

EXPLORING STORYBOARDING IN PRE-BRIEF ACTIVITIES

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ABSTRACT

Creating ideas is no longer seen as a challenge within companies, creative sessions and brainstorming is widespread in most companies. However, when creating a design brief there is a lack of tools and methods finding problems and framing situations of interest. This paper examines the characteristics of storyboarding, the making of the storyboard, in pre-brief activities. In an explorative study 54 teams participating in an idea development workshop is analyzed. The workshop was developed using theories from design, visual thinking and narrative, using visual tools in every step with a focus on framing a situation of interest. This study provides an initial understanding of storyboarding in a new area and tentatively suggests that storyboarding stimulate creativity and reflection on emotions in the situation of interest. It also seems like storyboarding stimulates teams in organizing and discussing raw data widely. Storyboarding seems promising as a method but needs to be compared to the traditional way of describing a brief, a written document. An experiment is suggested to evaluate the differences between pre-brief activities made with storyboarding compared to written.

Keywords: storyboarding, innovation, framing, human behavior in design, design methods

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1 INTRODUCTION

The idea boxes at companies are full of ideas and project proposals to create new value for the company and by that increase its profitability. However, most of these ideas are for various reasons left without any further development even though they might be valuable. In this paper the focus is on understanding storyboarding as a method for framing and reframing opportunities for innovation.

There is a growing interest within companies to have new methods and tools to work with in “the front end” of innovation to create potential solutions to the problem. This to take action on the design brief formulated, answering a need or opportunity in the market. However, there are few companies that utilize a designerly way of understanding the opportunity to design for. This phase is often unseen concerning the ethnographical methods designers use. It is when using these methods opportunities for innovation often can be found (Brown, 2009). These activities, however, are typically based on market research (Rhea, 2003) leading to “design brief” documents that actually don’t describe “the problem behind the problem”, but broad interpretations of market signals. Opportunity finding needs to be designed for exploration and discovery, using design methodologies developed for these circumstances creates insights otherwise not reached (Brown, 2009).

When connecting this research to the process of making innovations using design methodology there are several models that explain why, where and how “the front end” plays an important role in innovation processes (David et al., 1994, Cooper and Kleinschmidt, 1995, Khurana and Rosenthal, 1998, MacCormack et al., 2001, Verganti, 1999). However, as Paton and Dorst (2011) explains there are very little design research in the specific area of framing the opportunity except from a few groundbreaking works from Cross (2007), Lawson (1980, 2006) and Schön (1983, 1991). This is also the case in innovation management research according to Darsö (2001), she explains this phase as “What happens before something turns up as a pre-project is rather obscure, in real-life as in literature. At best is described as a chaotic and turbulent phase with certain individuals as central actors who make use of internal networks, intra- and inter-organizationally”. This motivates the scope of this research in creating more understanding of the activities and characteristics regarding opportunity framing and to unlock some hidden parts in “the front end” of innovation.

The objective of this, first step, is to explore storyboarding in team pre-brief activities in early idea development and create an understanding of the characteristics of storyboarding in framing opportunities for innovation. We do this by developing a methodology, DoTank, and use this in 24 workshops collecting data from in total 54 teams.

2 BACKGROUND

The phase of framing the problem is of great importance for the success of innovation, it doesn’t matter how well the process is managed or the design is realized if it’s based on the wrong assumption regarding the problem (Cooper, 1988). This means that it’s crucial to understand and frame the problem in a way so that the opportunities for innovation are in focus in order to know what to bring in to the design space. Cross (2000, 2008) means that the design brief does not always get the attention and priority it needs and deserves in order to stimulate the team to perform a successful project, if more focus can be put to develop the brief, a better result can be the outcome of the design process.

In “Creating the perfect design brief” Phillips (2004) argue that a design brief is a “written description of a project that requires some kind of visual design”, he also states that the narrative format has worked best for him, but with a lack of information about how to construct this narrative format you are left to explore without guidelines or examples. The formal requirements of the design brief could be listed in many different ways, but how to actually perform in the pre-briefing phase little is explained, even though one important question is posed:

“What *exactly* is the problem to be solved?”

This question is something that pursue every manager in the front end of innovation, however using the design perspective in this phase can be relevant according to five different characteristics or attributes (Nielsen, 2009).

- Designers tackle wicked problems and approach all problems as if they were ill-defined.
- Designers are human-centered and have a myriad of tools and methods to approach the user (or the network of stakeholders).
- Designers co-develop the understanding of the problem along with the creation of the solution.

- Designers use abductive reasoning and strive for a solution.
- Designers engage in a reflective conversation with the situation.

This connects the innovation management to design practice alongside the fact that designers use visual thinking in understanding the situation and in the reflective conversation with the situation. With a focus on creating innovative solutions the use of creativity and design methods are praised by researcher within the field of business (Martin, 2009) and innovation (Utterback et al., 2006, Verganti, 2009).

2.1 Framing and reframing

When Schön developed the theory of the “reflective practitioner” he framed the professional practice with reflection and learning processes (Schön, 1983, 1991). This new theoretical frame gave insight in how professionals think about doing something while doing it. Schön describes this as “reflection-in/on-action” that hinges on the experience of surprise. Within designing this is exemplified by the conversation that the designer has with the sketch. Consider this “conversation”, time is an important factor. And the “action-present” zone of time that Schön describes could be very rapid, as in the conversation that the designers have with his sketch, but also stretches over minutes, hours, days or even weeks or months. Schön describes design as a reflective conversation with the situation, the designer “shapes the situation in accordance with his initial appreciation of it, the situation talks back, and he responds to the situation’s talk-back” (Figure 2). Also, designers use of problem solving methodologies and mindsets is related to a chain of decisions which involves reflection-in/on-action, the focus for problem solving is in the "naming" and "framing" phases where the objectives and goal of the project are identified (Wikström and Jackson, 2012a).

Another way of understanding this could be as a type of reframing of the problem space justified by the discovery in the conversation with the situation. When reframing problems the mindset focus shifts from a convergent to a divergent approach, this explorative mindset is an important characteristic of design thinking (Howard et al., 2008) and in innovation making (Van de Ven, 1999, Rhea, 2003).

In the gap between the divergent and convergent approach Tassoul and Buijs (2007) makes an interesting contribution when adding clustering as a step you lift clustering from the convergent approach to the gap between divergence and convergence. This contributes in this specific research by making connections in the transformation of data to information, exploring thoughts and ideas from team members and building an understanding of the design space.

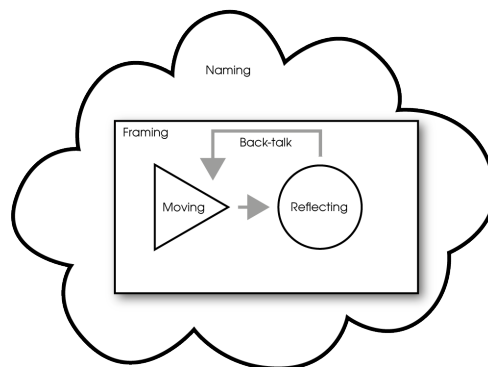


Figure 2. The reflective practice, model developed by Wikström and Jackson (2012b).

In the conversation that designers have with the situation the focus is on one individual interacting with the situation with some kind of media (for designers the sketch), the creation of mental models and the interaction with the media constitute the individual beliefs of the situation. If this situation is left without reflection a misguided belief can be developed, this is described by Argyris (1990) as “the ladder of inference”. If we go through the ladder of inference without reflecting on the data we have observed, making our selection, adding meaning, making assumptions, draw conclusions, adopting beliefs about the world and finally taking actions based on these beliefs the situation is based on our own misguided beliefs and the way through this is described by Senge et al. (1994) as communication through reflection, creating beliefs that reflect the real situation.

This research aligns with the operational definition of frames that Hey et al. (2007) makes. When they studied teams, performing in the front end of innovation, framing and reframing the situation they

found four different phases where framing and reframing occur within design teams. These phases included “pseudo-frame setting”, “individual frames made explicit”, “conflicts made salient” and “common frame negotiated”. Their conclusion was to encourage design teams to focus on raw user data to guide their activities in the early phases and, the sooner an iteration (doing all four phases of framing and reframing) was performed the sooner the students could get a shared understanding of the needs of the users and as they call it “get on the same page”. They further encourage development of tools and guidelines to assist teams in organizing and discussing data in its raw form.

However, there are also some general difficulties that can come about when framing and reframing a situation. Fixation of either the client’s idea of the solution or the designer’s initial idea can be a barrier to innovative ideas (Paton and Dorst, 2011). Some designers might experience fixation when looking at solutions and designs performed by other designers, or restrained by knowledge about the use or properties regarding the problem or object in focus (Purcell and Gero, 1996). Approaching the situation using a mental model based on problem-solving can restrain the designer in the front end of innovation processes (Paton & Dorst, 2011). However, there are psychologists arguing fixation as normative but malleable (Smith, 1995).

2.2 Visual thinking

Our brain acquires information from the visual environment one to three times per second (Ware, 2008). This external information becomes the content of our visual working memory. To be able to facilitate this memory successfully, external cognitive tools must be developed to compensate for limitations in human memory and information processing at the same time as they take advantage of them (Tversky, 1999). A cognitive tool can be a sketch, a map, a chart or a poster, in this case the storyboard is such cognitive tool. Visual representations relieve the pressure on memory since they externalize memory and reduce processing load by allowing the understanding to be based on external rather than internal representations (Tversky, 2007). When working memory is released, new information can be processed and creativity stimulated. On the other hand, representations, pictures, figures and text affect memory. As such, a story can easily change direction since the representations generate new ideas (Eriksson, 2009).

The use of methods for understanding, interpretation and explanation such as sketches are important for designers. Sketches are also central in Schön's explanation of how professionals interact with the situation at hand. Being visual opens up for comments from others, and if the action-present time frame is longer a stimuli of interaction is supported. Thus, visualization is actually an enabling methodology supporting development work.

2.3 From storyboard to storyboarding

The tradition of storyboard, as a pre-visualization tool for the film industry, starts in the early 20-th century with artists like Winsor MacKay and films like “Sinking of the Lusitania, 1915” and thrives from comics in its way of graphic storytelling and visual narrative form. The way of explaining verbal stories with frame-by-frame sketches like storyboards is a way of explaining the storyline for the entire production team involved in making a movie. It also supports the organizing of the team within complicated actions and gives understanding of the whole set before the actual filming takes place (Hart, 2008). The use of storyboard in film industry is about creating visual manifestation of the verbal story, going from abstract to concrete in understanding a whole. The key is to explore the visual appearance of the scene (or situation) and identify what kind of issues that has to be solved to realize the scene.

This traditional use of storyboard can when applied in making innovations play an important role in several phases. Van der Lelie (2006) describe how storyboard helps in reflection and enhancing understanding of the experience in the situation. She also explains that a sketchy storyboard describing the use of a product provokes discussions. This is also something that Buxton (2007) describes when explaining how different styles in visual storytelling support different aspects of understanding. However, these examples are in the “use” of the finalized storyboard, experiencing the finished narrative. Wikström et al. (2011) used storyboarding to capture experience from performed projects. They explain that what is happening in making the storyboard is a creative process. This creative process opens up time for reflection on the situation, creating a common mental image. In the spaces between the sketches the teams doing the storyboard found new questions about the situation that needed to be explained, these questions becomes visible and tangible in the storyboard. The

modularization of the story seems important as well, moving the post-it notes when adding steps in the story helps creating a common mental image of the situation. However, our interest lies in the use of storyboard as a process tool (storyboarding), the actual making of the storyboard. And this is done in an area where storyboarding is completely new, the pre-brief activities of framing opportunity for innovation.

2.4 Narrative

In the context of storyboarding narrative is central since it is a way for individuals to organize their life and create order by connecting different parts of life into a coherent whole (Abbott, 2008, Czarniawska-Joerges, 1997). Storyboarding is one way of organizing events in a time frame, to understand its context and appearance, creating meaning. Abbott also explains narrative as a “representations of an event or a series of events”. However, narratives are not only constructions of meanings, but are a means for making and moving ideas in an organizational setting (Whittle and Mueller, 2008, Kelley and Littman, 2005).

In understanding how construction of stories takes place the concept of “closure” is used. Closure is best understood as something we look for in narrative to resolve, or *close* (Abbott, 2008). This means that in the construction of a narrative the search for closure is inevitable and something that will occur in the process. This closure could be triggered by either suspense or a surprise in the narrative. As mentioned the act of surprise is also an important ingredient in the reflective practice.

2.5 Summary

When framing and reframing a situation a divergent and convergent approach is used and an opening and closing of the “plot” takes place. This “plot” is characterized by a series of events that constitute the actual situation and the act of surprise in constructing the story explaining the situation.

The reason for using storyboarding in the workshop was to tell stories in order to create understanding of the culture in where the situation actually appears and by that open up understanding on where to create meaning in the situation. We see storyboarding as a “shortcut” to create common understanding among diverse actors, yet emphasizing the diversity in the team. Mapping action into visual appearance is a way of simplifying and bringing clarity to situations, as well as to create a common mental image of the situation. The process moves from “just being a beliefs” to inviting actors to take action and create a deeper shared understanding of the situation.

3 METHODOLOGY

This study included several steps, starting with the development of the DoTank methodology, after which the workshop was run and all the material (the visual tools and storyboards) was collected. As the last step in collecting data, a group interview with the facilitators was made. The analysis was performed using pattern matching and clustering of the data, followed by an interpretation using the theoretical framework.

3.1 Developing the DoTank methodology

The DoTank methodology was developed from the theoretical foundation of design, visual thinking, and narrative. The methodology should support idea development in short workshops, 90 minutes. Going from an area of interest to a concept description, where the concept highlights the framing of opportunities for innovation. Using the theory developed by Schön (1983, 1991), the activities were structured in a concrete way (Figure 3). The authors are aware of the fact that this theory springs from how professionals individually think in action and in this context teams with both novices and professionals participated. During the development three workshops was staged in order to evaluate the methodology, the initial idea was to use storyboard as a in the “moving-reflecting” phase. However, during testing new understanding of storyboarding (the making of the storyboard) was developed. This resulted in restructuring the order of the tools and use storyboarding as a tool for framing the situation.

3.2 Performing the workshops

The setup of the workshops was in the context of a large scale project called “Tipping point”, an exhibition at Kulturhuset, the cultural centre in downtown Stockholm. The objective of the exhibition was to open people’s eyes to the environmental hazards that threaten the earth and to make people

aware of the consequences of human action to meet these threats. As a part of the exhibition, an innovation contest was arranged with the aim of generating ideas about climate-smart lunches, meaning lunches that are generally more sustainable than the alternatives existing today. Different themes were introduced in order to highlight the context of climate-smart lunches: commodities, packaging, transportation, cooking, recycling, and the whole meal as a concept. At the beginning of every workshop the facilitators introduced the specific theme and briefly explained the process. In this broad framework the DoTank methodology was used in order to develop ideas into concepts, framing opportunities for innovation.

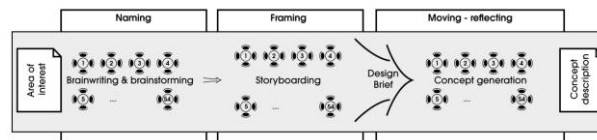


Figure 3. The DoTank methodology visualized.

The study is based on 24 workshops during a period of two months with in total 54 different teams participating in the contest and performing a DoTank workshop, each team consisting of three to five individuals.

Every step in the DoTank is supplemented by a visual tool shown in Figure 4. The first step for the teams to perform is an individual brainstorm (brainwriting) for about 10 minutes in order to clarify their individual beliefs and perceptions about the situation; this step is facilitated by a visual tool in which three questions about the future are posed. Who or what affects the area? Is there any uncertainty in the field and in general? What are the current trends, generally and specifically? These questions were posed in order to open up the mind for the specific theme and create the first frame of the situation. Since this is done individually, everybody in the team can make their voice heard in the next step, which is information sharing using brainstorming.

The brainstorming session starts by the team members sharing their thoughts and beliefs about the future. They are encouraged to build on each other's information and add new thoughts and information that comes to mind during the brainstorm. Towards the end of this step, which lasts for about 20 minutes, the group is asked to focus on one situation or issue that they find most intriguing or interesting to continue working on.

When continuing to the next step the teams are instructed to draw and tell a story of the situation they have focused on using a storyboard. Towards the end of this step the teams are again asked to focus on one specific part of the story from which to develop their concept.

The last step creates conditions for others to understand the concept; it also makes the concept concrete and helps moving it forward.



Figure 4. The visual tools supporting the different steps in the methodology.

3.3 Analysis

When analyzing the data, a theoretical framework based on Schön (1983, 1991) and Hey et al. (2007) is used. We propose that storyboarding connects the two theories and can be a tool for teams to make conflicts apparent and negotiated. We suggest that the brainwriting and brainstorming parts of the workshop support the “pseudo frame setting” and the “individual frames made explicit”, and that the storyboard supports the “conflicts made salient” and the “common frame negotiated” steps (Hey et al., 2007) p. 94. When connecting the reflective practice to the framing cycle, bringing storyboarding into idea development the characteristics of storyboarding can be understood regarding framing and reframing activities.

The methodology may invite questions about the generalizability and correctness of the findings due to the short time frame of the workshop, 90 minutes. But there is also some concerns regarding the participants attitude to perform in the workshop. These two aspects actually support each other since

the short time frame creates a more open mindset to perform in the workshop, not saying that this is always the case. However, after the series of workshops a group interview with the facilitators was held in order to get their perceived feelings on the attitude of the participants and the overall atmosphere of the workshops. This interview gave insights that most of the participants were focused on the topic.

4 EMPIRICAL FINDINGS AND DISCUSSION

Using the framework of Schön (1983, 1991) and the findings of Hey et al. (2007) concerning the four phases of the framing cycle we will discuss the characteristics of storyboarding in the context of pre-brief activities in idea development.

We link back to the objective of this paper to explore the characteristics of storyboarding in team pre-brief activities in idea development. A methodology (DoTank) was devised for idea development in 90-minute workshops focusing on the use of storyboarding as a bridge between naming and framing the situation of interest in order to understand the characteristics of storyboarding. The analyzed material was the visual tools used by the 54 teams during the workshops. The analysis of the material was made by first going through every team's material individually following the concept from the last step to the first step in order to understand when in the process the idea for the concept first came to mind and then a deeper analysis of the storyboard was made in order to understand the situation or issue described. Last a comparison between the material of all 54 teams was made in order to look for patterns and common characteristics of using storyboarding in idea development. The findings are presented as a whole but focus on the different steps in the analysis; first the results regarding the teams' concept development are presented, then the specific storyboard aspects and finally the patterns and common characteristics are presented.

4.1 Team concept development and the use of Storyboarding

In Figure 5 a story about a crop's way to the customer is outlined. The story begins in a field and goes via transportation to processing in a factory. The story is split up by a big cross. The last two squares show how crops are cultivated on roofs. The first of these seems to be a villa and the second might be a store. The story is from the beginning a descriptive process, but when the team members reach the processing factory they suddenly deviate from this and start telling a new story.

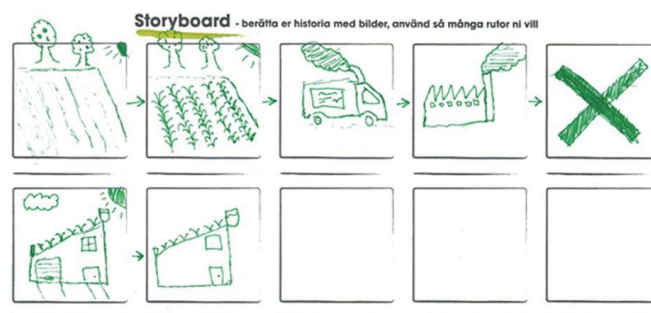


Figure 5. One example of idea generation using storyboarding

When following how the concept has been developed, understanding when the idea first came up, it seems like storyboarding actually stimulate creativity and opens up for idea generation in addition to spotting the opportunity for innovation. One reason for this could be that the storyboard externalizes memory and reduces processing load by using external representations. This externalization releases working memory capacity and stimulates creativity. It appear hard for the teams not to start creating ideas when drawing and telling the story of the situation. When the story is divided into frames (modularization), a transformation between the frames occurs and a gap is identified, e.g. indicated by the arrows in Figure 5. This gap in the story opens the plot for creativity and ideas are created that close the story. A new story begins to take place originating from new ideas that pop up in the gap between the frames in the storyboard. The story continuously describes the situation in focus but with a new direction not seen in the material from the earlier steps, resulting in a base for further development.

The idea generation performed by the teams during storyboarding is something not expected, but the fact that it occurs brings new light to storyboarding in this context. The idea generation could spring

from an unexpected discovery in the story leading the team in a different direction and opening the plot to find a closure in the story. The search for a closure is inevitable and an important part of a narrative. It seems like it could also be an important part of creating a story in idea development. The opportunity for innovation occurs in the spaces in between the frames of the storyboard resulting in a new direction of the story (a surprise) leading the team towards idea development.

This also implies that storyboarding actually creates a fixation of the idea early in the process. This could leave ideas inadequately explored, which in the end could lead to ideas not corresponding directly to the opportunity spotted. Or even ideas built on information not deeply rooted in the situation. The early fixation of ideas presented in storyboarding is an important discovery and should be taken seriously depending on the risk of failing to spot opportunities for innovation further on in the process. The fixation could be conscious or unconscious and is often explained by the fact that what has been seen cannot be unseen, meaning that if a design solution comes up early in the process, it may dominate the entire process. The important thing here is to know that storyboarding can bring fixation into the process and that this fixation can be accepted.

4.2 The situation in the Storyboard

In Figure 6 the story is about food shopping. The situation described is focused on ingredients needed to make a taco dinner and their packaging. The focus is not on shopping for just any food but shopping for one specific meal. The team later developed a deposit system for plastic and paper packaging. The opportunity can be seen in the third square in the storyboard, where the vegetables are put in plastic bags for transportation home.

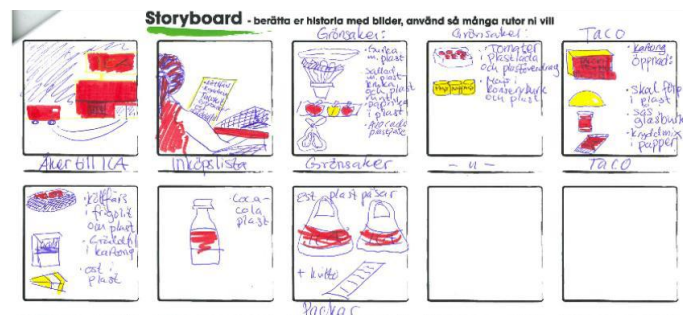


Figure 6. The focus in the storyboard.

As brought up by Wikström et al. (2011) we can clearly see the modularization of the story. When drawing and telling the story in a storyboard you are forced to divide the story into modules in order to fill in the blanks in the storyboard (as shown in Figure 6 above). The format of the storyboard supports the modularization of the story since the frames are printed on the storyboard. This modularization also supports the framing and the negotiation of the situation to create a common frame. This common frame is also supported by the focus that storyboarding brings to the process; since it forces you to pick a situation to tell a story about, it narrows the focus and supports the framing of a situation. The story is divided into modules that can have different resolutions. The resolution also gives information about the focus of the situation and the concreteness of the story told.

4.3 Summary

Creativity is stimulated by the narrative way of exploring a situation. The structure of the storyboard encourages the teams to divide the story to describe in modules and adds concreteness to the situation and through this new information to take action upon. The gaps in the storyboard transform the story to the next frame and this transformation opens up for new interpretation among the individuals.

Storyboarding also seems to generate a reflection on emotions in the storyboard. This is seen in both examples. This could create an understanding of the emotional challenges involved in the problem. This indicates how storyboarding is connected with the human-centered design approach since the stories told involve human emotions and are developed on a basis formed by activities and situations concerning human interaction with products, services, or systems. The focus on one specific situation that we can see in the storyboard could be a result of human centeredness. Being forced to pick a story to tell, storyboarding places you as narrator in the centre of the story at the same time as it put the situation in focus (Figure 6).

It also seems like storyboarding helps in shifting the mindset from divergent to convergent and influences the clustering of information in a concrete way. It could be that drawing and telling the story of interest clusters the information in a way that is easy to grasp and opens the plot for negotiation. In Figure 6 the packaging of all food is clustered and the sketches are both sources of information and negotiations of the opportunity.

5 CONCLUSION

This first step in understanding storyboarding in team pre-brief activities framing opportunities for innovation suggest tentatively that storyboarding can be used as a method to stimulate creativity and reflection emotions in the situation of interest. But also be used as a clustering object, negotiating the situation described in the storyboard. This new information opens up for understanding storyboarding as a creative tool used to frame and reframe opportunities for innovation in pre-brief activities.

Storyboarding could also be a tool for transformation of data into information in a narrative format as well as exploring the ideas and thoughts through the sketches in the storyboard. This since it actually creates time for reflection in the team. This indicates a contribution in developing knowledge on group level as well as in individuals, stimulating teams in organizing and discussing raw data.

These initial understanding of storyboarding in pre-brief activities opens up for a more focused research regarding the use of storyboarding in comparison to the traditional way of working, writing documents. In order to understand the difference an experiment is suggested to explore the differences between storyboarding and written briefs in team pre-brief activities.

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