

Efficiently Inefficient: Service Design Games as Innovation Tools

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Abstract

This paper analyses the effectiveness of service design games (SDGs) based on their ability to trigger participant reflection. The paper draws upon game studies to present how SDGs appear as ineffective innovation tools, and combines it with organizational knowledge creation to show how the “gameness” of SDGs actually drives their effectiveness. The paper contributes to the understanding of SDGs by offering a theoretical explanation for their effectiveness, and presents a framework for analysing design games as productive dialogues. *ATLAS*, a board game for service co-design project planning, is presented as an example of embedding reflection into the design of a SDG.

KEYWORDS: service design games, knowledge creation, innovation tool, service co-creation

Introduction

In this paper we analyze the way in which service design games (SDGs) function as participatory innovation tools in service design. We bring theory from game studies to shed light on how SDGs are both game-like and how they are not, and how the game-like characteristics of design games trigger reflection over the course of a game session. The use of design games is analyzed from a theoretical framework of knowledge creation through dialogue and the role of reflection in creating knowledge on the interpersonal level.

Design games are a part of the wider tradition of participatory design, which seeks to involve stakeholders and end-users in both product and service design processes. Design games are highly context-specific, customized and designer-facilitated games, used to solicit stakeholder input and insight into user needs, as well as to promote the sharing of ideas and co-operation (Brandt, 2006; Vaajakallio & Mattelmäki, 2014). While many design games are named, they are most often case-specific such as the pioneering design games of Ehn and Sjøgren (1991: 242-263): *The Layout Kit Game*; *the Carpentrypoly*; *The Specification Game*; *The Organisational Kit*; and *the Desktop Publishing Game*. In general, the term “design game” refers to all instrumental gaming in design contexts – regardless whether they are used for data gathering, concepting, creation of physical prototypes, prototyping interaction, or design education (Vaajakallio, 2012: 89). This paper focuses on design games related to the first three, where the focus is on knowledge sharing and creation (Hannula et al., 2014).

In service design, games are used for studying particular design environments, building design competences, empowering future users by providing them with the opportunity and vocabulary to discuss existing and future alternatives, and engaging multiple stakeholders in generating shared understanding of the use and users for early concept design (Vaajakallio, 2012). These games are typically associated first and foremost with the fuzzy front end of service design and innovation, but may be used in other areas such as business model creation (Ojasalo & Ojasalo, 2015). In the front end, SDGs are used for soliciting participant contribution or to enable co-creation with or between participants through material dialogue (Brandt et al., 2008). Compared to other methods such as interviews, design games enable the transfer of embodied and contextual information through interaction in a context-rich environment that scaffolds the creativity of participants (Sanders, 2006).

Within the field of game studies, games are traditionally defined through the constrained pursuit of artificial goals, where the constraints make the activity possible, more interesting, and more meaningful for their participants. In effect, when playing games people choose inefficient means of approaching goals, because that inefficiency makes the activity more exciting. For example, chess pieces have restricting movement rules and boxers use padded gloves, have defined rounds and are not allowed to kick (Suits, 1978). In this paper, we approach the game elements of SDGs through the definition of games proposed by Salen and Zimmerman (2004, p. 80), “a system in which players engage in artificial conflict, defined by rules, that results in a quantifiable outcome”. It highlights the conflict between SDGs and games in general by forcing us to question whether SDGs fit the definition of games at all, and whether these characteristics are at odds with the purpose of SDGs: Is there a conflict present in them if all players strive to advance in the design process? Since they represent the fuzzy front end of design, is there a quantifiable outcome? And, most importantly, if they are supposed to produce useful ideas, is the activity actually artificial?

We say “yes” to all these points. In this paper we argue that SDGs are games, which makes them inefficient, but that SDGs are able to leverage that inefficiency for fostering a productive dialogue and allow for new ideas and points of view to emerge. Furthermore, we show that because of their inefficiency, SDGs are so structured that they cannot be perceived as just playful co-creation tools.

With inefficiency, we refer to the aspects of games that may be perceived as delaying the design process with activities that do not directly contribute to a design goal, or as hindering the design process by making some procedural choices for the designer. In arguing that design games are efficient, we mean that they provide not just a more productive outcome, but also that the way SDGs make possible the envisioning, evoking and innovating of new concepts, creating new angles of approach and enabling deeper understanding would not be possible otherwise.

This paper expands on knowledge creation through service design games previously discussed by Hannula (2014) and Vaajakallio (2012) among others. The subject is approached using both meta-analysis and a case example of the design game *ATLAS* (2014). It answers the question *how do service design games accomplish their goals as efficient innovation tools, if they as games are supposed to be inefficient?*

Games and Efficiency

Both digital and physical games have long been studied as systems, and this systemic nature has been of great interest for the use of games for efficiency. Duke (1974) expresses this by saying that they are a “future’s language”, a means of communication able to convey entire Gestalts rather than just linear, partial aspects of the processes they describe - a thought echoed by many messengers of systemic thinking (e.g., Senge, 2006). Being more holistic than other forms of communication such as diagrams or models, they can provide immediate feedback, as well as show system-wide consequences for decisions (Lainema, 2009). They permit exploration, safe failure (Crookall, Oxford & Saunders, 1987; Tsuchiya & Tsuchiya, 1999) and even functional “bad play”, in the form of fruitfully going against their original design intent (Myers, 2010). These ways they promote double-loop learning, i.e., learning about problem framing in addition to problem solving (Argyris & Schön, 1980).

The systemic qualities of games may be present even in cases where the system being interacted with may not conform to some expectations of games. Operational gaming (e.g., Bell, 1997) is a tradition which considers any sort of simulation that has a human element affecting it to be a “game”, and such games are used to explore different options and predict possible futures. Similarly, design games such as *ATLAS* (2013), which is discussed in this paper as an example, are often borderline games: the competitive aspects of SDGs tend to be low and the goals that they have are allotelic, i.e., external to the play itself (see Klabbers, 2009). At the far end of the “gameness” spectrum are playful facilitation methods such as *CoCo* (2012), which are tellingly framed as “co-creation tools” rather than as games.

One of the causes of inefficiency in games is that they appear separated from everyday reality. This protective social contract is often called the “magic circle” of play (Salen & Zimmerman, 2004; Stenros, 2014). The concept comes from Huizinga (1939), who originally stated that like games, also rituals, drama and certain other activities are isolated from mundane reality the same way. While this might make one believe that this makes games unsuitable for creating real-life solutions, Polaine (2012) conceptually joins games with services, stating that not just SDGs, but services in general, can be perceived to take place within their own magic circles because they happen according to their own rules and in their own domains, and thus playfulness is a natural fit for their design. While a rather radical viewpoint from the perspective of game (or ritual) studies, we believe games allow experimentation and exploration with rules that might later be realized as services.

Design Games and Knowledge Creation

In order to analyze the efficiency of SDGs in not only sharing information but designing services, we utilize a theoretical framework of games supporting knowledge creation. All multiplayer games facilitate both information sharing and knowledge creation, whether they are designed for that purpose (e.g., Hämäläinen & Oksanen, 2012; Hummel et al., 2011) or just recreational (e.g., Harviainen & Vesa, 2015). The creation of knowledge, however, is not an inevitable part of all games, but has to be encouraged through either design, active facilitation before and during play, or preferably both (Kreijns et al., 2003). Trust and positive interdependence have to be established before the social environment becomes conducive for exploration, innovation and learning (Rourke, 2000). The game’s rules and level of complexity should support what Dillenbourg (2002) calls flexible strategies, the possibility to collaboratively select different approaches to problem-solving and knowledge creation.

Knowledge creation has been studied extensively in organizational research from the level of a company down to interpersonal communication, where different methods and contexts for knowledge creation are addressed. Tsoukas (2009) describes knowledge creation as dialogues where new distinctions are created and later incorporated into new practices and services. These distinctions are sometimes new words that encapsulate new concepts such as “natural selection” while others may remain as more loosely defined such as “software development methods are useful after a creative framing has been made by a software architect”. In productive dialogue, participants bring their background knowledge into focal awareness by attempting to understand each other, and see their own words in new ways based on how others respond to them. (Tsoukas, 2009)

However, Tsoukas (2009) argues that all dialogues do not offer the same kind of opportunities for knowledge creation. Productive dialogue requires relational engagement, in which participants signal to others a positive attitude toward each other and a desire to work on a shared goal, and self-distanciation, where participants exhibit the ability to remove themselves from existing practices and reflect on them from a development point of view. In productive dialogue, participants are able to take responsibility for their own faults and work together to find new distinctions that further the goal of collaboration. The opposite of productive dialogue is calculated participation, in which participants remove themselves from dialogue or try to protect an interest at the expense of the dialogue. (Tsoukas, 2009)

Based on Tsoukas’ (2009) description, games offer a number of perspectives into organizing productive dialogues. In supporting relational engagement, positive affect present in games encourages benign attitudes toward other participants and moderates the possible negative responses to suggestions and criticism. Having a shared goal within the game also frames the interaction in terms of camaraderie and “being on the same side”. If the game has a high level of interdependency, the participants are further encouraged to engage in the dialogue and to not leave themselves out. Finally, the psychological safety in games (Stenros, 2015) moderates criticism but may not encourage taking responsibility for shortcomings.

Games are able to support self-distanciation because of both the separateness of the game activity from everyday life, and the ability of games to maintain a connection to the outside world through allegory and metaphor (Crookall et al., 1987; Tsuchiya & Tsuchiya, 1999). Traditionally simulation gaming practice has resolved the challenge of self-distanciation by insisting that the game is to be conceived as self-containing in order to fully immerse the players in the game, and that the experience is only contextualized in the debriefing of the game (Crookall, 2010). This approach misses the ability of games to support self-distanciation while playing, transforming a game from simulation to dialogue.

Embedded Reflection

Design games exemplify the flexibility inherent in service design, existing on the borderline between game and co-creation tool. That flexibility allows them to act as boundary objects (Star, 1989), enabling the projection of different stakeholder interest on and through them, and thus facilitate shared understanding (Brandt & Messeter, 2004). They bring structure to the design process, and are particularly effective when combined with data through either facilitation or design (Johansson & Linde, 2005). They are highly topic-configurable or even topic-creatable (e.g., Ehn & Sjøgren, 1991), a facet that has been determined as important for organizational learning in other game types as well (Thavikulwat, 2004).

However, that flexibility alone is not explanation enough for their success, and we believe that the secret of design games is in-game reflection. Game-based learning and experimentation is by nature unfocused and requires proper debriefing for guidance and anchoring (Crookall, 2010). Such anchoring, while necessary for the gaming to have an impact, is however a limiting factor for free innovation, an intrusion of external conventions on the playful process at too early a stage - well before any feasibility testing should start. Simulation games can solve this problem through the use of e.g., reflective essays (Harviainen et al., 2014), but for service design, that is rather ineffective.

We argue that in well-designed SDGs, the reflection and a large part of the “debriefing” is actually embedded in the gameplay. That is their true strength - not only do stakeholders seek unified understanding of the task at hand and innovate new options for it, they are in truth helping each other ground the results of that search process. Information needs have a tendency to center around three facets: the situation of action and its context, requirements for task completion, and the additional factors created by dialogue and co-operation (Savolainen, 2012). SDGs assist in all three, through both their guided innovation processes and the way they instigate shared reflection. Some debriefing and the writing down of selected results might still be needed but the essential reflection has been performed to a large extent already by the time the game session ends.

Example: Reflection in SDGs

We present *ATLAS* as an example of embedding reflection and dialogue into the design of a SDG. *ATLAS* is a board game intended to be played in a group of 3-7 players from different backgrounds and one or two researcher-facilitators guiding the players through the game (Figure 1). It was created to support the players on collaboratively building knowledge and capabilities for service co-design project planning and execution, for instance providing support for choosing an appropriate co-creation method and select participants for a specific service context. In each game the players plan a service co-design project set in a specific context.



Figure 1: A game of *ATLAS* in progress

Our analysis of *ATLAS* is based on ten game sessions with different and diverse stakeholders from the Finnish government, multiple municipalities, and private companies

that have undergone or are going through service co-design projects. The game sessions were videotaped and analyzed by a group of researchers to verify observations made in the field about interaction, roles and progress in the game. The case example presented in this paper is a session in which the case was proposed by an ICT platform provider looking for a service co-creation method to use with their potential partner. The game session was organized as a part of a service industry seminar in which the participants were all involved in service development in their own organizations.

Before the game began, researchers had produced the game material (Figure 2) for each of the seven tables at the seminar. Each table was playing a separate game of *ATLAS* with one researcher per table playing as a facilitator who was responsible for explaining the game rules, maintaining the flow of the game, and guiding the players to a productive discussion. The facilitators were not players in the sense that they did not pursue a game goal and did not contribute in answering the questions. However, the facilitators were encouraged to raise or rephrase questions to enable discussion between players.



Figure 2: *ATLAS* game material: five decks of hexagon tiles, large black ending tile, a deck of method cards, a deck of persona cards, and player sheets.

At the beginning of the game each player introduced themselves by writing on their player sheet their name, project role, prior service co-creation experience, and learning goals for the game. After the introductions, the players agreed upon a case that would be the challenge for the game. This particular case had a real-life challenge for the players, while other tables had a fictional scenario made for the game session. After agreeing on the case, the players were asked to choose a motivation for their project from the green deck of “motivation for co-creation” tiles. The players selected the “Enabling a collaborative platform for various partners” motivation as their primary motivation out of the six available alternatives but agreed to select two additional tiles, “Creating new ideas” and “Enabling organizational change“, as secondary motivations. The players wrote their objective for the project, “to create a platform with/for multiple partners”, to a sticky note, attached it to the motivation tile and placed in the center of the playing area.

The green motivation tile acted as the starting point for the rest of the game, as further question tiles were placed around the initial tile turn after turn. Each turn, a player drew either a question card from one of the three question card decks – “project definition”, “participants”, and “methods & tools” – or a “challenge” card according to his or her preference. All players then discussed the question or challenge on the tile, and after collaboratively agreeing on an answer it was written down and placed with the tile onto the table. With the exception of the initial motivation tile, every tile was placed next to an already placed tile, allowing the players to address how each new answer relates to the previous answers. At the end of the game, the players had formed a honeycomb structure on the table consisting of an objective and a selection of decisions made to achieve the objective (Figure 3).



Figure 3: A completed ATLAS game session

Some tiles referred to two additional decks of cards used in the game: the persona deck and the method deck. The persona deck was used when a “participants” tile asked the players to choose up to three participant groups to involve in the project. The persona cards depicted people of varied ages, sexes and ethnicities with only a name and a photo, and the players were encouraged to freely associate what participant groups they imagine there might be in the context of the case. This allowed the players to apply their knowledge relevant to the case, in contrast to forcing the players to select the "correct" alternatives from preselected participant groups.

Similarly, the method deck was used when a “methods and tools” tile asked the players to draw three random method cards and select one that they consider should be used in the project they are planning. To compensate for the differences in service co-creation experience of the players, the method cards included descriptions of the ten methods used in prior service design research projects in Aalto University. The methods described on the cards were customer journey, design probes, design game, personas, process simulation, future recall, acting and drama, scenarios, service blueprinting, and storytelling/narratives (for further descriptions see e.g., Brandt et al., 2008; Bødker, 2000; Mattelmäki, 2005).

Once the allocated time of 60 minutes had run out, the game entered a reflective phase by playing the ending tile (Figure 4). Each of the questions of the ending tile required the players to summarize the answers to one category of question tiles or challenge tiles. Bonus tasks on the card suggested that the players reflect on their own learning in the game. The players were also given a flipchart paper to write a summary of their project plan. At the end

of the reflective phase, the players had created two artefacts that documented the process of planning the service project: the constellation of tiles and answers that was created by playing the game (Figure 3) and a document that answered the summarizing questions of the ending tile. These documents were taken by the players to be used in their perspective organizations and act as a shared draft for the service co-creation project plan.

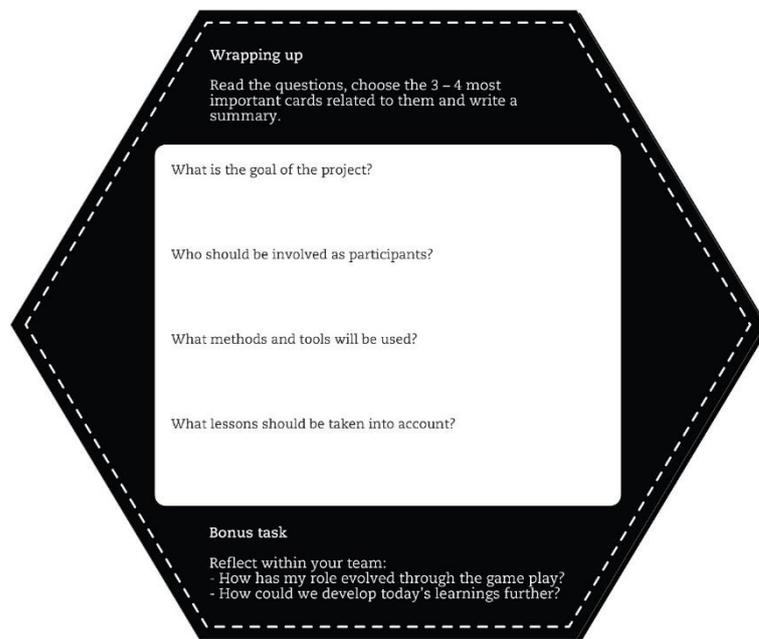


Figure 4: Ending Tile

The verbal feedback of the players was overwhelmingly positive, and both the effectiveness and the ineffectiveness of the game came up in the players' spontaneous comments:

Well this has been a pretty effective way in an hour or a bit over an hour to go through a number of different viewpoints to this service design which we definitely wouldn't have been able to do in an hour at one's own desk. It's like interesting the number of different viewpoints you get in this. In that sense it was a really fun experience.

From the playing perspective it was a really nice game experience. It does make me think about what all kinds of things we didn't go through in all of those cards. But at least with all the cards we did draw we were able to have a productive discussion, so it was an interesting experience and I think we were able to get ahead in our actual case.

Discussion

In this paper we presented *ATLAS* as an example of a SDG where reflection is built into the artefacts and rules of the game. The game itself does not provide a solution to a design challenge but instead the problem is discussed within the game in order to provoke self-distanciation and relational affect that contribute to knowledge creation (Tsoukas, 2009). While the game does include a structure for debriefing, the game is designed to embed reflection on work outside of the game and on how each answer in the game builds up the project plan.

Our example illustrates two methods of embedding reflection in this particular game which help us discuss the reasons behind the effectiveness of SDGs. First, *ATLAS* severs the connection between usual problems and usual solutions by removing the players from their original context. This is achieved by having the players strive to reach a game goal connected either to a fictional case or indirectly to their real life challenge. Second, dialogue in the game takes place through the game material such as the cards, which forces the players to think in ways they might not normally do faced with a similar challenge in their daily work. Both of these elements remove the players from the case, making the method “inefficient”, but as a result trigger self-distanciation in the players which encourages the forming of a productive dialogue.

The primary purpose of gaming, according to Duke (1974, p. 77), is “to establish dialogue to increase communication among a group about a topic which is complex, future-oriented, of a systems nature”. While scholars of recreational gaming may disagree about the priority of that purpose, games such as *ATLAS* appear to do exactly that. SDGs utilize their ability to increase communication in order to facilitate not just group thinking, ideation and learning, but also to do so more effectively. “Limitations foster creativity” is a truism in service design, and SDGs fully embody it.

Conclusions

This paper provided two contributions to the understanding of SDGs. As a practical contribution, this paper illustrates how reflection can take place during the game and not only in the debriefing. As a theoretical contribution, this paper presents an initial vocabulary for analyzing the use of SDGs as knowledge creation through productive dialogues.

We argue that SDGs create inefficiency by separating ideation from the problem context in either time, space or context by setting it in the magic circle of gameplay. They are games which have goals that are different but not isolated from the objectives of service design and which stop the players from getting ahead of themselves. While these elements make SDGs appear inefficient, they in fact are efficient in creating productive dialogues – the driving force behind creation of knowledge – by enabling reflection through self-distanciation, as well as the scaffolding of creativity by disconnecting means from ends. They allow reflection on means and results via simple simulations that often have very simple or participant-driven rules and authenticities.

Klabbers (2003) describes game design intended to create wider societal changes through the concepts of design in the large, to make those changes possible, and design in the small which is the actual design of simulations and games. To make game-based design in the large possible, design in the small has to reflect the intended goals. SDGs excel at this, because they by nature evoke issues of precisely that alignment. That, after all, is their very purpose: to foster deeper understanding of an existing subject and to utilize that knowledge to create new tools to access that knowledge in a fruitful manner. This knowledge creation focus makes them problematic for immediate result assessment (e.g., van den Hoogen, Lo & Meijer, 2014), but as they are essentially tools for creating functional prototypes (see Vaajakallio, 2014), their own results produce the concepts that will eventually be tested.

Future research building upon this paper should take a closer look upon the possibilities and use of SDGs. For example, Tsoukas (2009) describes situations where the creation of a new distinction can create an opportunity for the whole dialogue to move to a next stage by using

a new word. Such an expansion of thought could also be reflected in the function of a SDG: according to Vaajakallio (2012), rules in design games can be modified at will. This acting against the structure of a game can encourage transformative play (Stenros 2015). Such self-transforming play could introduce a stronger element of double-loop learning where the players create a game better suited to their needs.

Design games are also remarkable in that compared to other forms of gaming, they tend to be rather “shallow”, yet they are still highly efficient. For example, the SDG role-plays described by Boess (2007) would probably not even be considered “role-playing” by scholars of role-play, and the narratives constructed by Johansson and Linde’s (2005) card players are far from the complexity of recreational storytelling games or many modern video games. Nevertheless, they produce results - often very impressive results.

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