Department of Information and Service Economy

Open-Ended User Feedback in the Continuous Development of Information Systems and E-Services

Hilkka Merisalo-Rantanen

Aalto University

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Abstract

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Abstract

Information systems are increasingly web-based and part of web-portals and ERP-systems that users see as a single service. Business processes and information systems are intertwined and constantly co-evolve. Systems and e-services affect many stakeholders and vast numbers of users, including consumers. Their needs, expectations, and desires are versatile, even conflicting, and change over time. Therefore, ongoing user involvement in systems development is important for providing sufficient service quality. Yet, it is very challenging for the service provider to directly reach or control users and other stakeholders.

The utilization of open-ended user feedback provides a solution for ongoing user involvement. Open-ended feedback includes complaints, but also opinions and new ideas and tackles both business and organizational issues in addition to the system under consideration. However, the unstructured nature of open-ended feedback makes it difficult for such feedback to be analyzed and utilized. Often, no formal structure exists for forwarding feedback into the planning, development, and decision making processes.

The objective of this qualitative research is to understand the management and utilization of open-ended user feedback in continuous information system and e-service development. Interpretive case study approach and action research are applied in five cases that represent various industries, types of information systems and e-services, and development situations.

Methods and practices for the management and utilization of open-ended user feedback are developed. First, e-collaboration processes are developed for gathering open-ended feedback from users and other stakeholders at operational and strategic levels. Second, a model for feedback management is developed for gathering, analyzing, and disseminating open-ended feedback throughout the organization and all levels of planning. Finally, an e-service development model is constructed for integrating feedback management, information systems development, and new service development, thus enabling feedback utilization in those processes.

The developed processes and models cover the whole feedback lifecycle from idea conception to utilization. The e-service development model integrates idea generation, information system, and new service development processes. The results enable continuous user involvement through open-ended feedback throughout the system lifecycle and at all levels of planning. They are useful for both academia and practitioners in their undertakings to implement, improve, and integrate practices for feedback management and continuous information system and e-service development.

Keywords User participation, open-ended user feedback, feedback management, information systems development, e-service development, new service development, evolutionary development

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Tiivistelmä

Tietojärjestelmät ovat yhä enemmän verkkopohjaisia ja osia verkkoportaaleissa ja toiminnanohjausjärjestelmissä, jotka käyttäjän näkökulmasta ovat yksi sähköinen palvelu. Liiketoimintaprosessit ja järjestelmät ovat sidoksissa toisiinsa ja muuttuvat jatkuvasti. Tietojärjestelmät ja sähköiset palvelut vaikuttavat moniin sidosryhmiin ja suureen joukkoon käyttäjiä, mukaan lukien kuluttajia. Käyttäjien tarpeet, odotukset ja toiveet ovat moninaisia, muuttuvia ja jopa ristiriitaisia. Käyttäjien osallistuminen jatkuvaan tietojärjestelmien kehittämiseen onkin tärkeätä hyvän palvelutason takaamiseksi. Palvelun tarjoajan on kuitenkin haastavaa suoraan tavoittaa tai hallita käyttäjiä ja muita sidosryhmiä.

Vapaamuotoisen käyttäjäpalautteen hyödyntäminen on ratkaisu käyttäjien jatkuvaan osallistumiseen. Palaute sisältää valitusten lisäksi uusia ideoita ja tarpeita, jotka koskevat kyseisen järjestelmän ohella sekä liiketoimintaa että organisatorisia seikkoja. Jäsentymätöntä vapaamuotoista palautetta on kuitenkin vaikeaa analysoida ja hyödyntää. Systemaattisia tapoja välittää palaute suunnittelu-, kehittämis- ja päätöksentekoprosesseihin ei usein ole.

Tämän laadullisen tutkimuksen tavoitteena on ymmärtää, miten hallita ja hyödyntää vapaamuotoista käyttäjäpalautetta tietojärjestelmien ja sähköisten palveluiden jatkuvassa kehittämisessä. Tulkitsevat tapaustutkimukset ja toimintatutkimukset on tehty viidessä organisaatiossa, jotka edustavat eri teollisuudenaloja, tietojärjestelmä- ja verkkopalvelutyyppejä sekä kehittämistilanteita.

Tuloksena on menetelmiä ja käytäntöjä vapaamuotoisen käyttäjäpalautteen hallintaan ja hyödyntämiseen. Ensiksikin on kehitetty sähköisiä yhteistyöprosesseja vapaamuotoisen käyttäjä- ja sidosryhmäpalautteen keräämiseksi toiminnallisella ja strategisella suunnittelutasolla. Toiseksi on kehitetty palautehallintamalli vapaamuotoisen palautteen keräämiseksi, analysoimiseksi ja välittämiseksi organisaatiossa ja eri suunnittelutasoilla. Lopuksi on kehitetty sähköisen palvelun kehittämismalli palautehallinnan, tietojärjestelmien kehittämisen ja uuden palvelun kehittämisen prosessien integroimiseksi.

Kehitetyt prosessit ja mallit kattavat palautteen elinkaaren idean syntymisestä sen hyödyntämiseen. Sähköisen palvelun kehittämismalli integroi ideoinnin sekä tietojärjestelmien ja uuden palvelun kehittämisen prosessit. Tulokset mahdollistavat jatkuvan käyttäjien osallistumisen vapaamuotoisen palautteen avulla koko järjestelmän elinkaaren ajan ja kaikilla suunnittelutasoilla. Ne ovat hyödyllisiä tutkijoille ja myös yrityksille, kun ne ottavat käyttöön, parantavat ja integroivat palautehallinnan ja jatkuvan järjestelmien ja sähköisten palveluiden kehittämisen käytäntöjään.

Avainsanat Käyttäjien osallistuminen, vapaamuotoinen käyttäjäpalaute, palautehallinta, tietojärjestelmien kehittäminen, sähköisten palveluiden kehittäminen, uusien palveluiden kehittäminen, evolu-tionäärinen kehittäminen

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Vantaa, December 2010

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II. Bragge Johanna, Merisalo-Rantanen Hilkka, Nurmi Antti, Tanner Leena (2007). "A Repeatable E-Collaboration Process Based on ThinkLets for Multi-Organization Strategy Development", *Group Decision and Negotiation*, 16 (4), 363-379. Available at http://www.springerlink.com/content/374h873545241367/fulltext.pdf

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PART I: OVERVIEW OF THE DISSERTATION

1 Introduction

In this section, the background and motivation, research questions and objectives, and the outline of the dissertation are presented.

1.1 Background and Motivation

Contemporary information systems (IS) are increasingly web-based (WIS) and part of web-portals or ERP-systems that the users see as a single service. Examples of electronic services (e-services) are e-banking, e-booking of travels, hotels, and events, e-shops for both physical and digital goods, e-logistics for warehousing and delivery monitoring, e-check-in, e-payments, and e-invoicing. These advanced web-based applications differ from simple, e.g. purely informational WIS, by their large volumes of information, dynamic web pages, integration with database and other similar systems, vitality in user satisfaction, and preparedness for seamless evolution (see e.g. Deshpande et al., 2002). They require high performance, continuous availability, a large development team with expertise in diverse areas, and are deployed in mission-critical applications (Ginige and Murugesan, 2001). WIS have become closer or equivalent to digital services (Nambisan, 2003; Nambisan and Wilemon, 2000). [1]

These complex IS and e-services are constantly evolving due to continuous changes in business, technology, regulation, and user needs (Cook et al., 2006). Business processes and IS are intertwined and co-evolve, and a change in one often affects the other (Cook et al., 2006; Lowe, 2003). The development is necessarily an evolutionary process with a long lifecycle (Jazayeri, 2007; Cook et al., 2006; Murugesan and Ginige, 2005; Ginige and Murugesan, 2001). Maintenance and redesign in the use phase of the system lifecycle is continuous. As contemporary WIS have become closer or equivalent to digital services, integration of information systems development (ISD) and new service development (NSD) must be contemplated (Menor et al., 2002; Nambisan and Wilemon,

[1]The terms web-based information system, web-service, e-service, and digital service are used interchangeably in this research. IS and e-service are used as general terms and, when referring to the literature, the terms of the reference are used.

2000; Nambisan, 2003). Menor et al. (2002) even question whether a totally new NSD process for Internet service exists. NSD has evolved from the marketing literature relating to new product development (NPD) to consider the special features of service development (see e.g. Nijssen et al., 2006). [2]

Contemporary IS and e-services affect many stakeholders and vast numbers of users from within and outside the organization (e.g. Markus and Mao, 2004; Ramler et al., 2004). The employees of global organizations are geographically widespread and far from the internal or outsourced development organization. Organizations develop IS jointly, forming coalitions or consortia to manage IS and its development (Nurmi, 2009). External users may be geographically widespread, organizational or personal, customers or non-customers, and known or unknown to the service provider (Ramler et al., 2004). Consumers are often the largest user group of WIS. Thus, users are heterogeneous in many respects, e.g. education, culture, ethnicity, age, computer skills, financial needs, expectations, and perceptions (Markus and Mao, 2004; Ramler et al., 2004). It is very challenging for the service provider to directly reach or control the users (Markus and Mao, 2004; Ramler et al., 2004) that are external and may stay anonymous and unknown. [3]

Yet, the needs, expectations, and desires of these users for the system are versatile and even conflicting. According to Lowe (2003), web systems requirements elicitation is different from the conventional one. User requirements are often vague at the beginning. The requirements also change over time as business procedures and technologies evolve, and the users understand better the goals of the system through its use (Lowe, 2003). Thus, ongoing user involvement throughout the system lifecycle, also in the maintenance stage, is important (Ramler et al., 2004; Magnusson et al., 2003; Hsieh and Chen, 2005).

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[2]The term information systems development (ISD) is used in this research as a general term that may also comprise WIS development (WISD) and web-service or e-service development. Respectively, new service development (NSD) embodies both NSD and new product development (NPD). When referring to the literature, the terms of the reference are used.

[3]In this research, the term user is used in a general manner, covering both internal and external user groups. The terms user and customer are used interchangeably and, when referring to the literature, the terms of the reference are used.

User involvement in ISD and NSD has been studied for decades. Yet, previous research mainly focuses on the direct involvement of internal, organizational users in the early stages of system development (see e.g. the waterfall model for ISD (Royce, 1970; Brooks, 1975) and the stage-gate model for NSD (Cooper et al., 2002a; Cooper et al., 2002b)). Ramler et al. (2004) are one of the first to study user involvement in the post-implementation phase. Ramler et al. (2004), based on Powell (1998), distinguish four types of maintenance: corrective (fixing bugs and design deviations that have occurred), preventive (avoidance of these problems in the first place), adaptive (some change in the system's environment occurs such as a new Web browser), and perfective (enhancements, e.g. new functionalities, or increases in the efficiency of the IS). The emphasis in the post-implementation phase should be on the further development of the system through adaptive and perfective maintenance. The NSD literature classifies this phase as incremental innovations, e.g., service improvements, service line extensions, and style changes (Menor et al., 2002).

We suggest the utilization of open-ended user feedback as the solution for continuously involving heterogeneous users and other stakeholders in IS and e-service development throughout the system lifecycle. Fundin and Bergman (2003) maintain that user feedback on an existing IS and IS-based service provides insights on the opinions of current and future customers, thus resulting in more satisfied customers and better functioning service. Feedback is also useful for developing new or improved functions and new interface channels to existing IS as well as a source of innovative ideas for new IS and even new business opportunities (Fundin and Bergman, 2003). Users are frequently found to be good innovators, especially when developing new services or products (e.g. Magnusson et al., 2003; Matthing et al., 2006; Sawhney et al., 2005; Thomke and von Hippel, 2002).

Yet, it is difficult to receive relevant feedback and new ideas on an existing IS even if formal methods are used. Feedback is often solicited from individuals based on their official status or expertise, but they might lack the real interest on the development of the IS in question. Most organizations regularly accomplish formal, usually quantitative, surveys and market research on pre-set topics. These methods direct the participants to

deal with only pre-defined aspects of the system, and the selection of representative, innovative, and motivated representatives is difficult (e.g. Enkel et al., 2005). Helpdesks, contact centers, and interaction centers are available for unsolicited feedback and interaction that mostly consist of complaints and error notifications (Romano and Fjermestad, 2003; Sampson, 1998; Sampson, 1996).

The web and the online service itself provide excellent means for continuously reaching and involving heterogeneous users and for gaining insights on their current and future needs (Floh and Treiblmaier, 2006; Prandelli et al., 2006). The Internet and WIS enable interaction directly with mass users, consumers, and virtual user communities (Hsieh and Chen, 2005). However, according to Ramler et al. (2004), the standard feedback forms and mailto-links provided in web services produce mainly complaints about the existing functionality. Only the most satisfied or dissatisfied users are motivated enough to give feedback on their own initiative and the service must be quite critical for users in order to activate them to give unsolicited feedback (Ramler et al., 2004). Thus, it is still necessary to contact users and to solicit their feedback, also in face-to-face settings. Personal contacts, although electronic, and incentives are needed and wished for in the Internet age as well (Floh and Treiblmaier, 2006). It has been argued that personal interactions may help improve customer loyalty in situations where e-services become so depersonalized and commonplace that it is easy to switch the service provider (see e.g. Neslin et al., 2006; O'Loughlin and Szmigin, 2006).

The objective of an institutionalized, integrated feedback management system (FMS) is to enable continuous learning, improvement in service quality and productivity, and process redesign by systematically collecting, analyzing, and disseminating various types of user feedback (Fundin and Bergman, 2003). Utilizing user feedback enables continuous user involvement and influence throughout the system lifecycle. It facilitates an IS or e-service that constantly provides sufficient service quality and meets the needs and desires of various users. Maintenance and redesign in the use phase of the IS lifecycle results in better quality of both the work activities and IS by adding the exploitability of the IS (Nurminen and Forsman, 1994).

However, organizations face problems with implementing feedback management processes and integrating them with their development processes. The unstructured nature of open-ended feedback makes it difficult for such feedback to be analyzed and utilized (Ramler et al., 2004; see also Pavlou and Dimoka, 2006; Prandelli et al., 2006). Previous research has mostly focused on numerical feedback ratings ignoring the role of open-ended feedback (Romano and Fjermestad, 2003; Pavlou and Dimoka, 2006; Romano et al., 2003). In many cases no formal structure exists for forwarding customer feedback into the ISD or NPD process (Fundin and Bergman, 2003; Geib et al., 2005; Wirtz and Tomlin, 2000). Hence, far too often the feedback is not utilized in the development of the existing and new offerings. Seldom is innovative feedback even sought.

To sum up, organizations should have an effective and efficient feedback management process for gathering, analyzing, and disseminating open-ended user feedback throughout the organization. The process should cover the whole feedback lifecycle. New types of feedback gathering methods must be systematic but encourage users to freely bring out new development ideas. The ideas should be found from open-ended feedback as well as disseminated and utilized in the development of IS and e-services. Thus, feedback management should be integrated in ISD and NSD and the relationship between ISD and NSD defined.

1.2 Key Constructs

Next, a few key constructs of this research on feedback management and utilization in IS and e-service development are defined.

1.2.1 Feedback

The concept of feedback is vague and understood differently in various disciplines and contexts. We adopt the general definition of feedback for management theory offered by Ramaprasad (1983 pp. 4-5): "*Feedback* is information about the *gap* between the actual level and the reference level of a system parameter which is used to alter the gap in some way". "If the information on the gap is merely stored without being *utilized* to alter the gap, it is not feedback."

In an organizational setting, system parameters (input, process or output) are usually intertwined and the measurement of the actual and reference levels to define the gap is difficult, especially when the levels are qualitative. Yet, a mechanism for the comparison of the two levels is a requirement of feedback. In addition, feedback must always have a purpose in an organization, e.g. stabilization, control, growth or change. A conscious decision has to be made on the actions to widen, reduce or remove the gap - or leave it as is. Otherwise, the cost and effort of finding the gaps is just an expense (Ramaprasad, 1983).

1.2.2 User and Related Constructs

In the IS literature, the term *user* is analogous to e.g. end-user, hands-on user, and a user that exploits the outcome of an IS in one way or another. A user is usually regarded as an internal organizational user as distinct from users external to the organization providing the IS or service. Millerand and Baker (2010) define three groups of users: hands-on users, social actors, and sociopolitical actors. *Hands-on users* are those who interact "hands-on" with the IS either during ongoing use or in the definition and development phase. A *social actor* is the user of the information mediated by the system. A *sociopolitical actor*, also called a *stakeholder*, is impacted by the IS. Iivari and Iivari (2006) maintain that users form only one stakeholder group to be taken into regard in systems development, especially when systems are developed for work contexts.

The user of an IS may also have a *customer* relationship with the organization. Another specific group of users is *consumers*, i.e. ordinary people, as external, non-organizational users of an IS or e-service (Tuunanen et al., 2010). Magnusson (2009) regards ordinary users as the opposite to *lead users* (von Hippel, 1986).

In practice, users play multiple roles during the ISD lifecycle and the distinction between users and developers is becoming vague. The question is who is allowed and supported to co-develop, co-create, and co-use (Millerand and Baker, 2010).

1.2.3 Information Systems Development and Related Constructs

An *information system* is "an integrated set of components for collecting, storing, processing, and communicating information" (Encyclopædia Britannica, 2010a).

According to Hirschheim et al. (1995 p. 13), "IS are technically mediated social interaction systems aimed at creating, sharing and interpreting a wide variety of meanings". They continue that computers provide an effective means to proliferate and change the quality of social interaction. A *web-based information system* (WIS) or a *web-service* is an IS or a group of information systems developed to or integrated in the Internet and web environments (Deshpande et al., 2002). WIS and web-services belong to e-services that Rowley (2006 p. 341) defines as follows: "*E-service* is deeds, efforts or performances whose delivery is mediated by information technology (including the Web, information kiosks and mobile devices). Such e-service includes the service element of e-tailing, customer support and service, and service delivery."

Lyytinen (1987 p. 6), citing Welke (1981), defines *information systems development* (ISD) as "a change process taken with respect to object systems in a set of environments by a development group to achieve or maintain some objectives". Lyytinen (1989) regards ISD as a social change process where changes in technical, symbolic (data), and organizational object systems result in a new or modified IS application. The change must be identified, designed, and managed in a systematic and coordinated manner to develop applications that are meaningful for the organization, and development processes adapted to the context and problem at hand (Lyytinen, 1988). Hence, each development situation, e.g. WIS development, is unique.

With regard to WIS development, NSD is also relevant. According to Johne and Storey (1998), *new product development* (NPD) is the development of tangible products new to the supplier. Sometimes NPD is expanded to include *new service development (NSD)*, i.e. the development of service products new to the supplier. A *service product* is by nature intangible while *product development/innovation* focuses on the development or improvement of tangible or service products (Johne and Storey, 1998). The degree of newness to the organization or the market distinguishes an innovation from a change and defines its radicality (Johannessen et al., 2001).

An *ISD methodology* guides the change process. Hirschheim et al. (1995 p. 22) define an ISD methodology as "an organized collection of concepts, methods, beliefs, values and normative principles supported by material resources". They maintain that different

methods are required for different purposes or development situations. Iivari et al. (2000/2001) have suggested a hierarchy of ISD paradigms, approaches, methodologies (methods), and techniques to help modify a method for a specific situation.

Cook et al. (2006) present three types of *evolutionary software development.* Firstly, it may refer to the changes in a software product over its lifetime as the result of a complex feedback-driven process of change. Evolution is emergent and unintentional as the result of maintenance and other changes. Secondly, evolutionary development may mean intentionally changing software e.g. to meet the changing needs of users. Thirdly, the term evolutionary may characterize software that automatically adapts to changing circumstances based on optimization and searching (Cook et al., 2006). We are interested in the intended changes in an IS via open-ended feedback. We also use the terms continuous and ongoing ISD as well as the further development of a system to refer to IS evolution.

An *investment* is generally defined as "a process of exchanging income during one period of time for an asset that is expected to produce earnings in future periods" (Encyclopædia Britannica, 2010b). Information systems and e-services are technology investments that, according to Willcocks and Lester (1997), involve high risks and hidden costs for reasons such as the size and complexity of the project, the newness of the technology, the degree of structuredness in the project, and human, cultural, and political factors. Rather than, or in addition to, economic issues, competitive reasons together with the infrastructure and capital asset nature of IS/IT must be addressed when evaluating and deciding upon these investments. Thus, IS/IT investments have different objectives, and a *systems or investment portfolio* helps in the prioritization of the existing and new IT investments (Willcocks and Lester, 1997).

1.3 Research Questions and Objectives

In this research, our objective is to understand and improve the management (i.e. gathering, analyzing, and disseminating) and utilization of open-ended user feedback in the continuous development of existing and new IS and e-services. We aim at developing efficient, effective, and generalizable methods and practices for these activities. The research setting and research questions are summarized in Figure 1.

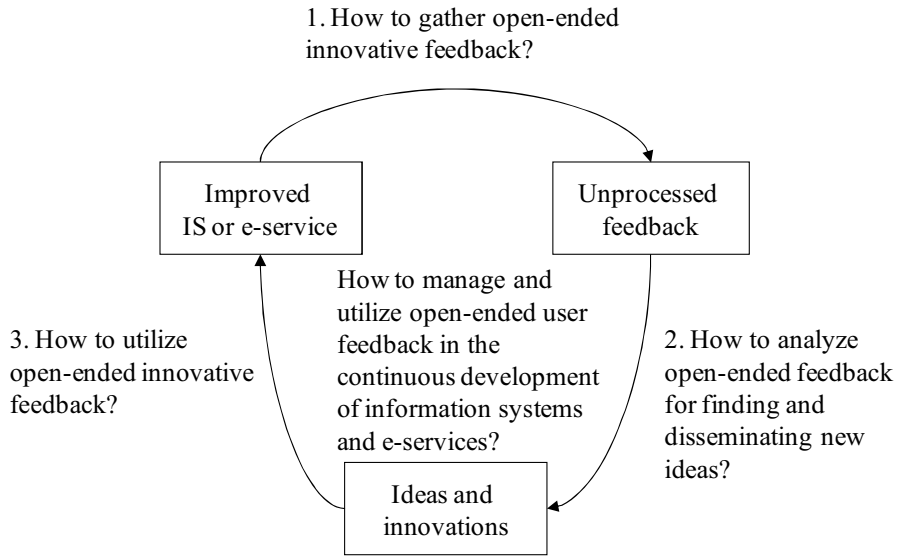

Figure 1 Research setting

The development of contemporary IS and e-services is incremental and iterative with small, frequent releases. The key elements are an improved IS or e-service (new or latest version), unprocessed feedback, and ideas and innovations. The main research question is *"How to manage and utilize open-ended user feedback in the continuous development of information systems and e-services?"* It is divided into three sub-questions:

1. How to gather open-ended feedback (opinions as well as new and innovative ideas) from users and other stakeholders during ongoing use for the further development of an IS or e-service? (Papers 1 and 2)
2. How to analyze open-ended feedback for finding and disseminating new ideas and innovations? (Paper 4)
3. How to utilize open-ended innovative feedback in IS and e-service development processes? (Papers 3 and 5)

Our perspective with regard to the phenomenon is organizational rather than that of users and other stakeholders. We focus on open-ended feedback that is either solicited or received in an unsolicited manner from users and other stakeholders of an existing IS or e-service during ongoing use. The feedback is registered in databases either by the

feedback giver, or by an officer in cases where the feedback is received face-to-face or in some other non-digital form. We do not explore ethnographic methods (Myers, 2009) where users are regarded more as objects e.g. for observation in the field or during laboratory experiments. We address the post-implementation phase (use and maintenance phase, evolution and maintenance phase) of an ISD process. Our scope is especially on perfective maintenance, i.e. the further development of an IS or e-service as opposite to keeping the old system running.

Empirical evidence was sought through multiple cases. The cases in several independent research projects represent both organizational and consumer IS and e-services that are critical and strategic for the organization and of vital importance for users. The case development situations vary from internal to partly or fully outsourced to multi-customer – multi-vendor ISD. All case systems have been developed from scratch and are under continuous development and renewal. The owner of each system is either one organization or a consortium that owns and develops the system jointly.

This dissertation consists of two parts: Part I presenting an overview of the dissertation, and Part II consisting of five original research papers. The remainder of this overview or introductory part is structured as follows. We first position the study by briefly reviewing the related literature on user feedback, user involvement, ISD, and NSD. Thereafter, the research methodology is presented, which is followed by a summary of the original research papers. Finally, the findings are discussed and conclusions presented.

2 Positioning of the Study

In this section, we first depict the framework for positioning the research. Next, the literature on user feedback and feedback management is reviewed and user participation theories are discussed. Finally, we briefly discuss the IS and marketing literature on ISD, WISD, NPD, and NSD from the user involvement perspective and portray a comparison of ISD and NSD.

2.1 Research Framework

In this research, we focus on the management and utilization of open-ended user feedback in the continuous development of information systems and e-services to enhance ongoing user involvement and influence. Open-ended feedback that is not limited to a detailed pre-set topic contains user needs and new ideas that tackle both business and organizational issues in addition to the system in case. These ideas should be found, analyzed, disseminated, and finally utilized in both business and IT domains.

Processes as well as daily tasks and duties usually change along with the IS implementation. Business processes and IS are intertwined and a change in one often affects the other (Cook et al., 2006; Lowe, 2003). Hence, IT and business domains should be aligned at operational, tactical, and strategic levels of planning (see e.g. Tarafdar and Qrunfleh, 2009; Slaughter et al., 2006; Henderson and Venkatraman, 1993; and an extensive literature review on IT alignment in Chan and Reich, 2007). It is not feasible or even possible to scrutinize one domain alone. Continuous feedback is one way to keep the domains and levels integrated. The conceptual Continuous Strategic Planning framework (Figure 2) depicts this interplay between the domains, levels, and feedback. We use this generic framework to position the original research papers that are portrayed with the dash line ellipses.

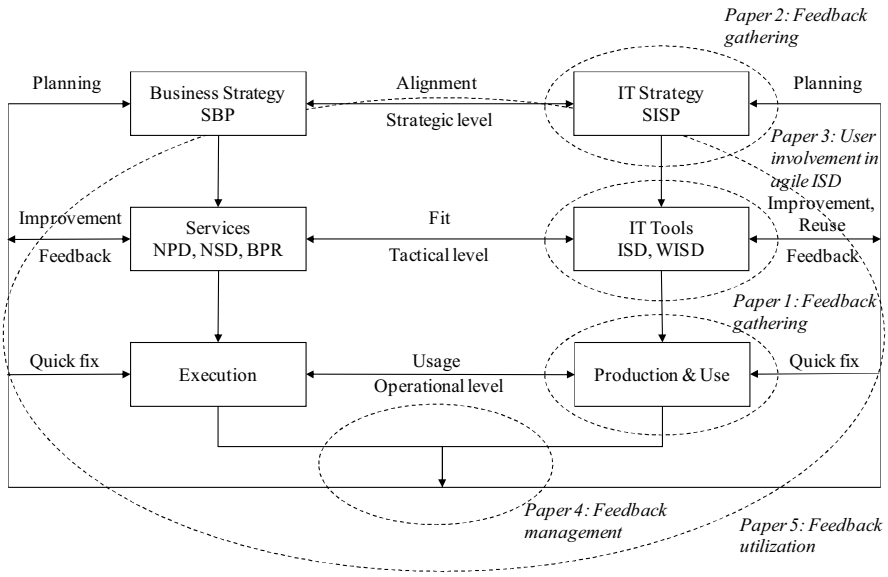

Figure 2 Continuous strategic planning framework (modified from Hallikainen et al. (2002))

The business strategy resulting from strategic business planning (SBP) guides the development and implementation of products and services (NPD, NSD) as well as business processes (business process redesign, BPR). The IT strategy resulting from the strategic information systems planning (SISP) guides the acquisition, implementation, and service delivery of IT tools or information systems (ISD, WISD) to support the organizational functions. The business and IT functions need to be in line, i.e. aligned at the strategic level. Additionally, a fit between business services and IT tools is needed at the tactical level. Alignment and fit are tested at the operational level during the use process of information technology and individual IT products when executing the business processes. The integration of business and IT domains becomes visible at the operational level.

The turbulent business environment of contemporary organizations and changing customer needs require continuous feedback on services and the supporting IT tools. IT and business domains must remain aligned and the improvement of processes, IS, and services is a continuous task at all levels of planning. The experience gained from implementing services and using the supporting IT tools provides information, or may sometimes even create the incentive for reconsidering business and IT strategies. The

utilization of solicited, unsolicited, and automatically collected feedback in both business and IT domains as well as at all levels of planning, complements the top-down planning described above. Efficient feedback management mechanisms for gathering, analyzing, and disseminating feedback to respective organizational units are necessary enablers of feedback utilization. The feedback arrows in Figure 2 depict the interplay between feedback, domains, and levels.

In this dissertation, the focus is on open-ended user feedback during ongoing use of an IS or e-service. Hence, we explore the phenomenon from the IT domain's perspective. Yet, due to the integration of IT and business, we also consider the business domain when necessary.

The dissertation consists of two parts: Part I presenting an overview of the dissertation, and Part II consisting of the following original research papers:

1. Bragge Johanna, Merisalo-Rantanen Hilkka, Hallikainen Petri (2005). "Gathering Innovative End-user Feedback for Continuous Development of Information Systems: A Repeatable and Transferable E-collaboration Process", *IEEE Transactions on Professional Communication*, 48 (1), 55-67 (special issue on Expanding the Boundaries of E-Collaboration).
2. Bragge Johanna, Merisalo-Rantanen Hilkka, Nurmi Antti, Tanner Leena (2007). "A Repeatable E-Collaboration Process Based on ThinkLets for Multi-Organization Strategy Development", *Group Decision and Negotiation*, 16 (4), 363-379.
3. Merisalo-Rantanen Hilkka, Tuunanen Tuure, Rossi Matti (2005). "Is Extreme Programming Just Old Wine in New Bottles: A Comparison of Two Cases", *Journal of Database Management*, 16 (4), 41-61 (special issue on Agile Information Systems Development).
4. Merisalo-Rantanen, Hilkka; Rossi, Matti; Hallikainen, Petri; Nurmimäki, Kari (2009). "User Influence in E-Service Evolution: A Case Study of E-Banking", *Communications of the Association for Information Systems*: Vol. 24, Article 41, 719-738.

5. Merisalo-Rantanen, Hilkka (2010). "Integrating User Feedback Management, Information System and New Service Development: Case E-Banking Service", *Aalto University School of Economics Working Papers* W-480, 1-29.

In the first two papers we look at user and stakeholder feedback from two ends. We start at the operational level by focusing on systematically gathering open-ended user feedback during ongoing use of an e-service (Paper 1). We continue at the strategic level with feedback gathering from stakeholders of an existing IS (Paper 2). These two studies give a deep understanding of feedback and insight on the existing mechanisms for gathering, analyzing, and disseminating the feedback. Next, we study ISD processes at the tactical level of the IT domain (Paper 3). This research provides a deep understanding of agile ISD methods and their support for user involvement and feedback management. It provides an ISD methodological perspective to feedback management and utilization in the continuous development of IS and e-services.

In the fourth paper, we explore the user feedback management process, i.e. the feedback arrows in Figure 2. This study helps understand the mechanisms for gaining unsolicited open-ended user feedback and for analyzing and disseminating feedback in an organization. Finally, we scrutinize the integration of feedback management, ISD, and NSD, thereby enabling the utilization of user feedback in ISD and NSD processes (Paper 5). Hence, the complete dissertation covers the whole feedback lifecycle from its emergence to its utilization in the related processes in IT and business domains and at all levels of planning.

2.2 User Feedback Gathering

Organizations seek feedback for customer care, improving current products and product development processes, and acquiring information for NPD, thus being able to retain customers and to know their changing tastes, acquire new customers, and, ultimately, to stay competitive (Fundin and Bergman, 2003). In addition to customers and unknown external users, internal users, i.e. employees, are a valuable source of feedback. Next, we briefly discuss the numerous categorizations of feedback gathering practices and methods, also called tools, instruments, and contact channels or technologies (see e.g.

Berry and Parasuraman, 1997; Maquire et al., 2007; Bragge et al., 2005; Romano and Fjermestad, 2003; Sampson, 1998; Wirtz and Tomlin, 2000).

Communication with users can be either *company-controlled* (e.g. for customizing information to meet customer's needs and optimizing customer's feedback opportunities) or *customer-controlled* (e.g. relating into the growing importance of the brand strength and economies of scale and size) (Floh and Treiblmaier, 2006). Based on the role the user plays in the communication process, contact channels or technologies are classified as *passive* (e.g. feedback forms, helpdesks, contact and interaction centers, mail-to-links, cookies, and mailing lists), *active* (e.g. mail, phone, and web surveys, chat rooms) or *interactive* (e.g. email and survey panels, focus groups) (Romano and Fjermestad, 2003; Sampson, 1998).

According to Sampson's categorization (Sampson, 1996; Sampson, 1998), an organization can solicit customer feedback actively or passively or receive unsolicited, customer-initiated feedback. *Actively solicited feedback* is requested from specific customers or users. A sample of certain customer groups may be selected using sampling or probability techniques. Lead users (see von Hippel, 1986; Sampson, 1998; Franke et al., 2006) are often used as user representatives and are customarily selected using networking techniques. Thus, the organization has direct interaction with customers and can avoid a non-response bias (Sampson, 1996; Sampson, 1998). Yet, it is not always easy to identify lead users. Moreover, the small group of innovators and early adopters might not be representative enough in the context of IS and e-services for consumers (Magnusson, 2009).

Passive solicitation of feedback is an appeal to all users and customers in general, whereas *unsolicited feedback* is received following users' own initiative. Regarding passively solicited and unsolicited feedback, the respondents are self-selected and they themselves initiate the response or feedback submission. The organization has no control over the sample frame or non-response bias, because all who are willing to participate may do so. Extreme response bias is expected, i.e. extremely satisfied and dissatisfied respondents are inherently motivated enough to initiate the response (Sampson, 1996; Sampson, 1998).

Fundin and Bergman (2003) classify feedback as proactive or reactive. *Proactive feedback* gathering is analogous with solicited feedback. *Reactive feedback* refers to unsolicited complaints that require unplanned and often immediate corrective actions from the organization (Fundin and Bergman, 2003). Unsolicited feedback can also be used proactively in the continuous development of IS and e-services.

According to Wirtz and Tomlin (2000), a feedback collection tool portfolio should support multi-level measurement (what and why) and actionability (where and how to improve), provide representative and reliable data for benchmarking and staff assessing, have service recovery potential (which user, organizational unit, or employee affected), enable first-hand learning of staff and managers, and be cost-effective. Maquire et al. (2007) maintain that multiple feedback gathering methods, both qualitative and quantitative, should be used and the portfolio regularly checked. They continue that understanding the customers and improving the product or service quality are central means to gain competitive advantage.

2.3 Feedback Management Systems (FMS)

The objective of an institutionalized, integrated feedback management system (FMS) is to enable continuous learning, improvement in service quality and productivity, and process redesign by systematically collecting, analyzing, and disseminating various types of user feedback (Fundin and Bergman, 2003). Feedback gathering and storing is just an expense if the data is not used in decision making throughout the organization (Ramaprasad, 1983). User feedback must be communicated in the organization both as codified in databases and personalized in meetings and discussions (Fundin and Bergman, 2003).

Unlike the management of actively solicited feedback, administering passively solicited and unsolicited feedback is a continuous day-to-day task. This data is extremely useful in monitoring and controlling the quality of daily business operations and in identifying ideas for quality improvement (Sampson, 1996; Sampson, 1998). For example, findings about customer dissatisfaction often reveal customers' hidden needs (Fundin and Bergman, 2003; Sampson, 1998). FMS should be able to capture both formal and informal complaints and comments, and hidden needs and novel ideas (Fundin and

Bergman, 2003). They should be able to combine data from various sources in order to obtain insights on real user opinions and needs and to disseminate it for the overall benefit of the organization. Data systems and processes are both necessary elements of FMS (Maquire et al., 2007).

Examples of FMS are presented in Table 1. Wirtz and Tomlin (2000) suggest tools for centralized and decentralized data entry and service recovery, databases for registering continuous feedback and monitoring open and closed cases, and tools for analysis and reporting of feedback. Frameworks for FMS have been suggested, e.g. to analyze Customer Relationship Management (CRM) at system and process levels (Geib et al., 2005), and to guide future research on CRM and e-CRM (Romano and Fjermestad, 2003).

Table 1 Examples of feedback management systems (FMS)

FMS System	Study
Issue handling system integrated into a WIS	(Ramler et al., 2004)
Customer complaint system for product service functions	(Fundin and Bergman, 2003)
Customer feedback system of a management consultancy	(Wirtz and Tomlin, 2000)
Customer satisfaction program	(Maquire et al., 2007)
CRM architecture for banking industry	(Liu, 2007)
Idea capture and handling system for NPD	(Cooper et al., 2002a; Cooper et al., 2002b)
IS methodology to analyze Internet-based qualitative data	(Romano et al., 2003)

According to Geib et al. (2005), CRM focuses on customer processes, i.e. on activities a customer has to perform to satisfy a need or to solve a problem. It manages knowledge from, about, and for customers. Geib et al. (2005) categorize CRM processes as CRM delivery processes (part of the customer process), CRM support processes (not part of the customer process, e.g. market research), and CRM analysis processes. Complaint management is part of the delivery processes. It receives, processes, and communicates customer dissatisfaction in the using phase of the customer process. The goal of complaint management is "to improve customer satisfaction in the short-run by directly addressing problems that led to complaints, and to support a continuous improvement

process (in the form of feedback management) to avoid complaints in the long-run" (Geib et al., 2005 p. 3). Feedback management, a part of the CRM analysis processes, consolidates and analyses the knowledge from customers collected in the CRM delivery processes, particularly in the complaint management process, and in CRM support processes. The results feed a continuous improvement process of products, services and processes (Geib et al., 2005).

Geib et al. (2005) continue that CRM processes are knowledge intensive processes where Knowledge Management (KM) should be applied for managing the collection, storage, and distribution of relevant knowledge. The objective of the KM process is to meet existing needs, to identify and exploit existing and acquired knowledge assets, and to develop new opportunities. A closed knowledge loop must be implemented in order to achieve effective CRM. Knowledge about customers collected in the CRM delivery and support processes has to be passed on to the analysis processes. The results of the analyses are channeled back to the delivery and support processes as recommendations for action. Only knowledge necessary to make recommendations should be collected and analyzed. Operational (e.g. customer interaction centers), analytical (e.g. data warehousing and mining), and collaborative CRM systems (e.g. telephone, email, and web) process well-structured customer information, whereas KM systems support the collection, sharing, and use of less-structured information such as documents and the implicit knowledge of the employees (Geib et al., 2005).

When offering multiple channels and tools for feedback, organizations expose themselves to large quantities of unstructured data that is useless without scalable knowledge management methods, processes, IS, and people (Romano and Fjermestad, 2003). However, in most cases no formal structure exists to transfer customer complaints into the ISD and NPD processes (Fundin and Bergman, 2003; Geib et al., 2005). More research is needed on customer selection and the analysis of customer knowledge, and more successful examples from practice for actively managing the innovation front-end are called for (Gassmann et al., 2006). The internal utilization of the data to guide decision making should also be explored (Maquire et al., 2007). Thus, the problem is

how to design and run a completely integrated FMS that ensures continuous learning and improvement in service quality and productivity (Wirtz and Tomlin, 2000).

2.4 User Participation Theories

User participation and *user involvement* are often used interchangeably – as is the case in this research – although there are differences. *User participation* refers to behaviors and activities that users accomplish during the IS development process, whereas *user involvement* is the subjective psychological state, i.e. the importance and personal relevance, the feelings that users attach to a system (Barki and Hartwick, 1989).

McKeen et al. (1994) maintain that effective communication between users and developers, regardless of the level of user participation, is essential in achieving *user influence*, i.e. the real effect of user participation on the decisions in the development process. Lynch and Gregor (2004), in turn, found that the *degree of user influence* on system features (design, outcomes) depends on the type (consultative, representative, consensus) and depth (stage in the development process, frequency of interaction, voice/views considered) of user participation. User participation does not necessarily result in user influence. Other factors, e.g. user-developer relationships, the nature of communication, and power relationships also affect the degree of user influence (Lynch and Gregor, 2004).

McKeen et al. (1994) continue that users' perceptions of their significant influence or effective communication with the system developers implicate high *user satisfaction,* and that they use this as a synonym for *system success*. According to Harris and Weistroffer (2009), user satisfaction is the most used metric of system success. Sheu and Kim (2009) regard user satisfaction as a strong indicator of system success. They continue that *user attitude*, an unarticulated impression and/or calculated judgment of the new IS, and *user readiness* for a proposed IS together with user participation and involvement, are contributory to user satisfaction. User readiness for change should be improved continuously, not only during an ISD project, and user participation regarded as a central means to achieve positive user readiness (Sheu and Kim, 2009).

According to Lynch and Gregor (2004), however, a system can be concurrently regarded as successful or unsuccessful, the situation may change over time, and successfulness is

difficult to measure. As an alternative to system success they propose *system impact* that can be measured with the level of system adoption (units sold or distributed) and the utilization of information generated in the system. Other metrics are needed when the use is not voluntary. User influence is a strong contributor to system impact (Lynch and Gregor, 2004).

Thus, organizations should foster an environment where the users feel that they are being heard and that they can make a difference (McKeen et al., 1994). In order to get information about the needs of the users, it is better to provide thin participation than no participation opportunities at all (Markus and Mao, 2004).

User participation theories address questions related to successfully involving users in ISD and NPD. According to the early models, user participation had an unquestioned direct positive impact on user satisfaction. Further studies found several contingency factors (moderating variables) related to users, developers, and IS projects that potentially affect the relationship. These factors help to consider if, when, and how much user participation is appropriate (see McKeen et al., 1994).

The traditional participation theory proposed by McKeen et al. (1994) focused on the early involvement of internal hands-on users in the in-house ISD process. Today's evolutionary IS and WIS affect many stakeholders and more users from within and outside the organization that cannot be involved in the requirements determination or other phases of ISD or WISD (Markus and Mao, 2004; Ramler et al., 2004).

Markus and Mao (2004) suggest a new participation theory for contemporary development contexts with complex, integrated IS such as ERP and outsourced and networked development. The theory consists of three key elements: actors, participation, and outcomes. Participants representing various stakeholder groups and change agents like IS specialists, accomplish participation activities together that lead to system/solution development and/or implementation success. Questions to be addressed when planning user involvement include 1) who selects the participants; 2) who are the participants; 3) how do they participate (type, richness, methods, conditions); and 4) when do they participate.

Alam (2002) investigated the key elements of user involvement in NPD, and defined a set of activities needed from organizations and users at different stages of NPD. The key questions to attend to are 1) why involve users; 2) when users should be involved; 3) how intensively users are involved (user initiated, information and feedback on specific issues requested, extensive consultation with users, representation as a team member); and 4) what is the mode or method of involvement (e.g. interview, brainstorming, focus group).

According to Harris and Weistroffer (2009), the effectiveness and successfulness of user participation depends on its implementation. They formulated a set of recommendations for choosing the right kind of user involvement at the most appropriate times in the systems development process and for achieving maximum benefits from user involvement. These recommendations relate to 1) the degree of user involvement (users as partners having some control over the outcome); 2) the complexity of the system (the importance of user involvement increases with system complexity); 3) the activities for user involvement (user involvement at least in core activities); 4) management style (people-oriented managers are capable of communicating); 5) users with or without functional expertise (involve functionally knowledgeable users to avoid negative attitudes toward the system); and 6) the extent of user involvement (optimal level of user involvement adds value rather than wastes time or resources) (Harris and Weistroffer, 2009).

Yet, customer integration, in practice, is far from perfect despite the abundant research on the selection of representative, innovative, and motivated representatives, and on the right timing of the participation (e.g. Enkel et al., 2005). More research on how user involvement should be implemented, i.e. the type and degree of user involvement, and on its effects in various contexts is called for (Magnusson et al., 2003; Markus and Mao, 2004; Lynch and Gregor, 2004; Harris and Weistroffer, 2009).

2.5 User Involvement in ISD and NSD

User participation and involvement have been studied for decades in many fields of research. Studies on user participation and user roles in IS and e-service development are relevant to this research. Other related fields of IS research that take users into account

are e.g. human-computer interaction (HCI) research focusing on the design and evaluation of usability and user experience issues as well as on the roles of HCI practitioners, and computer supported cooperative work (CSCW) research studying the support of information technology for collaborative and group work situations. These are, however, out of the scope of this study. On the other hand, NPD and NSD research on user participation and user roles is highly relevant. In this stream of innovation research in marketing, terms such as customer co-creation (Prahalad and Ramaswamy, 2004b; Prahalad and Ramaswamy, 2004a), open innovation (Chesbrough, 2003a; Chesbrough, 2003b) and democratized innovation (von Hippel, 2005) are used. Our scope is on user involvement in ISD and NSD through open-ended feedback in the post-implementation phase of an IS or e-service, not on the various ISD and NSD methods, their phases, user-centredness or the role of users per se. Thus, we only briefly review user involvement and the roles of users in the context of evolutionary or iterative ISD and NSD methods.

User participation in the development of IS and new products and services is generally seen as beneficial, especially in complex development situations (e.g. McKeen et al., 1994; Markus and Mao, 2004; Magnusson et al., 2003; Hsieh and Chen, 2005; Harris and Weistroffer, 2009). McKeen et al. (1994) maintain that user participation improves the quality of the system in several ways, such as 1) providing a more accurate and complete assessment of user information requirements; 2) providing expertise about the organization the system is to support; 3) avoiding development of unacceptable or unimportant features; and 4) improving user understanding of the system. User participation should lead to "greater commitment, involvement, acceptance, use, and ultimately, greater satisfaction" (McKeen et al., 1994 p. 443).

In a literature review on empirical studies, Harris and Weistroffer (2009) found that user involvement in systems development does increase system success. Lynch and Gregor (2004), however, conclude that user participation does not necessarily result in user influence on system design. The successfulness of user participation depends on how it is implemented (e.g. Magnusson et al., 2003; Lynch and Gregor, 2004; Hsieh and Chen, 2005; Harris and Weistroffer, 2009).

User representatives may participate in ISD and NPD processes, most frequently in the requirements engineering, ideation, prototyping, and testing phases (Hsieh and Chen, 2005; Nuseibeh and Easterbrook, 2000). When users are actively involved, their role varies from informative in the requirements elicitation or ideation phase, to consultative in the design phase, to participative, e.g. by having direct contact with developers (Kujala, 2003). Users may be regarded as experts in the RE or ideation phase, resources in the design and testing phases, or integral participants throughout the system lifecycle (Isomäki and Pekkola, 2005; Ramler et al., 2004; Magnusson et al., 2003). In addition, users may be considered experts of local work practices and context, validators of design decisions, final 'implementers' or misusers of the system, and evaluators after the implementation (Iivari et al., 2010).

Users may also participate in ISD and NSD indirectly. Prinz et al. (1998) study participation through user advocates. These mediators constantly observe and support users in their work environment and continuously gather requirements and feedback from users. They are outsiders in the development, i.e. they are not developer or user representatives. It is the task of the user advocate to communicate perceived needs, problems, and reactions of the users to the developers and, respectively, the responses and reactions of the designers to the users (Prinz et al., 1998). Observation and mediators can, however, affect the actions and comments of the users. Another example of mediated user involvement is found in the research by Iivari (2004).

In practice, users and developers form webs of users and developers where roles are dynamic. A person may play multiple roles during the ISD lifecycle, even simultaneously, crossovers between users and developers happen, and new roles emerge such as the role of a mediator representing both users and developers simultaneously. The distinction between users and developers is becoming vague (Millerand and Baker, 2010).

2.6 User-Centredness of ISD and NSD Methods

The user- or human-centredness of ISD methods varies (see historical reviews of the human-centred view of ISD methods and approaches in Isomäki and Pekkola (2005) and Avison and Fitzgerald (2003)). Traditional plan-driven ISD processes and methods (e.g. the waterfall) regard RE and testing as one-shot efforts, not ongoing tasks. In contrast,

the so-called Scandinavian approaches to ISD (Bjerknes and Bratteteig, 1995; Grudin, 1991; Iivari and Lyytinen, 1998) have advocated user-centeredness and professional work practices since the mid-eighties. Most notable of these methods is Participatory Design (PD) (Bjerknes and Bratteteig, 1995), which treats the end-users as equals to designers, co-designers, and experts of their own work. PD stresses user involvement in the development process and design decisions. Millerand and Baker (2010) regard iterative design methodologies, e.g. user-centred, participatory design and agile development, as means to provide guidelines and protocols that support the adaptability of interdependent, dynamic systems, actors, and settings.

However, neither general ISD methods nor user-centred methods give detailed instructions on whether, when (in which phases) or how users should be involved, or on how to integrate user involvement in the development process (Iivari et al., 2010; Pekkola et al., 2006). Pekkola et al. (2006) suggest combining PD and evolutionary prototyping. Full functionality prototypes help users articulate the requirements, the use of mediators improves communication, and together they help preserve the attention of the users and a positive atmosphere (Pekkola et al., 2006).

Prototyping is an efficient way to involve users throughout the IS, product, or service lifecycle, regardless what development approach is adopted (Ramler et al., 2004; Magnusson et al., 2003). The use of the existing system provides the users factual knowledge about a technology and enables them to gradually convert the knowledge from factual into more contextual (Nambisan et al., 1999). In the evolutionary development or use and maintenance phase, the implemented software may be regarded as a prototype that stimulates the users to participate and ideate via feedback. The "prototype" triggers the users to see the possibilities of the technology, to solve problems they face, and, thus, to get new value-adding ideas (see Ramler et al., 2004; Magnusson et al., 2003; Kristensson et al., 2004; Nambisan et al., 1999). The context of use and the user's role in it as well as the user's expertise and intrinsic motivation affect their innovativeness (Kristensson et al., 2008).

Agile ISD methods (e.g. Abrahamsson et al., 2002; Boehm and Turner, 2003; Cockburn, 2002) emphasize continuous user involvement throughout the IS lifecycle (Ambler,

2002; Ramler et al., 2004). These iterative methods support evolutionary IS development. Agile methods can be defined as using human and communication-oriented rules in conjunction with light but sufficient rules of project procedures and behavior (Cockburn, 2002). These four rules are: individuals and human interactions over processes and tools, working software over comprehensive documentation, customer collaboration over contract negotiation, and responding to change over following a plan (Agile Alliance, 2003). Agile methods stress the soft or human side of software development over the institutional aspect, and emphasize communication and programmers' morale. They focus on people as the primary drivers of development success (Conrad, 2000).

Menor et al. (2002) question how Internet-based services should be developed and whether a totally new NSD process for Internet service exists. Murugesan and Ginige (2005) endorse a new field of research, Web Engineering (WE), to promote systematic, disciplined, and quantifiable approaches to successfully build and maintain large, complex, high-quality web-based systems. In particular WE focuses on methodologies, techniques, and tools that support the design, development, evolution, and evaluation of WIS (see e.g. Deshpande et al., 2002; Ginige and Murugesan, 2001; Murugesan and Ginige, 2005). Murugesan and Ginige (2005) recommend an iterative process for WIS development. The process with feedback loops starts from the contextual analysis for gaining understanding of the deployment context, and proceeds through the architecture design, process model, project plan, and web site development to the evaluation and maintenance of the WIS. Supporting processes comprise of project management, quality assurance, and documentation (Murugesan and Ginige, 2005). This evolutionary process provides a good framework for WISD in general, but does not give guidance on what methods and tools would best suit WISD, how they could be integrated, how to make the iterative loops work, or what is the role of users.

Yang and Tang (2005) argue there is a lack of studies that investigate the importance of developing WIS that meet the demands of those who use them. Ramler et al. (2004) maintain that, in reality, "real" online users have seldom been requested to participate in WISD. It is in fact very challenging to involve these users directly.

2.7 Characteristics of ISD and NSD

The scope of this dissertation is not the actual ISD and NSD processes but their integration with feedback management and each other. Hence, only a brief overview of the main characteristics of ISD and NSD is presented.

There is an extensive literature on ISD, WISD, NPD, and NSD from various perspectives. Just a few exemplars are presented in Table 2. This list is by no means comprehensive, but gives some insight and clues to identifying further reading.

Table 2 Exemplars of literature on ISD, WISD, NPD, and NSD

Topic	Study
ISD methods and approaches	e.g. Avison and Fitzgerald (2003) and Merisalo-Rantanen et al. (2005)
WISD methods and approaches	e.g. Murugesan and Ginige (2005) and Bragge and Merisalo-Rantanen (2009)
NPD models and methods	e.g. Brown and Eisenhardt (1995)
NSD models and methods	e.g. Johne and Storey (1998) and Goldstein et al. (2002)
Comparison of NPD and NSD	e.g. Nijssen et al. (2006), Alam and Perry (2002), and Menor et al. (2002)

Formal ISD and NSD processes and their stages are alike (e.g. the waterfall method and the stage-gate model). Generic activities of the development processes are specification, development, validation, and evolution (Avison and Fitzgerald, 2003). Large organizations often use formal, sequential, and bureaucratic NSD processes that are efficient to manage and to which they are accustomed. Smaller organizations might have a more informal NSD process with more parallel stages (Alam and Perry, 2002). Respectively, parallel and spiral models are adopted in ISD.

Both ISD and NSD domains increasingly share a common theoretical foundation of innovation management (Nambisan and Wilemon, 2000). Innovation efforts are founded with consideration to customers, competitors, and market possibilities (Menor and Roth, 2008). According to Brown and Eisenhardt (1995), innovation research splits into two areas: the first, an economics-oriented tradition, examines the patterns of innovation, and the second, an organizations-oriented tradition, focuses on how specific new products are developed. The innovation process consists of the front-end, i.e. ideation and

innovation, and the back-end, i.e. the actual development of the product or service (see Menor and Roth, 2008; Oke, 2007; Gassmann et al., 2006).

According to Hannola et al. (2009), the most significant difference between ISD and NSD is at the beginning of the development processes. Requirements engineering in ISD and the front-end of the innovation process (FEI) are both activities preceding the actual ISD or NSD and aimed at detailed customer needs analysis. However, idea generation is not included in RE because ideas are regarded as inputs that are generated outside RE. The outcome of RE is a requirements document, whereas FEI results in a business plan and/or project proposal (Hannola et al., 2009).

ISD and NSD share the same often crucial problems of rapid, evolutionary development of products and services together with heterogeneous users and customers for meeting their diversified and constantly changing needs. However, the focus of the ISD and NSD processes is different along the technology-process-people triangle. In the IS field, mostly technology and process dimensions are scrutinized, whereas in marketing (NSD), more attention is paid to people and process dimensions (Nambisan and Wilemon, 2000; see also Nambisan, 2003).

The fields of ISD and NSD are complementary and can learn from each other. Gaps in the literature in one domain can be bridged by drawing upon the research in the other domain (Nambisan and Wilemon, 2000; see also Nambisan, 2003). We see that open-ended and especially unsolicited user feedback represents one form of continuous open ideation and innovation at the front-end, whereas ISD and NSD are approaches for the back-end of the innovation process (see Menor and Roth, 2008; Oke, 2007; Gassmann et al., 2006). An effective and efficient feedback management process must be integrated in both ISD and NSD for the successful continuous development of IS and e-services.

3 Methodology

In this section, we summarize the methodological approaches as well as the methods for data collection and analysis with regard to the original research papers included in Part II and the dissertation as a whole. Detailed descriptions on the cases as well as data gathering and analysis are included in the original research papers.

3.1 Research Approach

In this research, our objective is to understand and improve the management and utilization of open-ended user feedback in continuous information system and e-service development. The feedback is received in both solicited and unsolicited forms from users and other stakeholders of an existing IS or e-service during ongoing use. An overview on the focus, research questions and objectives, research methodologies, and data gathering and analysis methods of each original research paper from the dissertation's perspective is delineated in Table 3.

Table 3 Methodological overview of the papers

Paper #	Focus	Main research question and objectives	Research methodology	Data gathering methods	Data analysis methods
1	Feedback gathering; operational level	RQ1: How to gather open-ended feedback (opinions as well as new and innovative ideas) from users and other stakeholders during ongoing use for the further development of an IS or e-service? -To gain understanding of user feedback and its gathering and an insight on feedback management -To design and facilitate an e-collaboration process for gathering open-ended innovative user feedback at the operational level	-Case study -Action research	-Background and follow-up interviews -Computer-mediated group support systems (GSS) sessions -In GSS sessions observation, participant demographics survey, and feedback survey	-Coding -Descriptive survey statistics

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Paper #	Focus	Main research question and objectives	Research methodology	Data gathering methods	Data analysis methods
2	Feedback gathering; strategic level	RQ1: How to gather open-ended feedback (opinions as well as new and innovative ideas) from users and other stakeholders during ongoing use for the further development of an IS or e-service? -To deepen the understanding of the gathering and management of open-ended user and stakeholder feedback -To design and facilitate an e-collaboration process for strategy development that enables gathering open-ended innovative stakeholder feedback at the strategic level	-Case study -Action research	-Background and follow-up interviews -Computer-mediated group support systems (GSS) sessions -In GSS sessions observation, participant demographics survey, and feedback survey	-Coding -Descriptive survey statistics
3	Feedback utilization and management; user involvement in ISD; tactical level	RQ3: How to utilize open-ended, innovative feedback in IS and e-service development processes? -To gain understanding of agile ISD methods and their support for user involvement and feedback management -To provide an ISD methodological perspective to feedback utilization and management	-Interpretive case study	-Interviews	-Coding
4	Feedback management; operational level	RQ2: How to analyze open-ended feedback for finding and disseminating new ideas and innovations? -To gain understanding of the processes, key actors, and supporting IS of the management of open-ended feedback -To develop a feedback management model enabling the analysis, dissemination, and eventually utilization of open-ended feedback	-Interpretive case study	-Interviews	-Coding -Text mining

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Paper #	Focus	Main research question and objectives	Research methodology	Data gathering methods	Data analysis methods
5	Feedback utilization and management; integration of feedback, ISD, and NSD; tactical level	RQ3: How to utilize open-ended, innovative feedback in IS and e-service development processes? - To understand the utilization of open-ended user feedback in the continuous IS and e-service development -To construct an e-service development model for integrating feedback management, ISD, and NSD enabling continuous user influence via feedback and initiatives	-Interpretive case study	-Interviews	-Coding

According to Mingers (2001), *multi-method (mixed-method, pluralist) research*, i.e. combining several methods, helps gain a richer understanding of the research topic and richer and more reliable research results. The nature of our research problem, interacting with users, led us to use a *qualitative* approach (Seaman, 1999) as a means of trying to understand this complex IS research topic. We turned to the *case study* approach that Klein and Myers (1999) and Wynn (2001) have advocated as the most appropriate qualitative methodology for studying social processes and trying to understand users.

As a research philosophy we decided to take an *interpretive* stance (Myers, 1997; Klein and Myers, 1999; Myers, 2009; Myers, 2010) rather than the positivist approach that is common to case studies. According to Orlikowski and Baroudi (1991), interpretive research regards reality and the knowledge thereof as a social construct that social actors shape through their actions and interactions. The objective of interpretive research is to understand the research phenomenon, i.e. the meanings that the participants assign to it, the context, and the process between the context and the research topic, and to derive constructs and generate knowledge from the field (Orlikowski and Baroudi, 1991). According to Eisenhardt and Graebner (2007), *theory building from cases* aims at creating theoretical constructs, propositions, and/or midrange theory that emerge from empirical evidence. We have followed the guidelines for theory building from cases

proposed by Eisenhardt and Graebner (2007). These authors maintain that in a multiple case context, a theory is developed in sections or by distinct propositions and each of these is supported by empirical evidence. The theory is the overarching frame of the research and each part of the theory is "demonstrated by evidence from at least some of the cases" (Eisenhardt and Graebner, 2007 p. 29).

We applied an interpretive frame of reference in empirical investigations and interventions, i.e. interpretive case studies and action research (see the classification of interpretive research in IS provided by Klein and Myers, 2001). In the case descriptions we adapted the principles of *interpretive case studies* set out by Walsham (1995; 2006): 1) reporting details of the selected research sites; 2) the reasons why these sites were chosen; 3) the number of people interviewed; 4) the interviewees' hierarchical or professional position; 5) secondary sources of data; 6) data gathering period; 7) how field interviews and other data were recorded; 8) the description of the analysis process; and finally, 9) how the iterative process between field data and theory took place and evolved over time.

Action Research (AR) (Baskerville and Myers, 2004; Lau, 1999) was chosen for two studies (Papers 1 and 2) because it aims to solve current practical problems while expanding scientific knowledge (Baskerville and Myers, 2004). There are several different ways to define and conduct AR (Lau, 1999). We applied the AR cycle proposed by Susman and Evered (1978), which includes the following phases: diagnosing, action planning, action taking, evaluating, and specifying learning (reflection). The descriptions of the AR interventions also followed the AR cycle and its phases.

3.2 Research Process

The studies included in this dissertation were conducted as a part of three larger research projects. As the main researcher of user feedback it has been my responsibility to plan and conduct this part of the research projects. Yet, the collaboration of the research team (3 to 5 researchers per project, altogether 8 researchers) was essential for the accomplishment of the studies and was also brought about by publishing the results as joint articles. The research process is depicted in Figure 3.

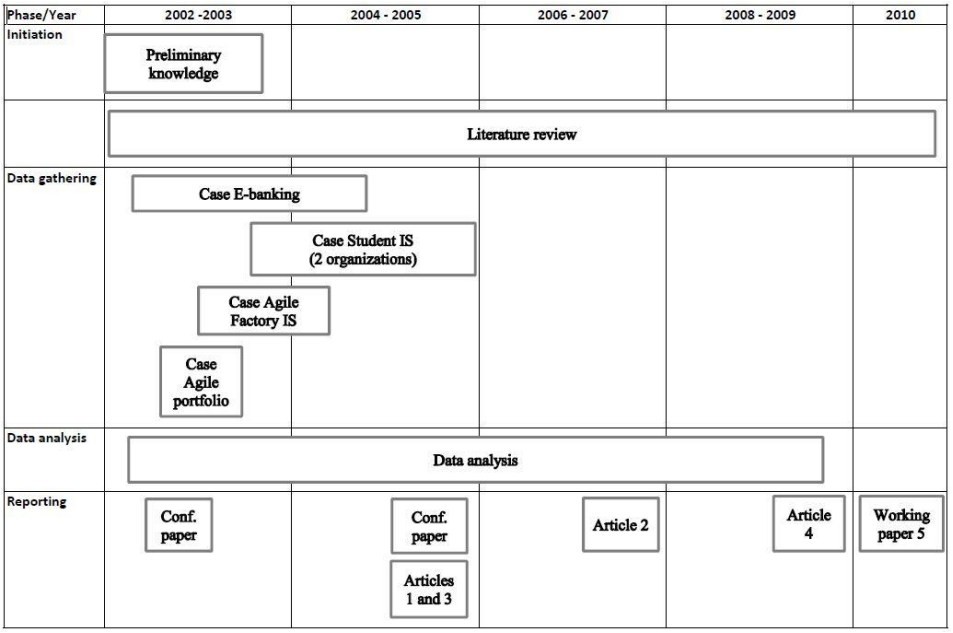

Figure 3 Research process

The dissertation project started in 2002. The data collection was conducted between summer 2002 and fall 2005. The AR interventions took place in fall 2003 and fall 2004. The results were published in five research papers between 2005 and 2010. The research papers together form a cumulative continuum that covers the whole feedback lifecycle from its emergence to its utilization. The first three papers investigate the current state of feedback management and utilization in ISD. In the last two papers, new models for feedback management and e-service development are developed.

The research process started with defining the problem. We wanted to obtain a big picture of ISD processes in general and, in the case organizations, details of their IT function, development processes, and user involvement, and on how these have evolved. A preliminary literature review on ISD, user involvement, and feedback was carried out. Simultaneously, we started the interviews in a financial organization to gain general understanding of their development processes, systems, and services and their evolution. We gradually continued the interviews and moved on from the general level to feedback

management and its utilization in the continuous development of the e-banking service (Papers 4 and 5).

Concurrently, we focused on feedback gathering in a member university of a consortium developing and maintaining a common student information system. A literature review on feedback gathering and the first AR intervention for user feedback gathering were carried out (Paper 1). Background and follow-up interviews were conducted before and after the AR intervention. A literature review on agile ISD methods and interviews in two new cases utilizing agile methods in their continuous ISD (Paper 3) were accomplished to gain understanding of agile methods and their support for user involvement, feedback management and utilization, and user influence in various industries from an ISD methodological perspective.

The second AR intervention was carried out in the consortium previously mentioned in order to gather stakeholder feedback at the strategic level as a part of the strategy development process (Paper 2). The literature on strategic planning was reviewed. Additional background and follow-up interviews were accomplished before and after this AR intervention.

In the three research projects, studies from the user feedback perspective were my responsibility. The data for the research was collected together with other researchers. The detailed data analysis was my responsibility although the other researchers participated in it and especially checked the validity of the concepts and categories found. I have written Paper 5 alone. The joint articles (Papers 1-4) were ideated together and different authors had different responsibilities based on their expertise. The e-collaboration processes were developed jointly, each researcher having specialized on their own field of expertise. The key models developed in this research also result from a joint effort, although I was responsible for producing the first drafts and developing these to their refined forms.

3.3 Data Gathering

Empirical evidence was sought through multiple cases in order to gain a deeper and wider understanding of the phenomenon under study, i.e. the management and utilization of open-ended user feedback in the continuous IS and e-service development. According

to Stake (2005 p. 446), cases for *multiple or collective case study* are chosen "because it is believed that understanding them will lead to better understanding, and perhaps better theorizing, about a still larger collection of cases". A *purposive sample,* which is building in variety and acknowledging opportunities for intensive study, is appropriate for qualitative research. The accessible cases are selected among the potential ones (Stake, 2005).

The data were collected in three separate research projects, conducted in parallel, and five organizations (cases), where we focused on four information systems or services and numerous user and stakeholder groups. From the potential cases we selected organizations that provided us with easy and quick access to explore their progressive ways of managing and utilizing open-ended feedback and continuously developing their IS and e-services.

We intentionally selected cases that provide a wide variety of research contexts. The case organizations represent various industries, including multinationals, from public to private companies. The case IS vary from legacy systems to web-based services, from organizational to consumer IS and e-services, and from critical to standard systems. The users and stakeholders are heterogeneous and their motivation to participate and give feedback varies. The case development situations vary from internal to partly or fully outsourced, to multi-customer–multi-vendor ISD. All case systems were developed from scratch and are under continuous development and renewal. The owner of each system is either one organization or a consortium owning and developing the system jointly. Details of the cases and the main data gathered are presented in Table 4. The data gathering methods are summarized in detail in Table 3 in the previous section.

Table 4 Summary of the cases

Project	Case	Data gathered	Paper #
Student IS **Fall 2003-fall 2005**	-A member university in a university consortium -Student information system's web interface and services for the students -24/7, online, web interface -Non-critical for students -Outsourced development -Student users -Somewhat unmotivated users -Feedback gathering to gain innovative development ideas from users during ongoing use of a WIS	-7 of the total 13 semi-structured thematic background and follow-up interviews with various internal stakeholders of the consortium and the software vendor (11 people in 5 organizations) -2 action research interventions (19 session participants in Group 1 and 13 in Group 2) -Electronic and printed material and web-sites -Familiarizing with the system's student interface and services through use	1
	A university consortium (13 member universities) -Student information system -24/7, online, traditional client-server and web interface -Critical to organizational users and IS owners -Outsourced development -Representatives of the member universities from various functions and levels of planning (organizational users and IS owners) -Motivated users and other stakeholders -Feedback gathering to gain innovative development ideas as a part of the strategy development process of an existing WIS	-13 semi-structured thematic background and follow-up interviews with various internal stakeholders of the consortium and the software vendor (12 people in 5 organizations) -1 action research intervention (16 session participants) -Electronic and printed material and web-sites -Familiarizing with the system's student interface and services through use	2
Agile ISD **Spring 2003**	-A manufacturing company -Factory system -24/7, online, traditional client-server interface -Highly critical for the production and users -In-house development -Internal, international users from various functions and all levels of planning -Highly motivated users -User involvement in agile ISD and their influence on systems that are developed and maintained in-house	-1 semi-structured interview with IT and business representatives (3 people) -Numerous complementary email and telephone discussions with the IT-manager -Electronic and printed material and web-sites	3

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Project	Case	Data gathered	Paper #
Fall 2002-spring 2003	A corporate communications agency -Communications application portfolio (software toolkit) -24/7, online, traditional client-server and web interface -Critical for the organization and external users -In-house development -Internal IS developers and external business users of the customer software -Motivated users -User involvement in agile ISD and their influence on systems that are developed and maintained in-house	-Deep prior knowledge of the case organization and its working methods -1 semi-structured interview with an IT representative -Electronic and printed material and web-sites	3
ISD and e-banking **Summer 2002-spring 2004**	-A financial organization -E-banking service -24/7, online, web interface -Highly critical for the service provider and users -In-house and outsourced development -Internal and external users (organizational and personal, customers and non-customers, known and unknown users) -Motivated internal users, less motivated external users -A model for feedback and initiative management that facilitates finding innovative ideas from open-ended feedback and enables user influence in ISD -A model for integrating feedback management, ISD, and NSD to facilitate user influence via feedback in ISD and NSD throughout the investment lifecycle	-8 semi-structured thematic interviews with 8 IT and business representatives at strategic, tactical, and operational levels of planning, focus on ISD and NSD in general and on feedback management and its integration in ISD and NSD, specifically in the e-banking context -Electronic and printed material and web-sites -Familiarizing with the e-banking service through use	4 and 5

As the main data gathering methods (see Tables 3 and 4), we applied *semi-structured thematic interviews* and in the action research interventions *GSS software*. Altogether 23 interviews with 24 interviewees were conducted. The interviewees were key company representatives with lengthy work experience in several organizational units in their organization and in many phases of strategic IT and business planning processes, ISD or both. We used multiple methods in selecting the interviewees. The researchers and the contact persons in each organization selected the interviewees together amongst the potential specialists brought out by previous interviewees or the contact person. All

interviews were recorded and transcribed immediately after the interview, and the interviewees also validated the transcripts. The data were complemented by telephone discussions and e-mails if necessary. The interviewees or the key informants also verified and accepted the final version of the case descriptions in the original papers. The agendas of the semi-structured interviews are available from the author on request.

In the three GSS-aided action research interventions there were 48 participants in total. Group Support Systems are part of information technologies that are designed to support task-oriented collaboration (Bajwa et al., 2003). The strengths of GSS-aided sessions are 1) simultaneous and anonymous contribution via computers; 2) structured agenda lead by a facilitator; 3) voting and multi-criteria analysis possibilities; and 4) complete records of the electronic discussions serving as a group memory both during and after the session (Nunamaker et al., 1991; see also Austin et al., 2006). The automatically produced GSS documentation on the data recorded during the sessions was given to the contact persons for further analysis and utilization.

In accordance with Mingers (2001), we supplemented *qualitative analyses* (interviews, GSS session reports, and observation) with *quantitative ones* (participant demographics survey and session feedback survey in GSS sessions), and *other related sources of information*, e.g. electronic and printed documentation and web-sites for complementary information on the development processes, systems, and services of the case organizations. In addition, we have our own experience as users of student information and e-banking systems, which helps us understand better those specific cases.

During the data collection, the sample was either extended or focused based on emerging needs, according to the principles of *theoretical sampling* (Strauss and Corbin, 1990; Glaser and Strauss, 1967). *Memoing*, the process of making notes on ideas, questions, statements, and hypotheses emerging during the analysis, was an essential part of the data gathering process (Sarker et al., 2001). In each case, the dynamic data gathering process was completed when no additional information emerged, a state called *theoretical saturation* (Strauss and Corbin, 1990; Glaser and Strauss, 1967).

3.4 Data Analysis

In qualitative research, data collection and analysis are simultaneous and iterative. The objective of interpretive research is to understand the research phenomenon, i.e. the meanings that the participants assign to it, the context, and the process between the context and the research topic (Orlikowski and Baroudi, 1991). Hence, interpretive analysis seeks themes, terms, and key points emerging from qualitative data. Qualitative, interpretive analysis is mainly a process of manual coding, resembling the principles of *open and axial coding* found in Grounded Theory (GT) (Strauss and Corbin, 1990).

The collaboration of the research team (3 to 5 researchers per project, 8 researchers in total) was also essential to analyzing the data gathered, although the detailed analysis from the user feedback perspective was my responsibility. Each researcher in a project individually read through the material, defined the key points, themes, and terms, and organized the material accordingly. Simultaneously, the data gathered was compared with the relevant literature, using it as a sensitizing device for interpretive analysis (Klein and Myers, 1999). Thereafter, the outcomes were discussed together and compared with each other. Finally, a synthesis was constructed.

After the manual coding process in the e-banking case, we decided to experiment with text mining software (DR-TextMiner 1.3.4.) for the content analysis of the interviews. It was my responsibility to employ the software. Tools for qualitative analysis require much manual analysis and coding to produce results that often more or less confirm and in a way are guided by the "brain work" behind the results. This was also the case in our content analysis. The analyses of the single words that the interviewees employed and their relations supported our manual open coding analysis. Thus, we relied on our manual coding results rather than the results of the text mining software.

4 Review of the Results

The detailed results of this dissertation have been published in four journal articles (Papers 1-4) and one working paper (Paper 5). These are presented in Part II. The papers together form a cumulative continuum to answer the main research question: "*How to manage and utilize open-ended user feedback in the continuous development of information systems and e-services?"* The first two papers help to gain deep understanding of user feedback and an insight on the existing mechanisms for feedback gathering and management. The third paper addresses agile ISD methods. It provides deep knowledge on ISD and the support of agile methods for user involvement as well as feedback management and utilization from an ISD methodological perspective. These three papers lay the ground for the last two papers that address feedback management and utilization in continuous IS and e-service development processes. Next, we briefly summarize each paper from the perspective of the dissertation.

4.1 Paper 1: Gathering Open-Ended User Feedback at the Operational Level

This paper addresses the first research question: "*How to gather open-ended feedback (opinions as well as new and innovative ideas) from users and other stakeholders during ongoing use for the further development of an IS or e-service?*" The purpose of the action research intervention was to assist the case organization by designing and facilitating an e-collaboration process for gathering open-ended innovative user feedback. From the dissertation perspective, the objective was to gain deep understanding of user feedback in general and an insight on the existing mechanisms for gathering, analyzing, and disseminating the feedback. Our case was a student information system developed and maintained by a consortium of universities. In one member university we focused on student users, the largest user group of the system, and their web interface, which at the time of the research was fairly new.

We designed and facilitated two e-collaboration processes for gathering open-ended feedback. We used two different ideation methods that do not portray preset topics or options. Only a main question on the needs and ideas to develop and improve the system features was presented to commence brainstorming. The processes were built using the Collaboration Engineering (CE) approach with thinkLets (Briggs et al., 2003; de Vreede

and Briggs, 2005; Kolfschoten et al., 2004; Kolfschoten et al., 2006) as the problem solving method, and implemented using GSS software as the technology in a face-to-face setting. The processes also included a background survey on participant demographics and feedback giving habits, and a feedback survey about the session itself.

The habit of giving feedback on the case or any other IS was not common among the participants, which is rather typical for an average end-user. Most would not have participated had the session not been part of a course and thus beneficial. Email, either via the system's mailto-link or direct email to the IT-helpdesk, was the most used feedback channel. The feedback the participants had previously given was mostly about error notifications or minor improvement suggestions.

Unfortunately, the feedback had not always been responded to by the system owners or developers, and, if it was, the response was either a receipt notification or, seldom, a detailed explanation on the subject. Yet, the immediate feedback from the IS owner at the end of the feedback sessions about the presented ideas was regarded as extremely interesting, valuable, and motivating by both the participants and the IS owner. Hence, the motivation of the users to give feedback both solicited and unsolicited is extremely important. Quick personal response to feedback is an important motivating action. It shows that the feedback is valued and taken seriously.

The participants considered the quality, i.e. usefulness of the feedback for the further development of the case system, and the quantity of the feedback received as outstanding. The IT-representatives also regarded the sessions as a success. They were extremely satisfied with the quality and the quantity of the feedback received, compared with other feedback gathering methods in use, i.e. web form, IT-helpdesk, and student union's discussion forum. The needs, wishes, and ideas presented addressed not only the student interface and functions but also the consortium, other IS, processes, organization, and even physical facilities. Most ideas were not totally new to the IT-representatives, but the information on the importance and priorities of the feedback items for users was regarded as extremely useful for the further development of the case system.

The participants regarded the collaboration processes as very appropriate for feedback gathering. They also considered the sessions to be successful and the use of GSS advantageous. They mentioned useful GSS features such as anonymity, interactivity, voting, efficiency, and online documentation. For the case organization, the developed e-collaboration processes provide an additional means to contact users that otherwise would not provide feedback. They help obtain innovative feedback and new ideas as well as information on their importance to users. CE with thinkLets as the building blocks provided an efficient and effective method to design and facilitate a collaboration process. It was a time-efficient and pleasant way to work, and produced a large number of prioritized ideas. The automatic GSS session reports were also regarded as a great advantage.

Feedback management and utilization was person-dependent because no formal processes for their accomplishment existed either at the university or consortium level. The feedback gathered was given to the IS owner, the student registrar office, and the CIO of the case university as well as to the consortium representatives. The feedback was discussed in the working and project groups of the consortium, but no decisions were made. The utilization of feedback and the further development of the system were slow due to the unanimity requirements of the consortium's decision making. However, some minor improvements were implemented locally soon after the sessions.

4.2 Paper 2: Gathering Open-Ended Stakeholder Feedback at the Strategic Level

The research setting in this paper is very similar to that of the previous paper. The research question is the same, i.e. "*How to gather open-ended feedback (opinions as well as new and innovative ideas) from users and other stakeholders during ongoing use for the further development of an IS or e-service?*" The purpose of this action research intervention was to help the case organization by designing and facilitating an e-collaboration process for strategy development. From the dissertation perspective, the objective was to further deepen our understanding of user feedback and the gathering of such feedback by focusing on various stakeholders at the strategic level of planning, and to explore further the existing feedback management mechanisms. Our case was a consortium of universities developing and maintaining a joint student information system. Thus, the system was the same as in the first paper, but the organizational level was

different. The session participants were a heterogeneous group of individuals from various member universities, hierarchical levels, and organizational units. They were users, managers, and process or IS owners in the student administration or IT-department of the member universities, together with one participant who represented the consortium administration.

We designed and facilitated an e-collaboration process for strategy development. The process was again built using the Collaboration Engineering approach with thinkLets (Briggs et al., 2003; de Vreede and Briggs, 2005; Kolfschoten et al., 2004; Kolfschoten et al., 2006) as the problem solving method and implemented using GSS software as the technology in a face-to-face setting. The internal environmental analysis phase of the strategy process (Thompson et al., 2004) provided the potential to gather open-ended stakeholder feedback. The participants were asked to brainstorm the future needs and challenges of their university and specifically their student administration related to the student IS. This main question alone started the free and open ideation. Thereafter, the needs and challenges were discussed, reformulated when necessary, and prioritized with group voting methods.

The open-ended feedback received addressed both the system and the multi-organizational consortium in general. In addition, comments came up on the key processes and functions of student registrar offices as well as the integration of the system with other internal and external IS. The feedback received from the heterogeneous strategy session participants and their priorities were quite different from those of the student users, as was expected.

The participants as well as the IS and process owners regarded the quantity and quality, i.e. the usefulness of the feedback gathered for the further development of the case system, to be extremely high compared with that from the other feedback mechanisms in use, i.e. the system's feedback link and IT-helpdesk. Many of the needs gathered in the internal analysis phase were previously known to the IS and process owners. It was, however, extremely useful to find out the relative importance and priorities of these needs. It would have been difficult and considerably more time consuming to obtain similar information from the heterogeneous stakeholders by any other means.

Both the participants and the case organization regarded the e-collaboration process as very appropriate for strategy development. In this multi-organizational context, the participants regarded the anonymity of GSS as essential. It enabled equal participation regardless of the position, role or individual properties of the participants. The face-to-face setting that also allowed verbal discussions during the session was a great advantage as well. It helped gain mutual understanding e.g. on the terminology to be used in the case context and opened up a possibility to learn from each other and about the consortium. From the case organization's perspective, the e-collaboration process substantially saved time compared with its traditional strategy development workshops and provided a good opportunity to reach the multi-organizational stakeholders to gather their needs, wishes, and ideas. The automatic GSS session reports were also seen as a great advantage.

The results of the session were discussed and further elaborated upon at the consortium level in the context of strategy development. From the feedback management perspective, neither the consortium nor the single universities had formal processes for analyzing, prioritizing, and disseminating feedback or combining different views on the same system. Thus, the utilization of feedback in the further development of the case and other systems and processes was person-dependent.

4.3 Paper 3: Agile Methods and their Support for Continuous User Involvement in Information System and E-Service Development

The center of attention of this interpretive case study is on the third research question of the dissertation: "*How to utilize open-ended innovative feedback in IS and e-service development processes?"* The objective was to gain deep understanding of agile ISD methods and their support for user involvement and feedback management. The study aimed at providing an ISD methodological perspective to feedback utilization and management.

We scrutinized two private international organizations employing agile Extreme Programming style practices in their internal ISD. In both organizations we focused on one major system or software that was under continuous renewal after several years of development. The first case was an international manufacturing company and its highly strategic and time-critical factory system. All employees in different locations used the

system for all their tasks. The second case was an international corporate communications agency and its communications application portfolio for developing final products for customer organizations and their employees. Thus, the developers themselves were also end-users of the software.

In both cases, system helpdesks were the most important communication channel for internal, distant, and external users and the main source of new user requirements for developers. In the factory case, recurrent daily interactions between developers and local users, both official and spontaneous, were extremely valuable for development and motivating for both parties. Small and frequent releases also motivated users because their ideas were quickly made visible. The releases provided a working, sufficient prototype for users and triggered them to ideate.

It is essential to have a change or feedback management system in place, as in the factory case, in order to be able to register, analyze, and utilize user feedback regardless of the feedback channel. In the factory case, the development team actively and systematically gathered and combined new ideas and trends in business and technology from many sources such as management policy statements, system administration, and users. The business environment was the key driver of the development, but the development perspective was clearly 'bottom-up', because user needs drove the continuous development of the system. Thus, both bottom-up and top-down approaches were applied wherein decisions on the future development were regularly and frequently made together with the business management. In the portfolio case, the role of external users and feedback management was less visible. Instead, each new customer implementation elicited requirements new to the developers.

The support of agile methods for user involvement and feedback management varies. Agile methods must be used systematically to ensure successful IS and e-service development. The case organizations greatly differed in their reasons for selecting this kind of approach to ISD and the drivers behind its adaptation. The manufacturing company had gradually evolved its own method, or way of working, and used it strictly and systematically. The other company had made a more or less deliberate decision to employ modern agile development practices, but the use was less systematic. The

research indicates that the method selection discussion should not be limited to which method is better than the other, but instead should focus on the drivers, constraints, and enablers that affect the selection of the method.

The proximity and familiarity of users, developers, and business management, as well as a common language are essential for continuous user influence and fast-pace incremental ISD. Successful agile development also requires the developers to be extrovert and know thoroughly the business in addition to the technology.

A high-level development plan for a longer time-span must also exist when agile methods are used. It may be a separate project plan, as in the customer implementations of the portfolio case where the waterfall method was also used. In the factory case, the release plan was complemented with a detailed short-term work plan to guide and control the actual development with the agile method. Thus, specifically with external customers it is necessary to apply formal, sequential methods that provide clear decision points and criteria and to which customers are accustomed.

4.4 Paper 4: User Feedback Management

This interpretive case study addresses the second research question "*How to analyze open-ended feedback for finding and disseminating new ideas and innovations?"* The objective was to understand in detail the processes for the management, i.e. gathering, analyzing, and disseminating, of open-ended user feedback that enables its dissemination and utilization. The case was a multinational financial organization and its e-banking service, with a large number of internal and external users (personal and corporate customers, and other identified and unidentified users) and open-ended user feedback. Consumers were the largest user group of the e-banking service and most of the open-ended feedback was received from them unsolicited. The front-end, back-office, and legacy applications integrated in the e-banking service were in different phases of their lifecycle, and the service was under continuous major and minor renewal.

We developed a feedback and initiative management model (Figure 4) for gathering, analyzing, and disseminating open-ended user feedback and internal initiatives. The model depicts the key concepts of feedback and initiative management and their relations. It is solidified by describing the processes, patterns of action and interaction,

work and information flows, key actors and their roles, communication channels, and the supporting IS and databases. The model helps find novel and innovative ideas from the abundant open-ended feedback and enhances user influence on the evolutionary as well as new IS and e-service development.

In our case, there are two basic processes: feedback and initiatives (idea process). The processes are congruent with each other but not identical due to the differences in the quality, i.e. the novelty and innovativeness, of external feedback and internal initiatives. External feedback mainly includes reactions to the present systems and services, whereas internal initiatives are more concrete proposals for improvements.

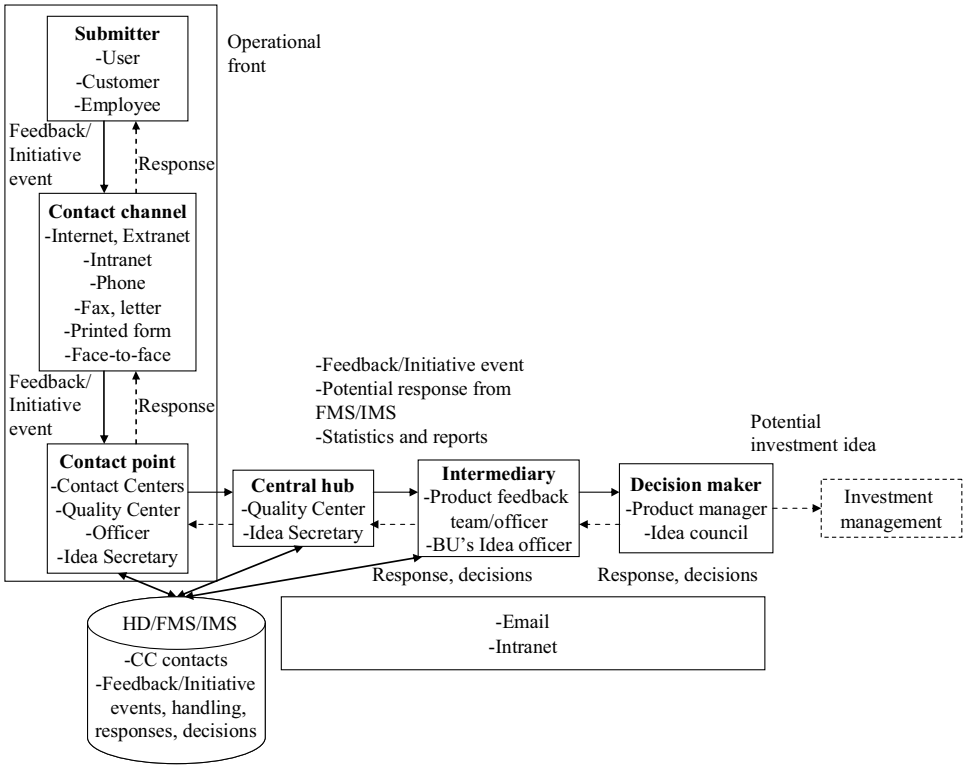

Figure 4 Feedback and initiative management model

Feedback and initiative handling and decision making is a structured filtering process. Unsolicited feedback and initiatives are scanned several times for new ideas both in the front-line and back-office. Standard feedback and initiative forms unify the registration

and make their scanning easier. Standard feedback is handled in the front-line at the operational level with the help of centralized feedback and initiative databases. Other feedback and initiatives are handled at higher levels of the organizational hierarchy, usually in the respective business product unit. The key ideas available in the databases are also transmitted to the decision makers via email. This combination of formal processes and informal alerts ensures the constant flow of feedback and initiative handling as well as getting the important issues on the radar of decision makers, who might not have time to scan the filtered information in the systems.

The key actors of the feedback and initiative management processes are located at business units (BU) that are the internal owners of the processes and the related IS. Business product units have undivided responsibility for their products and services. Thus, they are in the key role when utilizing the feedback and initiatives. Country-level organs control and further develop the activities and take care of the dissemination of new ideas at the company level. Hence, user feedback and initiatives can be utilized group-wide and up to the strategic level of planning.

Multiple low-cost and free contact channels for every taste and with very low barriers for participating must be available. Easy access, ease of use, interactivity, and quick reactions, especially to complaints, are essential. Responding to every submitter personally ensures that they feel they can influence. Contacts with submitters are centralized into one business unit to guarantee the high quality of user interaction, and the original contact channel and point is always utilized. Interactivity and personal feeling are also specifically sought in electronic user contacts.

Continuous encouragement and motivation of internal and external users by showing that user involvement is appreciated and does matter is regarded as the key to successful user participation. The initiative database is available on the Intranet for all employees to read, whereby registered ideas can be communicated throughout the organization. The continuous adaptation of the feedback and initiative management processes is deliberately made visible to users, e.g. in the customer magazine and web portal. This information also helps increase users' conception of the organization's credibility and service quality.

It is crucial to gather the voice of consumers that are the largest user group of the system. Our case organization regarded users as partners. The overarching objective of the feedback and initiative management processes was to improve and develop proactively not only IS, but all services and products holistically, to meet the expectations of the heterogeneous users.

4.5 Paper 5: Integration of Feedback Management, Information Systems Development, and New Service Development

The final paper seeks to answer the question of "*How to utilize open-ended innovative feedback in IS and e-service development processes?*" The purpose of this interpretive case study was to understand in detail the integration of feedback management in IS and e-service development that enables the utilization of user feedback in the further development of IS and e-services. This paper is a continuation of the previous paper where the feedback and initiative management model (Figure 4) was developed. Hence, our case was the same, i.e. a multi-national financial organization and its e-banking service, with a large number of internal and external users, user feedback, and internal initiatives. We particularly focused on the utilization of open-ended feedback and initiatives received unsolicited during ongoing use. In presenting the results of this paper here, we use the term feedback to cover also initiatives that may be regarded as a more innovative type of feedback.

We constructed an e-service development model (Figure 5) that depicts the key concepts and their relations in e-service development. It is solidified by describing the processes, work and information flows, key actors and their roles, communication channels, and supporting IS and databases. The model facilitates the integration of ideas received via various idea generation methods (including user feedback and initiatives), ISD, and NSD (investment management). The model enables feedback utilization and user influence throughout the IS lifecycle and organization at strategic, tactical, and operational levels of planning.

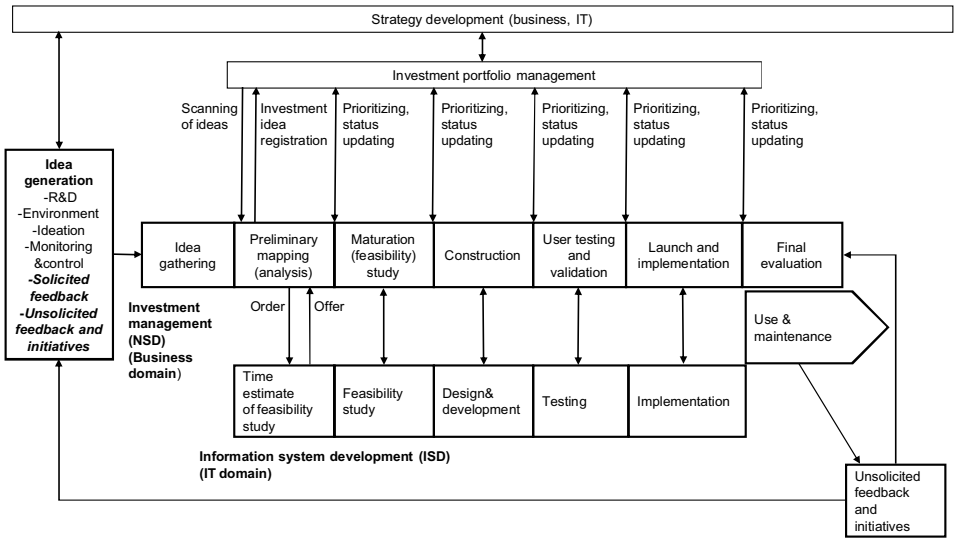

Figure 5 E-service development model

Idea generation, NSD, and ISD are the key processes that are fully integrated. The successful integration is enabled by the adoption of formal, linear processes throughout the investment lifecycle, well-defined organizational responsibilities, roles, and decision making points and authorities, both centralized and decentralized activities, and extensive use of supporting IS and databases that, at the strategic level, are centralized and group-wide.

NSD and ISD processes are parallel, NSD guiding the development. NSD is the responsibility of the business domain, whereas the IT domain is in charge of the ISD process. The basic model is applied to all investment types. An investment may contain many development projects, e.g. one for a physical product and another for an IS. An appropriate development process for each project is adopted in addition to NSD. The level of detail and the formality of the processes as well as the level of decision making vary depending on e.g. project size and criticality.

External users are actively involved only in the idea generation, production, and late testing phase. In the maturation (definition) and construction stages, employees represent ordinary users. This may be due to the fact that employees also use the systems as external personal users and, thus, they may be regarded as lead users. In addition, the

strategic importance of the e-services may explain why external users are not directly involved throughout the investment lifecycle.

It is essential to use multiple sources of ideas and combine them for the continuous development of IS and e-services. Combining information from various sources and searching for new ideas is centralized to business product managers at the tactical level. They are responsible for the preliminary evaluation of ideas and bringing the potential development ideas continuously into the group-wide investment portfolio. This bottom-up approach augments the sequential top-down strategic planning and enables continuous user influence up to the strategic level. The continuous strategic planning process provides strategic agility (Doz and Kosonen, 2008) or responsiveness to changes in e.g. the environment and user needs.

5 Discussion and Conclusions

The main driver of this research was the fact that continuous involvement of heterogeneous and even unknown users in the evolutionary IS and e-service development is problematic. It is difficult to reach users and other stakeholders (Markus and Mao, 2004; Ramler et al., 2004; Enkel et al., 2005), but it is essential to constantly know their needs, wishes, and opinions in order to be able to maintain and improve the service quality of the system and to stay competitive (Maquire et al., 2007). In this post-implementation or use and maintenance phase, the utilization of solicited and unsolicited open-ended user feedback enables continuous user involvement and influence throughout the system lifecycle and at all levels of planning. Yet, the unstructured nature of open-ended feedback makes it difficult for such feedback to be analyzed and utilized (Ramler et al., 2004; see also Pavlou and Dimoka, 2006; Prandelli et al., 2006). In many cases no formal structure exists for forwarding customer feedback into the ISD or NPD process (Fundin and Bergman, 2003; Geib et al., 2005; Wirtz and Tomlin, 2000). Due to the service nature of the contemporary IS and e-services, the service development aspect should be taken into consideration in addition to the ISD (Menor et al., 2002; Nambisan and Wilemon, 2000; Nambisan, 2003).

This dissertation seeks answers to the main research question "*How to manage and utilize open-ended user feedback in the continuous development of information systems and e-services?"* It was divided into three sub-questions: 1) How to gather open-ended feedback (opinions as well as new and innovative ideas) from users and other stakeholders during ongoing use for the further development of an IS or e-service?; 2) How to analyze open-ended feedback for finding and disseminating new ideas and innovations?; and 3) How to utilize open-ended innovative feedback in IS and e-service development processes? The objective of this multiple case study was to provide understanding and create generalizable models and practices for feedback management and utilization, in other words to build theory from cases (Eisenhardt and Graebner, 2007).

Walsham (1995; 2006) and Klein and Myers (1999) informed the interpretive field studies. We continuously refocused our research based on the improved understanding

that we gained from the various cases and continuous updating of the related literature that was used as a sensitizing device giving the background and abstraction to the research.

Multiple interpretations always exist in the field. The key construct of feedback itself is vague and often understood narrowly as complaints and error notifications. Yet, in the context of open-ended user feedback, the broader meaning of innovative feedback was well acknowledged. Different perspectives from various stakeholders were sought, which was taken into account in the selection of the interviewees and session participants. Suspicion, a critical perspective towards the data gathered, is a necessary element of any research. Semi-structured interviews and the GSS sessions in a face-to-face setting offered the possibility to discuss the topics in more detail and reveal the underpinning assumptions or misunderstandings.

We have tried to provide a rich description of the studies and their results that is fundamental for the rigor and relevance of qualitative research (Lyytinen et al., 2007). We have aimed at offering plausible, convincing, and transparent stories of the research, the cases, and the logical reasoning behind the results and conclusions. We believe that the rich and honest description and adherence to the empirical data results in an objective theory building from cases (Eisenhardt and Graebner, 2007). Next, theoretical contributions, practical implications, and the limitations of the study are discussed and areas for future research suggested.

5.1 Theoretical Contributions

The results of this dissertation have several theoretical contributions. They advance user involvement in and influence on continuous IS and e-service development in the post-implementation phase of the system lifecycle. We drew on user participation theories (McKeen et al., 1994; Markus and Mao, 2004; Alam, 2002) and the literature on feedback and ISD and NSD methods in IS and marketing when studying continuous user involvement in IS and e-service development processes through open-ended feedback.

Our research contributes to the discussion on the implementation and effects, i.e. type and degree, of user involvement in ISD and NSD (Magnusson et al., 2003; Markus and Mao, 2004; Lynch and Gregor, 2004; Harris and Weistroffer, 2009). Our results confirm

that average users (vs. the most unsatisfied, satisfied or lead users) are not very active in providing feedback or participating on their own initiative (Ramler et al., 2004). They do not have the intrinsic incentive to get involved. An incentive valuable enough to the participants is clearly needed or participation must be part of their work. Thus, personal contacts, either face-to-face or electronically, and incentives are important, as maintained by Floh and Treiblmaier (2006). Contacting users and other stakeholders personally also increased their positive attitude and readiness towards the system and feedback-giving and ultimately user satisfaction (Sheu and Kim, 2009). The designed and facilitated e-collaboration processes for gathering open-ended user and stakeholder feedback at the operational and strategic levels provide one means to contact users and other stakeholders personally. We have applied the processes in the use and maintenance phase of an e-service, but we believe that they could also be used for requirements elicitation.

The feedback and initiative management model (Figure 4) together with the e-service development model (Figure 5) depict an implementation of an institutionalized, integrated feedback management system (Fundin and Bergman, 2003). This FMS provides a formal structure for forwarding customer feedback into the ISD or NPD process (Fundin and Bergman, 2003; Geib et al., 2005; Wirtz and Tomlin, 2000). It covers the whole feedback lifecycle from idea conception to implementation, i.e. from its emergence to its utilization in the related processes in IT and business domains and at all levels of planning.

Our findings support Romano and Fjermestad's (2003) assertion that scalable KM methods, processes, IS, and people for handling large volumes of unstructured data are the key prerequisites for the utilization of the data. The more critical the system and the more competitive the business, the more important it is to know what the users want and need, and the more formal the processes for user participation and feedback management and utilization should be. Our feedback and initiative management model (Figure 4) specifically addresses the knowledge management gap in e-CRM research area in the field of IS (Romano and Fjermestad, 2003). It also shows that there are two closed knowledge loops (Geib et al., 2005) or ends of the feedback lifecycle. The first loop is the response to the feedback submitter. The other loop is feedback utilization in

planning, development, and decision making of the IS or e-service in case. Both knowledge loops are equally important for system success.

This study contributes to the previous discussion on the development of Internet-based services and on the relationship between ISD and NSD in e-service context (Menor et al., 2002; Nambisan and Wilemon, 2000; Nambisan, 2003). Menor et al. (2002) questioned how Internet-based services should be developed and whether a totally new NSD process for Internet service exists. Our research shows that a new type of NSD process for Internet service does not exist. Instead, both ISD and NSD are necessary for successful e-service development regardless of what methods are used, as depicted in the e-service development model (Figure 5). NSD is the tool of the business domain to manage an investment throughout its lifecycle whereas ISD is the specific process for constructing IS and WIS in the IT domain. The e-service development model (Figure 5) also integrates feedback management and other idea generation methods to NSD and complements ISD by adding an idea generation phase to precede RE (Hannola et al., 2009). Thus, open-ended and especially unsolicited user feedback represents one form of continuous open ideation and innovation at the front-end, whereas ISD and NSD are approaches for the back-end of the innovation process (see Menor and Roth, 2008; Oke, 2007; Gassmann et al., 2006).

The e-collaboration studies are among the first to empirically validate the applicability of the Collaboration Engineering approach with thinkLets (Briggs et al., 2003; de Vreede and Briggs, 2005; Kolfschoten et al., 2004; Kolfschoten et al., 2006) for designing collaboration processes. CE was found to be an efficient way to design and facilitate the e-collaboration processes, even for a novice facilitator. The processes produced a large amount of useful open-ended feedback and time savings were notable. They were regarded as inspiring and efficient tools for feedback gathering that can be applied in various contexts and at various levels of planning.

User involvement via open-ended feedback is indirect because the users do not usually interact with the developers in the post-implementation phase. The feedback is mediated to developers and decision makers through feedback and initiative management. Feedback can be utilized in various ways in the IT or business domain and at various

levels of planning. Any ISD or NSD method per se does not ensure feedback utilization. The agile approach, however, offers concrete methods for rapidly incorporating features presented in user feedback into the system development. Accordingly, the role of users and other stakeholders in IS and e-service development depends on both the actual feedback and its utilization. Our study is consistent with Millerand and Baker (2010) in that users play multiple roles during the ISD lifecycle and the distinction between users and developers is becoming vague. The question of who is allowed and supported to co-develop, co-create, and co-use remains (Millerand and Baker, 2010).

5.2 Implications for Practice

The developed e-collaboration processes together with the feedback and initiative management model and the e-service development model provide effective and efficient tools for organizations in their continuous renewal process. Feedback gathering, analysis, dissemination, and utilization are a management issue. The problem is no longer the selection of the right user representatives or asking the right questions. Rather, it is to be able to find each individual's needs, new ideas, and innovations, to combine them, and to disseminate and utilize the ideas in the development processes to make the most desirable IS, product or service. The need to integrate various development processes and increase their agility is evident, reflecting how intertwined business and technology are.

Understanding users and their feedback and taking advantage of it quickly and visibly is the key to providing products and services that customers want and need. Listening to customers is not enough to learn what they really think and want but cannot express exactly. The information is useless if it is not registered for further use. It is not only the employees in the front-line and contact points but the whole personnel that are in the key position to hear and record feedback to be utilized later. A user- or customer-oriented culture must be adopted throughout the organization.

A huge quantity of open-ended feedback is received unsolicited and available in discussions on the web. The challenges related to the management and utilization of feedback are significant. In addition to tools, organizations need the ability to analyze this data, convert it to a usable format, and utilize the information in their planning, development, and decision making processes. Hence, manual analysis of feedback is also

necessary. Only human brains have the ability to understand and combine individual events and items into a form that will perhaps make a new successful IS, product or service.

A participation strategy must be drafted and adopted to guide and ensure successful user participation in the planning, development, and decision making processes. User participation theories (McKeen et al., 1994; Markus and Mao, 2004; Alam, 2002) discuss issues that must be considered when developing a participation strategy. Business and IT-domains, strategic, tactical, and operational levels of planning, all processes and types of product, service, and investment must be addressed when drafting guidelines for user participation. Feedback is only one participation method among others, albeit one that is extremely important. A balance between feedback and other methods must be found through a participation strategy.

5.3 Limitations

There are limitations to this research. The empirical data were gathered in one country. Hence, the organizational and national culture may affect the results. However, we regard the multiple public and private cases in various industries as revealing and thereby providing an in-depth and versatile view of the phenomenon under study. According to Menor and Roth (2008), the financial sector and specifically retail banks represent an excellent context for empirically scrutinizing service competitiveness issues such as innovation due to their changing and information-intensive environments. The case organizations had full control and decision power on the development of the tailored IS throughout the system lifecycle, which provides a perfect context for IS and e-service development research. Thus, we consider the developed models and processes valid and reliable.

With regard to the replicability and transferability of the developed e-collaboration processes, we have successfully repeated the feedback gathering processes in the case organization (see Bragge and Merisalo-Rantanen, 2009). Thus, we do not consider that a great threat of sample bias exists with respect to the usefulness of the feedback processes. The strategy development process was conducted once in one case organization, so we can only assume that the sample is representative and the process

can be repeated. A further limitation is that the processes have not been transferred to the case organizations in order to be carried out and facilitated by their own staff according to the original, ultimate principles of Collaboration Engineering. Nevertheless, with regard to the 3-tier market test proposed by Kasanen et al. (1993), we believe that the e-collaboration processes have already passed the first tier, weak market test. The weak market test means that a manager with financial responsibility has been willing to apply the construction in their business. Passing the semi-strong market test would imply that the construction has become widely adopted by organizations, and a strong market test reflects that the units applying the construction systematically would have produced better results than those that are not using it (Kasanen et al., 1993). The construction is a novel solution that also has a scientific contribution (Lukka and Kasanen, 1995). The solution may be, e.g., a model, diagram, plan or organization (Kasanen et al., 1993).

The generalizability of the developed models is a controversial issue. According to Lee and Baskerville (2003 p. 236) "a theory generalized from the empirical descriptions in a particular case study has no generalizability beyond the given case". They continue that this theory is generalizable only within the case setting. An increase in the number of sites would not indicate greater generalizability of a theory to new settings (Lee and Baskerville, 2003). Yet, according to Eisenhardt and Graebner (2007), building theory from cases and their rich empirical data will likely produce an accurate, interesting, and testable theory. Thus, we claim that the resulting models could be further validated empirically in new case contexts.

In qualitative research, data gathering, analysis, and reporting of the results are simultaneous, iterative, and time consuming. The results emerge from the interpretations of the data by the researchers during the research process, and, thus, are inevitably subjective. The researcher is personally involved and biased due to his/her background, knowledge, and prejudices, but must remain neutral (e.g. not to take sides or try to change things) in the field situation (Walsham, 2006). We regard ourselves as outside observers rather than involved researchers (Walsham, 1995). The interviews were semi-structured, giving structure, but also allowing new topics to emerge. In the action research interventions, we acted as external experts or consultants specializing in the

GSS techniques and working methods used. Our backgrounds, prejudices (prior knowledge on the topic, the case organizations, and the case systems), and continuous learning during the research process have inevitably, at least subconsciously, affected the understanding of the research phenomena. Yet, we have acknowledged and reported our roles, backgrounds, and prejudices, and believe that we were able to remain neutral in the field and to avoid intentional biases in the results.

The data were gathered at a time when user or customer involvement in planning, development, and decision making processes was not as big an issue, let alone a hot topic, as it is today. Yet, we believe that our results are useful for both academia and practitioners in their undertakings to implement, improve, and integrate practices for feedback management and continuous information system and e-service development.

5.4 Propositions for Future Research

In the future, the developed models for user feedback management and e-service development should be further conceptualized and validated in other contexts such as e-services specifically for consumers, ERP-solutions, and other industries, countries, and cultures. Our perspective has been organizational, but the users' view on feedback and their organizational impact should also be explored in more depth. Such research would increase the knowledge of user motivation and preferences to participate.

Research on social media as a channel for feedback, interaction, and user and customer involvement is required. It is essential to interact and even "live" with the users to understand them and to invoke and maintain their interest to participate. Social media is an additional channel for feedback, but this is interactive and enables the users to discuss with each other and add on each other's ideas. Thus, such media supports open innovation and co-creation better than traditional channels that only have one-to-one relationship between the organization and the user. Organizations need new means to manage and utilize social media in their planning and decision making.

Web tools, the online service itself, and social media produce a huge quantity of unsolicited, unstructured data. More research is needed on the implementation of analysis tools (see Zhang and Segall, 2010 for a review of tools) and the integration of the analysis results in business and IT related planning, decision making, and

development processes. These tools would be highly desirable for the preliminary screening and mining of open-ended data that aims at finding new ideas, trends, and key topics of interest. The feedback and initiative management and e-service development models developed in this research provide a good starting point for further research.

More research on agile methods in the context of distant deployment, and with external or distant users is called for. These would test the method in different organizational cultures, more complex requirements gathering phase, and maintenance through release versions. The adoption of agile methods in traditionally organized IS departments and their applicability to managing their ISD projects with external consultants and vendors would also be of interest.

Additional empirical studies should be conducted to further validate the developed e-collaboration processes in new contexts with different samples, transforming them to virtual and distributed settings, and transferring the processes from facilitators to practitioners or problem owners in the organization. Organizations have a constant need to rationalize their internal and external collaboration and co-operation. New e-collaboration processes using Collaboration Engineering with thinkLets could help them in this endeavor.

User involvement and influence is a multidisciplinary phenomenon. The abundant innovation research in marketing is closely related to the discussion on user feedback in the field of IS. In addition to IS and marketing, production and operations management is a relevant field of research. The development of web-based planning tools for customer co-creation of physical products and their integration in the production process pose numerous research challenges for IS researchers.

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PART II: ORIGINAL PAPERS

I. Bragge Johanna, Merisalo-Rantanen Hilkka, Hallikainen Petri (2005). ”Gathering Innovative End-user Feedback for Continuous Development of Information Systems: A Repeatable and Transferable E-collaboration Process”, *IEEE Transactions on Professional Communication*, 48 (1), 55-67 (special issue on Expanding the Boundaries of E-Collaboration). Available at http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1397907

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III. Merisalo-Rantanen Hilkka, Tuunanen Tuure, Rossi Matti (2005). ”Is Extreme Programming Just Old Wine in New Bottles: A Comparison of Two Cases”, *Journal of Database Management*, 16 (4), 41-61 (special issue on Agile Information Systems Development). Available at http://www.infosci-journals.com/downloadPDF/pdf/ITJ2983_RV713KKMKD.pdf

IV. Merisalo-Rantanen, Hilkka; Rossi, Matti; Hallikainen, Petri; Nurmimäki, Kari (2009). “User Influence in E-Service Evolution: A Case Study of E-Banking”, *Communications of the Association for Information Systems*: Vol. 24, Article 41, 719-738. Available at http://aisel.aisnet.org/cais/vol24/iss1/41

V. Merisalo-Rantanen, Hilkka (2010). “Integrating User Feedback Management, Information System and New Service Development: Case E-Banking Service”, *Aalto University School of Economics Working Papers* W-480, 1-29. Available at http://hsepubl.lib.hse.fi/pdf/wp/w480.pdf

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