Mapping what actors know when integrating resources: Towards a Service Information Canvas

Stefan Holmlid*, Petra Björndal**

Stefan.holmlid@liu.se, Linköping University

Petra.bjorndal@se.abb.com , ABB Corporate Research and KTH, Royal Institute of Technology

Abstract

Even though service is described as actors integrating resources to achieve values, research on perspectives on knowledge that these actors have when integrating resources has not been part of service design research. In this paper we experiment with a technique, based in a service scenario, to map what actors know as a consequence of the events in the service process. We suggest that the technique called Service Information Canvas is valuable in a service design toolbox, and give access to understanding of service processes that is not currently available through other design tools.

KEYWORDS: Service Information Canvas, visualization, diachron, synchron, knowledge exchange, co-creation

Introduction

Service is sometimes described as the value created by actors integrating resources in systems and through institutions (Grönroos, 2008). In this definition a lot of assumptions are being made. One such assumption is that the actors integrate resources based on their knowledge. Sometimes this knowledge is regarded as one of those resources that actors are integrating; which in effect assumes that actors have some meta-knowledge to use knowledge as a resource. For the purpose of this paper, we will view actors as agents, where knowledge is not regarded as an external resource. Knowledge in this sense, may both be gained from education and training, accumulated from experience, and gained in a specific situation.

As an outset for design, this poses difficulties as well as inspiration. In design for service a lot of emphasis has been put on mapping actions, actors, events and systems of resources, and using different visualization techniques to materialize these aspects (see e.g. Segelström, 2009; Segelström & Holmlid 2011). Some of the techniques show how, whatever is visualized, develop over time, so called diachron techniques. Some of the techniques are not time based, so called synchron techniques (Diana et al, 2009). Typically what is visualized in diachron techniques, such as service blueprints or customer journey maps, is what actors do,

sometimes including the service experience, and some of the roles of people and technology used. In synchron techniques, such as system maps, it is mainly relationships, structures etc, that is visualized.

It is common to use e.g. customer journey maps (Segelström 2009). A typical customer journey map centers in on the customer and his/her actions and experiences from the beginning to the end of his/her service process. They are often qualitatively rich, and have a strong value in communicating and sharing insights as well as empathy (ibid.). However, how knowledge develops over the process, or what information certain actors have or communicate is not integrated in the visualization. Service blueprints, on the other hand, are more detailed regarding how to manage a service, and the timing of interactions between the customer and the service provider (Shostack, 1982; 1984; Bitner, Ostrom, & Morgan 2008). Still, it is not made clear which actor has what information at given points in time. Even extensions of the blueprint model (see e.g. Polaine, Løvlie, & Reason, 2013; Patrício, Fisk et al. 2011) to include more than a dyadic relationship, does not introduce details of knowledge used or information flows.

In this paper we suggest and explore a technique to map what situated knowledge actors in a service system have access to at specific points in a service process.

Mapping information and information exchange in processes

The technique we used was inspired by techniques from cognitive systems engineering and resilience engineering (e.g. Rasmussen, 1983), but simplified to fit into a collaborative workshop session set up. Cognitive systems engineering theories have been applied earlier in service, e.g. by Blomkvist et al (2010), that used the concepts of "barriers" to look into complex safety critical service systems.

The Service Information Canvas consists of one row for each role or actor in the service, and a column for each event or change in system state. In each cell one documents, given the event, what each of the roles then know, see Table 1 for a template.

	Event/state change 1	Event/state change n
Role 1	What Role 1 knows at the time of the event and by having experienced Event 1	What Role 1 knows at the time of the event and by having experienced Event n, and possible accumulation of knowledge over time
Role n	similar	similar

Table 1. Template for Service Information Canvas

The Service Information Canvas is a diachron technique (Diana, Pacenti, & Tassi, 2009), in that it includes a time dimension. As in many diachron design techniques time is represented in a discrete manner sometimes in stages. In this technique the discrete steps are formalized through, and represents, state changes in a service system.

Experimenting with the Service Information Canvas

The experiment with the Service Information Canvas was part of a series of workshops with three industrial service companies where service prototyping techniques were explored.

Service setting and scenario

For this specific workshop a scenario based on an emergency situation in a mine demonstrating today's situation with three role descriptions had been developed to support the exploration of service prototyping techniques. Six out of nine participants in this workshop were not acquainted with underground mining, and had backgrounds in three different industrial service companies, and a university. The exercise was a way to explore documenting techniques for a highly context dependent situation, when persons with situated knowledge are scarce.

The scenario was presented by the moderator together with film clips from work in underground mines to frame an understanding of the characteristics of this type of work environment. The scenario and role descriptions were based on earlier field studies in underground mines with the ambition to make them as realistic as possible.

The scenario was describing a safety critical event, a fire in an underground mine. The aim was to place the specified role descriptions, in the format of personas, in a specific context. The scenario gives glimpses into equipment, tools and pre-defined processes.

> ***A day in the mine (an excerpt)***
> *It's Thursday at 16:00 and Peter, the shift operator in the operations center, is relaxed, the radio traffic is calm. Things are going well today, they're keeping to the schedule. The drilling at production front 340F62 is even ahead of schedule. Peter smiles – Bo, the drill machine operator, just called over the radio and reported the task done. At the moment 67 persons has entered the mine, but it's not Peter's main focus.*
> *Suddenly, the fire alarm goes off. It comes from a smoke detector in the outgoing ventilation shaft. The fire can basically be anywhere in the mine. The emergency system has also triggered an alarm signal, both visual and audible, in the underground lunch room and the workshop at 700 meters. Peter reads out a well-rehearsed warning message over the radio, possible for all to hear. This is very time critical, people needs to be evacuated out of the mine or into one of the 10 rescue pod that are placed underground close to the active production fronts.*
> */…/*
> *Peter continues to contact people over radio and check their location to make sure that everyone ends up in a safe place, be it in a rescue pod or out of the mine. Once everyone is safe, he shuts off the audible alarm from the stationary alarm systems, to reduce the noise level for the fire fighters and the people in the rescue pod. 10 minutes after the fire truck has reached the drill rig, the firefighting crew tells him that the fire has been extinguished. Peter is relieved when he turns towards the mina manager who has just entered the operations center, "All survived" he says and smiles.*

Sensitizing and role-playing

The group divided into three teams to follow the actions of one role description each and the scenario was played out as a role play. The three persons with previous knowledge about the particularities in this kind of work were equally divided in the teams.

During role playing the groups of participants were using locations apart from each other to simulate the different locations in the mine; e.g. one group was walking outside in the wind and traffic to emulate a noisy environment inside the mine. An alarm signal was going off during the role play, where one person acted and initiated the fire alarm. The groups were out of sight from each other imitating the distributed way of working in underground mines. Using this ongoing prototyping technique (Blomkvist & Segelström, 2014) was a means of

sensitizing participants, but they were also expected to share their experiences and doings later in the workshop.

Debrief and sharing scenario understanding

After having played through the scenario during six minutes, there was a debriefing about the ongoing technique used in each team. After the debrief the whole group reconvened around a table and had an initial discussion about some of the issues experienced during the role play, such as coordination issues, communication issues and time issues. The suitability of the scenario itself was also discussed, where concerns about the consequences of using a too structured scripted scenario was raised.

Making the Service Information Canvas

In trying to capture and document the experiences acquired during the role play, a decision was made to map out what the different actors knew at the time of various events and how it changed over time. Next feelings/emotions were added for the actors during the multiple phases on to the canvas. The result was a simple *Service Information Canvas*.

Results and discussion

The Service Information Canvas

The direct result was a simple Service Information Canvas, which was drawn on a whiteboard. In Table 1 a selection of notes from the canvas is shown.

Table 2. Contents in the Service Information Canvas.
Red Text in italics shows possible experiential values

	t=0	***t=fire alarm goes off***	***t=Peter reads warning message***	***t=Peter calls Tom***	***t=local SOS calling***
Bo **Drill operator**	Finished his task Bo's location ***Satisfied***	Hears/sees fire-alarm	Bo realizes his drill is on fire My drill is on fire ***Concerned***	***Focused***	***Focused***
Tom **production supervisor** **Rescue team leader**	Tom's location Knows the rescue team	Hears/sees fire-alarm Get fire crew and get to fire truck ***Not again, a fire exercise (tired)***		Peter is clue-less Not an exercise ***Annoyed*** ***Afraid of dead bodies***	

	t=0	*t=fire alarm goes off*	*t=Peter reads warning message*	*t=Peter calls Tom*	*t=local SOS calling*
Peter Shift operator	Calm, works as planned Bo is in 340	Knows about the fire-alarm (from outgoing ventilation) 51 people left ***Busy "bottleneck" Too much to do "reporting in/out of mine, rescue pods etc.***	***Busy "bottleneck" Too much to do "reporting in/out of mine, rescue pods etc.***	Tom is moving to fire truck Tom, rescue team has right equipment ***Unsatisfied Uninformed Didn't know where to send Tom***	SOS service on their way ***Frustration, because of lack of info***

Finding challenges and critical events

The canvas made it possible for the group to identify challenges and critical events in the service process. There were four specific challenges identified; Unspecific alarm, Tom was under informed, Peter became a bottleneck, Bo was scared.

For each of these the group provisionally identified, from a service perspective, what "components" that was central for the critical event. The group also tried to identify possible techniques to prototype solutions with respect to these components (see table 2).

Table 3. Critical events, and related service components

Critical event	Service component	Possible prototyping techniques
Unspecific alarm	resource, system	*Diachron*: process map *Synchron*: system map
Tom is under-informed	process, experiental	*Diachron*: processes, customer journey map, service validation, experience diagram *Synchron*: information map
Peter as a bottleneck	Process	*Diachron*: processes, customer journey map, service validation, experience diagram *Synchron*: Measure not in isolation, Resource/communication map, actor map
Bo is scared	Experiental, progress	*Diachron*: Experience prototype, storyboard

Understanding technology shifts

The Service Information canvas also made it possible to discuss consequences of changing technology resources in the service process. For example, the group discussed what would be the difference if radio communication was changed into one-to-one communication. The obvious analysis, which can be done without the canvas, is that only the persons communicating would have the knowledge communicated. But the canvas made it possible to discuss the consequences throughout the process, who is lacking what knowledge, and which communication events and actions that needs to be added to compensate for that.

The group also discussed that some of these ideas could be quickly prototyped around the table, by easy and small role-plays with three persons. To give the experience of one-to-one communication, information could be passed on through notes, or by whispering. The rest of the group could then observe and gain insights, that later could be documented in a new canvas.

Limiting the canvas to situated knowledge

In the experiment we focused on situated knowledge, as a consequence of specific events. In the discussion, after doing the canvas, the group concluded that as a means to summarize important issues in how a service process is limited by internal deficiencies of information sharing in the service process it was quick, and instigated dialogues and insights. If used by professionals from the specific roles, the accuracy and precision may increase. The group also concluded that expanding the canvas to incorporate more aspects of what the actors know, will make the canvas more complicated to construct, and more complicated to get an overview of. Making iterations over the canvas, and adding to the knowledge content might be a way of dealing with this, in the cases where more understanding of previous experiences, or professional knowledge is important to include.

Service Information Canvas as a synchron or a diachron technique

The canvas we first envisioned only as a diachron design technique. However, it also captures in an abstract and synchron manner the relationships between the different roles, in the sense that one can see and compare what the different actors know, not only how their situated knowledge develops over time.

Conclusions

In this paper we reported on the development and use of a canvas to document how the knowledge of actors depends on and develops through the events of a service process.

The Service Information Canvas was an effective tool, in combination with a role-play between people with different knowledge and backgrounds. The role-play was an ongoing prototyping technique, that gave access to important understanding of a service process, that later could be shared and documented in a definite and diachron technique; the Service Information Canvas.

In a service, at every point of co-creation, the actors need to act on the basis of information, the Service Information Canvas makes it possible for designers and developers to understand these realities, and to make good design decisions.

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