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Staging Collaborative Innovation Processes

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Abstract: Organisations are currently challenged by demands for increased collaborative innovation internally as well as with external and new entities - e.g. across the value chain. The authors seek to develop new approaches to managing collaborative innovative processes in the context of open innovation and public private innovation partnerships. Based on a case study of a collaborative design process in a large electronics company the paper points to the key importance of staging and navigation of collaborative innovation process. Staging and navigation is presented as a combined activity: 1) to translate the diverse matters of concern into a coherent product or service concept, and 2) in the same process move these diverse holders of the matters of concern into a translated actor network which carry or support the concept.

Keywords: Innovation; design; matters of concern; staging; navigation; intermediary objects; Open Innovation; Users; Collaboration

1 Problem

Organisations are currently challenged by demands for increased collaboration internally as well as with external and new entities - e.g. across the value chain. Examples of such new collaborative partnerships are public private innovation (PPI) efforts where participants enter into collaboration from diverse innovative traditions and distinct practices. In line with open innovation efforts, a key argument for PPIs is the exchange of fruitful and useful knowledge and co-development of new, innovative solutions. But while knowledge exchange and co-creation might sound promising at the managerial strategic level, this also has the potential of creating sources of tension between a diversity of perspectives carried by actors and positions in the value chain. These actors represent a range of traditions, knowledge practices, interests, values and goals - matters of concern – which gives rise to misunderstandings and mistrust. These challenges point at the need for developing new approaches to manage collaborative innovative processes in the context of open innovation and public private innovation partnerships. Because, if navigated properly contradictory matters of concern not only create tension but also have the potential to enhance creativity and enable translation and negotiation of knowledge.

2 Current Understanding

For more than 10 years, companies have increasingly committed themselves to open innovation efforts opening themselves up for collaboration and exchange of knowledge with partners from other industries, public organisations, customers, end-users, and other actors from the value chain at a strategic level (Chesbrough 2006; Prahalad & Ramaswamy 2004). According to Enkel and Gassmann (2010) open innovation has developed from a small club of innovation practitioners mainly in the high-tech industry to a widely discussed and implemented innovation practice. But, while open innovation hardly is a new phenomenon (Pavitt 2006) it has developed from a mainly business-to-business collaboration, involving explicit strategic concerns as well as informal knowledge exchange between companies and their collaborative partners. Either way, the open innovation paradigm, while opening up the organisational boundaries maintain a highly firm centric strategic perspective. The core of the open innovation concept stresses the management of inflows and outflows of knowledge in order to accelerate innovation and expand markets for external use of innovation (Chesbrough & Bogers 2014). In this way, a company can create value out of idea spill overs from their R&D efforts and make better use of external ideas and technology in their own business.

The firm centric perspective is also present with the work of von Hippel although he stresses the distributed nature of innovation and perceives open collaborative innovation as a public good (Baldwin & von Hippel 2011). But, while von Hippel and other scholars (Prahalad & Ramaswamy 2004; von Hippel 2005) sees e.g. end-users as sources of ideas and knowledge that an organisation can tap into, others (Buur & Matthews, 2008) point at a general lack of sensitivity towards the nature of knowledge transformation and negotiation processes taking place in complex collaborative efforts across diverse actors.

Recently, scholars such as Frow et al. (2015) have suggested a holistic design perspective on co-creation within the context of innovation management. Here, they point at the highly general nature of literature in co-creation and the lack of guidance for in-depth exploration of opportunities for co-creation. The framework offered point at a number of ways to design co-creation discussing the different categories and dimensions such as motives, forms, the engaging actor, platform, level and duration of engagement. But still, the work examines co-creation design from the strategic perspective of the lead firm by considering multiple actors and macro-level design. Consequently, it draws on empirical studies of the executive level and it does not address the process of collaboration including a multitude of actors.

Ollila and Yström (2016) point at the multiple actors involved in collaborative innovation with diverse and moving preferences and view on the collaboration and hence directs focus from the firm-centric position towards a more collaborative one where design thinking is seen as a way to support this endeavor. They portray collaborative innovation as fluid and messy, and suggest collaborative innovation to be appreciated and utilized for its specific nature in order to achieve the desired innovation. But again, while pointing at collaborative innovation as a special form of innovation they do not address the collaborative processes.

From the engineering design tradition, design is viewed as a problem solving discipline, where problems and solutions co-evolve (Dorst & Cross 2001) and where design is viewed as a distinct way of knowing. More generally, within design thinking, design is rather understood as a situated, contingent practice carried by professional designers and those who engage with design activities (Kimbell 2011). But, while IDEOs User Centred design thinking approach (Brown, 2008) consider the designers as the experts studying and consulting users, the Participatory Design from Scandinavia (Björgvinsson et al.,

2012) have for many years been concerned with the challenges of involving a number of actors in design processes in knowledge sharing activities. Participatory Design builds on a collaborative approach, where the users are seen as partners in the design process (often referred to as ‘genuine’ participation) (Simonsen & Robertson 2012).

Though Participatory Design has been around for a while, the industry has not yet fully embraced this approach. One reason might be, that Participatory Design has been criticized of being an academic endeavor too focused on development of methods and too far from the ‘market’ (Buur & Matthews, 2008). With their concept of Participatory Innovation, Buur and Matthews draws on elements from both Participatory Design and co-creation to involve not only end users, but also a whole range of actors in the design process.

A central element in both these design traditions is the use of mock-ups and prototypes for representing ideas and transforming knowledge. Bogers and Horst (2014) draw upon the ideas of Design Thinking to discuss how collaborative prototyping might be seen as a way to translate and transform knowledge using prototypes as intermediary objects (Vinck 2012).

Also from a design driven innovation perspective, Verganti (Verganti 2008) points at the management of external translators in the pursuit of radical innovations redefining the meaning of technologies and products. But again, Verganti’s perspective is the discourse of the firm.

While we share the ideas from the design perspectives on using materiality such as prototypes as a means for collaboration and knowledge sharing as well as the translation of meaning, we miss a discussion about the matters of concern at stake for the involved entities. How might matters of concern (Latour 2004) be identified, negotiated and aligned to inform the object of design? In other words, how can a staging perspective on design thinking assist collaborative innovation efforts?

To answer this question we draw on a combination of design thinking emphasising the staging of design (Pedersen 2016b) and actor network theory with its focus on translating matters of concern into stable networks (Callon 1986; Latour 2004; Akrich et al. 2002).

A key perspective in the staging of collaborative processes should according to our understanding be concerned with: 1) to translate the diverse matters of concern into a coherent product or service concept, and 2) in the same process move these diverse holders of the matters of concern into a translated actor network which carry or support the concept.

3 Research Question

The aim of this paper is to investigate and suggest how to stage collaborative innovation process across public private innovation entities and navigate a number of diverse prototyping spaces for negotiating matters of concern.

4 Research Design

This paper is based on exploratory ethnographic research and participant observation aiming to investigate how actors from the value chain are involved and engaged in design and innovation projects – especially in a public private innovation setting.

One of the authors of this paper was engaged in a specific design project driven by a large electronics company with a sizable product-portfolio within the healthcare sector.

The company is a major player within the context of designing products, services and systems to both public and private hospitals around the world, and the specific project in question revolves around the design and development of a new app for stroke patients admitted to the hospitals' neurological ward.

The research was conducted in the period of 2014-2016 across different sites including the company headquarters and 3 different hospitals in Denmark. Traditional ethnographic field study techniques, including observations and qualitative interviews allowed for in depth knowledge about the motivations of diverse actors both from inside and outside the electronica company, while Participant observation (DeWalt et al., 1998), permitted the author being an integrated part of the project team partaking in some of the design activities.

5 Findings

Developing a stroke-app

What we find is missing from the firm-centric generic view on knowledge translation and transformation is an in-depth understanding of how such collaborative efforts involving a range of diverse actors are (or are to be) staged and navigated in order to support innovation. The following case will exemplify the diverse matters of concern of the distinct actors involved in a co-design project in a large electronics company in the Netherlands.

The design brief: Stroke as the main concern

The research and design team of the large electronics company was encouraged by their head of section to focus on neurology wards at hospitals and identifying opportunities within the stroke-area to help patients get a speedy recovery after having suffered a stroke and while still being admitted to the hospital. Hence the matter of concern of the new project team was to design a solution that would speed up the recovery process of stroke patients. These patients are in a very delicate state, and some of them suffer from limb weakness, cognitive dysfunction, and impairment of language and spatial perception. Hence due to the potential difficulties in engaging directly with the patients, the company researchers instead approached neurologists whom they had collaborated with on previous occasions to identify new research and design opportunities related to the recovery of stroke patients.

Pre: Problem identification at the hospital

And based on dialogue with neurologists at hospitals in the Netherlands and Belgium, the research team became aware that stroke patients enjoys visits from family and friends, but that they also quickly tire from these visits and that this potentially limits their chances of a speedy recovery due to exhaustion. This was obviously a matter of concern for the neurologists who's striving to support their patients' experience of quickly beating their impairments and returning to life, as they knew it before the stroke.

Pre: Initial Brainstorming

What does the patients have to say? The designers figured, that in order to engage the patients in the design process they would need something concrete to show them and

allow them to comment on. So with this in mind as well as the neurologists' matter of concern about allowing the patients to rest, designers and researchers from the electronics company gathered for a brainstorm session. In staging the brainstorm session, the researchers came to translate the concern of the doctors about providing rest for the patient to a matter of shortening the visits from friends and loved ones. Together they came up with 8 ideas of how to signal to the visitors that the visiting time was up, and that they had to leave. Most of the ideas involved apps, coloured lights and noise sensors as central element, which might be a reflection, that these technologies were familiar to the company employees as they were already in their product portfolio. To be able to communicate these ideas to the patients as well as loved ones and hospital staff, one of the designers from the small research and design team translated these ideas into 8 tangible storyboards on A4 paper each containing around 6 illustrations with supplementing text underneath.

First: A Designer is gathering insights at a neurology ward

Prior to entering the hospital the designers thus began staging the engagements to be carried out. The 8 storyboards were to be central elements in the interactions with patients, doctors, nurses, physiotherapists and relatives during field visits to hospitals in the Netherlands, Belgium and Denmark as they were to be used as boundary objects to encourage mutual learning between the designer and the other actors. The interactions was staged to support the designers in getting insights from the actors on two aspects 1) to learn whether many and long visits from family and friends was also a matter of concern for the patients and 2) whether some of the 8 ideas represented by the storyboards would support a speedy recovery of the patients.

But while the designer was able to stage the interactions by purposefully selecting which type of actors was to be engaged at the hospitals (patients and staff) and design and develop which materiality or prototype to bring to the interaction, however, she had to navigate the circumstances and situated practices in terms of who was admitted and who was working during the field study, the cognitive and physical state of the patients, the time available from the busy doctors as well as where the interactions would take place (e.g. at the patient's bedside, in the busy hospital halls, the doctors office, at a noisy lunch room etc.). Some decisions could be made before the visit while others was made due to chance and opportunity for the designer to seek and grab when provided / showing.

The neurologists and other staff shared concern expressed by the neurologist initially engaged that rest would benefit the patients, however having seen the storyboards representing the 8 ideas some of the staff questioned whether actors other than the patient should limit the visits. And during dialogue with patients, the designer learned, that stroke patients loved visits from close relatives but that they would prefer not having visits by distant friends and acquaintances as this was more tiring for them. E.g. one of the patients was currently doing time in jail – and he was less than happy when some of his friends came to visit, as he was not comfortable showing weakness in their presence. In fact, many patients expressed their frustrated with not being able to control who came to visit and when. Hence, the matter of concern of the patients was slightly different from the one promoted by the hospital staff. Rather than being able to control the length of each visit, the patients was more concerned controlling *who* came to visit and when.

Second: The designer is sharing the insights learned with the rest of the project team

Having uncovered that the matter of concern of the patients is somewhat different than the one of the doctor, the designer is eager to share this new important insight with the rest of the project team. For this purpose she stages a workshop with the project team. She invites the team to participate, books a creative meeting room at the company premises to create a creative mood and organises her findings using materiality such as print outs of the storyboards as well as pictures and quotes to work as boundary objects for translating knowledge in terms of insights from the field visits. Using materiality to communicate her findings and user-stories to provide context for the insights, the designer managed to create a shared understanding among the members of the project team, that the matter of concern they were working was no longer that of shortening the visits from family and loved ones but rather to give the patients control of who where to visit and when. The team members were easily aligned as the matter of concern for the patients was within the scope of the matter of concern of the project team, as proposed by the department manager, which was to support a speedy recovery of stroke patients. Hence, what was the concern of the patients clearly aligned with the already existing network of the organisation.

Third: A new concept is made

With a starting point in the challenge that patients wanted to be more in control of their visits, three of the project team designers sat together and brainstormed on the nature of the final concept. In this process an idea began to form using elements from some of the ideas illustrated on the storyboards but more related to how the patients would experience a larger degree of control of who their visitors were and when they would come by. This idea involved an app with different functionalities and was materialised by sketches and later more professional looking illustrations that was to be shared and communicated with the rest of the project team. The new concept supported the matter of concern of both the patients and staff, as the patients would gain more control and hence tire less from unwelcomed and unwanted visits – which was still in alignment with the overall concern of the project team.

Next step was for the front end and back end designer to detail and develop a nearly functional prototype of the app, which could be used to engage with patients and hospital staff as well as with internal actors in the organisation such as business unit managers who was eventually to sell the app together with other solutions from their product portfolios.

Fourth: A project manager shows the final prototype to the Business Unit managers

The project manager of the project team staged the interactions with the business unit managers, as he was a convincing salesman, which was needed to convince the BU managers. He met with the managers at the company premises, told the story of the app, how the users liked it, and demonstrated it's of the key functions. However, as it turned out, the BU managers did not appreciate the app, as they could not see how this new app would support their current products – which was their main concern. And as the app failed to align with the matter of concern of the BU managers, this became the end for this particular app - for the moment. The project team was not ready to give up on their idea, and instead they started navigating to understand the concerns of the BU managers

and the business better. Once they had grasped these concerns, they started a process of aligning controversies and conflicting matters of concern of company management, the stroke patients, the hospital staff and the BU managers by synthesising and developing a new app focusing on stroke diagnostics.

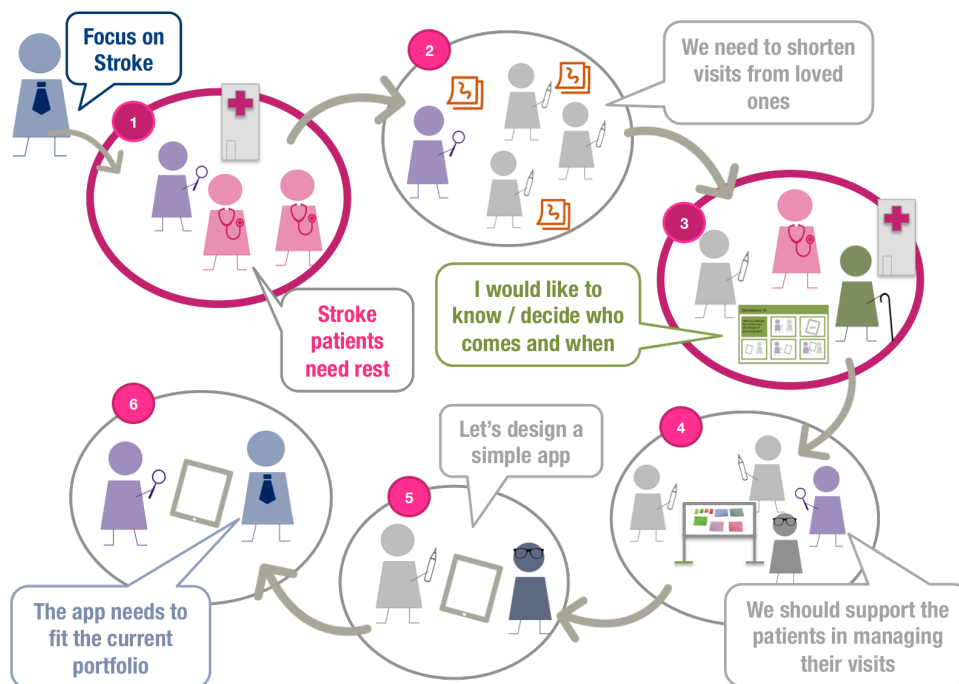


Figure 1 Overview of temporary spaces and the matters of concern identified.

Even though the app was not commercialised in that particular form the case still provides a unique look into the collaborative design process of a large design and electronics company collaborating with both public and private actors.

The case illustrates how not only managers but in fact a range of diverse actors with equally distinct matters of concern are to be taken into account in design and innovation processes within companies. The design of the app providing patients with the means to managing their visits is not developed based on a top-down management decision nor on inputs from lead users but is the result of a collaborative effort and continuous negotiation of matters of concern. Hence what is the main matter of concern in terms of patients' recovery changes as various actors are involved and is thus subject to exploration and negotiation. In the beginning, the neurologists define a matter of concern which is later modified by first the project team, then the patients themselves and later by the company business unit managers who comes into play based on navigational efforts of the design team. This leads to another central point, which is that, no single designer but rather an entire design team at different moments takes charge of the staging activities. This also includes designing different types of materiality in the form of prototypes like storyboards, pictures, and apps, which appears to perform as valuable potential intermediary objects (Blanco & Boujut 2003) for the negotiations about matters of concern.

6 Contribution

Innovation is truly a distributed process that calls for navigation of temporary 'spaces' for design and innovation (Pedersen 2016a; Clausen & Gunn 2015) involving diverse actors and types of materiality. In order to share and negotiate multiple, contradicting matters of concern, materiality in the form of prototypes like storyboards, pictures, and apps appear to perform as valuable potential intermediary objects for such negotiations. So, staging includes identifying actors as well as their matters of concern but also includes designing prototypes and other materiality throughout the design process – also in the early uncertain stages.

The authors promote a staging perspective for identifying a matter of concern for the actors involved in a collaborative innovation project with the aim of designing new products, services and systems. We highlight the importance of considering the contribution of numerous actors during the design process. Rather than focusing on a firm-centric setting and executive's perspectives only, our focus is the research team and how they in the outset identify and attend matters of concern and relate to relevant actors. Executives are one actor-group amongst many other actors in the network with different matters of concern. This means that the process can not be characterized as top-down only, but rather manifests itself as a result of mutual negotiations and alignments.

Furthermore, the case illustrates an example of *how* different actors are involved in the design process and support the work of researchers who promote the role of materiality and prototypes as a means to foster translation of knowledge and creativity in design (Buur & Matthews 2008; Bogers & Horst 2014).

7 Practical Implications

Project managers as well as designers involved in open innovation projects may benefit from the findings by being able to better strategically structure, stage, and navigate the development work while engaging diverse actors in the process. To sum up, practitioners should be aware of the following tasks and concerns when staging collaborative design processes:

- Identification of relevant actors and their roles – both within the project team but also in terms of actors from the entire value chain (for instance the customer might not be the same as the end-users)
- The communication strategies are also important, and here different types of materiality have the ability to perform as intermediary objects to allow communication across different knowledge domains both within the company in question and between the company and other actors and organisations.
- Handling matters of concern entails identification, negotiated and alignment. There are many matters of concern at stake in complex design projects which needs to be aligned. Hence, it is not just a question of top-down thinking and 'ordering' open innovation projects.

The case illustrates how matters of concern might be handled in an open innovation setting. However, in this paper we do not go into further detail in terms of presenting how specific methods is applied and used. The next step would be the development of a new set of methods and tools to make design and innovation (negotiation of controversies) work at a strategic level.

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