e-Me - the Student's Best Friend

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1.   EXECUTIVE SUMMARY

In a pioneering research project an effort to elicit requirements of an electronic assistant has been made. An e-Me, that helps students in organizing their life. The vision is that the students should not need to go to the information - the information rather comes to the students based on the active profile set by the student. This would include more or less complicated and integrated e-services for the students. The e-Me project is about exploring the concept of an electronic assistant as the next generation of platforms for people-centric (citizen-centric) e-services starting with students as one category of people. This exploration has been done in conceptual development (refinement of the vision), realization of the e-Me as an artifact, and in a phase of proof of concept involving several future users in the spirit of co-design. The line of action adopted in the e-Me project has been inspired of design science. The students, in their "business" and leisure environment, have been part in co-designing a future situation with an electronic assistant supporting them in the management of the lives as students.

Students as context aware people and future clients in the e-Me galaxy, have been seriously involved as co-designers in the different phases of the project. The students co-designed e-Me by writing ideal scenarios. They also tried out a prototype – both in order to identify shortcomings in the application and identify new usage situations, both within and beyond the school setting, when an e-Me would be of assistance. To make this possible a particular (virtual) community space was set up as a part of e-Me. In this space interaction between different stakeholders, such as the project management, researchers, designers, service providers, programming team, and students as users took place. The goal was to create an on-going and lasting co-design between the various stakeholders in order to create new possible views to be implemented in the concept of an electronic assistant.

During a test period of 3.5 months, the project implemented several refinements in the evolving e-Me artifact. Students did try out different versions of the e-Me. To stimulate continuous interest among the students for being part of the project we used several different mechanisms, such as meetings, workshops, media exposure, continuous updates of the e-Me, and role-plays. The results of the pilot also did show that it was a big range of interests among the students and others stakeholders in being present in an e-Me galaxy. During this process it was however clear that the electronic assistant metaphor stimulated ideas about future design options.

In this paper experiences is explored from implementing this radical idea in a university setting for delivering better services to students through a new infrastructure. Certain emphasis will be put upon the integration of public and private services based on the needs coined by the life situation of the student and thereby the involvement of private and public partners. This was made possible due to the fact that we have taken the individual and his/her life situation in the creation of a social proxy of oneself, instead of the organization which is providing services to the individual as the starting point. In this way, the e-Me as a filter and agent, in the electronic galaxy could become the student's best friend.

2.   THE E-ME PROJECT – TOWARDS E-EMPOWERMENT OF STUDENTS

The idea behind the e-Me project (www.e-Me.se) is simple and challenging at the same time: *To build an electronic assistant, an e-Me, that helps students in organizing their life*. This involves activities such as organizing the course schedule, buying or lending course books, planning public transport, managing study planning and progress, and so on. So far students have to go to a number of places, both physically and virtually, to accomplish that. e-Me is supposed to turn that process around (Albinsson et al, 2006b). The vision is that the students should not need to go to the information; the information rather comes to the students based on the active profile set by the student.

The project, that this paper reports experiences from, explores whether an e-Me acting both as an agent for individuals and as a filter in the information galaxy for desired information services would be of use for creating a better society (c.f. Albinsson et al, 2006ab). It takes as its starting point the individual and his/her life situation, instead of the organization which is providing services to the individual. The project, which formally begun in 2005, has applied a co-design (Albinsson, 2005; Albinsson & Forsgren, 2005ab) approach starting from a vision about an electronic assistant as a solution to student self-administration. An important part of the vision was also that the e-Me should evolve over time with input from different stakeholders by letting them share and design their view of reality together with others. To ensure both open and reflective participants a student setting at University College of Borås has been chosen. The e-Me project is in part a governmentally funded Swedish research consortium consisting of representatives from Umeå University, the University college of Borås, the city of Stockholm as well as several partner companies like Intel, Microsoft, VISA, Telia, Mecenat, and smaller student oriented companies (Lind et al, 2007).

One condition for e-Me is that e-Me Student-related services become accessible. To identify the relevant services a number of co-design workshops together with students in Sweden and Spain were conducted resulting in eight different scenarios documented with text and cartoons (Albinsson et al, 2006a) (c.f. figure 1). To ensure representative results the participants of this study had been selected from different environments (e.g. cities and small towns), age groups (20 to 35) and countries (Sweden and Spain) with an equal gender distribution. These scenarios covered eight situations the students want to improve, such as *apply to university and begin studies, Monday morning, You've got lots of mail, change of plans, form-filling and reviewing, the elective course, finding jobs, the purse chase,* and *co-buyer groups.* During, the spring and summer of 2006 these scenarios were verified by sending a questionnaire to 16 000 students in Sweden which resulted in more than 3 200 responses (Lindell et al, 2006). The most relevant services were implemented in a prototype – the e-Me pilot. Figure 2 shows one snap-shot from the user interface of the e-Me pilot.
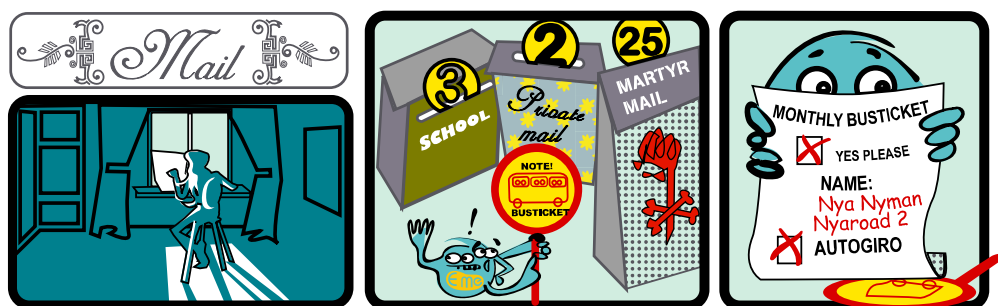
At 11 a.m. Nya logs onto her e-Me. 3 mails in the schoolbox, 2 private ones and 25 in the "Martyr-mail" inbox. Nya calls the address used when surfing for "Martyr-mail". e-Me reminds her again about renewing her monthly bus ticket. Prepared renewal form is attached.

Figure 1: Part of a developed Co-Design Scenario showing e-Me sorting messages and notifying its student on pending matters. The Co-Design Scenarios are 12 pages of cartoons (from Albinsson et al, 2006a)

The scenarios were also used to involve the above mentioned stakeholder organizations in a conversation about their roles in a world with existing e-Me's. After this verification a pilot version of the e-Me concept was designed and built (Lind et al, 2007). A small group of students were involved in test and evaluation during this phase. After three months the first prototype of e-Me was deployed for a group of 120 students (January 2007) at University College of Borås in Sweden (UCB) who, as students and future users, became a part of the e-Me project group and co-designers. The

students co-designed e-Me by trying out the prototype – both in order to identify shortcomings in the application and identify new situations, both within and beyond the school setting, when an e-Me would be of assistance (ibid).

The core of the e-Me consists of the following components (Lind et al, 2007):

- *Calendar management*, in which the user's calendar can be shared with other e-Me users' calendars. Different categories of bookings can be highlighted by using different colors.

- *Mood management*, in which it is possible to set and manage in which mood the e-Me user is. Three possible moods have been implemented in the prototype so far; private, meeting and open.

- *Mail aggregation*, in which mail can be popped from different sources and distributed dependent on the mood that is set.

- *Contact Management*, in which contacts can be grouped into different categories and a status of the contact, can be set in relation to the possible moods.

- *Archives*, in which files (of different types) can be stored and shared with other e-Me users.

- *Assignment*, in which the user manages all tasks assigned to the e-Me. In the pilot version four assignments has been implemented. These are the possibility for e-Me to receive study results (from Ladok - a national system for reporting study results), get the schedule into the calendar (from NeverLost – the school's scheduling system), receive this weeks lunch menu, as well as matching desires and needs of offers from organizations with students discounts (from Mecenat).

- *Community,* where the stakeholders; users, developers, e-Me project management and service providers can discuss the e-Me, suggest improvements/additional services and share experiences.

In the left part of figure 2 different "blobs" (views) of the e-Me is depicted. In the right part of the same figure one of the blobs (the assignment blob) is expanded. e-Me also supports device independency in the sense that e-Me gives a possibility for the user to interact with his/her e-Me via a web-browser or his/her mobile phone. This aspect of mobility also means that the e-Me could notify the user concerning different events (such as emails from contacts with the right mood, changes in schedule, matched offers, changes in the study results etc.).

Figure 2: The e-Me User Interface (c.f. Lind et al, 2007)

The purpose of the e-Me project is to develop a student assistant and to explore new ways of developing an information system. The purpose of this paper is to report upon some experiences to

be derived from involving students in this process. Following this introduction we will provide some insights of adopted research approach. A summary of experiences from putting the e-Me into application in the student setting at UCB will then be provided based on reports made in Lind et al (2007). The paper will be concluded by some implications for the future.

3.   CO-DESIGN AS RESEARCH APPROACH

The e-Me project is to be regarded as design-oriented action research (Lindgren et al, 2004) in which researchers have been collaborating with businesses and organisations as well as end-users in creating new knowledge. The line of action adopted in the e-Me project has been inspired of design science (Hevner et al, 2004). The students, in their "business" environment, were co-designing a future situation with an electronic assistant supporting them in the management of the lives as students.   The development of e-Me has been inspired by the philosophy of co-design (Albinsson, 2005; Albinsson & Forsgren, 2005ab). Such dynamic interplay between these actors and processes constitutes the core of the co-design knowledge creation process (Grönlund, 2000). The result of the work is a new type of infrastructure supporting an ongoing co-design of new citizen centric services. We call that infrastructure the e-Me galaxy (Albinsson et al, 2006a). In other words, co-design is used in the creation of e-Me as an infrastructure for service development.

Students were chosen because these are a rather experienced group of citizens. The project have focused students since they are in the process of developing skills to deal with communications and schedules in the process of becoming adults, and therefore are both reflective and open to change.

The term co-design is used in different ways. In the context of our study it refers to an idea that was elaborated in (Forsgren, 1991) where it was still called co-construction. It has its roots in "systems thinking" as established by (Churchman, 1968). His principal idea was that we can design an unlimited number of views on reality. They may differ in their granularity (level of detail), their perspective, their level of abstraction, and so on. But from Churchman's point of view this is not sufficient. We must also "calibrate" the viewing instrument (or measurement scale) to arrive at (or agree on) a view that is supposed to be implemented. The necessity to agree upon some common design for a system has also been put attention on by other scholars (c.f. Liu et al, 2002). This collective process of designing views and choosing the best one is called co-design. It has shaped the way we look at social systems in general and information systems in particular (Ackoff, 1981; Checkland, 1988; Mitroff and Mason, 1981). The notion of co-design is considered to go beyond the notion of participatory design (Mumford, 1983) in the sense of admitting and letting *several* views of reality shape and drive several complementary design processes.

4.   PUTTING E-ME INTO AN APPLICATION IN A STUDENT SETTING

The described prototype has been incrementally developed and validated in a collaborative, multi-contextual, empirical real-world environment (c.f. e.g. (Eriksson et al, 2005). Approximately 200 different "stakeholders" (University College of Borås (UCB) staff, researchers, developers, e-Me project management, service providers, the programming team, and students) have been part in developing and validating this prototype as part of the students supporting environment at UCB so far.

There were several purposes with running the pilot at UCB; to create a showcase, to make a proof of concept, to perform use case studies, and to make business case definitions. There were many stakeholders involved in the pilot situation. First, we had the students who had signed up for participating as co-designers. To manage these students we created an organization consisting of a student coordinator and eight student ambassadors. Some of the partners took a stronger stake in this pilot, which meant that these partners contributed both by supplying with resources and by their presence. Media also played an important role – both for fulfilling the needs of being a showcase – but also for letting different stakeholders understand the value of the efforts performed in the project. Another important stakeholder in the project was the newly established InnovationLab, an on-campus software research lab. The role of InnovationLab was to develop and maintain the e-Me, and primarily to improve the artifact based on the feedback from the students and other parties. In order to manage this, a particular IT-based community in e-Me was used. The goal was to create an on-going dialog between the various stakeholders in order to improve the

design and the understanding of the concept of an electronic assistant. At the same time it was possible to follow the emergence of the e-Me prototype.

During this integrated development, use and evaluation of e-Me we can conclude that there has been a lot of interaction between different stakeholders. Probably the most important feature of this whole setting is that the community space is a part of the e-Me system. This created the possibility of having users communicating reflections, changed requirements and identification of new usage situations. These comments created a starting point for other stakeholders to become involved in the dialogue. This co-design setting meant that several kinds of stakeholders had their say about the comments made by the users. In the pilot study, stakeholders such as InnovationLab (the developers), some service providers, associated researchers, designers, and the project management were part of the community. This meant that before efforts of a new version of the e-Me system were decided to be invested in several stakeholders had their say. From the pilot study, there are several examples of users that desire certain functionality, but the project management and the developers claim that the cost in relation to the value generated was too high (Lind & Rittgen, 2008).

The Pilot study has a rich output of experiences and results; here we will list a few of the more important ones. These experiences and results express desires from different stakeholders as well as the use of different instruments (such as e.g. the e-Me community) for driving the integrated development, use and learning process forward. The pilot test reports that the e-Me concept is working well and a core group of partners are planning to turn the e-Me into reality. Some important experiences and results are (c.f. Lind et al, 2007):

- The students want the e-Me to continue to grow and develop. As indicated from the student workshops with scenarios students felt that e-Me was a step in the right direction of what they needed and they want the prototype to evolve further. The UCB management also has recognized the value of e-Me and a developed test period for new groups of students are financed.

- This setting delivered experiences that e-Me is worthwhile developing to a full-scale-situation (proof-of-concept). Interestingly, the students developed experiences that integration was to prioritize before extreme high functionality of each component (even if the functionality of each component needs to be good enough). Further, it should also be noted that the students appreciated the important uniqueness in e-Me was its ability to reflect the e-Me user's personality (such as e.g. the user's mood) to a high extent.

- The e-Me community as a powerful learning arena for use and development of IT-artifacts. The e-Me community was important for the development team at Innovation Lab as well as for the students as end users of e-Me. It was also important for the research team to follow the arguments and ideas that was created in the community. Finally the comments from the student ambassadors that they learned a lot about IT-development by participating in the e-Me community indicates that a community of this type can be used as a pedagogical tool for education of students in IT-related subjects.

- The importance of the first materialization of a new concept. We got a lot of feedback from the scenarios as such, and the materialization of e-Me greatly widened the interested audience and new insights of new usage situations of e-Me came forward. In this process, the media was important.

- The importance of a group of e-Me ambassadors as introducers and coaching activities. As we have seen in a number of other projects with new technologies, it is important to use a coaching approach. In this project, we did use student ambassadors and they really were the heart of the pilot setting. As one of them said "I learned as much on this project as all other studies together". The pilot would not have been possible without the student ambassadors.

- The student situation as one of many application areas for e-Me. Almost in every discussion with new stakeholder groups a new idea about application areas for e-Me arrived. e-Me for homecare, e-me for immigrants, e-Me for safe mining, e-Me in Health, e-Me for tourists, e-Me for entrepreneurs, and e-Me for knowledge workers are examples of such ideas.

- The usefulness of having the development team, InnovationLab, involved as one closely related co-designing party in the process. Students expressed how good it was that their

needs were listened to, discussed with, and how fast some of the ideas to changes could be implemented.

In order to get this environment working we found it crucial that the students got the feeling that the e-Me became their concern. To foster such feeling a number of crescendos, such as new releases, were used in order to ensure continuous attention towards e-Me. These releases were results of student-initiated discussions held among a number of different stakeholders. The students were also stimulated in distributing usage situations to each other that they had experienced when the e-Me would be of benefit to use as well as identifying new usage situations that could be of use.

5.   IMPLICATIONS

As identified by Lind et al (2007) this way of running a development of new innovative IT-solutions is unique. The setting could be characterized as open and/or network innovation (Albinsson et al, 2007). The involvement of the user in systems development is important, but the user cannot be the only party ruling what the outcome of the process should be. It could be derived that other related stakeholders need to be involved in such co-design processes also. It should however be noted that users can have a very important role in putting attention towards essential aspects of the artifact to be developed. The prototype and the pilot case have given us strength to put forward the concept e-Me into a full-scale e-Me and other user groups to come .

Another important experience derived from this project is the role that the media can have in inspiring different stakeholders to keep up the ambitions concerning the level of quality. At the time of the launch of the e-Me for students the project had impact in national TV, radio and newspapers. This drove service providers, including the management of UCB, to understand the importance of supplying with wanted services, the programmers to understand the importance of delivering software with high quality and of course expectations from the users – the students.

The next step is making e-Me real. The pilot study has delivered proof-of-concept and today there are a number of stakeholders willing to make efforts in creating a reality of e-Me:s. In the pilot study a user interface directing the attention towards something new and radical was used. The ambition was to not letting students relate to existing artifacts. In the next step there is however an ambition to co-create a world of e-Me:s building on open standards. This could among other things mean that e.g. existing email and calendar clients would be possible to use for some parts of the user interface.

Company structures and business models are now formed for developing a new efficient infrastructure as a driver of e-services both in a national and in an international setting. This line of reasoning is also well in line with integration of public and private services based on the needs coined by the life situation of the client / citizen and thereby the involvement of private and public partners. This was made possible due to the fact that we have taken the individual and his/her life situation, instead of the organization which is providing services to the individual as the starting point.

Important to note is that the research team, as well as other stakeholders, has been driven from the ambition to actually contribute with value to others, in this case students. So far the e-Me project has existed in a more laboratory like environment framed by academia, but in co-operation with different private and public partner organizations. This initial step of the e-Me projects life has been important to keep in such controlled environment. In the next step, when making e-Me real, it is however necessary to establish a more company like structure for the purpose of design and evaluation of emergent business models. For us, this is a way to expand the boundaries of traditional research in which contribution to practice is done by, in initial stages, being part of the emerging practice. We need to explore public-private partnership models and we will do that in an exiting environment with demanding users.

As identified by Lind & Forsgren (2008) an important conclusion is the necessity for going beyond the web site as a design metaphor for e-empowering clients. Potentially e-Me as a device-independent platform for e-empowerment distributing user generated e-services in a public-private partnership business model would be an alternative design metaphor. This platform is also a starting enabler for people to exist in a collaborative world without any "real borders" for joint creation of the future. By letting several views of reality be "collided" with each other in co-design processes, by the support of virtual platforms, different desires and roles will evolve. People and organizations acting

as clients in this galaxy will individually and jointly form their desires, judgments, and recommendations of what is good and bad. People and organizations acting as service providers in this galaxy will have a chance to contribute with services that the clients actually desire. Due to an increased globalization and development of infrastructure in diverse corners of the world such platforms, as e-Me is an example of, will be an enabler for people to be included in the information galaxy in a preserved way.

6.   ACKNOWLEDGEMENT

7.   REFERENCES

Ackoff, R. L. (1981). Creating the corporate future. New York: Wiley.

Albinsson, L. (2005). Using Dramatised Scenarios to Co-Design eGovernment Services. Paper accepted to the eChallenges 2005 in Ljubljana, Slovenia.

Albinsson, L., Forsgren, O. (2005a). The Electronic Assistant e-Me – An Important Element in a Design Language for Co-Design. Published in the Proceedings for Egov 05, Denmark.

Albinsson, L., Forsgren, O. (2005b). Co-Design Metaphors and Scenarios – Two Elements in a Design Language for Co-Design. Published in the Proceedings of LAP 2005, Sweden.

Albinsson L., Forsgren O., Lind M. (2006a). e-Me Stories & Scenarios - The Ideal Electronic Galaxy of the Student, University College of Borås, Sweden

Albinsson, L., Forsgren O., Lind M., Ozan, H. (2006b). Turning the Internet Around – e-Me: The Students ideal e-Service. Paper accepted to and presented at eChallenges 2006, Barcelona, Spain.

Albinsson L., Lind M., Forsgren O. (2007) Co-Design: An approach to border crossing, Network Innovation, eChallenges e-2007, The Hague, The Netherlands

Checkland, P. B. (1988). Soft systems methodology: An overview. J. of Applied Systems Analysis, 15, 27-30.

Eriksson M., Niitamo V-P., Kulkki S. (2005) State-of-the-art in utilizing Living Labs approach to user-centric ICT innovation - a European approach,.CDT, Luleå University of Technology, Sweden

Churchman, C. W. (1968). The Systems Approach. New York: Dell Publishing.

Forsgren O. (1991) Co-constructive computer applications: Core ideas and some complementary strategies in the development of a humanistic computer science. In: Bazewicz M (ed.) Information systems architecture and technologies - ISAT'91. Politechnika Wroclawska, Wroclaw, pp 45-53.

Grönlund Å (2000). Managing electronic services: A Public Service Perspective, Springer, London

Hevner A. R., March S. T., Park J., Ram S. (2004) Design Science in Information Systems Research, MIS Quarterly, Vol 28(1), pp. 75-105

Lind M., Albinsson L., Forsgren O., Hedman J. (2007) Integrated Development, Use and Learning in a Co-design Setting: Experiences from the Incremental Deployment of e-Me, *eChallenges e-2007*, The Hague, The Netherlands

Lind M., Forsgren O. (2008) Co-design: The theoretical foundation of Web 2.0, ´submitted paper

Lind M., Rittgen P. (2009) Challenges of Co-Design: The Case of e-Me, submitted paper

Lindell S., Lind M., Forsgren O. (2006). Students as e-Citizens – Deriving Future Needs of e-Services for Students. Accepted to International Workshop on E-Services in Public Administration (WESPA2006), pp. 99-114, 31/10-2006, University College of Borås, Sweden.

Lindgren R., Henfridsson O., Schultze U. (2004) Design Principles for Competence Management Systems: A Synthesis of An Action Research Study, MIS Quarterly, Vol. 28 (3), pp. 435-472

Liu K, Sun L and Bennett K (2002) Co-Design of Business and IT Systems. Information Systems Frontiers 4(3), 251-256

Mitroff, I. I., & Mason, R. O. (1981). Creating a dialectical social science. Dordrecht: Reidel.

Mumford, E. (1983). Designing human systems, the ETHICS approach. Manchester Business School, Manchester, UK