A Stakeholder-centric Approach to Information Systems Design

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Abstract: This paper builds on a case study in the Swedish public sector to illustrate a pragmatic view of design, characterized by a focus on stakeholders and social action. This view of design proposes a synthesis of a workpractice diagnosis to gain thorough understanding of business needs and prepare for organizational change, prototyping to design IT systems that are usable for all, and agile values in construction to embrace change throughout the design process. It is argued that information systems design is typically based on a narrow view of users in an intra-organizational setting, while in reality there is a need to include a wide spectrum of stakeholders in IT-enabled change, in order to build usable systems creating value across both organizational and technical borders.

1. Introduction

Contemporary IT system development efforts are typically part of a change process, where the aim is to improve a social setting (e.g. establishing inter-organizational business processes or enabling a community of people to interact with each other in new ways). In the view of socio-instrumental pragmatism [11], IT development enables – and is part of – induction of change in a social context.

In their Multiview model, Avison and Wood-Harper [2] promote the idea that system developers need to take into account the view of different stakeholders in order to improve acceptance of a new IT system. Other authors claim that the extent of stakeholder participation has an impact on the success of projects dealing with business and IT development [6, 20]. Krippendorff expresses that only the users of the artefact tend to be considered in information systems development [17]. This is consistent with Lyytinen and Hirschheim [18], who state that IS research tends to provide a simplistic view of the IT system and how it affects stakeholder interests. They argue that it should reveal the actors' interests with regard to the IT system (and possible conflicts of interest).

The notion of "failure" of IS projects needs to be understood from the different stakeholders' viewpoints. Failure to one may be success for another. From a change management point of view, it is imperative to identify sponsors and blockers of a project, and take into account these political circumstances to improve the feasibility and chance of success [14].

Since the inception of the Internet, the technological context of IT development has grown increasingly complex. New IT systems are typically part of an evolving infrastructure that allows different systems to 'interact' with each other. New technology needs to adapt to the existing infrastructure, and sometimes contribute to the evolution of that infrastructure [9]. Infrastructures and system interaction may span over organizational boundaries, which add political complexity to development [23] – new stakeholders are added, and new dimensions of power and politics arise. This calls for architectural decisions in IS development, which further adds to the complexity of stakeholder management, both concerning technological design and in relation to business issues (e.g.

agreeing upon conceptual models for data exchange). The shift towards interacting and inter-organizational systems calls for a renewal on the discourse on stakeholder management in IS projects [1, 23].

2. Objectives

This paper presents a pragmatic view of IS design that incorporates an elaborate view of stakeholders, and implications for and practice that follow from adopting this view. To paraphrase R. Edward Freeman, this paper addresses "who and what really counts" in an IS development project in a Swedish e-government context. An important contribution from this work is that it proposes a design process with *inherent* characteristics to address stakeholder issues.

3. Methodology

This research has been conducted through a practical inquiry [11]. The purpose has been to contribute both to local practices ("the LSS case", see below) and to general practices. Besides local contributions in terms of participation in work practice renewals and IT systems design, the aim has been to formulate knowledge that is valuable for practitioners outside these local practices. General practice contributions are formulated as abstracted and constructive knowledge aimed for practitioners and researchers.

   This practical inquiry comprises both action research and design research [12, 27]. Action research [e.g. 28] has implied a close collaboration between researchers and practitioners aiming at theoretically informed organisational changes. We have worked through iterations of evaluations, action plans (designs), practical interventions and mutual learning. Design research [e.g. 15, 19] has implied researchers' active design of different artefacts such as models, prototypes and software-to-use. The design processes have been based on both 1) situational pre-conditions, needs and visions and 2) practical theories and design methods, patterns, and ideals. An approach with continual iterations between design and evaluation has been applied.

4. The LSS Case

In this section, we introduce the background of the LSS case, followed by an overview of the design process and its rationale.

4.1 – Background

In Sweden, the *Act concerning Support and Service for Persons with Certain Functional Impairments* (LSS) regulates ten types of services provided by the municipality to the individuals. The intention of the law is to enable persons with functional impairments full participation in everyday life, insofar as possible.

   One of the services regulated in LSS is personal assistance. In October 2006, 3698 persons received personal assistance (The National Board of Health and Welfare, 2007). A personal assistant may be assigned to a person belonging to a group of people entitled to special services. The legislation has gone through a series of changes over time, and as a consequence, the municipalities have revised the way they work in order to comply with these changes. A number of legislative revisions have caused the current municipal administration to be rather complex and inefficient.

   In addition to the municipalities, The Swedish Social Insurance Agency is an important stakeholder in the LSS-administration. Given the legislation, municipalities and the Social Insurance Agency have different responsibilities with regard to decision-making and funding of personal assistance.

In January 2007, the LSS Inquiry was initiated, aiming at improving the LSS-administration. The project team consisted of representatives from 14 municipalities, the Social Insurance Agency, and project management from the non-profit organization Municipalities for Joint Development of e-Services (Sambruk) – a Swedish non-profit organization that supports collaboration and knowledge management in inter-municipal development projects in the Swedish public sector. Organisations such as Sambruk – networks of 'smaller stakeholders' – may be conceived of as new stakeholders, established to be more powerful in negotiations than their individual members. Sambruk seeks to exploit this, e.g. when negotiating with IT system vendors.

4.2 – Design approach

Socio-instrumental pragmatism (SIP) was a foundation for the LSS case design approach. SIP is a theoretical framework founded in – among other things – the philosophy of American pragmatism, social action theories, symbolic interactionism, speech act theory, affordance theory, and activity theory [11].
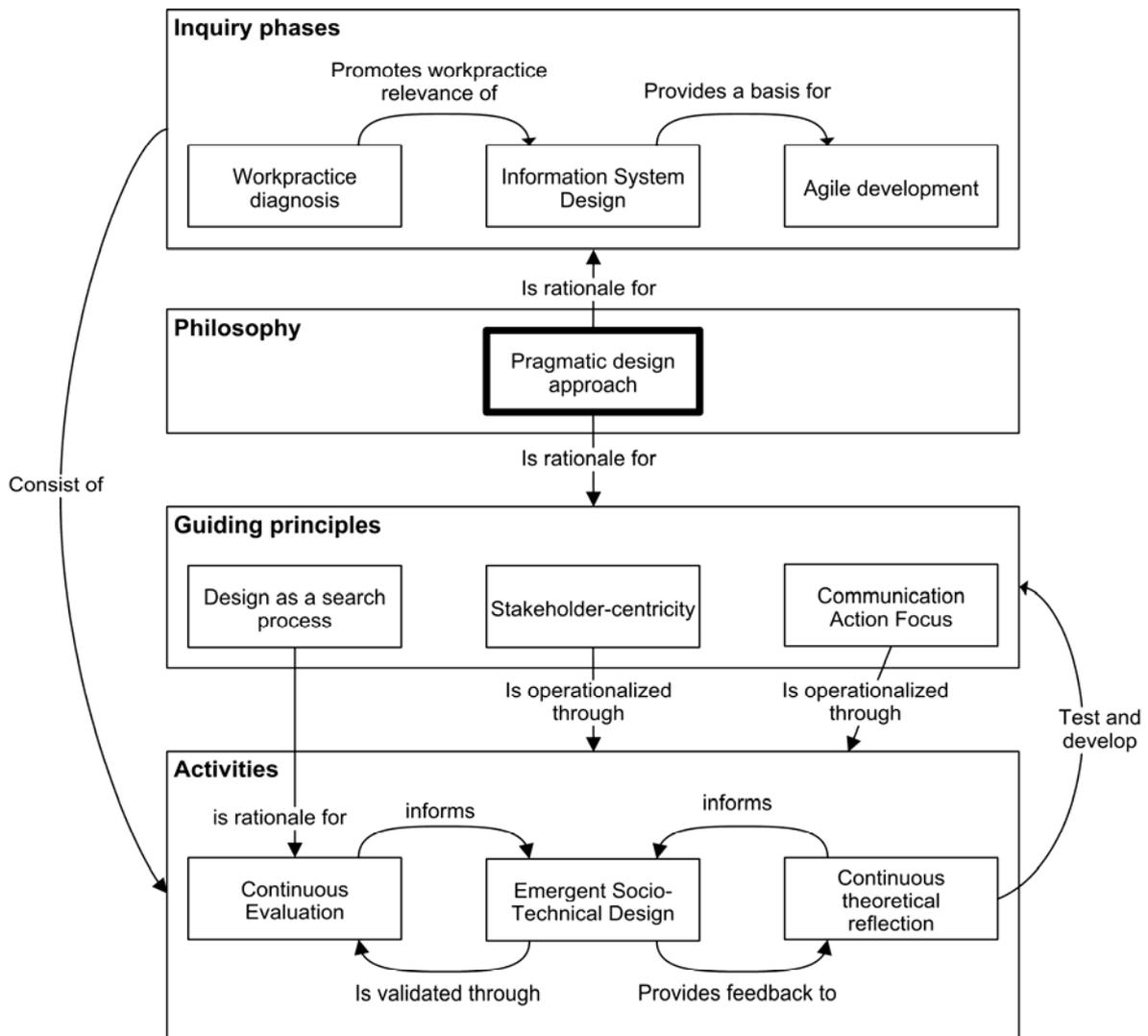

Figure 1: Design approach in the LSS case

The practical implications of SIP for the design approach are shown in figure 1 and briefly explained here. There were three major phases of inquiry:

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A *workpractice diagnosis* based on the SIMM approach to change analysis [13], including a number of activities to understand the workpractice processes, its problems and goals, and to make well-informed change proposals to overcome the identified problems. The change proposals included proposals on purely *social* changes to the workpractice, e.g. revising who has the responsibility for decision-making, but they also included proposals regarding the design and implementation of a new IT system.

Information systems design was conducted using a prototyping approach [5, 21]. Non-functional prototypes were developed using static web pages and software tools for user interface design. The emerging prototypes were exposed in various meetings, workshops and conferences to get feedback on the emerging design, and to make various stakeholders knowledgeable about the new IT system and its design rationale (the values created through its implementation). After a number of cycles of design and feedback, the project group determined that the design was satisficing to move to the next phase.

An *agile development* approach [3, 10, 25] was adopted to develop the system. One of the municipalities was selected to be a pilot municipality during the development. Agile development means frequent communication between developers and customers, and that developers embrace changing requirements from the customers.

All three phases of design were governed by three guiding principles: (i) *Design as a search process*, which implies that design is inherently iterative, and needs several cycles of design-evaluation in order to design solutions that solve the problems in a manner that is satisfactory [8]. Design, in a SIP perspective, is conceived of as social construction. (ii) *Stakeholder-centricity*, which recognizes design ideals as being subjective, and that design is political and shaped by different stakeholder interests [23]. As stated by Orlikowski and Iacono: "IT artefacts are not natural, neutral, universal or given [...] We need to recognize IT artefacts as products of human design, thus shaped by the "interests, values, and assumptions of a wide variety of communities of developers, investors, users, etc." [22, p 131]. (iii) *Communication action focus*, which means that the designer sought to understand social interaction in the workpractice, and how to improve processes and collaboration through a re-design of IT as a tool for social interaction [13, 29].

An adoption of these three principles means that design is characterized by emergent socio-technical design, continuous evaluation, and continuous theoretical reflection.

5. Stakeholder-centric issues in the LSS case

The *business stakeholder map* (figure 2) is a re-construction of stakeholders that emerged in the LSS case design process. The basis for the re-construction is a pragmatic model of stakeholders in relation to IS design [26]. Note that only a subset of the identified stakeholders is mentioned in this paper. However, these examples serve well to illustrate the political complexity of the inquiry.

Example 1: The design process aimed at producing value for *all* direct users of the new IT system: (i) **Work managers**, using the IT system to schedule personal assistance, monitor the delivery of assistance, audit and confirm time reports, and handle invoicing and follow-ups on assistance. (ii) **Personal assistants**, using the IT system to report time, either on the web or using a smartphone, and report expenses to their employer. (iii) **Clients**, using the new IT system to inform themselves about available resources for assistance, and to review the municipal administrative process (their schedule in relation to assistants' time reports and work managers' confirmations). All these groups became 'sponsors' of the project, which is likely a result of a series of interactions between designers and these three stakeholder groups. Further, the meetings with these stakeholders provided valuable feedback to the designers.

Example 2: The **social insurance agency** is an important collaboration partner for the municipalities, since it provides a rather large part of the funding for personal assistance.

Municipalities deliver personal assistance, and invoice the social insurance agency. This stakeholder was considered an important sponsor to ensure feasibility of a number of innovations in the municipal administration. Although the social insurance agency was represented in the project, and their representative was positive towards the ideas brought forward in the project, the social insurance agency turned into a "blocker" of some changes that would have saved the municipalities a lot of effort (and money). In a critical meeting, other representatives of the agency were reluctant to embracing the ideas from the project. The key lesson learned here was that the representational issue is crucial – there is a need to form relations to true decision makers in the stakeholder organization to ensure that perceived 'sponsors' do not turn into 'blockers' at a later stage in the project.
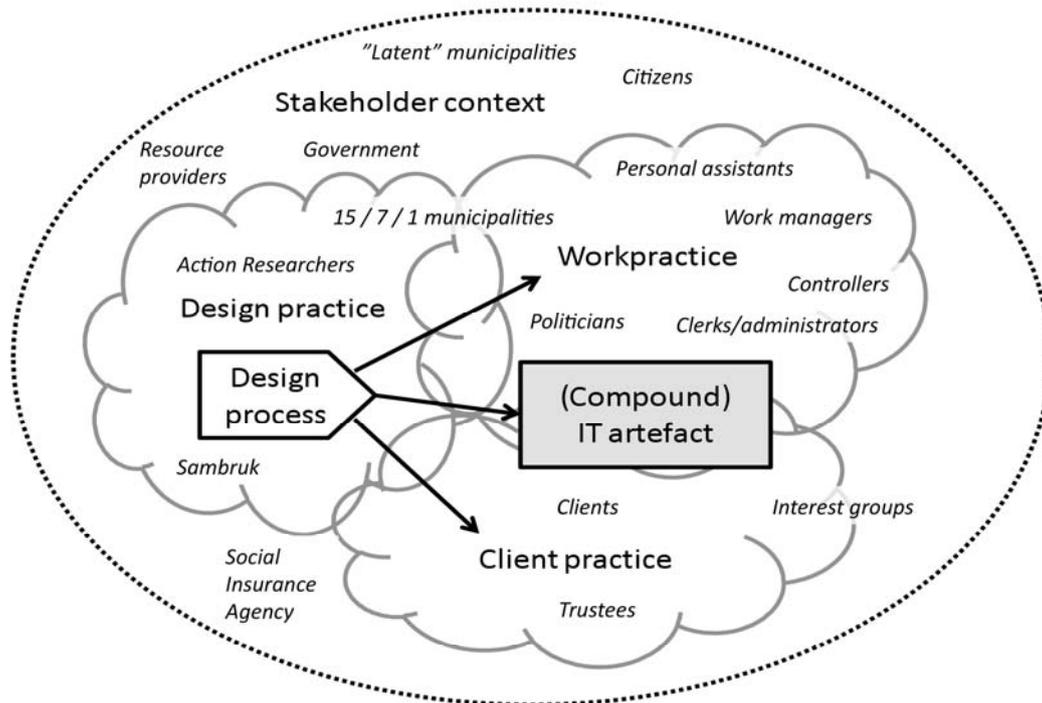

Figure 2: A 'business stakeholder' map from the LSS case

Example 3: The clients join forces in strong **interest groups** for functionally impaired. In this project, it was deemed important to come up with results that were appreciated by the clients. First, the municipalities exist to serve the citizens by carrying out activities as stated in legislation. Second, if the interest groups form a negative opinion about the project, they may communicate this through media, making it hard (or impossible) for politicians in the municipalities to support the project financially. Typically, the participating municipalities finance projects in the Sambruk context. In this case, representatives from 14 municipalities were part of the project initially, and ideally all 14 would have contributed financially to committing changes (e.g. developing or procuring IT systems). Thus, it was both desirable and necessary to establish good relations with interest groups. This was done through communication between project management and management representatives of the main interest group, and (in the IS design phase) by demonstrating prototypes of the planned IT system at two conferences arranged by this interest group. This generated both valuable feedback for IT system design, and essentially made the interest group a 'sponsor' of the project.

Example 4: Another important type of stakeholder, with a lot of power, is the **product vendor** – the developer of an IT system in use in the pilot municipality. Collaboration with

vendors of systems-in-use needed is often desired when developing new applications, in order to satisfy the need for applications to interact with the old ones. System interaction may be desirable to avoid work redundancy, and inconsistencies in information structures. In the case of the pilot municipality, the vendor of the existing scheduling system turned out to be unwilling to support the project in importing schedule data to the new IT system. After contacting the company with a request to develop an adapter for system interaction, they responded after five weeks, stating *"Our development team does not have the time to help you with this request right now. They need to prioritize version upgrades and other maintenance, at least within the foreseeable future"*. The vendor of an IT system – which is meant to support municipal administrative processes – becomes a 'blocker' to this project. From a municipal perspective, this type of dependency on a vendor is highly unfortunate. In a way, it can be interpreted as a municipal lack of control over the development of their own organization.

6. Discussion

There are several reasons, found in multiple academic disciplines, to centre a design process on its stakeholders.

First, it is a means to understand the work practice and its problems. We need to focus business problems from early stages of inquiry in order to come up with change measures that solve the actual problems in the workpractice. There is also a need to be open for different kinds of innovative changes, and avoid the trap of just creating IT support for the current processes in the organization. Work practice understanding and innovation is promoted by the guiding principles in the proposed view of design.

Second, there is a need to make sure that the requirements for a new IT system are based on the actual needs of the organization. The requirements thus need to be shaped and assessed by the practitioners who will use the IT system (this is further discussed in the IS design section below). The proposed view of design starts with a workpractice focus, and it embraces changing requirements throughout prototyping and development, and continuously exposes emerging design results to stakeholders to promote constructive dialogue between designers, workpractice staff, clients, and other stakeholders.

Third, from a change management perspective, the strategy of engaging people at an early stage in a change process increases the chances that they actually accept and adopt the changes [16]. A user-centered design process has also proven to increase the chance of building *usable* IT systems [4, 24], which are usable to all stakeholders.

Fourth, as shown in the case examples, there is a need to manage relations across organisational borders, which needs to be conceived of as an extension of the change management perspective. This can be seen both as a matter of building inter-organisational systems (as shown in example 2) and as a matter of managing vendor relations (as shown in example 4). The management of such relations has an impact on the feasibility to commit desired changes.

Fifth, as highlighted in example 3, there are reasons to manage relations with other parties that may influence the feasibility of the project. In this case a client interest group.

Sixth, emerging open innovation business models offer new and powerful ways to make innovation happen through the delegation of idea generation (and other areas of product development) to actors outside the own organization [7]. Such business models do not only promote innovation, they also resonate well with democratic values, and should thus be further elaborated upon in e-government projects (i.e. the inclusion of citizens and businesses in the development of public administration).

In summary, one may consider an inclusive approach to stakeholders important both with respect to the usability of the product-to-be-built, the acceptance and utility of that product and the accompanying organizational changes. This discussion on stakeholder-

centricity constitutes a rationale to embrace a stakeholder-centric approach to design in a wider sense than a narrow focus on users of the IT system to be built.

7. Conclusions and implications for practice

The theoretical discussions and the empirical work in this study signal that, apart from some recent initiatives [1, 23], existing approaches to stakeholders within IS research tends to be based on an outdated view of IS development. There is a need for new models, incorporating contemporary complexities of IS development: Projects are inter-organizational, leading to systems that depend on and contribute to existing infrastructure. Based on our action research in the Swedish public sector, there is a clear need for practical theories to promote stakeholder-centricity in such projects. In this paper, a pragmatic design approach including the concept of stakeholder-centricity has been demonstrated, and six different arguments providing a rationale for the concept have been put forward.

In an e-government context, it is (arguably) more evident that various stakes need be taken into consideration. Government acts *on behalf* of the people, and is *funded* by the people through taxes, and people should be the *beneficiaries* of government action. 'People', however, is a broad term that may be understood in different ways, e.g. as individuals, interest groups, employees or shareholders in a company. When developing public administration, all of these entities are stakeholders that need be identified and taken into consideration. It is also important to reflect about the organization of government into various independent entities, such as local governments, and 'federal' government agencies. Thus, from an e-government perspective, the *normative* dimension of stakeholder theory – the social responsibilities of an enterprise – appears less problematic than in the private sector: It is a justifiable end in itself, rather than merely a means to improve shareholder profits.

The input from various stakeholders is a key to innovation. In the LSS case, idea generation stemmed from stakeholder interaction. At the same time, a broad approach to including stakeholders was necessary to assess and improve the feasibility of the ideas in the project. The LSS case and its theoretical foundation – socio-instrumental pragmatism – lead us to suggest that the three activities *workpractice diagnosis*, *IS design through prototyping*, and *agile development* are commensurable, in that they both invite stakeholders to inform the design process and help communicate the ideas of design to those stakeholders. An important practical implication of this is that there is an active collaboration with stakeholders throughout inquiry – even in latter activities focusing technological issues.

8. Acknowledgements

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