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Participation Game: Reflections on the Iterative Design Process

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Civic engagement in decision-making concerning the built environment has become a widely acknowledged practice. Today this is no longer about the dilemma of civic engagement, but rather about the best strategy for the purpose. Games and gamified applications are gaining popularity as efficient tools for civic engagement, which attract and retain participants, as well as foster learning and experimentation. The article presents the case of a role-play urban design game, Participation Game, which was developed in the iterative design process. The initial prototype of the game was transformed from session to session based on the player feedback, collected through questionnaires and debriefings, as well as the analysis of video recordings of game sessions. The overarching goals of the game were, firstly, to familiarise the audience with public hearings of urban design related projects, and, secondly, to find out how the changes in the setup of the game influence the player experience and the outcomes. The findings indicate that game setup limits the opportunities for discussion, and might even steer it towards desirable (for game authors) outcomes.

Keywords: case study, iterative design, role-play, serious game, urban design

Introduction

Civic engagement in urban planning has become a widely acknowledged and increasingly normalized practice in the Western developed economies. Since 1970s the requirements for civic engagement in discussions of urban planning issues are being gradually included in the legislation of democratic countries (Shipley & Utz, 2012). According to Irvin and Stansbury (2004, p. 56), today this is no longer about the dilemma of civic engagement, but rather about the best strategy for the purpose.

Games and gamified applications are gaining popularity as efficient tools for civic engagement, which attract and retain participants, as well as create space for experimentation, facilitate learning and consensus building, or, alternatively, allow crowdsourcing ideas and experiences (cf Gordon et al., 2017; Thiel et al., 2017). The games, designed for purposes beyond entertainment, are referred to as "serious games" (Dörner & Spierling, 2014). Serious games pose a set of challenges for designers, as they require from a designer the mastery in game design, as well as the knowledge of educational theory and the domain in focus (Winn, 2009).

One of the approaches towards serious game design is the progressive iteration, which includes prototypes, play-tests, feedback collection and analysis, and transformation of prototypes based on the findings (ibid.). The approach urges for a prototype which is developed enough to be playable, and, at the same time, encourages addition of new rules and narratives (Gugerell & Zuidema, 2017). Additionally, iteration requires an elaborate methodology of data capture of user game play experience, opinions and suggestions (Constantinescu et al., 2017).

The current article presents a case of Participation Game, a role-play board game, which simulates negotiations between stakeholders with diverging interests about the future development of two vacant land plots in the neighbourhood. The goals of the game stem from the research on community engagement practices in the Baltic context, namely, in Riga and Tallinn. The research examines two cases, community engagement in the design process of detailed plans for urban areas Mezapark in Riga and Kalarand in Tallinn. In case Kalarand the community managed to negotiate more public benefits, then in case Mezapark, arguably, due to the presence of an active community with a clear vision, and an informal appropriation of the space in focus of a detailed plan by the community (Prilenska et al., 2019). The initial goal of the game was to find out how does the presence of a community and the common vision among the members of the community, as well as the appropriation of public space by the community or individuals, affect the outcomes of negotiations about the future development of a space in focus of a plan. The game was developed iteratively during a series of five game sessions and was adjusted after each game session based on user behaviour and input. In the course of designing the game and its goals transformed substantially. The article focuses on the progressive design of the game, and discusses game sessions, their outcomes, and the changes made to the game based on the outcomes.

Theoretical Foundations

Games are believed to foster active learning, or "learning by doing", as they offer to a player a set of progressive challenges, with the adequate support and instant feedback (Winn, 2009). Learning by doing creates space for experimentation, for playing out the real-life situations without real-life (often, undesirable) consequences, thus, preparing players for real-life challenges (Gordon & Baldwin-Philippi, 2014; Gordon et al., 2017). Furthermore, games represent complex real-life phenomena as simplified models, thus, fostering understanding

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and resolution of complex problems (Constantinescu et al., 2017). Some authors suggest, that learning *per se* for humans is an enjoyable activity, and that (video) games are enjoyable specifically due to the learning principles they are usually based on (Gee, 2013). Above all, games evoke emotional experiences, which, again, per se for humans is a strong motivation (Geher, 2018; Yannakakis & Paiva, 2014).

Games, which are designed for other purposes, rather than amusement, such as learning particular content or deliberation, are referred to as "serious games" (Ampatzidou et al., 2018; Dörner & Spierling, 2014; Winn, 2009). Serious games entered the urban planning domain in the 1960s, when urban policy games CLUG (developed by Feldt in 1960s) and Metropolis (developed by Duke in 1964) were developed (Duke, 2011; Feldt, 2014). These games were intended for educating planning students and local government representatives about land-use and budgeting issues (Duke, 2011; Feldt, 2014). Later, serious games were introduced into civic engagement activities with an intention to develop "a shared understanding" of a phenomenon, define common goals and identify a range of action vectors (van Dijk & Ubels, 2015, p. 464; Sanoff, 2000). Recently, after the success of pervasive smartphone games Ingress (Niantic, 2012) and PokemonGo (Niantic, 2016), a constellation of serious games emerged, which focus on sourcing ideas and experiential information about the built environment from the players (cf Thiel et al., 2017; Prandi et al., 2017; Wilson et al., 2019).

In games for civic engagement specific attention was paid to role-play for deliberation (cf Gordon et al., 2017; Sanoff, 2000; Tan, 2014). Innes and Booher (1999) conceptualise deliberation within a group of stakeholders as a role-play. Stakeholders bring to the table a set of roles associated with certain perspectives (ibid.). These roles include, but are not limited to professional - a representative of a governmental institution or a lobbyist, personal - a parent or a cyclist, as well as the roles as participants in the discussion - a naysayer or an enthusiast (ibid.). Consensus building (or dialogue) calls for the ability to suspend the usual perspectives and welcome other possible perspectives (ibid.; Gordon et al., 2017; Johnson et al., 2017). Thus, games, which include role-play, allow players to practice the art of reasoning and acting from unusual perspectives, as well as develop the awareness and empathy towards positions, which differ from their own.

Designing serious games is a challenge, as serious games have simultaneously be entertaining and fulfil certain serious tasks (Winn, 2009). In serious games educational theory, domain knowledge and game design converge (ibid.). Winn (2009) suggests DPE (design, play, experience) framework for developing serious games focused on learning. The DPE framework implies an iterative design process, where 'the designer designs the game, the player plays the game, which results in the player's experience', and the designer adjusts the game based on the experience of play-tests (ibid., p. 1014). Conducting the play-tests with the target audience is crucial, as the game is adjusted based on player feedback (ibid.).

Several authors report iterative game (co-)design experience with perspective audiences. The attempts to co-design games from scratch did not work out as intended, as target audiences often do not have the essential knowledge about the domain in focus and/or game design (Khaled & Vasalou, 2014; Gugerell & Zuidema, 2017). Transformation of a barebones prototype, which allowed modifications based on player input yielded better results (ibid.; Constantinescu et al., 2017). Player input was collected through observations and debriefing (Gugerell & Zuidema, 2017), interviews and surveys (Prandi et al., 2017), video recordings and player move tracking sheets (Constantinescu et al., 2017). Gugerell and Zuidema (2017) note, that the completion of an ambiguous rule set with co-designers could be the focus of a serious game itself.

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Methodology

The game

The game was designed to reflect the prevailing community engagement practice in the Baltic countries (and worldwide) - the public hearings (Prilenska et al., 2019; Rowe & Frewer, 2000). Public hearings usually involve stakeholders directly affected by a project, plan or policy, such as local residents and entrepreneurs. During the public hearings the final version of a project, plan or policy is presented, followed by the questions, answers, objections and proposals round. Therefore, the game represents a board game, where players take over the roles of stakeholders with diverging interests and involve into discussion about the proposal of an upcoming project in the neighbourhood.

The game was developed for educational context, and its target audience are university students and high school pupils. The game was developed and tested iteratively from March 2018 to January 2019 in a series of five game sessions, and was modified after each game session based on player feedback. The overarching goals of the game are twofold, on the one hand, to familiarise the audience with public hearings of urban design related projects, and, on the other hand, to find out how the changes in the setup of the game influence the player experience and the outcomes.

The interface of the game consists of the narrative, role and voting cards, information and visioning boards. The appearance and the content of the information and visioning boards developed substantially in the iterative design process (Figure 1; Figure 2). The appearance of the narrative, role and voting cards had minor changes, while the content had major changes (Appendix 1; Appendix 2). The gameplay had minor changes (Table 2; Table 3). Section 4, *The evolution of the Participation Game*, describes in detail game sessions, player feedback and the changes made to the game based on the player feedback.

The urban area in focus

The game is set in Mukusala neighbourhood in Riga, which is currently in the focus of public attention due to its relatively rapid transformation. The neighbourhood is located on the left bank of Daugava across the city centre on the right bank (Figure 3). The neighbourhood is populated since 1250s, and used to house a female monastery. From 15th century until mid-18th century the area used to serve military purposes. From the mid-18th century until now the area developed as mainly industrial area with a few low-income housing patches. Currently, the area represents a mix of large vacant plots, industrial buildings (mainly workshops for small low-tech businesses) and low-rise low-income housing (detached houses or small apartment blocks). Compared to other central areas the neighbourhood is scarcely built and the quality of existing building stock is poor.

Due to strategic location close to the city centre and at the intersection of main transportation lines the city council designated the area as a priority development. Since 2009 a number of "anchor" objects were developed, such as a shopping mall, Latvian National Library, a business centre, a university campus and a few luxury housing estates. In the near future Rail Baltica high-speed railway line will go along the northern border of the neighbourhood. In 2017-2018 the area was in the focus of student urban design competition, which involved urban planning and architecture students from University of Latvia, Riga Technical University and RISEBA. In 2019 the area was in the focus of MadCity conference and hackaton in urban planning. Therefore, some perspective players were familiar with the area.

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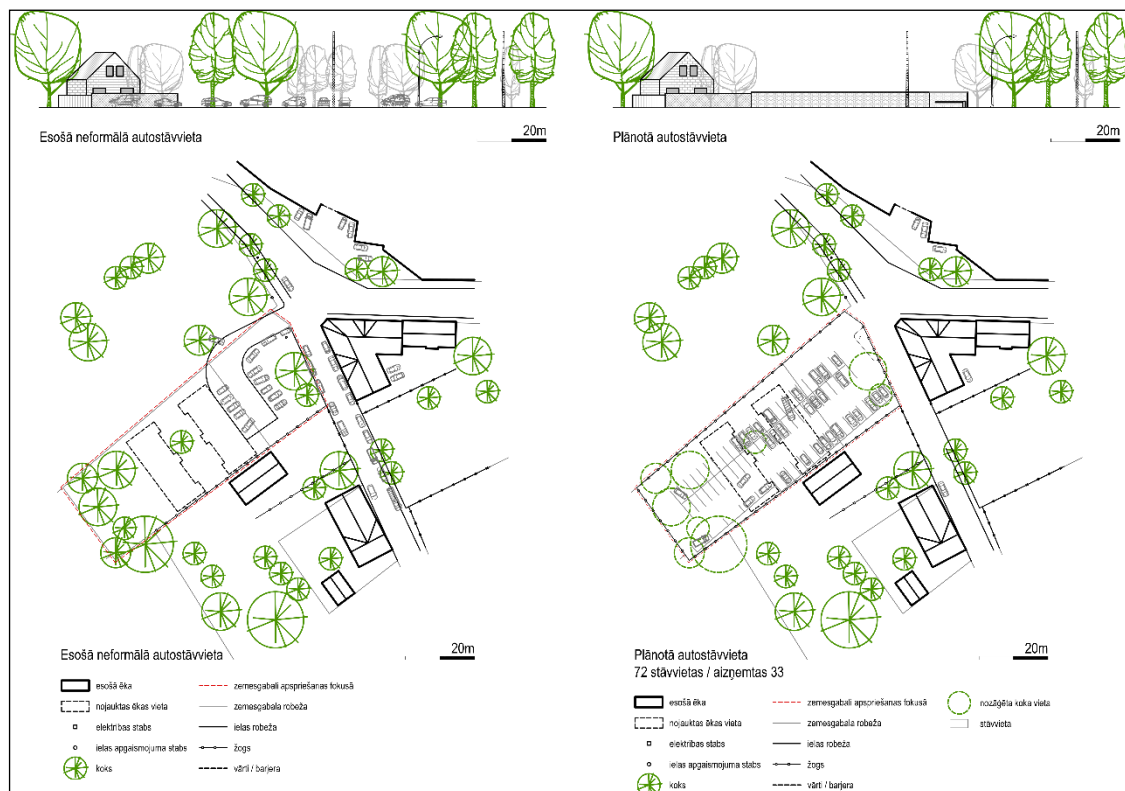
Figure 1. *Two dimensional information (top) and visioning boards (bottom), session 1.*
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Figure 2. *Three dimensional information board, visioning board and building units, game sessions 4 and 5. Source: © Viktorija Prilenska.*
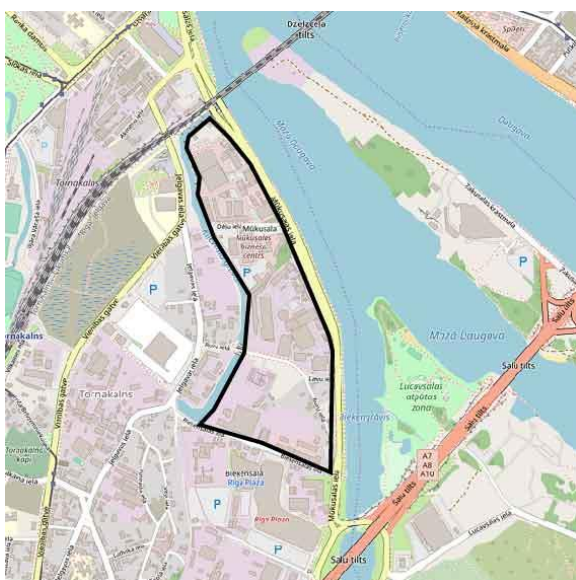
(a) Mukusala neighbourhood.

(b) The location in focus.

Figure 3. *The urban area in focus. Source: © Viktorija Prilenska.*

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Data collection and analysis

Game sessions. Players were recruited through university professors (or school teachers). Four sessions were conducted with students in architecture and urban design (20 participants), urban studies (8) and sociology (9). One session - with high school pupils (23). The number of players per game session varied from seven to 23. With 21 players and more the game took place simultaneously at two tables. Game sessions took place on 8 May 2018 in Riga, 12 August 2018 in Hamburg, 23 November 2018 in Tallinn, 25 January 2019 and 1 February 2019 in Riga. Four Game sessions took place at university campuses and one - in the premises of Riga planning department. There was no intention to play the game outside the educational context as real-life stakeholders, such as residents or local entrepreneurs, are not interested to participate in activities of experimental nature with no perspective of incorporating the results into real-life plans or policies (cf Brown & Chin, 2013; Horelli, 2002).

Video, audio and photo records. Each game session, including the debriefing, was video (four sessions) or audio (one session) recorded, and the outcomes were photographed. The camera (microphone) was placed at the short side of a table, fitting the majority of participants into a video frame. Additionally, the positions of roles at the table were documented. The video (audio) records were divided into five-minute fragments, and each fragment was thematically analysed. The themes were pre-established, and included the number and roles of discussants, the opinions expressed and activities performed, as well as group dynamics. For the sample of thematic analysis of a video fragment refer to Appendix 3.

Observation. One game session was observed by a non-participant, who documented the power dynamics between the roles and players taking on these roles. The observer summarised the observations in as a narrative of ca. 300-400 words.

Evaluation forms. After the Game session players were requested to fill in anonymous evaluation forms. The evaluation forms contained the options for numeric and textual assessment of the game. Players were offered to rate the aspects of the game from "1" to "4", "1" meaning unsatisfactory and "4" meaning very good. Players were, also, offered to elaborate in text the reasons for the assessment. The aspects of the game included the quality of introduction into the game, game interface, legends and role description, engagement, enjoyment and the degree of realism. The evaluation forms were analysed by means of an Excel spreadsheet. The average score of numerical evaluations was derived. The textual parts were analysed thematically, measuring the frequency of appearance of similar judgements. For the sample of the evaluation form refer to Appendix 4.

The Evolution of Participation Game

The initial setup of Participation Game

The narratives. In Mukusala neighbourhood there are two residential areas. One area is relatively isolated from the industries by a channel. The other area borders the industrial area, and, thus was selected as a game location. In the area there are two small apartment buildings, detached residential buildings, a hotel, garages and a large complex of workshops for low-tech enterprises (a former radio factory). The land is mainly privatised and belongs to physical or legal persons. There are two land plots, which belong to the city council, and used to house two two-storey wooden social houses with bad reputation. The houses burned down in 2015, and currently the land plots are vacant. The employees of adjacent enterprises use the land plots as an informal parking lot.

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According to the in-game narrative a local landlord, who rents the workshops to small enterprises, wants to buy a land plot from the city council and build a parking lot for the employees. Local residents and entrepreneurs are invited to the public hearings of the project. Some locals prefer to have a recreational space instead of a parking lot, whereas the others prefer a parking lot. The task of the stakeholders is to reach a consensus about the future development of the land plot. Building on the research about community engagement practices in the Baltic context, there were two variables, (1) the community and (2) the appropriation of space, which make four couples, resulting into four in-game narratives (Table 1).

The role cards. The game has the following roles: three local entrepreneurs, five local residents, city council representative, planner, observer and moderator. All roles, except for a planner, observer and moderator, have the voting rights. The role cards contain the brief description of the situation and challenges. As the roles are location bound, the cards contain a picture of the house/enterprise and a code (R1, R2, E1, E2, etc.). The codes mark house/enterprise location on the information board. Depending on the number of participants the number of roles may vary, e.g. the roles of one entrepreneur and two residents can be excluded. For the sample of a role card refer to Appendices 1 and 2.

Table 1. In-game narratives

Nr. 1. Community + no appropriation of space	Nr. 3. No community + no appropriation of space
Present: informal parking lot Planned: parking lot The community is invited to the public hearing of a parking lot project and offers an alternative proposal - a recreational space	Present: informal parking lot + a degraded house Planned: parking lot The community is invited to the public hearing of a parking lot project
Nr. 2. Community + appropriation of space by community	Nr. 4. No community + appropriation of space by individuals
Present: informal playground + a meeting place Planned: parking lot The community is invited to the public hearing of a parking lot project and offers an alternative proposal - a recreational space	Present: informal playground + a meeting place + a degraded house Planned: parking lot The community is invited to the public hearing of a parking lot project

The information and visioning boards. The information board contains general information about Mukusala neighbourhood: photographs, building functions, the number or residents/employees in each building, land plot division and ownership (Figure 1, (top)). The visioning board contains the sketch of an existing situation and the sketch of a planned future situation - a parking lot (Figure 1, (bottom)). The visioning board is complemented by translucent sheets of paper and colourful felt-tip pens for sketching on top of the existing or a planned future situation. Additionally, the visioning board for narratives Nr. 1 and 2 contains "a community proposal", a spatial vision designed by the author, which the community members are supposed to lobby.

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The gameplay. The game has three rounds and lasts roughly two to three academic hours (90-120 min), including the evaluation of the game and a debriefing. Firstly, the author introduces the game, its goals and context. Then the roles are distributed randomly, players take seats at the tables assigned to them, read the role cards, ask questions (if any).

In the first round players one by one name their roles and express the opinions about existing and planned future situation. The round ends with voting for or against the future planned situation - a parking lot, and, in narratives Nr. 1 and 2, "a community proposal". In the second round players discuss voting outcomes and suggest alternative proposals. "The planner" sketches a new vision, based on proposals of other players. The round ends with voting for or against the new vision.

If players voted unanimously for the new vision, then in the third round players one by one express their opinion about the vision. If players did not manage to reach a consensus, then "the representative of the city council" takes the final decision and explains it to other players, whereas other players one by one express their opinions about the final decision. In the end of the game session players fill-in game evaluation forms and discuss the dynamics and the outcomes of the game. The timing of activities is reflected in Table 2.

Table 2. The game-play, session 1 and 2.

Activity	Time (min)
Presentation	10
Round 0 - distribution of role cards - taking seats and reading the cards - questions and answers	10
Round 1 - naming roles and expressing opinions about existing and planned situation - voting for or against planned situation	10
Round 2 - discussion of the voting and alternative proposals - development of an alternative vision - voting for or against an alternative proposal	20
Round 3 - if consensus, then expressing opinion about an alternative vision - if no consensus, local government takes the final decision and explains it, others express their opinions about the final decision	10
Filling-in Game evaluation forms and a Coffee break	10
Debriefing	20
Total timing	90

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Game session 1

Game setup. The game session was conducted with master students in sociology and in architecture (21) as a part of a course related to urban studies. Players had Latvian background and were familiar with the Mukusala neighbourhood. The turnout of students (21) was a half from the expected (40-45), therefore two narratives instead of four, Nr. 2 and 4, were tested, which were different from each other by the variable "the presence of a community". In both narratives the space was "appropriated" by either the community or individuals, meaning that the locals have arranged an informal recreational space on the land plots. Figure 4 shows the fragments of the visioning board, (a) reflects the "present" situation, whereas (b) reflects the "planned" situation. Figure 5 (a) shows "a community proposal", designed by the authors, which the community was supposed to lobby. The goal of the first game session, was to test the initial premises of the game, and the methodology of data collection and analysis.

(a) Present situation, narrative Nr. 4.   (b) Planned situation, narrative Nr. 2.

Figure 4. *Fragments of the visioning board, game session 1. Source: © Viktorija Prilenska.*

Game play. In each 5 min interval more than half of the players were engaged into discussion. Game rounds were well articulated, as each game round ended with a sketch and voting. The players did not like neither the parking lot proposal, nor the "community proposal", and voted against both of them in the first round. In the second-round game rules and the moderator encouraged the player with a role of a planner to make a sketch. However, it worked only partially, as other players, also, participated in sketching or showed the desire to participate in sketching. Although the roles of planners were assigned to architecture students, they did not

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have a sufficient knowledge in urban design, namely, the minimum standard dimensions of roads, parking spaces, landscaping elements and street furniture, and asked moderators for assistance. Consensus building went smoothly, as there was enough space for both functions, the parking and recreation.

Outcomes. The outcomes in both groups are similar. The land plot was divided into two parts, the smaller part was dedicated to the recreational space, and the larger - to the parking lot (Figure 5, (b)). Players agreed, that the perspective landowner, the landlord who owned workshop spaces, was responsible for building the parking lot and the recreational space with minimum facilities, namely, grass, threes and hedges. The residents, in turn, were responsible for building additional facilities, such as a playground, benches, picnic tables and alike. There was no substantial difference between the player group "with community", narrative Nr. 2, and the group "without community", narrative Nr. 4, neither during the game play, nor in the outcome, as the players formed alliances disregarding those indicated in their roles. The "appropriation of the space" seemed to have no substantial influence neither on the game play, nor on the outcomes.

(a) Community proposal, narrative Nr. 2. (b) Co-designed proposal, narrative Nr. 2.

Figure 5. *The fragment of the visioning boards and the co-designed proposals, game session 1. Source: Viktorija Prilenska*

Evaluation of Participation Game 1.0. The overall evaluation of the game was positive scoring the average of 3.4, with engagement, enjoyment and realism scoring the lowest (3.1), and the interface (3.6) and the roles (3.7) scoring the highest. Players appreciated detailed role descriptions, that allowed "diving into the role" (10 mentions), some players found the roles

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"limiting" (1 mention), other players requested to add the mode of behaviour (e.g. aggressive, 1 mention) and the "facts" or "details" to build argumentation on (10 mentions) to the roles. Players enjoyed the diversity of views suggested by the role cards (2 mentions) and the opportunities to practice argumentation and consensus building skills (9 mentions). Players noted, that in real-life consensus building is more complex than in in the game (8 mentions), where the consensual solution was "obvious", and requested to escalate the conflict (5 mentions), by, for example, introducing financial aspects (2 mentions).

Evaluation of the methodology. Video recordings made with wide-screen action cameras provided a good overview of players, their actions and arguments. Five-minute intervals for the analysis of video recordings was an optimum unit of information.

The groups were observed by two sociology students, who wrote down the outcomes of voting, as well as the arguments and the agreements made during the negotiations. The observations duplicated the analysis of the video recordings, and the latter was more detailed. Therefore, in further game sessions no observations were conducted.

Evaluation forms, which consisted of numerical and textual evaluation were only partially filled in. The information in the textual part was repetitive or the textual parts were left blank. Therefore, for the next game sessions the questionnaires were twice shorter.

Game session 2

Game setup. The second session was conducted with a mixed group of bachelor and master students in architecture and urban design (10) within a framework of the Baltic International Summer School organised by HafenCity University. Students came from the former countries of Socialist Bloc (Poland, Russia, Moldova), which used to have a similar planning background, and were not familiar with the Mukusala neighbourhood. During the second game session the narrative Nr. 3 was tested, which was different from the narratives Nr. 2 and Nr. 4 by the variable "appropriation of space" (Table 1), namely the locals did not arrange any informal recreational space on the land plots, and the employees continue to use it as an informal parking lot.

The narrative was complemented with an additional challenge - to build a residential cluster, with the intention to escalate the conflict and hamper the consensus building by creating the shortage of space to house all functions, the parking, recreation and housing. Consequently, an additional role of the developer, who was responsible for lobbying the residential cluster, was introduced. The roles were complemented with player attitudes towards the project (e.g. negative) and the mode of behaviour (e.g. actively protest).

Game play. The game play was similar to the game play in game session 1. The introduction of an additional challenge, as well as the attitudes and the modes of behaviour, seemed to substantially prolong the negotiations, as the space was limited, and players were determined to lobby their interests. Initially, the role of a planner went to an unexperienced student, who was unable to produce a viable sketch. Thus, the sketching duty was later taken over by a more experienced student with more articulated leadership skills. The unfamiliarity of students with the location seemed to have no significant influence on the game play and the outcomes.

Outcomes. The land plot was divided into three parts, where the smallest part facing the street was allocated to recreation, the largest part in the back - to housing, and the medium part in the middle - to parking (Figure 7, (a)). Players agreed, that both land plots are sold to the

developer, and that the latter builds a parking lot and the recreational space. Initially, the developer agreed to build the aforementioned facilities in exchange for extra building rights, but in the course of negotiation this agreement was "lost". The landlords, who own the workshops and an apartment house, agreed to rent the necessary parking spaces from the developer.

Evaluation of Participation Game 1.1. The game scored the average of 3.0, with realism (2.4), interface (2.8) and roles (3.0) scoring the lowest and the engagement scoring the highest (3.5). Again, players noted, that in real-life residents do not have as much influence on decision-making as they were assigned in the game (2 mentions), and requested to add financial aspects to the description of the roles, thus, delineating the influence of each stakeholder on the decision making (4 mentions). Additionally, players expressed the preference for a three dimensional "less realistic and more gameful", "cartoonish", interface (4 mentions). One player noted, that although she disagreed with the position outlined in the role card, she had to act accordingly, and it was an interesting experience for her.

Game session 3

Game setup. The third session was conducted with a group of bachelor students in architecture and urban design (7) as an extracurricular activity. Players had Estonian background and were not familiar with the Mukusala neighbourhood. The goal of the game session was to test the new interface, which was partially two and partially three dimensional.

The information and visioning boards reflected the current real-life situation in the area, the information board was three dimensional scaled 1:400 (Figure 6, (a)) and the visioning board (or gaming field) - two dimensional scaled 1:100 (Figure 6, (b)). The visioning board had a grid overlay with a step of 6.25 cm, which was chosen as, firstly, it equals to two and a half 2.5 m wide parking spaces, and, secondly, it fits roughly the dimensions of a budget one family two storey house, which is 6 m wide and 12 m long, with a floor area of around 140 m^2.

The role of a planner was abandoned in favour of 6.25x6.25 cm building cards, which allow all players to participate in the design process (Figure 6, (d)). The cards embodied landscaping elements (grass, sand, paving, asphalt, fences, trees, hedges and gardens), parking spaces, street furniture (benches, tables, lights and playground equipment) and houses. Three dimensional models represented the cars. The cards and the models reflected roughly the realistic dimensions of the embodied elements scaled 1:100. "A carte blanche", a blank card, was introduced with the intention to allow for flexibility, which was previously ensured by sketching. "A carte blanche" could replace any other building card (if not enough) or embody an entirely new object, which is not captured by the cards. The information and visioning boards, as well as building cards, received a "cartoonish" look.

The financial aspect was brought in by allocating a certain amount of resources to each role (Figure 6, (c)). Roles with larges power capacities (e.g. landlords) had more resources and the resources were more valuable than roles with smaller power capacities (e.g. residents).
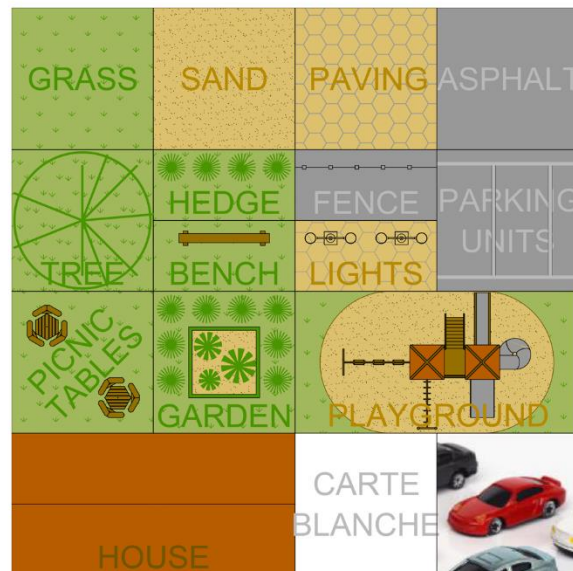
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(a) Information board

(b) Visioning board

(c) Role card with allocated resources

(d) Building cards

Figure 6. *The interface, game session 3. Source: © Viktorija Prilenska.*

Game play. Building cards successfully replaced the role of a planner distributing designing capacities between all players and reducing substantially the number of questions related to the dimensions of roads, parking spaces and other urban design elements. Furthermore, they seemed to make the game play more engaging, involving the majority of players into negotiations or designing activity during 5 min intervals. Game rounds merged, as building cards allowed continuous refinement of the co-designed proposal, which was in the state of flux throughout the game session (Table 3). The allocation of resources did not work as intended, as the players mixed up the resources and played around with the common pool of resources.

Outcomes. The outcomes of the current session were almost identical to the game session 2 (Figure 7, (b)). "The carte blanche" was used solely as a replacement for existing building cards, if they were not enough, not for the new ideas.

Evaluation of Participation Game 2.0. The game scored the average of 3.5, with the role descriptions and the realism scoring the lowest (3.3) and the engagement scoring the highest

(4.0). Players enjoyed the "fun" (2 mentions) and the insights into urban design (3 mentions) delivered by the game. At the same time players expressed the preference for the entirely three dimensional interface (3 mentions), clearer financial capacities of the stakeholders (1 mention) and requested the feedback from a professional planner about their co-designed proposal (idea sparkled during the debriefing).

Table 3. The game-play, session 3, 4 and 5.

Activity	Time (min)
Presentation	10
Round 0 - distribution of role cards - taking seats and reading the cards - questions and answers	10
Round 1 - naming roles and expressing opinions about existing and planned situation - development of an alternative vision - voting and expressing opinions about the final vision	60
Filling-in Game evaluation forms and a Coffee break	10
Debriefing	20
Total timing	110

Game session 4

Game setup. The fourth session was conducted with two groups of high school pupils (23) within a framework of the UNESCO project "Jauno mantotāju skola" ("Young heirs school"). Pupils had Latvian background, and most of them were not familiar with the location. The goal of the game session was to test a new three dimensional interface, as well as the suitability of the game for pupils.

The information board and the visioning board were left without changes, whereas building cards were replaced by three-dimensional building units, which roughly reflected the real dimensions of the objects (Figure 2). The idea of allocating resources to the roles was abandoned. The role cards were complemented with financial aspects, such as prices and areas of land plots, prices of street furniture, parking lots and housing, as well as financial capacities of each player.

Debriefing and game evaluation by the players were replaced by the discussion with professional planners, the employees of Riga planning department, who commented on the game and on co-designed proposals.

Game play. The game play was similar to the previous session, where the game rounds merged (Table 3). Players did not pay attention to the roles, financial issues and agreements, and focused mainly on the design. Part of students were highly engaged, whereas other, less vociferous pupils, were left out from the discussion. The game was played simultaneously on two tables with two groups of pupils and two moderators. The consensus building in the first group went smoothly, while in the second the players were struggling for leadership.

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Outcomes. The first group proposed to divide the land plots into two parts, the smallest one facing the street was allocated to parking, and the largest one in the back to housing with an integrated playground. The second group proposed to divide the land plots into three parts, the medium part facing the street was allocated to parking, the largest part in the back - to housing and the smallest part in the middle - to a playground (Figure 7, (c)). There were agreements made regarding the building responsibilities. The parking lot was supposed to serve the whole neighbourhood, including the employees of the workshops and the residents of the apartment house.

The planners studied the co-designed proposals and responded, that according to building regulations in Riga parking lots in the front yard are prohibited, they should be located either in the back or side yards. According to the players front yard location was more convenient for the public parking lot, as it is more accessible to the users.

Evaluation of Participation Game 2.1. The planners told that they would not be interested in playing the game, as "games are for the youth". They, also, requested to include alternative transportation opportunities into the game, such as public transportation and bicycle.

Game session 5

Game setup. The fifth session was conducted with a group of bachelor students in regional development and urban economy (8) as a part of a course related to urban studies. Players had Latvian background and were familiar with the Mukusala neighbourhood. The goal of the game session was to find out how the introduction of new rules would influence the game play and the outcomes - a co-designed proposal.

The information and visioning boards were left without changes. Building units were complemented by a bus stop and cycling path units. The role card of a city council representative was complemented by an additional rule, namely, the introduction of the public transportation line in the area gives 20 percent reduction in parking spaces. There were no additional rules concerning the bicycle path.

Game play. The game play was, again, similar to the one in game session Nr. 3 (Table 3). Players were highly engaged into negotiations and designing, some players stood up to have the better overview of the visioning board and move around the building units. Players acted well within the boundaries of their roles, paying attention to their own interests and interests of other players, as well as financial issues and agreements about the building responsibilities. Players did not raise any issues transcending the boundaries of the game, such as the relevance of a parking lot, recreational space, housing or alternative means of transportation for the area. They treated game challenges as a puzzle, trying to fit all functions into the limited space and to take into account the interests of all players to the maximum extent.

Outcomes. The land plots were divided into two parts, with the smaller part facing the street allocated to the parking lot, and with the larger part in the back allocated to the housing area integrated with an integrated playground (Figure 7, (d)). The houses were stocked on top of each other to save the space. The bus stop was built to reduce the amount of necessary parking spaces by %20. The duties to build the parking lot were shared between the landlords, who owned workshop spaces and who owned an apartment building. The duty to build a recreational space was delegated fully to the developer. Landlords and residents agreed, that on weekdays during the office hours the parking lot is used by the employees, while on weekends and on weekdays outside office hours the parking lot is used by the residents.

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(a) Game session 2.

(b) Game session 3.

(c) Game session 4.

(d) Game session 5.

Figure 7. *Co-designed visions. Source: © Viktorija Prilenska.*

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Evaluation of Participation Game 2.2. The game scored the average of 3.3, with engagement and realism scoring the lowest (3.1) and with the interface and role descriptions scoring the highest (3.5). Players enjoyed the opportunities for discussion (4 mentions) and consensus building (3 mentions), as well as the divergence of views between the players (3 mentions). Players noted, that in real life residents are often not involved in the decision making (2 mentions). The players requested to have a feedback from a professional planner about their spatial proposal (2 mentions) and provide the information about the best practices of urban design.

Discussion and Conclusions

The players

Eighteen participants out of 67, who took part in game sessions, studied architecture or urban design, nine students - sociology, eight students - urban studies, twenty-three participants were high school pupils, and three participants were university professors. Fifty participants were from Latvia, seven from Estonia, and ten were from other former Socialist Bloc countries.

Most players were sceptical towards the practice of civic engagement in planning and the capacity of resident communities to substantially influence planning decisions. They were convinced that urban development is developer driven, and that local government is unable to lobby public interests. Furthermore, most players admitted, they have never participated in public hearings, and Participation Game was their first encounter with the role-play consensus building exercise concerning the built environment.

During the game play, most players, including those with the role of a city council representative, made multiple jokes about the local government. The local government was represented as an institution, which is not ready to spend any resources for small scale public infrastructure (such as neighbourhood scale public spaces), which does not have its own position regarding the future development vector of the city, which cares mostly about the outcomes of elections, and tries to avoid direct confrontation with powerful interest groups (such as developers or land owners).

Player scepticism towards civic engagement may be explained by their cultural background, as all of them come from the former Soviet Bloc countries. In these countries urban planning practices are still in transition, resident communities entered the planning domain in early 2010s, and reached the capacity to influence the decision-making concerning the built environment only by the end of the current decade (Prilenska et al., 2019). Game sessions with players, who come from the countries with a long history of civic engagement, might have yielded different results. The degree of familiarity with game context, Mukusala neighbourhood, seemed to have no significant influence on the game play and the outcomes.

Sociologists and planners better adopted the roles with their characteristic behaviour, than architects. They, also, paid more attention to the agreements about financial and building responsibilities, than architects. Architects, in turn, focused on design, rather than on roles and agreements. All players revealed their weak knowledge about basic urban design principles, such as standard dimensions of roads, turning and parking places, as well as about the optimum arrangement of urban design elements. Therefore, building cards and units were helpful as learning and experimentation tools about urban design principles.

The role-play nature of the game turned out to be not suitable for high school pupils, who

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ignored the roles and focused solely on design. Furthermore, the size of the group of 11-12 people did not work for the pupils, as less vociferous pupils were ignored and more vociferous pupils were struggling for leadership. It seems, that for pupils the optimum size of the group should be twice smaller, and that the game should focus on developing teamwork skills in first place, rather than on urban and participatory issues.

The format of the game

In the iterative design process the interface of the game transformed from a two dimensional to three dimensional, and the co-designed proposal, developed by players in the gaming process, transformed from a sketch to a three dimensional model assembled from pre-designed units.

Compared to a two dimensional interface, three dimensional "cartoonish" interface was more appealing to students and increased their level of engagement into the gaming process. On the one hand, building cards and units allowed multiple players to engage into modelling activity simultaneously. Besides, in contrast to sketching, modelling from pre-designed units did not require any drawing skills or knowledge of basic urban design principles. On the other hand, building cards and units limited player choices to the set of urban design elements, offered by game author. The "carte blanche", which was added to the set of pre-designed units with the intention to increase its flexibility, was used as a replacement for the existing elements, rather than as an embodiment of new elements or ideas.

During the game play students acted within the rules of the game, and did not make any attempts to transcend them, by changing and/or adding the rules, or by raising broader issues about planning and/or participation. In-game challenges were treated like a puzzle which had to be resolved within the framework of the game. Limitations of the game became especially evident during the final session, where additional building units and rules concerning the bus stop and the cycling path were introduced. The bus stop, which was useful in solving "the puzzle" with parking places, was built, whereas the cycling path, which did not give any in-game benefits, was neglected. These findings, along with the fact, that co-designed visions are surprisingly similar, suggest, that the rules of the game might steer players towards certain outcomes, and even allow to orchestrate the results.

In-game collaboration

The role cards indicated, that local residents and entrepreneurs are a part of a local community, assuming, that players will make in-game collaborations accordingly. However, players ignored the indications in the role cards and preferred to collaborate with their buddies. The findings imply, that within a game it is difficult to force collaborations, which do not exist in real life. These findings are specific for the particular game and cannot be generalised. There is evidence, that some pervasive games foster collaboration, cf Big Urban Game (Coppock & Ferri, 2013; Cameron, 2004) and community cohesion, cf ZWERM (Laureyssens et al.,2014), whereas some board games encourage building in-game alliances, cf Energy Safary (Gugerell & Zuidema, 2017) and City Makers (Constantinescu et al., 2017).

The iterative design

The design of the game changed from session to session based on player feedback, which was collected by means of evaluation forms and debriefing, as well as audio and video recordings of game sessions.

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The analysis of evaluation forms showed that students are unwilling to fill in lengthy questionnaires, and, therefore, starting with game session 2 the evaluation form was reduced to one A4 page. In the evaluation forms students were slightly more critical towards the game, then during the debriefings, as the evaluation forms were anonymous.

The analysis of audio and video recordings showed the levels of engagement, measured by the number of players involved in the gaming process during 5 min intervals, player activities, unfolding discourses, as well as the dynamic of player mood during the session. In combination with direct player feedback from evaluation forms and debriefings, the analysis allowed to identify the strengths and the weaknesses of the game, as well as preferred directions for further improvement.

The game evolutioned from the basic game, which offered the flexibility in the interpretation of the roles and the freedom of sketching into the game with definite role descriptions and a pre-designed set of building units. The game became more rigid and limiting, and, at the same time, clearer and more convenient for the players.

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Appendix 1: Example of a Role Card (session 1, narrative Nr. 4)

Entrepreneur. Landlord (E1)

Your situation:

- You own a large workshop complex at Laivu street and You lease it to small enterprises.
- The employees of small enterprises arrive to work mainly by car; thus, you need a parking lot.

Your challenges:

- Some enterprises moved out to the premises with a parking lot, which has surveillance and a guard.
- There is no space for a parking lot in the courtyard of the workshop complex, thus, you would like to buy a vacant land plot nearby and arrange a parking lot there.

The photograph of the workshops.

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Appendix 2: Example of a Role Card (session 5)
The full set of role cards is provided in Supplementary materials.

<p style="text-align:center">**Entrepreneur. Landlord (E1)**</p>

Your situation:

- You live outside the neighbourhood.
- You own a large workshop complex at Laivu street and You lease it to small enterprises.
- The employees of small enterprises arrive to work mainly by car; thus, you need a parking lot.
- There is no space for a parking lot in the courtyard of the workshop complex, thus, you would like to buy a vacant land plot nearby and arrange a parking lot there.

Your challenges:

- You need 30 parking spaces. The price of one surface parking space is 2 thsd. euros. The price of one underground parking space is 20 thsd. euros.
- Nearby there are two vacant land plots. Land plot X belongs to the city council, its area is 721 m^2 and price - 50 thsd. euros. On the land plot X there is space for roughly 30 parking spaces. Land plot Y belongs to the developer, its area is 1588 m^2 and price - 100 thsd. euros. On the land plot Y there is space for roughly 60 parking spaces.
- You have 100 thsd. euros.

Your attitude/behaviour:

- You need the parking lot and You are determined to lobby Your interests.

<p style="text-align:center">The photograph of the workshops.</p>

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Appendix 3: The Fragment of Video Recording Analysis (session 5)

	D1	E2	G	
R1				
R2				
	E1	R3		R4

Locations of roles at the table. Camera moves around. E1 - local entrepreneur-owner (offices), E2 - local entrepreneur-owner (hotel), R1- landlord (blue-green), R2 - resident-tenant (young), R3 - resident-owner (retired), R4 - resident-owner (mortgage), D1 - developer, G - local government, O - observer, x - camera.

Game session 5, Legend 1					
…					
00:10	00:52	Round 2 - 42 min			
Start	End	Discussants	Activity	Group dynamics	Notes
00:10	00:15	all 8: landlord housing, resident, entrepreneur, landlord workshops, government, resident, developer, resident	Build, clarify the number of required parking lots, try to make alliances based on common interests and financial capacities (E1-D), propose public transport, discuss possible solutions, clarify positions	Focus, smile, laugh occasionally, rational approach	Speak between each other in small groups, rather active, ask question about urban design and game rules, stick to the rules
…					
00:20	00:25	8: landlord housing, government, resident, developer, landlord workshops, resident, entrepreneur	Build, search for common interests, clarify positions, discuss possible solutions, argument - "you voted against parking lot, and build parking lot", answer "we voted against use of parking lot solely for enterprises", compromise	Focused, rational approach, frustration, vociferous occasionally	Speak between each other in small groups, ask questions about urban design, stand up to build
…					

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Appendix 4: Evaluation Form (session 5)

Game evaluation

Please, circle the corresponding answer (1- unsatisfactory, 2 - satisfactory, 3 - good, 4 -- very good; yes or no) or write!

How engaging was the game?

1	2	3	4

Evaluate the presentation!

1	2	3	4

Evaluate game interface!

1	2	3	4

Evaluate role description!

1	2	3	4

How realistic is the game?

1	2	3	4

Explain your opinion!

………
……………………………………………………………………………………………

Aspects of the game, which you enjoyed?

………
………
……………………………………………………………………………………

Aspects of the game, which need improvement?

....
....
....

Are you willing to participate in the similar game once again? Yes / No

Any other comments?

....AESOP / YOUNG......................
....