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Case Example: WORK-A-ROUND, a Simulation Game for Mobile Work and Workplace Design

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Abstract

The case example reports on the development and first experiences with a simulation game called WORK-A-ROUND. The game has been developed during a research project focusing the future integration of mobile work into classical work environments based on physical office spaces. WORK-A-ROUND focuses the simulation of distributed work scenarios and is meant to be used within the context of participatory workplace design and strategic planning for distributed work. First observations have shown that the game is well adopted by the participants and its low-hierarchy and team-oriented program seems to facilitate the negotiation of open scenarios in cross-disciplinary stakeholder groups. A two-step debriefing process further aims at the transfer of the game's results and cooperative learnings towards strategic recommendations for the player's real work life and the future design of workplaces.

Office work and work environments are undergoing a constant change. Part of this change is caused by the increasing number of tools and devices, which allow office workers to complete their daily tasks even without physically being present at the main office. More and more the daily workload is getting distributed to different

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locations such as the office at home, while commuting on the train, the main office or at other various places also called "third places" (comp. Ashforth, Kreiner, & Fugate, 2000). This way our work - and especially work in the knowledge sector - becomes a sort of daily journey where different tasks become completed at different locations. In addition, the way we collaborate with other people becomes more and more independent in terms of location and time. Former synchronous collaboration turns into asynchronous ways of working together (comp. Fried & Hansson, 2013, p. 22).

According to a study made at the Competence Centre Typology & Planning in Architecture (CCTP) the "Office of the future will less and less be a place only meant for working. More and more teamwork and building up networks, formal and informal project collaboration and meeting people will stand at the core of the office" (Amstutz, Schwehr, Schulze, & Krömker, 2013, p. 38)

Consequently, the question arises whether the future office needs to provide spaces for all different work tasks, or whether it will rather benefit from the new networks of spaces and provide only spaces for activities, which are strongly related to the company itself, or those activities and tasks, which are executed as a team. This is a question which not only is crucial for companies maintaining a large number of office facilities but also for today's knowledge workers who more and more need to organise themselves while working at different places.

Furthermore, it also becomes a central question for people involved into the management and planning of office spaces and buildings. This planning process often requires a close cooperation between service providers (such as e.g., Architects), their clients and the affected office workers as well. Especially today, when the work-process extends over the main office's boundaries and includes a vast network of locations. For office planners it becomes essential to map and understand this network in order to match the future office spaces to their client's work culture and team behaviour – or to paraphrase Amstutz and Schwehr: "Because it makes a difference whether one works regularly at the corporate office or at places where other people have their coffee or cheeseburgers" (Amstutz & Schwehr, 2014, p. 38).

One of the partners involved into the development of WORK-A-ROUND is the RBSGROUP, a Swiss company dealing with consultancy and planning of large-scale workplace concepts. From their point of view, the discussion in the workplace consulting process has shifted a lot during the past few years. Their managing director, Niklaus Arn, describes this change as one from discussing "working in different places within the office" to a discussion on "working in a network of places on a working day". The office itself remains only one part within this network. So far, the consulting process is not equipped yet with tools and change management practises to meet this fundamental shift in work environments. Current practises either focus only on the corporate office spaces or if so, extend the view on their employee's home offices as well. The real network of places where today's work is actually happening is far more complex: It includes transportation systems, client's sites, third places and coffee shops, as well as the various spaces within the main office itself. Beyond that, more and more aspects exist that are related to the company's work culture, team behaviour and collaboration, which may have an essential influence on the work environment as well.

This case example reports on the development of a simulation game meant to meet these new challenges by providing consultants and planners a new tool to learn how to deal with new distributed work concepts. The game called WORK-A-ROUND aims at identifying distributed work patterns and helping to better match places (where is the actual work done?) and tasks (which type of work?). The perfect match itself may be influenced by different factors such as a companies' culture and hierarchy, available office spaces or the organisation of each employee's daily tasks. WORK-A-ROUND tries to meet these factors on two different scales: "Design in the Large (DIL)" and "Design in the Small (DIS)" (Klabbers, 2006). In order to gain learnings on both scales the game addresses three main groups of stakeholders:

- *Design in the Large (DIL): The management of a company, by showing the potential in productivity increase when better understanding flexible work,*
- *Design in the Large (DIL): the facility management and office planners by identifying the requirements for future office spaces in the context of multi-located work*
- *Design in the Small (DIS): the employees, by teaching them new strategies to better match their work tasks and places and make them ambassadors or "change agents" (Kriz, 2003, p. 508) in their own work context.*

A big part of the game's expected output can be named as learning output – such as scenarios and strategies for multi-located work. The actual design of the office space itself may happen in a following step after having played the game. From this point of view WORK-A-ROUND refers quite good to the term "Knowledge Co-Creation Games" (Hannula, Irrmann, & Smeds, 2014) since its gameplay focuses a learning output for the participants by fostering the dialogue between participants and "cooperative learning" (e.g., Kriz, 2008, p. 666).

Reasons for Working With a Simulation Game

The first steps towards the game's development date back to 2012, when the Competence Center Typology & Planning in Architecture (CCTP) joined a research project on integrated mobile and office work led by the Institute for Research and Development of Collaborative Processes at the University of Applied Sciences and Arts of Northwestern Switzerland (FHNW). The project's aim was to investigate the evolving development of mobile working in Switzerland and its effects on the future organisation of work and workplaces in Swiss companies. Together with partners from the transport sector, telecommunication, consultancy, and office planning, a series of tools have been developed, all together aiming at the better organisation and support for multi-located working. One of these tools is the simulation game described in this case example.

After having evaluated different methods, we had various reasons why we decided on developing a board game over the possibility to choose other approaches. The main arguments can be summarised as the following four purposes discussed in this section:

- *Providing a participatory platform for cross-disciplinary project teams*
- *An Exploratory character that enables participants to think outside the box*
- *An intentional masking of functional boundaries to discuss open scenarios*
- *Open Scenarios that enable stakeholders to evaluate multiple strategies*

Providing a Participatory Platform

The first reason why we decided on designing a game, was to create a participatory platform or "stage" (as per Vaajakallio & Mattelmäki, 2014, p. 64) that allows stakeholders to get involved into both our research process about multi located work and the design process of future workplaces. We realized the need for a common conceptual space open to all participants, especially in a cross-disciplinary context.

Exploratory Character

In the context of workplace design and the development of new strategies for multi located work the exploratory aspect of design, games can act as a huge enabler when it comes to negotiating future design strategies together with stakeholders – especially in an early stage of the design process. While playing the game, participants can act within an altered space, also discussed as "Design Worlds" (Johansson & Linde, 2005, p. 8) or "As-if-worlds" (Brandt, 2006, p. 62). These conceptual spaces allow stakeholders to explore scenarios in "[…] a situation where the participants can step in and out of their own perspective" (Johansson & Linde, 2005, p. 10). Transferred to the world of workplace design this conceptual space may enable our stakeholders to step out of their own work life, which might be still bound to a couple of fixed locations, towards a perspective that allows them to identify an entire network of places where they could possibly work in the future.

Free of Functional Boundaries

Another benefit of design games that became a very convincing argument to meet the changing world of workplaces with a simulation game was the possibility to create a collective momentum in the design process, where functional requirements are not necessarily discussed and do not become boundaries. In his "Concept Games", N. John Habraken points out that "A game provides an environment for a group of players […] to make and transform complex configurations, free of functional requirements" (Habraken & Gross, 1988, p. 150). In the field of game design this statement might perhaps seem obsolete, but when it comes to workplace design and architecture, the possibility to evaluate complex scenarios in a cross-disciplinary group usually comes with an enormous effort and costs, if executed in real-life. By providing a new platform or stage where this discussion can happen with much less effort and costs, more time can be spent on negotiating different scenarios and finding the most suitable solution.

Open Scenarios

Another problem, which often gets encountered in the architectural design process, is the stakeholder's or participant's different capability of expressing their needs and requirements. This ability might be constrained by hierarchical cultures, lack of expertise, or simply the fact that a design process has not introduced any scenarios that are open enough for negotiation. In their paper on "Facilitating Collaboration through Design Games", Eva Brandt and Jörn Messeter stress the importance of scenarios as a "powerful vehicle in designing interaction" (Brandt & Messeter, 2004, p. 121). They furthermore point out the openness of scenarios that help to provoke dialogue and negotiation between stakeholders by "[…] enhancing their abilities of expressing and negotiating design ideas through a game" (ibid.). Johansson and Linde further describe this openness as a twofold one: "First, it allows that a same situation can be interpreted differently by different participants; second, the openness allows an existing situation to be different in the future" (Johansson & Linde, 2005, p. 2). According to Vaajakallio and Mattelmäki the empowering of stakeholders is one of four purposes that design games should provide by being "hands-on tools for establishing a common language between designers and users and to involve users in discussions on existing and future alternatives." (Vaajakallio & Mattelmäki, 2014, p. 64)

Meeting the complexity of designing workplaces with a simulation game is not entirely new to the workplace community: Annelise De Jong and Evi De Bruyne are two researchers who already have been working on the development of the so-called "Workplace Game" (De Bruyne & De Jong, 2008; De Jong & De Bruyne, 2008; De Jong, Kouprie, & De Bruyne, 2009). It is a board game which "[…] aims to facilitate group discussions on working behaviours […]but is not directly aimed at office space designers." (De Jong & De Bruyne, 2008, p. 3). While addressing the same field, there are two main differences between the game presented in this paper and "Workplace Game", which mainly focuses office users and their behaviour WORK-A-ROUND, in turn, includes all the people involved into both, the use of office spaces, and the development and design of office spaces as well. WORK-A-ROUND fosters the dialogue between e.g., facility managers and office workers, or the company's management and the office planner. Another essential difference is that the "Workplace Game" deals with spaces within the corporate's main office. WORK-A-ROUND extends to what has been described before as a network of places, and addresses task oriented and multi-located work strategies.

Scaling Multi-Located Work Processes Into a Board Game

While designing WORK-A-ROUND, one of the main challenges was to scale down the complexity of multi-located work processes to a multi-player board game, which can be learned and played within a two-hour workshop. At the same time, it was important not to lose the game's capacity to "mirror the real-life system" (Kriz, 2003, p. 496), which in the case of multi-located work is a large and complex network of

places and tasks. The main effort has therefore been spent on providing a mainboard that would appear as clear and simple as possible.

By taking into account the many different locations where players could work, the design of the mainboard turned out at the beginning to be one of the core issues. The first approach was to represent the dynamic relocation during the worker's daily journey with a dynamic mainboard consisting of a variety of cards that every time would be put together in a different order (similar to "SETTLERS OF CATAN"; Teuber, 1995). This initial decision was based upon the idea that multi-located work could be best represented by simulating its sequential character. Tasks and places were meant to be re-arranged each time, allowing players to transform and optimise the sequence every time they play the game. This approach was initially related to the concept of mental simulations that according to Gary Klein require "forming an action sequence in which one state of affairs is transformed into another" (Klein, 1998, p. 73). Another aspect that first led to a dynamic board design was the simulation of the network of places as a flexible territory. As a result, the first draft of the mainboard (Figure 1) consisted of various cards representing different locations within the "workplace territory" relating to the idea, that "(…) the territorial organization has to do with control of parts of the board" (Habraken & Gross, 1988, p. 154).

We quickly realised, however, that this approach would lead to a longer set-up phase at the beginning of each game-workshop (especially since each time the game would be played by different people) and it would be also hard to compare the performance of different teams that played the game. Therefore, we decided to design a static game board representing the same configuration of places each time the game is played (Figure 2). The dynamic part is then achieved by the collocation of locations and the different tasks each player has to complete. Four sets of different task cards (Figure 3, 4) are assigned to the four players and come with different requirements, according to place and time. This way players quickly learn how tasks might be completed at different locations and may develop strategies by each round that the game is played.

Basic Rules and Game Dynamics

Our first version of WORK-A-ROUND has been designed to be played in a workshop context; it is moderated by a game leader or facilitator and conceived to create the right motivation for players in order to generate realistic outcomes about the workers' behaviour in a multi-location context. The following section explains the game's main dynamics and rules, as well as the four central personas of the game. The game mainly consists of a main board (Figure 2) and four sets of Task Cards such as a set of Event Cards. Players start at their four Home Offices located in the corners and move around the different locations represented on the board by changing location once per round.

The Program of the Game

WORK-A-ROUND is a team-oriented game and the intent is not to have any single winner, except the entire team's learning outcome. Consequently, no individual goals are assigned to the players, in order to exclude competitiveness between players and
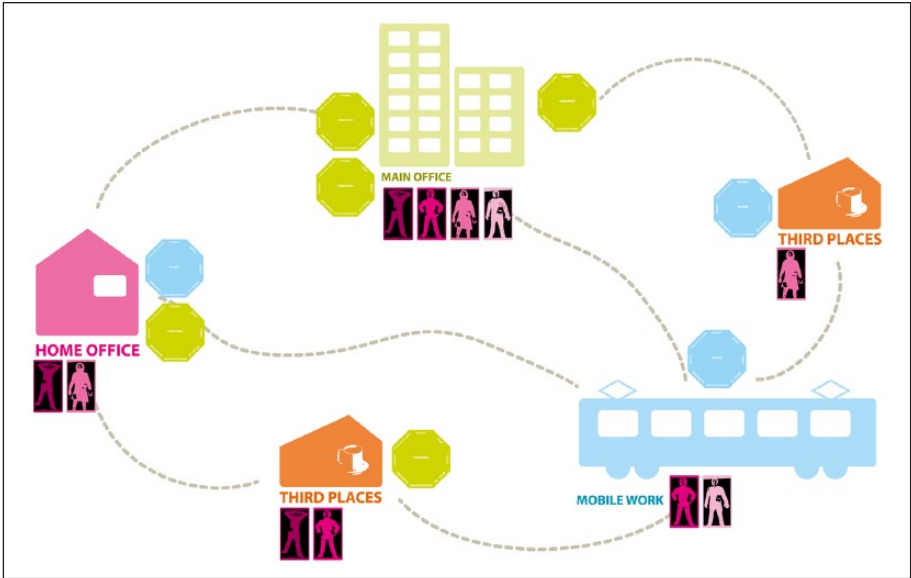
Figure 1. First draft of the main board with single cards representing different locations.

Figure 2. Final version of the main board with fixed locations.

to foster communication and teamwork by achieving a common goal. This common goal of the game is to complete all the tasks assigned to the team (and distributed between all players) within as few rounds as possible. The team-oriented character relates to Habraken's concept of a game's program by provoking negotiation (Habraken & Gross, 1988, pp. 144-155), team-based problem solving, and cooperative learning (Kriz, 2008, p. 666). The concept of a game's program also connects to the real situa-
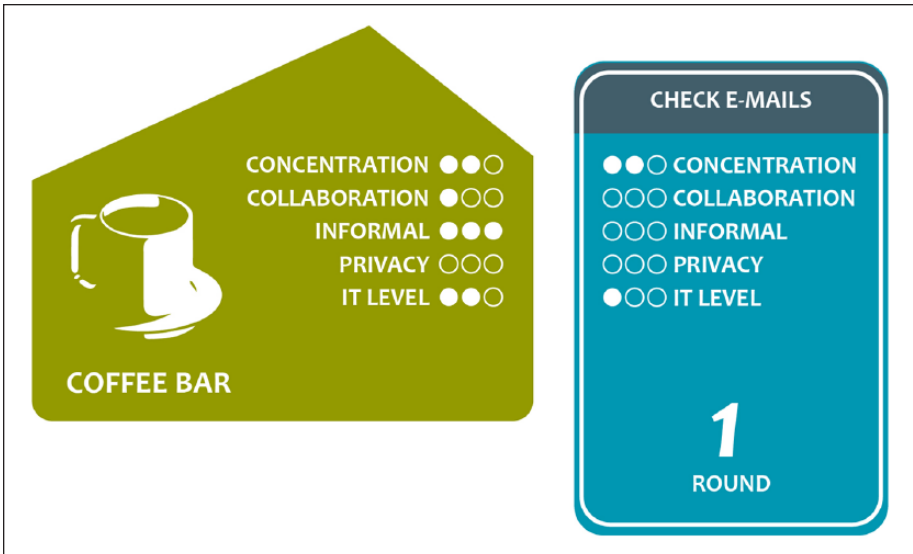
Figure 3. Matching task cards with locations.

tion in workplace design, where the different stakeholders and service providers usually work together in order to accomplish a series of common tasks.

Rules

Since our focus was to provide a game that can be learned quickly and to promote the dialogue between the participants, we tried to reach out and find a "sweet spot between constraints and freedom" (Pearce, 2006, p. 70). This happened by limiting the number of rules to only two general ones plus the instructions given on the single task cards. One rule is that each player can change his location once per round. All locations may be used to complete tasks (workplaces) or to get to the next location (transport). At every location, one task may be completed per round. The second rule links the tasks to certain locations: just as in real life, each task has specific requirements regarding the aspects: concentration, collaboration, informal, privacy and IT level. Each level is visualised by three dots (Figure 3). If a task matches a location, it may be completed there. Any other restrictions or rules are defined by the task-cards themselves. For example, some tasks have to be completed with other team members (Figure 4).

Participants and Their Roles

The first version of WORK-A-ROUND requires the presence of four participants (or four groups of players) and a game leader or facilitator. In order to simulate a more realistic work situation, four profiles are assigned to the different players (Figure 5). Similar to Vaajakallio's and Mattelmäki's (2014, p. 68) approach to "allow
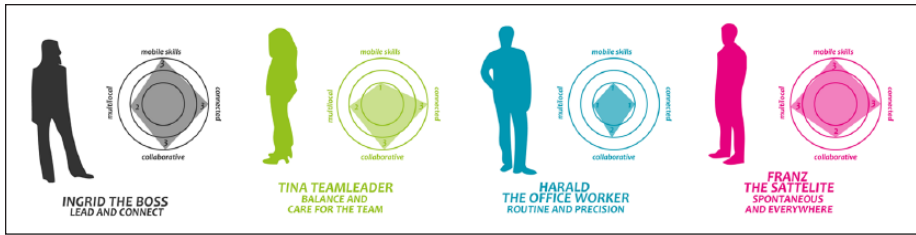
Figure 4. Team task.

Figure 5. Participants and their profiles.

participants to switch between roles and by doing so gain new perceptions", WORK A ROUND is meant to give players the opportunity to step out of their everyday roles and change their perspectives while playing the game.

Each profile is distinguished by certain skills concerning their mobility, collaboration or ability to work at different locations. The tasks assigned to the different players are also different from each other and have different requirements regarding the workplace or collaboration with other players. Furthermore, two players – "Ingrid the Boss" and "Tina Team leader" - have leading roles. By some special assignments communicated on their task cards, the two leading participants are involved in the coordination of the team's overall performance. When playing the game, a leading player does not necessarily have to be a leader in real life.

Facilitator

As a fifth participant, the facilitator plays a central role within the game. He introduces the game, announces each round and observes the single steps of all

players, such as the team behaviour, as well. He may further encourage the discussion between the participants and summarise the team's decisions after each round. To paraphrase Johansson and Linde (2005, p. 14), "[His role oscillates] between running the game and letting the participants have control". Another task assigned to the facilitator is the debriefing held twice during the game. While the intermediate debrief gives the facilitator the possibility to support the team's decision making process during the game, the final debriefing works as a summary and transfer of the learnings to the player's real life. Kriz (2008) and Wagemann (1999) describe this twofold mandate of the facilitator as the double role of a "shaper" and "coach".

Establishing the Debriefing Process

While developing WORK-A-ROUND, a series of workshops has been held in order to test and redesign the game before launching the final version. As participants, we have chosen people involved in the development of the game, people from the field of consultancy and office planning, and people with no preliminary background in either the game or office planning.

First attempts to play the game have shown that even though only a small number of rules are given, explaining the game dynamics and program takes a fair amount of time. This may be related to an initial large number of tasks given to the four players (12 tasks per player). Because of this first experience, the task number has been reduced to ten tasks, which made it easier for players to join the game. A second lesson from the first couple of workshops has been the fact that players get quickly involved in discussing and coordinating the tasks given to the team. The facilitator's role has therefore become even more important than initially thought.

After the first experiences made together with the participants, the following five game steps have been established:

- Setup of the game and introduction
  - First part of the game (8 rounds)
  - First debriefing and break
  - Second part of the game (approx. 10 rounds)
  - Final debriefing

Set Up and First Part of the Game

We have observed that after the introduction and an initial warm-up, players quickly start to talk and collaborate, in order to choose the most efficient way to complete the assigned tasks. Their actions nevertheless do not really follow any specific strategy at that point. Most players first seem to face the game with a trial and error approach. The two leading players (Ingrid and Tina) also slowly tune into their roles after a few rounds played. After approximately eight rounds, we could observe first strategic moves, as well as the discussion between players becoming more focused on being efficient as a team. At the same time, more and more tasks became distributed over

multiple locations. Based upon this observation, the decision has been taken to include an intermediate debriefing phase unto the game. The first debriefing is announced by an according event-card after eight rounds.

First Debriefing

After eight rounds (approximately 45 minutes), a short break is announced. The break is initiated by the first debriefing phase of the game. The facilitator asks players to comment on the following observations:

- How many tasks have been completed?
- How many of the team-tasks have been completed or discussed by the team?
- Which are the hot spots – the locations that are mainly used to accomplish the tasks?
- Which locations have not been used at all?
- Does the situation represented by the play deck relate to the players' real experiences as well?
- Which problems are known from their everyday work experience?

This first debriefing phase is meant to support both the development of appropriate strategies to finish the game and the awareness of linking the experiences made while playing the game to the participant's situation in the real world. First workshops have confirmed that after a while (the first part of the game) players increasingly link the game's situation to their daily work experiences.

Second Part of the Game and Final Debriefing

Since the break offers some time to discuss both the game and its connection to the player's real work life, the second phase of the game has been observed to be much more team-oriented. The individual players really begin to cooperate and start to plan the next steps and tasks in order to meet at certain locations and complete the remaining team tasks. Once all tasks are completed, the game is announced to be finished and the final debriefing starts. The final debriefing is again moderated by the facilitator and focuses three areas: *Strategy, Workplaces and Real Life Strategy*. The participants discuss the following questions:

Strategy

- What has been the difference between the first and second part of the game?
- Is there a strategy that has evolved while playing the game?
- How could this strategy be transferred to the player's real work situation?
- Workplaces
- Which are the "Hot Spots" – the locations that have been mainly used to accomplish the tasks?
- Are these "Hot Spots" being used in the player's real lives as well?

- Which locations have not been used at all?
- Are these locations possibly the same in real life?
- Learnings and real life strategy
- Which are the five team members's core learnings from playing the game?
- Name the two that could have the highest impact on the current way of working?
- What could be possible steps to implement these two?

First, the debriefing procedure was mainly based on a dialogue between the players, which is moderated by the facilitator. The main instrument involved in this dialogue has been a checklist of questions to be made and a possibility to visualise the answers (e.g., flip chart or whiteboard). In the current version of the game, the final debriefing is supported by an Excel-chart that may be used on e.g., a tablet computer. The score, locations used, tasks accomplished and strategies used are all documented and saved in a global database. Questions and learnings may furthermore be both projected on a screen and finally delivered by mail to all participants of the game. The database enables the players and especially the moderator to better compare different strategies used in the game and transfer the knowledge to the consultancy or planning process as well.

The aim of the debriefing procedure is to enable players to transfer strategies from the game to their real work-life and turn this experience into cooperative learning (as per A. Y. Kolb & Kolb, 2009; Kriz, 2008, p. 666). For example, the fact that players start to better match tasks and different locations may be focused during the final debriefing in order to define "Abstract Concepts" (D. A. Kolb 1984, p. 21; Kriz & Nöbauer, 2002, p. 2) and transfer them into their active work life.

Conclusions and Future Prospects

The first experiences with WORK-A-ROUND (8 workshops with a total of 70 people from different backgrounds) have shown that amongst the first participants the board game has been adopted very well as a mean to foster dialogue between different stakeholders in the context of multi-located working. Comments such as "This really is difficult such like in real life" or "Why do I never work on the train?" often confirm that the game relates quite well to the participant's real life experience and allows them to articulate first strategies for their mobile work life. However, not enough data currently exists to discuss the real learning outcome gained through the game. Another observation is that the facilitator's presence stimulates a cooperative learning process by conducting the game and acting as a "coach" during the debriefing phase. After our first experiences with WORK-A-ROUND the benefits for the participants can be named as:

- Awareness of own work-patterns and work-culture
- Stepping out of hierarchies and habits
- Participation (in the planning process)
- Strategies for the real work life
- Shared fun time amongst players

One of the first learnings for the design and research team has been the finding that even despite the complexity of multi-located work and workplaces the "Configuration of the territory" (Habraken & Gross, 1988, p. 154) in our case certainly was related to pieces of the game (e.g. execution of a specific task at a specific location) but not necessarily of the board itself (the reason why the initial idea of a main board consisting of re-arrangeable cards has been changed). Another finding is the absence of individual goals in favour of the game's overall program that allows players to act and learn as a team.

This Paper outlined the reasons why in our specific case a simulation game has been chosen over other possibilities to get involved with stakeholders in the planning procedure of distributed workplace scenarios. In the first instance, WORK-A-ROUND has been designed as a simulation game and could be characterized as a "Knowledge Co-Creation Game" (Hannula et al., 2014). Further application of the game will show whether it might follow Habraken's approach and serve as a research tool too (Habraken & Gross, 1988, p. 152). Potential findings when applying WORK-A-ROUND as a research game could be:

- Findings about distributed work patterns of knowledge-workers
- Correlation of specific work tasks and workplace
- Team behaviour in distributed work scenarios
- Challenges of synchronous and asynchronous collaboration

WORK-A-ROUND has been published as a first version at the end of 2014 and is currently being developed further. The last workshop in a larger context (40 players at 4 tables) has taken place in November 2015 and has successfully contributed to the data and experiences gathered during previous workshops. The following step is to introduce the game as a consultancy tool on the Swiss market. First workshops are being confirmed to start in spring 2016.

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Declaration of Conflicting Interests

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References

Amstutz, S., & Schwehr, P. (2014). *Human office*. Zürich, Switzerland: vdf Hochschulverlag AG Zürich.

Amstutz, S., Schwehr, P., Schulze, H., & Krömker, H. (2013). *Office in motion. Arbeitswelten für die Wissensarbeitenden von morgen* [Office in motion. Workspaces for the Knowledge Workers of tomorrow]. Lucerne, Switzerland: Competence Center Typology & Planning in Architecture, Lucerne University of Applied Sciences and Arts.

Ashforth, B. E., Kreiner, G. E., & Fugate, M. (2000). All in a day's work: Boundaries and micro role transitions. *The Academy of Management Review*, *25*, 472-491.

Brandt, E. (2006). Designing exploratory design games: A framework for participation in participatory design? In *Proceedings Participatory Design Conference* (pp. 57-66). New York: ACM.

Brandt, E., & Messeter, J. (2004). Facilitating collaboration through design games. In *Proceedings Participatory Design Conference 2004* (pp. 121-131). New York: ACM.

De Bruyne, E., & De Jong, A. (2008, July 14-17). The workplace game: Exploring end users' new behaviour. In *Applied Human Factors and Ergonomics 2008*, Las Vegas, NV.

De Jong, A., & De Bruyne, E. (2008). Participatory design of office spaces by game playing? In *Applied Human Factors and Ergonomics 2008*. Las Vegas, NV.

De Jong, A., Kouprie, M., & De Bruyne, E. (2009). Effects of the workplace game: A case-study into anticipating future behavior of office workers. In B.-T. Karsh (Ed.), *Ergonomics and health aspects, HCII 2009* (pp. 3-12). Heidelberg, Germany: Springer-Verlag Berlin Heidelberg.

Fried, J., & Hansson, D. H. (2013). *REMOTE: Office not required, crown business* (1st ed.). New York, NY: Crown Business.

Habraken, N. J., & Gross, M. (1988). Concept design games. *Design Studies*, *9*, 150-158.

Hannula, O., Irrmann, O., & Smeds, R. (2014). Modeling knowledge co-creation games as activity systems. In *Proceedings of the 45th Conference of the International Simulation and Gaming Association* (pp. 186-198), Dornbirn, Austria.

Johansson, M., & Linde, P. (2005). Playful collaboration exploration: New research practice in participatory design. *Journal of Research Practice*, *1*(1), Article M5.

Klabbers, J. H. G. (2006). A framework for artifact assessment and theory testing. *Simulation & Gaming: An Interdisciplinary Journal*, *37*, 155-173.

Klein, G. (1998). *Sources of power*. Cambridge, MA: The MIT Press.

Kolb, A. Y., & Kolb, D. A. (2009). The learning way: Meta-cognitive aspects of experiential learning. *Simulation & Gaming: An Interdisciplinary Journal*, *40*, 297-327. doi:10.1177/1046878108325713

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. New York, NY: Prentice Hall.

Kriz, W. C. (2003). Creating effective learning environments and learning organizations through gaming simulation design. *Simulation & Gaming: An Interdisciplinary Journal*, *34*, 495-511. doi:10.1177/1046878103258201

Kriz, W. C. (2008). A systemic-constructivist approach to the facilitation and debriefing of simulations and games. *Simulation & Gaming: An Interdisciplinary Journal*, *41*, 663-680. doi:10.1177/1046878108319867

Kriz, W. C., & Nöbauer, B. (2002). Debriefing von Planspielen. In U. Blötz & B. f. B. B. Bonn (Eds.), *Planspiele in der beruflichen Bildung* [Simulation games in vocational education] Bielefeld, Germany: Bertelsmann.

Pearce, C. (2006). Games AS art: The aesthetics of play. *Visible Language*, *40*(1), 66-89.

Teuber, K. (1995). Catan, *Mayfair*. Stuttgart, Germany: Kosmos.

Vaajakallio, K., & Mattelmäki, T. (2014). Design games in codesign: As a tool, a mindset and a structure. *CoDesign: International Journal of CoCreation in Design and the Arts*, *10*, 63-77.

Wagemann, R. (1999). So haben sich selbst steuernde Teams Erfolg [The way to success for self led Teams]. *Organsiationsentwicklung* [Organisational Development], *1*, 44-55.

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