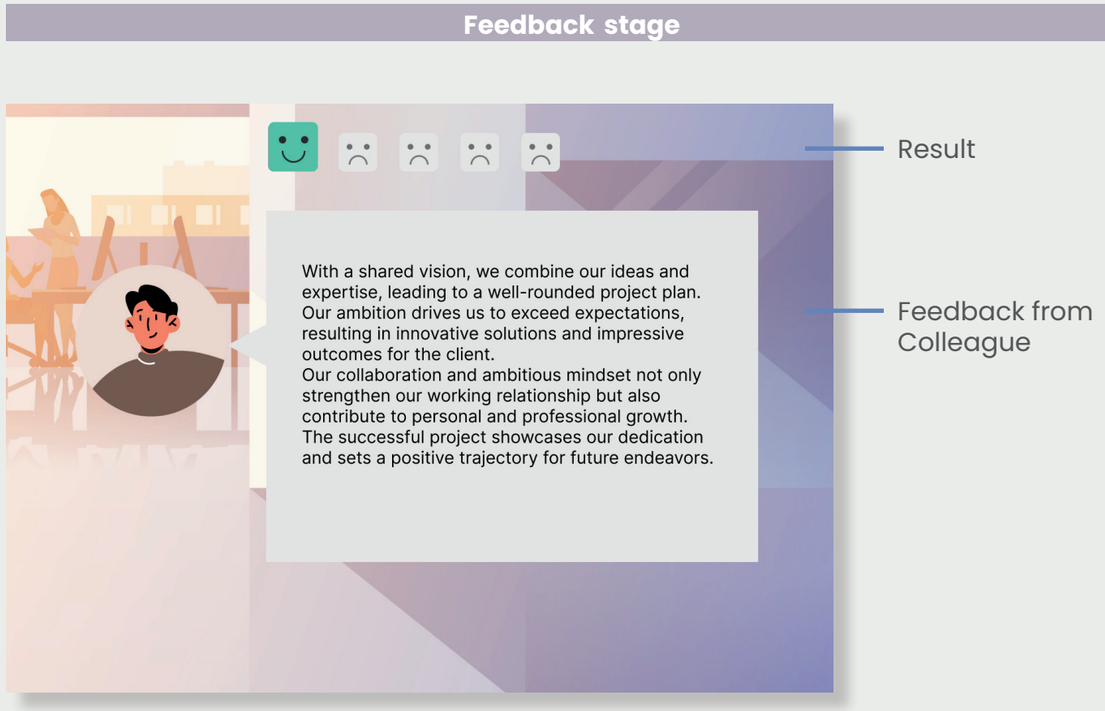
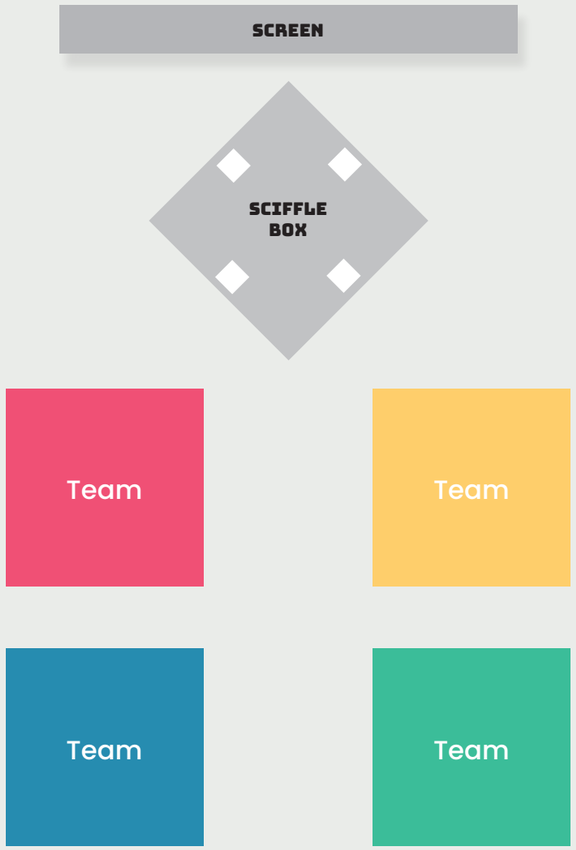


Figure 8.4: UI in the feedback stage of No Problem Department.

Figure 8.5: Physical Setup of No Problem Department.



for further use.

While the voting mechanism ensues, the facilitator introduces an influential facet by scanning a “Positive,” “Negative,” or “Middle” card. This action guides the ensuing feedback generated by ChatGPT, shaping the tone of the feedback to be relayed to the participants. The synthesized results, coupled with ChatGPT’s feedback, are jointly presented on the screen (Figure 8.4), offering participants both textual and visual depictions of the overall consensus.

This intricate sequence repeats itself across multiple rounds, progressively engaging players in varied dilemmas and refining their value-based decision-making processes. Upon culmination, a culminating discussion engages participants in a reflective discourse, encapsulating the invaluable lessons learned through the dynamic integration of corporate values in resolving multifaceted workplace predicaments.

For the physical set-up (Figure 8.5), each team will have their table to select cards and having discussion. Where the sciffle box is presented in front of a screen.

There will be lots of visuals of the final prototype

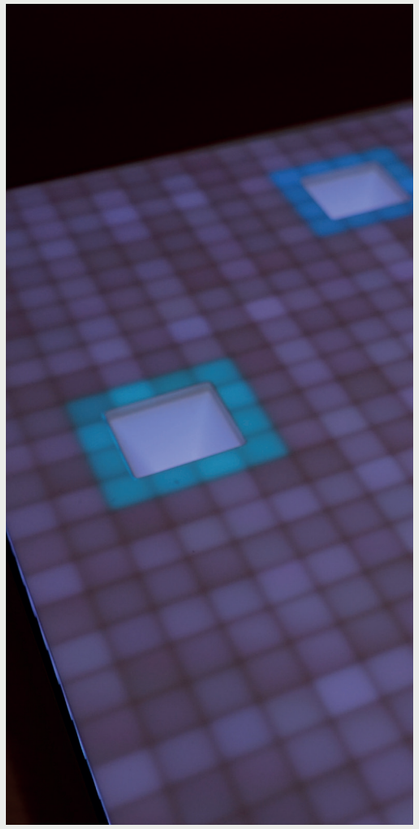
8.2 Conclusion

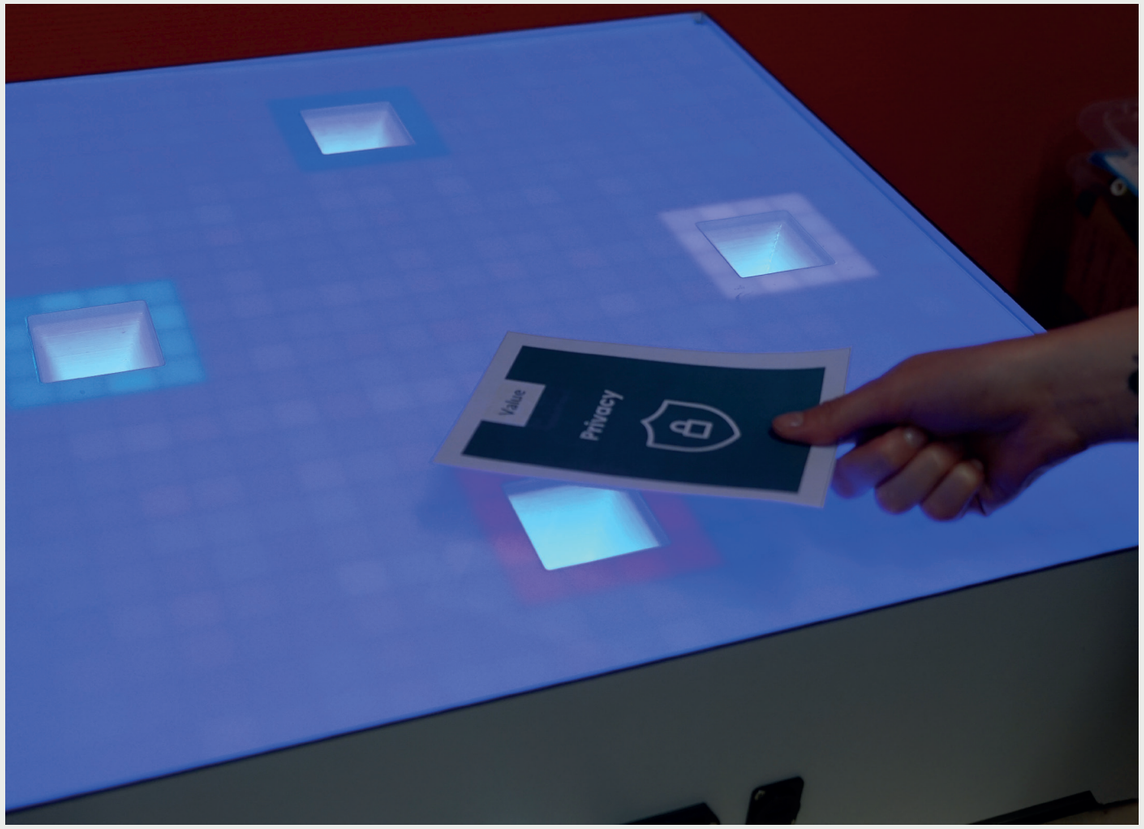
In summary, this chapter delved into the intricacies of the designed game play, where participants are immersed in a value-driven decision-making process to tackle diverse workplace challenges. Through the strategic utilization of value and function cards, the game encourages collaborative problem-solving. The integration of ChatGPT’s feedback and the Sciffle Box’s dynamic functionalities enhances the learning experience, enabling participants to reflect on the multifaceted interplay between individual values and corporate objectives. Ultimately, this gamified approach showcases the potential of utilizing technology and game mechanics to foster a deeper understanding of corporate values in real-world contexts.

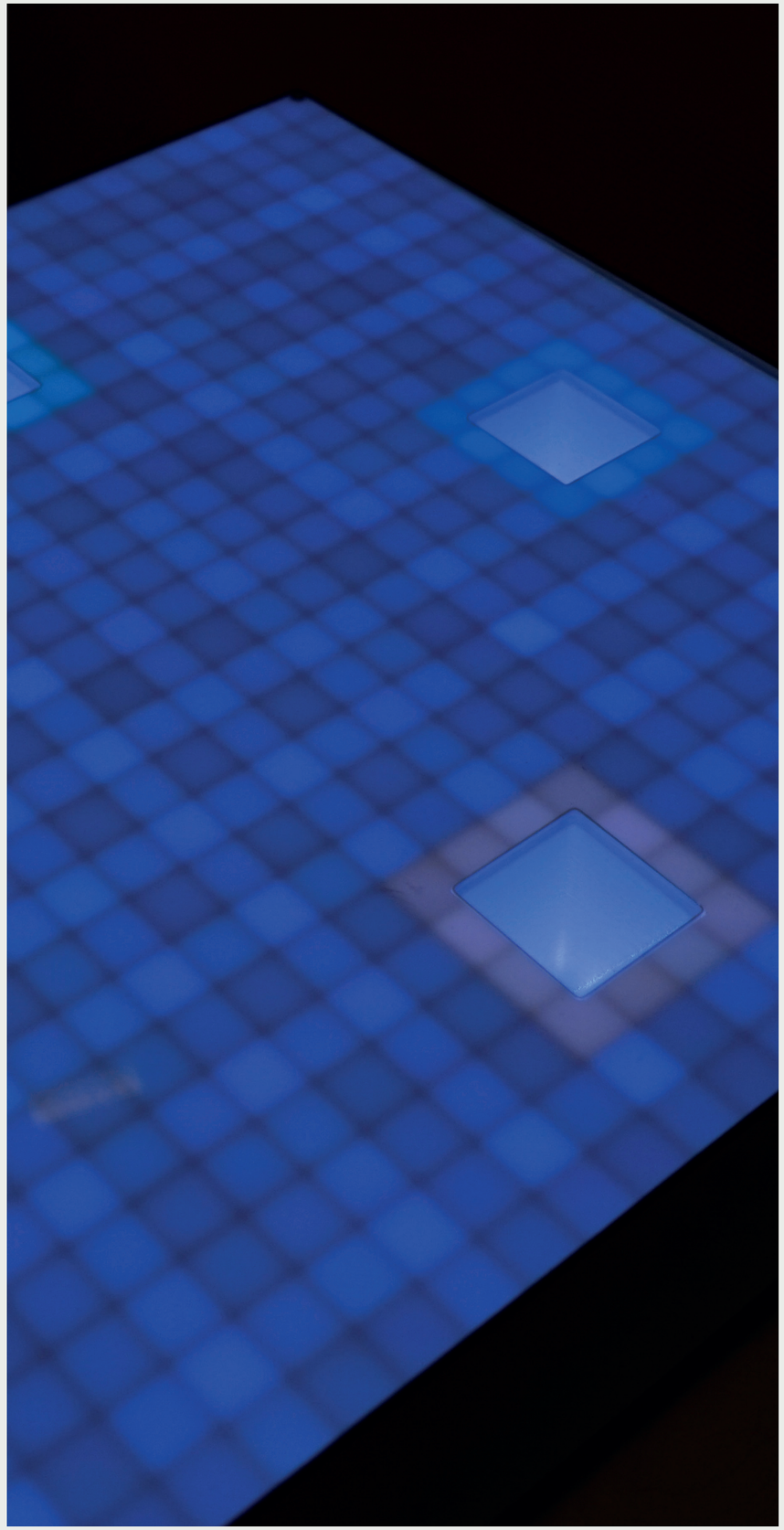
20 value cards

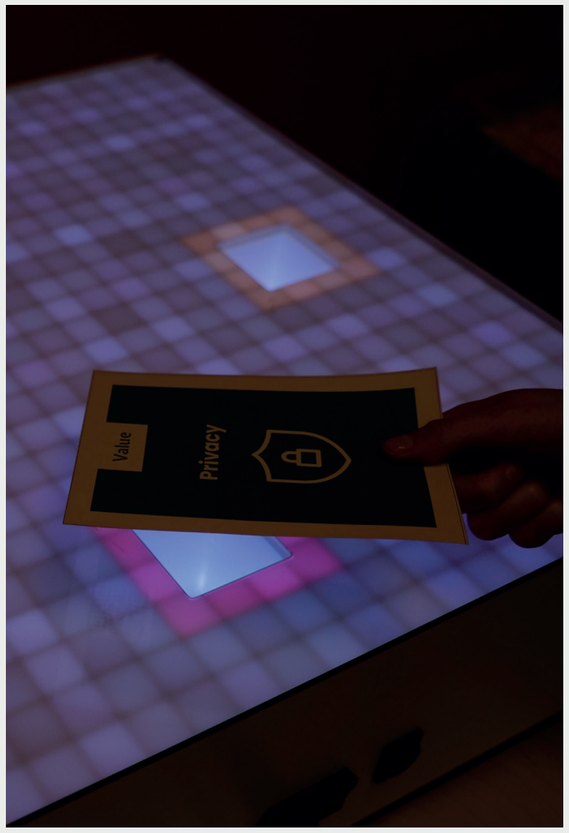
Full Card deck can be seen in Appendix G (Page 174)

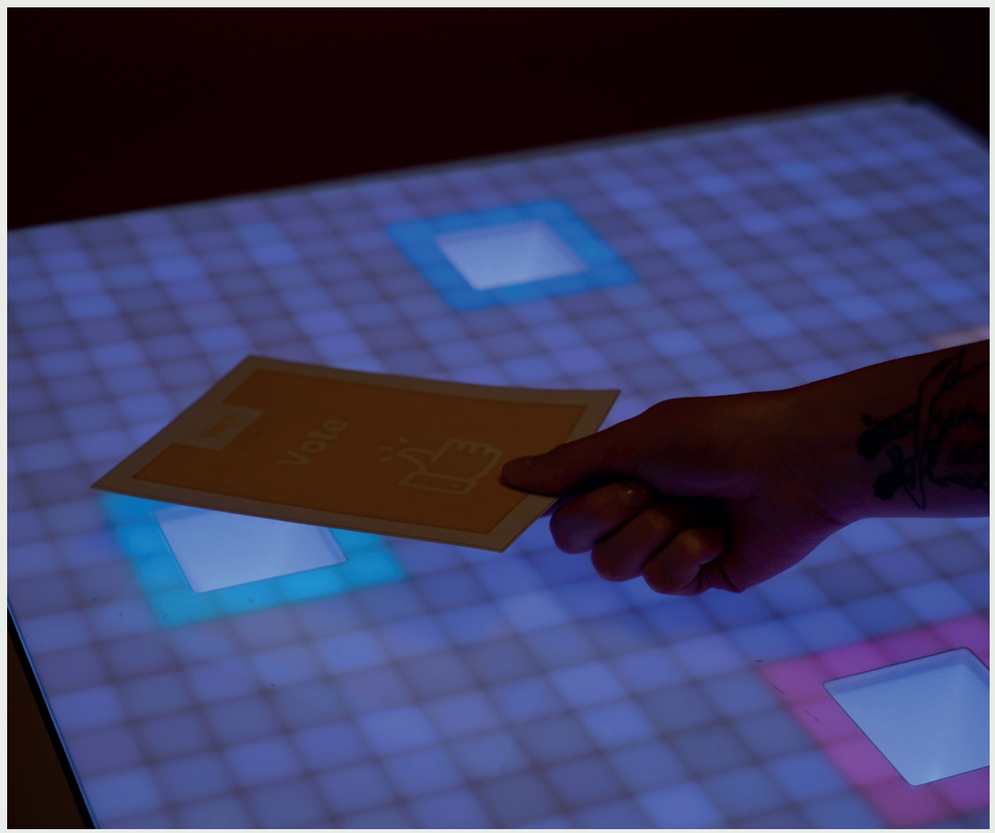
Function cards




Value
Privacy




Value
Privacy


Vote

Chapter 9: Evaluation

Addressed following research questions:

- To what extend does the final design (prototype) fit in the criteria?
- How stable is the ChatGPT performance during game play?
- How relatable is the dilemmas that generated by ChatGPT?

This chapter delves into a evaluation session involving seven staff members from Ijsfontein. The evaluation process is meticulously designed to provide a robust assessment of the developed game. The evaluation encompasses a multifaceted approach that encompasses experiential game play, structured interviews, observations, and questionnaires. The overarching objective is to gauge the effectiveness, feasibility, and impact of the game on participants' understanding of values and their application in the context of corporate settings.


No problem department


Team
Vote
Humbleness
Empathy
Repeat
Enjoyment


Value
Challenge
Value
Equity
Value
Privacy
Value
Efficiency
Function
Repeat
Function
Surprise

9.1 Evaluation setup and results

An evaluation session is conducted with seven staffs of Ijsfontein, including two business owners. The session starts with experiencing the full game, then a structured interview is conducted. The interview focusing on what is the key learning outcome that players gained from this game. What are the tips and tops of the game and how is the feasibility, desirability and viability of the game. The interview is done with all participants, it is recorded then transcribed. Then the data is coded and analyzed to gain insights of the game.

During the game, an observation is done to see if the players are having desired discussion about values and corporate values, if all players are able to engage with the game and if there are any confusion happening during the game. In the end, a questionnaire is used to collect data on if the design fit the design criteria.

Concurrently, a meticulous evaluation of ChatGPT's performance was undertaken through a series of 10 prototype tests. Each iteration involved an assessment of the consistency of dilemmas generated by ChatGPT, the contextual relevance of these texts to enhance the game experience, and a comprehensive scrutiny of potential errors that might arise during game play.

From the observation it is found that all players are able to be immersed into the game flow. Each team are able to have meaningful discussion on which value do they think is the best value, what are their understanding of the values and corporate values.

There will be pictures from evaluation session

From the interview data, the following outcomes are found:

1. The game is able to help players getting deeper understanding of values. Players are able to connect with a diverse range of values. They can step out of their comfort zone in values and gain different perspective about values. At the same time, values are becoming less vague and more concrete during the game play. Having specific contexts helps the values to be more understandable.

"(I learned that) it can be a lot of choices to solve (working) problems. In real life, you don't have these value cards in your hand, uh, you kind of like struggle how you can resolve it. Usually, you ca only think about one solution (with the value cards you can think about more). So for me, I learned it's, you have a lot of choices." (Participant 6)

"I really like the fact that you think about it some values, that, you know, we don't really think about. You might have it back of your mind, but you don't really make it like something that you talk about, which you which co work. E.G. I thought it was really nice that you, think about empathy e.g. In what way empathy can do in this specific situation, I think it it helps you to organize your thoughts by creating a story, connecting the words (and express the value)" (Participant 4)

"What I find interesting is that if you look at the problem and there is a value, you try to connect problem in the value, two values that are there. And in a way, it helps you, because by picking up a value, you sort of put a lens on the way you like to solve it. UM. And I think discussing that with the teams interesting, because then I we sort of find a common solution based on the value" (Participant 3)

"I think it's nice to discuss the values, be aware of them." (Participant 2)

"Yeah, for me, equity was interesting to to understand that if you approach your client. It was an AH! moment for me. If there's a problem we both have the same yeah, I intend to see it as my problem like we (Ijsfontein) have to solve for client. But it's not the case, we're in the same boat (with the client), so I get a different understanding when I look at equity." (Participant 3)

"I really like is the fact that when the cards are getting um less, you have to take something out of the box on choosing a family that you normally wouldn't choose for yourself. I think that's something that's really nice." (Participant 5)

2. But at the same time, there are some weaknesses of the game as well. On the one hand, corporate values should be more focused in the game for that is the most important learning goals for the market. On the other hand, presenting and voting in the game process can still bring sense of competition in the play experience. A possible solution is to make it clear what players are voting for, not the teams, but the value that can reflect the corporate values.

"So now you say these are four corporate values, and we play with you explained it at the end, and I think it should also be introduced at the start." (Participant 2)

"I think it should introduce more on why we are playing a value game." (Participant 5)

"I was a little bit struggling with the fact that we are playing with the corporate values, but the only values we play with are human values (on the value cards). So somehow I would like it that we can also play with corporate value cards" (Participant 3)

"For some reason, I became quite competitive It. It felt also like , I want to win, but you couldn't win (because you said there is no right or wrong)." (Participant 4)

"Like, I presented my value. I want my value to be that (final value). Then we have a discussion about it, we really like it. We start to love our value." (Participant 1)

3. The contextual input furnished by ChatGPT contributes to the overall game experience. However, instances where the generated content does not align precisely with the discussed meanings can result in diminished relevance of the feedback. Concurrently, the awareness that the texts are authored by ChatGPT introduces an additional layer of perception, potentially rendering the text less imbued with a human touch.

"For me, the question is, should you say that is generated or not? Because maybe it wouldn't even notice for me if I didn't know it was generated by ChatGPT um. But, if you know, you look at definitely, do you think it was, like, less human." (Participant 4)

"For me if ChatGPT bring meaningful feedback is 50/50. It is more meaningful when what we discussed, it's the same thing that is that's on the screen, but, uh, there also were sometimes that it (ChatGPT) showed something that I was not connected to." (Participant 1)

"I don't think there is a difference no matter the context is generated, or you wrote it." (Participant 2)

4. The are more development can be done based on the game mechanism. First, the function cards can be simplified to really limit the card decks that players can select from. Therefore, they have to connect with values that might not be their first options to explore the diversity of values.

"What I really like is the fact that when the cards are getting um less, you have to take something out of the box on choosing a value that you normally wouldn't choose for yourself. I think that's something that's really nice. You do not need that much function cards." (Participant 5)

5. The design exhibits a notable level of feasibility. The prototype can support the play experience with details like sound effects and animations. The usage of ChatGPT brought a new way of developing Sciffle Box games. At the same time, the design provides smooth user flow, allowing meaningful and fun playing experience that satisfy user's needs. It would be a bigger challenge to weaken the facilitator roll in the game so customers can play the game easier.

"And so, I would say, let's say, 75% from market ready, because it's already working. So basically the functionality is already there... I think the flow of the whole game is is quite good, you know, the steps and, uh, and the discussion that we have... So ChatGPT now is bringing values on production and adding more technical values to the box." (Participant 4)

6. The design is visible to the market for it reflects the need or corporate

training and brought new ways of corporate value training to the market. Too bring even more impact on viability, the role of ChatGPT can be more standing out by providing feedback with different personality or even using other AI technology like image/video generating to make the non-game players more vivid.

"And I could imagine if you would just add, e.g. a personality to it, so give feedback with a different tones of personality, so that you make the prompts more specific. Yeah, I think then the text will become more humanized, more personal. Because generating general text, we all now check GPT can do it perfect. But that's not the fun part." (Participant 4)

The results of the questionnaire can be seen in Figure 6.1. There, six participants give their answer to the questionnaire, an average number is taken to evaluate the performance of the game.

During the evaluation phase involving the iteration of the prototype on ten occasions, an assessment of ChatGPT's performance was executed. The analysis revealed a consistent pattern whereby the first dilemma consistently maintained its original form across all iterations. Subsequent dilemmas similarly exhibited a substantial degree of uniformity, albeit with minor discrepancies observed in one or two dilemmas. Across these ten iterations, ChatGPT consistently exhibited the capability to generate a set of dilemmas that substantially mirrored the working context of Ijsfontein.

However, a noteworthy observation emerged during four out of the ten evaluations, indicating instances of non-contextual feedback. These anomalies were characterized by incongruent text, such as mentioning positive/negative/middle ratings during feedback where it should not have like "Adapting a negative attitude, I ..." or extraneous statements such as "Shall we start from the first question?" The origin of these discrepancies can be attributed to ChatGPT not adhering to the requisite format stipulated in the prompts, thereby leading to inconsistencies in parsing and extracting superfluous text. This phenomenon underscores the need for stringent formatting adherence to ensure optimal

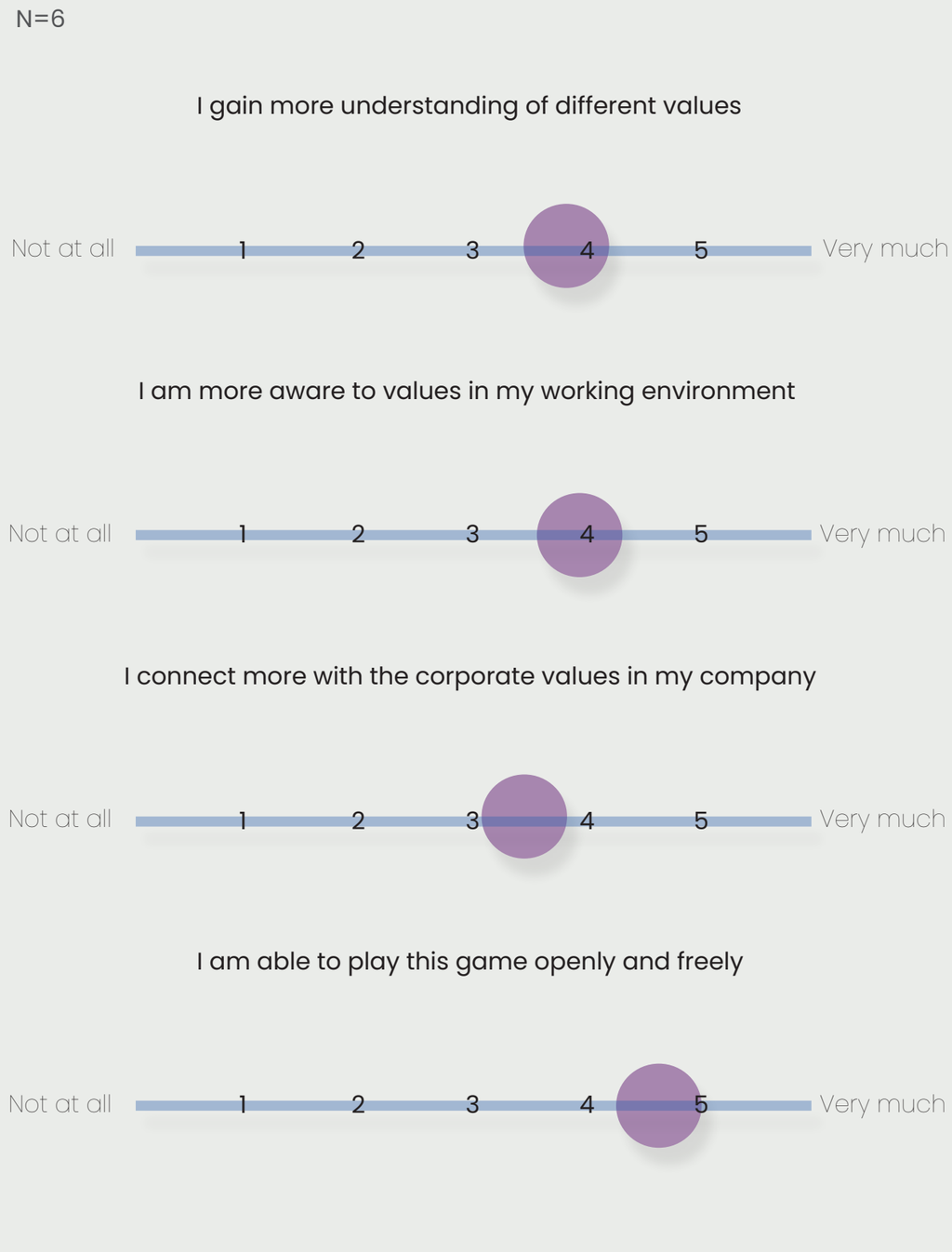


Figure 9.1: questionnaire results.

coherence and precision in ChatGPT's responses.

9.2 Compared with criteria and testable targets.

Based on a comprehensive synthesis of the evaluation outcomes and retrospective consideration of the initial design criteria, the following arguments can be posited:

1. *The game focuses on social interaction between players.*

   As observed, participants engage in meaningful discussions, actively participating in team-based interactions, presenting their perspectives, and attentively considering the arguments put forth by fellow players.

2. *The Sciffle Box and ChatGPT can facilitate the game with a meaningful role.*

   The Sciffle Box serves as an active orchestrator, guiding players through various game stages, proficiently managing data storage, calculations, and delivering feedback through auditory cues and LED indicators. Simultaneously, ChatGPT contributes by contextualizing the game play. However, it occasionally introduces non-contextual text or feedback that doesn't align with players' discussions.

3. *All players are able to engage with the game.*

   From the observation, all players are able to activity engage and discuss values during the game.

4. *The learning experience should be immersed in the flow of playing.*

   There are no lectures given during the game. The facilitator is only guiding players though different stages of play. But still, from the interview it can be seen that players are able to gain different learning outcomes from plying the game.

5. *Players should have the autonomy to learn about values.*

   Players are giving full freedom to discuss or present values in their own way, they can freely express different meanings of value and connect with other people's meanings.

6. *The game should create a safe environment to promote personal truth and open communication.*

   By defining the play contexts with players that work together in everyday life and knowing each other. It created a safe and comfortable environment to express their personal understanding of different values.

7. *The game should introduce the concept of value and help employees connect to corporate values from their own values.*

   The game successfully unpacked abstract values with specific contexts for players to match their persona value, behavior and corporate values. Nonetheless, there's room for refinement by emphasizing corporate values more prominently to underscore their significance within the context of everyday work life.

8. *The game should increase the awareness of values.*

   From the interview and questionnaire, it can be argued that players are more aware of the impact of values, recognizing the diverse options of values will lead to different behavior in working environment.

Criteria	Testable target	
1. The game should focus on social interaction between players.	Players are having meaningful conversations about their understanding of values.	+
2. The Sciffle Box and ChatGPT should help facilitate the game with a meaningful role.	Players are able to finish the tasks in the game by scanning cards and will receive logical feedback from ChatGPT.	+
3. All players should be able to engage with the game.	All players are included in discussions.	+
4. The learning experience should be immersed in the flow of playing.	The play flow should not be interrupted by the facilitator.	+
5. Players should have the autonomy to learn about values.	Corporate values and values will not be defined with "a right answer" before or during the play.	+
6. The game should create a safe environment to promote personal truth and open communication.	Players should be comfortable sharing their own understanding of values.	+
7. The game should introduce the concept of value and help employees connect to corporate values from their own values.	Players should understand more about values and connect more with corporate values.	+
8. The game should increase the awareness of values.	Players should be more aware of values in their working environment.	+

Figure 9.2: Evaluation results compared to criteria and testable target.

Conclusion

In summary, the evaluation of the designed game involved seven Ijsfontein staff members. This assessment aimed to gauge the game's effectiveness in fostering value understanding, facilitating interactions, and aligning with feasibility, desirability, and viability criteria.

During game play, participants actively engaged in discussions about values and corporate values within their teams, resulting in immersive experiences. Interviews further revealed positive outcomes: the game deepened participants' understanding of values, with context-driven scenarios making abstract concepts more concrete. However, opportunities for improvement were identified.

Enhancements were suggested for the game's mechanics, such as emphasizing corporate values more prominently and addressing competitive dynamics. While ChatGPT's contextual input was praised, feedback inconsistencies pointed to the importance of adhering to response formats. The human-like touch of ChatGPT's content raised intriguing questions.

Overall, the evaluation highlighted the game's alignment with design criteria while revealing potential areas for refinement. The core objective of promoting value-based discussions and interactions was met, but refinements are needed in aspects like corporate values' emphasis and ChatGPT's role. This evaluation serves as a foundation for iterative enhancements, aiming to create a game that effectively bridges personal and corporate values, enriching organizational learning and collaboration.

Chapter 10: Discussion

Reviewed the design challenges in this project and addressed the solutions.

In the pursuit of effective corporate training and value integration, this project navigated a series of intricate design challenges. From grappling with the abstract nature of values to ensuring seamless AI integration, the project aimed to enrich value discussions within a gaming context. This chapter introduces the key design challenges faced and highlights the strategies employed to address them, ultimately contributing to the realms of value discussions, corporate training, and game design.

10.1 Discussion

Throughout this project, numerous design challenges were identified and tackled. Initially, the abstract nature of values emerged as a key concern from both the literature review and co design sessions. It became evident that people lacked awareness of values' influence and struggled to engage in value-related discussions independently. To address this, the design incorporated specific contexts and examples of values (value cards) to foster connections between values and behaviors. By making values a lens for analyzing behavior and tasking players with linking behavior to value cards to resolve dilemmas, the project effectively increased value awareness, fostered diverse understanding, and facilitated more concrete value communication.

A second challenge stemmed from the immense diversity of values, leading to difficulties in selecting and scaling them for meaningful discussions. In response, a solution emerged from adapting Schwartz's value theory, which categorized human values into 10 categories. This enabled the selection of two values from each category, subsequently divided into four teams, effectively supporting a broad spectrum of value connections and communication.

During the field study, the project encountered the challenge of optimizing Sciffle Box game customization efficiency. This was managed by integrating ChatGPT into the game, offering enhanced flexibility. Consequently, adjusting prompts or even employing cards with varying prompts allowed for customized game experiences without the need for extensive game development efforts.

Moreover, traditional corporate training often neglected the vital link between personal values and corporate values, impacting behavior change outcomes. This gap was successfully addressed by encouraging staff members to link their individual values with corporate values, thereby cultivating a deeper understanding and driving natural behavior change.

Creating a game mechanism that fostered open value discussions without right or wrong answers presented another challenge. To circumvent this, ChatGPT was assigned the role of providing feedback, mitigating excessive competitiveness and promoting collaboration. By integrating narratives and reducing the emphasis on competition, a supportive environment conducive to value discussions was established.

Furthermore, integrating ChatGPT into the gaming experience while ensuring it facilitated value discussions proved to be a significant challenge. This was met by utilizing ChatGPT to generate relevant non-game player context, immersing participants in narrative-rich value discussions. The technical hurdle of ensuring meaningful context generation was overcome through meticulous prompt crafting, iterative testing, strategic task sequencing with confirmations, dynamic feedback generation through control cards, and the implementation of a parser in Unity for effective text extraction.

Referencing the pertinent literature, the value framework proposed by Schwartz (2012) and Bos-de Vos (2020) offers valuable guidance in managing an extensive array of values through a succinct set of illustrative examples, facilitating effective discussions and communication. Additionally, insights drawn from Muzikante and Reņģe (2011) underscore the profound connection between values and behaviors, emphasizing the potential for inducing behavioral changes. In line with this, Boenink and Kudina's (2020) work accentuates the intricate interplay of values with behaviors, advocating for a nuanced approach to communicating values, considering their interactive, diverse, and dynamic attributes. These scholarly contributions substantiate the project's strategies in effectively facilitating value unpacking, comprehension, and communication within the designed gaming context. At the same time, adapting design space cards to facilitate co-design sessions can provide strong guidance and bring better results (Lomas, Karac, & Gielen, 2021).

The study also encompasses limitations. While value selection adheres to established frameworks, the finite number of examples may constrain the scope of engagement, potentially failing to encompass the full gamut of real-world values. ChatGPT's accuracy in generating contextually apt feedback is pivotal; deviations could compromise value discussions. Addressing competition concerns in the game's mechanics is essential to prioritize collaborative exploration over competitive dynamics. The facilitator's role remains vital in the current setup; optimizing for autonomous Sciffle Box-guided game play aligns with market preferences and user-friendly interaction, diminishing reliance on external facilitation.

This project makes contributions to the fields of value discussions, corporate training, and game design. The integration of ChatGPT for AI-mediated dialogues offers an innovative approach to fostering meaningful discussions around values. This approach bridges the gap between individual values and corporate ethos in training contexts. Moreover, it provides a personalized and contextually rich training method, enhancing engagement and relevance. In the realm of game design, this project showcases a novel way of using AI to facilitate learning dialogues within a cooperative gaming environment. This innovative fusion of AI, value discussions, and game design holds promise for both scholarly exploration and practical applications in AI-augmented learning, value integration, and participatory game development.

There are several avenues for further exploration in this area. Expanding the range of value examples and adapting the game to accommodate a broader array of contexts could deepen the value discussions. Integrating more AI capabilities, such as multi-modal feedback involving text, images, or even video, could enrich the game play experience and better reflect the complexities of real-world corporate scenarios.

The game mechanics could be further refined to minimize the competitive undertones, facilitating an environment that emphasizes collaboration, exploration, and personal growth. Additionally, automating the facilitation process entirely, removing the need for an external facilitator, could simplify the user experience and potentially broaden the game's appeal.

Further empirical research is warranted to assess the long-term effects of the game on participants' understanding of values and their subsequent behaviours in professional contexts. Qualitative studies could delve deeper into the nuances of value discussions, exploring how personal values evolve and integrate with corporate values over time.

10.2 Conclusion

In conclusion, this project delved into the intricacies of promoting value discussions through innovative game design and AI integration. The journey unveiled solutions to diverse challenges, from bridging the gap between personal and corporate values to optimizing AI-generated feedback. By effectively navigating these challenges, the project not only enhances the value integration landscape but also paves the way for future explorations in AI-augmented learning and participatory game development.

Conclusion

In conclusion, this project embarked on a multifaceted exploration of values, corporate training, and game design within the realm of the innovative Sciffle Box platform. The endeavour to bridge the gap between abstract values and tangible behaviours led to the development of a value-focused game experience. Through a systematic approach, numerous design challenges were meticulously addressed. The following research questions are answered in this project:

Sub-question 1a: What are the definitions of values?
Values can be defined as the guiding principles of people or a certain quality of worth. In this project, the former definition is adapted.

Sub-question 1b: What are the characteristics of values?
Values are linked with desires and motivate actions. Values act like criteria, they guide the selection and also the evaluation of actions. Values are ordered by importance, in different contexts, different values are prioritized. Values are interactive, dynamic and diverse. You do not realize values until you it is linked with an action or choice. Values change all the time and there is no one single viewpoint of values.
Sub-question 1c: How to identify values? Using qualitative and interpretative methods. Provide specific context and challenge, allow reflection from action to values with concrete steps. Identify diverse viewpoints, and promote personal truth.

Sub-question 1d: What are corporate values? Why are they important?
Corporate values are the guiding principles of an organization. They can faster the decision-making process within an organization, embrace team collaboration, providing better staff engagement and efficiency.

Sub-question 2a: What is the physical build-up and marketing strategy of the Sciffle Box?
The Sciffle Box is a gaming device that contains a LED matrix and four scanners. This device facilitates player interaction with a digital game by means of tangible cards, which are engaged through scanning actions. Notably, the Sciffle Box's primary target is the domain of physical corporate training. The service it offers is tailored to enable effortless game play and accommodate substantial group sessions effectively.

Sub-question 2b: What are the games that build on the Sciffle Box?
Currently, there are three games on the box, they focus on team building, on boarding and corporate value training.

Sub-question 3: Under what contexts can the Sciffle Box promote value connection?
The Sciffle Box can enhance value communication between humans. It can connect individuals, enhance understanding between co-workers, help complex decision-making, supporting value promotion or value co-creation.
At the same time, it can also help value communication between technology and human. It can support workshops like co design technology with values, explore new possibilities of technology with human values or identify the impact of technology with values.

Sub-question 4: How can the game mechanics and rules be structured to promote value communication among players?
To embrace the interactive, dynamic and diverse nature of human values, it is important to provide specific dilemmas, helping players connect values with behaviours and decisions. At the same time, provide value examples (value cards in this case) to unpack the abstract nature of values and simplify value reflection by providing limited options. At the same time, it is very important to highlight there are no right or wrong answers in the game, weakening the scoring system to provide a collaborate dynamic and diverse definition of values.

How stable is the ChatGPT performance during game play?
From the evaluation, it is found that ChatGPT is able to provide meaningful dilemmas as required. But when it comes to more detailed and specific requirements in the prompt, it might not be able to follow. Four out of ten times ChatGPT are not able to provide feedback in the required form. This variability could potentially be attributed to both the calibre of the prompts and the performance of the parsing function I build within the Unity program.

How to adapt the game quickly and easily to a different company?
By changing the prompt and describing which company the game is built for, ChatGPT is able to provide dilemmas that are fitting into the specific company context. In Chapter 7, the dilemmas ChatGPT generated for NS would be about train management, for Netflix they would be about show production and for Cava would be about delivery. In the No Problem Department, the dilemmas are mainly focusing on design and communication with clients.

How relatable are the dilemmas generated by ChatGPT?
From observation and interviews of the evaluation of the session, the context ChatGPT bring can be relatable enough for players to gain a different insight into values in the working environment and have a meaningful discussion about different meanings of values.

Main Question: How to promote value communication through gamification on the Sciffle Box?

In the end, the main question can be addressed by considering the interplay of several factors:

Dilemma Design and Contextualization: To foster value communication, crafting specific dilemmas that resonate with the target audience's working environment is crucial. In this project, it involves utilizing ChatGPT's capabilities to generate relatable scenarios tailored to each company's context, thereby stimulating discussions around values within their unique organizational settings.

Incorporation of Value Cards: Integrating value examples (value cards) as part of the game's mechanics aids in concretely unpacking the abstract nature of values. These examples offer players a limited set of options, simplifying the process of reflecting on their own values and connecting them with potential behaviours and decisions.

Scoring System Flexibility: By deliberately weakening the scoring system and emphasizing that there are no definitive right or wrong answers, the game fosters a collective and diverse understanding of values. This promotes an open and inclusive environment for value communication, free from the constraints of a rigid scoring structure.

This project's contributions resonate across fields, intertwining value discussions, corporate training, game design, and the unique capabilities of Sciffle Box. The fusion of ChatGPT and value-focused game play within Sciffle Box presents an innovative avenue for fostering meaningful dialogues around values. It stands as a personalized, contextually-rich training method within Sciffle Box, enhancing engagement and relevance. Moreover, the integration of AI into Sciffle Box cooperative gaming bears promise for scholarly exploration and practical applications

within Sciffle Box's evolving landscape. As this journey concludes within the Sciffle Box, it opens the door to future explorations within Sciffle Box and beyond. Expanding the range of value examples within Sciffle Box, incorporating multi-modal feedback within Sciffle Box interactions, and refining Sciffle Box's game mechanics to emphasize collaboration are among the possibilities. Empirical research within the Sciffle Box context to evaluate long-term effects and qualitative studies within Sciffle Box to delve deeper into value discussions remain avenues for further investigation within Sciffle Box and its wider implications.

In essence, this project advances understanding within the Sciffle Box and underscores the intricate interplay of values within a dynamic and evolving landscape, leaving a mark at the intersection of values, AI, game-based learning, and the innovative Sciffle Box platform.

Reference

Bos-de Vos, M. (2020). A framework for designing for divergent values, in Boess, S., Cheung, M. and Cain, R. (eds.), Synergy - DRS International Conference 2020, 11-14 August, Held online. https://doi.org/10.21606/drs.2020.374

Boenink, M., & Kudina, O. (2020). Values in responsible research and innovation: from entities to practices. Journal of Responsible Innovation, 7(3), 450–470. https://doi.org/10.1080/23299460.2020.1806451

Hotjar Blog. (2023, June 30). How to choose the right core company values [70+ examples]. https://www.hotjar.com/blog/company-values/

Ijsfontein. (2019, March 7). Homepage. https://www.ijsfontein.nl/en/

Ijsfontein. (2022). Facilitator manual for the million mile journey v03. Ijsfontein.

Karac, M. (2018) “Power of the Cubes.” Masters Thesis. Delft University of Technology, Industrial Design Engineering. http://resolver.tudelft.nl/uuid:7423644b-9fe2-46c7-91d1-c6e034ea01be

Kaptein, M., & Schwartz, M. S. (2008). The effectiveness of business codes: A critical examination of existing studies and the development of an integrated research model. Journal of Business Ethics, 77(2), 111-127.

Karac, M. (2021). Design Space Cards. Proceedings of the ACM on Human-computer Interaction, 5(CHI PLAY), 1–21. https://doi.org/10.1145/3474654

Lencioni, P. M. (2023, January 30). Make your values mean something. Harvard Business Review. https://hbr.org/2002/07/make-your-values-mean-something

Lomas, J., Karac, M., & Gielen, M. J. (2021). Design Space Cards. Proceedings of the ACM on Human-computer Interaction, 5(CHI PLAY), 1–21. https://doi.org/10.1145/3474654

Muzikante, I., & Reņģe, V. (2011). Attitude Function as a Moderator in Values-Attitudes-Behavior Relations. Procedia - Social and Behavioral Sciences. https://doi.org/10.1016/j.sbspro.2011.10.195

Pommeranz, A., Detweiler, C., Wiggers, P. et al. Elicitation of situated values: need for tools to help stakeholders and designers to reflect and communicate. Ethics Inf Technol 14, 285–303 (2012). https://doi-org.tudelft.idm.oclc.org/10.1007/s10676-011-9282-6

Schwartz, S. H. (2012). An Overview of the Schwartz Theory of Basic Values. Online Readings in Psychology and Culture, 2 (1) https://doi.org/10.9707/2307-0919.1116

Schwartz, S. H. (2021). A Repository of Schwartz Value Scales with Instructions and an Introduction. Online Readings in Psychology and Culture, 2(2). https://doi.org/10.9707/2307-0919.1173

Schwarcz, S. (2015). The Concept of “Value” in the Theory of Marketing. Asian Social Science, 11(9). https://doi.org/10.5539/ass.v11n9p320

Valamis. (2023, March 21). Corporate training. Valamis. https://www.valamis.com/hub/corporate-training

Verbeek, P. P., & Tijink, D. (2020). Guidance ethics approach (1st ed.). ECP | Platform voor de InformatieSamenleving. https://ecp.nl/publicatie/guidance-ethics-approach/

VALUE (noun) definition and synonyms | Macmillan Dictionary. (n.d.). https://www.macmillandictionary.com/dictionary/british/value_1

Appendix

Appendix A: Project Brief

DESIGN FOR our future

TU Delft

IDE Master Graduation

Project team, Procedural checks and personal Project brief

This document contains the agreements made between student and supervisory team about the student's IDE Master Graduation Project. This document can also include the involvement of an external organisation, however, it does not cover any legal employment relationship that the student and the client (might) agree upon. Next to that, this document facilitates the required procedural checks. In this document:

- The student defines the team, what he/she is going to do/deliver and how that will come about.
- SSC E&SA (Shared Service Center, Education & Student Affairs) reports on the student's registration and study progress.
- IDE's Board of Examiners confirms if the student is allowed to start the Graduation Project.

USE ADOBE ACROBAT READER TO OPEN, EDIT AND SAVE THIS DOCUMENT
Download again and reopen in case you tried other software, such as Preview (Mac) or a webbrowser.

STUDENT DATA & MASTER PROGRAMME
Save this form according the format "IDE Master Graduation Project Brief_familyname_firstname_studentnumber_dd-mm-yyyy".
Complete all blue parts of the form and include the approved Project Brief in your Graduation Report as Appendix 1 !

family name: Wen 6233
initials: X.W. given name: Xin
student number: 5556945

Your master programme (only select the options that apply to you):
IDE master(s): ( ) IPD (★) DfI ( ) SPD
2nd non-IDE master: NO
individual programme: - - (give date of approval)
honours programme: ( ) Honours Programme Master
specialisation / annotation: ( ) Medisign ( ) Tech. in Sustainable Design ( ) Entrepeneurship

SUPERVISORY TEAM **
Fill in the required data for the supervisory team members. Please check the instructions on the right !

** chair: Derek Lomas dept. / section: DA
** mentor: Ianus Keller dept. / section: DCC
2nd mentor: Anko Elzes
organisation: Ijsfontein
city: Amsterdam country: Netherlands
comments (optional)

Chair should request the IDE Board of Examiners for approval of a non-IDE mentor, including a motivation letter and c.v..

Second mentor only applies in case the assignment is hosted by an external organisation.

Ensure a heterogeneous team. In case you wish to include two team members from the same section, please explain why.

TU Delft

Procedural Checks - IDE Master Graduation

APPROVAL PROJECT BRIEF
To be filled in by the chair of the supervisory team.

chair Derek Lomas date 17 - 2 - 2023 signature

CHECK STUDY PROGRESS
To be filled in by the SSC E&SA (Shared Service Center, Education & Student Affairs), after approval of the project brief by the Chair.
The study progress will be checked for a 2nd time just before the green light meeting.

Master electives no. of EC accumulated in total: 18 EC
Of which, taking the conditional requirements into account, can be part of the exam programme 18 EC
List of electives obtained before the third semester without approval of the BoE

(★) YES all 1st year master courses passed
( ) NO missing 1st year master courses are:

name Robin den Braber date 20 - 02 - 2023 signature

Robin den Braber Digitaal ondertekend door Robin den Braber Datum: 2023.02.20 12:49:41 +01'00'

FORMAL APPROVAL GRADUATION PROJECT
To be filled in by the Board of Examiners of IDE TU Delft. Please check the supervisory team and study the parts of the brief marked **.
Next, please assess, (dis)approve and sign this Project Brief, by using the criteria below.

- Does the project fit within the (MSc)-programme of the student (taking into account, if described, the activities done next to the obligatory MSc specific courses)?
- Is the level of the project challenging enough for a MSc IDE graduating student?
- Is the project expected to be doable within 100 working days/20 weeks ?
- Does the composition of the supervisory team comply with the regulations and fit the assignment ?

Content: (★) APPROVED ( ) NOT APPROVED
Procedure: (★) APPROVED ( ) NOT APPROVED
comments

name Monique von Morgen date 06 - 03 - 2023 signature

Value communication with serious gaming

project title

Please state the title of your graduation project (above) and the start date and end date (below). Keep the title compact and simple. Do not use abbreviations. The remainder of this document allows you to define and clarify your graduation project.

start date 13 - 02 - 2023 14 - 08 - 2023 end date

INTRODUCTION **

Please describe, the context of your project, and address the main stakeholders (interests) within this context in a concise yet complete manner. Who are involved, what do they value and how do they currently operate within the given context? What are the main opportunities and limitations you are currently aware of (cultural- and social norms, resources (time, money,...), technology, ...).

The Skiffle box is a device that supports different serious games playing in groups. It is developed by Ijsfontein and used for different clients with different games to help team-building, improve cooperation or learn about the company/company value. By the action of scanning, the Skiffle box can support a variety of game mechanisms and serve different organizations with different learning goals. The skiffle box is used connected to a screen, the only input is through the QR code scanners. Users will interact with the game by the box. The skiffle box is playing the role of facilitator, it will encourage social interaction between players instead of distracting them. It provides lots of possibilities for different types of play and social interactions.

space available for images / figures on next page

introduction (continued): space for images

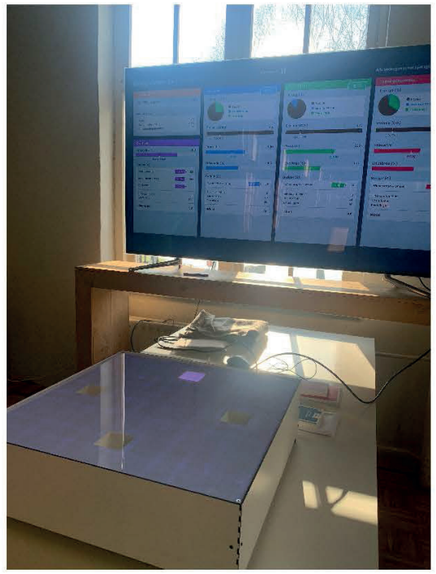


image / figure 1: The Skiffle box connected with a screen with a serious game on display.

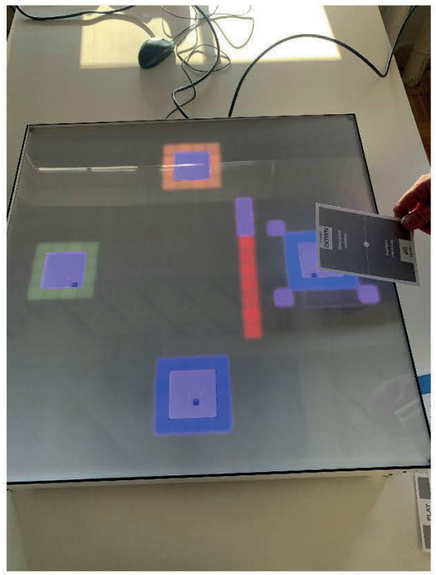


image / figure 2: Scanning cards in the serious games to take action with the Skiffle box.

PROBLEM DEFINITION **

Limit and define the scope and solution space of your project to one that is manageable within one Master Graduation Project of 30 EC (= 20 full time weeks or 100 working days) and clearly indicate what issue(s) should be addressed in this project.

There are many potential opportunities that the skiffle box can provide, but supporting value communication/ design for values can be one of the most interesting areas. Values are abstract, dynamic, and less aware of in daily life. It is easy to agree on but hard to specify what exactly was agreed upon. By using the skiffle box, communications about values can be facilitated to bring more clarity/engagement. My research will lay on how can value communication supported by skiffle box bring games possibly about value-centred ideation towards different topics, value co-creation, value alignment or conflict.

ASSIGNMENT **

State in 2 or 3 sentences what you are going to research, design, create and / or generate, that will solve (part of) the issue(s) pointed out in "problem definition". Then illustrate this assignment by indicating what kind of solution you expect and / or aim to deliver, for instance: a product, a product-service combination, a strategy illustrated through product or product-service combination ideas, ... In case of a Specialisation and/or Annotation, make sure the assignment reflects this/these.

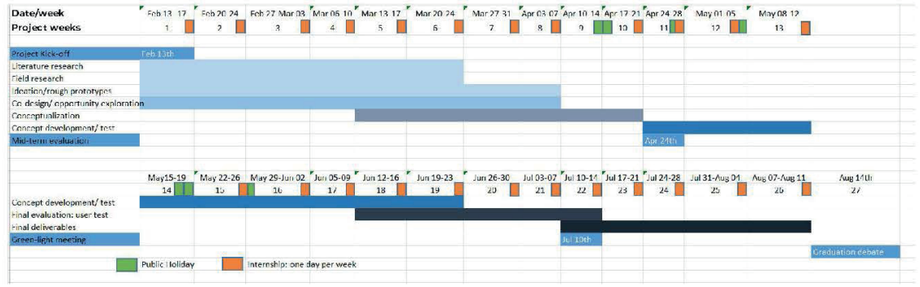
How can the skiffle box support/facilitate social interactions that bring benefit to communicating values/design for values?

In this project, I will explore what are the new and valuable experiences that the skiffle box can create. By researching the box and working closely with it, I will be designing physical elements (cards, objects etc.); digital elements (Miro, unity etc.) that can interact with the skiffle box or help players interact with each other to explore different social interactions that the skiffle box can facilitate. The main area that I want to discover is how can these social interactions supported by the skiffle box bring benefits to value communication or design for values. I will find design oppotunities among value-centred ideation, value co-creation, value alignment or conflict with the help of "the design spcae cards" (Lomas et Al, 2022).

PLANNING AND APPROACH **

Include a Gantt Chart (replace the example below - more examples can be found in Manual 2) that shows the different phases of your project, deliverables you have in mind, meetings, and how you plan to spend your time. Please note that all activities should fit within the given net time of 30 EC = 20 full time weeks or 100 working days, and your planning should include a kick-off meeting, mid-term meeting, green light meeting and graduation ceremony. Illustrate your Gantt Chart by, for instance, explaining your approach, and please indicate periods of part-time activities and/or periods of not spending time on your graduation project, if any, for instance because of holidays or parallel activities.

start date 13 - 2 - 2023 14 - 8 - 2023 end date



First phase: Discover
Literature research and field research will be done here. In Literature research, I will look into the academic research on human values, defining values and how to communicate values. Then, in the field study, by using interviews with the designers of the skiffle box, observing play sessions, and interviewing players, I will try to understand the usability of the product, how is it used currently and what are the interactions it allow. Ideations with rough prototypes (Cards, physical objects, Miro, Figma) are done in this phase as part of the exploration. The "design space cards" (Lomas et Al, 2022) will be adapted to help ideate and facilitate co-design sessions. Co-design sessions will be done here with experts in different areas to explore the design possibilities.

Second phase: Define
In this phase, I will narrow the problem area to a more specific goal. I will describe the opportunities that I find during my research and set my design goal and criteria.

Third phase: Develop
Based on the design goal, game ideas will be generated, prototyped and tested. Then a concrete concept will be selected based on the criteria, it will be further developed on a detailed level through user testing.

Fourth phase: Deliver
In the end, a final user test for evaluation. A discussion will be done to analysis if the design achieved the design goal, what are the pros and cons of the design and what are the future possibilities.

Personal Project Brief - IDE Master Graduation

TU Delft

MOTIVATION AND PERSONAL AMBITIONS

Explain why you set up this project, what competences you want to prove and learn. For example: acquired competences from your MSc programme, the elective semester, extra-curricular activities (etc.) and point out the competences you have yet developed. Optionally, describe which personal learning ambitions you explicitly want to address in this project, on top of the learning objectives of the Graduation Project, such as: in depth knowledge a on specific subject, broadening your competences or experimenting with a specific tool and/or methodology, ... Stick to no more than five ambitions.

I am passionate about gamification and interactions, it is very excited to have the chance to collaborate with both academics and the company to generate new knowledge that can be used also in future research/practice. I'd like to learn about serious game development from practice, apply the knowledge I learned from university flexibly to real cases and improve communication skills across different departments from day-to-day work.

FINAL COMMENTS

In case your project brief needs final comments, please add any information you think is relevant.

Initials & Name X.W. Wen 6233 Student number 5556945

Title of Project Value communication with serious gaming

Appendix B: Interview questions with the project manager and product owner.

1. What type of business we are dealing with the sciffle box?
- How do we approach customers/ customers approach us
- What areas are we having the business in? (Employee training?)
2. What do you offer with the sciffle box and how is that different from the offers of competitors?
- sub-question: Who are the competitors, and what is their offer usually?
- What is the strength of the sciffle box and what could be the weakness?
3. What are the important trends in the market environment of the sciffle box?
- What are the needs and frustrations that people are having with the current product?
- What are our competitors doing and planning to do?
4. Imagine an ideal situation, the sciffle box is developed into a mature product with a successful business system. We want to make the sciffle box big as a running business, what does that big mean to you? What would that business look like?

Appendix C: Games on the Sciffle Box.

ABN

Aesthetics:

Exploration, fellowship

Technology:

Screen: Digital game interface

The Sciffle box

Action cards

Industrial:24 actions, 3 need support from other parties.

Electricity:25 actions, 2 need support from other parties.

Housing corporation: 30 actions, 1 need support from other parties.

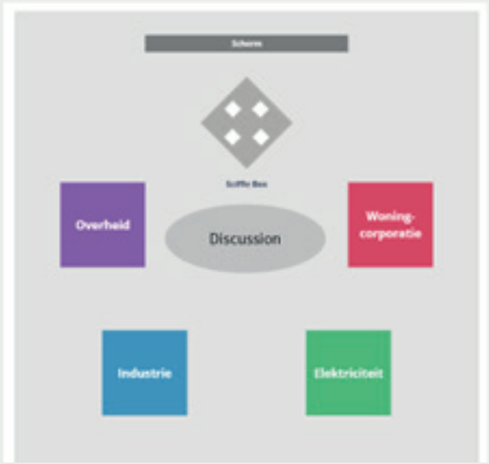
Government: 7 action cards, 14 cards for tax and subsidies.

Facilitation cards:

One facilitator introduces the game before playing and gives tips when playing the game.

The skiffle box is playing the role of facilitating the interaction/social interaction of the game.

> *But what we don't actually want or need is that they are going to discuss around this table. This isn't a discussion table. The discussion should be done here. This is an interactive table. That's very interesting.*
>
> *A lot of discussion finds a place somewhere around here, close to the box, and most of the time, some people, left or right, are looking at the screen, discussing and seeing, what is really going on, and what we need to interact on. So it's most of the time somewhere close to the screen, people standing next to each other, all looking at the screen. The real discussion is here between people. Oh, okay, I need this from*



you, or that.

Ceva:

The game will start with an introduction by the facilitator, they will introduce the learning goal: four values; the timeline of the workshop, the game and tips for the game. In figureA1 , you can see the gaming process. The game consists of 3 levels: The first level starts with parcels that are easy to process. In the next two levels, parcels will become harder to deliver. In between the levels, there are 2 Strategy Breaks, during these breaks the facilitator will guide the players to reflect upon the behaviour corresponding to the core values to see if they are being applied properly or if there is room for improvement. For each strategy break, two values will be the focus of the reflections. The facilitator will observe the behaviour of players with a form (seen in figure A2) and help them reflect deeper. But they will let the players first discuss what strategy they should adopt in the next level first. In the end, the players will try to create as many miles as possible together in the game, the ranking system can be seen in figure A3.

Aesthetics: Challenge, fellowship

Technology:

Screen: Digital game interface (Figure A4)

The Sciffle box

Action cards: In (pick up the parcel), Out (deliver parcel), Start research&progress again, Reschedule, Contract the carrier, Report claim&start procedure, Contract the client. Each team will have one set of action cards (Figure A5).

Packages: 24 Game packages, consisting of Circle 1 – 6, Square 1 – 6, Triangle 1 – 6, and Diamond 1 – 6. (Figure A6)

Facilitation cards: 7 cards for the facilitator to turn on/off the box, start/ pause the game etc. (Figure A7)

You can bring a more powerful effect when communicating values by letting players experience it themselves. Learning by doing is one of the key elements in sciffle box games. You do not tell players what they should learn, they should find out by playing.

"Better to let you experience, (it is) better (value) communication by (let players) doing something".

Observation Form

❒ = Ocean; ❒ = Air; ❒ = Ground; ❒ = Warehouse

Boldness

- ❒ One or more players show courage
- ❒ One or more players show initiative or are decisiveness
- ❒ One or more players choose speedy action
- ❒ One or more players dare to challenge conventions
- ❒ One or more players ...

Exemplarity

- ❒ One or more players show eachother how it's done
- ❒ One or more players make hardly any mistakes
- ❒ One or more players work neatly and/or organized
- ❒ One or more players monitor the loss of packages
- ❒ One or more players ...

Excellence

- ❒ One or more players think about the process
- ❒ One or more players work effectively
- ❒ One or more players improve themselves
- ❒ One or more players give each other tips and tops
- ❒ One or more players ...

Imagination

- ❒ One or more players dare to think big or grand
- ❒ One or more players discuss new possibilities
- ❒ One or more players try new things
- ❒ One or more players create new (game)rules
- ❒ One or more players ...

Figure A2

Figure A4

Figure A5

Session	Miles
Bronze	< 3000 miles
Silver	> 3000 miles
Gold	> 7500 miles

Figure A3

Figure A6

Figure A7

NS

Aesthetics: Fellowship, Challange
Technology: sciffle box, screen, 30 question posters, 6 cards for each player team (20 teams max). control cards: start, pause, continue, yes, no, shutdown, time's up.

Appendix D: Ideation card deck

Action

Example: Hiding yourself or a sciffle card that someone else needs to find or hiding the information you know.

Action

ACTING

Example: Behave in a role that is not like yourself to fit in the group.

Action

BUILDING

Example: Building in the physical world with materials.

Action

GUESSING

Example: Guess what sciffle cards the other teams may have.

Action

TAKING

Example: Strong players can take objects from weaker players.

Action

Example: A player decides he outcome of an action.

Action

COMPARING

Example: Compare your cards with other players' cards.

Action

DISTRACTING

Example: Distract other players from their conversation.

Action

LOOKING FOR SOMETHING OR SOMEONE

Example: Trying to find the hidden card or the right people who own the card.

Action

CHOOSING

Example: Deciding between multiple options.

Action

CHANGING ROLES

Example: The people who are in charge of scanning now are in charge of finding the right card.

Action

NEGOTIATING

Example: Trading the resources and agreeing on it's value.

Action

Example: Persuading another player to team up with you against other players.

Action

RUNNING

Example: Running to the sciffle box to scan a card.

Action

CREATING

Example: Making new ideas, making sketches.

Action

OBSERVING

Example: Memorise blinking pattern of the sciffle box.

Action

SPYING

Example: Get the information you need without others knowing your goal.

Action

SHARING

Example: Share your information or cards with others.

Action

STEALING

Example: Getting cards from others without them noticing.

Action

TRADING

Example: Buy or sell the resource/ cards you have.

Human Value

Benevolence-Dependability

Being a reliable and trustworthy member of the ingroup.

Human Value

Benevolence-Caring

Devotion to the welfare of in-group members.

Human Value

Universalism-Tolerance

Acceptance and understanding of those who are differ-ent from oneself.

Human Value

Universalism-Concern

Commitment to equality, justice, and protection for all peo-ple.

Human Value

Universalism-Nature

Preservation of the natural environment.

Human Value

Humility

Recognizing one's insignificance in the larger scheme of

Human Value

Conformity-Interpersonal

Avoidance of upsetting or harming other people

Human Value

Conformity-Rules

Compliance with rules, laws, and formal obli-

Human Value

Tradition

Maintaining and preserving cultural, family, or religious tra-

Human Value

Security-Societal

Safety and stability in the wider society.

Human Value

Security-Personal

Safety in one's immediate environment.

Human Value

Face

Security and power through maintaining one's public image and avoiding humiliation.

Human Value

Power-Resources

Power through control of material and social resources.

Human Value

Power -Dominance

Power through exercising control over people.

Human Value

Achievement

Personal success through demonstrating competence according to social standards.

Human Value

Hedonism

Pleasure and sensuous gratification for one-

Human Value

Stimulation

Excitement, novelty, and challenge in life.

Human Value

Self-Direction-Action

The freedom to determine one's own actions.

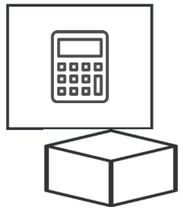
Human Value

Self-Direction-Thought

The freedom to cultivate one's own ideas and

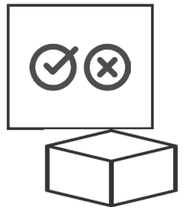
Human Value

Sciffle



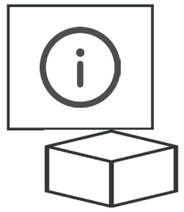
Caculate your score

Sciffle



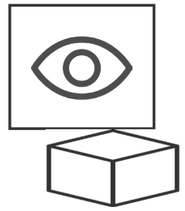
Tell you right or wrong

Sciffle



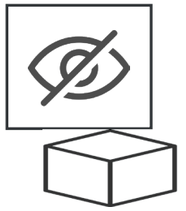
Give you information

Sciffle



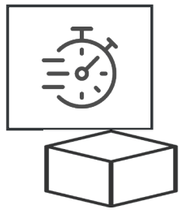
Show everyone’s input

Sciffle



Hide everyone’s input

Sciffle

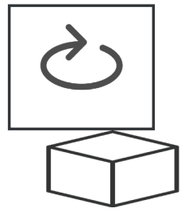


Set a timer

Sciffle

Document everyone’s decisions (actions)

Sciffle

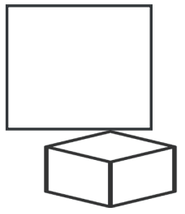


Guide actions in turns

Sciffle

Require other’s permission

Sciffle

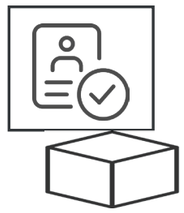


Play a sound

Sciffle

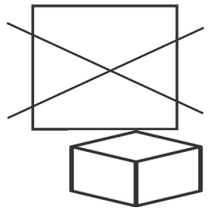
Randomly generate numbers/ roles/directions...

Sciffle



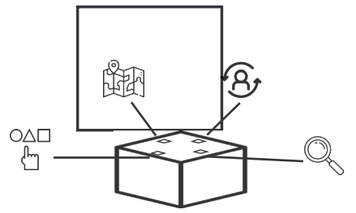
Identify a player/team.

Sciffle



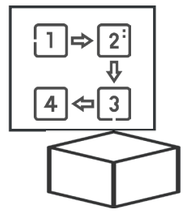
Support games without the screen (only the box).

Sciffle



Support different actions based on scanner location.

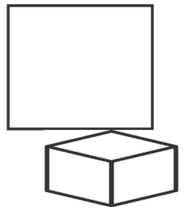
Sciffle



Require scanning in a specific order.

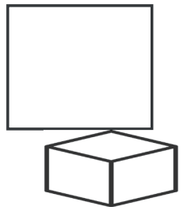
Sciffle

The sciffle box can...



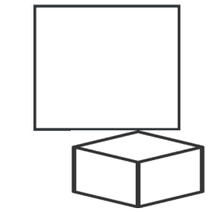
Sciffle

The sciffle box can...



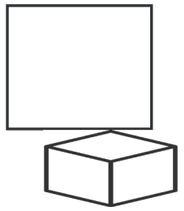
Sciffle

The sciffle box can...



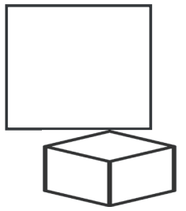
Sciffle

The sciffle box can...



Sciffle

The sciffle box can...



Game type

ACTION

Games that offer an intensity of action as the primary attraction (shooting, fighting etc.). The reflex response is the primary skill needed to play these games.

Game type

ADVENTURE

Games that offer exploration and puzzle solving as the main attraction. Reasoning, creativity, and curiosity are the most common skills required of a good adventure game player.

Game type

PUZZLE

Games that offer puzzles as the primary attraction to games.

Game type

ROLE PLAYING

Games that offer the player an opportunity to immerse themselves in the player character's situation. Role Playing Games (RPG) storytelling by embracing innovative ways to vary and report stories.

Game type

SIMULATION

The primary gameplay element of a simulation is its ability to match real-world situations. Simulations seek to provide enjoyment through reenactment. It may also include social situation simulation.

Game type

STRATEGY

Strategy games entertain through reasoning and problem-solving. It can be combined with a quality narrative.

Pleasure

COMPETITION

Being better than other players.

Pleasure

DESTRUCTION

Enjoyment that is in a way opposite from creation.

Pleasure

SENSATION

Using your senses to experience something pleasant (touching silk, tasting food...)

Pleasure

FANTASY

Imagining the world and yourself as something dierent from how it is in the reality.

Pleasure

NARRATIVE

A dramatic unfolding of a sequence of events, however it happens.

Pleasure

CHALLENGE

One of the core pleasures of gameplay, since almost every game has a problem to be solved.

Pleasure

FELLOWSHIP

Everything enjoyable about friendship, cooperation, and community.

Pleasure

EXPRESSION / CREATION

Expressing yourself and creating things.

Pleasure

SUBMISSION

Leaving the real world and entering the world of the game, it's rules and meanings.

Pleasure

DISCOVERY / EXPLORATION

Finding unexpected new things during the play.

Pleasure

ANTICIPATION

When you know a pleasure is coming, just waiting for it is a kind of pleasure.

Pleasure

COMPLETITION

It feels good to finish something.

Pleasure

DELIGHT IN ANOTHER'S MISFORTUNE

Typically, we feel this when some unjust person suddenly gets their comeuppance.

Pleasure

GIFT GIVING

A unique pleasure when you make someone else happy through the surprise of gift.

Pleasure

HUMOR

Two unconnected things are suddenly united by a paradigm shift.

Pleasure

POSSIBILITY

Pleasure of having many choices and knowing you could pick any one of them.

Pleasure

PRIDE IN AN ACCOMPLISHMENT

This is a pleasure all its own that can persist long after the accomplishment was made.

Pleasure

SURPRISE

The brain simply like surprises.

Pleasure

THRILL

When you experience terror but feel secured in your safety.

Pleasure

THRIUMPH OVER ADVERSITY

Pleasure that you have accomplished something that you knew was a long shot.

Pleasure

WONDER

An overwhelming feeling of awe and amazement.

Pleasure

MASTERY

Noticable improvement of skills and game score.

Pleasure

COMPETITION

Being better than other players.

Pleasure

DESTRUCTION

Enjoyment that is in a way opposite from creation.

Learning Goal

IDEATION

What are the other possibilities if we design based on the values of the stakeholders? What design can support this value and what design can damage it?

Learning Goal

ANALYSIS

What are the values that people have right now? Are there value alignments or value conflicts in the current situation?

Learning Goal

COMMUNICATION

What are the values that you want stakeholders to talk about? How to help them communicate this list of values?

Final Value cards

Human Value

Privacy

Human Value

Fairness

Human Value

Transparency

Human Value

Accountability

Human Value

Safety

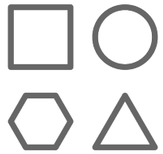
Human Value

Autonomy

Human Value

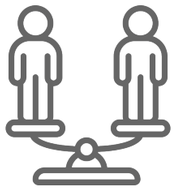
Sustainability

Human Value



Diversity

Human Value



Equity

Human Value

Loyalty

Human Value

Humility

Human Value

Spirituality

Human Value

Compassion

Human Value

Honesty

Human Value

Kindness

Human Value

Courage

Human Value

Appreciation

Human Value

Attentiveness

Human Value

Achievement

Human Value

Challenge

Human Value

Community

Human Value

Leadership

Human Value

Respect

Human Value

Stability

Human Value

I want more....

(get more value examples from ChatGPT)

Appendix F: Workshop materials, setup and results

Workshop 1&2 set up.

The workshop materials provided a structured framework that guided the workshop process in the following manner:

Introduction (10-15 mins): The workshop started with an icebreaker activity to help participants get to know each other. A brief presentation introduced the Sciffle Box and provided background information about the workshop's purpose and objectives.

Narrowing Down Design Focus (15-20 mins): Guide testers through a process of narrowing down their design focus by considering specific technologies, contexts, and stakeholders. Prompt them to reflect on the target audience and the unique aspects of the game's environment.

Selecting Characters (Learning Goals) (3-5 mins): Encourage testers to choose characters representing different learning goals for their game. Each character aligns with a specific number of values related to the desired learning outcomes.

Identifying Target Group (Players)(3-5 mins): Prompt testers to define the target group of players for their game. Consider factors such as age range, educational background, and any specific characteristics or preferences that may influence gameplay.

Determining Desired Outcome(5-10 mins): Guide testers in selecting the desired outcome of their game, such as behaviour change or knowledge acquisition. This outcome should align with the chosen learning goals and target group.

Card Selection(15-20 mins): Using the provided deck of cards, testers will select cards layer by layer, incorporating them into their game design. Each card represents an important element or component that contributes to the overall gameplay experience and learning goals.

Pitch and Feedback(20-25 mins): Testers will take turns pitching their game ideas to the group, explaining how the selected cards and game elements work together to achieve the defined learning goals. Participants will provide feedback and suggestions for further refinement.

Finalize my game(5-10 mins) At the end of the workshop, testers will fill out the "My Game" section of the workshop material, summarise their game concept, and adjust their design based on the discussion, including learning goals, target group, desired outcome, and key gameplay elements.

Workshop Goal:

1. What context can value-based serious games support?

2. What are the game mechanisms that support VSD/value communication?

3. What can the sciffle box do to support VSD/value communication?

4. Are the cards easy to use and understand?

5. Are there ways that you want to design but did not show in the cards?

6. Is there something too easy/ hard to do in the workshop?

7. Is there something confusing in the workshop?

With who?

3-4 master students of industrial design engineering from TUD.

Timeline:

1. Introduction about the sciffle box/ the workshop today.

2. What technology/ context/ stakeholders they will focus on in this game?

3. Pick your character to define what learning goal the game will have.

4. Pick five value cards that you want to design with.

5. Design a game to achieve the learning goal

They can pick 1-3 cards from each category to assemble a design space. Start with game type/ game pleasure then action. In the end, pick sciffle box cards.

6. Present the game to others, and re-define the game with the feedback of others.

Characters:

The Explorer

You want your players to create new solutions. You want to help them explore opportunities based on different values. In your game, you will help your players ideate new solutions/re-design based on values you think is important in your case.

Start with 5 value cards, and generate a game in your own context that help people ideate solutions that support/damage the value cards you have.

The Communicator

You want your players to communicate about values. You want to help and guide your players to express their own values in a way that they can understand each other.

Start with 3 value cards, and generate a game in your own context that helps people understand and communicate these three values.

The Scientist

You want to analyse what values your players have. Your game will help your players analyse themselves/ each other and find out what are their values in your case.

Start with 0 value card but read them through first, and generate a game in your

Number	Charactor	Game type	Pleasure	Actions	Sciffle	Learning goal	Outcome
A1	Explorer	Simulation Puzzle	Narrative Expression Discovery	Changing roles Creating Comparing	Hide everyone's input Tell you right or wrong Identify a player Give you information Document everyone's decisions	Helping readers understand the feelings of writers better under the background of dynamic lighting design	Enhance understanding of emotions based on text communication.
A2	Explorer	Simulation Role playing	Narrative Possibility Discovery	Comparing Observing Changing roles	Show everyone's input Require scanning in a specific order Support different actions based on scanner location	Helping citizens and designers make decision together under community design background	Help decision making with more complex issues
A3	Scientist	Role playing	Challange Sensation	Building Observing Judging	Tell you right or wrong Document everyone's decisions	Helping developers understand the value of physical sensation in XR under the background of XR device and force feedback	Promoting product/interaction
A4	Explorer	Simulation	Pride in an accomplishment Mastery fantasy	Choosing Negotiating Creating	Show everyone's in put Require scanning in a specific order Identify a player Document everyone's decisions	Helping designers ideating and producing more desirable and printable design under AI generative design and 3D printing background	Helping with design process, better communication from needs to solutions
B1	Scientist	Simulation Strategy	Possibility Thriumph over adversity	Looking for someone or something Negotiating	Give you information Calculate your score Show everyone's input	Helping dating app users finding a partner under the background of wellbeing in cyber environment	Promoting values that shape user behaviour to help cyber well-being
B2	Scientist	Simulation	Submission Fantasy	Comparing Choosing	Play a sound Give you information	Helping people with difficulty sleeping have effective power napping in a safe environment	?
B3	Scientist	Simulation Strategy	Possibility Challange Discovery	Building Observing	Set a timer Document everyone's decisions Show everyone's input	Helping floor workers in the airside on task delegation and giving responsibility under the background of working with automation systems	Help employees build trust and give responsibility to automatic systems.

own context that can help you analyse what values your players have.

Workshop 3 set up.

Tasks:

Value co-creation in a working environment to help people work together: (□)

In a working environment, you and your collages may have different ways of working. Therefore, when working together, friction may occur. In your game, you want to help people work together smoother by communicating their values in a working environment and creating a value that they all agree is important in their daily work.

The goal behaviour: you and your collages can express what is the most important thing individually and then create a group value (common guide) to follow in daily work.

Players: you and your collages (4-16 people)

Communicate values and find a common ground to help complex decision-making:

The city government considering the implementation of a new transportation system. To make a complex decision like this, the city government would need to gather information about the potential benefits and drawbacks of the new transportation system. They might need to consider factors like cost, environmental impact, potential disruptions to existing transportation systems, and the impact on residents and businesses.

You are invited to a discussion session to discuss this plan as a resident together with government workers and other residents (from a different area that may be influenced by this implementation). The goal of the game is to help everyone at the table communicate what is the most important for them in this context (their values) and to find a common ground.

The goal behaviour: different stakeholders on the table can understand why they have their needs in a specific way and are able to tolerate the differences to find the common ground.

Players: you (resident), other residents, governors, business owners (4-16 people)

Communicate values of life to connect people together.

This is the introduction week of the university you just entered. You met a lot of people but you do not know any of them. You are in a group with other new students. The goal of the game is to let everyone communicate what is the most important things in their life (values in life) to know each other better. (An ice-breaking game with values)

Goal behaviour: People can easily express what is important in their life (values) and others are able to understand/relate.

Players: you and your teammates (introduction week from university) that you just met for the first time (4-16 people)

Develop technologies based on values.

Values can inspire new ideas to shape technology more human-centred. The goal of your game is to help different stakeholders generate new ideas for AI-chatbot in a medical context based on different values. (Think about: what would a medical AI chatbot look like when it is about accountability? What if it is about spirituality? Let your game help inspire ideas based on different values!)

The Goal behaviour: People will actively ideate how would AI-chat bot looks in a medical context when it is developed based on their human values.

Players: you(designer), doctors, nurses and patients (4-16 people)

Timeline:

Walk-in: (5 mins)

Introduction: (5 mins)

Introduction on the people, the process of the workshop, ask permission for recording and pictures.

Value game: (15mins)

1. Select an answer, and briefly discuss one or two questions.

2. Present values in the end: In this workshop, values mean the drives of people, influencing your actions and how you make your decisions. It is dynamic, and the priority change based on the context. It is abstract and can be understood by analysing your behaviour or decisions. It can be different in a group, if you select together, you will have a different answer.

Making games. Explain how to do it. (5 mins)

First round (23 mins) (Need a timer, need recording and pictures)

Picking cards and designing the game structure 4 mins

Pick a value card and adjust the game 4 mins

Presenting each group 2 mins pitch per group, 3 mins questions 15 mins general

Questions: Why did you design like that, what values you picked, and what changed after you test with values? What you expected to work and what actually worked?

Second round (31 mins)

Picking cards and designing the game structure 8min

Pick a value card and adjust the game 8 mins

Presenting each group 2 mins pitch per group, 3 mins questions 15 mins general

Questions: Why did you design like that, what values you picked, and what changed after you test with values? What you expected to work and what actually worked?

Appendix G: Final design card decks

Value

Autonomy

Value

Pleasure

Value

Stability

Value

Privacy

Value

Authority

Value

Efficiency

Value

Loyalty

Value

Equity

Value

Kindness

Value

Leadership

Value

Respect

Value

Challenge

Value

Humbleness

Value

Transparency

Value

Empathy

Value

Enjoyment

Value

Tradition

Value

Safety

Control

Next

Control

Timer

Value

Ambition

Value

Adventure

Control

Positive

Control

Negative

Control

Middle

Control

Shut down

Vote

Vote

Vote

Vote

Control

YES

ON

Control

Vote

Vote

Vote

Vote

Function

Surprise

Receive a random value card

Function

Switch

Switch a value card in your hand to a new random one

Function

Restart

Give up all your value cards and get 5 new ones

Function

Duplicate

Duplicate a value that you own

Function

Recover

Get the value card that you plaied last round back

Function

Repeat

Get a value card that one of the other teams played last round.