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Article

## New Insights, New Rules: What Shapes the Iterative Design of an Urban Planning Game?

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### Abstract

Games have become established tools within participatory urban planning practice that provide safe spaces for collective actions such as deliberation, negotiation of conflicting agendas, scenario testing, and collaborative worldbuilding. While a body of literature on the effectiveness of games to address complex urban planning issues is emerging, significantly less literature addresses the design and development process of serious games with a possible space in its own right within urban planning practice. Our study investigates long term iterative processes of designing a game for visioning urban futures, specifically, how design iterations connect to the application of games in practice by accommodating or responding to emerging needs, goals, and relationships. We approach this topic through the case study of the Sustainability Futures Game, a game designed by the Helsinki-based creative agency Hellon to support business leaders, sustainability specialists, and city officials to imagine desirable alternative urban futures. Through storytelling and collective worldbuilding, players first imagine what sustainable urban living means for a specific city, frame their vision using the UN's sustainable development goals, and finally create concrete pathways towards reaching these goals. This article uses a genealogical approach to systematically analyse the five design iterations of the Sustainability Futures Game. It aims to elucidate the contextual and relational influences on the application of serious games in urban planning practice to understand how these influences might encourage or inhibit their potential to foster transformation towards sustainable futures.

### Keywords

design genealogies; futures methods; serious games; sustainability transitions

### Issue

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### 1. Introduction

In the face of increasingly urgent and large-scale global challenges, there is a pressing need for new approaches and transformative actions to stabilise and restore social and ecological systems (Leach et al., 2013). Cities have a critical role to play in fostering sustainability transformations: The majority of the global population currently lives in urban environments, and cities contribute dis-

proportionately more to climate change. However, they are also places where the necessary changes in lifestyles, productive means, governance practices, and political systems can be initiated. While cities are increasingly concerned with creating more sustainable and desirable futures, creating consensus and shared visions through participatory governance processes remains a challenge (McPhearson et al., 2016). Serious games have become established tools within participatory urban planning

practice that facilitate the understanding of complex and wicked problems (Rumore et al., 2016). Serious games provide safe spaces for collective actions such as deliberation, negotiation of conflicting agendas, scenario testing, and collaborative worldbuilding (e.g., Gordon & Baldwin-Philippi, 2014; Medema et al., 2016). There is a growing body of literature on the effectiveness of games to address complex urban planning issues (see Mayer, 2009; Vervoort, 2019) but significantly less on addressing the design and development process of serious games within urban planning practice in its own right.

Our study investigates iterative processes of designing a game for visioning urban futures, specifically, how design iterations accommodate or respond to emerging needs, goals, and relationships, eventually translating contextual and relational conditions into a finished product that can be applied in urban planning practice. We explore this question through the case study of the Sustainability Futures Game, a facilitated, gamified activity. The Sustainability Futures Game uses storytelling and collective worldbuilding to enable players to imagine sustainable futures for a specific city, frame their vision using the UN's sustainable development goals (SDGs), and finally create pathways towards reaching these goals. The development process of the Sustainability Futures Game was defined by its research-driven, exploratory attitude, and it was developed by the Finnish design consultancy Hellon, in the framework of the European research project CreaTures (Creative Practices for Transformational Futures; <https://creatures-eu.org>), which explores the role of creative practice in sustainability transformations. In addition, it embraced two other levels of openness: a broad attitude towards sustainability and the lack of a predefined client or target group. These conditions have been decisive for the development of the game and allow us to reflect on how contextual and relational influences on the application of serious games in urban planning practice might encourage or inhibit their potential to foster transformation towards sustainable futures.

In the following section, we introduce the academic debate on the use of games as a future method for urban planning and governance, and outline aspects related to iterative game design in this field. In Section 3, we describe the Sustainability Futures Game case study and layout of the framework of the transformative future by Mangnus (2022), a framework we have used to analyse the iterative development process as a futures-focused participatory activity. In Section 4, we discuss how changes in futures perspectives, the institutional context, participation culture, process design, participants, and methodology have related to one another throughout the six iterations of the Sustainability Futures Game. In the last two sections, we provide insights into game development processes for urban transformations. We discuss the proposed extension of the framework of the transformative future to include a genealogical dimension, paying particular attention

to processes unfolding over time, the positionality of those managing these processes, and the purpose of future activities.

## 2. Games for Urban Governance and Sustainability

Understanding and responding to large-scale sustainability challenges increasingly requires interdisciplinary forms of knowledge production (Cairns et al., 2020; Khoo, 2017). To address large-scale urban sustainability transformations, there is an urgent need for participatory creation of shared futures visions (McPhearson et al., 2016), a move away from “solutionist” approaches (Strengers et al., 2019), and a turn towards experimental (Sengers et al., 2016) and values-based (Dulic et al., 2016) futures methods. Art and design bring an experiential quality to sustainability projects (Maggs & Robinson, 2020), and are potent in provoking situations that bring together stakeholders in imaginative, reflective exchange (e.g., Hesselgren et al., 2018; Irwin, 2015). Moore and Milkoreit (2020) suggest that such imaginative exchange is important for both individuals and groups in understanding our current degraded socio-ecological conditions and the systems that brought these about and envisioning both likely and desirable futures. Popular city-building games have often provided the first formative experience with urban planning and governance for generations of gamers (Bereitschaft, 2016). Serious games have a long history of application and evolution in urban governance and policymaking (Mayer, 2009). Compared to other media or forms of learning used in participatory urban planning, games, in particular, have been reported to offer a more effective and holistic understanding of complex systems and to encourage generating ideas for change (Kriz, 2003). Games are unique because they allow for experimentation with new roles (through player characters), new rules that may represent alternative governance structures, and new future worlds to inhabit and play in (Vervoort, 2019). They also contribute to the “fun aspect” of learning (Gajadhar et al., 2008) by combining learning with entertainment (Boyle et al., 2012; Jabbar & Felicia, 2015), and improving interpersonal relations among players (Fang et al., 2016). However, despite their reported benefits, serious games are often disconnected from anticipatory governance processes and urban planning practices (Vervoort et al., 2022). The limited application of serious games and gamified activities in these fields can be attributed to a lack of resources, planners' inexperience with participatory methods, and sceptical audiences (Ampatzidou et al., 2018). Even when used in relevant contexts, the focus tends to stay on the direct learning effects among the players of serious games, and less on their affordances to impact governance beyond such learning (Vervoort, 2019). However, transformative change often depends on recognising individuals as active agents in socio-ecological systems, whose interactions can shape institutions (Bai et al., 2016; Strengers et al., 2019).

Translating complex phenomena, such as urban sustainability transformations into the context of serious games is a challenging task. Iterative design methods are commonly used in game design but are rarely participatory. While conventional game design mainly involves game designers alone, inter- and transdisciplinary and participatory design approaches are used more widely, particularly in the field of serious game design (e.g., Abeele et al., 2012; Khaled & Vasalou, 2014). Adopting a participatory game prototyping process can lead to a balanced game in terms of domain content and playability, particularly when addressing potential players as distinct subgroups with differing and sometimes diverging interests (Ampatzidou & Gugerell, 2019). Stakeholders and game designers may bring different perceptions, ambitions, and interests to the game design process (de Caluwé et al., 2012), so a key benefit of involving different stakeholders in processes of ideation, exploration, and learning is enhanced communication and lowering biases of the game designers (see Magnusson, 2009; Muller, 2002).

### 3. Case and Methods: The Sustainability Futures Game

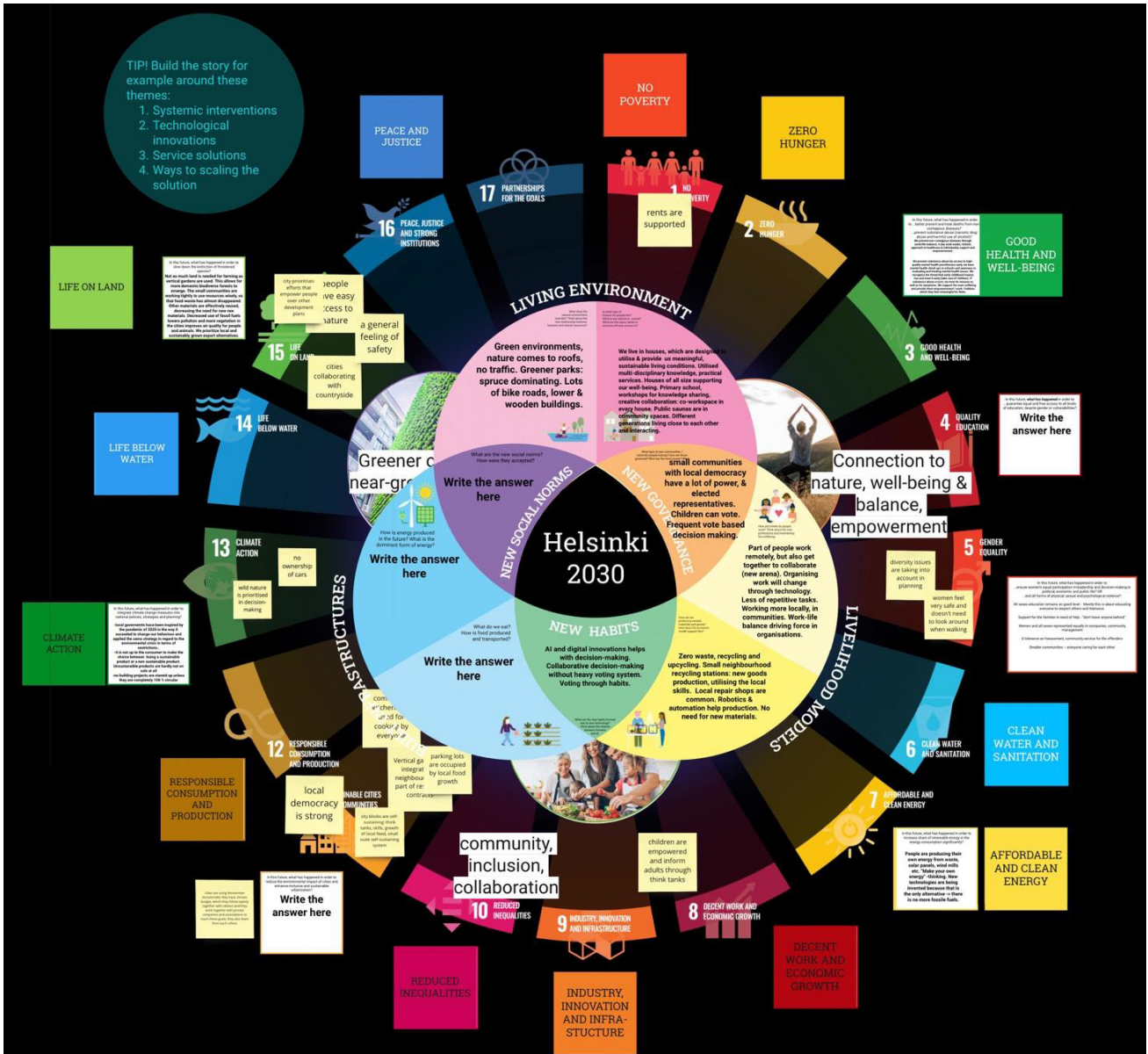
The Sustainability Futures Game is a facilitated, gamified activity developed by the Helsinki-based design consultancy Hellon (<https://www.hellon.com>) to support business leaders and city officials to imagine desirable alternative urban futures. The Sustainability Futures Game builds upon the Nordic Urban Mobility 2050 game, previously developed by Hellon as a tool for collective mobility scenario-making for the Nordic Smart Mobility and Connectivity programme of Nordic Innovation between October 2018 and February 2019. The Sustainability Futures Game exists both as a physical board game and as an online gamified workshop facilitated in the virtual collaborative environment Miro (<https://miro.com>).

Each gameplay session, designed for five to eight participants, starts with a short introduction by the facilitator followed by a round of introductions by the players and focuses on a real city, which is chosen ahead of the game by the participating players. Through storytelling and collective worldbuilding, players need to imagine a “desirable future” (Bai et al., 2016) for this city in 2030. To build this vision, they first imagine what sustainable urban living means for the specific city and the people living there, through a series of short exercises using visual prompts, additive storytelling, and probing questions. This first part of the process is concluded by using the SDGs to frame the generated vision (Figure 1). The second part of the gameplay focuses on creating concrete pathways towards reaching these goals, by identifying critical issues and solutions. The session is concluded with a short presentation and evaluation, and a debriefing conversation where participants share personal and organisational reflections, and feedback on the game’s outcomes, and methodology.

The participatory design process was structured around a series of seven sessions testing five prototypes that iteratively built upon each other. The sessions lasted approximately three hours with a break and included two to three facilitators and five to 12 players. In the session with 12 players, four facilitators guided two subgroups playing in parallel. Members of the Hellon team guided the players through the different steps of the process, moderated the discussions, and kept track of the time. The first four sessions were primarily intended to develop the key mechanics and narrative of the game, while the final three sessions were focused on testing and refining the Sustainable Futures Game with key audiences: The first of these sessions was played within a corporate responsibility network event, the second included representatives of different public sector organisations from Finland and Sweden, and the last one was with master’s students at Laurea University of Applied Sciences in the Service Innovation and Design program. Sessions were documented through video recordings when participants consented, participant observation, semi-structured post-gameplay interviews with volunteer players, and regular interviews with members of the design team held between June 2020 and November 2021. No demographic data were collected from the players, as the game is intended for professional audiences, and thus the only relevant information was judged to be their professional background.

In the following section, we present a detailed account of the design process focusing on the underlying interrelations between the different game iterations. We use the transformative futures framework, an analytical framework developed by Mangnus (2022), for understanding how futures-focused participatory practices, including gaming, relate to action and decision-making. This framework extends earlier work by Hebinck et al. (2018), which used four different policy-focused foresight cases through the lens of three elements: (a) the governance context, (b) social dynamics, and (c) methodological factors. While Hebinck et al. (2018) primarily focus on the framing conditions (such as the institutional context) that allow future processes to be impactful, Mangnus (2022) argues that the relationship of influence can work the other way around as well—from methods up to governance contexts. New methods and innovative process design can attract new institutional support and the right mix of participants can re-frame fundamental ideas about how the future is to be understood or provide an example to start transforming participation cultures and so on. Mangnus et al. (2021) also add two new dimensions: participation culture and the basic future perspective dominant in the process. In summary, they distinguish several factors that impact and compensate one another:

1. Future perspective: This refers to fundamental ideas among those involved in a future process on what the future is, how it should be engaged with, and how it relates to action in the present.



**Figure 1.** Part of the game board, including the contributions by players during one of the sessions testing the final iteration with an external audience.

Muiderman et al. (2020) identify different common future perspectives in the literature. Some focus on prediction while others see the future as fundamentally unpredictable and focus on navigating uncertainties. Yet, others see the political nature of future visions and actively try to mobilise new groups of actors toward desirable futures. Finally, critical theorists are engaged with recognising deeper power dynamics underpinning societal futures and imaginaries.

2. Institutional context: Institutional conditions and contexts shape what is possible with future processes and practices. They determine what scope there is for taking action and what mandate and support those involved in organising the futures process have from those in power.

3. Participation culture: How familiar with participation are the people involved in a future process? Is open exchange easy or hard in any given national, regional, organisational, or inter-organisational context? How does this change over time?
4. Process design: How is the overall process structured? What is the timing of the process in terms of its wider context? How many meetings are being organised? The performative nature of future work plays a big role in its impacts (Oomen et al., 2021).
5. Participants: It is crucial to consider who takes part in futures processes, since the right or wrong combination of individuals can make or break such a process. This includes those organising the process and any individuals directly involved in funding it.

6. Methodology: Which specific futures methods (such as the game discussed in this article) are being used? What are their intended results and features?

#### 4. A Design Genealogy of the Sustainability Futures Game

##### 4.1. Background: The Nordic Urban Mobility 2050 Game

The precursor of the Sustainability Futures Game, Nordic Urban Mobility 2050 is a scenario-making game for urban mobility. Players create a potential future state of the world in the year 2050, which they elaborate through stories of everyday life. They then imagine emerging and possible mobility solutions and systems for this world. The co-created scenario can be used to reflect on new projects and/or the future relevance of existing project ideas, and to facilitate relevant discussions about strategies and policies related to businesses, municipalities, and the population. The objective of the game is to encourage deliberation on future mobility scenarios for the Nordic countries, to initiate discussions on plausible mobility modalities, and their impacts and desired features, and the game's outcomes should serve as a basis for developing concrete ideas for future Nordic innovation projects.

Player feedback from the Nordic Urban Mobility 2050 game showed that the gaming format appealed for being engaging and offering a holistic view of the future, instead of focusing exclusively on limited, pragmatic aspects of mobility planning. This feedback aligned with Hellon's previous experiences working with game-like methods in service design and customer experience transformation projects and motivated them to continue exploring methodologies that enable this type of integrative futures thinking, and to develop this format further. The framework of the CreaTures research project provided a context where Hellon had the choice to either improve the game design of the Nordic Urban Mobility game, narrowing even more the scope within the well-defined expert domain of mobility, or to explore games as a future methodology at a more abstract level. Eventually, negotiations over the use of the game with the commissioning client and the excitement of developing something new led Hellon to the decision to broaden the scope of the game, with the intention to create a game format that could be easily adapted to the specific needs of different clients.

##### 4.2. The Sustainability Futures Game

Figure 2 summarises Hellon's approach to framing the futures perspective of the Sustainability Futures Game, describing the institutional context and participation culture, the process design, methodologies, and participants connected to the Sustainability Futures Game development. During the iterative design process, intri-

cate interrelations between the different elements developed. Untangling these interrelations offers the possibility to identify how iterative design processes accommodate or respond to emerging needs, relationships, and changing contexts.

##### 4.2.1. Future Perspectives

While the Nordic Urban Mobility Game focused on creating desirable future scenarios around mobility, the Sustainability Futures Game assumes that during the play people learn to navigate complexity related to the future. This change of future perspectives marked a significant design change between the first and second iterations: The focus on supporting politically desirable futures inherited from the Nordic Urban Mobility game is clearly replaced with a focus on navigating the complexities and uncertainties of sustainability transitions. While most of the basic mechanics remained the same in principle, the storytelling layer of the game was redesigned to use the SDGs as a background, on which players create a future vision and think about possible barriers and what needs to happen to get there. This framing of the future as navigating the complexities of sustainability transitions remained constant throughout the following iterations. The main goal of the activity is to help people create visions and pathways to change, and not to provide concrete tools to realise them. Hellon purposely avoided the use of critical elements to encourage a constructive and positive creation of a common vision, where design fiction is centred and feasibility stays in the back row.

##### 4.2.2. Institutional Context

The European research project CreaTures defined the institutional context in which the Sustainability Futures Game was developed and played, because it provided Hellon with the opportunity to work with an open brief, instead of a client-driven process. This marked a major departure from the Nordic Urban Mobility game and has remained consistent throughout the whole design process. Only while working on the last iterations of the game did the Hellon team start to think about the possible applications of their game in a business context and the possible clients that may be interested in employing the Sustainability Futures Game within their organisations, thus shifting the institutional context of the game. More specifically, in the fourth iteration, Hellon's desire to start engaging with new institutional contexts drove changes in the process design and in the future perspective. There was a clear shift toward a future perspective that would support players to navigate the complexity of sustainability transitions and to practice imagining desirable near-future scenarios, instead of working within an institutional framework focused on generating politically desirable futures. In terms of the process design, it led to the change in the time horizon of the future scenario, the introduction of the SDGs and other minor adjustments

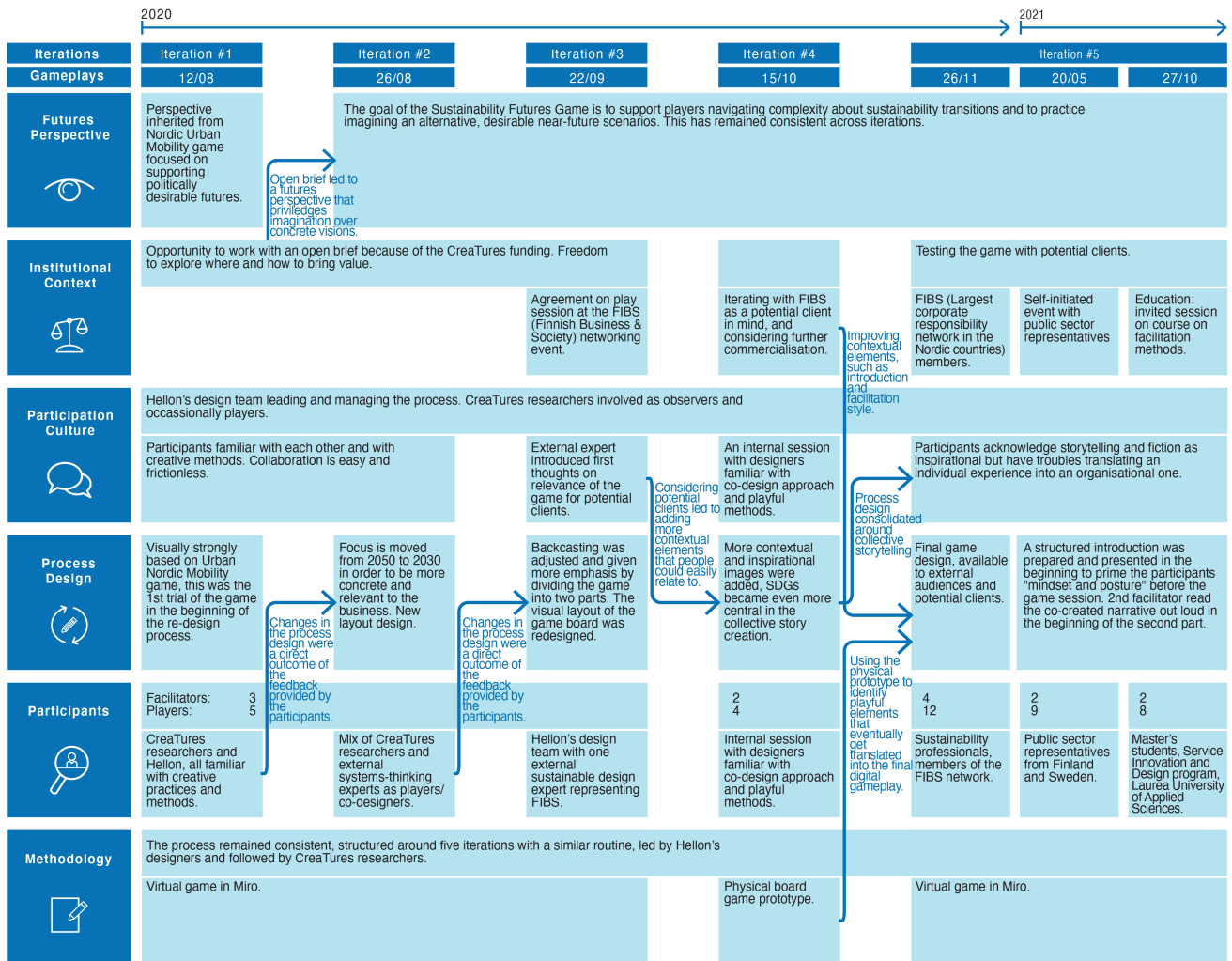


Figure 2. Development process of the Sustainability Futures Game following the framework by Mangnus (2022).

such as simplifying some of the tasks to better fit story creation purposes and adding two new tasks to cater to potential new business clients.

#### 4.2.3. Participation Culture

Games have been a core part of the Hellon professional toolbox. In a field dominated by marketing professionals, many people in the Hellon design team have a background in service design, pedagogical, empathic, and participatory design. Because of this background, Hellon recognises that games provide safe spaces, make people relaxed and comfortable, and provide frameworks to share sensitive information. Having been developed as a commercially unsolicited project with a strong research focus, the design process of the Sustainability Futures Game was strongly managed by the Hellon team. The facilitator role was split between two members of the Hellon team, one responsible for guiding the players and one taking care of the more technical aspects of using the online collaborative workspace. During the first iterations, participants mostly knew each other, as, despite their different backgrounds, they were involved in the same research project. They were all familiar with

creative methods, human-centric approaches, and moving between the different scales that the game utilised (personal, community, society). Collaboration was thus easy and frictionless. Only from the third iteration and later, when an involved sustainability expert with a strong business perspective and mindset was involved, discussions emerged on how to create room for negotiation in the game and how probable or interesting the scenario would be for potential participants. During the last sessions, while participants acknowledged the use of storytelling and fiction as inspirational and empowering, going beyond the individual experience of the player and into an organisational process of sustainability transition has been challenging. Organisations tend to operate with short- and medium-term goals and specific projects. A more open-ended approach would only be interesting as part of a larger project.

#### 4.2.4. Process Design

Gameplay sessions followed the routine detailed in Section 3; they started with an introduction to the game by a member of the Hellon team, followed by a round of introductions of all players, and then the gameplay

started. Each session closed with a short debriefing conversation and gathering player feedback. The consistency in the session routine allowed a focus on the development of the narrative and exercises. In the initial prototype, most of the basic mechanics were directly inherited from the Nordic Urban Mobility game but the mobility elements were removed, and the game was translated into a digital format that could be played in Miro. Testing this version with a group of CreaTures researchers, the design team concluded that more specific sustainability-related content should be created to enhance the focus of the game. The storytelling layer of the game was thus redesigned to use the SDGs as a framework. The first game scenario implied that in 2050 the SDGs have been met and players had to imagine how the focus city looks. In the second iteration, there was a narrative switch from a 2050 to a 2030 timeframe to accommodate short term business perspectives and make the case more concrete and relatable. Over the following iterations, the use of the SDGs gradually became stronger. A significant change occurred in the third iteration when the game was divided into two phases: (a) building the 2030 scenario, and (b) backcasting and identifying barriers and solutions. Splitting the game into two parts improved the flow of the gameplay, even though the first part was clearly more game-like, whereas the second part came closer to a traditional workshop format.

#### 4.2.5. Participants

People with diverse backgrounds were involved at different stages of the iterative design process. Each session had a different player composition: Two sessions were played with researchers from the CreaTures project, one session had a mixed audience of game designers and researchers, one session was internally played by Hellon designers alone including persons who had not contributed to the game design earlier, and one session was played in the framework of a business event with the aimed core audience. In the months following the design phase, the final iteration of the game was played in three sessions with target audiences. The first session included players mainly from a business background, the second primarily public servants, and the third session was carried out with students in the framework of a course on facilitation methods.

There were notable differences in how participants from different backgrounds reacted to the Sustainability Futures Game sessions. People with an academic or research background insisted on fact-based scenarios that were considered plausible, as well as on introducing conflicts and negotiations that would lead to more realistic scenarios, while notably, people with a business background were the least familiar with gaming as a method, while both researchers and students appeared more at ease with the method. Particularly in the first session, which was conducted in the framework of a business networking event, participants represented their organisa-

tions, which all are members of the same sustainability-related association. Getting into the game and unleashing the creative flow was most difficult in this group. Students tended to be more open and less concerned with connecting the story to any reality. Due to the particular focus on facilitation, the students were more interested in the format of the session providing the most feedback on the visual and storytelling aspects of the experience.

#### 4.2.6. Methodology

The development of the Sustainability Futures Game followed an iterative participatory design process comprising five design iterations tested in seven playing sessions. With the exception of the fourth iteration, which was tested using a physical prototype, all other sessions were played online. The choice for an online format was imposed by the then-ongoing Covid-19 pandemic. Instead of developing a fully digital experience, Hellon designers chose to use Miro as a prototyping platform, filling the gaps in interaction manually thus simulating a potential digital experience. Hellon did not make the decision to productise the game, thus it has not been developed to a full, stand-alone digital version. The focus of the game sessions stayed on understanding the narrative, value, and context of the players, with easy to edit elements and not finalising the design. The design team used the physical prototype to identify playful elements quickly and easily in the experience. The eye contact between players gave the feeling of co-creation and many of the mechanics introduced in the physical prototyping were taken over to the digital version and became tasks of the facilitator.

### 5. Discussion: Lessons From the Sustainability Futures Game Design Process

In this article, we examined the iterative development of a game used for the participatory exploration of different futures around the SDGs as a framing device. The iterative development process of this game serves as an example of how many different factors interact with each other to influence and frame the development of game-based explorations of urban sustainability. We have used a framework developed by Mangnus (2022) which expands on work by Hebinck et al. (2018) to identify the different elements and conditions that influence and frame future processes. This framework has been developed in response to a relative lack of inclusive analyses of future processes, including games, in terms of how they are shaped by and interact with different contexts and assumptions.

Our key contribution has been to expand the functionality of this framework by adding the time dimension explicitly—to turn it into a framework for design genealogies, following the different iterations of the Sustainability Futures Game development process. This has led to insights into the benefits and challenges of



the game as it progressed over time. These case-based insights offer practical recommendations for game development and iteration. These practical recommendations in turn offer insights into the strengths and weaknesses of the future practice framework by Mangnus et al. (2021) when it is structured over different time steps (elaborated in Section 5.2).

### *5.1. Insights for Game Development for Urban Transformations*

Following the interactions between the different elements of the framework, a multidimensional story of iteration and change emerges. A key feature of the game, which has proved to be challenging, has been its openness and relative lack of focus. Being an adaptation of a more bounded, concrete version of a game on urban mobility, Hellon's original goal was to create a tool that would allow audiences from very diverse fields to come together and address fundamental, systemic issues related to sustainable urban futures. The development process of the Sustainability Futures Game was defined by three levels of openness: (a) the exploratory character of the whole endeavour afforded by the research funding, (b) the openness in thematic scope with regards to sustainability, and (c) the lack of a predefined client or audience. This openness functioned both as an opportunity and a challenge for Hellon. While striving to create a tool with multiple possible applications and potentially many different clients, Hellon also decided to refine the design internally before testing it with a series of notably diverse audiences. As a result, perhaps, feedback from players consistently indicated that the game acted as a good boundary object (Star, 2010; Star & Griesemer, 1989) but that players struggled to see how its outputs could be operationalised in their professional contexts. It has been clear that the boundary object function has been of great value to Hellon as a way to connect to other actors. However, through the different iterations, the game developers struggled to balance openness and clarity of purpose. Across the different framework elements, this included trying to find more concreteness in targeted players, the process and method design, and institutional and organisational contexts in different steps. Overall, however, the lack of constraints due to the research funding for the project meant that there was a relative lack of urgency to focus on concrete uses for the game, and Hellon's interest in open exploration—driven by what Muiderman et al. (2020) describe as the “navigating uncertainty” approach to futures—remained dominant in the game's development iterations. This openness can certainly be valuable but becomes more difficult to translate into action when no other constraining conditions are in place. Hellon's interest in shifting the Sustainability Futures Game into a tool that can be used by specific organisations for explorative “futuring” might help create this constraint in the future.

The process characterised by the multi-conditional framework over time offers a number of lessons for those involved in futures methods within urban planning practice and gaming in particular:

- Maintain clarity of future perspective and institutional context: Initiating an iterative development process requires a firm positioning with regards to the goal of the intended process. Exploratory research can be particularly useful in understanding complex phenomena such as urban sustainability transitions and identifying potential aspects to explore further. Research-driven, exploratory work should be separated from consultancy and client-driven work which respond to predefined briefs.
- Balance inspirational and business value: Creating a participation culture where potential audiences and stakeholders feel comfortable engaging in an honest exchange. Processes that are not profit-driven can generate other types of value and knowledge.
- Establish design constraints: Creating rules to guide the process design and choosing suitable methodologies can help to keep the design process focused, and eventually enable it to transition into an applied tool more easily. While openness can be appealing, it is important to consider specific audiences, needs, goals, and languages.

Vervoort et al. (2014) offer a potential solution to the openness versus concreteness question: Their scenario approach focuses on creating more open, explorative overarching scenario sets that then form the basis for more specific policy investigations. Games, such as the Sustainability Futures Game, could use a similar approach of open exploration and more concrete adaptation of the game results—and Hellon has already been exploring this direction in the final phases of its project.

### *5.2. Reflections on Methodological Development of the Framework*

Repurposing the transformative futures framework developed by Mangnus et al. (2021), with an approach to developing a design genealogy, has provided several important insights that can help to develop the framework.

First of all, introducing the aspect of time and not treating the futures process as an isolated event but as part of a larger, iterative process has enabled us to observe the evolution of the framework elements, pointing to the need to consider time explicitly in the framework. The different perspectives on futures and how these relate to the present have been shown to be crucial in understanding the fundamental logic of the game approach over different iterations and showing how prediction, open exploration, and normative visioning acted in tension with each other over the game's development. However, a dimension that was arguably missing from

the explicit framing was a description of the intentional focus or scope inherent in this future perspective. Is the intended use of the game open or concrete and focused? With any future approach, this tension between the openness of the approach and the imagined futures has benefits and drawbacks in comparison to more focused, concrete approaches (Vervoort et al., 2014). For the framework, we would suggest adding open versus concrete or focused to the “future perspectives” category.

Furthermore, we would like to argue for an explicit description of the positionality of those organising and leading the process, especially in iterative processes where this factor might be the main source of continuity and discontinuity. Hebinck’s et al. (2018) framework does not cover all dimensions of the Transformative Futures Framework that was adapted from their work—but it has a more specific focus on the role of what is labelled the “researcher” as a category of interest. We would like to argue for a category such as “process leaders and designers” to the framework to explicitly address the positionality of such actors in the process and what they would like to achieve, especially over multiple iterations in a design genealogy. This is also in line with recommendations by Stirling (2014) to forefront the positionality of participatory process organisers.

## 6. Conclusion

The aim of this study was to elucidate how contextual and relational influences might encourage or inhibit the potential of games and gamified formats to foster transformation towards sustainable urban futures. We explored this goal by examining the iterative development process of the Sustainable Futures Game, a facilitated, gamified activity for collective visioning of desirable, sustainable urban futures, using a framework developed by Mangnus (2022) which expands on work by Hebinck et al. (2018). The results of this research enabled us to formulate practical suggestions for process leaders and designers aiming to develop participatory, iterative, and game-based activities to explore urban sustainability transformations. Our suggestions point to the need for clarity in the adopted future perspective, the cultivation of an open participation culture, and setting design constraints to the process design and methodology. Reflecting on the Transformative Futures Framework, we suggest expanding it to accommodate dimensionality in the futures perspective category and to highlight the positionality of process leaders and designers.

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## Conflict of Interests

The CreaTures project has been developed in the form of action research, where researchers and creative practitioners work together as co-researchers. In this context, we disclose that Zeynep Falay von Flittner has been an employee of Hellon and that Kirsikka Vaajakallio is currently employed by Hellon.

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