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Focus, Goal and Roles in E-Service Design: Five Ideal Types of the Design Process

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ABSTRACT

New technology means new opportunities for both the private and public sectors. Service-oriented solutions based on e-services are no exception. Such solutions can support efficient and flexible collaboration between actors, as well as enable opportunities for the design of new and highly innovative services. However, service-oriented solutions also mean a number of challenges. In order to successfully design e-services, a number of strategic choices have to be made by the service provider organization, such as deciding on the roles to be played by the provider and customers in the design process, and deciding which focus should govern the design. For example, should the e-service design focus on fit into the provider's IT architecture; should the e-service design focus on fit into the provider's internal processes; or should the e-service design focus on the interactions with the customers? In this paper, we present five different ideal types of e-service design that can support such choices. The five types differ in their views on the main goals of the e-service design; their views on the service providers' and customers' roles and responsibilities in the design process; and their views on the focus of the e-service design process. We also present the benefits and drawbacks of the different ideal types, and describe how real cases of e-service design can be categorized according to these types.

Keywords: *e-service, e-service design, ideal types, innovation, co-design*

INTRODUCTION

Globalization and increased market competition force many to extend their collaborations with business partners, such as vendors and customers. That is, many organizations need to

collaborate with business partners in order to efficiently and effectively carry out business functions such as production, ordering, delivering, sales and marketing (Prahalad & Krishnan, 2008). Extended collaboration is also necessary in the governmental sector as the demands for low-cost and high-quality public services are increasing. For example, different government agencies, ministries and units need to collaborate in order to provide citizens and companies with one, or a limited number of, entry point(s) for using governmental services (Gouscos et al, 2007). The implementation of a purchaser-provider model in the governmental sector, where both public and private actors can be providers of governmental services, has also called for increased public-private collaboration (Siverbo, 2004).

However, it is important that such collaborations are flexible (Prahalad & Krishnan, 2008). In the commercial sector, it must be possible for an organization to swiftly reconfigure the network of collaborating business partners. The reasons are as follows: customers can change their demand; new products and vendors can be introduced; and current business partners can leave the collaboration. In the public sector, citizens and their representatives, politicians, can require new services and changed collaboration partners as well.

In order to establish flexible collaborations, organizations are implementing service-oriented solutions based on e-services. First, service-oriented solutions are quite straightforward for organizations to implement because of the existence of supporting methods and technologies. Second, service-oriented solutions will lower the barriers for actors to enter into collaborations because of the existence of common e-service standards. Third, service-oriented solutions will support business changes in organizations since the usage of e-services, layered above IT systems, will lower the business and technical dependencies of existing IT solutions. In other words, usage of e-services will provide a more flexible IT solution that can manage business change more easily (Josuttis, 2007). Furthermore, the use of e-services and the resulting extended collaboration will provide opportunities for both public and private organizations to identify and design new and innovative services that cannot be designed without the use of information and communication technology in general, and e-services in particular. However, identification of new and innovative services calls for an e-service design process in which the creativity among different actors is exploited, i.e. ideas, requirements and design solutions from either or both the providers and the customers of e-services are identified and used (Sundbo, 2008, Tung & Yuan, 2007).

Another factor that differentiates e-service design from traditional IT design is the scope that needs to be taken into consideration during the design process. In traditional system design, the user and provider of the IT system is usually part of the same organization, with common organizational goals, business processes and IT systems. However, when designing an e-service, a broader scope needs to be considered, including the e-service's support for both the service provider and the service customer, who all have different goals, business processes and IT systems. Focusing only on the service providers may re-

sult in an e-service that will not be used by the service customers (Goldkuhl, 2009; Henkel & Perjons, 2011).

It is not obvious how a service provider organization should deal with both the service provider's and the service customers' views in the e-service design process, and how to exploit the creativity among different actors in full. In practice and in literature, there exist many different methods and techniques for e-service design. Some of these methods and techniques may support the goal of the design process better than others, but there is no guidance on which of them to choose.

The research question investigated in this paper is: What strategic choices exist when designing e-services so that efficient, effective and innovative e-services can be developed? This question can be reformulated into sub-questions like: What different e-service design approaches exist? How can these approaches be differentiated and described?

In this paper, we present five different ideal types of e-service design. These ideal types can be seen as five strategic approaches for designing e-services; that is, by choosing an ideal type, the organization will, for example, make a strategic choice regarding the focus, the goal and the roles in the design process. Each of these ideal types has its benefits and drawbacks, also described in this paper. The ideal types span from traditional service design approaches, where the service provider designs e-service solutions that focus on the overall architecture of e-services, to more radical approaches, in which a number of service customers will, by themselves and using their domain knowledge, design e-service solutions for a service provider.

There exist other classifications of approaches for information systems development (ISD): for example, Iivari et al (2000), which is an attempt to cover many different aspects of ISD in one classification model. Different ISD methods can be described using such a comprehensive framework. Our attempt is much more focused and narrower. Our ambition is not to cover the whole ISD process or the development of all types of IT artifacts. We have an explicated a focus on design of e-services, which means one type of IT artifact and one part of the development process. Our approach also follows a shift from a systems perspective to a service perspective in ISD (Dahlbom, 2002). This also makes more classical frameworks, like e.g. that of Iivari et al (2000), less adequate.

RESEARCH APPROACH

One main characteristic of our research is *conceptual development*. We are aiming at a *typology* consisting of *five conceptual ideal types*. There are many different sources for this conceptual development resulting in a typology (see figure 1). There is a basic knowledge of the historic development of different approaches in information system development, product development and service design. We also base our knowledge on empirical studies on ISD and e-service design. We have participated in several such practical projects, many times as action researchers, design researchers and evaluators (see below). We bring this

knowledge into this conceptual development; that is, different parts from earlier empirical studies have been used as examples and illustrations in the typology development.

This development of typology starts from a core of theoretical constructs (concepts like e-service, user, customer, provider, etc.) (see the theoretical base in figure 1). This theoretical concept base is built from both our empirical studies and from extant theories in the field. The typology development presented in this paper can be seen as a *theoretical expansion* of this theoretical base.

We apply a *multi-grounding* approach (Goldkuhl, 2004) to justify the typology development. This means that we combine different types of grounding procedure: theoretical grounding, empirical grounding and internal grounding (see figure 1). The empirical base (our cases introduced below) is used both 1) as a source of inspiration for generating the different ideal types and 2) as a base for checking the validity of the typology.

The research can be described as *knowledge integration*. We bring different threads together and try to give them meaning as parts in a conceptual whole, i.e. the constructed typology. The conceptualization processes can, in our multi-grounding framework, be described as abductive in the sense of a continual movement between investigating empirical case knowledge and the use and (re-)formulation of different theoretical constructs and ideas. The construction of these five ideal types has been conducted through continual comparisons and sharpening of differences in features, categories and values as well as checking that the ideal types are conceptually congruent. This can be labeled as internal grounding of the typology (see figure 1). We have also checked that the typology is fully congruent with the original concepts used (which is called theoretical base). This can be called internal theoretical grounding (see figure 1). The check against extant theories can be called external theoretical grounding (see figure 1).

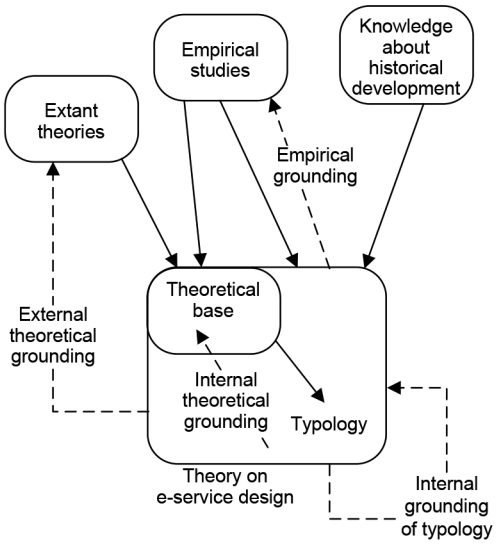

Figure 1. A multi-grounding research approach (the solid arrows represent "impact on")

The ideal type construction is based on 1) actor relations in terms of designer role possessions (who) and 2) cognitive and value orientations of designers (what and why). This follows principles of ideal type construction (Weber, 1978; Watkins, 1952).

Our empirical knowledge is mainly collected from the following empirical cases:

The Mobile project aimed at integrating and combining existing e-services at a major mobile network operator in Sweden, using e-processes executed in a BPM system (Johannesson & Perjons, 2001). The research strategy used was action research: the researchers contributed to the design of the e-processes by applying new design guidelines for e-processes integrating existing e-services. Data were collected during participative modeling sessions with managers and IT owners at a mobile network operator. The data were analyzed and used for refining the e-processes, identifying new e-services for the mobile network operator, and refining the design guidelines for e-processes.

The REMS project aimed at identifying and designing e-services supporting collaboration among eye healthcare providers in the Stockholm region (Henkel et al, 2011). The research strategy used was action research: the researchers contributed to the identification and design of e-services by applying new models and methods. Data were collected during workshops and interviews with stakeholders such as hospital executives, eye-care specialists, primary care physicians, IT personnel, and opticians. Generated data about e-services and business process alternatives were analyzed and structured with the aid of methods and models provided by the researcher.

The Telecom project aimed at transforming a major Swedish telecom company's internal IT support from an IT system focus to a service-oriented architecture (SAMMET, 2010). The research strategy used was a case study: the researchers followed a development case where the e-service architecture and a supporting governance structure were designed. Data about organizational and technical challenges were collected during meetings with managers of the IT support, IT and e-service designers, and internal users of e-services.

The Swedish Tax Agency project aimed at analyzing an existing e-service in order to create a better design for the customer (i.e. companies declaring taxes) (Goldkuhl, 2009; Henkel & Perjons, 2011). This was an evaluation project with the purpose of clarifying why the focused e-service was not used by so many customers. Data were generated from interviews with public administrators and company representatives. There were also historical data generated from earlier investigations (questionnaires). Data were analyzed and structured into models using methods provided by the researchers.

The Verksamt project aimed at evaluating the Swedish one-stop business link website (called verksamt.se) as an assemblage of services (Goldkuhl et al, 2010). Data in this evaluation project were generated from public administrators and entrepreneurs through workshops, interviews and questionnaires. The website was inspected through a usability assessment. A test case showing how municipal users utilized the website was conducted.

THEORETICAL BASE

The conceptual base for our typology will be set out in this section. We will work with two main dimensions in the typology: who and what. "Who" means the designer that is driving the development work, the one who is focusing on something. "What" is the area that is focused on in the e-service design process.

E-Services in a Service Provision Context

E-services exist in a service provision context (see figure 2). There is a service provider organization that interacts with an external customer. Within the service providing organization there will be human actors who carry out different tasks in order to provide services to the customer. There exists an e-service artifact that functions as a medium between the customers and the providing actors within the service provision organization (e.g. Hultgren & Eriksson, 2005). These providing actors are also to be seen as internal users in relation to the e-service artifact. They are thus called provider-users. The customers are external users of the e-service artifact. To be explicit, we call them customer-users. The customer-user interacts with the e-service artifact, which is seen as a special kind of an IT artifact. The e-service artifact belongs to the service provider organization. Electronically carried services are delivered to the customer-user when using the e-service artifact. The customer performs different types of action, before, during and after interaction with the e-service artifact. The customer situation comprises service usage actions (directly interacting with the e-service artifact), preparatory actions performed before the service delivery and succeeding actions, which are performed based on the service delivery.

The design of an e-service is in itself a dual-design endeavor. It is service design and at the same time it is design of an IT artifact (Alter, 2010). The roles of service provision (i.e. customer and service provider) are illustrated in figure 2. The principal designer of the e-service may be a professional developer. A professional developer can be employed by the service providing organization, but can also be external; a consultant or a developer at a software vendor carrying out design on behalf of the provider organization. The designer role can however also be conducted by a user: a provider-user or a customer-user. We distinguish thus between a developer-as-designer and a user-as-designer. These roles

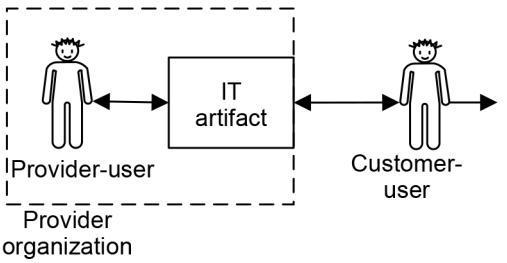

Figure 2. A service provision context: e-service (which is an IT artifact) and user roles

will be shown in the ideal types below. The developer-as-designer is shown in figures 3–5 and 7 below; and the user-as-designer is shown in figures 6–7 below.

Design is here defined by different generic activities such as problem finding, generating/utilizing domain knowledge, idea generation, requirements elicitation and proposing of solutions. These activities are thus what are included in the designer role. The designer is the one responsible for these actions. Information can be gathered by inquiries directed towards other actors. We distinguish between the design (explained above) and the construction (i.e. realization) of the artifact. A professional developer can work with both design and construction. The construction comprises activities that transform a design proposal into a working system. In this paper, the scope is the design of the e-services and not the construction.

To summarize: the e-service functions as a medium between the provider organization and the customers. Within the provider organization the provider-user performs different tasks in order to provide the e-service to the customers and manage the customers' interaction with the e-service. The customer-user interacts with the e-service artifact in order to use or consume the service. Furthermore, the design of the e-service can be carried out by a professional developer (employed or hired by the provider organization), called a developer-as-designer, or carried out by the provider-user or customer-user, called a user-as-designer.

If we look at the e-service design as mainly a question of service design, we can distinguish between a provider-driven and a customer-driven design. If we look at the e-service design as mainly a question of IT design, we can distinguish between a developer-driven and a user-driven design. These two aspects (service design vs. IT design) are needed for the typology below. The core concepts related to e-service design and use are summarized in table 1.

Scope, Focus and Context in Design

The "what" in our typology designates the main focus that the designer applies. A designer does not, however, apply one static and single focus during development. It is necessary to shift focus to different phenomena and aspects. Focus is what is in the foreground of the perception. There will always be a context (background) to the focus. When shifting focus, some other part in the background will move to the foreground. According to gestalt theory (e.g. Chang et al, 2002), there is a continual shifting during perception between what is in the focus and what is in the background. This is also called a figure-ground shift. Besides the notions of focus (foreground) and context (background), we also use the notion of scope. Scope is the entire "area" covering both focus and context. In figure 3 we have illustrated the figure-ground shift and the different concepts of focus (foreground), context (background) and scope. This figure describes the

Table 1. Main concepts of the theoretical base

Concept	Definition
Customer	A human actor that is receiving a service. This actor is external in relation to the service provider.
Service	The delivery of something valuable to a customer.
Service provider	An actor that is providing a service; can be a service provider organization or human service provider. A service provider organization can contain human service providers and service artifacts that fulfill service duties on behalf of the service provider organization.
E-service	The delivery of something valuable, through electronic means, to a customer.
E-service artifact	An IT artifact that delivers services.
User	A human actor that is using an IT artifact; can be internal in the service provider organization or external (a customer).
Customer use actions	Actions carried out by the customer when interacting with the e-service artifact; these actions can be preceded by preparatory actions and succeeded by actions utilising the effects of the service delivery.
Designer	A human actor that conducts design tasks.
Design actions	Design of service and/or IT artifact; can include actions of problem finding, generating/utilising domain knowledge, idea generation, requirements elicitation and proposing solutions.
Developer	A human actor that is working professionally with the development of IT artifacts; can be employed by a service provider organization or can be external in relation to the service provider.
Customer-user	A service customer that is using an e-service artifact.
Provider-user	A human service provider that is using an e-service artifact.
User-as-designer	A user that is conducting design tasks.
Developer-as-designer	A developer that is conducting design tasks.

shifting of focus between phenomenon A and B. When A is in the foreground, B will be in the background. The scope covers the three phenomena A, B and C. The phenomenon C is never in focus; it remains in the background in these two focus-shifting cases.

We do not claim that the scope is different between the five ideal types in principal. However, the *main focus* will differ in the five ideal types. Each ideal type will have a typical main focus. The main focus is what the designer gives most attention to; what is

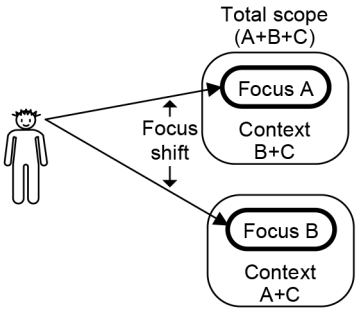

Figure 3. Focusing and focus shifting

most salient to the designer. Some parts that are in the background may remain in the background all the time, which means that these will never be addressed consciously.

The different ideal types below are differentiated by the two dimensions of role (who) and focus (what). Focus is supplemented by explicating the underlying goals (why) for this type of e-service design.

FIVE IDEAL TYPES

Dialectical Evolution of Different Design Approaches

We present five ideal types of e-service design below. Our conceptualization of these ideal types can be seen as an attempt to make sense of a historical evolution within ISD and e-service design. We have identified several design approaches (such as classical requirements engineering, process management, user-centered design and user innovation). Each design approach has been categorized using the dimensions of role and focus leading to a constructed typology. The role dimension (who) has been differentiated using the two perspectives in e-service design: service design and IT design. This means that the questions were 1) who is the service designer (provider or customer)? and 2) who is the IT designer (developer or user)? The focus dimension (what) has been further clarified using a subdimension of goal (why).

We have viewed the evolution of these design approaches as dialectical processes. The historical development occurs through dialectical leaps; a thesis is contrasted by its antithesis, represented as arrows in figure 4. We have also identified a possible synthesis – co-driven multifocus design – that encompasses many of the other design approaches' features and values.

Based on the two utilized dimensions (i.e. role/who and focus/what) and their possible values, it is possible to construct a typology with several more ideal types. We have restricted our typology to the five types mentioned above (figure 4). The research purpose was not to generate an exhaustively complete typology. Instead, we have identified through our literature analysis five important historical trends related to e-service design and these have been structured into ideal types with the aid of the chosen dimensions.

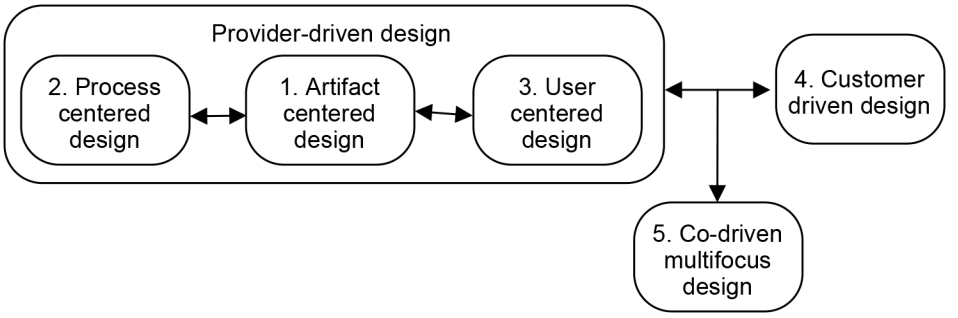

Figure 4. Historical development of ideal types through dialectical leaps

Provider-Driven Artifact Centered Design

The artifact centered design ideal type has its roots in traditional software engineering approaches. These approaches have focused on a software system's functionality, its internal structure, and its relation to the overall IT architecture and IT processes. Many such approaches can be found in literature describing methods for the design of real-time and embedded systems; the design of information systems based on object-oriented and component-based approaches; the design of software product lines aiming at reusing the code between products in the same product line; and for the design of service-oriented solutions (e.g. Bean, 2010; Chessman & Daniels, 2001).

The characteristics of the *artifact centered design* ideal type are:

- The designer is the *professional developer*, who is part of or acts on behalf of the provider organization.
- The focus is the *IT artifact*, that is, its functionality and internal structure, as well as its role in the overall IT architecture.
- The goal is *artifact efficiency*.

The artifact centered design ideal type (figure 5) is a typical engineering strategy that aims at creating an efficient artifact for the provider organization users and the provider organization's IT architecture and IT processes, such as development and maintenance processes.

When the IT artifacts are e-services, both research and practitioners have emphasized that the e-service design can be driven using a top-down or bottom-up approach, or, usually preferably, as a combination of the two approaches (e.g. Erl, 2006, Josuttis, 2007). The bottom-up approach means identifying functionality in the existing IT systems and, based on that, identifying candidate e-services. The top-down approach means identifying functional requirements of the provider organization and, based on these, identifying candidate e-services. After the identification of candidate e-services, the e-service provider organization has to decide which candidate e-services are to be designed. These services

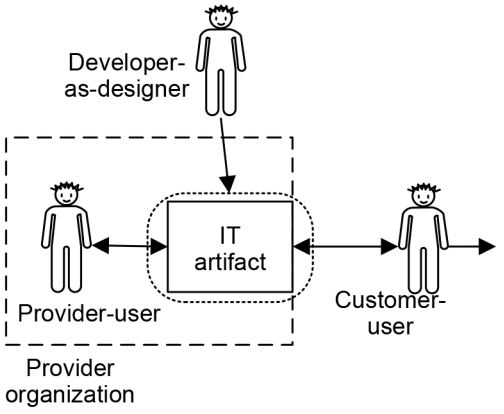

Figure 5. Provider-driven artifact centered design

are also refined and adapted to the overall architecture of e-services so that they can be combined and reused in an efficient and flexible way.

The benefit of this ideal type is that the provider organization and its design representative, the professional designer, will have full control over the design process. There may be an impact from provider-users and their requirements, but the impact will be limited. This minimizes the risk that narrow-minded and conservative users will have too much impact on the resulting design. Instead, the designer can be innovative and focus on long-term solutions. The drawback is the limited concerns on the provider-users' business process in which the services will be used, as well as the limited concerns on customer-users' needs. This can result in designed services that may not be used by the provider-user because of an inappropriate fit in the business processes, or by the customer-users since their needs are not considered.

The ideal type has been based on the following empirical experiences: In the Telecom project, the main focus of the e-service design has been on the overall architecture of the e-services, including the internal relation between the e-services. Thereby, the existing and future e-services could be combined, reused and maintained in an efficient way. However, in the project, the provider-users' requirements also had some impact on the e-service design.

Provider-Driven Process-Centered Design

The process-centered design approach can be seen as a reaction to the provider-driven artifact centered design. This ideal type has its origins in business process re-engineering and business process management approaches (e.g. Hammer & Champy, 1993). According to these approaches, the traditional software engineering focus on the artifact's functionality and structure is too narrow-minded. For an organization to be successful it needs to create effective business processes, supported by the IT systems. Therefore, the design of IT systems has to consider how the system can best support the business processes. Many

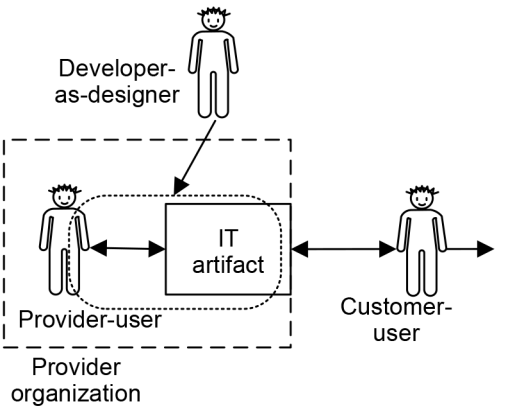

Figure 6. Provider-driven process-centered design

authors argue that e-services will be a base for improving existing, and building new, business processes (e.g. Erl, 2006; Woods & Mattern, 2006).

The characteristics of the *process-centered design ideal type* are:

- The designer is the professional developer, who is part of or acts on behalf of the provider organization.
- The focus is the internal business process (of the provider organization) and the IT artifact support to this process.
- The goal is *internal process efficiency*.

The process-centered design ideal type (figure 6) emphasizes one of two main ideas in the BPM literature, that is, the process efficiency. The other main idea, customer orientation, is downplayed in this ideal type. This focus on internal process efficiency can be found in several BPM approaches. One example is process management following ITIL (Van Bon et al, 2008), which takes a clear focus on the process itself and leaves out the customers in its definition of a process. When following this ideal type, the designer needs to be aware of an IT artifact's impact on the internal business processes of the provider organization. This requires the designer to gather knowledge of how the provider-user work in the provider organization and transform this knowledge into the design of the IT artifact.

When the IT artifacts are e-services, organizations often combine e-services into e-processes, which are executed in certain applications such as enterprise service buses, workflow or BPM systems (Josuttis, 2007). Thereby, efficient business processes-oriented IT support can be constructed. Furthermore, such IT support can easily be redesigned by just changing the order of the e-services or introducing new e-services in the e-processes.

The benefit of this approach is that the IT artifact will support the internal business processes of the provider organization. The drawback, which the ideal type shares with the artifact centric type, is the lack of concern regarding the customer-users' needs.

The ideal type has been based on the following empirical experiences: In the Swedish Tax Agency project, we have studied an e-service that gave companies the possibility to submit their tax declarations electronically instead of using paper forms. However, the e-service solution did not take into account the work situation and the IT environment of the companies, which led to low usage of the e-service. The Tax agency's internal processes were optimized at the expense of the e-service customers' processes. In the Mobile project, the design of e-processes integrating e-services was driven by the goal to support efficient and flexible internal business processes for the service provider.

Provider-Driven User-Centered Design

As a reaction against an artifact centric approach, a user-centered design approach has evolved. There are several important issues within a user-centered design approach: a focus on how to serve the user, an emphasis on the artifact's usability, and also a focus on user involvement to get their opinions on design proposals (e.g. Gulliksen et al, 2003). Concerning e-services, there is a natural emphasis on external users/customers (Santos, 2003).

The characteristics of the *user-centered design ideal type* are:

- The designer is the professional developer, who is part of or acts on behalf of the provider organization.
- The focus is the customer-user and the user interface of the IT artifact.
- The goal is *customer comfort and efficiency*.

A user-centered ideal type (figure 7) is driven by professional developers (UI designers) with an emphasis on usability issues. The role of users can vary in this approach. There are many scholars who claim the importance or even necessity of involving users in order to get their views on proposed designs (e.g. Gulliksen et al, 2003). However, there are other scholars who claim that the key to success is the explicit designing *for* the user, but that user involvement may imply problems for such a design approach (e.g. Beyer et al, 2004; Webb, 1996). It is claimed that a user will never be a proper representative for a user collective; that a user cannot properly convey information about requirements and work practice essentials.

In the provider-driven user-centered design, a professional developer is the designer. Users can have the roles of being informants or evaluators of e-service design proposals. Their involvement is conditioned by the professional developers, who interpret and translate opinions from users into requirements for e-service designs. The focus of a user-centered design is sometimes considered as too narrow and just limited towards user-artifact interaction (Gasson, 2003). In other words, broader issues of users seem to be filtered out when strictly focusing on usability.

The ideal type has been based on the following empirical experiences: In the Verksamt project, the website www.verksamt.se is an assemblage of governmental e-services for

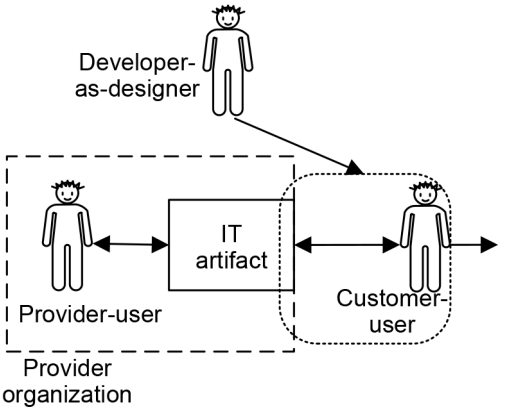

Figure 7. Provider-driven user-centered design

companies. The design of this website has been governed by high usability ambitions. However, the design has led to complex and cumbersome processes among both municipalities (providers) and companies (customers).

Customer-Driven Design

The customer-driven design approach can be seen as a reaction against the three previously presented approaches, which are all types of provider-driven development. This ideal type has its origins in Eric von Hippel's findings in the 1970s that many products and services were innovated or refined by individual end users (Bogers et al, 2010; von Hippel, 2006). This approach to product/service development is often labeled user innovation. The background is that some end users make their own adjustments of products and services, which are originally aimed for their own use. These end users' solutions can be fed back to the producing provider organizations, and can then be the base for refining products and services for a wider number of end users (Bogers et al, 2010; von Hippel, 2006).

The characteristics of the *customer-driven design* ideal type are:

- The designer is the *customer-user*, which means that this kind of user is acting as a designer.
- The focus is the *customer situation*, and this covers the user's different activities before, during and after interaction with the e-service artifact. The goal is *customer effectiveness*.

In the user-driven design ideal type (figure 8), the *customer-user will be the designer* of the e-service solutions. These solutions are based on the customer-users' need to create effective service solutions for their particular situations. The customer-user is not usually the constructor since the e-service artifact belongs to the provider organization. It might be possible to implement some customer-user-initiated changes directly in the e-service artifact if it has some end user adaptation capability. Other changes (of greater magnitude)

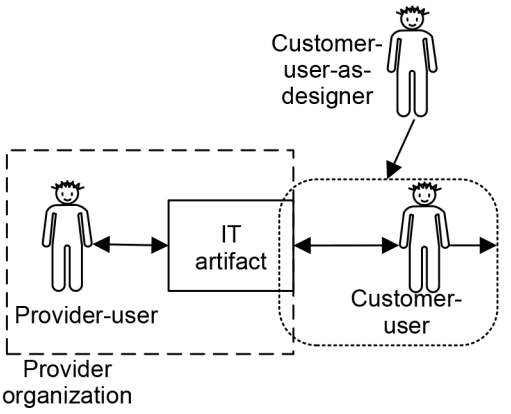

Figure 8. Customer-driven design

need to be forwarded into the service provider organization which has control over the artifact. In order to implement the user-driven design ideal type, the service provider organization needs to carry out a number of activities: identify the innovative users, provide the innovative users with necessary resources, gather users' solution proposals, evaluate the proposals, and adapt them to a wider number of end users.

The benefit of this ideal type is that innovative persons with domain knowledge outside the provider organization are used, and research has shown that such persons have contributed with many innovative and successful solutions for organizations (von Hippel, 2006; Sundbo, 2008). A drawback is that the activities of 1) identifying and contracting innovative users and 2) gathering their design proposals are complex, costly and time-consuming.

The ideal type has been based on the following empirical experiences: None of the projects in our empirical base is a clearly customer-driven approach. However, in the Swedish Tax Agency project, we identified a number of innovative users, documented their way of working with the existing e-service, and interviewed them in order to gather their design ideas for new or refined e-services.

Co-Driven Multifocus Design

The four ideal types described above can, in a dialectical fashion, be seen as one initial thesis and three kinds of antithesis. This fifth and last ideal type can be seen as a synthesis of the above four ideal types. It is a reaction against a single actor view of the designer role. It has a broader focus, incorporating the different foci of the other ideal types. But it is not only broader in focus. It also has a refined goal; that is, in this approach the e-service is not only seen as a service to the customer. It is seen as a co-service with value for both parties (Goldkuhl, 2009).

The characteristics of the *co-driven multifocus design ideal type* are:

- The designers are the *professional developer* (part of or acting on behalf of the provider organization) and the *customer-user* (i.e. co-driven design).
- The focus is the total service situation including internal and external processes and service effects. This covers the different users and their activities including artifact usage.
- The goal is *service effects on both sides* (i.e. co-service value).

This ideal type (figure 9) includes values and approaches from user innovation (customer-driven design) but is not limited to the customer as designer. It has an encompassing view of designers, including both sides participating, but does not presuppose which activities should be performed by which actor. The customer-user and the professional developer are seen as competencies to use and involve in the design process. This could, of course, also include the provider-user.

The ideal type has a broad focus. This multifocus covers the total service situation including processes both at the providing organization and of the customer. What is pivotal is the service effects on both sides. The goal is to arrange an e-service that gives clear values to both parties, the customer as well as the provider. The motto could be "*by both for both*."

There are obvious benefits in this approach: inviting both parties to participate and covering a broad spectrum of issues and aiming for co-value. There are, of course, drawbacks concerning time and resources. Arranging the design with broad participation is a great challenge. It is also challenging to work with a multifocus. This requires a continual gestalt-based focus shift of what is in the foreground and background. It might be the case that something gains most attention and that the attempted multifocus approach degenerates to a more restricted focus.

The ideal type has been based on the following empirical experiences: In the REMS case, the designed e-services were a result of a constant interaction between provider-user, customer-user, system developers, and researchers, where business processes analysis on both the provider-user and customer-user side was important input into the final design.

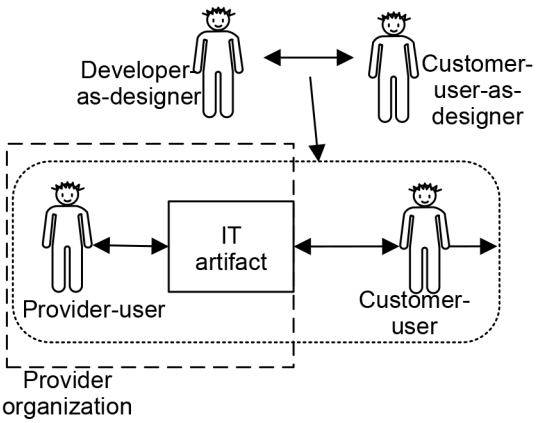

Figure 9. Co-design for co-value

Table 2. Comparative overview of five ideal types

Ideal type	Who: Service designer	Who: IT designer	What: Main focus	Why: Goal
1	Provider-driven	Developer-driven	Artifact	Artifact efficiency
2	Provider-driven	Developer-driven	Internal process	Internal process efficiency
3	Provider-driven	Developer-driven	Customer-user (in interaction)	Customer comfort & efficiency
4	Customer-driven	User-driven	Customer-user (in situation/ processes)	Customer effectiveness
5	Co-driven (provider & customer)	Co-driven (developer & user)	Multifocus	Co-service effects

In the Swedish Tax Agency project and the Verksamt project there has (in redesign proposals) been a constant search for co-value designs.

Comparative Analysis of the Ideal Types

In this paper, a typology consisting of five conceptual ideal types for e-service design has been presented. The main differences between the ideal types are presented in table 2. More precisely, the five ideal types are differentiated by two dimensions: role (who) and focus (what). The "role" dimension has further been differentiated into 1) roles for e-service design where service design is emphasized and 2) roles where the e-service design is mainly seen as an IT design endeavor (see the two "Who" columns in table 2). The "focus" dimension has also been further differentiated by introducing the underlying goals for the ideal types (see the "Why" column in table 2).

The first three ideal types are all provider driven. They differ in the focus dimension: the first ideal type focuses on the artifact, the second on the provider's internal processes, and the third on the customer-users' interaction with the artifact. The fourth ideal type introduces a radical shift of view: the design of the e-service is customer driven in order to design innovative solutions for customer-users in their situations/processes. Also, the fifth ideal type can be seen as a radical shift of views, that is, a reaction against 1) the single actor view and 2) the single focus view. Instead, the fifth ideal type emphasize the e-design process as co-driven by both the provider and customer, having a multifocus that considers the e-service fit in business processes on both the providing organization's and the customers' side.

It is important to note that the "who" in our typology is *the driving designer*. There may, of course, be other actors involved in the design process. For example, in the three first ideal types (with a developer-driven designer) there may be more or less user participation. Therefore, the role dimension (who) could be further developed and refined. It might be possible to differentiate between different participatory roles (see, for example, Markus & Mao, 2004). However, our aim has been to construct a simple and easy-to-understand typology. Therefore we have had a limitation to the driving role of designer.

Application of the Typology

The typology presented in this paper can be used to reflect over strategic alternatives when planning e-service design projects. Thereby, informed strategic choices can be made in the planning phase of the project. The typology can also be used for challenging ongoing e-service design projects in order to analyze them and suggest improvements: an ongoing e-service project will first be diagnosed as one of the ideal types using the main concepts of the typology, and then be analyzed from the other ideal types' perspectives in order to find better strategic choices. Finally, the analysis can be used to redesign the ongoing e-service project to better fulfil the overall goal of the project. Furthermore, the typology can be used to evaluate an already finished e-service project in order to better understand why certain efforts may have succeeded or failed. Thereby, involved participants and others can learn from finished e-service projects, and apply the knowledge when planning future projects.

In order to demonstrate the application use of the typology presented in this paper, we return to one of the empirical cases presented in the section Research approach, the Telecom project. In the Telecom project, the goal of the project was to develop a flexible IT support by introducing a service-oriented architecture on top of existing IT systems. The project was provider driven, and the main focus was the e-service architecture. Many of the resources in the project were used for creating rules for how to design new e-services so that they could fit efficiently into the overall architecture as well as creating rules so the e-service architecture could be efficiently maintained by the company in the future. Therefore, the Telecom project is an example of an ideal type 1, provider-driven artifact centered design (see table 1), with the focus on the artifact, the e-service architecture.

The Telecom project could have chosen another strategy, inspired by the other ideal types. In ideal type 2, provider-driven process-centered design, the focus is on the internal processes. The fit of the e-services into the internal business processes was discussed in the Telecom project, but limited resources were used to describe the internal processes in detail, which is a prerequisite for understanding how to adapt the design of e-services to fit the processes. However, a long-time goal of the project was to consider the fit of e-services and internal business processes by introducing BPM systems on top of the e-service

architecture, supporting the business processes. As part of the Telecom project, a certain project group was created with the responsibility of investigating which BPM system to invest in.

In ideal type 3, provider-driven user-centered design, the focus is on customer comfort and efficiency. The customers, who in the Telecom project were mainly internal customers, i.e. employees and hired consultants, and their comfort and efficiency, were also discussed. However, to find, involve and understand different types of users was considered a time-consuming task, although some representatives of users were involved in the project from the start. Again, limited resources were spent on discussing customer comfort and efficiency, compared to the resources focusing on the creation of rules for how to design new e-services and maintain the architecture.

The management of the Telecom project did not discuss involving innovative customers as the main designer, which is the "who" or service designer for ideal type 4, customer-driven design. However, as mentioned above, some representatives of users were involved in the project from the start, so the project supported some co-driven ideas, which is part of ideal type 5, co-driven multifocus design. The multifocus was, however, limited in the project, as were discussions about co-service effects.

In this analysis of the Telecom project, the project was diagnosed as an ideal type 1, provider-driven artifact centered design. However, the project management group involved some users in the project as well as discussing the e-services fit to the internal business processes. Limited resources, though, were spent on describing the business process and involving different types of users.

The ideal types presented in this paper could be used by a project management group as a basis for discussing strategies other than the chosen one. For example, in the REMS project, the project management decided from the beginning that the project should include multiple views (multifocus) and that the goal should be to achieve co-service effects. A large amount of resources were spent on participative design sessions using prototypes and benefit analysis using actor networks and goal models. Such an approach could also have been chosen by the project management group in the Telecom project.

CONCLUSIONS

In this paper, we have presented five strategic approaches for designing e-services. They have been represented as a typology, consisting of five ideal types. The five ideal types have been grounded in, and continuously sharpened by, our experiences of ISD and e-service design.

The typology can be used to:

- reflect over strategic alternatives in the planning phase or ongoing e-service design projects. In this way, informed strategic choices can be made.

- evaluate finished e-service efforts, e.g. to better understand why certain efforts may have succeeded or failed, and learn from past experiences. That is, the reason for a success or failure can be traced back to the strategic choices made in the project. The ideal types can support such an analysis.
- theorize e-service design through linking different design approaches together in an encompassing framework. This can be the basis for formulating hypotheses regarding e-service design, which then need to be operationalized and empirically tested.
- categorize a number of existing e-service projects in different domains for comparison in order to gain better empirical knowledge about e-service design projects.

To summarize, the proposed typology can bring order and understanding of different strategies and challenges to e-service design. The constructed typology has been made for e-service design; that is, a special type of IT artifact and one part (although pivotal) of the development process. Our claims are limited to this type of situation, although some aspects might be generalized to broader cases of ISD. Future research will provide evidence about possible generalizability.

A typology consisting of five ideal types is an analytic tool that emphasizes certain elements in reality and hides others. Which elements to emphasize and which to hide depends on the purpose of the typology. In order to create an appropriate typology for a certain purpose, the typology needs to be evaluated. Future research on this typology should include a combination of 1) more in-depth conceptual analysis of extant theory with comparison of used dimensions of these ideal types and 2) proving the ideal types when assessing different empirical e-service design cases. Further research may lead to more knowledge on the typology's usefulness and further refinement of the ideal types.

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