Experience Design in Digital Services

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Abstract

The aim of this article is to construct a conceptual framework for a discussion of experience design in the field of digital services. The focus is on service design and service design research with the aim of developing working tools to gain and concretize a holistic customer experience (deep customer insight) in everyday and real-time use for companies in the field of digital services.

This conceptual mapping serves as a preliminary research study and development plan for the multidisciplinary research programme Need for Speed (N4S) from the perspective of the University of Lapland. The vision of the whole Need for Speed research programme (2014–2017) is that the Finnish software industry is the recognized leader in both business innovations and fast implementation of products and services in the digital economy. From the service design and design discipline point of view, this aim is achieved by adopting real-time experiments with actual company cases through service prototyping and providing instant value delivery based upon deep customer insight and creating a holistic customer experience.

Acknowledgements

1. Introduction to service design in the field of the digital economy

The aim of this article is to construct a conceptual framework for the discussion of experience design in the field of digital services. The focus is on service design and service design research aiming at the development of working tools to gain and concretize a holistic customer experience (deep customer insight) in everyday and real-time use for companies in the field of digital services and experience design in digital services.

Following in the footsteps of Rovio and Supercell, the digital economy has become one of the leading creative sectors in Finland. This is also a playground dominated by the software-intensive industry, where service experience design has just started to establish a foothold. This article presents a service design and design science point of view in the emerging field of digital services and economy. The aim is also to create a conceptual foundation for service design in digital services and economy. Service design and service prototyping are new competences for designers and experts working in the experience industry. Service design and prototyping further foster the meaning and value of experience design.

In the conclusion to this article, there is a framework of experience design in digital services, where service design is divided into the following three focal areas of practice and research adapted by Sangiorgi (2009, 419): interactions, complexity, and transformation. These three areas of service design involve the practice and research related to service interfaces, service systems, and service innovation. In the N4S research project, these fields of service design have been identified as three work packages: (1) Deep customer insight (service interfaces), (2) Real-time value delivery (service systems), and (3) Mercury business (service innovation).

Chapter one introduces the context of digital services (software-intensive industry), where the development and research of service design methods starts out in the Need for Speed (N4S) research project presented in this article. In this chapter, the essence of service

design is interconnected with the interaction research tradition in design. Service prototyping as an interactive design method is also illustrated. In Chapter two, the role of service design is studied from the value co-creation point of view. The essence of service design is reviewed in relation to the innovation and constructive design research paradigm. In Chapter three, the social nature of interaction is highlighted as a focus of service design, and the relationship between (user) experience design and service design is established through the definitions of social value.

1.1. Service design approach

Service design is establishing itself as a method for developing services and service businesses (Miettinen, 2011). The service design process has characteristics from both iterative design process goals (Gould and Lewis, 1985) and human-centred design (ISO 9241–210, 2010). Service design is a process – an iterative cycle of design, testing and measuring, and redesign. The human-centred design process model can be applied to involve problem framing, information gathering and interpretation, and solution ideation, development, and evaluation in developing an existing service or in designing a new service solution. Human-centred design thinking captures unexpected insights and produces innovative solutions that more precisely reflect what consumers want (Brown, 2008).

Service design connects the areas of cultural, social, and human interaction. As a participatory approach, service design focuses on the collaboration of the researcher and participants instead of establishing the researcher as a field expert. The use of different design methods, design research, design thinking, and various visualization techniques link different stakeholders' views during the service design process. Van Oosterom (2009) proposes a five-phase service design process that consists of discovering, conceptualizing, designing, building, and implementing. This is similar to Mager's (2009) four-phase process: discovery, creation, reality check, and implementation (see also Moritz, 2005).

Based on the interaction paradigm in service design, outlined by Sangiorgi (2009), the aim of this paper is to construct a conceptual framework for the discussion of experience design in the field of digital services. The context of digital services is associated with Pacenti's (1998) interpretation of "services as complex interfaces to the user," and also helps to position service design within the service interface perspective alongside the focus on service process and management (Sangiorgi, 2009, 416).

In this paper, three interrelated conceptual domains are presented and classified: digital products and services, service design and research (from the service interaction point of view), and experience design and research. A basic principle in the combination of "digital," "experience," and "service" from the design and service design research points of view stems from the idea of socially constructed experience or co-experience (Figure 1.). In the field of service design, the concept of co-experience, launched by Battarbee (2004), is not as widely used as those of co-design or co-creation, but it involves insights that are substantial in regard to experience design in digital services. The aim of the paper is not to offer an exhaustive conceptual basis of experience design in the field of digital services; however, the insight that is presented might serve to raise questions concerning the essence of the experience and its construction—that is, whether experience is designed and offered by the professional digital service producers or co-created within the processes of using and consuming digital services.

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Figure 1. Co-experience at the intersection of Digital Services, Experience Design, and Service Design
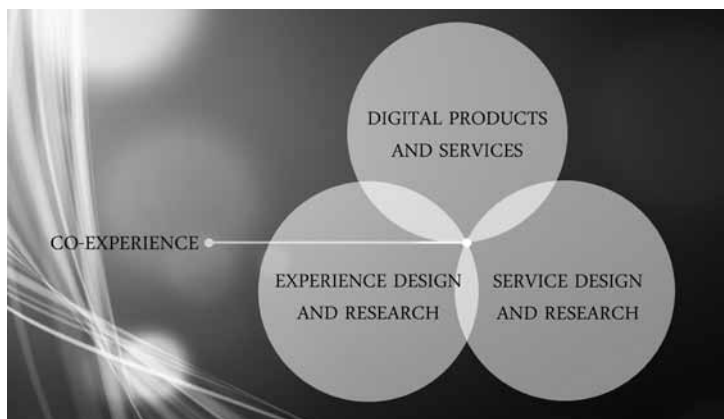
Sorce: Adapted from Battarbee (2004); Miettinen (2011, 2012); Huomo, Järvinen et al. (2013).

The hypothesis of service design is that, when the customer or the end user participates in the design process, new ideas, service needs, and different ways of utilizing technology are encountered. The service design process and methods can help in innovating human-centred service concepts (Miettinen, 2011). In the on-going N4S project, we will utilize service design as the framework for the participatory research process. While seeking to benefit from service design methods and tools, the potential of the service design methods will also be analysed critically and developed further as a multidisciplinary, holistic approach in the research and development of digital services, starting with existing digital service products and their providers, leaving the predetermined aims and contents of the service design development process open by inviting the end users to name and discover these framings through a process based on their own motivations, challenges, and aspirations.

1.2. Service prototyping as an interactive design method

Service design is one of the strategic research areas at the University of Lapland. The Faculty of Art and Design has worked for several years with service design and service prototyping methodology. The Service Innovation Corner (SINCO) is a prototyping laboratory at the Faculty of Art and Design, and it is a practical manifestation of the action research and development (R&D) work done on service prototyping at the University of Lapland since 2009 (Rontti, Miettinen, Kuure, and Lindström, 2012). The development of service prototyping methods and facilities has been carried out within several service design case projects in the business and public sector contexts. The construction of the SINCO laboratory in the Service Innovation Corner (SINCO) project was first funded by the European Regional Development Fund and further by the European Social Fund for the development of the operating model and methods in the SINCO PLUS project from 2009–2013.

SINCO and related projects on the research and development of service design in the Faculty of Art and Design have focused mainly on two different areas. The first considers how service prototyping can add value at various phases of the service design process, and the second focuses on the agile use of technologies to prototype customer journeys, service

moments, and different touch points quickly and iteratively. The use of existing technological solutions with mock-ups has played a key role in enabling the rapid visualization, concretization, and evaluation of ideas.

The tools used in service prototyping are innovative and based on design techniques. Solutions may be related to the ways that the service is produced, such as using mobile services and the Internet or co-production. Service solutions can also combine various services, such as entertainment and education. The means of involvement of the end users often include self-documentation (photographic diaries or videos) as well as service design workshops (Mattelmäki 2006). In addition, service design offers new methods that enable the rapid development of ideas and instant reactions to different stands and touch points during the customer journey through drama and visual work so that those involved are easily able to shape the proposed service models. The project will import the practical design methods at the core of the co-development process.

1.3. Digital business development and service design

The Internet and the digital resources available online are having an ever-increasing impact on the global economy as a whole. The complexity and competition around the Internet environment and ecosystem will increase even more dramatically and enable new business, economic, and socio-cultural opportunities. In addition to emerging ecosystems and new competitors, the infrastructures, approaches, and processes of information and communication technology are taking shape in the forms of faster and faster networks, cloud and Web technologies, and open-source and open-data approaches.

The breakthrough target for Finnish technology and innovation policy aims to support the transformation of the Finnish software-intensive industry toward a value-driven and real-time business paradigm. According to Tekes, Digile, and several software-intensive corporations and companies, this can be achieved by shifting digital product and service development into shortened development cycles through evaluated progress, real-time customer feedback, and other incremental improvements (Huomo, Järvinen et al., 2013).

The service design perspective in this context of digital economy development and paradigm change aims to support the creation of new digital business by providing instant value-delivery tools. The aim of this article is to construct a conceptual framework for the discussion of experience design in digital services. The focus is on service design and service design research that aims to develop working tools to acquire and concretize a holistic customer experience (deep customer insight) in everyday and real-time use for companies in the field of digital services. This aim of customer-oriented and participatory tool development stems from the user-centred design research tradition, where the end user of the product is seen as a central source of information in the processes of product design and development (Sanders and Stappers, 2008; Keinonen, 2009; Binder et al., 2011; Bjögvinsson et al., 2012). The research strategy is to look for a variety of research methods from various research disciplines to enable innovative inter- and multidisciplinary research. Service design is a multi- and interdisciplinary field of research. The service design research methods used are empirical, including a blanket array of qualitative tools and methods.

To accomplish the vision of leading the Finnish software industry and the digital economy at the head of a new culture of business innovations and the rapid implementation of products and services, the following fields of research have been identified related to service design: (a)

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Value delivery in real-time focusing on service prototyping tools and the processes of digital products and services, (b) Deeper customer understanding and insight focusing on user experience prototyping tools and the processes of digital services, and (c) New 'mercury' business areas focusing on business prototyping tools and processes of the digital economy (Rontti et al., 2012; Huomo, Huotari et al., 2013; Miettinen and Kuure, 2013).

Service design tools and design thinking focuses on the real-time value delivery of the illustration and construction of service design processes and tools associated with the following research questions: How and with what service design tools can we speed up the value creation of the company? How do we build up the service design process to speed up real-time value delivery in our partner companies?

The second common target between the software-intensive industry and service design involves how to utilize deep customer insights in accomplishing a better business hit rate. This target is approached with the following research question: How can we support the customer oriented service delivery processes of a company with the help of service design and design tools?

The third pragmatic object concerns the uppermost aim of the development of the digital economy: how to find new money by focusing on business operations development. The research question from the service design research point of view is as follows: how can service design tools and methods support the development of business actions and business ideas (i.e. design thinking) in the company?

A conceptual framework of experience design in digital services from the service design point of view consists of three focal areas of practice and research adapted by Sangiorgi (2009, p. 419): interactions, complexity, and transformation (Figure 2). These three areas of service design involve the practice and research related to service interfaces, service systems, and service innovation. In the N4S research project, these fields of service design have been identified as three work packages: (1) Deep customer insight (service interfaces), (2) Real-time value delivery (service systems), and (3) Mercury business (service innovation).

Figure 2. A Service Design Framework for Experience Design in Digital Services

Source: Adapted from Sangiorgi (2009)
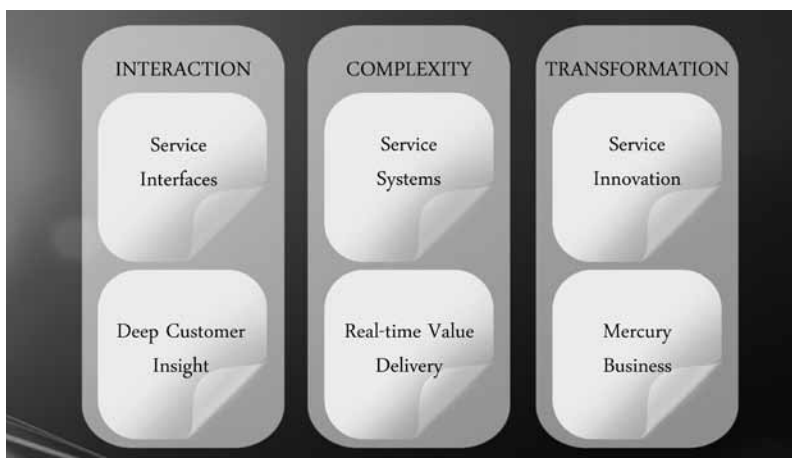
Service design research has its academic roots in the philosophy of design science. The design science discipline is future-oriented. The fundamental question in design science is how to research something that does not yet exist. Problem-based and practice-based approaches have been the focus of design research and development, where research is done through the construction of (service) products, artefacts, illustrations, environments, processes, models, etc. These constructions and the documented work around them serve as diversified research data for many purposes starting with the everyday product usage problems related to end-user orientation, such as questions on how to become accustomed to new technological ecosystems and ending with the academic research questions concerning creative action and learning, co-creation processes, learning-by-doing, or design thinking philosophies.

Design, whether it is service design or product design, is about communication (Miettinen and Kuure, 2013, p. 32; Polaine, 2012). According to Polaine (2012, p. 116), all experiences of a service are a result of human-to-human interactions even if they are mediated in some way. This is a definition of communication to be reckoned with in service design. The core activities specific to service design (service blueprinting, visualization of customer journeys, paper prototyping, scenarios, etc.) are effective means and tools in accomplishing the essential target of communication and interaction. This definition is also supported by Sangiorgi (2012, p. 98), who reminds us of the first formulations of service design: "Service design has been described as the design of the 'service interaction platform.'" In the context of digital services development, this perspective is even more crucial.

2. Speeding up value delivery through service design

The service design approach in the research and development of digital services is heavily concentrated on the surrounding contexts of the service including products, technologies, and cultures linked with the digital service in question. This is why design and service design research is at its best both company-oriented and end user or customer-oriented. As a matter of fact, the service design approach is very close to that of corporate design and design management, as stated by Bauer-Wabnegg (1997):

"The supply of information is the actual basis of the brand's and the provider's credibility and thus serves as a pillar of corporate identity. This also includes—as always—corporate design. Interactive consulting and service offers that appear in the Internet in the form of standardized user interfaces usually prove to be a crude break in corporate image, because they convey the image of the system developer rather than that of the actual provider or the purchased brand." (according to Bürdek, 2005, pp. 358 and 343)

The service design approach provides a means to look at how service experience forms through the customer journey and different service touch points. Service design activities include visualization, hands-on experimentation, and the creation of quick prototypes. Service prototyping focuses on making the intangible become tangible using various methods of visualization: concept sketches, rough physical prototypes, stories, role playing, storyboards, or any other form of visualization.

The main goal of the on-going business transformation in the field of software-intensive industries is to create a foundation and form a response to the changing economic conditions. In the development of a digital product and service, the focus is on creating incremental

improvements in real time at every turn. When managed sensibly, this might serve as a way to do marketing that is inviting from the customer's point of view if interest is kept up through the constant upgrading of the product and enhancement (Väänänen-Vainio-Mattila and Vilminko, 2013, p. 100). However, there is a difference between a service and a service designed as an experience. The end users and the customers of the service experience must be able to trust the marketing of continuous deployment. In addition, the process of incremental improvement cannot start with a totally unsatisfactory product or service. The consumer is not allowed to sense at any phase that something was a waste of money.

2.1. Action research in service design

The service design research and development work on service prototyping at the University of Lapland falls into two categories. The first area considers how service prototyping can add value at various stages in the service design process to highlight customer insight and help communicate and evaluate new service concepts. The second bloc of service prototyping is technology-oriented and focuses on the use of agile technologies in prototyping service-scapes, touch points, service moments, and paths such as customer journeys. The use of design methods and agile technological solutions enables the rapid creation of different service environments and interfaces digitally. Thus, the rough mock-ups of experiences constructed in the prototyping situation can be tested, saved, and developed further during the concept design phase. Technologies are a great help in creating contexts for understanding innovation opportunities (Miettinen and Kuure, 2013, p. 33).

The service design research in the N4S research project involves companies offering digital services that are implemented through several micro-scale cases and taken further into a more iterative and progressive macro-scale model of the service design concerning the whole perspective of the company culture. The action research approach is typical of the pragmatic research fields of design that are material-led and technology-led, constructive and hermeneutical in nature (Koskinen et al., 2011). Due to the solution-oriented as well as product-focused orientation in the field of design research, the development of service design tools and methods in the context of the digital economy starts with micro-scale service prototyping cases within the actual companies (see Bürdek, 2005, p. 225). In these preliminary and introductory company cases, the aim is to co-create mutual understanding between the research partner and the company partner of the common target of this yet corporate development-oriented research target. The corporate-oriented research interface is the most manageable relating to customer understanding, where the company's service delivery ends with the customer and the interaction tools and methods under study are tested by the customers; that is, the end users of the product or service.

The first phase of implementing the service design approach in actual company cases is briefing, where the approach is solution-focused and concentrates on the concept creation of a service product such as developing the service experience of a multi-device storage and sharing application for consumers. This can also be referred to as a research sprint on the road to a more general (macro-scale) understanding of digital service design development in the company's strategy and in the field of the Finnish digital economy.

The service design perspective in the N4S research project utilizes a pragmatic, explorative service design research approach. The approach works as a means of acquiring research data not only about the research context and problematic in that but also about

solution models and prototypes that can lead to transformations. The strong focus on participation and co-creation links the service design approach to user-centred design processes, where the theoretical background comes from human-centred design theory (Beyer and Holtzblatt, 1998) and culturally sensitive design methods (Mattelmäki, 2006, 2008). The epistemological and methodological background of service design can be identified as consistent with participatory action research (Reason, 1994; Selener, 1997; Smith, Willms and Johnson, 1997; Lincoln, 2001; Kindon, Pain and Kesby, 2007).

The action research approach enables the testing of ideas in practice as a means of increasing knowledge about or improving the target issue (Kemmis and McTaggart, 1988), which is how service prototyping contributes to methodological development, design thinking, and innovation when developing service experiences. The research process follows a typical cyclical action research process: identifying the problem, gathering data, design, performing the actions, analysing the results, capturing knowledge, and planning the next steps (Ferrance, 2000). This research approach follows the iterative service design process (Miettinen and Koivisto, 2009), where company cases such as mapping the customer journeys of a certain existing service product serve as a starting point for a more holistic understanding and construction of a more experience-oriented service development process in the company.

The micro-scale company cases are implemented especially in the first phases of the research, where the digital service products and their usage; that is, customer experiences (customer journeys), are observed, illustrated, and prototyped using service design tools. These company cases also familiarize the partner companies with the service design approach and tools, and also serve as diverse research data that are complemented with data on end users, customers, and other stakeholders of digital services. Beginning with the aim of becoming familiar with the possibilities and limits of service design tools and methods in the context of digital services, user experience and the digital economy is just one phase of the action research process. The subsequent phases of the research focus on the follow-up and processes of implementation or adaptation that are also studied as part of the research (van der Linden and Zeelen, 2008, p. 191). As the project aims to develop tools and methods that companies and other stakeholders in the field of digital services can use on a permanent basis, the project establishes a continuation strategy with the participants and evaluates the impacts of the project throughout the process.

2.2. Co-designing, testing, and construction with companies

The University of Lapland has systematically collected qualitative research data from projects utilizing the aforementioned SINCO prototyping laboratory, where service design has been strongly integrated into business sector development through observations, videotapes, questionnaires, and other documents (e.g. meeting notes, invitations, and visual and tacit workshop outcomes). These results of previous research projects have offered a hypothesis for innovation-oriented research implemented in the N4S research programme concentrating on the service design perspective in software-intensive digital services.

The data gathering is going to include three to four company-specific cases per year with the partner companies. The development of service design tools and methods is an iterative process in a four-year time frame starting with problem-based and end user-oriented service design briefs (2014) forging ahead with in-depth-service design thinking among the partner

companies (through 2017). Instead of focusing merely on customers it is important to come together with different stakeholders and co-create value with them from the premises of human-centred design (Holmlid and Evenson, 2007). Throughout the N4S programme, the service design tools and methods are developed more suitably for the field of the digital economy, and the partner companies are directed toward an in-depth understanding of customer-oriented, explorative, and real-time value creation case by case.

The preliminary results of the "Service design in business" themed interviews, collected in 2013 for other service design research projects at the University of Lapland, are here presented as a preliminary hypothesis of the service design research and development interests regarding on-going research on digital services. The data originates from Finland, Italy, the USA and Canada from professionals working in the field of private-sector service design. The preliminary results show that increasing business challenges seem to be connected with corporate growth. Corporations are rapidly shifting their businesses from black and white service or product production to combined product-service systems to reach growing markets. When a business gets bigger, the core product and service development challenges originated in customer understanding or other socio-cultural and human processes do not necessarily change in contrast to smaller and manageable entities. One of the key solutions might be generating smaller, more supportive networks between the corporation and its stakeholders instead of dismantling complex systems. During interviews, professionals also raised the importance of co-sharing and co-learning, which are becoming more and more important aspects of the corporate culture. (Rytilahti et al., 2015).

Marks of a changing working culture can be seen as teams are becoming more self-organized by adopting stronger independent responsibilities when boundaries inside corporate hierarchies are becoming more blurred and difficult to identify. The interviewees also raised the importance of multiple expertise inside the corporation, which not only show up in the form of a multidisciplinary team structure but also underline individual skills. Based on the experience of professionals, the more individual team members have personal commitment and enthusiasm for the topic, the more the design process and results seem to succeed. Not only are individuals important inside the corporation, but also, when it comes to end users and business-to-business customers, there is a need to find a balance between users and technical research—according to the data, one of main challenges is an unstable balance between technical research and user research. The interviewees saw that the user research perspective should be stronger and lean more toward human-centred design research and observation of people's behaviour. (ibid.) These preliminary results indicated an absent field of co-design research in digital ecosystems: there is the necessary infrastructure and machinery in place in the global corporations, but the tools and methods for thinking "in terms of programs" is still lacking (Koskinen et al., 2011, p. 169).

2.3. Finding new business opportunities through business prototyping

The new ways of conducting business may change the existing products and product portfolios but also lead to utilizing competences in new markets and in new business domains. Google is continuously entering new application domains with radically new business models. Achievements like this are supported by providing lean tools and services, as well as building a company culture where new opportunities do not collide with the static structures of the organization (Huomo, Huotari et al., 2013, p. 30). The service design approach and service

prototyping techniques implemented in business prototyping allow experimentation with new business ideas, designs, and policies in a risk-free environment (see Transentis, 2014). Innovating practices and working principles such as "the Ideo way" emphasize approaches such as "quick and dirty" prototyping, "failing often and early", thinking with hands", "serious play", and "business prototyping" also in business modelling (Kelley and Littman, 2001; Gudiksen et al., 2014; Sanders and Stappers, 2014).

The available research articles on business prototyping are still few in number. The prevailing practices of business development rely on traditional scientific, numerical, and economic analyses, while empathetic, social, and cultural models in relation to business management and development or questions focusing on corporate and company cultures are few (Laine and Vaara, 2007).

The focus of service design research within the business development context is on mapping and developing the use of prototyping and simulation methods in agile business development processes through various company cases, and a review of the multidisciplinary methodological traditions behind them. The research attempts to map the business impacts of the methods and the premises of their integration into existing business development processes and practices. One focus is on modern "real-time business" and digital services as well as on new concretizing methods of customer insight and intangible solutions. Another focus is to research and develop technology-aided prototyping and simulation methods as service design tools. The emphasis is on the activity of using technology-aided tools and the processing of digital content to rapidly concretize and simulate the value of new businesses being developed. The research will be conducted as action research where participating in different business case projects plays an important role.

The SINCO prototyping lab concept and development approach have received interest from several companies for use as their business development tool, either by means of adopting the methods as an in-house toolkit or as an outsourced service, including workshop facilitation. Furthermore, it has guided the further development of the in-house model of technical tools and facilities, and several relevant research questions have been identified. First, it has uncovered the need for research on the effects, benefits, and roles of technology-aided simulation methods and agile prototyping-based co-creation workshops in the business development context. An article has been published in relation to business development under the concept of design thinking (Rontti et al., 2012), but further studies are needed.

Second, the operating model at SINCO has initially shaped the role of a service prototyper as a facilitator and a technology-skilled stage wizard turning participants' thoughts into reality on the fly. The role and the expertise of service prototyper as well as simulation- and prototyping-based development approaches draw from different science traditions. An in-depth survey of the essential development traditions is needed to map the novelty and theoretically ground the methodological composition of the SINCO approach. The traditions include, for example, prototyping in industrial design and product engineering, simulation in human-computer-interaction (HCI), agile development models in software engineering, and staging methods in the performing arts. From the facilitation and co-creation point of view, computer-supported collaborative work and technology-aided learning in education sciences are also associated with the topic. The innovative trends in business prototyping will also be examined.

The growth of companies, especially small and medium-sized enterprises, has remained on the agendas of several government programs in Finland in recent years. On the other

hand, large enterprise groups have struggled with efficiency and have been trying to streamline the hierarchy and product development processes. At the same time, new start-up companies and "the new Nokia" have been called for to boost the national economy. Increasing the innovativeness of companies and enhancing business development processes has been identified as an apparent challenge in several disciplines involved. Research and development on agile methods of service design can also contribute to this challenge.

During the past decade, the role and knowledge expected of designers in companies has expanded from product design to concept services and new business models – not to mention an increased request for basic philosophy regarding ethical and ecological issues, among others (Valtonen, 2012, p. 1929). Service design has become an umbrella term covering methods focusing on customer insight, designing holistic concepts, and concretizing experiences consisting of tangible and intangible elements. The role of the service designer is to interpret and facilitate various professionals and stakeholder networks. Simultaneously, developing ICT-technologies and digital solutions are enabling both new tools for designers to quickly prototype new ideas, simulate experiences and new channels, and develop new logics for business development. For example, the recent proliferation of smart phones and a variety of free and pay applications offer new types of mobile service business opportunities. The real-time economy, multi-channelled services, and the ability to collect various customer data online require a new kind of business intelligence but also enable new ways to streamline business development processes. Against these drivers, the research and development work of agile prototyping and simulation methods in business appear to be a significant and timely theme.

3. Deepening customer understanding

In the old days, products were first designed for enterprises and then marketed and sold to consumers. Today, most products – whether they are traditional tangible products, hardware, software, or digital – are still not designed and produced in the backyard of the true customer and end user. The consumers are in the minds of the designers and the producers, but only as an imaginary or illusionary interpretation of the end user and his or her wants, needs, and values. In addition, social media through systems such as Facebook are changing the definitions of communities, friends, family members, and colleagues. These media have become successful because the individual customer is able to define and manage the portrayal of herself/himself, something that in a traditional and pre-modern world was socially constructed face to face.

Still, in the field of product and service development, the common practice is to rely on usability testing and skip the earlier co-design and development phases, such as rough prototyping based on the assumptions of the users' needs and indescribable aspirations. As a totally subjective and psychologically researchable phenomenon, the user experience was ignored until the humanist paradigmatic change in design research. The researchers executing this paradigm change are anxiously taking all these complicated and holistic aspects of experience as objects of research through the disciplines of semiotics, phenomenology, and hermeneutics (Bürdek, 2005, p. 230). In addition to the strong interdisciplinary relationship with engineering, human-computer interaction, and pedagogics, the field of design research is seen to encourage more and more researchers from other disciplines, such as sociology,

(service) marketing, economics, and even tourism. The younger academic research fields and disciplines such as tourism and service design are fighting their way into the field of science that is currently dominated by natural sciences. On this journey, they have many shared research interests, such as experience, or co-experience.

3.1. User involvement in digital service design

There are significant correspondences between the theories of structures or phases of experience creation in different disciplines. In tourism research, there has been the discussion and development of the experience pyramid theory by Tarssanen and Kylänen (2005), and in design research, Jordan (2000) launched the Four Pleasure framework to understand the positive experiences that people can have. These and many more similar models are built on insights developed by Maslow's (1968) theory of the hierarchy of human needs.

Jordan (2000) stated at the turn of the 21st century that we are moving from one economic era into another. The main statement of his layering of economies from a commodity economy into the dream economy of the 21st century is that the consumer demands associated with the previous layer or economy will not disappear during the change. When the world economy transformed from the era of the commodity economy toward the manufacturing economy, people did not stop buying commodities. The structures and essence of the economies have not transformed; rather, they are arranged in layers one upon the other (Jordan, 2007, pp. 6–7). This makes the object of marketing and design more complicated and dependent on the context of use, place, timing, and society. Hence, the same factors affecting people with tangible products and artefacts cannot be excluded from the research if we are willing to understand the essence of a successful service experience. This is generally a very positive direction of development, as the role of the products and services go beyond the functional and become part of everyday life, styles, and the motivation for action, but at the same time self-evidently rely on the functionality of things (Jordan, 2007, p. 16). For example, in the case of digital services such as cloud services, this is a question of the trust and confidence in not only the digital transfer of knowledge but also in the emotionally and socially significant contents of human life.

When experience is the key element in understanding customer behaviour, it is in this paper evaluated and compared in relation to the definitions of user experience and value, user-centred design, and user interaction widely used in the disciplines of service design, design research, and human-computer interaction (Kujala, 2002; Battarbee, 2004; Sanders, 2006; Boztepe, 2007; Miettinen, 2012).

According to Keinonen (2009, p. 146), user representations set some requirements for the product (or service), but in part, they, as well as the users themselves, are flexible, and the product or service requirements can be modified during design. There are more and more design practices where the role of the user is proactive and the role of the designers inactive. This refers to situations where users take the initiative in adjusting their environment and applying do-it-yourself design tools that are available to them. According to von Hippel (2005), a reflective design conversation based on interpreting user data and projecting design ideas against it is likely to happen when the most advanced users within specific practices start improving their equipment. This phenomenon of lead user innovation is reported to be relatively common, especially within the open-source software development movement. User innovations are typically rather incremental, presuming efficient communication and

sharing between users. This type of communication can lead to remarkable development if adequate social and technical preconditions exist. Still, there exist challenges to the method of the development of human-centred design practices: the development of interaction operations models that are able to structure, focus, and standardize collaborative procedures in a way that still accommodates the relevant aspects of design (Keinonen, 2009, pp. 146–147). There are some common assumptions and even general misinterpretations relative to the communication between users and designers. According to Kujala (2002, pp. 18-20), the fundamental problems and solutions are summarized in Table 1

Table 1. Problems of communication between end users and designers

	Problem	Solution
Interpretation of user values	Users do not know what they want, or they cannot articulate it.	Field studies, open interviews and direct techniques provide a complete picture without the need for users to articulate their needs.
Request for mean values	There are too many users to study, and too many heterogeneus requests for specific features or technical solutions presented by the users.	Identify the various kinds of users and sample representative users from all essential groups. Discover the underlying user needs from the design point of view.
Constructive aim of design	A new product will provide a new way of carrying out the existing tasks.	The future context of use must be identified with relation to the present context of use and user skills. The advantages of the current processes should be saved and the problems fixed.

Source: Adapted from Kujala (2002, p. 20)

This is good news for the postmodern views of the ubiquitous digital globalization that is seen to threaten the essence of traditional social life and social structures, such as relationships between relatives, families, and other communities of interest, as well as many ethical and moral standards concerning the everyday lives of people (MacIntyre, 1981, pp. 9–11; Wilska, 2002, p. 196; van Eijk and Bargeman, 2004, p. 440). The paradigm change from the designing of products to the designing of services and other immaterial constructions may or may not be characterized as immaterial after all. Service designers and experience marketers are responsible for managing entities of products and matters surrounding the end user and the customer of the experience markets. In performing this task, there is no other reasonable means but to enable the customers and end users to engage in designing the services together with the professionals and masterminds of design, planning, construction, and manufacturing. Customers and end users of services are the professionals of the experience. They know the context, culture, and social possibilities and limitations regarding the services of the experience offered to them.

3.2. Lead user know–how and enthusiasm

Eric von Hippel (2005, p. 33) poses a question of an individual user about whether the user's needs for new products is highly heterogeneous. The answer is, "yes", and von Hippel (2005, p. 147) has discovered that in new innovation process design, manufacturers actually abandon their efforts to understand users' needs accurately and in detail. The most open-minded service manufacturers might outsource need-related innovation tasks to their users who are equipped with appropriate toolkits. This process change differs from the lead user search processes. In exploiting the lead user knowledge, the focus is on existing innovations, and nothing is done to change the conditions affecting user-innovators at the time that a new product or service is being developed. There are toolkits for users, and in contrast the conditions that potential innovators face also change. By making innovation cheaper and quicker for users, they can increase the volume of user innovation. In addition, the innovative effort can be channelled in certain directions by choosing the supported toolkits (ibid.).

Especially in the field of software-intensive technologies and digital service development, the user toolkits for innovation are most effective and successful when they are user friendly. Toolkits such as creating quick prototypes or hands-on experimentation enable users to apply the skills they already have and to work in their own customary and well-practiced language. This means that users do not have to learn different and unfamiliar design skills and languages used by manufacturer-based designers. For example, in the case of software-intensive digital services design, from the service design point of view, the majority of the users are not familiar with the software engineering language. Therefore, more user-friendly toolkits are provided that allow toolkit users to design in their own language, such as digital graphics and other visualization or communication- and interaction-sensitive approaches. That is, users can create a design, test how it works, and make improvements using only their own, customary design language (von Hippel, 2005, p. 157).

From the digital economy point of view, much innovation by users goes uncounted or undercounted. Thus, innovation effort that is volunteered by users, as in the case with many contributions to open-source software, is currently not recorded by government statistical offices, von Hippel states (2005, p. 111), and continues how this is also the case for user innovation that is integrated with product and service production. Equally, as process innovation by manufacturers occurs in the company settings and on the factory floor as they produce goods and services and simultaneously learn, many important innovations developed by enthusiastic – but not professional – game programmers, art directors, or photographers at home are woven into learning-by-doing as they deliver services to end users and customers (Leadbeater and Miller, 2004, p. 20; von Hippel, 2005, p. 12).

The concept of Pro-Am developed by Leadbeater and Miller (2004, p. 18) is based on an idea that originated from the classification between professional versus amateur sports. One can, for example, describe oneself as a wannabe tennis pro who, to be ranked as a good amateur, has to attain an average rating of 5 in a world-wide rating system that ranks players from 10 up to 1, the best:

> "A Pro-Am pursues an activity as an amateur, mainly for the love of it, but sets a professional standard." (Leadbeater and Miller, 2004, pp. 18–20)

From the service design point of view, it is noteworthy that Pro-Ams often spend their free time and know-how, as well as their disposable income, on travel and equipment to become

producers of services. For example, Pro-Am musicians and photographers want to use their instruments and cameras to produce work that other people want to hear and see (Leadbeater and Miller, 2004, p. 21). Typical for lead users of the new products and services is that they in one way or another end up channelling their devotion into a business that they can make a living from. This is one reason that products are critically evaluated by these enthusiasts. It also requires a lot of know-how to be able to participate in a group working together. To end up as a real innovation, existing products and services must provide good or excellent performance. Therefore, the role of digital service is to offer a means to survive in different social environments.

Hennion (2007) defines amateurs as connoisseurs who have a spiritual enthusiasm for the thing they do. Hennion also has a sociological approach to taste or experience as a collective technique. She suggests that postmodern tribes such as amateurs or enthusiasts do not believe that things have taste. Rather, a more in-depth analysis of these kinds of community-based collective techniques helps us to understand "the emotional devotion to sensitise oneself to things, to other people as 'us', to situations and to moments." Taste is the opportunism of the moment and of the situation. It is an active way of people putting themselves into a state where something may happen to them. There are other options for deciding one's taste than either determinism or spontaneity. Connoisseurs insist more on attachment in people's activities and less on labels, according to Hennion (2007).

3.3. The social value of experience

According to Sangiorgi (2012, p. 97), value is no longer conceived as embedded in tangible goods created on an assembly line but as the value of social, cultural, or semantic use. However, the concept of the use value of products and services needs to be defined more thoroughly from the social point of view for design research and service design purposes (Rytilahti, 2008; Koskinen et al., 2011, p. 157). In the literature of marketing and consumption, discussions of the experience are closely linked with the concept of lifestyle. According to Collins (2004, p. 298), lifestyles are not just individual lifestyles but also rituals and thus markers of group boundaries.

The end users, customers, and individuals are social creatures. They do not live in a void, but neither are they steady members of certain consumer segments for the rest of their lives. Acting socially is valuable for humans, but social value captured in the design process requires knowledge of more institutionalized traditions or regulations inside various user communities. The other possibility is to concentrate on how people are committed to acting together (Kurvinen, 2007, p. 14). For example, what is the level of engagement when doing things in groups (Ludvigsen, 2005)? This is a socially pragmatist way to approach the concrete and constructive aim of any type of design, whether it is constructive design, interaction design, industrial design, or service design (see Battarbee, 2004; Kurvinen, Koskinen, and Battarbee, 2008).

As with many aspects of design, there is not an established theory of value that can guide service design or experience design. What further complicates the matter is that context-dependent research fields are plagued by terminological confusion regarding the use of the term "value." Part of the confusion comes from the fact that value is a highly polysemous word. It oscillates between concepts of economic return and moral standards. Confusion about the use of the term "value" spans a number of disciplines, including economics,

sociology, anthropology, psychology, and marketing (Boztepe, 2007, 57–58). There is one definition by an anthropologist, David Graeber (2001, p. 1):

"It is extremely difficult to find a systematic 'theory of value' anywhere in the recent literature [of social theory]; and it usually turns out to be very difficult to figure out what body of theory, if any, that any particular author who uses the term "value" is drawing on. Sometimes, one suspects it is this very ambiguity that makes the term so attractive."

Value changes as the contexts of using or owning a product changes. From the end user point of view, the value varies over time as the level of experience with the product alters or situations and phases in life change (see Räsänen, 2003; Boztepe, 2006, pp. 59–60). Even the same product may be assigned a different value by users in different contexts (Boztepe, 2006, p. 60).

Objects cannot contain value (Boztepe, 2007, p. 59). It is the symbol systems that are known and shared in a society that construct value (see Appadurai, 1986; Deacon, 1997). The contribution of service design methodology and research development on the interdisciplinary crossover between the humanistic, social, and pragmatic approaches is able to create a whole new mind-set for redefining and measuring value. One central starting point is the qualitative nature of value that at its core is simply based on the actions of human curiosity. This kind of value does not reside in an object's tangible materiality but rather in the message it communicates. As in semiotics, the physical form enables communication but does not construct meaning and therefore cannot be a source of value (Boztepe, 2007, 59).

4. Conclusion

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A result of this paper is the conclusion that the research fields of design, experience design for services, service marketing, and even software engineering are able to exploit methods and tools that are already widely used in service design. Service design is a new competence area that helps in managing and developing service experiences in various contexts and themes of interest. The context presented in this paper is the field and economy of software-intensive digital services, where the challenges and aims of research concern human interaction between tangible and intangible parts of ubiquitous service products. The methods familiar from industrial design and other fields of art and design are easily applied for the purposes of experience design and service design. The notion and contexts of experience design are present in the service design process. The end users, consumers, and other stakeholders are brought along in the service prototyping activity, where service propositions are experienced, evaluated, and developed.

The aim of this article is to construct some conceptual framework for the discussion of experience design in the field of digital services. Service design is establishing itself as a method for developing services and service businesses through connecting the areas of cultural, social, and human interaction. Service design is one of the strategic research areas at the University of Lapland, and the Faculty of Art and Design has worked for several years with service design and service prototyping methodology. The tools used in service prototyping are innovative and based on design techniques. The complexity and competition around the Internet environment and ecosystem will increase even more dramatically and enable new business, economic, and socio-cultural opportunities. The service design perspective in this context of the development of the digital economy and paradigm change

aims to support the creation of new digital business by providing instant value-delivery tools. The article poses a research question of how to study digital services and user experiences with the help of service design methods. Experience design in the field of the digital economy is based on real-time value delivery based upon deep customer insight and understanding. Service design tools and methods such as service design prototyping, service scenarios, and co-design tools are at the core of a customer-centred approach to holistic experience design and marketing.

The service design approach in the research and development of digital services heavily concentrates on the surrounding contexts of the service including products, technologies, and cultures linked with the digital service in question. Due to the solution-oriented as well as product-focused orientation in the field of design research, the development of service design tools and methods in the context of the digital economy starts with micro-scale service prototyping cases within actual companies in research projects. Thus, the research conducted in service design research and development projects could be characterized as an action research approach that became mainstream also in the field of industrial design (Koskinen et al., 2011, p. 23).

It is presumed, according to Sangiorgi (2009), that the design research traditions associated with the practices of service interfaces, systems, and innovations are the interaction paradigm, activity theory and activity systems paradigm, and the innovation and program paradigm (also referred to as constructive design research; see Koskinen et al., 2011). The conclusion is that the practices of service interfaces and research carried out within the interaction paradigm prompt service design research geared toward complex service systems and innovation construction. Therefore, the experience involved in the digital services is socially constructed, and the research that is conducted iterates the interactive nature of services.

Design, whether it is service design or product design, is about communication, and experiences of a service are a result of human-to-human interactions even if they are mediated in some way. Corporations are rapidly shifting their businesses from black and white service or product production to combined product-service systems to reach growing markets. Co-sharing and co-learning are becoming more and more important aspects of the corporate culture. Marks of a changing work culture can be seen as teams are becoming more self-organized by taking stronger independent responsibilities.

Likewise, the role of the end user is a central focus in service design. Questions concerning value construction among end users, user innovativeness, lifestyles and taste are the core field in the methods used in service design. Therefore, the article advocates stronger lead user involvement in service design and experience design in services. There is a strong interdisciplinary relationship with engineering, human-computer interaction, and pedagogics. The field of design research is seen to encourage more and more researchers from other disciplines, such as sociology, (service) marketing, economics, and tourism. The younger academic research fields and disciplines such as tourism and service design are fighting their way into the field of science that is currently dominated by natural sciences. On this journey, they have many shared research interests, such as experience.

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