Aalborg Universitet

**AALBORG
UNIVERSITY**

Idea Generation for Future Mobile Services

Involving Users in the CAMMP project

Sørensen, Lene Tolstrup; Nicolajsen, Hanne Westh

Publication date:
2009

Document Version
Publisher's PDF, also known as Version of record

[Link to publication from Aalborg University](#)

Citation for published version (APA):
Sørensen, L. T., & Nicolajsen, H. W. (2009). *Idea Generation for Future Mobile Services: Involving Users in the CAMMP project*. Paper presented at World Wireless Research Forum, WWRF Meeting, Beijing, China.

Idea generation for future mobile services – involving users in the CAMMP project

Lene Sørensen[1] and Hanne Westh Nicolajsen[2]

[1]CMI, Aalborg University Copenhagen, Lautrupvang 15, DK-2750 Ballerup, Denmark
[2]Hum-IT, Aalborg University Copenhagen, Lautrupvang 2B, DK-2750 Ballerup, Denmark

Abstract—**Studies show that the phase of idea generation is essential for developing innovating new services. This phase can be based on involvement of potential users or customers – and generally these can contribute positively to the generation of ideas. This paper takes is basis in the new service design of converged mobile rich media services for handheld devices (mobile phones). The overall purpose is to discuss the premises, methods, challenges and limitations, for idea generation based on involvement of users. The paper discusses the challenges of user involvement in a specific; the CAMMP project, where different stakeholders all need to have a saying in the service development for rich, mobile broadcasting services.**

Index Terms—**idea generation, mobile services, services development, user involvement**

I. INTRODUCTION

NEW advances in wireless and mobile technologies have emphasised the need for service providers to identity new types of services that potential users will want to use and buy. Services are one of the most important bases for many businesses and it is key factor in the hard competition for customers. Striving for finding new services, the concept of customer orientation has emerged as a central concept when developing new products and services and as a result, hereof customer involvement in service development is being central to many businesses (Edvardsson et al., 2006).

User involvement in services development does not mean the same in all cases – and can have more or less impact on the service development dependent on when the intervention finds place. Alam (2002) made a survey on different studies of user involvement in new services development and concluded (amongst others) that the highest intensity of user involvement is at the stages of idea generation and idea screening, and that businesses use a variety of modes to include the user.

This paper discusses some of the considerations for idea generation in new service innovation more specifically in future mobile services. Focus is in particular on a project named CAMMP in which the concept of future rich media and services are explored. There is a fundamental user centric perspective within the project to include different user groups in the process from idea to testing the final services and concepts. However, how the users shall and can be involved is still a question under debate.

The overall purpose of the paper is to outline a number of practical and theoretical considerations for planning user involvement in idea generation for new services. Different methodological approaches are discussed in respect to the CAMMP case and in respect to what is known about idea generation and user involvement.

The paper is organised as follows. Section 2 outlines some of the findings in literature on idea generation and user involvement. In section 3, is presented an overall study of different approaches and experiences in user involvement in service innovations. The CAMMP project is presented in idea focus and first experiences with involvement of users in section 4. Furthermore, this section discusses some of the practical challenges the project focuses when it comes to user involvement. Section 5 includes a discussion of the CAMMP project in relation to the theoretical foundations of user involvement and idea generation. Finally, section 6 presents the conclusions.

II. IDEA GENERATION AND USER INVOLVEMENT

There is a continued discussion in the literature to whether users should be involved in service or product innovations or not.

A. User involvement – yes or no?

In the literature, there has been presented different views on the involvement of users in service development. Christensen and Bower (1996) have argued against the involvement of users with the argument that users do not have sufficient technical knowledge to produce innovations. Leonard and Rayport (1997) conclude the same with reference to those users unable to articulate their needs. Others (Gales and Mansour-Cole, 1995) argue that the costs of involving users in service development may not provide sufficient positive effects. On the other hand, Edvardsson et al. (2006) describes a number of cases and experiences linked to different levels of involvement of users in service development and conclude that user involvement not is the ultimate solution to all challenges in service development.

In favor of user involvement is Anderson and Crocca (1993), Sinkula (1994), and Hennestad (1999) who all say that collaboration between suppliers and users can lead to a mutual and better understanding of users' needs and wishes. Wikström (1995) underlines that intensive interaction with users is likely to generate ideas also in respect to new ways of doing business. Ståhlbröst and Bergvall-Kåreborn (2008) argue that in order to secure, users' needs are considered in any technology development phase, users must be involved. Alam (2006) backs up the view on user involvement by concluding that user interaction can support the development of differentiated new services with unique benefits and better value for the users themselves. Furthermore, Alam (2006) concludes that user interaction

may help to shorten the development cycle time and in through this way reduce the time to market perspective. And finally, Magnusson (2006) concludes after an experiment that users create other types of ideas than professional service or product developers and these together makes up a good foundation for innovative services or products.

In the literature, there is no clear conclusion to whether users must be involved in service development or not. However, the trends go towards that user involvement can contribute to new ideas and it is necessary to involve users when there is a need to develop new services or products, which provides new value to the users.

This paper takes the user-centric view where users should be involved in service development they would and can have an idea and opinion about. However, it is also the view of this paper that user involvement not can stand alone but ideas and views but be worked with and contributed by technical service developers to reach a commercially viable state. This view calls for a specific way of including users in the service development cycles.

B. User involvement – to which extend?

Even though some authors argue for involving users, there is a large difference in respect to how intense and to which degree the users are involved. Alam (2002) argues that the degree of user involvement can be described as a continuum ranging from passive acquisition of user input, feedback on specific issues and extensive consultation with users to full user representation in the project.

Alam (2002) presents the following four levels of user involvement:

1. Passive acquisition of input. Users take the initiative to provide input to the development process.
2. Information and feedback on specific issues. Service developers may approach major service users to obtain information and feedback on specific issues. This may take place at various stages of the development process and implies that the intensity of the user involvement in relatively high.
3. Extensive consultation. Service producers take the initiative and invite user input by means of a planned process governed by predetermined objectives. The intensity of the user involvement is relatively high.
4. Representation. Users are invited to join a new service development team where they contribute to the specific stages of the development process in their capacity as a team member. Here the intensity of user involvement is very high.

Sandén et al. (2006) made a survey about the degree of customer involvement in Swedish companies. In the survey a total of 366 companies responded on a questionnaire in relation to the role that user involvement play in their company. The companies represented goods and service firms (details on the companies can be found in Sandén et al, 2006). The survey showed that a total of 13% not did involve users in their development process. Around 51% of the companies with a customer marked involved users as informants, while 22% of the customers with a business market included users as informants. These numbers were almost reverse when it came to involving users as experts. Here 48% of the companies with a business marked involved users as experts while 26% of the companies with a consumer marked did that. Involvement of users as partners or sole developers were only represented in low numbers. Around 8% of the companies did involve users as partners and only 5% did include them as sole developers.

From this survey, it is clear that Swedish companies involve users in the development process and that most companies view users as experts.

It should be noted, in this paper is made no specific differences between the concept of a customer or a user. It is assumed to be the same.

III. APPROACHES FOR USER INVOLVEMENT

The involvement of users in service creation takes place through a large variety of approaches: Qualitative as well as quantitative approaches are used.

Alam (2002) has identified six modes of user involvement: face-to-face interviews, user visits and meetings, brainstorming users' observations and feedback, focus group discussions, and phone, fax and e-mail. Alam (2002) argues that in-depth interviews and user visits were the most commonly used.

Sandén et al. (2006) found the following techniques: internally collected information and knowledge about customers, surveys, customer interviews, observations, and the lead user method (working with lead users, see von Hippel, 1986). Surveys and interviews were stated to be the least common techniques.

At the moment much literature calls for involving users as co-creators in design and service development (for example Sanders and Stappers, 2008; Mannervik and Ramirez, 2006; Ståhlbröst and Bergvall-Kåreborn, 2008). This focuses on the users as partners and sole developers to stay in Sandén et al. (2006) terminology and in the representation terminology of Alam (2002). The argument is that if users are involved in co-creation of services, the companies have a much better chance of knowing their customers which is seen as the most important step to increase the value of innovation created in the service and product development cycle (Mannervik and Ramirez, 2006).

Within the last 10 years, the perspective of user involvement to include users as co-creators has been emphasized through the development of the Living Lab approach (see for example Ståhlbröst, 2008). One of the main differences between a Living Lab approach and traditional user involvement processes is that user involvement takes place in real-world contexts (Ballon et al., 2005), and that there is a focus on the vertical value chain in which customers, producers and suppliers are involved with the objective to create commercially interesting innovations (Shaffers and Kulkki, 2007).

The Living Lab approach involves users with a variety of the already mentioned techniques as well as different creativity techniques to be mixed into the other techniques.

IV. CAMMP

CAMMP is short for Converged Advanced Mobile Media Platform (http://www.cammp.aau.dk) and is an industry-university collaboration supported financially by the Danish

Advanced Technology Foundation. The overall purposes of the project is:

- to identify and evaluate new types of personal, mobile services beyond existing TV and radio combining traditional push broadcast with user generated audiovisual content and shared immersive experience;
- demonstrate viable business models for delivery of next generation rich media to mobile;
- and create firm conditions for a Danish value complex in an international, standardized environment based on the unique university-industry cluster.

The fundamental broadcasting technology used for the upcoming mobile services is DvB-H. Currently, Aalborg University (who is the project leading partner in the project) has set up an antenna at the university campus in Ballerup (situated in the greater Copenhagen Area), which allows for the broadcasting signal to be sent in a small radius (2 km) around campus. It is expected that the DvB-H signal will be rolled out to cover all of Denmark in October 2010.

The project will be running from mid 2008 until mid 2012.

A. User involvement in CAMMP

In CAMMP, users are involved in the projects in several ways: as idea generators and as testers of new services and other developments in the project. Other stakeholders of the results of the projects are involved indirectly as users by being partners in the project. Some of these are DR (one of the major Danish Broadcasting stations, www.dr.dk; Nokia and Motorola, and BSD (Broadcasting Service in Denmark). These stakeholders are involved in the idea generation in respect to identifying new services and features of future rich media.

So far, the project has involved expert users in respect to use of mobile services. The expert users were students from two different campuses at the university, studying medialogy on first or second year. The focus on the students was closely associated with the limited DvB-H coverage around the university. It was however possible to test at two different campuses due to a placement of a diab to transmit the DvB-H signal at the campus where there were no antennae.

A semi-field lab test was carried out during weeks in spring 2009. Here two groups of students were introduced to the test- set-up, the technology and the device (a Nokia N77). During one week, the students were asked to use the N77 for using the DvB-H broadcasted mobile television at campus and in the surrounding environment (covering a subway station, busses, a collegiums and green areas). Special tasks covered:

- Watching television – four channels were available, two regular channels known from regular television, one channels with internet based news and one so-called dogma channel with clips of old movies
- Switching between the channels
- Sending short text messages to comment on tasks and for ideas on content and usage

- Producing a small video (user generated content)
- Voting on the best user produced video (the user generated videos were uploaded on the dogma channel making it possible for all test participants to watch)
- Feedback on the GUI (graphical user interface) and the set-up of the whole test.

In respect to generating new ideas for services and applications, two activities were carried out: the text messaging from the users during the time they were alone, and a short (15 minutes) group discussion after the testing period to discuss and present ideas. It must be mentioned that the students were in the same room when they were introduced to the test and when they finalized the test. Both incidents were constrained in time only to take 1 hour to allow for the students to return to class.

As a result of the testing, a total of 27 students generated 23 ideas on new content and use situations. For details on the test see CAMMP (2009).

V. DISCUSSION

A. Challenges in CAMMP

The first test carried out in the CAMMP project addresses some overall problems, which needs to be addressed in the methodological set-up. Some of the challenges were:

- The reduced coverage of the broadcasting signal. Coverage on around 2 km near the University campus allowed for the students to use the mobile services when or around campus.
- The sim-card. The users had to use a non-personal sim-card to avoid self-payment of produced traffic and to be able to receive the DvB-H signal.
- Reduced stability of the signal. During the test, one the transmitters were broken and a less stable alternative solution had to be set-up.
- Limited services for users to test. The users expected to be able to test more services. However, one of the main purposes for the involvement of the users was to gain new ideas for services. And if there were too many services to test, it would have been more difficult to point to missing parts.
- Asking users what they want. Not all users were able to answer right away. However, most users were able to express ideas and needs after a week of using the technology and services.

Some of these challenges were related to what can be called the *context and integration*. To have real experience users needed to be able to connect and interact with other users and to be able to use the device for many purposes and in combination with other devices. In the CAMMP project's first test, it was seen as a problem that the users not were able to use their own mobile phone and sim-card for the test because of most sim-cards not are able to receive the DvB-H signal. The reason for all users to use the same type of mobile phone and sim-cards were to secure that they not had to pay for the generated traffic them selves.

Other challenges were related to what is referred to as the *understanding or experience of technology,* which is largely time and experience dependent. Some users were eager and wanted to use more time initially on the mobile TV as it is all new and exciting. However some users were reluctant as they felt uncomfortable with the especially the mobile phone which was not as their own phone. Also some users had a pre-expectation that they did not or could not have interests in mobile television at all. Furthermore, in this limited test, it was difficult to learn more about the users' behavior over a full day. When applying a new technology or a new service, it takes some time before this is a natural build-in as a part of the user's daily life and his/her behavior. The time, the test was running was not sufficient for the user to establish new behavioral patterns and to become highly experienced users.

B. Methodological perspectives

From a methodological angle, the test showed that there is a need for an approach which:

- Involve users and other stakeholders in the process. The involvement does not have to take place at the same time but all stakeholders need to be heard.
- Facilitate and support creativity. Idea creation needs to be supported no matter where the user is and how the user involvement takes place. This perspective is specifically important when the user is in his/her own context without any facilitator near.
- Secure that users are motivated and open to share ideas and information across all boundaries of gender, power and culture.
- Secure that users become co-creators. One of the elements in this is that users can be involved during the whole service development cycle and that it is possible to attract and motive them to take part over a long time period such as four years.

With experience from the CAMMP project, there is a need for a method which asks for a method triangulation where users are both observed, asked and are socially and creatively active in expressing their needs in various ways, and where they can work together to create ideas for new services. On an overall basis this calls for application of methods from Interaction Design to secure those contextual perspectives can be analyzed while at the same time involving and supporting the users to become innovators. Furthermore, the Interactive Design methods can support users to take part in the process independent of where they are. Another point in the method triangulation calls for anthropologic and ethnographic methods to secure an overall understanding of what the users need and cannot express, and for understanding changes in behavior that can be basis for new innovation ideas. Again the contextual perspectives will be secured through application of these methods. The last side in the triangulation of methods calls for creativity and team building/sharing methods to support users to in becoming creative and to support the information sharing amongst the users. Team building and sharing methods would furthermore raise the likelihood that users can overcome social, cultural or even power relations so that a common goal can be pursued and provide a good background for co-creation.

Perspectives, which are not addressed in this method triangulation, are: technology perspectives (what can the technology do, which are the perspectives to pursue or address); business perspectives (which ideas can be interesting from a business perspective); and organizational/community perspectives (how the ideas can support the users in the communities or work organizations). These perspectives can be argued to be part of the contextual analysis and to be an inherent part of set-up of the involved users.

The direct involvement of the users also needs to take place in different ways. Several studies show that users in general have a rather limited solution space (Ståhlbröst and Bergvall-Kåreborn, 2008; Schultz et al., 2006); that users talk about what they have experienced and what they do but not what they could do (Ståhlbröst and Bergvall-Kåreborn, 2008); users have difficulties in expressing their needs and focuses more on wishes (Schultz et al., 2006); that users' requirements cannot be settled in one iteration but that they evolve in an iterative process; and that users have difficulties in seeing courses of actions they have not experienced themselves (Ståhlbröst and Bergvall-Kåreborn, 2008). In order to overcome some of these obstacles, users need to be involved in the idea generation process over a longer period of time and in a number of different ways. Here we propose the following process to be carried out as an iterative process:

- Interview with single users on their personal ideas and needs for a new technology
- Monitoring of users in their daily life environment following through different contexts and through the users' interaction in different communities and work and leisure organizations
- Creative and social workshop where users create ideas based on the synergy, which takes place in a team situation.

The idea generation process hereby becomes a longer process based on a more rich analysis process.

The CAMMP project takes an iterative approach to the development of new services and content for the mobile and social TV that is the focus of the project. Every year for the four years of the project, there will be a test of the services already developed and at the same time new user requirements will be derived for the coming generation of content.

The above-mentioned discussion gives the following guides to the process of user requirements generation in the CAMMP project. Involvement of users should take place using the three different user involvement approaches mentioned above. One of the challenges in this will be the monitoring of users in their daily life contexts. Since, there is a high uncertainty in relation to when and where users will be using the broadcasting content that will be developed as part of the CAMMP project, this will mean that users should be followed during days regardless of their activities and contexts. This may be too invoking for users and may be a problem in relation to the resources of the project. Alternatively or contributively to the monitoring, a "diary" or a small note book can be used for the users themselves to report their uses, ideas and problems through a whole day. This approach has been used in another project where the

authors have been involved. Details on this can be seen in (Larsen et al., 2007).

In order to create synergy in a group of users, it may be an idea to use the same set of users in the different tests and add new users in new groups and in new iterations. The continuous use of the same user group, will also secure that the users will be able to see some of their ideas being part of the next iteration content, they will need to test. This, hopefully, will create a basis for co-creation that shall make the users innovators.

Another challenge will be the involvement of all stakeholders in the requirement generation. This will mean that also technology developers, operators and device manufacturers must be involved in the process. Naturally, persons involved in the CAMMP project can be part of the exercise, but traditionally, persons from the industry have a tendency to be rather busy and to prioritize such activities less important.

VI. CONCLUSION

Generating new services, much literature points at the involvement of users in the process to raise the idea production and the focus on solutions, which add value to the users. However, the involvement of users within the process is not an easy task. There exist numerous challenges in the user involvement process and just as many ways to involve users.

Design of new rich media services, as is the main task of the CAMMP project, the traditional approaches for involvement of users cannot necessarily be applied. The traditional methods build on an assumption that users can express new ideas in a lab or in an interview situation. However, when it comes to services being presented for users on a mobile platform, these approaches may not apply.

The Living Lab approach offers some principles for involvement of users in a broader perspective. Here key is involvement of users to the extent where they become co-creators, and that the idea generation and service generation takes place in the users' daily life context. Furthermore, the users in this approach have a broad meaning covering all stakeholders of the service development.

This paper has discussed some of the challenges present in involving users for idea generation in mobile media services development. Challenges are related both to limitations and problems linked to technical parameters such as the broadcasting signaling, devices and sim-cards, to monitoring, supporting and motivating users when they are in their natural environment through a day consuming mobile services.

In relation to the CAMMP project, the methodological challenge will be worked with throughout the project cycles where it has been planned to make tests with users at least four times. However, this does not immediately allow for an easy way to involve the users to become co-creators. Whether co-creation is needed in the idea generation and service development, only time will tell.

REFERENCES

[1] Alam, I. (2002). An Explanatory Investigation of User Involvement in New Service Development. *Journal of the Academy of Marketing Science*, Vol. 30, No. 3, pp. 250-261.

[2] Alam, I. (2006): Process of Customer Interaction in New Service Development. In: Edvardsson, B., Gustafsson, A., Kristensson, P., Magnusson, P. and Matthing, J. (eds)(2006): *Involving Customers in New Service Development.* Imperial College Press, London.

[3] Anderson, W.L. and Crocca, W.T. (1993): Engineering Practice and Co-development of Product Prototypes. Communications of the ACM, Vol. 36, No. 4, pp. 49-56.

[4] Ballon, P., Pierson, J. and Delaere, S. (2005): Open Innovation Platforms for Broadband Services: Benchmarking European Practices, 16th European Regional Conference, 4-6 September, Porto, Portugal.

[5] CAMMP (2009): Evaluation Results of 2009 Lab Tests, IR 1.4.1.

[6] Christensen, C.M., and Bower, J. (1996): Customer Power, Strategic Investment and the Failure of Leading Firms. *Strategic Management Journal*, Vol. 17, pp. 197-218.

[7] Edvardsson, B., Gustafsson, A., Kristensson, P., Magnusson, P. and Matthing, J. (eds)(2006): *Involving Customers in New Service Development.* Imperial College Press, London.

[8] Gales, L. and Mansour-Cole, D. (1995): User Involvement in Innovation Projects. *Journal of Engineering and Technology Management,* Vol. 12, No. 1-2, pp. 77-109.

[9] Hennestad, B.W. (1999): Infusing the Organisation with Customer Knowledge. *Scandinavian Journal of Management*, Vol., 15, No 1, pp. 17-41.

[10] Larsen, J.E., Sørensen, L., Shultz, N. and Olesen, H. (2007): User Centricity in MAGNET and MAGNET Beyond. Presented at the IST Conference Budapest, 2007.

[11] Leonard-Barton, D. (1992): Core Capabilities and Core Rigidities – A Paradox in Managing New Product Development. *Strategic Management Journal*, Vol. 13, pp. 111-125.

[12] Magnusson, P.R. (2006): Learning from Experiments Involving Users in Service Innovation. In: Edvardsson, B., Gustafsson, A., Kristensson, P., Magnusson, P. and Matthing, J. (eds)(2006): *Involving Customers in New Service Development.* Imperial College Press, London.

[13] Mannervik, U. and Ramirez, R. (2006): Customers as Co-Innovators: An Initial Exploration of Its Strategic Importance. In: Edvardsson, B., Gustafsson, A., Kristensson, P., Magnusson, P. and Matthing, J. (eds)(2006): *Involving Customers in New Service Development.* Imperial College Press, London.

[14] Sandén, B., Gustafsson, A. and Witell, L. (2006): The Role of the Customer in the Development Process. In Edvardsson, B., Gustafsson, A., Kristensson, P., Magnusson, P. and Matthing, J. (eds)(2006): *Involving Customers in New Service Development.* Imperial College Press, London.

[15] Sanders, E.B.N. and Stappers, J. (2008): Co-creation and the New Landscapes of Design. Submitted for CoDesign, Taylor & Francis, March 2008.

[16] Schaffers, H. and Kulkki, S. (2007): Living Labs: A Strategy for Open Innovation Fostering Rural Development. Asia-Pacific Tech Monitor, *Special Issue on Open Innovation: A New Paradigm in Innovation Management* (Sept. – Oct., 2007).

[17] Schultz, N., Sørensen, L. and Saugstrup, D. (2006): Participatory Design and Creativity in Development of Information and Communication Systems. In: Heilensen, S. and Jensen, S.S. (eds.)(2006): *Designing for Networked Communications: Strategies and Developments*, Idea Group Inc., London, UK.

[18] Sinulka, J.M. (1994): Market Information Process and Organizational Learning. *Journal of Marketing*, Vol. 58, No. 1, pp. 35-45.

[19] Ståhlbröst, A. (2008): Forming Future IT – The Living Lab Way of User Involvement. Ph.D. Dissertation. Luleå University of Technology, Dept. of Business Administration and Social Sciences, Luleå, Sweden; 2008:62.

[20] Stålbröst, A. and Bergvall-Kåreborn, B. (2008): constructing Representations of Users Needs – A Living Lab Approach, IRIS 31, http://www.iris31.se/proceedings.html, August 10-13, Åre, Sweden.

[21] Von Hippel, E. (1986): Lead Users: A Source of Novel Product Concepts. *Management Science*, Vol. 32, No. 7, pp. 791-805.

[22] Wikström, S. (1995): The Customer as Co-producer. *European Journal of Marketing*, Vol. 30, No. 4, pp. 6-19.