



Gameful Participation

The use of gamification in citizen participation within the public space planning process

Oskar Blomé

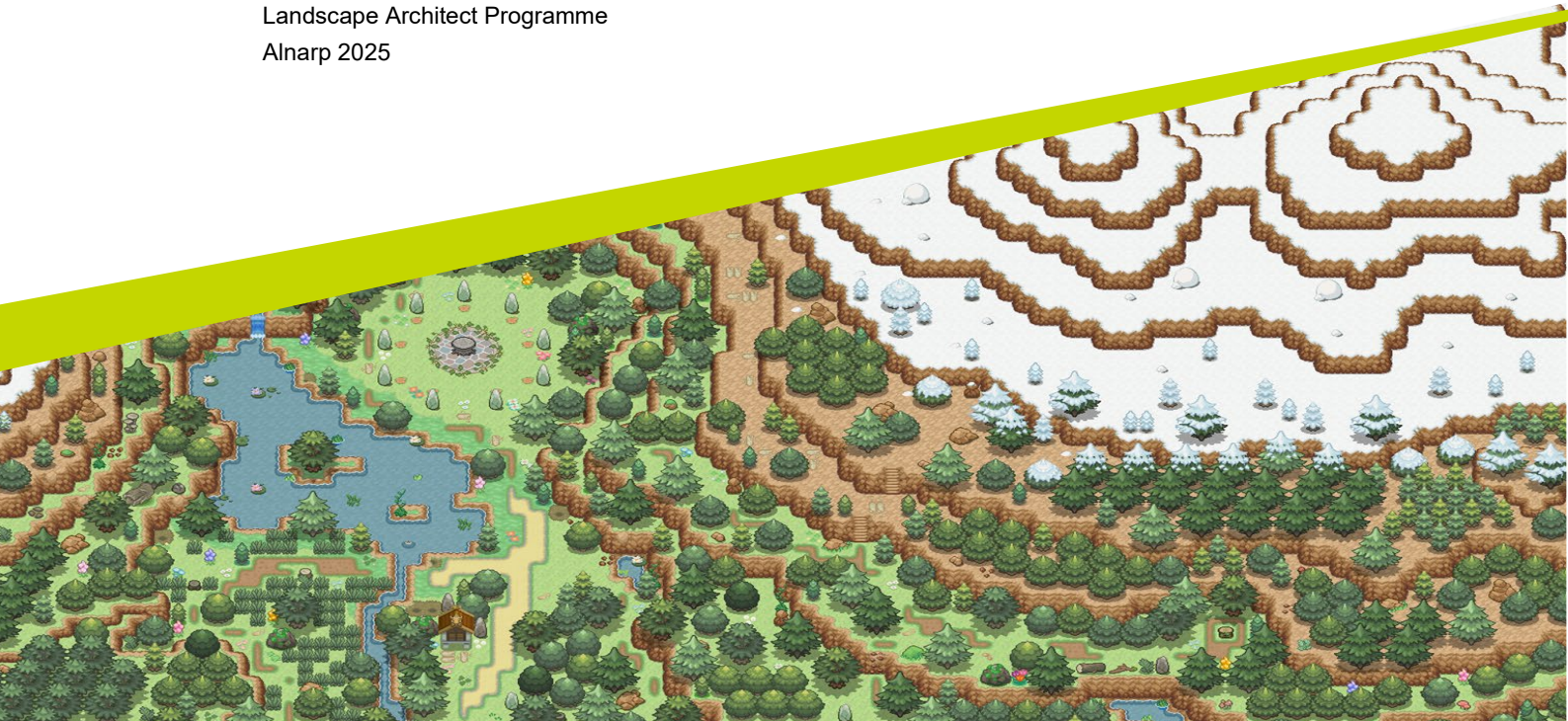
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Abstract

The objective of this essay has been to shine a light on processes where games have been used to facilitate citizen engagement in the planning process. Traditional participatory processes, such as public meetings, often suffer from not being able to foster motivation within a diverse group of citizens. Electronic participation, defined as the use of Information and Communication Technologies (ICT's) within citizen participation, has been seen as a method to prevent some of the hurdles present in conventional citizen participation. However, e-participation faces its own number of challenges, mainly that it is not perceived as being worth the time of participating. Gamification, the use of games and game elements in non game contexts, has seen application in e-participatory contexts in recent years, as a method to engage more citizens. The methods applied in this research, to study the intersection of games and e-participation, are literature study and qualitative interviews. The interviews were conducted with three professionals who have facilitated four cases where gamification was applied to citizen participation; Skaparstaden, B3-Design Your Marketplace, Blockholm, and Byggkrossen. Through the literature study I identified seven categories which I deemed relevant for professionals to consider when applying gamification to a citizen participation context; creator, core service, purpose of gamification, target audience, motivational affordances, degree of participation, and inclusivity. With these seven categories I constructed a matrix which was then used as a model to discuss the four cases of gamified e-participation. Through the discussion I discovered that several aspects from the cases align with that of the literature, such as striving to involve a younger demographic. There were also interesting aspects that deviated from the literature, such as how gamification struggles to include adults, who may view these processes as being "not serious". The thesis concludes by stating that while gamification possesses the potential to facilitate greater engagement it is highly case dependent. The specific situation, site, and target audience should determine how the gamified process is designed. There are also challenges to these processes, the most pronounced one being the difficulty of balancing the playful game elements and the serious aspects of citizen participation. Ultimately, gamification is a good tool within citizen participation, but which benefits from being used in conjunction with in-person participatory processes, instead of as a standalone service.

Keywords: Citizen participation, E-participation, Gamification, Information and communication technologies (ICT), Public space planning

Preface

This thesis is the culmination of a five year master program on landscape architecture in SLU Alnarp. It is an attempt at combining my professional interest in citizen participation and my personal interest in games, to make the research process a fun experience for me. To write about the subject of gamified e-participation has been an exciting journey, and I hope that the reader of this thesis will share this sentiment.

First and foremost, I would like to thank my supervisor Maria Kylin, and my assisting supervisor Christopher Klich, for their guidance and their genuine interest shown throughout this process.

I am also grateful to the three professionals who I interviewed during this process: Alfred Nerhagen, Alenka Poplin, and Mats Karlsson. Thank you for generously sharing your time and insights, your contributions have been instrumental to this thesis.

Finally, I would like to thank my partner, my family, and my friends for their support. Most importantly, however, I would like to thank my two cats who kept me company during the writing process. Thank you, Uma and Miso, your presence has helped preserve my sanity.

Malmö, January 15, 2025

Oskar Blomé

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1. Introduction

Two years ago, when I moved to a new city, I sought a way to explore my surroundings and engage in a cost-free outdoor activity. This led me to discover geocaching, a location-based mobile game in which the player locates caches hidden in the physical world by other players. The experience of geocaching not only gave me a stronger connection to my new environment but also ignited an interest in me regarding the intersection of digital games and landscape architecture.

When deciding on a theme for this thesis, I aimed to further explore citizen participation in the planning process, a topic I had previously started to delve into during the research of my bachelor's thesis. Citizen participation is an essential aspect of a democratic planning process (OECD 2022), offering participants the opportunity to influence decisions regarding their local environment that will affect their quality of life (Sanoff 2020). However, as I learned during my earlier thesis, traditional means to involve citizens, such as through public meetings (Rowe & Frewer 2004), have faced challenges in facilitating inclusive participation, and have many times failed to engage citizens from varying demographics (Hasler et al. 2017; Cars 2015).

Electronic participation (E-participation), defined as the use of Information and Communication Technologies (ICT's) within citizen participation (UN/DESA 2020), has seen its rise during the last decades, in part to face the challenges posed to conventional citizen participation (Hasler et al., 2017). While e-participation enhances accessibility to participating in the planning process it has often failed to engage citizens (Poplin 2011). An issue caused partly by a failure to motivate people to partake (Lopes Resek et al. 2022), prompting the question: How can we, as landscape architects, motivate more citizens to participate in planning processes?

Herein, the use of digital games has the potential to provide a solution. The term most commonly used to refer to the application of digital games and game elements in non-game contexts is Gamification (Kopp 2012). Gamification has been successful in motivating people to engage with a multitude of different services since its conception (Hasler et al. 2017), and the application of it in e-participation contexts is an emerging field of research (Thiel & Fröhlich 2017). In the realm of citizen participation, gamification mainly serves two purposes: To attract participant demographics that otherwise seldom engage with more

traditional citizen participation processes, and to make these participation processes more engaging for citizens (Thiel & Fröhlich 2017; Hassan 2019).

There exists no standard on how to apply gamification within a citizen participation context, and as it is a relatively new field of research, in which the body of work is quite limited (Thiel & Fröhlich 2017), I found it interesting to analyze a number of cases where gamification has been used in citizen participation within the public space planning process. This analysis aims to examine what was learned through these processes, and what they can tell us about how one can apply gamification in a citizen participation context.

1.1 Objective

The objective of this essay is to shine a light on the opportunities of gamification as a method of e-participation in public space planning processes. By researching the subjects of gamification and e-participation, and more specifically, gamification within the context of e-participation; I attempt to categorize aspects relevant to consider when facilitating a gamified process within an e-participatory context. From these categories I have then constructed a matrix, to be used as a framework to interpret and discuss four cases where gamification has been used within the context of e-participation in the planning of public spaces, to see how this process can be conducted.

1.2 Research Questions

- Which aspects of gamification and citizen participation are relevant to consider when facilitating a gamified e-participation process in a public space planning context?
- How can the creation and implementation of gamification in the context of citizen participation in the public space planning process be done?

1.3 Method

The methods chosen to conduct this research have been literature study and semi-structured interviews, the process of how these were conducted are outlined below.

1.3.1 Literature study

Through a literature study on the subjects of gamification, citizen participation, e-participation, and gamified citizen participation, I constructed a matrix. This matrix is used as a framework to structure the information gathered through the interviews and thus provide a basis for discussing how the process of gamified e-participation can be done.

It is important to clarify that the matrix represents my attempt at structuring the very broad, multidisciplinary, subject of gamified citizen participation. The themes included in the matrix are not intended as an exhaustive review of what constitutes gamification within citizen participation, but rather as a categorization made with the intent of structuring the topic.

The literature study conducted in this research focuses on two separate themes; games and play, and citizen participation. Within the games and play theme, literature has mainly been on the subject of gamification, e.g. the use of games within non-game contexts.

Within the citizen participation theme, the literature has been focused on e-participation, e.g., the use of Information and communications technologies (ICT's) within citizen participation. The literature research has also concerned the intersection where these two themes meet, e.g. literature on the subject of games used within e-participation.

The majority of literature used in this research was gathered through the database of SLU's library and through google scholar. Additional literature was subsequently obtained through the reference section of the previously reviewed literature.

1.3.2 Interviews

For this research three qualitative semi-structured research interviews were carried out over video conference. The interview subjects were three professionals who have facilitated four different cases where games were used as a method for e-participation. These gamified processes were: Skaparstaden, Blockholm and Byggkrossen (Minecraft), and B3-design Your Marketplace.

Interview 1: (21/10 - 2024) - Alfred Nerhagen, a landscape architect who works at Helsingborgs municipality who was in charge of the conception of the gamified service Skaparstaden.

Interview 2: (11/11 - 2024) - Mats Karlsson, an architect who was in charge of the Blockholm and Byggkrossen projects, both in which the computer game Minecraft was used as a tool for e-participation.

Interview 3: (12/11 - 2024) - Alenka Poplin, A professor at Iowa state University who led the process behind the conception of the game B3 - Design your Marketplace, and who has written several articles on the subject of games in citizen participation.

Qualitative research interviews are a method for data gathering that focuses on self-reporting, ergo what the interview subject says to the researcher in response to questions (Denscombe & Larson 2018). It is a phenomenological research method, meaning that it is interested in: "... understanding social phenomena from the actors' own perspective and describing the world as experienced by the subjects, with the assumption that the important reality is what people perceive it to be" (Brinkmann & Kvale 2015, p. 30). An interview being semi-structured entails that it is prefaced by a list of matters to be adressed and questions to be answered, while still being open enough that the researcher can be flexible regarding the order of questions asked and allow the interview subject time to elaborate when they choose. The emphasis in semi-structured interviews is on letting the interview subject develop their answers and viewpoints (Denscombe & Larson 2018).

The reason that I chose research interviews is because it is a fitting method to obtain privileged information (Denscombe & Larson 2018). As the objective of this research is to shine a light on the process of how gamification can be applied to e-participation, I found it most relevant to interview subjects who have conducted this process. As phrased by Brinkmann and Kvale (2025): "... we

should be for interviews when the subject matter concerns aspects of human experience ... when the research question can be formulated using the little word how, there is a good chance that qualitative interviews are relevant: How is something experienced? How is something done? (Kvale & Brinkmann 2015, p. 127).

Two of these interviews (Interview 1 and 2) were conducted in Swedish, and quotes from the interviewees have been translated to English by the author of this research. Effort has been made to translate these quotations verbatim, as well as retaining the essence of what was conveyed. The interview questions asked differ amongst the subjects, but all relate to the theme of how their gamification processes were conducted, and their views on gamification within e-participation. The interview questions were formulated with the help of guiding principles from the books *Forskningshandboken: för småskaliga projekt inom samhällsvetenskaperna* (The research handbook) by Martin Denscombe and Per Larson (2018) and *Interviews - learning the craft of Qualitative Research Interviewing - Third edition* by Svend Brinkmann and Steinar Kvale (2015).

1.3.3 Research Process

An iterative approach was taken when conducting this research: The theory gathered from the literature study formed the matrix, the matrix was then applied to the empirical findings gathered through the interviews, which, in turn, complimented and influenced the theory (see fig. 1).

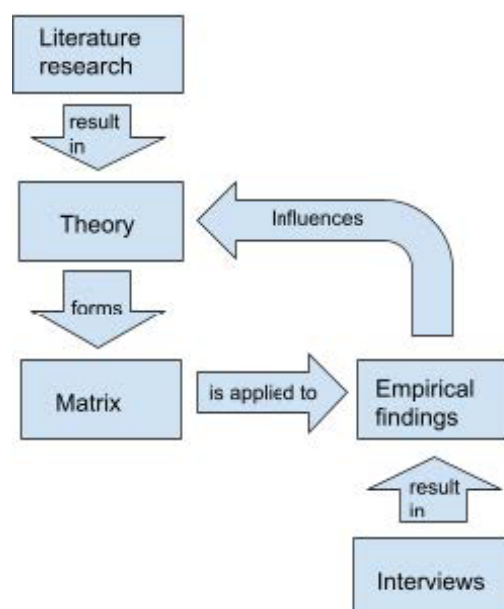


Figure 1 Model of the research process (Blomé 2025).

As a concrete example of this, the empirical findings gathered through the interviews suggested that the inclusion of a discussion regarding the subject of power would benefit the research paper. However, power in planning is a broad subject, and to explore it in depth would be too extensive for the constraints of this research. Therefore, some aspects of power have been included, based on how relevant they were in relation to the empirical findings.

1.3.4 Playing the games

In addition to the literature study and the interviews, I also played some of the games. I did not participate in the participatory processes connected to these games, but I played the gamified service Skaparstaden, and I played the game Minecraft. Unfortunately, I was not able to play the game B3 - Design Your Marketplace, as it is not available online, nor is it in English. I played these games as a way to understand their interfaces and better be able to explain them.

2. Theoretical Framework

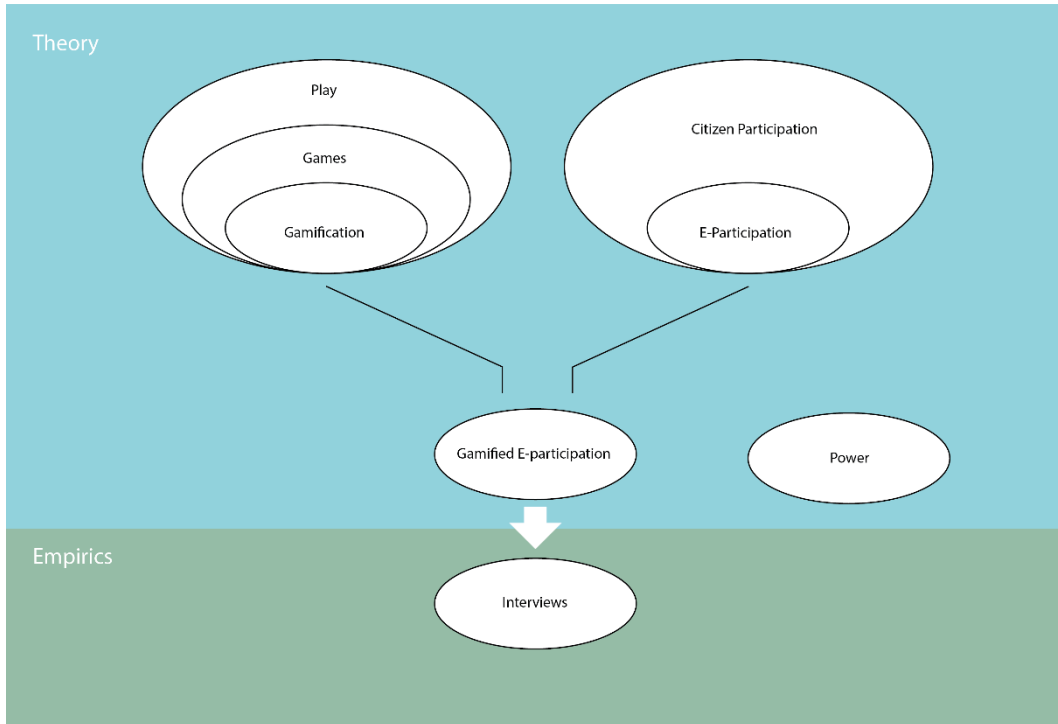


Figure 2 Model of the Theoretical Framework (Blomé 2025).

This thesis explores the intersection where gamification and citizen participation meet, focusing on the application of gamification in e-participation for public space planning.

The theoretical framework that this essay builds upon mainly descends from to themes, citizen participation, and gamification. A third theme, intended to complement the other two, is that of power, which is included to provide nuance to the discussion.

2.1 Theoretical Concepts

The key theoretical concepts in this thesis are drawn from the spheres of citizen participation, gamification, e-participation, and power. They are the following:

2.1.1 Key theoretical concepts of Citizen participation and E-participation

- **IAP2's Spectrum of public participation:** A model detailing levels of public influence in participatory planning processes (IAP2 2024).
- **Challenges of citizen participation:** Conventional forms of citizen participation often face barriers of inclusivity and accessibility, which has led to the application of new methods to engage further demographics (Cars 2015; Hasler et al. 2017).
- **Challenges of e-participation:** Intended as a solution to some limitations present in conventional citizen participation, e-participation presents its own challenges, mostly in regards to motivating citizens to participate (Poplin 2013).

2.1.2 Key theoretical concepts of Gamification

- **Motivational affordances:** A central aspect of gamification, referring to which affordances are put in place to enhance users engagement (Koivisto & Hamari 2019).
- **Core service and enhancing service:** Huotari and Hamari (2017) state that to define and discuss gamification it is necessary to distinguish between the core service, which describes the intent of the participatory process, and the enhancing service, which are the game elements applied to the core service.

2.1.3 Key theoretical concept of Power

- Relations between **power and rationality**, as well as **power and knowledge**, derived from Bent Flyvbjerg's (1998) book *Rationality & Power: Democracy in Practice*.

2.2 Disposition

The thesis begins with an introduction to the concepts play and game, leading to a definition of the concept of gamification. This is followed by a background to citizen participation and its digital counterpart, e-participation, culminating in the emerging field of gamified e-participation. The theoretical framework results in a conceptual matrix, intended as an answer to the first research question: “Which aspects of gamification and citizen participation are relevant to consider when facilitating a gamified e-participation process in a public space planning context?”.

Following this initial section, which provides the theoretical groundwork for the thesis, are the three interviews describing four cases of gamified e-participation. The thesis concludes with a discussion where the matrix is applied to the empirical findings gathered from the interviews, to answer the second research question: “How can the creation and implementation of gamification in the context of citizen participation in the public space planning process be done?”

3. Game and Play

Play can be defined as a free activity that is intrinsically rewarding (Huizinga 1955). Game and play are two very similar concepts, and in some languages, they even share the same word. The German translation of the phrase “playing a game” is “man spielt ein spiel”, and the Slovene translation is “Igrati igro” (Poplin 2011).

In the context of this thesis I will make a distinction between these two concepts. Play is a broader concept than a game. A game is a subset of play, and the activity of play is at the same time a subset of every game (Poplin 2011). What this means is that all games contain the aspect of play, while play may contain games. Play is an open-ended territory while games are confined areas (Kampmann 2003). Both play and games contain rules, but generally in different ways. Rules in play can be defined as mental concepts that provide boundaries for the activity, but do not dictate each action (Gray 2009). Games, on the other hand, are defined by their rules. As phrased by Suits (1967): “To play a game is to engage in activity directed towards bringing about a specific state of affairs, using only means permitted by rules, when the rules prohibit more efficient instead of less efficient means, and where such rules are accepted just because they make possible such activity” (p. 48).

3.1 Games - Definition

Games belong in a category defined by Wittgenstein (1967) as family resemblance concepts. This means that games are connected to each other by a number of overlapping similarities while sharing no general common denominator.

Additionally, games can be defined as systems (Koivisto & Hamari 2019). Meaning that they are composed of a number of actors and mechanics that interact with one another to form a concrete whole (Houtori & Hamari 2017). The information systems field has distinguished between two types of systems that are designed to fulfill different needs; Utilitarian systems, and Hedonic systems (Koivisto & Hamari 2019).

The purposes of Utilitarian systems are related to productivity, their intent is to increase efficiency (Koivisto & Hamari 2019). What motivates people to take part in these systems are extrinsic sources. As phrased by Koivisto & Hamari (2019): “the system aids the user in reaching a goal that is separate from the system use itself” (p. 192). These systems can be evaluated on how efficiently users can reach

the external goal (Koivisto & Hamari 2018). Traditionally, games reside within the sphere of Hedonic systems, meaning that their purposes are for recreation and enjoyment. Hedonic systems are intrinsically motivating; ergo, what motivates the user is the system use itself (Koivisto & Hamari 2019). If users do not find a game enjoyable, they will generally refrain from playing it (Poplin 2013).

On the intersection between these two types of systems there are, what is referred to as, mixed systems, which serve both utilitarian and hedonic needs (Koivisto & Hamari 2019). One such type of mixed systems are motivational systems, which aim to motivate the user towards a desired behaviour through hedonic means; ergo, achieve “productivity through fun” (Koivisto & Hamari 2019). One of the most prominent motivational systems has drawn inspiration from the digital game industry and is referred to as Gamification (Koivisto & Hamari 2019).

3.2 Gamification

Gamification is a relatively new concept, first introduced to the public in 2002 by software engineer Nick Pelling, as a term used to describe his work in making hardware more fun (Shakeri 2016). The term was not popularized until 2010 however (Deterding 2011). As it is a relatively new term, the definition for gamification is not completely unanimous. The definition I will use is the following, gamification refers to: “... a process of enhancing a service with [motivational] affordances for gameful experiences in order to support users’ overall value creation” (Houtori & Hamari 2017, p. 25). To expand on what this means we must first define the terms motivational affordances and gameful experiences.

Affordances refers to action possibilities formed between actors and an object or environment (Encyclopedia of the Sciences of Learning 2012). The affordances Houtori and Hamari (2017) refer to are motivational affordances, which they define as: “stimuli designed with the intent of provoking the users’ motivational needs and affecting the users’ psychological states” (Houtori & Hamari 2017, p. 26), the aforementioned definition specifies that these stimuli are to facilitate gameful experiences: “... affordances for gameful experience” (Houtori & Hamari 2017, p. 25).

Gameful experience, or gamefulness, is a collective term which refers to the different positive psychological factors that relate to games. Some examples of these elements are: mastery, autonomy, suspense, immersion and flow (Houtori & Hamari 2017). Flow refers to the: “... satisfying, exhilarating feeling of creative accomplishment and heightened functioning.” (Csíkszentmihályi 1975; from

McGonigal 2011, p. 35). These psychological factors are numerous, and too extensive to fully delve into within the context of this essay. What can be said is that they all describe the positive experiences associated with gameplay (McGonigal 2011), and that they are what makes games intrinsically motivating (Koivisto & Hamari 2018). As McGonigal (2011) phrases it:

When we're playing a good game—when we're tackling unnecessary obstacles—we are actively moving ourselves toward the positive end of the emotional spectrum. We are intensely engaged, and this puts us in precisely the right frame of mind and physical condition to generate all kinds of positive emotions and experiences. All of the neurological and physiological systems that underlie happiness—our attention systems, our reward center, our motivation systems, our emotion and memory centers—are fully activated by gameplay (McGonigal 2011, p. 28)

The “motivational affordances for gameful experience”, then, refer to stimuli designed for the user to achieve gamefulness. In a Literature analysis of 273 empirical papers on the subject of Gamification, authors Koivisto and Hamari (2019) define 47 motivational affordances for gameful experience (see appendix 1).

Gamification can then be said to consist of three main elements. The motivational affordances implemented on a core service or system, which lead to psychological outcomes (gamefulness), which in turn is supposed to affect the behavior of users (Koivisto & Hamari 2019). Furthermore, as stated in the aforementioned definition, Gamification refers to enhancing a service. Houtori and Hamari (2017) state that: “if one is to identify gamification, it is essential to distinguish between the enhancing service providing affordances for gameful experiences and the core service that is being supported by that enhancing service” (Houtori & Hamari 2017, p. 27). To exemplify this, Huotori and Hamari (2017) present three seemingly identical scenarios wherein a person plays a geocaching game in a city park, geocaching being a location based game where players use global positioning systems (GPS) to seek containers hidden by other players (Geocaching 2024).

In the first scenario presented by Houtori and Hamari (2017), a person is partaking in a geocaching game in a city park, by their own volition and with the purpose of enjoyment: This scenario does not describe a

gamified process, but rather a fully-fledged game, as the core service is the geocaching game itself, and the enhancing service is the city park. In the second scenario the city has implemented a geocaching game to encourage use of the city park among residents. This scenario does describe a gamified process, as the core service is the city park and the enhancing service is the geocaching game. In the third scenario a group of people are partaking in a geocaching game in a city park, to make their hobby, trekking through the city, more engaging. This scenario also describes a gamified process, as the core service is their hobby, the trekking, and the enhancing service is the geocaching game (Houtori & Hamari 2017).

To summarize this section, gamification refers to the enhancement of a core service through motivational affordances characteristic among games (such as point systems, badges, etc.) that evoke the positive emotions and experiences related to gaming (gamefulness), with the purpose of improving the user experience and getting the participant to further engage with the core service that the gamification enhances. Gamification can then be evaluated on how successful it is in motivating and engaging the user to participate in the core service (Koivisto & Hamari 2019).

3.3 Serious Games

In the sphere of “games as motivational systems”, it is relevant to also mention the term serious games. Other terms have appeared over the years, such as “games with purpose”, but they refer to the same thing: Games that “have an explicit and carefully thought-out educational purpose and are not intended to be played primarily for amusement” (Abt 1970, p. 9). To differentiate between Serious games and traditional games based on this definition is not an easy task. Koster (2013) argues that all games have a core message, or intention that goes beyond simply “fun” (Koster 2013, in: Shakeri 2016).

There also exists some diverging definitions on the terms gamification and serious games. Most common is the argument that serious games refer to full games created for other purposes than entertainment, while gamification refer to the implementation of game elements, or motivational affordances, in non-game situations and circumstances: “...It [Gamification] is about creating systems which make use of game elements such as points, competition, leaderboard, and badges to motivate the user to change behavior or develop skills” (Shakeri 2016, p 48).

In this thesis I will apply the definition used by Kopp (2012), who uses Gamification as an umbrella term to define both the application, or design, of a fully fledged game with a main purpose other than hedonic pleasure (Serious game), and the integration of game elements on other systems.

4. Citizen Participation

Citizen participation refers to the idea of involving people in public decisions and social development processes in their area (Sanoff 2020). Sanoff (2020) defines citizen participation as: "... direct public involvement in decision-making processes whereby people share in social decisions that determine the quality and direction of their lives" (Sanoff 2020, p. 10). Citizen participation is strengthened under article 21 of the Universal Declaration of Human Rights (1948), with the words: "Everyone has the right to take part in the government of his country, directly or through freely chosen representatives" (United Nations 1948).

Citizen participation is a wide term, and involves many ways for citizens to exert their influence. Voting in public elections for example, is one of the most common ways for citizens to participate (Ali & Azad 2021). In this essay, the form of participation concerned is citizen participation in the physical planning process of public spaces.

In Sweden, for example, citizen participation in the planning process is legally required and is supported by the Planning and Building Act (PBA) from 1987. The statutory form of participation of this kind is consultation (*samråd*), carried out by municipalities with concerned parties (Tahvilzadeh 2015; Boverket 2023). Concerned parties include the County Administrative Board (*länsstyrelsen*), municipal surveying authorities (*lantmäterimyndigheter*), other concerned municipalities, known stakeholders, known holders of tenant ownership, concerned tenants and residents, tenants' organizations, as well as authorities, groups and individuals with substantial interest in the suggested plan (Boverket 2023). The specific form for consultation is not stated in the PBA, which means that municipalities themselves choose which method to use when consulting concerned parties (Boverket 2023).

To define all methods for citizen participation is not possible within the scope of this research. What should be stated however, is what the conventional form of citizen participation is, namely public meetings (Rowe & Frewer 2004). Public meetings provide the opportunity for a diverse group of stakeholders to come together regarding a planned development proposal. Public meetings can be virtually any size, can be directed at the public at large or specific user groups, and can be situated in any of the columns in the spectrum of public participation (IAP2 2024), from inform to empower. The main advantages of these meetings is that they are familiar and established ways for people to express their opinions, and they provide the opportunity for participants to be able to communicate and discuss with each other in person (EPA 2024).

How citizen participation processes are generally conducted, and where they are situated in the planning process differ based on location in the world, and it is outside the scope of this essay to delve further into how different planning processes are structured. It is relevant to state, however, what the common purposes for citizen participation in the planning process are.

4.1 Goals of Citizen Participation

The main goals of implementing citizen participation in planning, for municipalities and planners, is to; lessen the experience of anonymity in citizens, increase citizens trust in organizations and municipalities, Improve plans and decisions through providing citizens with a voice in design and decision making, for citizens to develop a sense of community by working together towards a common goal, and for the planner to gather more relevant information regarding the planned area (Becker 1977; Sanoff 2020). For citizens participating in planning processes, their main goals are to have their voice heard, and be able to influence decisions which concern their lives (Sanoff 2020). As phrased by Ertiö (2015): “Citizens are not mere tenets of local knowledge, but aim to be involved in shaping the policies that affect them” (Ertiö 2015, p. 309).

4.2 Challenges of Citizen Participation

While citizen participation is an essential part of a democratic society (UN 2024), the conventional implementation, namely public meetings, face a number of challenges (Hasler et al. 2017).

One of these challenges is the need for participants to be at a specific place at a specific time (Hasler et al. 2017; Afzalan & Muller 2018). This creates issues for the individual when the meetings are located far away or are held at unfitting time periods, requiring them to put aside considerable time from their everyday lives to be able to participate. Krek’s (2005) theory of rational ignorance relates to this. This theory states that: “Ignorance about an issue is said to be rational when the cost of educating oneself about the issue sufficiently to make an informed decision can outweigh any potential benefit one could reasonably expect to gain from that decision, and so it would be irrational to waste time doing so” (Krek 2005, p. 165). If the trouble of attending a public meeting outweighs the perceived benefit the meeting offers, citizens may choose not to attend. This especially affects those with less free time on their hands, such as families (Hasler et al. 2017), or those with physical constraints (Afzalan & Muller 2018).

Another challenge is that public meetings suffer from a lack of representativeness (Hasler et al. 2017). Historically public meetings have been unproportionately attended by older white men (Cars 2015) and lack representation from youths (Cars 2015), women, non-indigenous speakers (EPA 2024) and people with lower socioeconomic status (Sanoff 2020). Even when public meetings are well attended they only reach a fraction of the community at large, and may therefore miss out on needed information from a wider group of citizens (EPA 2024). Furthermore, the meetings can be dominated by those perceived as possessing most power in the community, as well as those who are most verbally domineering (EPA 2024). Participants with negative views of the proposed change are often more verbal than those with neutral or positive views, making meetings disproportionately skewed towards these negative opinions (Cars 2015).

4.3 Power and Participation

When conducting research on citizen participation within a planning context, one would be amiss to not include the concept of power. As phrased by John Forester (1989): "... if planners understand how relations of power shape the planning process, they can improve the quality of their analyses and empower citizen and community action" (Forester 1989, p. 27). To start, there exists no consensus on a definition of power (Westin 2019). Power is not a singular entity, but rather a cluster of concepts (Westin 2019). Similarly to games, Haugaard (2010) referred to power, per Wittgensteins (1967) definition, as a family resemblance concept. Meaning that there exist many variations of power which are connected by overlapping qualities, while sharing no general common denominator (Haugaard 2010).

I am therefore not attempting to define the concept of power, but rather introduce some power relations that are relevant within the context of this research. These power relations were identified as contributing to the discussion through the iterative research process and are explored in the following section. Initially, however, a rudimentary introduction to power within a planning context is presented.

4.3.1 Introduction: Power in Planning

To act within a planning context, is to exercise power (Flyvbjerg & Richardson 2002). Power is thus present in all forms of planning, and rather than being merely oppressive, it is a requirement for planning actions to be made (Westin 2019). For each action, a power to act is necessary; power is what gives us the

ability to act, and it should be understood as an enabler of action (Bornemark 2016).

In a planning situation, a system of power is a requirement, which orders who can act, and to what degree. As phrased by Westin (2019): “A system of power provides planning actors such as politicians, planners, citizens, activists and developers with social positions, which confirms upon them (varying) abilities to act, which is to exercise power” (Westin 2019, p. 26). This is known as positional power, which refers to one’s ability to act based on one’s position in a specific system. The power is in this case connected to the position itself, and not the person occupying it (APA 2023).

It is worth emphasizing the word “varying” in the previous quote by Westin (2019), as the systems of power in planning are asymmetrical (Westin 2019). This is not inherently negative; although the democratic ideal is that all relations are to be egalitarian, this is not possible in many cases. For example: The relations between a doctor and patient, or between a director and an employee are required to be asymmetrical in terms of power (Bornemark 2016). Power relations are also in constant flux (Flyvbjerg 1998), and the same planning actor can possess varying ability to express their power depending on what context they are situated in (Bornemark 2016).

Flyvbjerg (1998) phrases power in a planning context as a: “...dense and dynamic net of omnipresent relations. It is not simply localized in “centers”, nor is it something one can effectively “possess” and regulate by law” (Flyvbjerg 1998, p. 5). This entails that all actors in a planning context have the possibility to influence decisions, as the possibilities to express power not only depend on static power relations between actors, but also on the dynamics of how actors use their power (Wolff 2020). Flyvbjerg (1998), for example, states that the rational argument is a form of power available to planning actors with lower position within the system of power.

4.3.2 Power and Rationality

Bent Flyvbjerg, in his book *Rationality and Power: Democracy in Practice* (1998), presents a number of relations between power and rationality (Flyvbjerg 1998). I will include two of these relations, which I deemed relevant in contributing to the discussion segment.

1. Power defines reality by defining rationality. This does not imply that power seeks out rationality, but that power defines what counts as rationality and thereby what counts as reality (Flyvbjerg 1998).
2. More power equals less rationality. Power possesses the freedom to define reality, and greater power possesses more freedom to define reality. This equals less need for power to concern itself with how reality “actually” is (Flyvbjerg 1998).

Another relation that Flyvbjerg (1998) mentions is that between power and knowledge, which I elaborate on more in the following section.

4.3.3 Power and Knowledge

Planning actors possess varying knowledge, and through this have different ability to express power (Westin 2019). As previously stated in the citizen participation section, citizens possess knowledge regarding their environment that is relevant in the planning process while, for example, the landscape architect possesses knowledge regarding how to design said environment (Sanoff 2020). These knowledge are all important, but can be very different from one another, and are in many cases not shared among planning actors (Westin 2019). Knowledge can in this sense prove to be exclusionary, if we are to follow Francis Bacon's (1597) tenet that knowledge is power; a planning actor possessing knowledge not shared among other planning actors may cause these other actors to experience a disadvantage in power relations (Bornemark 2016).

Additionally, if an actor possesses the ability to exert their power, they can determine what counts as knowledge. As phrased by Flyvbjerg (1998): “... the relationship between knowledge and power is commutative: Not only is knowledge power, but, more important, power is knowledge. Power determines what counts as knowledge, what kind of interpretation attains authority as the dominant interpretation. Power procures the knowledge which supports its purposes, while it ignores or suppresses that knowledge which does not serve it” (Flyvbjerg 1998, p. 226). While this can appear to be a misconduct by the ones in

power, planning requires making decisions which inevitably lead to some knowledge being excluded, both wilfully and inadvertently (Westin 2019).

4.4 Degrees of Participation

The distribution of power to citizens in planning processes decides what degree of participation the process represents (Castell 2013). When discussing degrees of participation, different models are often employed to categorize this complex topic (Corkhill 2013). Several models on the different degrees of citizen participation are in existence (see, for example, Henecke & Khan 2002; SKR 2019; OECD 2022; IAP2 1999). One of the most widely referenced is Arnstein's ladder of citizen participation (Arnstein 1969). Arnstein made the ladder as a critique on participatory processes at the time. Her sentiment was that vulnerable groups in society should be given more influence in how the city is planned, a statement still relevant in this day and age (Castell 2013).

Arnstein's ladder includes eight steps in order of progressing citizen power: Manipulation, therapy, informing, consultation, placation, partnership, delegated power, and control (Arnstein 1969). Manipulation, therapy and placation, the three first steps of the ladder, all represent forms of non-participation or fake participation, and are often omitted in more recent models (Tahvilzadeh 2015; Castell 2013). In participatory processes in Sweden, for example, Castell (2013) argues there is no basis for these steps (Castell 2013).


Based on Arnstein's (1969) ladder, the International Association for Public Participation (IAP2) created a spectrum of public participation in 1999. This spectrum includes five steps that showcase, from left to right, the increasing impact the citizens involved have on the decision-making process (see fig. 3) (IAP2 2024). This is the model I have selected to employ in my research, due to it being widely recognized and referenced.

The spectrum of public participation includes five columns that are, in order of citizen influence; Inform, consult, involve, collaborate and empower. These separate columns are all associated with public participation goals and promises to the public (IAP2 1999).

IAP2 Spectrum of Public Participation



IAP2's Spectrum of Public Participation was designed to assist with the selection of the level of participation that defines the public's role in any public participation process. The Spectrum is used internationally, and it is found in public participation plans around the world.

INCREASING IMPACT ON THE DECISION 					
	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION GOAL	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.
PROMISE TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

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Figure 3 Spectrum of Public Participation (© International Association for Public Participation www.iap2.org 1999).

The spectrum of public participation includes five columns that are, in order of citizen influence; Inform, consult, involve, collaborate and empower. These separate columns are all associated with public participation goals and promises to the public (IAP2 1999).

5. E-Participation

The United Nations Department of Economic and Social affairs (UN/DESA) defines E-participation (electronic participation) as the use of Information and Communication Technologies (ICTs), such as the internet, computers, live broadcasting technologies, etc. (Unesco 2024), by public administrations to engage citizens in matters regarding decision-making (UN/DESA 2020).

Many of the tools used for e-participation are digitized versions of already existing mechanics for participation (UN/DESA 2020). E-petition sites, for example, give citizens the opportunity to submit and sign petitions online (involve 2024). By being located online these tools are more efficient at reaching a wider populace, but they are essentially the same as their paper-counterparts (UN/DESA 2020).

There are, however, some genuinely novel ways of participation that have become available through the public access of ICTs (UN/DESA 2020). Public participation geographical information systems (PPGIS) are one of the most recent innovations within this field, which allow citizens and municipalities to collaboratively map- or design areas (Poplin 2013).

E-participation originated during the last decades and saw its growth because of two main reasons. One is the rising popularity of the internet and digital platforms, as planners saw the opportunities presented in these technologies being applied to citizen participation (Freeman 2013; Poplin 2013). The other reason is that digital technologies are seen as a way to cope with the issues of conventional participatory planning processes (Hasler et al. 2017).

By being able to provide an online service, e-participation does not necessarily require the citizen to be at a specific location at a specific time, thus making the hurdle of participating lower (Hasler et al. 2017; Afzalan & Muller 2018). By allowing more people to participate, e-participation gives a wider range of citizens the ability to have their voices heard, making the participation more equal and inclusive (Afzalan & Muller 2018). Youths and families are two groups historically underrepresented in conventional citizen participation that benefit from having access to online participatory tools (Hasler et al. 2017).

One of the most recent advances within the e-participation field has come to be because of the invention and proliferation of mobile phones. This form of participation is referred to as Mobile participation (M-participation); the integration of e-participation features into mobile phones. The main advantage of

m-participation is related to availability, in general people carry their mobile phones with them wherever they go. This allows people to discuss and engage with public matters as they experience them in-situ (Ertiö 2015)

5.1 Challenges of E-participation

E-participation presents its own number of challenges however. The majority of e-participation tools are one-way communication channels, such as petition services, which do not actively involve citizens (Thiel & Fröhlich 2017). On the other hand, the e-participation services that provide a higher degree of participation, such as PPGIS services, have tended to be too advanced for the average citizen (Poplin 2013).

While most citizens' digital literacy have, over time, evolved alongside the user friendliness of e-participation services, some groups of people are left out. Older people, as well as people with lower socioeconomic status, generally have less access to ICTs and more limited digital literacy (Afzalan & Muller 2018). Furthermore, rational ignorance (Krek 2005) has shown to remain an issue within e-participation, as in traditional citizen participation. Many citizens do not find e-participation to be worth their time, and the question of how to motivate citizens to participate is still relevant (Poplin 2011).

In recent years, attempts at motivating more citizens to participate in planning processes through making the processes themselves more engaging have been made (Poplin 2011; Poplin 2013; Thiel & Fröhlich 2017). Gamification has become one of the most commonly implemented ways of motivating people to engage with a variety of different services (Hassan 2019). Gamification within e-participation, especially, has seen a growing amount of application, as it is seen as a potential approach to engage a wider audience (Hassan 2019; Poplin 2013).

5.2 Gamified E-Participation

Gamification in E-participation can be said to have two main purposes; The first is to evoke interest of citizens previously not engaged in e-participation, with a majority focusing on children and youths, and the second is to make the participation process a more engaging experience (Thiel & Fröhlich 2017).

Gamification has several benefits when applied to e-participation. It is a tool to help citizens learn about planning situations and planned changes, which require fundamental understanding for one to participate, in an easier and more engaging

way (Poplin 2013). Gamification can make complex planning situations seem more manageable by phrasing the issues as goalposts within a game (Sanoff 2020). Through partaking in gamified scenarios participants are allowed considerable experimentation, one can try out different solutions to planning problems in a non-threatening environment (Sanoff 2020; Poplin 2013), for example through interactive manipulation of a simulation of the planned area (Poplin 2013). In some cases participants can assume the roles of other stakeholders, and through this gain further understanding of multiple sides of an issue (Sanoff 2020). Another argument for gamified e-participation is that it may lessen rational ignorance among citizens, and make participation be perceived as more worth one's time (Poplin 2011).

Research on the subject of gamified e-participation has shown that it positively influences people's willingness to engage with e-participation services, especially among young people (see Thiel & Fröhlich 2016; Poplin 2011; Bowser et al. 2013; Hassan & Hamari 2019).

There is some variance among the results however. For example, some research has shown that motivational affordances such as the element of competition are successful in facilitating engagement (Bowser et al. 2013), while other research provides data that contradicts this, and has shown that the element of competition can serve as a deterrent for people engaging in the service, while the social aspects of being involved and part of a community supported engagement more so than any motivational affordance (Rehm 2015; Eveleigh et al. 2013). In contrast to this, other research has shown that social interactions were not relevant in their case studies (Thiel & Fröhlich 2017). This variance in results indicate that the success of Gamification in e-participation is highly dependent on both context and how it is implemented (Thiel & Fröhlich 2017). While it is case dependent, there are some challenges regarding the implementation of gamified e-participation that is prevalent in the literature, as outlined below.

5.3 Challenges of Gamified E-participation

The following are the most pronounced challenges of implementing gamified e-participation found in the literature researched.

One challenge is the fact that the creation of a gamified service is limited by logistical and financial challenges, to create a gamified process generally consumes a lot of time and money (Poplin 2013; Delaney 2022).

Another challenge is that games are complex and multifaceted systems, which make them difficult to apply within other contexts and environments (Koivisto & Hamari 2019).

Additionally, as a primary goal of gamification is to motivate users to partake in, and contribute to a core service, gamification requires the creator of the process to possess an understanding of motivational psychology. It is relevant to both have an idea of what motivates people to play games, as well as an idea of what motivates people to participate in planning processes (Koivisto & Hamari 2019). In addition to these challenges relating to the implementation of gamification in e-participation, I identified some challenges on the subject of the service usage itself.

Being an e-participation service, it comes with some of the same challenges present among these. Gamification in e-participation is affected by digital literacy, although to a lesser degree than with more conventional e-participation services. It is also affected by users' access to ICTs (Torrado & Maria Diaz Lage 2022). Moreover, the achievement affordances present in many gamified services have faced criticism (Thiel & Fröhlich 2017). Adding rewards or incentives to an activity may result in participants considering the activity in itself not valuable enough to be undertaken without the presence of rewards. The extrinsic motivation of rewards may in this case reduce the intrinsic motivation of participating in the service (Kohn 1999). Another criticism of the achievement affordances in gamification is that participants may perceive rewards as a means to control their actions and thus may develop negative feelings towards the process (Thiel & Fröhlich 2017). In summary, the rewards derived from these gamified services may backfire and negatively impact the core services which they are intended to enhance (Kohn 1999; Houtori & Hamari 2017).

6. Matrix for Gamified E-Participation

This Matrix is intended to answer the research question: “Which aspects of gamification and citizen participation are relevant to consider when facilitating a gamified e-participation process in a public space planning context?”.

The matrix has been constructed through a categorization on the subject of gamified e-participation in an attempt to structure this diverse multidisciplinary topic. It is not intended to encompass all aspects of gamified e-participation, but rather to serve as a framework for discussion.

6.1 Categorization

Qualitative analysis is, at its core, a process of forming categories through the filtering of data. Furthermore, we, as humans, create categories in an attempt to reduce the sheer volume of information we need to process when navigating the world (Grodal et al. 2021). It is important to state that all attempts at categorization are context and author dependent. In qualitative research, different authors will likely generate different categories when faced with the same research material. This is because the process of sorting information varies between individuals, based on their goals and preexisting knowledge. If another researcher would be presented with the same materials, they would likely proceed differently than I have, and subsequently create different categories. This is an inherent quality within qualitative research. Thus, categories can not be separated from their author, or from the context in which they were conceived (Grodal et al. 2021). It is therefore relevant to state how I, as the author, made this categorization. The categories I made are the following: Creator, Core Service, Reasoning for gamification, Target Audience, Motivational affordances, Degree of participation, and Inclusivity.

- **Creator** refers to who created the participatory process, and who created the game, if these differ.
- **Core service** is derived from the literature by Houtori and Hamari (2017). In the matrix, the category core service identifies the foundational purpose of the process which is enhanced by gamification. As the matrix is for gamification of e-participation, these core services all relate to participatory goals. An example of such a core service could be an e-petition service, with the purpose of providing a forum where citizens can voice their opinions.

- **Reasoning for Gamification** refers to why the creators of the gamified processes used gamification. Some of the purposes exemplified in the literature were: To engage citizens who are traditionally less likely to participate, such as youths and children (Hassan 2019; Thiel & Fröhlich 2017), as a means to overcome rational ignorance (Poplin 2011), and to encourage experimentation and facilitate learning (Poplin 2013; Sanoff 2020).
- **Target audience** refers to which demographics the creators sought to involve through the use of a gamified process. The literature frames gamified e-participation as a method to involve children and youths (Thiel & Fröhlich 2017).
- **Motivational affordances** are drawn from Koivisto and Hamari's (2019) literature analysis on the subject of gamification. They refer to which motivational affordances were put in place to help users achieve a gameful experience, and can be seen in appendix 1.
- **Degree of participation** is connected to the IAP2 spectrum of public participation (IAP2 2024), which can be seen in fig. 3. It is included to discuss what impact participants had in the decision making processes.
- **Inclusivity** addresses one of the primary challenges identified in citizen participation and e-participation, namely that these processes fail to include a significant portion of the populace (Afzalan & Muller 2018; Sanoff 2020). This category is included to discuss how the gamified processes overcame the traditional barriers present in citizen participation and e-participation, and whether these processes faced their own issues in regard to involving specific groups of citizens.

7. Gamified Services

In the following section I outline four different cases where gamification was applied within e-participation processes: Skaparstaden, B3 - Design Your Marketplace, Blockholm, and Byggkrossen.

7.1 Skaparstaden

Skaparstaden is a mobile application where the user can design a site suggestion for Drottninghög square in Helsingborg.

7.1.1 Interface – Skaparstaden

When opening the application, four tabs are displayed on the bottom of the user's screen: *Suggestions* (förslag), *Create* (skapa), *Timeline* (tidslinjen), and *My page* (min sida), as seen in figure 4.

Under the tab Suggestions the user can see all design suggestions participants have made for the site and like and comment on these, and under the tab *Create* the user can choose between three options:

- To design the suggestion using augmented reality (AR) on the site in Drottninghög (AR i Drottninghög) in 1:1 scale. This option requires the user to physically be on the site and scan a QR code displayed there, which at this point in time (2024) is no longer there.
- To design the suggestion using AR in a location of the user's own choice (AR på annan plats), in a scale of their own choice, on a plane surface.
- To design the suggestion on an overview model in their smartphone (Överblicksvy), not using AR.

Under the tab *Timeline* the user can read about the history and future plans of Drottninghög, and under the tab *My page* the user can choose a name, a profile picture, see their design suggestions, and see which design suggestions they have liked and commented on.

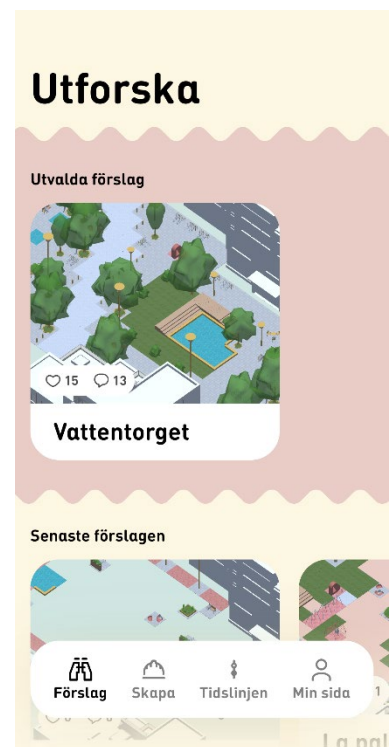


Figure 4 Screen capture of the main menu of Skaparstaden (Utopia Arkitekter AB 2022).

7.1.2 Creating a design suggestion – Skaparstaden

When creating a design suggestion the user sees a model of the site (fig. 5 & 6). The model contains four immovable houses surrounding a checkered area. The checkered area is where the user creates their design. One can also see information bubbles connected to certain squares in the checkered area. The information shown here pertains to real-world building restrictions as well as relevant aspects to consider in the design. For example: Areas with underground wires where it is not possible to place large trees, entrances to houses, and which areas have morning- and evening sun (fig. 6).

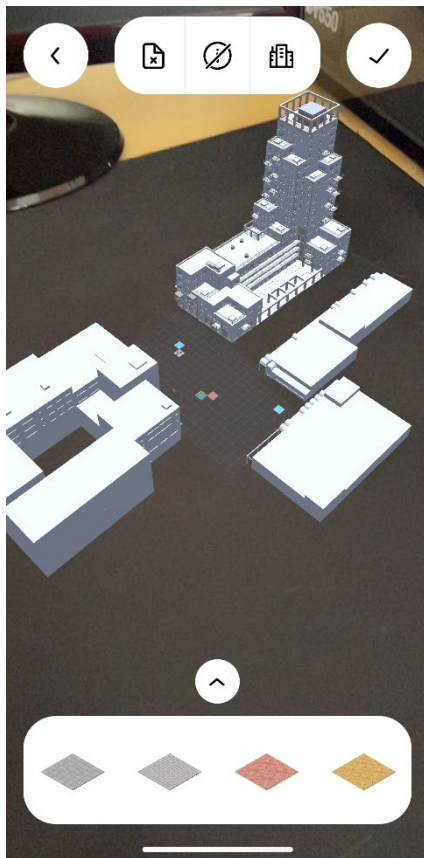


Figure 5 Screen capture of the AR model of Drottninghög square (Utopia Arkitekter AB 2022).

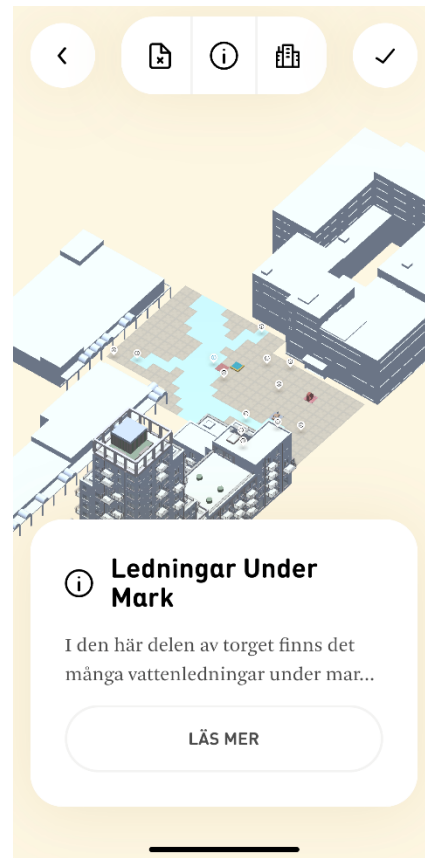


Figure 6 Screen capture of the AR model of Drottninghög square and building restrictions (Utopia Arkitekter AB 2022).

The user creates their design by placing game objects on the squares in the checkered area, one object corresponds to one square. There are 42 game objects to choose from. These consist of: Different variations of floor tiles, plants and trees, and outdoor furniture such as benches, tables, swings, light posts, etc. To place the game object on the square the user must drag them there from a menu on the bottom of the screen, using their finger.

7.1.3 Background – Skaparstaden

Drottninghög, the area in Helsingborg where Skaparstaden was implemented, was constructed during the 1960's as one of the first efforts of the million program (Helsingborg 2024), which was a project in Sweden designed to create new housings to combat the housing shortage (Wikipedia 2024). Million program areas in Sweden have become infamous for having monotonous construction and lack of diversity, which have often led to socio economic issues (Helsingborg 2024a). Drottninghög was no exception to this, and suffered from aforementioned socio economic issues well into the 2010's (interview 1). During this time the project DrottningH was initiated by Helsingborgs municipality and Helsingborgshem, the largest real estate owner in the area. The goal of DrottningH is to better integrate this district with the rest of Helsingborg through the use of citizen dialogue (Helsingborg 2024).

Alfred Nerhagen is a landscape architect employed by Helsingborgs municipality who started working with the DrottningH project during 2013. His first project in the area was improving an existing collaborative planting area. The goal of the planting area was for it to become more controlled by the citizens. In this process Alfred greatly involved the users of this planting area, and together with them designed the site, creating a greenhouse and plant beds to be used by the community. This design process facilitated a high degree of engagement from the citizens, who even visited the sites at evenings to engage passer-bys in dialogue in an effort to prevent vandalism.

“That sort of engagement, that doesn't happen by itself, that was because of this co-creation process”

Alfred was fascinated by the engagement shown by the citizens, and he wanted to facilitate the same kind of engagement seen here on another site in the area, the Drottninghög square. The square was during this point in time generally perceived to be an inhospitable site with criminal activity and was generally neglected.

The process of involving citizens couldn't be exactly the same, as the user groups were different, the planting group was a smaller closed community of around 20 people, while the square was for the general populace as well as visitors.

During the time Alfred started working with the Drottninghög square, the H22 city expo was about to be initiated (Interview 1). The H22 city expo was an exhibition in Helsingborg active during the period 2019 to 2022 focused on innovative solutions to city planning (Helsingborg 2024b).

Alfred had for some time seen the opportunities present in augmented reality, and wanted to use this as a tool to facilitate a dialogue process. These two factors, the H22 city expo and Alfred's interest in augmented reality, led to him having the idea of creating Skaparstaden, a gamified augmented reality service with the purpose of engaging citizens in the design of Drottninghög square. The intent behind Skaparstaden was for it to be used during the H22 city expo as a tool for citizens to design the square, in combination with workshops on the site, and in collaboration with city officials (Interview 1).

Another incentive behind the implementation of Skaparstaden was a will to involve new groups of participants. When holding conventional participation processes, Alfred states that the participants overwhelmingly consist of pensioners, and that the ones who express themselves mainly are old men. The hardest groups to reach are youths and parents. Young children can often be reached through schools, but teenagers and parents are much harder to engage (Interview 1)

To make the idea behind Skaparstaden reality, Alfred and his colleagues needed to find financial support, as well as collaborators with experience in creating augmented reality services who could program the game. They applied for funding through Vinnova, Sweden's governmental innovation agency (Vinnova 2024), and collaborated with Utopia architects to make the application a reality (Interview 1).

7.1.4 Challenges – Skaparstaden

There were a number of challenges surrounding the implementation of Skaparstaden. The H22 city expo did not draw as many people as envisioned to the Drottninghög square, a contributing factor to this was bad weather (interview 1).

The workload was another issue. With Alfred being in charge of multiple projects during the H22 exhibition, he couldn't participate during the full extent of the conception and implementation of the application (Interview 1).

There are high costs associated with programming, and a lot of time needs to be invested. If they had more time and resources, Alfred expresses that they would have applied some more motivational affordances. He had a wish to connect the game objects to a budget and a Co2 emission scale, to make the game more grounded in reality (Interview 1).

There are also knowledge requirements. Many of the specific technical difficulties surrounding the development of applications is something you don't know about

until you're in the process of creating one, Alfred states. For example, the original idea for Skaparstaden was for it to be applicable on other sites by easily switching out the base model, but that turned out to be much harder to implement than first thought (Interview 1). Another issue was the lack of a shared language between game programmers and landscape architects/planners.

“I don't think that they (the programmers) always understood my vision for the app, until we had progressed beyond an issue, and after that it was hard to go back and change it”

Alfred explains that they had to invent a new language between planners and programmers so that everyone understood what the intent was behind each decision and game object. He also experienced challenges with the concept of gamification. He states that he doesn't think there's a clear connection between engagement in a game and engagement in a real situation (Interview 1).

“The hard thing is that Gamification and reality is a challenge to get to work together. Because one of the reasons to play a game, according to me, is to do something not associated with reality”

7.1.5 Result – Skaparstaden

The idea behind Skaparstaden was for the design suggestions made by the citizens to be processed and discussed together with officials on site during the workshops, as Alfred states:

“We knew that if we, ultimately, only received a bunch of suggestions, then it would be very hard to evaluate them. We needed a process where we could evaluate the suggestions together with the participants on site”

Alfred emphasizes the importance of these collaborative workshops associated with Skaparstaden. He says that he does not believe that Gamified E-participation can serve as a replacement for face-to-face meetings, but rather act as a supplement, or a tool, in the process (Interview 1).

Unfortunately, there was a lack of participants on site. The application received some suggestions, but quite few of them were thoroughly elaborated. Alfred states that it is very hard to get people to spend up to an hour of time outside on a site participating in these kinds of projects. That is why they designed the application with the option to create your design of Drottninghög's square at other locations, so that participants on site could refine their suggestions later at home. But it was still difficult to engage people enough to create a full design. Alfred believes

further integration of motivational affordances may be a solution in creating more engagement:

“To get people to do this, I think gamification is a requirement. To put down this kind of work.”

But he also states that the best way to apply gamification has, to his knowledge, not been created yet. Alfred brings up the possible opportunities that Artificial Intelligence (AI) can contribute with, in the context of gamification in citizen participation. One example of this being as a tool to facilitate better discussion in the game. Even though Skaparstaden included the possibility to comment on other participants' suggestions, the comments given were shallow and not especially constructive, Alfred explains.

“[Skaparstaden] couldn't generate a depth in the comments. To do this we would need an engine that could guide the user. Perhaps an AI that asks the participant questions, such as: “What did you mean by this comment?” or, “Can you elaborate on this comment?”. This wasn't possible back then, but now it is a possibility”

In the aftermath of H22 Alfred had to take a sick leave and was given new projects when he returned. The responsibility of designing Drottninghög's square was handed to other officials within Helsingborg's municipality, who had not been involved in the Skaparstaden project.

The square has yet to be built on as of the time of writing (2024), and there are still insecurities surrounding when the construction will happen. The suggestions made on the Skaparstaden application are not being used in the current design process, but the material is still available (Interview 1).

Alfred believes that there is great potential for further work with Skaparstaden. There were a number of people who were fascinated by the application, both among older people but mainly younger individuals. It was generally perceived as easy and fun to use by those participating at the workshops. There were several other actors wanting to use the application on other sites as well, but because of the aforementioned issues with switching out the base model it would be costly and time consuming to do so. Furthermore, the architecture firm responsible for the programming of the app, Utopia, went bankrupt shortly after the app was finished, which has led to the application not being maintained or further developed on (Interview 1).

When asked where he would place skaparstaden on the IAP2 spectrum of public participation, Alfred says that the application was intended for collaboration, but reiterates that it is a tool in a collaborative process, and is not intended to be a standalone e-participation service (Interview 1).

7.2 B3 - Design Your Marketplace

B3-Design Your Marketplace was an online serious digital game designed for use on computers, by students from Florida Atlantic University (FAU) and HafenCity University Hamburg (HCU) (Poplin 2013). The leader of the project was Alenka Poplin, professor at Iowa state University, whom I interviewed during this research. Alenka's research focus is on the intersection of games, geospatial information and citizen engagement, with a focus on engaging underrepresented and marginalized communities (Interview 3). The B3 game was the product of a project-based class that Alenka held, based on a real situation involving a marketplace in Billstedt, a city district in Hamburg. Once or twice a week this marketplace hosted a farmers' market, but on other days it was empty, and was viewed as uninteresting by citizens. The city administration of Hamburg was interested in hearing about citizens' opinions on how this square could be developed, because of this Alenka chose this scenario as the project for her class (Interview 3).

The goal of the game was for participants to create design suggestions for the marketplace. Users could then vote on each other's suggestions, thus facilitating an element of competition (Interview 3).

The game environment consists of a number of static buildings, which cannot be moved or altered, surrounding the marketplace square. The marketplace itself is displayed as a checkered grid. Onto this grid users can drag and drop different dynamic objects, such as plants and trees, urban furniture, and lights (Poplin 2013). Another feature of the game were "little helpers"; in game characters whose purpose was to guide and help the user. There were five different character designs to choose between: A monkey, a fish, a penguin, an archer, and a little captain. All characters supply the user with the same information, but based on which character you pick, the information is phrased differently (Poplin 2013). These "little helpers" had a playful design, Alenka explains, as they had a comic appearance and would sometimes tell jokes. She differentiates this playful element from gameful elements, which in the case of B3, she explains, is the element of competition. This was implemented to encourage users to return to the service, Alenka explains.

“It’s a competition element that can help you, as a player, to keep on coming back. You don’t just submit your design and then you’re done, you might also want to check how your design is doing ... you can also take other people’s design and then resubmit with your ideas for the competition”

7.2.1 Target audience

The target audience for B3-design Your Marketplace was quite wide, Alenka explains. The game was designed to be used by adults that lived in Hamburg, and who had basic computer skills. The interface was shaped after this user base, including basic features such as drag and drop functions and the aforementioned “little helpers”, who could guide the user through the game.

B3 - Design Your Marketplace also targeted a type of player through its design, whom Alenka refers to as “achievers” (Interview 3). Achievers are a group of players first classified by Richard Bartle (1996), in the Bartle taxonomy of player types (1996). Achievers find their motivation in games through achieving the different goals set by the game (Bartle 1996). B3 also targeted the player type “explorers”, Alenka explains. Explorers are a player type whose motivation in games stem from the ability to explore and experiment with different options (Bartle 1996).

Alenka emphasizes that defining the target audience is one of the most essential aspects when making a game for citizen participation.

“I think that’s where the game design starts. What are the needs and goals, and who is your targeted audience? And then how can we adopt this to the targeted audience”

On this note, Alenka mentioned a project she recently participated in, where she and colleagues used Minecraft as a tool for citizen participation (see Andrade, B., Poplin, A. & Sousa de Sena, I. 2020). The reason they chose to use Minecraft in this process was, in Alenka’s words:

“We know that many children play Minecraft ... that was the only reason we decided to build on Minecraft, because we assumed and understood that many kids are already playing it, so the environment will be known to them, and they will be able to use many functions and operations”

On the subject of catering games for citizen participation to a targeted user group, Alenka mentions the possibilities of AI. Back when they created B3 - design your marketplace, Alenka wished that the user interface of the game would be able to

sense how the user was operating the system; how fast they clicked, how used they seemed to be to the interface, etc., and adapt thereafter. Through this the game could be applicable to an audience with a wider disparity in technological skills.

“So the system takes up to, two-three clicks, to understand that you have the basic skills, and more than that, that you are very fast, and so it would give you a different, more complex user interface and more options. This would be possible now with AI, but back then, this was my dream”

7.2.2 Challenges with games for citizen participation

When asked about what the most challenging aspect of creating games as a tool for participation is, Alenka responds that achieving a balance between seriousness and play is the most difficult. If the game is very serious it gives you little space for playfulness, and vice versa, if the game is too playful there is no room for the serious element (Interview 3).

Adults' thoughts about games, and play, can also prove challenging. Alenka mentions some preconceived notions that people, mainly adults, have when they hear that a participation process involves games, or play:

“We wanted to engage residents in a playful way, and once we said playful everybody thought it was just for kids. Play, and game, is often associated with that, that it's not real, it's just a game ... So they might feel that it's not going to be treated seriously, that it's not for adults”

Because Alenka has experience with both designing games for participation and using already existing games (Minecraft), I asked her what she found the strengths and weaknesses of the two approaches were. When using an existing game you are limited to the possibilities which its environment gives you, Alenka explains, while creating a new game gives one more freedom to explore new methods, and create more specific scenarios (Interview 3).

An upside of using an existing game, however, is that one can tap into the game's current player base. This is beneficial, as the existing users are familiar with how to operate the game and already find enjoyment in it. It also means that one doesn't have to promote the existing game as much as a newly created one (Interview 3).

Another challenging aspect of working with games in citizen participation is how difficult they are to design. Alenka explains how there is a lot of knowledge that goes into designing games, and states the importance of understanding that game design is a whole other field of research and application. Furthermore, to combine participatory planning and games presents even more challenges. As Alenka states:

“It is not easy to, in any case, design a game. It’s a very complex process ... But if you imagine that besides designing a game, you want the game to have a specific goal related to planning, and you want to reach a specific audience, and you want to create a very specific representation of the real world. There are lots of constraints connected to that. It’s very complex and not anybody can do it.”

7.2.3 Results - B3

The finished B3 - Design your Marketplace was tested with students and a group of pensioners, in a retirement home. The pensioners enjoyed the game, however, as Alenka remarks; the enjoyment might have primarily derived from them being given attention, and being asked to participate, rather than from the game itself. The pensioners found the game to be easy to use, because of the helpful guides. Some of them did, however, have a difficult time navigating the computer software itself. Alenka remarks on how this knowledge has shifted over time.

“10 or 11 years ago, the elderly’s digital skills were quite different from now ... Everybody’s using laptops and smartphones nowadays, but back then we needed to teach them the basic computer skills”

An upside with having seniors participate in gamified citizen participation, is that they often are more interested in play than younger adults, Alenka remarks.

“Elderly are also more open to play .. It’s like a full circle. You start playing and you enjoy it, then you grow up and forget about playing, and then when you have more time, you become more curious again, and you play a game. We should play more as adults. In this research, we are trying to tell people: Hey, there is a possibility to enjoy life.”

A statement made by a number of the senior participants was that they viewed online participation through games to be beneficial to citizens with physical handicaps (Poplin 2013).

The Finished game was shown to city officials, who were happy and enthusiastic about the initiative, but didn't have it in their budget to employ it, explains Alenka (Interview 3).

When asked about where Alenka would place B3 - Design Your Marketplace on the IAP2 Spectrum of public participation (IAP2 2024), she answered that B3 has the potential to enable all facets on the spectrum. However, she also stated that the model, as a linear tool, is unsatisfactory in these processes, and would be more beneficial as a set of components referencing different functions (Interview 3).

7.3 Minecraft as a tool for participation

Minecraft is a computer-based game created by Mojang game studios in 2009. It is one of the most successful digital games in history (Delaney 2022), having a monthly active player base of 141 million players worldwide (Statista 2021). Minecraft is a “sandbox” game, meaning that it hosts an open world, which users can shape to their liking, and that it has no predetermined course of actions; users can choose to do whatever is possible within the game world (Delaney 2022). The Minecraft world is built upon a 3-dimensional grid which players interact with by placing, or removing, blocks of various colors and patterns (Westerberg & Von Heland 2015). Users choose whether to play the game online, in multiplayer servers, or offline, in a single player world (Westerberg & Von Heland 2015). Users also choose which game mode to participate in, the two most common being Survival and Creative. In the Survival game mode, the objective of the game is to survive, with challenges such as hostile non-player characters (NPCs), hunger, falling, etc. The creative mode is more like a playground, where the user can shape the world to their liking without the threats present in survival mode (Austin 2024). Minecraft in creative mode is more similar to the concept of play, than to the concept of game. As per the previous definition of games by Suits (1990): “To play a game is to engage in activity directed towards bringing about a specific state of affairs...” (p. 48), Minecraft in creative mode has no objectives, and can be described as “digital lego” (Delaney 2022; Westerberg & Von Heland 2015). Because of its versatility, new games and interactive experiences can be made by players within the game, which places Minecraft on the border between being a game, and being a game design engine (Delaney 2022). Minecraft in creative mode has been likened to an easy to use, beginner friendly 3D modelling software (Westerberg & Von Heland 2015). As phrased by Cody Sumter (2012), part of the Human Dynamics group at the MIT Media Lab: “[Minecraft creator] Notch hasn’t just built a game, he’s tricked 40 million people into learning to use a CAD program” (Sumter in Cheshire 2012, p. 1). A benefit to Minecraft over conventional 3D modelling services, and one of the reasons it has been used as a

tool for citizen participation, is that it's been proven to be quick to learn (Delaney 2022), and easy to use (Imam & Lahoud 2021). Furthermore, the ability for users to collaboratively design and build using the existing multiplayer mode is something not present in most 3D modelling services (Westerberg & Von Heland 2015). Another contributing factor to Minecraft as a tool for citizen participation, is that it's played from a first-person point of view, rather than a birds-eye view perspective like many 3D modelling services. Because of this users are more immersed in the environment that they are creating, and have an easier time to comprehend the scale of the site (Delaney 2022). An inherent weakness to Minecraft, however, is that it is not as detailed as most other 3D modelling software, which can make it difficult for participants to accurately convey what they intend (Delaney 2022). Additionally, Minecraft by itself is not a sufficient method for participatory processes, as cautioned by Delaney (2022):

“Despite its benefits, Minecraft is not a panacea for the inherent difficulties of community consultation. In its implementation, it must be used in combination with other tools and methods, some of which can be integrated into the game, and some of which are best carried out in the physical rather than virtual realms” (Delaney 2022, p. 340).

7.3.1 Minecraft – Blockholm

Mats Karlsson is an architect with a background in fine art education, who has worked with two processes concerning the role of games in participatory planning processes. The first process was an exhibition called Blockholm, which he initiated together with artist Markus Bohm (Interview 2).

Blockholm was initiated based on observations made by Mats and Markus, regarding the state of contemporary architecture. Primarily, Mats felt that the architecture museum in Stockholm was a bit closed in and stuck in their old ways, mainly showcasing exhibitions by architects - for architects. His opinion was that the current exhibitions did not sufficiently reflect our contemporary society, and that they failed to take into account many groups of participants (Interview 2). Mats and Markus saw the opportunities of Minecraft when observing Markus' child playing the game, and were fascinated that such a young child could create fairly advanced structures using a digital tool. Mats points out several benefits with Minecraft as a tool for citizen participation: The large user base, the game being fairly cheap to purchase, and the online multiplayer mode are all aspects that contribute to Minecrafts potential. The fame of the game itself was also a contributor. Minecraft was, at this time, getting increasingly popular and Mats and his colleagues saw the opportunity of it as a means of marketing.

But above all, the ease of use was the most prominent potential.

“[Minecraft is] a tool, almost like a shovel. The threshold is so low, immediately when you enter the game, you can act. And this is the first prerequisite that tells us; this can be used for so many more things than just as a game”

This usability was not only applicable to children. Mats stated that adults who observed the game could easily grasp the game’s mechanics, and were able to themselves sit down and play. Because of these aspects, Mats and Markus saw the potential in using Minecraft as a tool to facilitate interest and understanding on the subjects of architecture and city planning in a new audience. Moreover, they saw the potential with Minecraft as a means to bring the architecture professionals “back to the sandbox”, and allow for architects, children and other participants to build, together, on the same playing field, as the game presented an equal ground to these different groups (Interview 2).

Blockholm took place during 2012-2013, and was a process where people were given the opportunity to rebuild the city of Stockholm, from scratch, in Minecraft. It was displayed at the Swedish Centre for Architecture and Design (ArkDes) in Stockholm. The process was directed at involving new user groups, mainly children, and to participate one needed to have a Minecraft account. Players who participated were given a web address which was connected to a plot of land, this plot was the only area that players could build on, players could also add a text description about their site. The only other limit was a building height limit of 10 blocks. The freedom to build whatever one could imagine is something Mats emphasizes as important to the process. The focus was fantasy and creativity, Mats explains, and it is easy for these aspects to be overshadowed when too many restrictions on what one is allowed to build are in place. A collaborator on the project was Mojang, who chose to provide guidance and help without cost, as they found the process to be interesting (Interview 2).

At the end of a four month period, the project was finished, with 15 000 people having participated in the process of rebuilding Stockholm. Mats and his colleagues then made a selection of circa 100 sites in Minecraft which they felt were especially interesting or innovative, and created a guided tour of these sites. Invited to this tour was a jury of professionals, including the city architect of Stockholm, an architecture critic, and a critic from the ArkDes. This jury then evaluated the sites based on criteria such as; how does the site connect with the corresponding physical site, what was the idea-description, and what does the suggestion tell us about Stockholm as a city. Out of these, circa 100 sites, 20 were chosen to be included in the exhibition. These sites were then made into physical

models, where every Minecraft block was represented as 20 x 20 cm blocks. As a finishing statement about the project, Mats says:

“It was an experiment, where we tried to push the boundaries regarding what citizen participation is, and where we tried to look beyond just talking to participants. We wanted to absorb the information about the amazing, to allow participants to be naive, and let them express their dreams about the city”

7.3.2 Blockholm - Side Stories

By allowing participants a large degree of freedom in the Blockholm project, some unforeseen events occurred. These side stories, as Mats refers to them, were, according to him, sometimes even more interesting than the actual project, as they reflect on the social aspects of building something together (Interview 2).

One of these side stories occurred when the project was being filmed live on the news. Because of how the Minecraft server was programmed, it turned out to be possible to build below other people’s plots of land. One user took advantage of this and placed explosives underground, which were activated as the project was being filmed. Mats’ team found the culprit, suspended them, and disabled explosives on the server, but it did create some hurt feelings among those whose creations were destroyed (Interview 2). At another point in the project, the area in Minecraft that represented Djurgården was made into a free building area, where users could collaborate and even destroy each other's creations. During this time a group of players built a new version of Globen at the site, where they held festivals and gathered as a community. However, another group of players decided to attack the building, so Mats and the other project leaders logged in to help the users protect it (Interview 2). In another instance, a user created an egg-shooting machine which overloaded the server and caused users' computers to crash whenever going close to it. Mats and his colleagues, together with employees at Mojang, were eventually successful in removing the machine (Interview 2).

7.3.3 Minecraft – Byggkrossen

Another project using Minecraft as a tool for participation in which Mats was involved was called Byggkrossen. This was a process in the Swedish city Lund during 2014, on the block Stenkrossen, where a detailed development plan was to be made. Byggkrossen was a participation process directed at children and youths in this area, where they and their parents were invited to partake. This user group was especially relevant in Stenkrossen, Mats says, as there were a lot of actors in the area that worked with youths (interview 2). The project was a competition, where participants could win prizes, such as gift cards. There were two modes that

participants could choose between: Controlled or freestyle (Karlsson 2015). The stipulations from the municipality of Lund, for the Controlled mode, were the following (translated to english from Karlsson 2015):

“Make a contribution that coincides with the limitations and wishes of the municipality. This means that you cannot build on existing buildings on the playing field. How would you like to live? How would the neighbourhood look if you were in charge? ... We are looking for a suggestion that includes varying forms of residences, stores, and a pre-school. A place where people want to be and can meet, to put it simply.”

The stipulations for the freestyle mode were more similar to the Blockholm project, which advocated for free building (Interview 2), they were phrased as following (translated to English from Karlsson 2015):

“Build whatever you want! Rewards creativity and innovation and you can build wherever you want. Here we want to know what you want in Lund, what is missing? Only your imagination sets the boundaries.”

Whether they chose to partake in the Controlled or the Freestyle mode, participants worked in teams or on their own to create suggestions for areas on the block.

Two of Mats' colleagues built Stenkrossen in Minecraft, which they then separated into 40 plots of land. Each group of participants were given control over a plot of land, which was the only area that group could build on; they could, however, visit each other's plots. One of the benefits of working this way was that participants could easily walk over to neighbouring plots and take inspiration from what was being built there.

Participants worked within the constraints of quite simple parameters. Stenkrossen was to be densified; a set number of residences were to be included, and a number of roads were to be drawn and connected. Participants were also to include a small text connected to their site, describing their intentions (Interview 2).

The biggest question Mats had when conducting this process was: “How can we do this in a playful manner, while still achieving concrete goals?”. It was important to find a balance between facilitating a playful participatory process, and achieving relevant, processable, data (Interview 2).

At the end of this process 100 people had participated, and 71 suggestions were handed in. These were then presented to a jury consisting of, among others: Representatives from Lunds communal real estate company (LKF), the contracting company Veidekke, and Lunds city planning office (Karlsson 2015). As the Stenkrossen project is still underway, and Mats was only involved with an aspect of it, the results of how this participation process affected the built environment remains to be seen. The process itself was successful however, Mats states. There were a lot of participants, and they expressed enjoyment in partaking in the process.

7.3.4 Notes on Minecraft, and games, as a tool for citizen participation

From these two projects, Mats have garnered some thoughts and observations on the use of Minecraft, and games in general, within citizen participation processes. One observation he found interesting was how children created versus how adults created. Children’s processes were more iterative, changing and taking inspiration from other sources as the process moved along. While the process of adults was more linear, they had a more clear idea from the start which they followed through with (Interview 2).

As previously stated, the renown of Minecraft was beneficial to these projects. However, it also presented a challenge. Many adults had preconceived notions about Minecraft, viewing it as “just a game”, and not serious enough. Mats stated that, in his opinion, many adults didn’t feel that the end process was sufficiently relevant, it wasn’t what they were used to (Interview 2).

The limitations of Minecraft created some challenges as well. The game wasn’t really made for these processes, Mats stated. The player is confined to representing the world through blocks, which makes the level of abstraction quite high. Because of this, Mats emphasizes the importance of the accompanying texts used in both projects; as an additional means for participants to express themselves and their vision (Interview 2). The limitations in how the game is played is a challenge as well, as Mats noted:

“It’s a bit of a blunt tool. If you start building on an idea in Minecraft, you have to see it through, because if you are disappointed and want to rebuild it, it requires quite a lot of work to do so”

In Mats' opinion, this is a part of what makes Minecraft interesting however: It requires users to have a dialogue beforehand on what the purpose of the construction is (Interview 2).

Another aspect of using Minecraft as a tool were regarding the ethics of involving a private game company in a public participation process, and in the case of ArkDes, representing a commercial company in a governmentally owned museum. Mats and his colleagues had a discussion on this topic, and determined that the relevance of using Minecraft outweighed the potential negative aspects. And as Mojang saw no direct profit, apart from a form of advertising, it was determined that there would be no harm in using Minecraft as a tool (Interview 2).

On the wider subject of games and gamification, in general, within citizen participation, Mats had some thought as well. A benefit with games is that they can act as a simplified simulation of a real world situation, Mats says. The creator of the game can choose which parameters to include in their simulation, and thus represent very specific situations in a more comprehensible form. Games, and other digital tools, are also a form of manipulation, Mats stated, as digital realities are not reality, but a representation of reality. What they wanted with Minecraft was to give citizens a tool so that they, themselves, could represent their view on reality (Interview 2).

The use of games in citizen participation has many applications, in Mats opinion, and he views it as a viable new tool to get citizens' voices heard.

“It’s all about acquiring a tool that gives you relevance around the table. Games can be that; It’s a tool that can make citizens interested and engaged and it can showcase a new reality; that makes it relevant.”

On the subject of the future of games within citizen participation, Mats brings up the opportunities of Artificial intelligence (AI). He believes that AI can further lower the bar of participation by seamlessly integrating the more technical aspects of city planning into these creative tools, and thus allow citizens to express

themselves without needing the technical expertise required to do so thoroughly
(Interview 2)

As a finishing statement Mats makes a remark on the current applications, and future need for gamification as a means to engage and educate people on the issues facing us, be it societal or climate issues.

“It’s a wide subject, and we have only touched on the beginning of it. That’s why it’s [gamification] so hard to judge based on the small amount of tools available today that we have used. They are nice, and they provide some solutions, but the width of what it can do, and the need for it, to, within a short frame of time, readjust many current systems ... to get people involved in this process, democratically”

8. Result

In the following section the Matrix is applied to the interviews, providing discussion points for the seven categories: creator, core service, reasoning for gamification, target audience, motivational affordances, degree of participation, and inclusivity. The motivational affordances are taken from Koivisto and Hamari's (2019) literature analysis of 273 papers on the subject of Gamification, and the full list of these can be seen in appendix 1. The degrees of participation are taken from IAP2's spectrum of public participation (1999), which can be seen in fig. 3., on page 27.

<u>Matrix</u>							
Project	Creator	Core service	Reasoning for Gamification	Target audience	Motivational affordances	Degree of participation	Inclusivity
Skaparstaden	Alfred Nerhagen, Helsingborg's municipality, Utopia architects	To gather design suggestions for Drottninghög's square	Innovative approach in connection with H22, to involve a younger demographic	Visitors during H22, mainly directed towards youths and young adults	Social networking features, Competition, Peer-rating, Augmented reality	Collaborate	The majority of participants found the game easy to use, an older user had issues with the mobile interface
Blockholm	Mats Karlsson, Markus Bohm, ArkDes	Create an exhibition for Arkdes, to facilitate an experimental process	To facilitate interest in architecture in a younger demographic	Minecraft users, mainly children and youths	Competition, Multiplayer, Full game	-	A lot of youths were involved, some adults found the process "not serious"
Byggkrossen	Mats Karlsson, Lunds municipality	To gather design suggestions for the area Stenkrossen	To involve a younger demographic	Youths and children in the area of Stenkrossen, Lund	Competition, Cooperation, Multiplayer, Real world reward, Full game	Involve, collaborate	The process engaged many youths and parents
B3 - Design Your Marketplace	Alenka Poplin, Students from Florida Atlantic University (FAU) and HafenCity University Hamburg (HCU)	To gather design suggestions for a marketplace in Billstedt	Part of a course on games in citizen participation	Adults in the Billstedt area, was also tested on senior citizens	Competition, Virtual helpers, Adaptive difficulty	Can be applicable to all degrees	Elderly participants found the game easy to use, but had difficulties with the computer interface

9. Discussion

9.1 Creator

When discussing who created these three gamified services, and the impacts therein, it is essential to first differentiate between the actors who programmed the game, and the actors who facilitated the participatory process. In the case of B3 - Design Your Marketplace, these are the same (Interview 3), but this is not the case in Skaparstaden, Blockholm, and Byggkrossen (Interview 1; Interview 2).

In the case of Skaparstaden, the municipality of Helsingborg employed a new actor in the process, as they needed outside knowledge on how to program a game (Interview 1). Alfred and his colleagues at Helsingborgs municipality facilitated the participatory process, and provided guidelines on what to include in the game, while Utopia architects programmed the game itself (Interview 1). In the case of Blockholm and Byggkrossen, the game used was the already existing game Minecraft, which was created by the game studio Mojang (Delaney 2022). Mats and his colleagues facilitated these participatory processes, and used Minecraft to shape environments (Interview 2). In both these cases the creators of the gamified services are twofold, consisting of one actor who created the participatory process, and one actor who created the game itself.

As seen in the case of Skaparstaden, these collaborative processes can cause challenges. Alfred stated that there, on occasion, arose difficulties in communication between him and his colleagues, and the programmers, requiring them to construct a shared language as the process progressed (Interview 1). These difficulties in communication arose from the fact that each of these two actors possessed different knowledge which the other one lacked. Alfred and his colleagues possessed knowledge on what aspects were relevant when facilitating a participatory process on a public space, and the programmers possessed knowledge on how to design a game (Interview 1).

It is relevant to bring up the power and knowledge relations discussed earlier and apply them to this context. An actor possessing knowledge which is not shared by other actors may cause an imbalance in power relations (Bornemark 2016). Furthermore, as the relationship between power and knowledge is commutative, if an actor possesses knowledge not understood by other actors, they also possess the power to change what counts as knowledge (Flyvbjerg 1998). A programmer can then, for example, falsely tell the planner in charge of the process which

elements are possible to include in the game without the planner being able to know if this is true, and thus manipulating the participatory process.

There are no signs which indicate that Utopia sought to manipulate the participatory process through the design of Skaparstaden. However, it is important to be aware that when involving an actor in the planning process who possesses knowledge which is not shared by other actors, and providing this actor with a role that holds influence over the participatory process, this actor is handed a position of power, which can be abused. In the case of Blockholm and Byggkrossen, where Minecraft was used, the creator role is blurrier. As Minecraft is an existing game it was not created for these processes, it was however modified by Mats and his colleagues to include restrictions such as limit where users could build (Interview 2). In this sense, Minecraft was both the game and the game design engine, as mentioned by Delaney (2022).

Mojang, the company which owns Minecraft, was present in the Blockholm project as advisors (Interview 2). There are no signs which indicate that they sought to influence the participatory process, nor do they appear to have any incentive to do so. As Mojang is a commercial company however, there is a question whether it is justifiable for a governmentally owned museum, or a municipality, to use their platform and advertise for Minecraft. Mats and his colleagues deemed it defensible, as they considered the relevance of using it to outweigh potential downsides. The relevance being that a large amount of children and youths use Minecraft, and the goal with the Blockholm and Byggkrossen was to reach out to these groups, and collaborate with them on a platform they could use (Interview 2). My personal opinion is that I agree with Mats, as Mojang received no direct monetary gain from these processes (Interview 2). Additionally, Mojang has been further involved in additional non-profit citizen participation processes than those described in this paper, which in my opinion enhances their credibility. The most prolific one being a collaboration between UN-Habitat and Mojang, called the Block By Block project, which uses Minecraft as a tool for citizen participation in urban design, concentrating on sites in poor communities within developing countries and focusing mainly on youths as participants (Delaney 2022). An aspect not discussed in the literature reviewed, but that has shown itself relevant to consider if one is to apply gamification to a citizen participation context is whether to create a game or to use an already existing game, such as Minecraft.

Using an existing game can prove to be less costly than creating a new game (Interview 3). As the high cost of creating games is one of the challenges described in the theory on gamified e-participation (Poplin 2013; Delaney 2022),

to counteract this is a clear advantage of using an existing game. Additionally, by using an existing game, the facilitator of the participatory process can tap into the existing user base of that game (Interview 2; Interview 3), and thus have the ability to engage further people, which is one of the main purposes of applying gamification in e-participation found in the literature (Thiel & Fröhlich 2017).

A benefit to using Minecraft, or other widely popular games, is that the risk of the companies behind them going bankrupt is much less likely than when employing smaller firms, such as what happened in the case of Skaparstaden. However, a benefit of employing smaller firms, as expressed by Alfred, can be that they are more invested in the processes (interview 1)

A detriment to using an already existing game is that one is limited by the constraints present in that game (Interview 3). As Mats noted on using Minecraft, the game was not made for these processes (Interview 2), it is not very detailed, and issues may therefore arise if users can not accurately convey their intent (Delaney 2022). On the other hand, when creating a new game one is more free to simulate specific scenarios and explore new methods (Interview 3). An example of this is the augmented reality implemented in Skaparstaden (Interview 1), an aspect of the game that I found interesting when playing the game, and one that would, most likely, not have been possible if an existing game was used.

In general, it seems that using an existing game is easier, less risky and more cost efficient; however, the benefits of implementing new methods, which is often not possible when using an existing game, should not be overlooked. As previously stated, gamification in e-participation is highly affected by context (Thiel & Fröhlich 2017), and the same can be said for whether one should create a new game or use an existing one in participatory processes.

9.2 Core Service

In the case of Blockholm the core service was to facilitate an experimental process, and it was to be displayed as a museum exhibition (Interview 2). The use of gamification as a means of experimentation aligns with the literature stating that it provides participants with a platform to try out solutions in a non-threatening environment (Sanoff 2020; Poplin 2013). The core services of the other games were related to gathering design suggestions on the sites connected to their respective game (Skaparstaden, B3 - Design Your Marketplace, Byggkrossen). The connection between site and game is therefore an interesting aspect to look into. In all these cases the sites were represented as virtual simulations of real places, made according to scale. Users could manipulate the

sites by either placing premade objects (Skaparstaden, B3) or blocks (Byggkrossen), on the checkered areas that represented the respective sites.

Among these processes, I believe that Skaparstaden demonstrated the strongest connection to the site for three main reasons. First, the game was intended to be played on the site. Second, the game incorporated real-world building restrictions and suggestions, such as areas with underground wires, morning and evening sun exposure, etc. And third, the augmented reality feature, which made it possible for participants to visualize their suggestions in a 1:1 scale directly on the site (Interview 1). However, Skaparstaden did not generate the expected amount of engagement from citizens. If we compare this process to a previous participatory process that Alfred held, which revolved around improving a collaborative planting area (Interview 1), we can see that the latter was more successful in facilitating engagement. One of the key differences between these two projects is that the collaborative planting project had a clearly defined user group. In contrast, Skaparstaden's user group for Drottninghög's square was more wide, and less invested in the site (Interview 1). A challenge with the Skaparstaden process then, may have been that Drottninghög's square itself did not engage citizens. This aspect is not related to the Skaparstaden game itself, but risks being incorrectly attributed to it, which may reflect negatively on the use of these new, innovative methods for citizen participation.

Another challenge of gamified e-participation that was not present in the literature, but which was evident in the interviews relates to the relationship between core service and game elements. One of the advantages of gamification is that it creates a simplified version of the planning situation that is easier for citizens to engage with (Sanoff 2020). However, it seems issues can arise if the game differs too much from the real situation. Alfred expressed concern that a gamified e-participation service may represent an "alternative reality", that is separate from the real project, making people interested in the game but not in the core service that it is intended to support (Interview 1). This aligns with findings by Thiel and Fröhlich (2017) and Kohn (1999), which showed that the inclusion of rewards that are not inherently connected to participating in these processes may reduce people's motivation to contribute to the core service.

This may have been an issue in the Skaparstaden process, where a number of suggestions were not elaborate enough, and some were "not serious", and submitted as jokes (interview 1). In this case, participants may have found playing the game itself to be fun, but did not find interest in the core service behind the game.

In the case of Blockholm there were also some participants who did not take the process seriously, and who chose to destroy other participants' creations (Interview 2). A contributing reason for this may be that these processes provided participants with a large degree of freedom to build what they wanted. This reflects Flyvbjerg's (1998) assertion that more freedom to act, e.g. more power, equals less rationality (Flyvbjerg 1998). As the participants had the power to create what they wanted, some chose to use this power in ways not aligned with the participatory goals, such as creating designs that lacked in practicality or engaging in disruptive behaviors (Interview 1; Interview 2).

Limiting participants' freedom by limiting what can be done in the game can also prove negative however. Mats noted that fantasy and creativity can easily be overshadowed when too many restrictions are in place (Interview 2). Additionally, participants may perceive the rewards and restrictions in the gamified processes as a method of controlling their actions (Thiel & Fröhlich 2017). If the restrictions of the gamified processes are too many, and participants can't express their opinions through it, then the participatory process is redundant and can be seen as a form of manipulation (Arnstein 1969).

Achieving a balance between the serious aspects, ensuring that the process is sufficiently anchored in a real-life situation, and the playful aspects that motivate people to participate in these processes, appears to be one of the greatest challenges with using games in participatory processes, as noted by Alenka (Interview 3). It also appears to be one of the most important aspects.

9.3 Reasoning for Gamification

Most reasons for why gamification was implemented in these four cases were in-line with the literature, seeking to involve demographics that normally abstain from citizen participation (Thiel & Fröhlich 2017). This was the case in Skaparstaden, Blockholm, and Byggkrossen, which sought to involve children and youths (Interview 1; Interview 2). The purpose of encouraging experimentation found in the literature (Poplin 2013; Sanoff 2020) was also present in all processes. For example, Alenka mentioned that with B3 they sought to accommodate for the explorer playstyle, which consist of users that derive engagement from games through experimentation and exploration (Interview 3).

A purpose of gamification that was identified during the interviews was its use as a method for achieving public and media interest by being a new, and innovative approach to citizen participation (Interview 1; Interview 2). In the case of Skaparstaden the gamified process was part of H22, which had a focus on

innovative solutions to city planning (Interview 1), and in the case of Blockholm and Byggkrossen Mats mentioned that the rising fame of Minecraft was a contributing factor to why they used it, and that it provided marketing for the process (Interview 2). This reasoning for using gamification could be linked to why all interview subjects brought up the possibilities of AI, as it is, at the time of writing, the latest trend in technology.

Another reasoning behind why gamification was used lies on a more individual level. Alfred mentioned his own interest in augmented reality, which contributed to why he chose to create Skaparstaden (Interview 1), and Mats mentioned an interest in Minecraft after observing what his colleague's child accomplished in the game (Interview 2). Both Alfred and Mats possessed roles which gave them influence over which citizen participation method was to be chosen in the case of Skaparstaden and Blockholm. This reflects one of the earlier mentioned relationships between power and rationality: Power defines reality by defining rationality (Flyvbjerg 1998). Whether or not using gamification in citizen participation is a rational choice is determined by actors with the positional power to decide this. This is not inherently negative, but it is relevant to state that gamification is one method for citizen participation among many, and that power is a deciding factor when discussing the reasoning behind why Gamification is used.

9.4 Target audience

The fact that the target audience were children and youths in three of these cases (Skaparstaden, Blockholm and Byggkrossen) aligns with the literature stating that the most common demographic targeted by gamification is children and youths (Thiel & Fröhlich 2017). In the case of B3, however, the target audience were adults in the area of Billstedt and the game was tested on pensioners (Interview 3). This is an interesting deviation from the other cases. As the target audience in B3's case was wide, the game was to be accessible for a large number of different demographics. Older people, who generally possess lower digital literacy (Afzalan & Muller 2018), was a good choice as a focus group because of this. If this demographic finds the game easy to use, that serves as an indicator of its overall accessibility.

Alenka stated that defining a target audience is one of the first steps in designing a game for citizen participation, and one of the most important aspects (Interview 3). In the process where she, Andrade and Sousa de Sena (2022) used Minecraft as a method for citizen participation, the reason for doing so was to involve

children, and they knew that many children play and understand Minecraft (Interview 3).

In the case of Blockholm, they targeted people with an existing Minecraft account, as this group in most likelihood overwhelmingly consisted of children and youths. This brings up an interesting aspect of gamified e-participation, however, players as a targeted demographic.

Alenka mentioned that in B3 they targeted certain groups of players, as defined by Bartle's taxonomy of player types (Bartle 1996). Bartle's taxonomy categorizes players after four types; achievers, explorers, socializers and killers (Bartle 1996). The achiever and explorer playstyles have already been explained in this paper, so I will not further elaborate on these, the other two are also interesting to consider in these cases however, so they will be briefly explained.

Socializers are a group of players who derive motivation from participating in a game from its social factors, such as chatting with other players and building communities (Bartle 1996). This player type aligns with the research by Rehm (2015) and Eveleigh et al. (2013), which indicated that social aspects supported engagement much more than other motivational factors. Killers, on the other hand, derive their enjoyment from games through defeating other players, both through causing destruction and through competing with others in skill based challenges (Bartle 1996). The players who caused destruction in the Blockholm project (Interview 2) may be representatives of this group.

The taxonomy of player types (Bartle 1996) represents an aspect to consider when creating gamified services for citizen participation: What motivates different types of players to participate. This will be further elaborated on under the Motivational Affordances heading.

9.5 Motivational affordances

The most common motivational affordance among these four gamified services is the element of competition, which was found in all cases (Interview 1; Interview 2; Interview 3). Competition has shown to facilitate engagement (Bowser et al. 2013). And as Alenka stated, competition can provide participants with incentive to return to the game (Interview 3), for instance, to see how their submission is received by other users, adapt their submission according to comments, and so forth. On the other hand, competition has a chance to serve as a deterrent for some participants (Rehm 2015; Eveleigh et al. 2013). This may be connected to Bartle's taxonomy of player types (Bartle 1996); achievers may be motivated by

competition, while socializers may find it to negatively influence their experience of the game.

After conducting this research, I have realized that the question of what motivates people to participate in gamified e-participation is wider than what can be defined by the motivational affordances presented by Koivisto and Hamari (2019). It is a good starting point, as gamification requires an understanding of motivational psychology (Koivisto & Hamari 2019). However, as different people find different aspects of games motivating (Bartle 1996), it is difficult to determine which motivational affordances create a gameful experience for different individuals. In addition to understanding what motivates people to play games, it has shown to be relevant to consider what motivates them to participate in planning processes. To influence decisions in their area that affect their lives is a motivation to participate described in the literature (Sanoff 2020). Another source of motivation seems to be inherent to the participation process itself. Alenka described how participants in B3 expressed joy through just being involved (Interview 3). This is only a surface-level reading of what motivates people to participate, further research is needed to explore what motivates people in gamified processes, and whether these motivational sources are in conflict.

As previously mentioned, Alfred expressed concern that there is no clear connection between why people choose to play games and why people choose to participate in planning processes (Interview 1). This statement echoes a sentiment by Kohn (1999), that extrinsic rewards may reduce the intrinsic motivation to participate, even if the rewards are only virtual (Kohn 1999).

What motivates people to partake in gamified e-participation seems to be a wide question, outside the scope of this research to answer. It may provide an interesting area of further research, however.

9.6 Degree of participation

As stated in the degrees of participation section, there exists several models on how power is distributed to citizens in participatory processes. I chose to use IAP2's Spectrum of Public Participation (see fig. 3) as my basis for discussion, which include five steps: Inform, Consult, Involve, Collaborate, and Empower (IAP2 2024). To discuss what degree of participation these gamified processes represent has shown itself to be quite difficult, however.

The strength of models such as IAP2's spectrum of public participation is also their weakness; they are simplifications of a complex reality. While they help

distil complex themes into a more comprehensible whole, they risk being overly simplified and may not efficiently reflect reality (Corkhill 2013). I believe that this was an issue with my research.

In the case of Skaparstaden, Alfred said that the process was intended as a form of consultation but emphasized that the Skaparstaden game was a tool in a collaborative process and not intended to be a standalone e-participation service (Interview 1). As there was a lack of participants, the material produced was insufficient in providing a basis for a planning suggestion, however (Interview 1). Therefore, it is difficult to place it on the spectrum, as it is not a completed participatory process.

B3 - Design Your Marketplace was not used in the planning process of Billstedt, as the municipality didn't have the funding to implement it (Interview 3). When asked where Alenka would place the game on the IAP2 spectrum of public participation, she responded that it has the potential to belong in all categories. She marks, however, that a linear model is not well suited to these processes and that she would rather see it as a set of components referencing different functions (Interview 3).

Unfortunately, I failed to solicit an answer from Mats regarding where Blockholm and Byggkrossen would be placed on the spectrum according to him. Blockholm was an experimental process with the intent to be a museum exhibition (Interview 2), it is therefore difficult to place it on a spectrum meant to evaluate participatory planning processes. I would personally place it somewhere between Collaborate and Empower, as participants' unaltered creations were showcased in the exhibition, but the ones showcased were chosen by a jury (Interview 2), thus not fully placing final decision making in the hands of the public (IAP2 2024).

As the Stenkrossen plan is still underway, and Byggkrossen is only an aspect of the larger process, it is difficult to place it on the Spectrum of Public Participation. In my opinion it is closest to the Collaborate section, as they partnered with the public in the development of alternatives (IAP2 2024).

After conducting the interviews, I have realized that the model of a spectrum showcasing a degree of participation might not be well applicable to these situations. As Alenka stated, a set of components describing different participatory functions would perhaps be a more efficient template for evaluating how these processes empowered citizens (Interview 3).

Furthermore, I believe that my methods have not been well applicable to answer what degree of participation these processes constitute. To interview participants would perhaps provide a more nuanced perspective on what impact citizens had, and can serve as an area of further research.

9.7 Inclusivity

In the literature researched, gamified processes are described as attractive alternatives for involving a younger demographic (Thiel & Fröhlich 2017), who rarely participate in conventional participation processes (Cars 2015). They are also described as a more accessible form of e-participation that can serve to bridge the digital divide (Poplin 2013). This is evident in the case of B3, as the test group of pensioners found the game easy to use (Interview 3). Many of these participants also expressed that the game could have value to older people and people with mobility impairments, as it didn't require participants to physically visit the site in question (Interview 3), a statement supported by the literature (Hasler et al. 2017; Afzalan & Muller 2018).

Issues with accessibility mostly seem to stem from mobile or computer interfaces, and not the games themselves. In the case of B3, the elderly participants mostly expressed difficulties with using Windows (Interview 3), and In the case of Skaparstaden there was an older user who had issues with the smartphone interface (Interview 1). From my perspective of using Skaparstaden, I can understand that people with sight- or motor impairments may experience difficulty with it. As Alenka stated however, the digital knowledge of older people have increased since B3 was tested, and these issues will lessen over time (Interview 3).

An aspect of inclusivity that was absent in the literature but was present in the cases of B3 and Blockholm, was that a number of adult participants found these processes to be “just a game”, and perceived them to be “not serious”, and because of this chose to abstain from participating (Interview 2; Interview 3).

I do not personally believe this to be an issue however, for two main reasons: My first reason is that I believe that this will change with time. Similarly to how Alenka stated that the elderly of today have increased technical skills in comparison to when B3 was tested (Interview 3), I believe that interest in games, and their integration into our daily lives, will continue to increase.

My second reason for not finding this to be an issue is that not all citizen participation processes must involve all people. More conventional methods of

citizen participation already cater to an older demographic (Cars 2015), and one of the purposes of gamified e-participation is to engage a younger demographic who normally abstains from participating (Thiel & Fröhlich 2017).

With that said, it is important to note that the gamified processes themselves should not serve as a replacement for traditional participatory processes. As stated by Delaney (2022) in regards to Minecraft; it should be used in combination with other methods carried out in the physical realm (Delaney 2022). This sentiment is echoed in the interviews. Alfred emphasized the importance of the collaborative, in-person, workshops associated with Skaparstaden, as he believes gamified participation should serve as a supplement to face-to-face meetings (Interview 1). And in the case of B3, Alenka believed that the elderly participants mostly responded positively to the fact that they were visited, and asked to participate (Interview 3). This is related to the literature stating that social aspects, and the feeling of being part of a community, was more prone to facilitate engagement than motivational affordances such as competition (Rehm 2015; Eveleigh et al. 2013).

9.8 Future Research and Application

The future of gamified e-participation seems to be an interesting area of research and application. Mats noted that gamified e-participation is difficult to evaluate based on its small number of current applications but emphasized its potential as a tool to motivate people to learn about societal and climate issues facing us (Interview 2). This application of gamification may be interesting as a subject of further research.

Another topic that could prove interesting is that of Artificial Intelligence (AI), which was brought up, unprompted, in all interviews. Alenka spoke about the possibilities of AI as a means to adapt the game interface after the user, making it easier for inexperienced users and more advanced for experienced users (Interview 3). Alfred mentioned how AI could serve as an assistant in guiding participants to make more constructive comments about each other's work (Interview 1). Finally, Mats noted that AI may be able to further lower the bar to participate by seamlessly integrating the more technical aspects of city planning into these creative tools and thus allow citizens to express themselves without needing the technical expertise required to do so thoroughly (Interview 2). These suggested applications of AI present interesting topics for further research. Furthermore, they raise questions on the theme of ethics and power when using AI within citizen participation processes, which may be a highly relevant subject in the near future.

The topic of motivation has, in my opinion, proven to be the most fascinating aspect to further develop on. Gamification is a complex process which requires an understanding of motivational psychology (Koivisto & Hamari 2008), and as noted by Alenka (Interview 3), combining it with citizen participation adds additional layers of complexity. Investigating the motivational aspects behind why people play games, such as through Bartles taxonomy of player types (Bartle 1996), and why people choose to participate in planning processes, along with examining if these motivational sources counteract each other, would prove an interesting area of further research.

10. Concluding Remarks

To begin, I address my second research question: “How can the creation and implementation of gamification in the context of citizen participation in the public space planning process be done?”. The answer to this question is that gamified e-participation can be conducted through a multitude of different approaches, as observed in the literature and through the interviews. While this is the case, as gamified e-participation is highly context dependent, I have identified some factors I found to be of importance among all cases.

The specific situation as well as the target audience should determine not only the design of the game but also whether a new game should be created or if an existing game is preferable. While existing games, such as Minecraft, provide cost efficient and accessible alternatives, they may lack the customization that is required for some participatory processes.

The involvement of additional actors with exclusive knowledge, as well as power to affect the participation process is a factor that should be taken in consideration. Effective communication is essential, to ensure a shared understanding of what the purpose of the process is and what is achievable within the frame of a game. As more research and application is put into this field, a shared language should emerge, making this process easier.

One of the most complicated aspects of gamified e-participation seems to be achieving a balance between playfulness and seriousness. If the games are perceived as too playful, they might be discredited by some demographics. If the games are too serious, however, participants may not return to the game, and their creativity may be stifled. It is also important that the implementation of gameful elements do not overtake the core service, as this may cause users to partake in the game but not contribute to the participatory process.

Ultimately, Gamified E-participation is an innovative approach which can successfully engage both younger and older demographics in participatory processes if correctly adapted to the specific situation. Even still, the importance of community interaction in these cases indicates that these games should, mostly, be seen as tools to complement in-person participatory processes.

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Appendix 1 – Motivational Affordances

Motivational affordances for gameful experience, taken from Koivisto and Hamari's literature analysis of 273 papers on the subject of Gamification, named: *The rise of motivational information systems: A review of gamification research* (2019).

Achievement/Progress

Points, score, XP
Challenges, quests, missions, tasks, clear goals
Badges, achievements, medals, trophies
Leaderboards, rankings
Levels
Performance stats, performance feedback
Progress, status bars, skill trees
Quizzes, questions
Timer, speed
Increasing difficulty

Social

Social networking features
Cooperation, teams
Competition
Peer-rating
Customization, personalization
Collective voting

Immersion

Avatar, character, virtual identity
Narrative, narration, storytelling, dialogues, theme
Virtual world, 3D world, game world
In-game rewards
Role play

Non-digital elements

Real world/financial reward
Check-ins, location data
Motion tracking
Physical cards
Physical playboard
Real world interactive objects
Physical objects as game resources
Physical dice

Miscellaneous

Full game
Assistance, virtual helpers
Virtual currency
Reminders, cues, notifications, annotations
Retries, health, health points
Onboarding (safe environment to practice the rules), benefits for beginners
Adaptive difficulty
Game rounds
Warnings
Penalties
Game slogans
Funny movies
Virtual pets
Trading
Making suggestions
Virtual objects as augmented reality

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