

Current Research Trends in Games for Public Participation in Planning

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Abstract – The research, outlined in the paper, explores games as methods for better public participation in planning. Drawing on the thematic analysis of scientific publications, prominent authors and research centres, as well as key research themes, are identified. The themes include motivational aspects of gamified participation, online and pervasive games for massive civic engagement, deliberative and educational games for collective problem-solving, game co-design for questioning and reframing planning concepts. The paper concludes with the benefits of gamification for participatory planning practice.

Keywords – Games, literature review, methods, public participation, urban planning.

INTRODUCTION

The ideas of public participation in planning decisions emerged in the 1960s and since then have been gradually institutionalized [1], [2]. Today, participatory planning is practiced in many parts of the world with varying success [3]. South American and African countries feature some prominent participatory planning examples [1], [4], [5], while some Western countries, which pioneered and developed participatory ideas, are struggling with the decreasing public interest towards participation [6]–[8]. The latter is, arguably, due to the rigidity and complexity of Western planning systems and the inefficiency of traditional civic engagement methods, such as public display [3], [9]–[11]. The efforts to get and keep residents involved, gave rise to a constellation of alternative participation methods, from participatory budgeting to ICT aided participation, among which games occupy a certain niche [12]–[15].

Scopus search results by the items “games”, “participation” and “planning” indicate a substantial growth in the number of publications exploring the potential of participatory games since 2011 until today (2019). Some contributions build on applications of well-known commercial games (e.g. SimCity, Minecraft and Pokémon Go), whereas others reflect upon the experiments with non-commercial games specifically developed for participatory purposes (e.g. Community PlanIt, Play [Location], Community Circles) [5], [16]–[20]. Games designed for the purposes beyond entertainment are referred to as “serious games” [21]. In the current article serious games, developed for participatory purposes, are referred to as “participatory games”.

Serious gaming entered the planning domain in the 1960s. Early games focused on simulating the relationship between urban policies and regulations, land-uses, population dynamics, infrastructures and ecology [15], [22], [23]. In the course of development, serious planning games diversified their repertoire, focusing, among other topics, on participatory design and plan-

ning [24], [25]. In contrast to “play” (from “paidia”), which is an unstructured activity without rules and goals, “game” (from “ludus”) is structured by rules to achieve a certain goal [26]. Due to their structured nature and transparency ensuing from the rules and goals, if treated seriously, games may potentially become standalone participation methods at certain planning phases [1].

Research summarized in the current paper draws on recent scientific contributions, and explores the potentials of participatory games for better public participation in planning. The paper indicates a few research centres and authors who have developed a variety of participatory games and published most on the topic. These centres include, but are not limited to, Engagement Lab at Emerson College (USA) and Newcastle University (UK), which focus on games with digital components, Play the City and Play!(UC) (Netherlands), which focus on collaboration fostering board games. The authors include Thiel [20], [27], [28] who focuses on motivational aspects of gamification, Gordon [18], [29], and Devisch [26], [30], [31] who study how games contribute to collective learning, and Poplin [32]–[35] who publishes on various aspects of games.

Furthermore, the paper reveals the topical research themes in the domain of participatory games, namely, the motivational aspects of gamified participation, massive civic engagement by means of online and/or pervasive games, deliberative and educational games for collective problem-solving, game co-design for questioning and reframing planning concepts. The paper concludes with potential application areas for games in participatory planning practice.

I. METHODOLOGY

Literature review is a summary of published research on the topic conducted by accredited scholars [36], [37]. The generic purpose of the literature review is to provide the context and theoretical foundations for further research, as well as to identify knowledge gaps and establish a benchmark for evaluating the findings [38], [39]. The objective of the current literature review is to acknowledge the advancements in the field of participatory games and to discuss the potential application of participatory games in the planning process.

The literature review focuses on publications about non-commercial games, which were developed for participatory purposes. Publications were sourced from the Scopus database in June 2019 using five sets of search items: (1) “game”, “games”, “gamified”; (2) “community”, “public”, “civic”; (3) “participation”, “involvement”, “engagement”; (4) “urban”, “city”, “neighbourhood”, (5) “planning”, “design”. The items within each set were separated by a Boolean operator “OR”, and the sets were connected by a

Boolean operator “AND”. The years of publications were limited to the last 10 years, from 2009 to 2019, and the sources of publications – to journals and conference proceedings. The scope of contributions was refined by screening titles, abstracts and keywords, and limited to case studies. Complementary scientific contributions, which provide insights into the topic, were sourced by means of forward and backward reference search.

Table I (see Appendix) contains the list of 22 examined non-commercial participatory games, their brief descriptions, authors and years application, as well as the relevant literature. Out of 22 listed games 20 games were sourced from the literature and 2 games – Energy Game and Participation game, which fit the scope of the research, are developed by the author. The well-known commercial games, such as Geocaching, Minecraft, SimCity, Cities Skylines, Ingress and Pokémon Go, which were either adapted for participatory purposes or generated participatory spin-offs, are not within the scope of the research [5], [17], [30], [40]–[42].

Following the grounded theory approach [39], [43], the body of literature on participatory games was analysed thematically, and seven topical research themes were identified. The vectors were labelled as (1) gamified versus non-gamified methods, (2) information sourcing games, (3) data generation games, (4) pervasive games, (5) deliberative games, and (6) co-designed games. The themes are elaborated and discussed in **Section 3, Findings & Discussion**.

Six (out of seven) themes, which relate to specific game characteristics, are positioned according to the framework of participatory methods proposed by [3]. In her seminal article on methodology of participatory planning [3] the author argues that the choice of methods depends upon (1) the context, (2) number and profile of participants, (3) anticipated participation level [44], [45], and (4) participation phase [46], [47].

In the current article, the multifaceted definitions of criteria determining methodological choice and proposed by [3] are simplified. The context, which in [3] is defined as cultural, territorial, institutional, thematic, etc. is narrowed down to the spatial scale. The levels of participation are defined by the type of information flow, where public communication is a one-way information flow from the planning authority to residents, public consultation is a one-way information flow from residents to the planning authority, and public participation is an information exchange between both parties [14], [45]. The planning process is characterized by four phases: initiation, planning, implementation, and maintenance [3], [46], [47].

II. FINDINGS AND DISCUSSION

A. Gamified Versus Non-gamified Methods

With the gamification of society, blending game design elements into non-game contexts to attract and retain users has become a ubiquitous practice [73]. “Fun” is a significant motivator for residents to involve in participatory activities [74]. Therefore, a branch of participatory games research is dedicated to studying

the differences between gamified and non-gamified participation [28], [59]. The impact of gamification on participation was evaluated in the case studies of smartphone applications for sharing geo-referenced content Community Circles, HINT! and Geo-Zombie for which gamified and non-gamified versions were developed [28], [59]. The aforementioned applications employed reward systems, such as points and leaderboards (Community Circles, HINT!), as well as a narrative appealing to perspective users (Geo-Zombie). The research findings suggest that participants derive “fun” from various aspects. Some players enjoy “gameful” aspects, such as the competitive and captivating gameplay, whereas others are motivated by “serious” aspects, such as the interest in urban environment, opportunities to raise concerns and share ideas, as well as learning and socializing [20], [28], [59], [75], [76]. Although “serious” aspects are the major motivators for engagement in participatory projects, while gamification is a minor motivator, gamification succeeded in increasing participation rates and, specifically, the activity of participants [28], [59]. Game scholars argue, that gamification is often associated and limited to reward systems, which are merely secondary elements structuring the gameplay and measuring progress, while the primary elements are those evoking emotional experiences, providing space for experimentation and generating the state of flow [77]–[80]. Therefore, further research on participatory games should focus on motivational aspects of the latter [28], [81].

B. Information Sourcing Games

The expansion of Internet connectivity and the growth of digital literacy among all social groups prompted the emergence of online participatory methods. The latter was preceded by established approaches, namely, PPGIS (Public Participation Geographic Information Systems) and citizen science, which used to crowdsource information for planning and scientific purposes by means of paper-based questionnaires [82], [83]. Contemporary online participatory methods employ online platforms or applications for mobile devices, may or may not contain game elements, and collect contributions in the format of geo-referenced texts or images [20], [76], [84], [85]. These methods are usually applied in the early stages of planning, namely, in the initiation and research & design phases, with the purpose either to source experiential information about the spatial qualities and the patterns of use (e.g. Community PlanIt in Boston and Detroit; Maptionnaire in Helsinki), or to inquire about the opinions on the completed projects (e.g. Stickyworld for the Main Street project in Tallinn; web pages for competition projects in Sippo and Vasaa) [18], [85]–[87]. Compared to face-to-face methods online methods provide the opportunity to participate at any time within a project time frame and from any location, are free from limitation posed by the capacity of meeting spaces, and collect contribution in a structured or semi-structured format [18], [85], [86], [88]. Due to the aforementioned benefits online methods, arguably, are capable of massive outreach and engage the usually underrepresented groups, such as youth and working age citizens [18], [85]. For example, Community PlanIt involved 1,494 participants, of whom in Boston one third were students, and in Detroit two thirds were

of 35 years old or younger [18], and Community Circles involved 780 participants in Turku [20].

C. Data Generation Games

Public participation is often criticized for being non-representative, as it involves a small number of participants of certain profile and, thus, does not reflect the variety of interests within the population [7], [20], [74], [85]. The reasons for non-participation vary from being disinterested about urban issues or unaware about participation opportunities, to taking a rational decision not to participate because the costs of participation outweigh its benefits [8], [89]. The big data opens an opportunity to enquire about the preferences of population groups, including non-participants, indirectly and at a relatively low cost [40], [90]. Data producing technologies, such as environmental, transportation, building management sensor systems, as well as user-generated content, like social media, administrative and census data, etc., generate massive unstructured information [91]. The patterns in the massive unstructured information, discovered by means of data mining methods, enable formulating assumptions about spatial preferences of the residents, which can be partially validated through surveys involving those willing to participate [17], [40], [90], [92]. Games, and specifically participatory games, generate (or are designed to generate) the data revealing the preferences of the players [40], [68], [90]. Although commercial games are excluded from the review, it is worth mentioning that the data generated by commercial location-based games Geocaching, Ingress and Pokémon Go, indicates the points of interest in the city, including the hyperlocal and emerging places, as well as outdoor recreational spaces overlooked by city guidebooks and maps [40], [42], [90]. Non-commercial participatory game Urban Shaper developed for high-school pupils, reveals that the youth of Plock (Poland) exhibit interest in public places, which are located not further than 600m from their respective schools [68].

D. Pervasive Games

The advancement of GPS mobile devices gave birth to location-based games, from low-tech geocaching to high-tech Pokémon Go, which successfully activated the once neglected spaces [17], [40], [90]. Location-based games are also referred to as “pervasive”, since they extend beyond the “magic circle” of the game, the spatiotemporal frame, invading public spaces and engaging outsiders [93]. Pervasive participatory games vary from multi-player games, which treat the public space as a playground (e.g. Big Urban Game; ZWERM), to single-player applications for mobile devices, which encourage certain location-based activities (e.g. Play Before Plan; Change Explorer) [11], [50], [61], [72]. The benefits of pervasive games depend on their purpose and design. A four week long game ZWERM is reported to nurture face-to-face communication and community cohesion in two adjacent residential districts of Ghent [72]. The interaction among neighbourhood residents was achieved by means of an interactive device in the shape of a tree, installed in the heart of each neighborhood, which required combo (two people at once) check-ins [72]. The device produced a honeypot effect, attracting new

participants and generating spin-off activities, such as check-in parties and scheduled check-ins [72]. An Apple watch application for sourcing location-based information ChangeExplorer claims to increase the number of contributions by means of notifications popping-up upon approaching the area under planning [11]. In contrast to most participatory games, which are designed for the laymen, a series of pervasive games Play Before Plan is developed for urban practitioners, such as planners, architects and policy makers [61]. These games enlighten professionals about the local spatial practices at Rye Lane Street in London, which differ substantially from perspective top-down plans and policies, through a series of missions aimed at visiting characteristic locations and communicating with local businessmen [61].

E. Deliberative Games

The information flow in participatory activities is classified into one-way and two-way flow [45]. One-way information flow, from sponsors to participants and vice versa, is limited to informing participants about planning activities or sourcing contributions from participants, whereas two-way information flow enables deliberation between the sponsors and participants [45]. Civic engagement methods, including a share of participatory games, are often limited to one-way information flow (e.g. a share of information sourcing and sharing games) [14]. Traditional methods enabling information exchange, such as public hearings or thematic discussions, are often characterized by the dominance of vociferous individuals or groups who aim to express their concerns and revolve around a limited set of topics [8], [10]. Furthermore, unless the discussions are recorded and transcribed verbatim, the conclusions are captured for further use, while the discourses are usually left out [10], [45]. The aforementioned deficiencies may be addressed by engaging into discussions well-trained facilitators and observers, which is rarely the case [10], [45], [94]. Therefore, a number of participatory games are designed for facilitating deliberation and capturing the data generated in the process. The card game Community Conversational encourages every participant to speak out and to diversify discourses by means of action and question cards [10]. The discourses are being recorded with a camera aided by the software, which traces the cards, allowing to perform searches within the massive qualitative data [10]. Speaking out or acting in turns fostered dialogue, where all opinions are expressed and heard, enabling building empathy and widening individual perspectives [10]. Role-play games, Play[Location] and Participation Game, foster players to act and reason from alternative positions (roles) while collectively shaping a common vision for a particular area by means of three-dimensional construction units [19], [60]. The role-play fosters consensus building among stakeholders with diverging or even conflicting interests through taking on the opponent’s perspective (role) [19], [60], [95].

F. Co-designed Games

Participatory games often create a framework for a co-design activity (e.g. collective vision for the future development of a neighbourhood), but are rarely co-designed [56], [96]. The game

mechanics is usually developed by experts with limited involvement from the part of perspective players, who have to follow the established rules, choices and ramifications [97], [98]. The practice is supported by the traditional body of literature in game design promoting the completed unambiguous set of rules as a prerequisite for a game [93], [99]. Participatory games, as a part of serious game domain, use game mechanics to achieve serious outcomes through an entertaining process, thus posing a severe design challenge [21], [78]. The challenge may be addressed by bringing into the design process perspective players who become active co-designers, rather than passive informants [54], [56], [98], [100]. The co-design approach is believed to align games with players' preferences, mitigates the knowledge gaps, and provides the space for mutual learning [98], [100]. The findings from research on game co-design indicate that playing with an existing barebone game prototype yields better results than designing a game from scratch [54], [56], [98]. The barebone prototype encourages the introduction of new rules and narratives while scaffolding the relationships between game elements, emerging experiences and anticipated outcomes [54], [56], [98]. In the course of iterative co-design procedures, applied for creating board games City Makers, Energy Safari and Participation Game, the initial game underwent substantial transformations, and initial game objectives were adjusted accordingly [54], [56], [60]. The playful co-design procedure did not result into substantial reframing of existing planning models and discourses, as was expected earlier [56], [60]. Thus, further research should focus on structuring co-design procedure to trigger triple-loop learning [56], [60].

G. Educational Games

A share of participatory games focuses on education with no intention to produce planning related outcomes. Education (or learning) and entertainment are the fundamental features of games [21]. Some scholars believe that entertainment stems from learning, as the latter is an enjoyable activity for humans [101]. In-game learning represents a set of progressive challenges with continuous support and instant customized feedback enabling active learning (or learning by doing), which is believed to be more efficient than passive learning (e.g. lecturing) [21]. Games provide space for experimentation, which allows exploring a range of choices and their ramifications without facing real-life undesirable consequences in case of failure and receiving in-game reward in case of success [18], [29]. Participation games may play out real-life situations by setting challenges and modelling possible responses, and thus prepare players for real-life action [29]. The characteristic examples are simulation games Urbax21 and Water Management Game. The former is a role play game, which explores the relationship between the building regulations and socio-economic changes in the city [69]. The latter models possible scenarios for solving drinking water shortage problems in peri-urban communities [70].

CONCLUSIONS

H. The Application of Games in Planning

Table II matches the themes elaborated in **Section II**, Findings and Discussion, with criteria outlined in **Section I**, Methodology. Games have a wide application context, varying in spatial scope from neighbourhood to region. Depending on their nature games involve small and large number of players. Large samples are characteristic for digital games, while small samples – for board games. Many games do not specify player profile, targeting at generic urban population. Some games are designed for specific player groups, such as children (e.g. Pop-up Pest), youth (e.g. Geo-zombie) or representatives of peri-urban communities facing the shortages of drinking water supply (e.g. Water Management Game). A few games set specific criteria for players, aiming at better representation and meaningful contributions (e.g. Play [Location], Energy Safari). The nature of information flow in games varies from communication to participation. Information sourcing and data generation games are limited to public consultation, whereas deliberative and co-designed games by fostering information exchange achieve public participation. Games are usually in the early planning phases, namely, initiation and design, which are the stages where project frameworks are established and key decisions are taken [46]. The aforementioned statement aligns with the findings from the research on the real-life application of games [15]. However, games may be applied also in later phases for studying and reporting the qualities and use patterns of newly built or refurbished spaces, as well as for evaluation purposes.

I. Games for Better Participation

To sum up, the current paper reviews scientific publications on participatory games and reveals common research themes. The ongoing research focuses on the motivational aspects of gamified and non-gamified participation, as well as the contribution of game elements, such as reward-systems, appealing story, emotionally captivating gameplay, etc. into better participation. The evidence from case studies suggests that irrespective of motivation to participate gamification yields the increase in the number of participants and contributions per participant. The findings align with the efforts to enable massive participation through gamified online platforms and applications for mobile devices, which succeeded in recruiting hundreds of participants. Online participatory games are not only “fun”, they also provide convenient means to participate, capture and analyse player contributions. The information generated while playing location-based games, if analyzed correctly, may supply additional, non-articulated by players, insights into player preferences.

Another branch of the ongoing research focuses on the learning potential of games and, specifically, on civic learning for enabling collective action and change. The empirical evidence suggests that games with deliberation elements and role-play games in particular, enable participants to widen their perspectives and appreciate opposing or diverging positions. Educational games facilitate understanding of existing planning systems, whereas

game co-design enables questioning and reframing the underlying concepts. The accumulation of knowledge and skills within the resident community, as well as mutual learning between resident and planning communities, fosters transformation of planning institution in pursuit of better participation.

J. The Limitations and Directions for Further Research

Due to resource constraints current research builds on a limited literature sample, namely, scientific contributions sourced from a single data base, which results into certain bias. Further studies should diversify the literature sample, expanding the search to other relevant contributions (e.g. professional journals) and databases. To examine the real-life application of participatory games an additional research of planning agencies and their daily practices is recommended.

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APPENDIX

TABLE I

LIST OF REVIEWED PARTICIPATORY GAMES [AUTHOR OF THE ARTICLE]

No.	Name	Description	Designer	Year	References
1.	@Stake	Role-play card game for fostering empathy and creativity	Engagement Lab, Emerson College	2014–2015	[29], [48], [49]
2.	B3 – Design Your Marketplace!	Desktop/laptop application for modelling public spaces in three dimensions	HafenCity University	2009	[32], [34]
3.	Big Urban Game	City wide five day long race in groups carrying 7.6 m tall inflatable figures through a series of checkpoints	Design Institute, University of Minnesota	2003	[50]–[53]
4.	Change Explorer	Apple Watch application (complemented by iPhone application) for conducting geo-referenced surveys	Digital Civics, Newcastle University	2015	[11]
5.	City Makers	Card game for education about street businesses and fostering collaboration	Play!(UC), University of Groningen	n.d.	[31], [54]
6.	Community Circles ¹	Smartphone application for collecting and sharing geo-referenced content (problems, ideas, photographs)	Telecommunication Research Center Vienna	n.d.	[20], [27], [28]

No.	Name	Description	Designer	Year	References
7.	Community Conversational	Board game for dialogue building with video and geo-referenced content capturing, and audio content transcription into text	Open Lab, Newcastle University	n.d.	[10]
8.	Community PlanIt	Desktop/laptop application for collecting and sharing geo-referenced content (problems, ideas, photographs)	Engagement Lab, Emerson College	2011–2012	[18], [55]
9.	Energy Safary ²	Board game for education about energy transition and fostering collaboration	Play!(UC), University of Groningen	2016	[31], [56]
10.	Energy Game	A prototype of a digital game (developed in Unity, available through GitHub) for building neighbourhood energy supply scenarios	Viktorija Prilenska, Tallinn University of Technology; Māris Lenšs, Emīls Terjavjainens, Normunds Budevičs, Ģirts Uptis and Liene Versune, Albert College	2018–2019	[57]
11.	Floating City	Idea collecting application for a computing device (e.g. desktop, smartphone)	Play!(UC), University of Groningen	n.d.	[31], [58]
12.	Geo-Zombie	Smartphone application for crowdsourcing geo-referenced accessibility data (text, photographs) for physical spaces	Catia Prandi, Marco Roccetti and Paola Salomoni, Department of Computer Science and Engineering, University of Bologna; Valentina Nisi and Nuno Jardim Nunes, Madeira Interactive Technologies Institute, University of Madeira	n.d.	[59]
13.	HINT!	Smartphone application for crowdsourcing geo-referenced accessibility data (text, photographs) for physical spaces	Catia Prandi, Marco Roccetti and Paola Salomoni, Department of Computer Science and Engineering, University of Bologna; Valentina Nisi and Nuno Jardim Nunes, Madeira Interactive Technologies Institute, University of Madeira	n.d.	[59]
14.	NextCampus	A prototype (physical model + Excel calculation sheets) of a digital game for scenario building about university campus relocation	Alenka Poplin, D. Kulus, T. Prill, A. Wagner, HafenCity University	2009	[33]
15.	Participation game	Role-play board game for negotiating alternatives and collectively constructing neighbourhood project	Viktorija Prilenska, Tallinn University of Technology	2018–2019	[60]
16.	Play Before Plan ³	Smartphone application for planners and other urban practitioners to learn from spatial and economic strategies applied in Rye lane	Adriana Valdez Young, littleBits and English for Action	2012	[61]–[64]
17.	Play [Location] ⁴	Role-play board game for co-designing a neighbourhood vision	Play the City	2011–2015	[19]
18.	Pop-up Pest	Game in public space, which educates children about spatial aspects of downtown Pest	Eszter Toth, HafenCity University in co-operation with kulturAktiv	2012	[65]–[67]
19.	Urban Shaper	Group problem solving game for high-school pupils, which focuses on urban regeneration issues and collects geo-referenced data	Robert Olszewski, Agnieszka Turek, and Marcin Łączyński, Warsaw University of Technology and University of Warsaw	2016	[68]
20.	Urbax21	Role-play game with hybrid interface (digital + pen and paper) for educating student and agency representatives about urban policy issues	Thierry Vilmin	n.d.	[69]
21.	Water management game (originally, no name)	Role-play board game for educating rural-urban fringe residents about drinking water management	Sharlene L. Gomes, Leon M. Hermans and Wil A.H. Thissen, Faculty of Technology, Policy, and Management, Delft University of Technology	2018	[70]

No.	Name	Description	Designer	Year	References
22.	ZWERM	Neighbourhood wide four week long pervasive community-building game, supported by a network of hardware elements across the neighbourhood	imec iLab.o	2013	[71], [72]
n.d. – no date.					
¹ Two versions of the application were developed: a gamified and non-gamified; the game was tested in real-life under the name “Täsä” in Turku, Finland ² “Energy Safari” has a modification - “Mobility Safari”, which uses similar interface and game mechanics, and focuses on smart mobility. ³ The series of applications “Play Before Plan” includes two games, “Arrivalcity” and “Shopomama”, as well as a non-gamified app “Pech City”. Print version is also available. ⁴ The series of games “Play[Location]” includes an array of iteratively developed games from the early prototypes “Play Almere Haven” and “Play Oude Western”, through an intermediate prototype “Play Istanbul”, to full-fledged games: “Play Noord” and “Play Oosterwold”.					

TABLE II
SUMMARY OF THEMES AND CRITERIA WITH EXAMPLES [AUTHOR OF THE ARTICLE]

Themes	Context: neighbourhood, city, region	Number (large, small) and profile (defined, undefined) of participants (large, small)	Participation level: communication, consultation, participation	Planning phase: initiation, design, implementation, maintenance	Examples
Information sourcing games	neighbourhood or city	large, undefined	consultation	design	Change Explorer, Community Circles, Community Planit, Floating City, Geo-zombie, HINT!
Data generation games	neighbourhood or city	large, undefined	consultation	design	B3 – Design Your Marketplace, Urban Shaper, Energy Game, NetCampus
Pervasive games	neighbourhood or city	small, undefined	communication or consultation	either n/a, or design	Big Urban Game, Change Explorer, Community Circles, Geo-zombie, HINT! Play Before Plan, ZWERM
Deliberative games	neighbourhood	small, defined or undefined	communication, consultation or participation	design	@Stake, Community Conversational, Play[Location], Participation Game
Co-designed games	neighbourhood or city	small, defined	communication, consultation or participation	either n/a, or initiation	City Makers, Energy Safari, Participation Game
Educational Games	neighbourhood, city or region	small, defined or undefined	communication	either n/a, or initiation	Pop-up Pest, Urbax21, Water Management Game