ABSTRACT
Design and innovation workshops are common practices to match diverse stakeholders to initiate collaboration for innovation. Due to the complex and multi-faceted processes in such a collaboration workshop, not only the toolkits but also the facilitation of the process needs to be taken into account. This paper discusses the use of the Value Design Canvas, a paper-based tool that is designed to support multi-stakeholder co-design process in a design and innovation workshop. We evaluated the current version of the tool in a multi-stakeholder design and innovation workshop session with a special focus on the quality of the facilitation process. The findings are described by relating facilitator activities with implications for tool (re-)design.

INTRODUCTION
Designing new interactive products and services increasingly requires collaboration between different stakeholders as the complexity of new technologies goes beyond the capabilities of individual companies. Open Innovation is an emerging paradigm in which the companies look for external as well as internal knowledge and resources to incorporate in the product development process. Companies utilize strategic alliances and networks that involve other parties such as competitors, other firms with diverse capabilities, knowledge institutions and users to expand their knowledge (Chesborough 2006). Therefore collaboration between different stakeholders is increasingly valued in design practice (Vanhaeverbeke & Cloodt 2006).

Design and innovation workshops are common practices to match complementary stakeholders. These settings are utilized by companies to become a part of partner networks to initiate collaboration (Chesborough et al. 2006, van de Vrande et al. 2009). The need for new practices and toolkits to mediate collaborative work in such settings and the empirical gap about how the participants in these workshops utilize design toolkits were recently discussed (Heinemann et al. 2011).

In the innovation initiation stage, design and innovation workshops face a particular challenge: they aim both to gather and match diverse stakeholders who are not familiar with each other’s vision and capabilities, and to create a bond between the stakeholder groups through a shared outcome to continue the collaboration. In addition to these, participants of these workshops often expect the outcome to be concrete and the process to be efficient in terms of the invested time. Therefore optimized facilitation of the group process can be a
determinant on the success of these workshops (Heinemann et al. 2012).

To answer this challenge, we developed a paper based tool named Value Design Canvas to support the collaborative design process between diverse stakeholders in a design and innovation workshop setting. The main motivations behind our tool design were to enable the following aspects of the collaborative process:

- **Shared:** to create a bond within the group through the co-development of the idea to support commitment for collaboration
- **Structured:** to provide an efficient process by focused, step by step development
- **Tracked:** to allow the participants to build on earlier comments and each other’s ideas, and to document the outcome
- **Easily facilitated:** to enable the easy moderation of the tool process

The Value Design Canvas frames the group discussion by combining user experience design with business model design perspectives in a structured manner to develop an initial product/service idea. The process starts with an idea presented on a post-it. The group follows a step by step process, first by analysing the design domain and exploring the value design possibilities, then defining stakeholder roles on the business model level, and finally communicating the evolved idea based on the given template. At present it is assumed that a facilitator will support the process of using the Value Design Canvas. A schematic representation of the tool layout is presented in Figure 1.

![General layout of the Value Design Canvas](image)

Figure 1: General layout of the Value Design Canvas

We aim to develop the tool further with a research through design approach, in multiple design iterations. The tool itself serves as a means to investigate the dynamics of the collaborative design process. Therefore we are interested in understanding how the group interaction is shaped around the physical and visual elements of the canvas. The tool will be more widely applicable, if it is easy to learn and use by a facilitator. Therefore we are interested in providing good support for the facilitation process during the Value Design Canvas usage, by supporting the tasks of managing the process and gathering the right content.

The aim of this paper is to examine how the Value Design Canvas is used in design and innovation workshops and to present the implications for a redesign of the Canvas based on the results of a case study. In the following part, first literature on related work and small group facilitation is reviewed. Then a more detailed description of the Value Design Canvas is presented. We will then present the results of the case study and discuss our findings and implications for a redesign in relation to improving the facilitation task.

**SUPPORTING MULTI-STAKEHOLDER GROUPS IN WORKSHOPS**

**RELATED WORK**

Recent work in the Participatory Innovation field (Buur & Matthews 2008) proposed various approaches and tools to mediate collaborative work by engaging stakeholders. To cover the multitude of diversity in the field exceeds the scope of this paper; however we would like to highlight the two major approaches to support the co-creation process in design and innovation workshops.

One approach is to create a common understanding through envisioning user experiences. For instance Brandt & Messester (2004) propose scenario-based design games to engage stakeholders. They aim to provide a structure to design activities through game and play. Inspiration Cards (Halskov & Dalsgaard 2006), IDEO Cards (IDEO 2003) and PLEX Cards (Lucero & Arrasvuori 2010) are the card sets to inspire the designers and other stakeholders based on the frameworks of user experiences. STORIFY (Atasoy & Martens, 2011) incorporates storytelling techniques for communicating and discussing strategies on how to guide a user towards an intended experience.

Another approach is to communicate the business angle with other stakeholders, to explore the possibilities of collaboration. For instance, widely-known tools are the Business Model Canvas (Osterwalder & Pigneur 2009) and Business Model Kit by Board of Innovation, which help to define certain building blocks of a business model and explicitly display them for visual brainstorming on business models. Mitchell & Buur (2010) propose “tangible business model sketches”- interactive sculpture-like mechanisms – to stimulate discussions concerning how businesses create and capture value between different stakeholders including non-specialists like designers. Buur and Laarsen (2010) propose improvised theatre as a means to generate innovative ideas based on crossing intentions.

In multi-stakeholder collaboration settings, the interplay between the capabilities and resources of the network partners is important in value creation (Vanhaverbeke & Cloodt 2006). In addition, having a shared
understanding of the users and value proposition is important for the communication between stakeholders. In other words, the mixture of diverse perspectives and capabilities of different stakeholders is the driving force for innovative ideas. Therefore, combining user experience design and business model design perspectives in the co-creation sessions is valuable for both having a shared understanding and also thinking of the stakeholder capabilities as a means to develop innovative design concepts. Our main motivation is to develop a tool that combines these two approaches in a single design process.

FACILITATION OF SMALL GROUPS IN WORKSHOPS

Frey (1994: 4) provides the definition of facilitation as “any meeting technique, procedure, or practice that makes it easier for groups to interact and/or accomplish their goals” (Kolb & Rothwell 2002). Kolb & Rothwell (2002) remark that although there are differences among scholars and practitioners in the use of the term “facilitator”, they agree on the roles of the person who is responsible for facilitation. This general agreement is based on Bales’ (1950) identification of task and social-emotional needs of a group, which later applied by Schein (1979, 1987) to human relation training and process consultation, as task and maintenance processes. Task process focusses on “getting the job done” and maintenance process focusses on “ways of getting the group’s psychosocial needs met and the development of satisfying relationships among group members” (Kolb & Rothwell 2002: 200).

To inform the re-design of Value Design Canvas with a special focus on the ease of the facilitation process, we evaluated the current version of the tool in a multi-stakeholder design and innovation workshop. We verified design properties of the Canvas related to this classification. The research questions of our study were:

- **Main research Question**: Which changes can be made in the tool design to better support the facilitation process?
- **Regarding the process of the tool (Task – Process)**: Is it easy and clear to follow the process that is proposed by the tool? Is it easy for the facilitator to decide when to move to the next step?
- **Regarding the support for the discussion content (Task – Content)**: Is it clear among the group what content to provide and how to contribute?
- **Eliciting information (Maintenance)**: Is it easy to get the group members into discussion?
- **Use of Post-it notes (both Task – Content and Maintenance)**: Is the use of post-its supported the team enough to comment on and track the discussion?

VALUE DESIGN CANVAS

Value Design Canvas (see Figure 2) is an A0 size paper –based tool that is used with post-it’s in the multi-stakeholder group discussions. It is designed to support the divergence and convergence cycles which are typical in a design thinking process (Laseau 1980, Pugh 1990). The tool proposes a process with specific steps in the discussion, starting from a post-it description of a design idea and ending in a concise template to describe the evolved concept at the end of the session. In each stage, the group comments on a different aspect of the design domain and then the idea, as below:

1. Design domain analysis with user centred perspective
2. Envisioning user experience
3. Business process concept design
4. Concretization with scenarios and product features
5. Communication of the idea based on template

This proposed structured process allows the design group to go through a cyclic design-thinking process together, by gradually refining the design concept from different perspectives in a structured manner. The transition of the discussion focus, from user experience to business model level helps the group participants to communicate clearly about the value proposition and the means of realizing the innovation.

Each stage contains dedicated fields in the tool layout to provide isolated discussion topics for the group. The comments during the discussion are summarized on post-its to document the discussion. Boundary objects in the form of keywords and instructions are provided on the layout to inform and inspire the group participants. Time stamps that are placed in each dedicated field guide the process with time rules to make the group move forward in the process by balancing the time invested on the discussing a specific topic. By this way, the group is steered through a simple structured discussion process from several angles. At the end of the process, the group develops a shared understanding of the design domain and clarifies the initial design idea together over a number of small cycles.

We aim to develop the tool with a research through design approach, through an iterative process. In this sense, we are interested in how the physical (post-its) and visual (layout) elements of the tool shapes and mediates the group discussion in a multi-stakeholder co-creation session.

**METHOD**

In this section we will describe the context in which the value canvas was used, the people that participated in the session and the procedure that was fallowed in the session. We will then explain what data was gathered.

**RESEARCH SETUP**

We evaluated Value Design Canvas in an a multi-stakeholder design innovation workshop, namely *Information and Inspiration Session*, that is organized in the context of EU project ProFit Innovation for Sports Motivation, in 2012, Eindhoven, The Netherlands (see Figure 3). The workshop was attended by a mixed group of stakeholders composed of designers, sports and...
movement experts, user representatives and technology developers/companies in the sports and play industry.

The aim of the workshop was to match complementary stakeholders from the sports and game industry to generate design concepts for the ProFit Sports Innovation Competition. The complete session was planned to be 5 hours long, including an informative and then a creative design session, in which the participants were first informed about the design problem and then worked in groups of 4-5 people from different profiles to develop design concepts. In total 8 groups of stakeholders used the Value Design Canvas. 4 randomly selected group processes were video recorded.

The co-creation process started with an ideation session of 1 hour, in which the design groups first followed 6-3-5 Brainwriting technique to generate design ideas, and then selected 1 potential idea to develop further. The groups then used the Value Design Canvas for 1 hour 20 minutes to develop the selected design idea and clarify the output at the end of the session.

The participants were briefed on how to use the tool at the beginning of the Canvas session with a 15 minutes presentation including an example design case. On each table one participant was assigned as a facilitator. The facilitator role was defined as: to make sure that the design ideas are placed on the Canvas and to manage the time by following the time stamps on the tool.

METHOD OF ANALYSIS

For the purpose of this paper we analysed the complete 80 minutes videos of the use of the Value design Canvas of 2 groups, which differed in terms of their group dynamics: in one group the members were actively participating, whereas in the second group the members were more inactive. The selection of the cases was made after a quick scan of the 4 recorded videos. Our main intention was to observe the diversity of interaction with the tool to inform the next version design for an optimized facilitation process.
Interaction analysis was applied as an analysis method (Jordan & Henderson 1995). We were interested in how the tool supports the group process from working from a design idea to a concrete design concept, by considering the facilitation process. Therefore, as a unit of analysis, we focused on the transitions that occurred during the discussion process: a) Transitions from one design comment to another b) Transitions from one tool stage to another. We observed the facilitator actions to handle the transitions during the process, as these were the instances when the whole group process was steered during the interaction with the Canvas.

The facilitator actions and the group interactions were transcribed into anecdotes and analysed qualitatively to examine how the facilitator and the other group participants deal with the flow of using the tool. The collection of observed facilitator actions is then categorised. We used Bales’ (1950) categorization of facilitator tasks as a main structure of our categorization and refined the categorisation to inform the tool design: We divided Task Actions into two sub-categories, since we were interested in analysing whether the tool supports both the process and the content of the discussion. We defined these 3 main action categories that relate to Value Design Canvas interaction as follows:

Task actions:

a) Tool Process: Supporting the team to follow the process of the tool
b) Content: Supporting the team members to provide the right type of content

Maintenance actions:

Involving the team members in the discussion

The actions and related anecdotes are grouped based on their similarities to derive the related implications for design (see Figure 4). The actions related to task-tool process constituted the actions that relate to instructing the group about the process and the rules of the Canvas, and directing the group to proceed with the next step. The task-content actions were related to clarifying what type of content is expected from the group, by asking questions based on instructions or keywords provided on the Canvas layout, providing extra information or summarizing the discussion points. Maintenance actions were the ones that relate to making the group members involved in the discussion and aligning the group understanding about what is written on the post-its by strategies like reading out loud.

RESULTS AND IMPLICATIONS FOR DESIGN

The grouping of diverse facilitator actions also defined the design implications to ease the facilitation task for the tool re-design. In the next sections we will elaborate on our implications regarding the design changes based on our observations of facilitator actions. We will describe the design implications in terms of The

<table>
<thead>
<tr>
<th>FACILITATOR ACTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarifying the rules regarding the tool process</td>
</tr>
<tr>
<td>Informing about what to do next</td>
</tr>
<tr>
<td>Reading out loud the instructions of the next section to get the group prepared</td>
</tr>
<tr>
<td>Deciding to go on to the next step based on the number of comments placed on a block</td>
</tr>
<tr>
<td>Prompting the group to drop the current discussion and clarify the concept to move on</td>
</tr>
<tr>
<td>Waiting for the group to settle the discussion before moving to the next step</td>
</tr>
<tr>
<td>Proposing a topic for discussion when the group remains unclear/silent</td>
</tr>
<tr>
<td>Exemplifying the content of the next section</td>
</tr>
<tr>
<td>Asking questions based on the keywords/instructions to open up discussion</td>
</tr>
<tr>
<td>Asking clarification questions based on what is there in the previously placed post-it</td>
</tr>
<tr>
<td>Asking clarification questions while writing on the post-it</td>
</tr>
<tr>
<td>Asking a question based on an idea</td>
</tr>
<tr>
<td>Providing extra information/comment on the purpose of the section</td>
</tr>
<tr>
<td>Providing extra explanations regarding the instruction placed on the canvas</td>
</tr>
<tr>
<td>Silently taking notes based on discussions</td>
</tr>
<tr>
<td>Following the discussion by listening and summarize the idea on the post-its</td>
</tr>
<tr>
<td>Giving instructions where it seems it is not clear what to discuss on within the group</td>
</tr>
<tr>
<td>Asking directed questions to the participants</td>
</tr>
<tr>
<td>Reading out loud while writing on the post-it</td>
</tr>
<tr>
<td>Reading out loud what is written on the post-it and asking approval</td>
</tr>
<tr>
<td>Commenting on an idea and writing after approved</td>
</tr>
<tr>
<td>Reading out loud existing post-its to prompt new ones</td>
</tr>
<tr>
<td>Consulting the others about what to do next</td>
</tr>
<tr>
<td>Stating approval/appreciation on the comment</td>
</tr>
<tr>
<td>Encouraging the team members to take the step without too much loosing time by simplifying the task</td>
</tr>
<tr>
<td>Distribute post-it decks and ask for contribution</td>
</tr>
<tr>
<td>Tracking the comments</td>
</tr>
</tbody>
</table>

Figure 4: The grouping of facilitator actions

Value Design Canvas process, contents of the tool sections, eliciting information from the group members and the use of post-its.

VALUE DESIGN CANVAS PROCESS

Rules: Facilitators had some moments to inform the group about the rules proposed by the tool to get the group ready before starting with a new stage of the tool process.

F: We got 5 minutes for this 5 minutes for this 5 min. for that. In a sense exploring again a bit…
F: …but we can jump. (showing different parts) Go here and there and there…
F: …So you are staying. She (the central facilitator) said if you don’t define give-take relations you’re out of the game

Apparently these moments are necessary, both to explain what are expected from the group and how it will be done. One way to integrate these instructive
moments in the tool process is to introduce a kind of pattern that is easy to follow, e.g. before every section.

The short instructions/titles of the sections of the tool were utilized by the facilitators in both groups to get the group prepared for the next step. Reading out loud the instructions was a sign of the start of a new process. This was followed by additional explanation / instruction / example to warm up the group.

At these moments the groups remained mainly silent; attentively listening to understand what is going to be expected from them. The facilitators used their intuitions to decide whether the information they provided was enough to get the group start commenting. They also put effort in clarifying what is expected from the group, by examples or discussion opening questions. One way to support the group at these moments is to give more tips on the layout to help the facilitator in instructing the group.

**Time stamps:** Facilitators utilised time stamps as a simple decision criterion to move to the next section.

This shows that our intention to support facilitation worked well with the time stamps. Although the facilitators did not strictly follow the time limitations because they did not want to break the continuing discussions within the group, the time stamps helped the facilitator in the active group to gather the group discussion back on track with an objective criterion to move on. This avoided the group from losing too much time on one discussion. The time stamps were designed for the specific workshop flow. It is possible to adjust the time limitations for longer workshop settings.

**Size of the tool sections:** We observed that the size of the tool sections worked as an affordance for the facilitator to decide whether enough comments were made on a specific tool section.

The sizes of the sections were determined by the structure of the tool and the post-it size, with a consideration to provide large enough space for contribution. Apparently the emptiness of a section is a direct affordance which signifies that the topic is not elaborated enough. This inspired us to re-consider the size of the sections regarding the necessary input.

**CONTENTS OF THE TOOL SECTIONS**

**Flaws in discussions as a pointer of clarity problems:**
The flaws in group discussion point out to the problems in clarity of the tool sections.

**F:** As far as I understand, this is sort of a user scenario….
This is what happens when you are using it, maybe before and after. And in our case this might be this is when you are at FieldLab. This is maybe why you would go there… I don’t know… what does it mean to go there… and this might be what you do when were there or what would make you come back. Something like that…

At these moments it is observed that the facilitators were puzzled, remained more silent and could not provide any examples/instructions about what to do next. One observed behaviour was to ask others to take part in deciding what to do. At these moments the group decided on a meaningful type of content to support discussion. These instances point to some clarity issues, which need to be resolved in the next design version.

**Instructions/keywords:** The descriptions on the blocks and keywords were utilized by the facilitators to explain what is expected. The facilitators were observed to come up with self-defined questions and explanations to open up discussions based on these boundary objects. We observed that these instances more frequently occurred in the inactive group, to make the group members involved in the discussions.

**Providing examples:** Examples were utilized by the facilitators as a useful way to clarify the content that is expected from the group members, especially at the beginning of a new process stage.

There can be multiple ways of exemplifying the content regarding the specific parts of the tool. In our workshop setting a case example was presented at the beginning of the session with the tool description. Integrating this
example in the tool itself, either with color-coded cards or dummy post-its would be a more intuitive way that helps the group utilize these during the process itself.

ELICITING INFORMATION FROM THE GROUP MEMBERS

**Asking directed questions:** One observed facilitator action to involve the group members was to ask directed questions to the group members.

| F: (Giving explanation on the next step of the tool) Who would give expertise, or money, or… so that we could make this… we already got some stuff, we can stick ourselves there as well… what we think we could contribute… so what would D (company name) do? |
| D: We can do the engineering of the mechanical parts… (F writes the comment on the post-it) |
| F: and A (the company name)? |
| A: The remote system (F writes on the post-it)… |

This strategy worked as it initiated a turn taking process, which was observed to be a clear way of prompting the group members to contribute. Turn taking can be introduced in some specific stages. One stage that it can be useful is the business model concept design part, where the give and take relations are explored. This format would also get the team members feel that the design concept is developed around their specific capabilities and resources.

**Reading out loud the available comments:** Facilitators utilised the already placed post-its on the Canvas to spark more ideas or to open up a discussion.

| F: …and then… (reads the existing post-its loud) “use diverse equipment”, and you “get visuals afterwards and during”… |
| D: You might be able to choose what is there on the visuals |
| F: yeah… (starts to write the comment, reading out loud) |

These instances show that the available post-its inspired the discussion in the later stages. This was an intended design decision to support the convergence process. This action can be more structurally prompted by introducing a simple rule, making a selection among the post-its, to initiate discussion in the next step.

**USE OF POST-IT NOTES**

Post-its are an important element of the Value Design Canvas to track the group discussion. It is observed that the main activity carried out by the facilitators was summarizing the comments on the post-its. This activity was observed to be done mainly in two ways: either as a private activity, or as a displayed social and publicly available activity. This aspect of the use of post-its as an integral part of the Value Design Canvas is elaborated further in Mortensen (2013).

**Writing on post-its in silence** is observed to be done by the facilitators when the group is in an active discussion. At these moments, the main facilitator activity was to track the discussion and summarize the discussion.

**Reading out loud while writing on post-it** is observed to be a frequent activity for aligning the group actions. The idea written on the post-it became a shared decision by this way and informed the others on the process. At these instances the group members waited for the facilitator to finish writing before giving a new comment. In some of the cases, the facilitator further asked to clarify whether the summary of the comment represented the comment correctly. This was followed by a correction/addition from another group member.

**Reading out loud the available post-its** was observed to help the group to have a quick overview of what has been discussed. In several instances facilitators selected a number of post-its on the canvas to comment on. This shows that the available post-its on the canvas helped the group to make convergence at several stages.

**DISCUSSION**

In this paper we presented our analysis of Value Design Canvas usage from the facilitation perspective. Our analysis of the facilitator actions guided us in defining the design implications for making our tool more widely applicable because the facilitation will be easier. These design implications will also contribute to providing more transparent usage with an easier-to-follow process.

Our analysis contributed to our understanding of how the interaction with the tool developed within different group dynamics. Flaws in the facilitation process point to problems of flow in the tool process, which needs attention with the re-design of the tool. The improvised tactics that are used by facilitators point out to the intuitive ways of communicating the tool process.

Our analysis demonstrated that the Value Design Canvas is an applicable tool in design and innovation workshops, which supports the multi-stakeholder teams in creating a shared understanding and developing a design concept together. The insights are based on the analysis of two groups of stakeholders. The workshop setting of our case study was determined by the design brief of the ProFit Innovation Competition and the time limitations of the Information and Inspiration sessions. Further studies will be conducted to examine how other groups will apply the Value Design Canvas working on different design problems and workshop durations.

**CONCLUSIONS**

In this paper we presented a study on the use of the Value Design Canvas. The detailed analysis of multi-stakeholder groups using the tool in a design and innovation session provided important ideas for improving the tool. The improvements are related to providing support for tool process facilitation, content facilitation and maintenance of the multi-stakeholder group discussion.

The main changes that will be made are integrating more boundary objects in the form of cards or dummy post-its to inform the group about the tool process and content and to inspire the discussion. Turn-taking rules with directed questions can be integrated in the specific
steps to prompt the group members to comment. A redesign of the tool layout will be considered with a special attention on the visual affordances and the relation with the boundary objects that are to be integrated in the tool design.

In the next phase of our research, we will examine how well the Value Design Canvas integrates User Experience Design and Business Model Design approaches in a single design process.

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