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Exploring user participation approaches in public e-service development

Fredrik Karlsson [a,b,*], Jesper Holgersson [b], Eva Söderström [b], Karin Hedström [a,b]

[a] MELAB, Swedish Business School, Örebro University, SE-701 82 Örebro, Sweden
[b] Informatics Research Centre, University of Skövde, SE-541 28 Skövde, Sweden

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ABSTRACT

It has been argued that user participation is important when public authorities develop e-services. At the same time there is limited research on the usefulness of existing user participation approaches in public e-service development. In this paper we, therefore, analyze how the three user participation approaches – participatory design, user-centered design, and user innovation – meet the strategic e-service goals of the EU and the US. In doing so, we identify three challenges that need to be considered when choosing among these approaches: 1) unclear user target segments can impede the fulfillment of usability and relevance goals, 2) the nature of participation can impede the fulfillment of democracy goals, and 3) lack of adequate skills can impede the fulfillment of efficiency goals.

1. Introduction

Today, it is common for public authorities to encourage citizens to carry out complex transactions using public electronic services (e-services for short). E-services are an increasingly adopted channel for citizen–government interaction (e.g. Rowley, 2006), and e-government has advanced from the early phase of information publication (Layne & Lee, 2001) to service development. When e-services are introduced as part of e-government, they are often viewed as a way to automate internal, and manual processes (Asgarkhani, 2005), in order to reduce cost and time for providing public services (Anthopoulos, Siozos, & Tsoukalas, 2007). In addition to efficiency goals, the empowerment of citizens, and their satisfaction with the services provided are also promoted in e-government policies (e.g. Altameem, Zairi & Alshawi, 2006; Commission of the European Communities, 2006). But it is important to recognize that the goals in such policies should have implications not only with respect to the results of using e-services, but also in advancing how these e-services are developed.

Today, an intensified customer orientation is found in today's public management (Schedler & Summermatter, 2007). It is elementary to have knowledge about different user groups' needs, skills, and technological environment. In other words, as a systems developer it is important to understand the tasks to support and the special user populations to make sure that users do not reject the developed e-services (Verdegem & Verleye, 2009). Melin et al. (2008) have shown that such knowledge brings positive effects when e-services are deployed. This confirms the extensive research on user participation in, for example, the systems development field (Cavaye, 1995), where these concerns have been present and debated for several decades (Markus & Mao, 2004).

Given the extensive research in the field of systems development and human computer interaction on user participation, it is surprising how few influences we find in the discussion on user participation for e-service development. So far, most e-government research on user participation has focused on the much broader concept of e-participation (e.g. Lourenço & Costa, 2007; Macintosh, 2006; Sæbø, Rose, & Flak Skiftenes, 2008). Axelsson et al. (2010) is a notable exception when they explicitly incorporate existing systems development wisdom into e-service development research. They pinpoint a number of challenges with citizen participation. However, they choose not to discuss specific user participation approaches (they use the term "school") found in the systems development and human computer interaction literature. Consequently, this is a limitation, since user participation can mean many things (Heeks, 1999), and includes a multitude of methods and techniques. Consequently, it is important to consider which user participation approaches are available for systems developers to implement the macro-level goals found in e-government policies (Colebatch, 2007). This toolbox affects how policies can be translated into practice (Hardy & Williams, 2008).

Moreover, existing research has shown that user participation is not a panacea and a number of challenges have been reported (see Kujala, 2003). In a critical review of participation, Heeks (1999) argues that participation shall not be used without considering the political and cultural context. Consequently, it is important to consider why user participation is introduced into e-service development and what is to be achieved with e-services; these types of goals should guide the choice of user participation approaches.

* Corresponding author at:MELAB, Swedish Business School, Örebro University, SE-701 82 Örebro, Sweden. Fax: +46 19 33 25 46.
E-mail addresses: fredrik.karlsson@oru.se (F. Karlsson), jesper.holgersson@his.se (J. Holgersson), eva.soderstrom@his.se (E. Söderström), karin.hedstrom@oru.se (K. Hedström).

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It is therefore a natural step to investigate the possibilities to apply different user participation approaches, which originate from the fields of systems development and human computer interaction, in e-service development. In this paper we analyze how user participation approaches meet the goals of public e-service development and use. In doing so, we identify challenges with applying existing user participation approaches for e-service development. Awareness of these challenges supports practitioners on how to mitigate these concerns in future e-service projects. Furthermore, it advances the body of research knowledge and defines areas for future research.

The paper is structured as follows. In the next section we look at existing user participation research. We take off in the existing wisdom on user participation research as it is discussed in the systems development and human computer interaction fields. We then turn to the rather limited influences that user participation research has had on e-government research literature. In the third section we outline our research design. In the fourth section we identify eight goals with public e-service development. Section five contains a goal analysis of the three user participation approaches, which in section six is mapped to the e-service development goals. Finally, the paper ends with short a conclusion.

2. User participation research

The need for user participation has long been recognized as an important area in systems development and human computer interaction (e.g. Baroudi, Olson, & Ives, 1986; Bødker, 1996; Floyd, Mehl, Reisin, Schmidt, & Wolf, 1989; Hirschheim, 1985; Mumford, 1981). For example, Muller et al. (1997) list 61 participatory methods, such as Joint Application Development (Wood & Silver, 1995) and ETHICS (Mumford, 1993). Aggregated on a higher level we find a number of well known user participation approaches, such as participatory design (Schuler & Namioka, 1993), user-centered design (Norman, 1986) and user innovation (Hippel, 1986).

User participation is believed to provide many benefits especially when it comes to development situations where the tasks are not well understood, or there are special user populations. In the case of e-service development it could, for example, involve people with disabilities, since public authorities are under legal mandate to make sure that their information systems are usable by people with disabilities (Lundman, 2006).

Existing research shows that user participation results in a more complete and accurate definition of requirements (Maiden & Rugg, 1996), improvement of work organization and industrial democracy (Cherry & Macredie, 1999), improved user interfaces (Smith & Dunckley, 2002), decreased user resistance to change (Bjerknes & Bratteteig, 1995), and greater user commitment to the implemented system (Markus, 1983). Despite reported benefits, user participation is not unproblematic and "qualitative evidence suggests that the state of IS participation practice is poor" (Markus & Mao, 2004). There are situations where the selected approach has been counterproductive (McKeen & Guimaraes, 1997) or characterized as demanding. For example, Wilson et al. (1996) and Heinbokel et al. (1996) report that user participation may have negative effects on project performance. Problems arise when systems developers have to resolve conflicts between user groups or when the users demand late changes. It has been noted that user participation per se is not a solution to user–developer communication problems and sometimes users have to be educated in what systems development means (Wilson, Bekker, Johnson, & Johnson, 1996). Oostveen and van den Besselaar (2004) note that user participation projects are often characterized as small, stand-alone applications with low organizational complexity. Furthermore, difficulties are found in sustaining continued use of participative approaches once the research interventions have ended (e.g. Hirschheim, 1983).

As discussed in the Introduction there are a limited number of studies discussing user participation in e-government development, both in the area of systems development and human computer interaction, and even fewer with a focus on e-services. Consequently, it is, for example, not surprising when Benbasat (2010) concludes that e-government is one future challenge in human computer interaction research. Jansen (2006) argues for studying the consequences of using the Scandinavian school, which is one type of user participation approach, in e-government development projects. However, Jansen does not provide any answers, rather gives a direction. Folkerd and Spinelli (2009) add to this discussion as well, when reporting on problems with user exclusion in the requirements engineering stage of public information system development. They state that the use of 'non-collaborative' systems development methods can result in "unpredictable usage of the system or partial rejection." Tan et al. (2007) and Jones et al. (2007) are other examples of agenda setting research. They all acknowledge that we now target users outside the organization, instead of in-house users that were common when working with e-administration (Jansen, 2006). This elaboration of the user concept is not found in early research on development of e-government (Følstad, Jørgensen, & Krogstie, 2004; Oostveen & van den Besselaar, 2004), where users did not include citizens. Holmlid and Lantz (2006) draw the same conclusion and exemplify from an e-government project: "when users are brought up on the agenda they are regarded as internal users."

Følstad et al. (2004) have found consensus among project leaders on the importance of user participation in e-government development. They found that many projects had good user involvement, but lacked a more explicit process. Schedler and Summermatter (2007) conclude that larger municipalities are more likely than smaller ones to explore citizens' needs. However, they were unable to say whether this was caused by having the possibility to allocate more resources or by the need for scalable requirement techniques to handle the municipality size.

There is, however, some research on user participation and e-service development processes. The most recent is perhaps the work of Axelsson et al. (2010) on challenges with user participation: (1) that e-services should target "all of us," (2) citizens do need incentives to participate in the development process, and (3) that more active forms of participation are more demanding for the organization. However, they do not discuss how different approaches of user participation address these challenges or associate them to contemporary goals with e-service development. In addition, Gulliksen and Eriksson (2006) report on attitudes towards user participation in a public organization. They identified problems such as unseen users and lack of time. But they also formulated proposed solutions. One example is the "user pool" concept to facilitate the process of acquiring users to different development projects. Oostveen and van den Besselaar (2004) contribute on how to combine a variety of user participation techniques (interviews, survey, workshops, and scenario-based evaluation) in a large international e-government project. However, their study has limited value when it comes to sorting out effective user participation approaches. The investigated techniques can be part of several different approaches since they exist on a lower level of granularity than the user participation approaches.

Several studies in human computer interaction (e.g. Olalere & Lazar, 2011; Shi, 2007) show that existing e-government solutions are inaccessible for disabled people, despite existing e-government policies. Similar findings are discussed by Lundman (2006) when she concludes that the awareness of disabilities needs to be strengthened in e-service development. She states that involving disabled users in the development process requires adapted user participation approaches.

We can conclude that existing research provides little direction regarding which user participation approach is most effective in an e-service development setting. Existing research about user participation in e-services development seems to focus on setting the research agenda. Less research can be found on assessment of user participation approaches.