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Iterative Creation and Analysis of Generic Ideation Spaces for SMEs

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Abstract
Inspired by successful educational ideation spaces such as Stanford d.school and Aalto DF, we wonder how to set up an industry-related ideation space for Swiss SMEs? Thus, we ask (1) which strategy must be applied to acquire knowledge for a workshop and ideation space concept, both adapted to Swiss SME needs?, and (2) what key learnings are necessary to deduce the concepts for Swiss SMEs? The first research question is addressed with an evaluation of strategies, whereas the applied criteria were derived from the industrial and cultural context. For addressing the second research question, we triangulated the four methods interviews, questionnaires, feedback, and own observations. Our results are two-fold. First, the chosen iterative approach enabled us gaining knowledge about the needs of Swiss' SMEs. Second, resulting from the pilot workshops, we cluster our key learnings under the topics: workshop concept, creativity stimuli, cultural requirements, and business needs.

Keywords: Ideation space, iteration, fast prototyping

1 Introduction

In recent years, product life cycles continue to shorten and the global pressure on innovations keeps rising. Therefore many organisations do not question innovation per se but rather ask how to innovate more successfully. This ability is even more important in situations where the context and environment of an organisation is changing constantly and rapidly [1]. There is a vast range of approaches described in literature, on how to develop and foster innovative potential among employees, e.g. optimisation of organisational climate [2], provision of rewards and incentives [3], creativity training [4], and a variety of brainstorming techniques. Thus, on a higher, organisational level, one concrete approach is the creation and use of ideation spaces [5]. Ideation spaces are particular premises also encompassing physical workspaces. Teams and groups of employees are encouraged to collaborate interdisciplinary and engage with each other in fast paced ideation sprints in order to explore and creatively think beyond the boundaries of their day-to-day routine.

Large companies can afford investing into such ideation spaces or think tanks, skunk works, and creativity departments to ideate and develop new products within a very short lead time. However, even leading niche small and medium-sized enterprises (SMEs), which are often

highly embedded in their local environment and context, cannot afford to do so due to limited size, resources, and financial capacity. The degree of space capacity utilisation would be miserable. Nevertheless, these SMEs depend on developing innovative products, and could decrease the risk of developing into misleading directions by resorting to an ideation space from time to time. Thus, an ideation space bookable for SMEs, providing single and particular workshops that are lasting from several hours to a few days, complemented by coaching and guidance, seems to be a promising way to support these SMEs in ideating new concepts for products and services. Such an ideation space is currently not available in Switzerland.

This paper is based on a research project that intends to bridge that need. By drawing inspiration from successful educational settings such as Stanford d.school and Aalto DF, and with the scientific guidance of two universities, it intends to establish such an ideation space particularly targeted at SMEs. The guiding research questions addressed in this paper are:

- RQ1: Which strategy must be applied to acquire knowledge for a workshop concept and a supporting creativity-inspiring ideation space, both adapted specifically to SME needs in Switzerland?
- RQ2: What key learnings are necessary to deduce the workshop concept and the ideation space' interior design concept for Swiss SMEs?

The answers will contribute to the forthcoming workshop concept and the interior design of said ideation space.

The remainder of this paper is organised as follows. Section 2 overviews strategies on how to establish ideation spaces as well as affiliated topics, defines criteria to evaluate these strategies, chooses one strategy, and formalises a hypothesis to be tested. Section 3 summarises prototyped workshops and describes in detail the applied data gathering methods. Section 4 outlines key learnings from the workshops, while section 5 discusses the implications of these findings. Section 6 concludes.

2 Background Information and Related Work

A cooperative organized insurance company is funding this research project and aims to prepare its SME clients for the future by providing an ideation space. The goal is to offer the SME's CEOs and staff unique workshops in terms of process, coaching, and setting, during which they generate ideas for innovative products, services, and business concepts. By applying concepts such as human centred design, design thinking, and rapid prototyping, the participants are given the opportunity to go through several iteration cycles and finish by taking home a tangible project vision.

The following overview points out potential strategies on how to establish ideation spaces specifically to SME needs in Switzerland.

- The easiest way to establish such an ideation space would be to **'Copy and Paste'** an existing and successfully running concept from somewhere else. Stanford's d.school (dschool.stanford.edu) and Aalto DF (aaltodesignfactory.fi) serve as international examples.
- Following **'Best Practice'** on how to establish such an ideation space would be another approach. It would, on the one hand, explain how to describe the cultural context and how to figure out the specific needs of SMEs. On the other hand, it would explain how to adapt an existing ideation space concept especially to this cultural context and SME needs.

- Following a **'Literature Based'** strategy means to study literature about ideation spaces in a broader sense [e.g. 6-11], about SME's needs, and Swiss culture, in order to establish hypotheses about how an ideation space would work for SMEs in Switzerland, and to test these hypotheses in controlled experiments.
- Finally, one can adapt a strategy from a related context. The **'Hunter-Gatherer Model'** based on wayfaring [12], distinguishes the behaviour of hunters (generative design actions) and gatherers (optimizing analytical actions), and is about "flow, awareness, observation, and real time intervention" [12, p 251]. Being confronted with uncertainty already at the starting point, one makes one step towards the expected target, builds prototypes, tests them against the known, and discovers the unknown. During these cycles, one is continuously gaining knowledge if one follows the three hunting rules: (1) never go hunting alone, i.e. be well equipped in skill diverse teams, (2) never go home prematurely (i.e. do not give up even if it becomes frustrating and team dynamics get fragile) until one has found the really big idea, and (3) bring it home, i.e. freeze requirements and plan the next steps for the gatherer (linear-thinking optimisation).

Due to the industrial context, we had to consider the following boundary conditions (criteria) when choosing one of the above listed strategies. The funding company set up a (1) tough time schedule, and provided only (2) limited resources. The universities were eager to (3) learn quickly. Further, participating SMEs (4) wanted to profit already in the pilot phase, i.e. pilot workshops had to deal with their specific problems or research and development topics. Moreover, their (5) business constraints, i.e. time limitations especially in terms of human resources availability, and (6) the Swiss cultural context had to be taken into consideration. In the following, the above outlined strategies are evaluated against these criteria.

- The **'Copy and Paste'** strategy would be in line with criteria (1) and (2), would ignore criteria (3), (4), and (5), and would be in contradiction with criterion (6). Thus, this strategy is rejected.
- **'Best Practices'** could not be applied as there was no literature sufficiently describing best practices about how to establish an ideation space for SME needs in Switzerland. This paper is a first attempt to fill this gap in literature.
- The **'Literature Based'** strategy would comprise (1) sampling several concept pieces regarding ideations spaces, Swiss culture, and SME needs, and (2) deducing hypotheses to be tested in controlled experiments. Thus, it would have been too slow, too expensive, and based on a too small control sample, i.e. stands in conflict with the criteria (1), (2), and (3).
- The **'Hunter-Gatherer Model'** describes a 'quick and dirty' adventure of a team with a diverse skill set, eager to discover the unknown. This strategy is in line with our time schedule (1), our resources (2), and our curiosity (3). Furthermore, it allows dealing with the specific questions (4) and constraints (5) of our SME partners in the cultural context (6) at hand.

The Hunter-Gatherer Model describes a strategy that fulfils all criteria. Thus, it answers the first research question satisfactorily. Additionally, it serves as a strategy to answer the second research question. We hypothesise that the Hunter-Gatherer Model is an adequate strategy to establish a workshop concept and a supporting creativity-inspiring ideation space, both adapted specifically to SME needs in Switzerland. Our success criterion is fulfilled if we can conceptualise our workshops and the interior design of the ideation space, based on the knowledge we gained during the model application.

3 Methods and Execution

As the premises of the final ideation space are still under construction, we have started prototyping both space and workshop concept in a university related lab.

3.1 Space – where

The prototyping space consists of five conceptually distinct but highly connected areas. These areas embody different working situations and are called *inspiration* (combining a media centre with a material library that stimulates ideation and prototyping), *test cube* (a testing area that allows to re-enact product application situations and to test the physical boundaries of materials), *arena* (used in several ways e.g. for prototyping sessions, presentations, and discussions), *round* (half-open room in room concept, which enables privacy without sealing oneself off from others), and an area *where grey matter matters* (small isolated and silent alcoves provide space for a single person working concentrated). Figure 1 shows views from our test lab at Technopark Zurich.

Figure 1 Views from the test lab at Technopark, Zurich.

3.2 Workshops – what

In total, we performed 14 workshop days at Technopark Zurich, working on seven topics with six to fifteen participants/employees from 14 companies and organisations. The workshops lasted from one to three days (two on average), and were led by different moderators with their specific styles, attitudes, and backgrounds. The workshop topics (with the deduced assignment of tasks) were tailored specifically to the needs of the participating company/ companies, i.e. product and/or service development.

3.3 Method triangulation – how

According to our research question and the iterative approach for increasing the workshop performance, a study with explorative character is chosen for collecting data and generate useful insights. Specifically, we focused on (1) interviews with key stakeholders, (2) questionnaires with workshop participants during the workshops, (3) feedback from the participants after the workshops (oral and written), and (4) own observations during the workshops. The triangulation of the collected data allowed us—from workshop to workshops—to derive working hypotheses and to test them in the next workshop in order to improve its performance, even if not all methods were applied during/after all workshops.

- Interviews: Five experts shared their experience for about 15min each in semi-structured interviews. The questions dealt with the experiences of the day, the results of the workshop, the perceived communication between the workshop participants, the pros and cons of the prototyped ideation space as well as the feeling it is imparting, and hypothetical results of the ‘same’ workshop in an ‘ordinary meeting room’. The interviews were recorded, transcribed (according to [13]), and analysed by paraphrasing, generalising, and reduction [14].
- Observation: The observer applied the AEIOU-Framework (Activities, Environments, Interactions, Objects, Users) [15] to collect data on a basis as broad as possible, noted the data in time, and immediately added pictures to support the analysis later on.

- Questionnaires: The observations revealed that workshop participants changed their behaviour during the days. Thus, the questionnaires were conducted in the morning, during the lunch break, and after the workshop at the end of each day. The (structured) questions dealt with the feelings of the participant, his/her satisfaction with the day, the moderation, and the space. Optionally, the participants were invited to give suggestions regarding the space (in free text). The return rate varied between 55-82%.
- Feedback: Feedback was collected on the one hand in informal discussions with workshop participants directly after their specific workshop, and on the other hand via email with a time lag of about a week, aiming at information about the workshop organisation, its structure, the moderation, and its results. Here, the return rate varied between 30-67%.

Figure 2 summarises the workshops and applied methods for data gathering. Additionally, we tested several measurement tools such as movement trackers, video cameras etc. against their potential usefulness in order to create an evidence based ideation space.

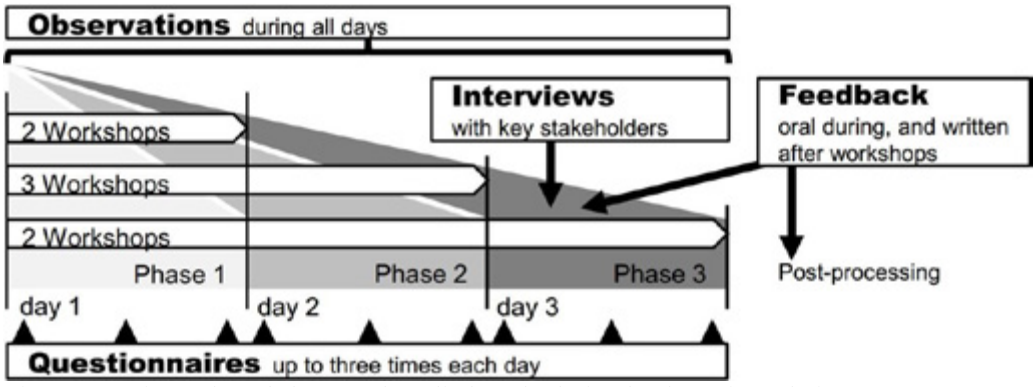

Figure 2 Performed workshops and applied methods for the data triangulation.

4 Results: Key Learnings

Following an emergent coding logic, we cluster our key learnings under the four topics: 'workshop concept, duration and organisation', 'creativity stimuli and spatial dimensions', 'language and cultural requirements', and 'business needs'.

4.1 Workshop concept, duration and organisation

Conceptually, we ended up dividing our workshop in three phases (compare figure 2), aiming at (1) working on the 'right' problem, (2) finding a convincing solution, and (3) preparing the 'next steps' in/for the organisation. Regarding phase one, participants appreciated to re-think the problem and to start 'from scratch' to get to the core questions of the topic. The visualised story of the hunter-gatherer-model [12] supported them in freeing their minds and getting into the 'prototyping mood.' At the same time, they missed having a clear agenda.

In terms of length, we found that three continuous days were very suitable for a high-powered workshop. However, it was not necessary to spend a 'whole' day for each phase. Still, for the participants it was important to complete each phase at the end of a day in order to be given a mental break before beginning the next day with the following phase from a new perspective. As the participants were not used to this kind of working, they perceived it as exertive and asked for a lunch break or to go out into the fresh air. At night, they wished to have some drinks letting the day sink away. Ultimately, we are thus setting up 2.5 day workshops.

The application of different and new methods during the workshop required significant transparency about the methods according to some participants. Some participants incipiently questioned the impact of e.g. an ad hoc customer acceptance test or utilising prototyping material. However, the majority of the participants perceived prototyping as helpful to communicate and to enrich story telling. These participants asked for more prototyping material. Especially the third phase was considered important for 'bringing home' the ideas into the organisations although only a minority of the participants could imagine to immediately starting prototyping 'at home'. In general, going through iterations required structure but also tough time limits to get going. Without these limits, participants missed this 'exciting thrill' and got bored.

The moderator should play an active role, act visibly, and care about the group dynamics. He/She should listen carefully and guide discussions. Some participants think this behaviour requires long lasting experiences in moderating workshops, tremendous expertise in innovation management and product development, and a 'certain standing' in SMEs, in short: seniority. Some expected a professor moderating their workshop.

The formation of groups of participants had influence on the workshop performance. When participants from more than one organisation took part in the workshops, they were unconsciously unwilling to mix, yet heterogeneous groups generally generated and shared more ideas and information. Another problem arose if participants could not (due to appointments in their jobs) take part the whole time of a workshop. They had difficulty to get into the ongoing group dynamics when coming back. Contrasting, changing group formations during the workshop were no problem.

The results of our pilot workshops were three-fold. First and as intended, the participants took home concrete new product ideas, inspiration, and a plan for the next steps. Second, they gained some basic knowledge about different design thinking methods and rapid prototyping. And third, a high motivation and creative competence to perceive ambiguity as a chance, and not as threat, was generated.

4.2 Creativity stimuli and spatial dimensions

Equality among participants played a major role in the workshops. An open space supports equality, e.g. if all participants find space to sit in a circle and not in two rows. This open space is mediated by a big room, with few walls, and few, movable furniture. However, movable furniture (on wheels) got only moved if it was needed somewhere else, not if the potentially nascent space was needed. If some participants stand and others sit (comfortably), the standing ones dominate the discussions. Not-sitting avoids to become lethargic and inactive. In terms of writing, easy and open access to pens, Mindcards [16], and whiteboards fosters equality among workshop participants as everybody can write down easily his/her ideas and inspirations. But also un-do writing was important. Notes which could be erased easily enabled equality among workshop participants as nobody needed to fear writing something 'wrong', i.e. whiteboards are to be preferred over flip charts.

The mood of the participants was influenced by the room. If the space does not look 'perfect', the participants do not perceived pressure to produce 'perfect' ideas but feel free to explore and learn. If the space breaks with conventions, workshop participants feel free to do so with/in their thoughts, i.e. to think out of the box. And if participants see that the space is used for prototyping and handicrafts, they are stimulated to prototype by themselves. Saw dust and oil odour would emphasise this 'hands on'-atmosphere.

Efficient working of the participants was influenced by the following. If participants did not see and easily access prototyping material, they did not use it. Easy access to Mindcards [16] minimised their potential 'production blocking' [17], i.e. ideas could not get lost if all participants could store their ideas immediately. Furthermore, a lot of space for notes had a positive impact on creativity as ideas could be linked to each other, referenced, and developed further. And during breaks, motion and the possibility 'to get away from the rat race for a while' were important to keep up the participants' concentration over a long time.

4.3 Language and cultural requirements

Due to the cultural habits of the Swiss, they need a short round of introductions at the first workshop day. They could not imagine to work together without knowing each other's back-grounds, and personal motivations to come to the workshop. Furthermore, short team building exercises were helpful to get them collaborating. Speaking (and at least understanding) Swiss German is compulsory for the moderator. Speaking High German without understanding Swiss German was not sufficient for the workshop moderation. Speaking English was an option for participants from the cities Zurich and Berne but discomfits participants who were not used to work in this language. We did not held workshops in French (the second most spoken language in Switzerland) but were asked to do so in the future.

Most of the participants appreciated the reflection sessions in the evenings. They suggested having a beer (or two), and were glad about the short distance to a hotel. (The final site of the ideation space is a medieval castle with a wine cellar that ample after session discussions.)

4.4 Business needs

Companies do not only calculate with the expenses they have to pay for sending their employees to an ideation workshop but see also the opportunity costs of work not done, emails not answered, internal meetings postponed, and lost sales. More than 2-3 days is that not affordable for SMEs. Thus, they want to know in advance specifically what they can expect from such a workshop, otherwise they over assess the risk and consider the workshops 'throwing money down the drain'. Especially for transferring the elaborated ideas into the company, participants asked for being allowed carrying home their embodied ideas and functional prototypes. This would help them sharing their experience with their colleagues and to convince them of their new ideas.

Having guests (e.g. extreme users, experts, potential customers, or employees from other companies) during the workshop was perceived as positive in terms of diversity for knowledge spill over and idea generation but was problematic in terms of confidentiality. Furthermore, it needed clear agreements that a workshop was either for idea generation only, or perceived as a 'kick off'-event for a joint collaboration on an innovative product. Due to changing working schemes, the participation of employees was not projectable, and it happened that participants had to leave the site for half a day. This influenced the group dynamics twice: when they left, and when they came back. Especially coming back had a negative influence onto the group dynamics. On the one hand, the group developed its ideas further (which the one had to catch up), and on the other hand, the group itself developed and formed a team (in which the one had to integrate immediately).

With these key learnings, we consider the gained knowledge base as sufficient to formulate the next generation of our workshop concept and to define the first version of the ideation space' interior design at the final premises. Thus, the second research question is answered satisfactorily. In the following, we discuss the most important pain points listed above.

5 Discussion

Discussion proceeds in two sections. Firstly, the key learnings, i.e. the results of our study, are set in context (referring to section 4). Secondly, the approach leading to these results, is discussed (referring to section 3).

5.1 Discussion of our key learnings

The biggest concern during our pilot phase was the workshop moderation. As it turned out, the moderator needs (1) long lasting general moderation skills, is (2) proficient in product development and innovation management, has (3) a 'certain standing' in SMEs, and (4) speaks at least Swiss German, and preferably also French and English. As the forthcoming workshops are scheduled for four months each year, divided in four-weeks lasting slots, and each workshop requires some preparation and post-processing, we are now looking for a bunch of moderators with the above stated skill set.

Regarding the group dynamics during the workshop, we draw the following conclusions: Guests are still very welcomed to our workshops but we avoid conducting workshops with two 'main' SMEs due to the problems with different expectations and confidentially. Furthermore, participants are encouraged to stay for the whole workshop at the ideation space in order to foster positive group dynamics.

During the prototyping sessions, an efficient organisation of the prototyping material would save search time. That would also facilitate the prototyping itself. Furthermore, it would have a positive influence on the working mood which in turn facilitates creativity [18]. Additionally, shorter search times might have an impact on the group dynamics because single team members would not get disconnected during prototyping storming sessions.

Magadley and Birdi [5] investigated brainstorming software to anonymously and synchronically generate ideas in order to avoid production blocking [17]. Our approach with Mindcards [16] is not providing anonymity but enables also generating ideas synchronically in a simple and natural manner.

Regarding the space, the size of the room has an impact on how much people tell about themselves [19] whereas longer distances between people let them feel more comfortable. Our test lab avoided the feeling of too less individual space by providing several niches, e.g. the room-in-room concept or the alcoves for single persons (see figure 1). The final premises will provide even more space in several rooms.

5.2 Discussion of our research approach

Indeed, our control sample comprises only 14 workshop days but the triangulation of four different data gathering methods allowed us to learn fast from different perspectives about the individual stakeholder needs as well as the preliminary space and workshop concept. We were able to gather all relevant data for the space and workshop concept under the boundary conditions (the six criteria) at hand. Thereby, the success criterion is fulfilled and the research question answered. The Hunter-Gatherer Model [12] was an adequate strategy to gain knowledge aiming at establishing a workshop concept and a supporting creativity-inspiring ideation space, both adapted specifically to SME needs in Switzerland. However, we are aware that forthcoming workshops will provide us the opportunity to learn even more about SMEs and their ideation process.

6 Conclusion

Regarding our first research question, we found that the Hunter-Gatherer Model was an adequate strategy to perform pilot workshops, enabling us gaining knowledge about the needs of SMEs in Switzerland. The iterative approach indeed enabled us to set up and continuously improve a preliminary workshop concept, to develop a concept for the interior design of the ideation space, and to generate and refine further research questions and hypotheses that will be tested in forthcoming workshops.

The applied and triangulated methods allowed addressing the second research question satisfactorily. The results are: Our workshops should comprise three phases, and last about 2.5 days for each single SME. The moderators speak Swiss German, have tremendous experience in innovation management, and have a 'certain standing' at Swiss SMEs.

The next steps in our project are the following. As soon as the final premises in the medieval castle are refurbished, we start refining our workshop and interior design concept under real conditions. Furthermore, several measurement tools will be tested against their potential usefulness regarding our research interests such as the impact of spatial dimensions and stimuli to creativity, and the impact of short iteration cycles in early phases of product development. Thus, we will be able to create an evidence based ideation space.

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