

Linköping Studies in Arts and Sciences No. 586

Stakeholder Engagement for Service Design

How service designers identify and communicate insights

by

Fabian Segelström

Department of Computer and Information Science
Linköping University
SE-581 83 Linköping, Sweden

Linköping 2013

At the Faculty of Arts and Science at Linköping University, research and doctoral studies are carried out within broad problem areas. Research is organized in interdisciplinary research environments and doctoral studies mainly in graduate schools. Jointly, they publish the series Linköping Studies in Arts and Science. This thesis comes from the Human-Centered Systems division at the Department of Computer and Information Systems.

Copyright © 2013 Fabian Segelström

Cite as:

Segelström, F (2013). *Stakeholder Engagement for Service Design: How service designers identify and communicate insights*. PhD thesis. Linköping, Sweden: Linköping University Electronic Press.

ISBN 978-91-7519-554-4

ISSN 0282-9800

Printed by LiU-Tryck 2013

URL: <http://urn.kb.se/resolve?urn=urn:nbn:se:liu:diva-97320>

Abstract

Service design is a field emerging from the new-found interest in services as a design material by practitioners and academics of the human-centred design tradition. As such, the field can build on the knowledge from previous work in design as well as in service research. Introducing a new design material may however also introduce new challenges to practice. The research presented in this thesis investigates how the design research phase of the human-centred design process is affected by making services a design material.

How users, staff and other stakeholders are involved in service design projects was studied in four studies. Two studies focused on getting a holistic view of how service designers engage stakeholders in their design research. The methods used for these two studies were interviews in one case and participatory observation in the other. The two remaining studies focused on specific aspects of the stakeholder engagement process. One compared how designers and anthropologists approach ethnography, whereas the second investigated the communicative qualities of service design visualisations.

It is argued that service design is a stakeholder-centred design discipline. The tools used in service design are to a large extent borrowed from other qualitative research traditions, but design-specific tools do exist. By analysing and synthesising the information obtained, it is then

Abstract

transformed into insights. These insights are visualised to provide easily accessible representations of service situations.

The final section of the thesis identifies challenges ahead for service design practice, based on the findings of the thesis and based on existing theoretical frameworks for the discipline.

Acknowledgments

Although writing up the PhD thesis might be the effort of one person, the reason that person even gets as far as starting to write up is thanks to all the people supporting that PhD student. I am grateful for everyone who has been there to support my journey towards the finished thesis. I'm indebted to and grateful for the following persons...

... my main supervisor Stefan Holmlid, for all the support and letting me find my own path whilst at the same time showing me which alternate paths I might be missing. Never forcing, always suggesting suits me perfectly!

... my two co-supervisors Arne Jönsson and Björn Alm. Both of you have provided invaluable outsiders perspectives on my research when most needed. Björn, a special thank you for all the fruitful discussions in general and on the methodological approach in general. And to Arne, thank you for your experience and making sure the research continued to progress towards a finished thesis.

... everyone who has participated in my studies. I am extremely grateful for all your help. In total roughly 50 people have been involved in one way or another in providing the data used in the studies. This thesis would not have been possible to write without your help. An extra warm thank you to everyone in the three agencies I worked in/with for the final study for allowing me to be a part of your work places.

Acknowledgments

... HCS for providing an enjoyable place to work in. And special thanks to IxS and the fika-crowd. IxS for providing an intellectually inspiring environment to work in, in which there always are new perspectives to be found when needed – thank you Stefan, Johan, Matti, Johan, Lisa, Eva, Mathias and Tim. And to the fika-crowd for providing many laughs, exciting discussions and a few beers during my PhD studies. So a big thank you to all of you; those of you who were here when I started and now have moved on (Sanna, Maria and Sara), those who have been here throughout most of my PhD (Johan, Amy, Jody and Anna) and all of you have joined the last few years (Lisa, Jonas R, Mattias, Kricke, Falkenskägg, Robin, Tim, Camilla and Karin). Also, thanks to all the administrative staff, especially Lise-Lott and Anne.

... an extra thank you to Johan and Lisa, the ones I tend to turn to first when I have something to discuss. Or just need a break.

... all the photo models. For the cover I want to thank the Zodiaken-staff in general for allowing me to take the photos on the front and back of the thesis cover, and Kristofer Frennesson in particular for getting in front of the camera. Similarly, my thanks go to the “customers” Matti, Lisa, Johan, Amy, Stefan and Tim. Furthermore, many thanks go to Jalal Maleki for taking the photos at Zodiaken. For the examples of visualisation techniques, my thanks go to Anna for modelling and Jonas H for photographing.

... my parents for everything. You made me into who I am.

Research support

The research presented in this thesis has been supported by:

Vinnova: SERV project: Service Design, innovation and involvement. Ref no: 2007-03444.

European Union: CIP Competitiveness and Innovation Program, research project “Service Design as an approach to foster competitiveness and sustainability of European tourism”.

Table of Contents

Abstract.....	i
Acknowledgments	iii
Table of Contents	v
Preface.....	ix
1 Introduction	1
1.1 Purpose and research questions	2
1.2 Studies performed	3
1.3 Contents of the thesis.....	5
1.4 List of publications.....	6
1.4.1 <i>Main publications of material used in the thesis</i>	7
1.4.2 <i>Other publications of material used in the thesis</i>	7
2 Service design emerges.....	9
2.1 A short history of design (research)	9
2.2 A short history of service (research).....	15
2.3 Service design emerges.....	21
2.4 Defining service design.....	27
3 Stakeholder research for service design	29
3.1 The service design toolbox (for stakeholder research)	29
3.1.1 <i>Ethnography</i>	32
3.1.2 <i>Innovative methods</i>	37
3.2 Communicating stakeholder insights through visualisations.....	41
3.3 Research questions revisited	45
4 Interviews with service designers	49
4.1 Data collection	49
4.2 Focus: How stakeholder research is done.....	50

Table of Contents

- 4.2.1 *Fundamental approach to service design* 51
- 4.2.2 *Influences on research planning* 52
- 4.2.3 *Performing stakeholder research* 53
- 4.2.4 *Intended outcomes of stakeholder research* 56
- 4.3 Focus: Communicating through visualisations..... 59
 - 4.3.1 *Analysis framework* 61
 - 4.3.2 *Findings* 62
- 4.4 Discussion of study results..... 68
 - 4.4.1 *Stakeholders as inspiration* 68
 - 4.4.2 *Tools for stakeholder research* 70
 - 4.4.3 *Visualisations as a communication tool* 71
- 5 Comparing ethnographic styles 73**
 - 5.1 Social anthropology..... 74
 - 5.2 Design..... 76
 - 5.3 Study discussion 79
- 6 Analysis of visualisations 83**
 - 6.1 Data collection 83
 - 6.2 Analysis..... 84
 - 6.3 Analysis frameworks 85
 - 6.3.1 *Framework: Interview study* 85
 - 6.3.2 *Framework: Diana, Pacenti & Tassi* 85
 - 6.3.3 *Framework: IHIP* 86
 - 6.3.4 *Framework: Service dominant logic* 86
 - 6.4 Results and result discussion 88
 - 6.4.1 *Framework: Interview study* 88
 - 6.4.2 *Framework: Diana, Pacenti & Tassi* 89
 - 6.4.3 *Framework: IHIP* 92
 - 6.4.4 *Framework: Service dominant logic* 93
 - 6.5 General discussion..... 94
- 7 Participatory observation at service design agencies..... 97**
 - 7.1 Participating agencies 99
 - 7.1.1 *Agency A: Transformator Design* 99
 - 7.1.2 *Agency B: minds & makers* 99
 - 7.1.3 *Agency C: Huddle Design* 99
 - 7.2 Data collection process 100
 - 7.3 Analysis..... 101
 - 7.4 Findings 102
 - 7.4.1 *Building the internal project structure* 102
 - 7.4.2 *Preparing for stakeholder involvement* 104
 - 7.4.3 *Stakeholder interaction* 107
 - 7.4.4 *The project team* 110
 - 7.4.5 *Analysing the stakeholder interactions* 111
 - 7.4.6 *Communicating insights* 113
 - 7.4.7 *The client and the project team* 115

7.5	Study discussion	118
7.5.1	<i>Before the stakeholder research starts</i>	118
7.5.2	<i>Performing the stakeholder research</i>	119
7.5.3	<i>After the stakeholder research</i>	121
8	Discussion	123
8.1	Result discussion	123
8.1.1	<i>Preferred way of working</i>	123
8.1.2	<i>Engaging with stakeholders</i>	125
8.1.3	<i>Analysing stakeholder input</i>	128
8.1.4	<i>Visualising stakeholder insights</i>	129
8.2	Connecting the findings to service design theory	131
8.2.1	<i>On the nature of service design</i>	131
8.2.2	<i>Issues with current tools and techniques for service design</i>	133
8.2.3	<i>Implications for service design</i>	136
9	Conclusions	141
9.1	Summary of findings	141
9.2	Challenges ahead	144
9.3	In summary	145
9.4	Suggestions for future research	146
10	References	148
Appendix		161
Appendix A - Interview questions		161
Appendix B - Examples of visualisation techniques		164
Appendix C - Full analysis data from study on what visualisations communicate		178

Preface

As with all research, this thesis is not only the result of the participants and the studies performed but also of me, the author. So who I am and my training has without a doubt impact on how the studies have been planned and conducted, which aspects in the data are seen as the most important to be held forward and which conclusions are drawn. To give those readers who want to understand why I prefer this author over that author, why I focus on what I focus on or who are just curious, this preface gives an overview of those aspects of my life, interests and training thus far which I see have had an influence on the researcher Fabian Segelström.

The first such thing has been me all my life, as my parents come from different countries (Germany and Sweden respectively). Although we lived in Sweden during my childhood years, this has impacted me insofar that I've grown up influenced by two cultures. That my parents also were avid travellers led to the family taking several holidays far away, which only enforced my contacts with a variety of cultures in young years. This has formed me into always being curious on the unknown and a want to understand how others perceive the world.

This curiousness is probably one of the things which influenced me the strongest to apply for the university education which I did; cognitive science. What also lured me in on the cognitive science path was the

description about making human needs and technology work together – what I now know is interaction design but at that time was something unknown for me. When the two initial years with mandatory courses had been completed I had been strengthened in my feeling that what I wanted to work with in the future was to make things usable and understandable to people.

During the following 1,5 years with elective courses I focused my attention on interaction design and the courses focusing on understanding humans as social beings (in contrast to the more biological understanding searched for in neuroscience and traditional western cognitive psychology). It was also during this time I came in contact with service design for the first time as I during the autumn of 2006 took a course on “Service Design and IT”. I was immediately intrigued by the service concept, and the even larger potential impact on peoples’ lives a service perspective could bring in comparison to human-technology interactions.

This new-found interest together with my still-not-satisfied curiosity in people and culture made me decide to postpone writing my master’s thesis half a year to be able to study these aspects even further. The spring of 2007 thus became my probably most formative university semester as I studied a second service design course and anthropology. At the same time the changes in the Swedish educational system due to the Bologna-process¹ were implemented. At Linköping University, they offered students in their final year the possibility to write a bachelor thesis instead and use their extra course work from the fourth year in the masters, thus giving us students the possibility to transfer into the new system. I opted to do so with the goal of obtaining a master’s degree in design. In this process I wrote my bachelor and master’s theses on topics in the intersection of design and anthropology (the bachelor thesis focused on cross-culture services and the master thesis on ethnography for design). Both also included research efforts abroad.

¹ For those unfamiliar with the Bologna-process it is an EU-wide effort to harmonise the educational systems across the EU, making the 3 year bachelor followed by a 2 year master’s programme the standard. In Sweden a four-year master’s without taking a bachelor degree was the most common prior to these changes.

Towards the end of my fifth and final year as regular student, a PhD position in service design was announced under Stefan Holmlid (who had also taught the two service design courses mentioned above and the master's year). I decided to apply as I felt that service design had large potential and that it was where I wanted to work in the future. At the same time still was very much just getting started. No good literature on service design existed on the subject during my education and even research papers were still very scarce. I wanted (and still want) to help service design forward by contributing to knowledge on the field which can be built upon to take service design to the next level. Luckily, Stefan decided to hire me and in August 2008 I started my PhD position.

It has been a fascinating journey over the past five years, in which service design has grown immensely. Looking back, it is almost hard to believe how much more attention the field has in practice, academia and media. The future is looking exciting for the field!

1 Introduction

Services have a special role in developed economies, contributing to between $\frac{2}{3}$ and $\frac{3}{4}$ of the gross domestic products in most countries but still receive much less economic resources for improvements compared to products. Considering this, it is no big surprise that customers are often dissatisfied with the service they receive (an often cited study found that 80% of service firms think they deliver superior service, but that only 8% of their customers agree (Allen, Reichheld, Hamilton, & Markey, 2005)). Furthermore, services are complex in their nature, consisting of people, artefacts and interactions between the various persons and artefacts involved in the service.

With this in mind, it is unsurprising that designers from the human-centred design tradition have given services more and more attention during the past two decades. Human-centred designers traditionally focus on creating artefacts which let people achieve their desired outcomes in the easiest manner possible. This is done with the help of research on how the artefacts are currently used. This research is done by learning from people how they use the artefact, through interviews, observations and other qualitative approaches.

The result of this interest in services as an object for design was the emergence of the service design discipline. Having emerged from within the design field, the approach on how to tackle work tasks were

inherited from human-centred design. There has been an interest in research on services from other fields among service design researchers from the early days of service design. And the influence of service thinking on service design has constantly grown stronger as service design has matured as a discipline.

However, research on service design is still young and disparate (although the body of peer-reviewed texts has multiplied several times during the time the research presented herein has been conducted). One issue which has received little attention in the literature is how the established practices of human-centred design are affected by the increased complexity of the design object which a service-focus brings. This thesis investigates one part of this, namely how service designers create an understanding for those affected by a service.

1.1 Purpose and research questions

The overall purpose of this thesis is to provide an academic description of how service designers create an understanding of the needs and motivations of those affected by a service, and how this understanding is communicated within the team and to the clients. This purpose is investigated with the help of a number of research questions, which will be explained in further detail, in light of existing research on service design, at the end of Chapter 3.

- Do service designers work according to a human-centred design tradition?
- How do service designers engage with stakeholders when building the understanding of a service context? Which tools² are used?

² A note on terminology; in regard to which approaches are used for involving stakeholders and constructing representations of stakeholder insights the words tools and techniques are used as synonyms. This corresponds to how the words are used by practicing service designers, by whom the approaches are seen as tools to help them do their work. The closely related word method is however carefully avoided by most practicing service designers as method is understood as prescribing a way of working rather than suggesting (as tool or technique). In line with this, the word method is only used when part of an established way of phrasing things like in “ethnographic methods” or “innovative methods”.

- What do service designers do with the material they have obtained about the stakeholders?
- What is done with the insights about stakeholder behaviour and desires? (How) Is it communicated with the team and to clients?

A series of studies were conducted to investigate these questions from different perspectives. The next section introduces these studies and the rationale behind them.

1.2 Studies performed

The overall approach of the work done for this thesis has been to highlight the areas of focus from a variety of perspectives. To get an initial understanding of how service design practice is performed in regard to involving stakeholders, and get a sense of which areas there were which might warrant further studies an interview study was conducted early in the PhD studies. The recruitment for the interview study aimed at getting the perspectives from as varied a group of practitioners as possible at that time.

The interviews revealed that the participants had troubles articulating exactly how they engages different stakeholders, but were considerably more articulate about how the insights gathered were communicated through the aid of visualisations. This led me to want to investigate the visualisation practices in closer detail. The first papers published on the interview material thus focused exclusively on what was said about how the insights about the service and customers were visualised. That gave me an idea of why and how the service designers visualised but no idea whether the visualisations communicated what they were intended to communicate.

A second study was thus initiated with the aim of investigating exactly what was communicated through the visualisations. For this study a set of visualisations from service design projects were collected, and then analysed with the help of two descriptions of how service designers visualise and two concepts of how to view services from service marketing and management. The outcomes of the analysis of the

Introduction

visualisation sections of the interviews and the study on what visualisations communicate formed the basis for my licentiate thesis³.

Attention was then turned to how the actual stakeholder engagement was done. The rest of the initial interviews were analysed and two new studies were initiated. The larger among them was a series of participatory fieldworks with three different service design agencies. Working with the agencies, their day-to-day work was participated in and observed with an emphasis on stakeholder engagement and the visualisations thereof. The field work was done in such a way as to provide contextual data on the aspects investigated in the other studies of the PhD.

In parallel a study on designers' ethnographic praxis was conducted. The motivation for the study was a combination of the identified difficulties of service designers in articulating how they worked in the interviews and a wide-spread criticism in the academic literature of designers not being sufficiently skilled in and prepared for field studies. The study was done by comparing how anthropology and design students approached the same field site.

A summary of the studies performed for this thesis, and the timing of data collection is presented chronologically below:

- Interviews with service design practitioners: October 2008 – January 2009
- Analysis of visualisation of research insights: September 2009 – January 2010
- Participatory observation at service design agencies: May 2011 – April 2012
- Comparison of ethnographic styles and their output: November 2011

The studies are presented in more detail, together with their findings in their respective chapters. In the next section, the chapters of the thesis are introduced.

³ The Swedish Licentiate degree can easiest be described as intermediate degree between a Master's degree and a full PhD.

1.3 Contents of the thesis

Below the contents of the various chapters of this thesis are presented.

1. Introduction

This chapter starts with a brief introduction to the field of study followed by the purpose and research questions which have been guiding the work. The studies performed are then introduced, followed by the section you currently are reading. The chapter ends with a listing of my publications of relevance for the thesis.

2. Service design emerges

The emergence of service design is presented by introducing developments within design and service research separately, followed by a section on how the two fields have impacted service design as service design has matured. The section ends with my definition of service design.

3. Stakeholder research for service design

The “classic” background chapter, introducing research within service design and related fields which are of relevance for the topics investigated. Two main sections exist; one focusing on tools for stakeholder engagement and one on how stakeholder insights are communicated. The chapter ends with expanded motivations for the research questions.

4. Interviews with service designers

This is the first study of the thesis. The methodology is introduced, followed by the results of the two separate analyses. One focused on stakeholder engagement and the other on visualisation of stakeholder insights. The chapter ends with a discussion of the study results.

5. Comparing ethnographic styles

The study comparing how anthropology and design students approached the same field site with similar briefs is presented. The way of working of the two groups is described in the detail. The differences and implications thereof are then discussed.

6. Analysis of visualisations

The method for collecting the visualisations analysed is introduced followed by mode of analysis and the four different frameworks used to analyse. In the result segment the outcomes of the analysis of the four frameworks are first presented and discussed separately, before the chapter ends with a discussion of insights emerging from a combination of frameworks.

7. Participatory observation at service design agencies

This study follows the pattern of the other studies, by starting with an introduction to the study, the agencies observed and on which grounds they were asked to participate. Thereafter the method for capturing the observations and the process of analysing the data is presented. This is followed by a presentation of the insights gathered, structured along seven main themes. The discussion of the findings concludes the chapter.

8. Discussion

This chapter is divided into two main sections. The first section discusses and compares the findings from the various studies, merging the findings together. The second section then continues this process, connecting the findings to the larger body of service design literature. This process describes the current state of service design practice and problematizes it, pointing at areas in which improvements are needed in the process of stakeholder engagements and visualisations as service design matures. Finally the implications of the findings for current practice are discussed.

9. Conclusions

The main findings and arguments of the thesis are reiterated once more and suggestions for future research are made.

10. References

A list of all the material cited in this thesis.

1.4 List of publications

With the exception of the participatory observation study, most of the results presented in this thesis are available in other publications as well. Furthermore, a number of related publications have been made which

have not been included in the thesis but have influenced the thinking presented herein in various ways.

1.4.1 Main publications of material used in the thesis

- Segelström, F. & Holmlid, S. (2009). *Visualization as tools for research: Service designers on visualizations*. Nordic Design Research Conference, NorDes 2009. Oslo, Norway
- Segelström, F. (2009). *Communicating through Visualizations: Service Designers on Visualizing User Research*. First Nordic Conference on Service Design and Service Innovation. Oslo, Norway.
- Segelström, F. (2010) *Visualisations in Service Design*. Licentiate thesis: Linköping Studies in Science and Technology, Thesis 1450. Linköping University Press: Linköping, Sweden.
- Segelström, F. & Holmlid, S. (2011). *Service Design Visualisations meet Service Theory: Strengths, weaknesses and perspectives*. Art & Science of Service, 2011. Almaden, CA, USA.
- Segelström, F. & Holmlid, S. (2012). *One Case, Three Ethnographic Styles: Exploring different ethnographic approaches to the same broad brief*. EPIC 2012, Ethnographic Praxis in Industries Conference: p. 48–62. Savannah, GA, USA.
- Segelström, F. & Holmlid, S. (submitted). *Ethnography by Design: On goals and mediating artefacts*. Submitted to Arts and Humanities in Higher Education, special issue on Design Ethnography.

1.4.2 Other publications of material used in the thesis

- Segelström, F., Raijmakers, B. & Holmlid, S. (2009). *Thinking and Doing Ethnography in Service Design*. In Proceedings of IASDR 2009, Rigor and Relevance in Design, Special Session on Rigor in Service Design Research. Seoul, South Korea.
- Segelström, F., Holmlid, S. & Alm, B. (2009). *Back to the Roots: A Case for a New Ideal for Ethnographic Research for Design*. In Proceedings of IASDR 2009, Rigor and Relevance in Design. Seoul, South Korea.
- Wreiner, T., Mårtensson, I., Arnell, O., Gonzalez, N., Holmlid, S., & Segelström, F. (2009). *Exploring Service Blueprints for Multiple Actors: A Case Study of Car Parking Services* First Nordic Conference on Service Design and Service Innovation. Oslo, Norway.
- Segelström, F., Blomkvist, J. & Holmlid, S. (2010). *Visualizations of Qualitative Research Material: Insights from the Service Design*

Introduction

Community. In Proceedings of 19th Annual Frontiers in Service Conference. Karlstad, Sweden.

Blomkvist, J., Holmlid, S. & Segelström, F. (2010). *This is Service Design Research*. In Stickdorn & Schneider [eds] (2010). *This is Service Design Thinking*. BIS Publishers.

Segelström, F. (2011). *New Grounds, New Challenges? Exploring Stakeholder Research in Service Design*. Nordic Design Research Conference, NorDes 2011. Helsinki, Finland.

Blomkvist, J., Segelström, F., & Holmlid, S. (2011). *Investigating Prototyping Practices of Service Designers from a Service Logic Perspective*. Nordic Academy of Management conference, NFF 2011. Stockholm, Sweden.

In Stickdorn, M. & Frishhut, B. [eds] (2012). *Case Studies of Applied Research Projects on Mobile Ethnography for Tourism Destinations*:
- Segelström, F. & Holmlid, S. (2012). *What is Service Design?*. pp. 16-21
- Segelström, F. & Holmlid, S. (2012). *Gamla Linköping Christmas Market Sweden*. pp. 72-77
- Segelström, F. (2012): *Service Design Mini-Dictionary*. pp. 132-133

Segelström, F. (2012). *Understanding Visualisation Practices: A distributed cognition perspective*. In Miettinen, S. & Valtonen, A [eds] (2012). *Service Design with Theory*. Lapland University Press, Vantaa, Finland.

Blomkvist, J. & Segelström, F (2013). *External Representations in Service Design: a Distributed Cognition Perspective*. European Academy of Design Conference. Göteborg, Sweden, April 17-19

2 Service design emerges

This chapter aims at describing the circumstances under which service design emerged and gained traction. To understand what is happening within service design, one needs to understand the contexts from which service design has emerged. A retrospective like this is by its nature selective and thus the selection will also give you as a reader an insight into what I as a researcher see as important, either due to its impact, its relevance for my research or my background.

The chapter is divided into three distinct parts; first a short history of design (research) is given, highlighting how thinking on design has changed over the years leading up to the emergence of service design. The second section describes research on services and how thinking from older/more mature service disciplines has influenced service design. Finally, a description of service design as a field is given based on the thinking from the two influencing research areas.

2.1 A short history of design (research)

Tracing the roots of design is a difficult task; did professional design start with the ancient architects creating places like the pyramids and Pantheon, with the guilds of medieval society or perhaps when industrial design emerged in the 1920s, with the Bauhaus school in Europe (Gropius, 1919) and designers like Loewy and Dreyfuss in North America as prominent figures? Scientific research on design is however

Service design emerges

easier to trace; most sources agree that it can be traced back to the thinking of the 1920's (Cross, 2001; Krippendorff, 2004; Bayazit, 2004) in combination with the progress made in ergonomics and human factors by the war industries during the Second World War (Bayazit, 2004; Cross, 2001; Gedenryd, 1998). As the wartime technologies and methods were adapted to civil society, the practice of design became a subject of scientific research.

This early research on design led to the design methods movement in the 1960s, aimed at creating systematised ways of designing (Bayazit, 2004; Cross, 2001; Gedenryd, 1998). In it, numerous models were created on how to design – a good example of the design methods of that time can be found in John Chris Jones' "Design methods", first published in 1970 (Jones, 1992). The design methods movement however quickly lost in popularity, and by the 1970s many of its most prominent early proponents were actively discouraging from using design methods, like Jones (quoted in Cross, 2001, p.50): "In the 1970s, I reacted against design methods. I dislike the machine language, the behaviourism, the continual attempt to fix the whole of life into a logical framework".

The next wave of research on design reflected this reaction to design methods, and instead emphasised the difference between design practice and the way natural science describes the world. Herbert Simon in 1969 (1981) argued that whereas natural sciences describe what is, design sciences focuses on what ought to be. Simon did so from the standpoint that design can be framed as a form of problem solving. This view was later criticised by Donald Schön in his influential study on professional knowledge, "The Reflective Practitioner" (1983). Schön argues that Simon's view is based on well-formed problems, whereas design often deals with complex problems which are difficult to frame. The main focus of Schön's work is however to describe professional practice, and he describes how designers (architects to be specific) externalise much of their thinking. One way of doing so is sketching. Sketching helps the designers to quickly test their ideas and reframe them when necessary. Design, according to Schön, thus becomes an activity of finding the right frame. This framing of design practice as something unique made a large impact on design research and has in many ways remained

unchallenged. Instead, the next big perspective change in design had to do with was seen as the object to design.

A major driving force behind this change was the arrival of the home computer and other technological advances, which made human-(electronic) machine interactions more common and complex than previously. The early development of interface design was well described by Grudin (1990). He describes how the computer and who uses it changed over time. The only users of the first computers of the 1950s were those who had built them, whereas computers had become commonplace in many offices around 1990 and were used by groups of users. And as time has shown, the evolution of the computer has just continued, creating an environment where most people in developed economies have daily access to computers, tablets and smartphones. Grudin (1990) paints the picture of how design first was introduced to computer science in the 1970s as graphic designers (and human factors specialists) were brought in to design the interfaces as the visual displays became affordable for corporations. Furthermore, Grudin notes that the late 70s and early 80s “marked the emergence of the distinct discipline of human-computer interaction” (Grudin, 1990, p. 264).

The introduction of computer supported work tools led not only to the emergence of interface design but also to the emergence of other important design fields, such as cooperative design and computer supported cooperative work⁴. Cooperative design emerged in Scandinavia and had workplace democratisation as an important driving force (Ehn, 1988; Schuler & Namioka, 1993). Computer supported cooperative work focused on changing work practices with the introduction of computers (Grudin, 1994) and attracted many researchers trained in sociology and anthropology, this was an important factor for making ethnographic studies more common in design in general (Schmidt, 2009; Randall, Harper, & Rouncefield, 2005). What was common in these approaches as well as human-computer

⁴ Both these disciplines also have alternate names; cooperative name is better known as participatory design today after the name given to it by the first American practitioners, and in computer supported cooperative work the word cooperative has at times been replaced with collaborative.

interaction⁵ was an increased focus on the users of the artefacts which were designed. The focus on the users of the products led to the emergence of the umbrella term user-centred design, which included the disciplines discussed above and many more.

The 90s and 00s, with the changes in life brought by the increased interconnectedness and technological advances saw the birth of a number of design sub-disciplines, especially within the user-centred tradition. In contrast to the early design disciplines like industrial design, human-computer interaction and graphic design these new approaches focused on how to design, rather than what to design (see Krippendorff (2004) and Redström (2005) for discussions on this shift).

Elizabeth Sanders has created a well-cited map of some of the most common design approaches and how they relate to each other. Originally published in 2006, and then expanded in a number of publications over time the map is based on two dimensions. One dimension is described as a choice of approach and the other dimension as a matter of mind-set (Sanders, 2006; Sanders & Stappers, 2012). The difference in approach identified by Sanders deals with what is the basis for design; approaches which are adapted from research-led traditions such as anthropology, engineering and psychology or those which have emerged from within design. The other dimension focuses on the mind-set of the designers; are the designers designing for users and consumers or are the designers designing with people? These two dimensions are helpful in understanding some of the different directions design is moving in; the methods used are appropriated from other fields as well as developed within the field. Furthermore, designers of today either see the users as inspiration for their design work or as active partners involved in doing the design.

Sanders' two dimensions do however not encompass all current directions of design research. One approach which is missing is design thinking. The term design thinking was first prominently used by Rowe

⁵ Human-computer interaction is only one of many names used for the design of interfaces of technology over time. The name of the mainstream lines of inquiry has changed with the trends over time and has been known as usability, interaction design and user experience design among others.

(1987), as a continuation of the lines of research to which Simon and Schön belonged; the attempts to explain how design is done. The term's current use can however be attributed to when the large design consultancy IDEO started marketing their offering as design thinking. Design thinking was framed as a way of applying designer's ways of working in corporations and business in order to help them be more innovative (Howard, 2012; Kimbell, 2011b). Design thinking has had a particularly deep impact within companies in the IT and business sectors (Dorst, 2011; Howard, 2012). This re-packing of design to a new clientele meant that the language of design was challenged in many ways – in this context the users often were referred to as customers.

A somewhat different approach to the portrayal of the current design landscape compared to Sanders has been explored by Richard Buchanan (2001). Buchanan uses the object of design as the basis for his model. He describes four orders of design and the object of focus for each of them. Buchanan (2001) argues that the growth of new orders of design indicates a greater awareness of how objects of design are situated in the lives of individuals. Furthermore, he argues that each new order builds on and incorporates the knowledge of the previous ones, i.e. interaction design builds on industrial and graphic design (the orders are to be read from the centre out). Buchanan's (2001) four orders are presented in Figure 1 below.

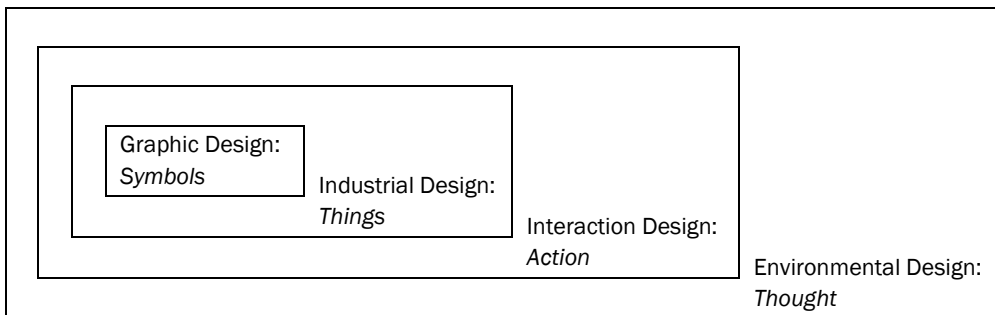


Figure 1 - Four orders of design and the objects they are concerned with. Adapted from Figure 1 in Buchanan (2001).

Interaction design in Buchanan's (2001) model does not relate to interface design specifically, but to a wider (less common) interpretation of the term interaction design:

Service design emerges

There is a common misunderstanding that interaction design is concerned fundamentally with the digital medium. It is true that the new digital products have helped designers focus on interaction [...] However, the concepts of interaction have deep roots in twentieth-century design thinking. (Buchanan, 2001, p. 11)

Interaction design thus encompasses not only interface design, but also design thinking and service design⁶ in Buchanan's thinking. The development from one order to another is described as:

What I believe has changed in our understanding of the problem of design knowledge is greater recognition of the extent to which products are situated in the lives of individuals and in society and culture. [...] Clearly, issues of strategic planning, collaborative design, participatory design, and, above all, human-centered design rise to a new level of intensity, requiring new kinds of knowledge to effect successful solutions. (Buchanan, 2001, p. 14)

The quote above not only summarises the evolution of design well, with its emphasis on understanding the users and context of use, it also introduces the concept of human-centred design to this chapter. Human-centred design as a concept has been used for a long time, but it has never been quite as popular as user-centred design and has often been taken as referring to the same thing. Indeed, Lee (2012, p. 15) states that “the two terms human-centered design (HCD) and user-centered design (UCD) are used in an overlapping manner in many design writings and projects, sometimes referring to the same thing and other times not”. There is an ISO standard for human-centred design for interactive systems (ISO, 2010) which defines six characteristics for human-centred design: 1) working with multidisciplinary skills and perspectives; 2) understanding users and tasks; 3) evaluating the design with users and refine based on the outcomes; 4) considering the whole user experience; 5) involving user throughout the design process; and 6) working iteratively. Krippendorff phrased it as follows:

⁶ In a keynote at the Service Design Network's conference in San Francisco 2011, Buchanan stated that he viewed service design as belonging to the outer section of the interaction design order (I have not been able to find a transcript, but an audience-made video can/could be found on Youtube: <http://youtu.be/zeSQWZFGw7w> (accessed 2013-03-22)).

Human-centredness takes seriously the premise that human understanding and behaviour goes hand-in-glove; that what artifacts are is inseparably linked to how their users perceive them, can imagine interfacing with them, use them and talk about their stake in them with others. (Krippendorff, 2004, p. 48, emphasis in original)

Steen (2012) created a list of design approaches which he sees as being part of human-centred design. Steen's list includes participatory design, lead user approach, co-design, ethnography and contextual design and empathic design. For Steen, human-centred design means designing with people to improve their everyday lives. In contrast, other authors describe human-centred design as a linguistic choice aiming at highlighting what is the true intention behind involving users; to help improve people's everyday life. Hanington (2003) talks about humanising the term user-centred design and Lee (2012) sees human-centred as being more inclusive than user-centred. Lee (2012) states that while human-centred design suggests a concern for people, user-centred design suggests a concern only for people in their roles as users. Similarly, Redström (2005) warns that the focus on the user might lead to the users becoming the subject of design, leading to user design rather than user-centred design.

To summarise, two trends in design research have been highlighted in this section: the object of design and the methodology for design. These two trends have come and gone as a main focus of research on design practice, but have always had an influence on one another. In the upcoming sections, service as an object for design is introduced. The next section describes service research and how it has developed over time, followed by a section on how the service object has been treated within service design thus far, leading up to how service design is understood in this thesis. From then on, the tools and techniques for stakeholder engagement for service design will be the main focus of the thesis.

2.2 A short history of service (research)

Early service research emerged as a response to what was perceived as neglected in marketing and management research of that era, namely that no difference was made between services and products/goods. Much early research thus focused on the question "Are goods and services

Service design emerges

different?” (Johnson, 1969), and was done within service(s) marketing and management. Two literature reviews from different eras (Brown, Fisk, & Bitner, 1994; Baron, Warnaby & Hunter-Jones, 2013) agree on the starting point for service research, namely the insight that services and products need to be marketed in different ways. The two literature reviews portray the development somewhat different from there on, mainly because the latter review has the benefit of an additional 20 years of hindsight. The reviews point to specific phases in service research’s history, a summary of their findings is a good starting point for understanding how research has developed within service(s) marketing and management.

The earlier of the two literature reviews was published in 1994 and highlights three stages in service marketing until that day (Brown, Fisk, & Bitner, 1994):

- **Crawling out, pre- 1980:** This stage focused on establishing the field in contrast to the existing fields and defining services; “virtually all services marketing authors during the 1970s felt compelled to argue that services marketing was different, at least in the introductions to their articles and papers” (Brown, Fisk, & Bitner, 1994, p. 26). One of the most influential papers of this time period came from Shostack (1977), criticising the marketing sector for its focus on products.
- **Scurrying about, 1980-1985:** A stage in which there was a growing interest in the field and the first conferences, aimed specifically at those in the field, were held. The content of publications drifted from arguing for services marketing as a field to more investigative studies on various aspects of service marketing.
- **Walking erect, 1986-:** This stage corresponds to services marketing being a fully accepted discipline in its own right. Research was focused on specific aspects such as new service development and quality management as well as reaching out towards other academic disciplines.

The latter of the two literature reviews sees four main stages in service(s) marketing research this far (Baron, Warnaby, & Hunter-Jones, 2013):

- **The Development of Ideas for the Marketing of Services, pre-1988:** Increasing awareness of differences between products and services in connection to the rapid increase of service's part of developed countries' gross domestic product formed a theoretical basis for the formation of services as a field of research.
- **The Creation of the Sub-Discipline of Services Marketing, 1988-1997:** The discipline as such emerged with a set of research themes and focuses, mainly business-to-consumer services. Different research traditions emerged, with American researchers using quantitative studies to form services marketing whereas researchers from the Nordics focused on qualitative case studies as service management developed.
- **A Focus on Customer Experience and the Changing Role of Customers and Consumers, 1998-2003:** This stage coincided with the Internet becoming a factor in retail, and thus the growth of market reach. Customers got more choices and thus needed to be catered to in better ways, leading service research to increase its attention to customers' "real needs". How customers experienced the service delivery became a key differentiator between similar service offerings. Other research included technology in various ways, such as self-service and technology acceptance.
- **Towards a Unifying Marketing Approach through Service, 2004-:** In this phase the historical notion of services as something different (compared to products) has been exchanged for the view of service as a perspective on business (and the previous services, in the plural, has become service, in the singular). The main initiator for this has been the impact the theoretical perspective service dominant logic has had on service research. Other research trends include a strengthened focus on technology's impact on service delivery and on service as improver of life quality (known as transformative service research).

As can be seen in the two summaries above, there are two common descriptions in the reviews. Firstly, that service research emerged as a response to the feeling that there are differences between customer's

expectations on services and on products. Secondly, that service research can be seen as being a discipline in its own right since the second half of the 1980's. With these descriptions of how service research has developed in mind, the aspects of service research which have had an impact on service design are presented in more detail below.

A review article published in 1985 focused on studies which had tried to show how services were different from products. Zeithaml, Parasuraman, & Berry (1985) reviewed 46 publications from 1963 to 1983 in regard to how they define services as different from goods. The review led to the identification of four characteristics as the main differentiators of services and goods. The four characteristics are intangibility, heterogeneity, inseparability and perishability, usually referred to as IHIP. The four characteristics can be described as follows (based on Zeithaml, Parasuraman, & Berry (1985) and Lovelock & Gummesson (2004)):

- **Intangibility:** The intangibility of services refers to that services do not have a physical form. In the words of Zeithaml, Parasuraman, & Berry (1985, p. 33): “Because services are performances, rather than objects, they cannot be seen, felt, tasted, or touched in the same manner in which goods can be sensed.”
- **Heterogeneity:** The outcome of a service delivery cannot be standardized (in the same way as goods production can be) as it is delivered by different individuals whose temporary mood fluctuates over time. This complexity is increased when a customer enters the process - a customer which is different in engagement, attitude and so on from the previous and next customer. Heterogeneity is at times referred to under other names such as non-standardization, variability and inconsistency.
- **Inseparability:** The production of services is inseparable from the consumption thereof. Matter of fact, Zeithaml, Parasuraman, & Berry (1985) did use the longer label “inseparability of production and consumption”. This also highlights that customers play a crucial role in producing a service – without them playing their role the service cannot be delivered.

- **Perishability:** A service cannot be pre-produced and saved for later use. This highlights the need to have the right amount of resources available at any given point: “If demand is low, unused capacity is wasted. If demand exceeds capacity, it goes unfulfilled and business may be lost” (Lovelock & Gummesson, 2004, p. 29).

The notion of IHIP as the main characterisation of services lived on for about 20 years after the Zeithaml, Parasuraman, & Berry (1985) review was published. However, a few years into the 21st century this view was scrutinized by many authors, some of the most influential publications being Vargo & Lusch (2004; 2008), Lovelock & Gummesson (2004), Edvardsson, Gustafsson, & Roos (2005) and Grönroos (2006). Lovelock & Gummesson (2004) analysed the four IHIP-characteristics thoroughly and found that no characteristic held for all service categories. Similarly, Edvardsson, Gustafsson, & Roos (2005) found the characteristics to be outdated. They suggested that services should not be seen as different from goods, but rather as a “perspective on value creation and that value creation is best understood from the lens of the customer based on value in use” (Edvardsson, Gustafsson, & Roos, 2005, p. 107). Grönroos (2006) highlighted how the Nordic research tradition within services management has long focused on interactions between customers and service providers, and that a service’s value comes from this interaction.

Vargo & Lusch challenged the traditional service-view even further in a series of papers which have had an immense impact on the services marketing-field (Vargo & Lusch, 2004; 2008). Rather than calling for new ways of describing services, they argue for a new dominant logic within marketing, in which services take the centre-stage; “the new perspectives are converging to form a new dominant logic for marketing, one in which service provision rather than goods is fundamental to economic exchange” (Vargo & Lusch, 2004, p. 1). This perspective has become known as service-dominant logic (short form: S-D logic). They presented 8 foundational premises for this new dominant logic (Vargo & Lusch, 2004), later refined and expanded to 10 (Vargo & Lusch, 2008). Seen as a whole, they highlight a focus on interactions between service provider and service receiver and the joint effort in making a service transaction meaningful. Among these 10, four

are of extra interest to service designers, as indicated by Blomkvist, Segelström & Holmlid (2011):

- **FP3 - Goods are a distribution mechanism for service provision:** The value of a good stems from that it can produce a desired value, i.e. the service they provide.
- **FP6 - The customer is always a co-creator of value:** Value is created through interactions between customers and the service delivery system.
- **FP7 - The enterprise cannot deliver value, but only offer value propositions:** A company cannot deliver a value to a customer without the customer participating. A company can only provide the environment for the service delivery.
- **FP8 - A service-centred view is inherently customer oriented and relational:** If service is understood as delivering value to a customer, a service-centred view by default needs to consider how to provide value to a customer. (Vargo & Lusch, 2008)

The S-D logic perspective thus puts the customer in the centre of its activities, and asserts that “[v]alue is always uniquely and phenomenologically determined by the beneficiary” (foundational premise 10 in Vargo & Lusch (2008)). To summarise, current service theory (in the form of S-D logic), sees services as a means for creating value for the customer. The service is delivered with the help of various goods in an interaction between the service provider’s employees and its’ customers, making a service a system with both people and artefacts as its components.

This view has however been criticised for not pushing the notion of service far enough. Two interesting examples are Grönroos (2008) and Heinonen et al (2010). Grönroos (2008) claims that FP6 of S-D logic is wrong, as the customers linguistically are placed as the helper of the service provider in creating the service. Grönroos (2008) argues that it is actually the service providers who are the helpers, as they help their customers in co-creating a desired value to the customers’ lives. Heinonen et al (2010) similarly highlights how S-D logic does not challenge the notion of the service provider as the main proponent of the service transaction. They propose a customer-dominant logic in

which the companies realise that their offering needs to be integrated into their customers' lives rather than trying to integrate their customers into their processes. This would among many things mean that in-depth knowledge of their customers is needed, as “[r]ather than trying to persuade customers that the offering is valuable to them, companies need to try to embed service in customers’ existing and future contexts, activities and experiences” (Heinonen, et al., 2010, p. 545).

With these developments in design and service research in mind, the next section describes the emergence of service design.

2.3 Service design emerges

Inspired by the increasing prominence of services in the developed economies, designers first started to talk about service design in a structured way in the early 1990s, much through the efforts in two institutions; Politecnico di Milano in Italy and Köln International School of Design in Germany. At both institutions, early work relied on the work done within services marketing. Services were portrayed as something different than products, and the thinking was clearly influenced by the IHIP-notion. In 1997, the first book on service design was published, having been jointly edited by Milano and Köln-staff (Erlhoff, Mager, & Manzini, 1997). Like many other early publications on service design it was not written in English; most publications were in Italian and German – in this case in German. The translated title of Erlhoff, Mager, & Manzini (1997) would be “Service Needs Design” (my translation, German original: “*Dienstleistung braucht Design*”), and the connections to the service marketing field are apparent throughout the publication.

Although they were exploring the design of services in parallel, the efforts in Milano and Köln took different directions. Milano focused on research and produced the first service design PhDs, highlighting topics which would later reoccur as a body of English language research emerged (see Pacenti & Sangiorgi (2010) for an English language overview of research originally published in Italian). The efforts in Köln mainly focused on creating awareness of the emerging field, and their publications mainly argued for the rationality behind a service design

Service design emerges

approach (see Mager (2004) for a collection of essays translated into English).

As more people became interested in service design, new service design research environments emerged in Sweden, USA and the UK, and additional institutions in Italy. Outside of academia early pioneering companies were primarily UK-based. According to several sources (Moritz, 2005; Moggridge, 2007) the first service design consultancy live|work was founded 2001 (however, Han (2010) points towards that the term was used by design consultants already in the early 1990s). In 2002, the large design consultancy IDEO started to explicitly offer service design to their clients (Moritz, 2005). By 2004 there were enough people actively involved in service design to form an international network. It was founded by academics from “Köln International School of Design, Carnegie Mellon University, Linköpings Universitet, Politecnico de Milano / Domus Academy and the agency Spirit of Creation” (Service Design Network, n.d.).

The service design community continued to grow, but most publications still focused on arguing for the viability of service design from a variety of perspectives (Blomkvist, Holmlid, & Segelström, 2010). To use the terminology of Brown, Fisk, & Bitner (1994), service design was still in the *Crawling out* stage. However, it can be argued that service design moved into the *Scurrying about* stage around 2006-2008; publications then started to focus on service design practice rather than arguing for service design (Burns & Winhall, 2006; Vanstone & Winhall, 2006; Holmlid, 2007; Kimbell & Siedel, 2008; van Dijk, 2008) and the first practice-oriented conferences – Emergence and the Service Design Network Conference – focusing specifically on service design were held.

By 2009, activity in the service design area had increased even further and the first research conference specifically aimed at service design was held in Oslo (the conference was then known as the Nordic Service Design and Innovation conference, and is now known as ServDes). There were also special tracks devoted to service design at larger design conferences. This was also the year in which the first anthology including chapters from authors from several research environments was published (Miettinen & Koivisto, 2009). Furthermore, a literature review

of peer-reviewed service design publications published until the end of 2009 shows that the vast majority of papers were published in 2009 (Blomkvist, Holmlid, & Segelström, 2010). The literature review identified two main approaches in this early service design research:

There seem to be two main approaches to this early research on service design. One is to widen the scope of service design and integrate practices and ideas from non-design fields, such as marketing, leadership and engineering. The other is to challenge and explore the basic assumptions in service design and the methods inherited from other disciplines. (Blomkvist, Holmlid, & Segelström, 2010, p. 310)

Blomkvist, Holmlid & Segelström (2010) also identified five areas in which research had been conducted:

- **Design theory:** Exploring the fundamentals of the discipline, and its relation to other design disciplines.
- **Management:** Learning from and integrating with existing thought on services within management/marketing.
- **Systemic approach:** Focusing on product-service systems with an engineering perspective.
- **Design techniques:** The tools and techniques used in service design projects.
- **Case studies:** Descriptions and explorations of projects done with a service design focus.

The interest in these areas has continued after 2009, although the systematic approach has not been fully integrated into the larger service design discussion. Instead it has mainly been investigated within the product-service systems tradition. The view of services as systems has however been established as can be seen below. A look at theses⁷ published by PhD students after 2009 confirms this view;

⁷ Selecting what to include and not in a list like this is always problematic. Self-identification as service design and use of the emerging canon of academic literature in service design has been demands for inclusion here, which means some close lying theses such as Rao (2012), Tan (2012) and Vaajakallio (2012) are not listed here.

Service design emerges

- Qin Han (2010) based her PhD thesis on case studies of work done by service design agencies. In reviewing them she explored the changing roles of service designers in relation to stakeholders during different stages of the design process.
- Johan Blomkvist's (2011) licentiate thesis focuses on understanding how prototyping is done within service design and if there are any service specific challenges to prototyping.
- Katarina Wetter Edman (2011) focuses on exploring differences and similarities between service design and service management discourses in her licentiate thesis.
- Judith Gloppen (2012) wrote her thesis in the border areas of design management and service design, focusing on what is needed for successful leadership of service design projects.
- Ben Singleton (2012) explores the moral implications of making services a design material. Does designing services also imply to design human behavior? If so, what does that mean for designers and design practice? In Singleton's (2012, p. 273) own words: "the basic gist of this thesis is that emerging practices of design are asking us to reappraise how we see design approaching the horizon of human beings as its object".
- Fernando Secomandi (2012) carries the argument that the points of interaction between service provider and customer need to get more attention, not less (as argued by some prominent authors).
- Simon Clatworthy (2013) developed a set of tools based on service design principles to aid teams (not necessarily designers) in creating more innovative services which are aligned with the organisation's needs.

The theses all approach one of the five research areas identified by Blomkvist, Holmlid & Segelström (2010) and use a second one as support. Furthermore, most of the theses make use of service marketing/management thinking to build an understanding of service design⁸. The adaptation of service management literature has played a

⁸ This (felt) need to explain what service design is, is a good sign that service design still is not completely established. This chapter adds another PhD thesis following this pattern to the pile.

role for service design academics outside the realm of PhD theses as well and has provided important theoretical grounding for the, arguably, most important theoretical advancement in service design this far – the *design for service* perspective.

Design for service can be described in two ways; the simple way is to say that it is a way to highlight that services cannot be designed, only the prerequisites for a service delivery can be design (Kimbell, 2011a; Meroni & Sangiorgi, 2011). The more complex description involves looking at theoretical frameworks used by the authors who write on design for service.

Two of the main proponents of the design for service perspective have been Daniela Sangiorgi and Lucy Kimbell. There are some nuance differences in how they portray design for service, and also over time in each of their writings. Two main traits are however consistent; the positioning of the IHIP and S-D logic perspectives from service marketing as opposing constructs of the service concept and the idea of a progression from IHIP to S-D logic. As an introduction to these two ideas, recent models of design for service from Sangiorgi (2012) and Kimbell (2011a) respectively are presented in Figure 2 and Figure 3 below.

		Ways of thinking about service	
		Products and services are different (IHIP)	Service as basis for economic exchange (S-D logic)
Ways of thinking about design	Design as problem-solving	Engineering	Service engineering
	Design as enquiry	Non-engineering design disciplines	Design for service

Figure 2 - Approaches to service design according to Kimbell. Adapted from Kimbell (2011 a, p. 45).

Service design emerges

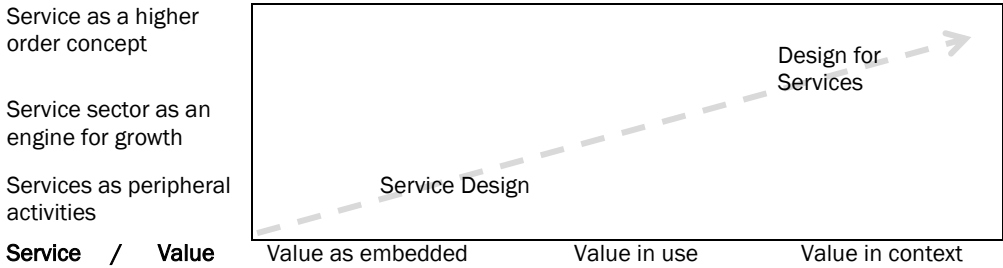


Figure 3 - Adaptation of Sangiorgi's (2012, p.98) model of service design and design for services.

As shown in Figures 2 and 3, both models make the distinction between the IHIP and S-D logic ways of viewing services. In the case of Kimbell (2011a), the distinction is contrasted with two different ways of viewing design. In Sangiorgi's (2012) model two different aspects of the S-D logic framework are used as the axes according to which the evolution of service design is measured. For Sangiorgi, the design perspective is a given. The appropriation of S-D logic to service design can be seen as the fundament of the design for service perspective.

The fundament is complemented by the idea that the S-D logic is a more desirable perspective than the IHIP one. This idea is clear in both the current model of Sangiorgi and earlier publications by her (such as in Meroni and Sangiorgi (2011)), whereas it is somewhat more obscured in Kimbell's model. An examination of her writings and speeches however shows that design for service is seen as a more desirable form by Kimbell as well (cf. Kimbell, 2011a; 2010).

Summing these two perspectives of design for services up, design for services can be described as a push to change service designers' mind-sets from an IHIP-esque understanding of services to one which aligns with the S-D logic one. At this point, it should be noted that the use of design for service as a term is primarily used as a model for thought and that authors on design for service are "acknowledging service design as the disciplinary term" (Meroni & Sangiorgi, 2011, p. 10).

2.4 Defining service design

Having described how service design has emerged, it is time to introduce my definition of what service design is:

Service design is the use of a designerly way of working when improving or developing people-intensive service systems through the engagement of stakeholders (such as users and frontline staff).

This definition builds on the concepts which have been introduced in this chapter, both from design and service. The user/human-centred design practices are included in “*designerly way of working*” and “*through the engagement of stakeholders*”. The S-D logic idea of services as constructed through interactions between people and artefacts is reflected in “*people-intensive service systems*”. The applied nature of service design is highlighted by “*improving or developing*”. Finally, the definition introduces the use of “*stakeholder*” as the preferred word for those affected by a service and provides examples of common types of stakeholders.

The choice of stakeholder as the description of those affected by a service needs some further explanation. The need for a different nomenclature than user- or human-centred arises as the system perspective on services and the human-centred tradition meet. When designing services, the service designers need to see all the humans involved in the service transaction, users/customers as well as employees and sub-contractors. This is however not enough as there also are non-human actors to take into account in the form of organisations and laws/rules which govern the service. A nomenclature which encompasses all these aspects is thus needed to describe factors which need to be considered for service design.

The word stakeholder fits this description and is already in widespread use within design (although experience has shown that some include and some exclude users when they use the word stakeholder). In this thesis stakeholder will be used to describe research on those (humans or

Service design emerges

non-humans) affected by a service⁹, whereas user, customer, employee and similar terms are used only when referring to that specific role in a service transaction.

⁹ This mirrors the definition of Freeman (1984, p. 46) in his seminal work on stakeholder theory: "A stakeholder in an organization is (by definition) any group or individual who can affect or is affected by the achievement of the organization's objectives". The use of the term stakeholder in this thesis does however not take the large body of work within stakeholder theory into account. Stakeholder is chosen as it is the most inclusive label for those affected by the work of service designers, not to make use of stakeholder theory. The reader interested in a discussion on stakeholder theory in general and on the terms user and stakeholder's relation in particular are referred to chapters 4 and 5, and in particular section 5.2.2, in Lindgren (2013).

3 Stakeholder research for service design

Whereas the previous chapter gave an account of the emergence of service design and the theoretical perspectives which has influenced thinking on service design thus far, this chapter focuses on research within service design and related subjects on the issues which are investigated in this thesis – how service designers create an understanding for those they design for and how they communicate this understanding.

The chapter features overviews of the toolbox which service designers have at their disposal. In this, attention is given to two types of tools; those which not all readers can be expected to be familiar with and those which are of particular interest for this thesis. This overview is divided into two sections, one focusing on tools for understanding the stakeholders and one on how insights are communicated once they have been identified. The chapter ends with the research questions being reiterated in the light of existing research.

3.1 The service design toolbox (for stakeholder research)

To understand how service designers learn about and from the users and other stakeholders, a good starting point is to know which tools the service designers have at hand. One way of finding out which tools are

established in the community is to survey which tools and techniques are presented in textbooks. This far only one (English language) textbook on service design which highlights the tools used exists – other books on service design focus on either research or on making the business case rather than teaching how to use the tools.

The one textbook on service design is “This is Service Design Thinking” (Stickdorn & Schneider, 2010). It features a distinct section on tools for service design, based on the service design community’s suggestions on which tools to include. A public voting was done on which tools to include after an initial collection of tools. The final editing was done by staff at design research agency STBY.

One textbook is however not enough to give a varied overview of the tools available. Thus, textbooks from related design fields were also surveyed and compared to “This is Service Design Thinking”. To keep the list recent, only textbooks published within the last five years at the time of writing are included. A summary of the tools for user research listed in the textbooks is presented in Table 1 below. The books used and their design field of origin are:

- **Service design:** This is Service Design Thinking (Stickdorn & Schneider, 2010). Listed as S&S 10.
- **Interaction design:** Designing Interactive Systems, 2nd ed (Benyon, 2010). Listed as B -10.
- **Interaction design:** Designing for the Digital Age (Goodwin, 2009). Listed as G -09.
- **Interaction design:** Designing for Interaction, 2nd ed (Saffer, 2010). Listed as S -10.
- **Design thinking:** 101 Design Methods (Kumar, 2013). Listed as K -13.
- **User experience design:** A project guide to UX design (Unger & Chandler, 2009). Listed as U&C -09.
- **Human-centred design:** Human Centered Design Toolkit, 2nd ed (IDEO, 2011). Listed as I-11.
- **Product design:** Product Design and Developments, 5th ed (Ulrich & Eppinger, 2012). Listed as U&E -12.

Table 1 - User research techniques for human-centred design. Textbooks indicated by first letter of authors' surnames and short form of year published. Tools have been grouped according to description in the textbooks, rather than exact name given. Tools listed are those emphasised by the textbook authors.

	S&S -10	B- 10	G- 09	S- 10	K- 13	U&C -09	I- 11	U&E -12
Interviews	X	X	X	X	X	X	X	X
Observation	X	X	X	X	X		X	X
Probes/diaries	X	X	X	X	X		X	
Focus groups		X	X			X		X
Questionnaires/surveys		X	X			X		
Contextual inquiry		X				X		
Card sorting		X				X		
The five whys	X							
Mobile ethnography	X							
A day in the life	X							
Artefact collection		X						
Data load logs			X					
Mystery shopper			X					
Activities				X				
Video ethnography					X			
Image sorting					X			
Participant as team member							X	
Benchmarking							X	

As can be seen just by a cursory look at the table, there are a few well established techniques highlighted by basically all authors and a long tail of techniques which are only highlighted by a few authors. Interestingly, the three most cited approaches (interviews, observations and probes) all have emerged in different areas of the humanities. As highlighted by Singleton (2012) many of the tools used are common research techniques in qualitative research in general. Hanington (2003) suggests that there are three types of methods used within human-centred design:

- **Traditional methods** which have been inherited from fields such as marketing, and often have a focus on reaching large numbers of people. Examples include focus groups, surveys, questionnaires and interviews.

- **Adapted methods** which originate in other fields interested in human activity. As they tend to have other research goals than design, their methods need to be adapted when used in design. Examples include ethnographic methods, observational research and cognitive walkthroughs.
- **Innovative methods** are tools which have been developed within design. They tend to have a strong participatory streak in that the participants are active in documenting the research in one way or another. Examples include card sorting, visual diaries and camera studies.

The readers of this thesis¹⁰ are expected to have an understanding of the common research techniques with perhaps the exception of innovative methods such as design probes. The upcoming sections will thus focus on describing tools and approaches which are either of particular interest for the thesis (ethnography) or which not all readers can be expected to be familiar with (innovative methods).

3.1.1 Ethnography

Ethnography originates in anthropology, where its development started in the 19th century as native North American tribes on the brink of extinction were studied with the goal of documenting their cultures before they disappeared. In Europe, the Torres Strait Expedition launched by scholars at Cambridge in 1898 is often seen as the starting point of ethnographic field work (Kuper, 1996). However, this early version of ethnography was something completely different compared to what it is today as the following quote clearly shows:

In 1909 [... a] meeting of teachers from Oxford, Cambridge and London was held to discuss the terminology of our subject. We agreed to use 'ethnography' as the term for descriptive accounts of non-literate peoples. [...] The comparative study of the institutions of primitive societies was accepted as the task of social anthropology, and this name was preferred to 'sociology'. (Radcliffe-Brown, 1952, p. 276, my emphasis)

¹⁰ It is expected that most readers of this thesis have a background in design, service research or cognitive science.

The next major step forward in the evolution of ethnography was taken by Bronislaw Malinowski, with the publication of “Argonauts of the Western Pacific” in 1922. He conducted field work for almost two years (over a span of three years) in the Trobriand Islands. Malinowski’s (1987) description of his methodology became the benchmark against which other ethnographic endeavours were measured within anthropology. He emphasised the following aspects as being important for ethnography:

- To live with the studied objects to be able to study all aspects of life for an extended period of time.
- To be able to speak the local language.
- To do participant observation, which means doing what the studied objects do as well to the best of your ability, whilst observing them. For example, if they are out fishing, you should also fish and not only sit in the boat and watch. And do it yourself, do not rely on anyone else to do it for you.

The work of Malinowski solidified ethnography as a method. As highlighted in Segelström, Holmlid & Alm (2009) this however led to a delimitation of what ethnography was applied to – homogeneous small scale societies were the ones which were best suited to be studied with Malinowskian ethnography. If anthropologists wanted to study something else they would need to break with the Malinowskian standards. Sociology, a closely related field to anthropology, became an important factor in adapting ethnographic praxis to other types of societies and spreading the ethnographic approach in the social sciences.

What has come to be known as the Chicago school was probably the most influential factor as they started to study sub-cultures in their own home environments, although still not within their own middle-class culture (Hammersley & Atkinson, 2007; Dourish, 2006). Anthropologists also started using ethnographic methods to study environments closer to home (Agar, 1996). From sociology the step to design was not a big one as design disciplines such as computer supported cooperative work and cooperative/participatory design emerged. A close relationship between computer supported cooperative work and sociology existed from early on, with many researchers working in departments of sociology.

Early examples of ethnography for design include Suchman's (1983) work at Xerox and studies made on air traffic control towers. (Hughes, King, Rodden, & Andersen, 1994). In a review of human-computer interaction's development and its potential future directions, Grudin (1990) suggested that ethnography would become one of the most important tools for interface design. The decade following the publication of Grudin's article became the decade in which ethnography moved from a novel technique for design to being a part of the standard toolkit, but not without much debate. A main focus of discussion was how to reconcile the long term studies suggested by traditional ethnography with the relatively short term projects designers were involved in. This led to the publication of a series of articles which partly made the case for ethnography and partly suggested adaptations in the form of rapid, quick or in other ways intensified ethnography (cf. Hughes, King, Rodden, & Andersen, 1994; Rose, Shneiderman, & Plaisant, 1995; Millen, 2000; Sperschneider & Bagger, 2003).

However, when something is appropriated from another discipline, frictions between different ways of viewing the appropriations are likely to occur. The appropriation of ethnography has been no exception, with plenty discussion on what ethnography is and how it can/should be interpreted in a design context¹¹. The perhaps most common critique of designers' appropriation of ethnography is that it is too simplistic and watered down, with too much focus on finding actionable insights. A 2006-article by Paul Dourish sums up this argument well, and the following quote gives insight in how ethnography by designers is seen by those agreeing with Dourish's arguments (cf. Button, 2000):

The term 'ethnography,' indeed, is often used as shorthand for investigations that are, to some extent, in situ, qualitative, or open-ended. [...] So, here, the defining characteristic of ethnographic investigation is taken to be its spatiotemporal organization – that the ethnographer goes somewhere, observes, returns and reports. (Dourish, 2006, p. 543)

¹¹ It should be noted that this discussion in no way is unique to design. Even within anthropology of today, there is plenty of discussion on what constitutes ethnography (cf. Geertz, 1995; Boellstorff, 2008; Marcus, 1995).

Anthropologist Rob van Veggel (2005) wrote an article trying to point out potential areas of conflict when the anthropological version of ethnography meets the designerly version. He bases his comparison on recollections of his experiences of working as an anthropologist for design companies. According to him, designers and anthropologists approach ethnography in the following ways:

[D]esigners approach ethnography for the practical reasons of gaining a rich and deep understanding of users that can be easily integrated into design projects, and yet quick and relatively inexpensive to obtain. (van Veggel, 2005, p. 5)

[A]nthropologists approach, ethnography as the methodological component of a theoretical endeavor to understand humans as socio-cultural beings, who presumably act and think in [a] different way; ethnography is a method to understand other people – anthropology is that understanding. (van Veggel, 2005, p. 8)

Based on these differences van Veggel (2005) identifies four potential conflict areas when the two disciplines collaborate: 1) the translation of anthropological insights into usable insights for designers, 2) designers lacking in preparation and training before doing ethnographic work, 3) how to link people's actions and thoughts together and 4) that anthropology is excessively theoretical.

Direct comparisons of different strands of ethnography such as the one by van Veggel above are few. Another comes from Tunstall (2008) who based her comparison based on how leading companies, famous for their use of ethnography, in three different disciplines (anthropology, marketing and design) describe their work in publications. In Table 2 her summarisation of anthropology and design's respective approaches are listed.

Stakeholder research for service design

Table 2. Tunstall's analysis of ethnographic approaches. Adapted from Tunstall (2008, p. 220).

	Anthropology	Design
Questions	What does it mean to be human?	How does one design a successful product, service, communication, or experience?
Assumptions - <i>Issues</i> - <i>Roles</i> - <i>Scale</i>	- Origins, evolution, and meaning - Anthropologist as instrument - Qualitative significance	- Context and user requirements - Designer as intermediary - Qualitative significance
Methodological approach towards ethnography	Preferred epistemological stance	Empathic intuition
Evidence	Informal conversation Experiential textual report	Concepts Prototypes

As is evident from van Veggel and Tunstall's comparisons of ethnographic styles, the difference between how designers and anthropologists approach ethnography is the motivation for doing so. Neither of the two authors discuss the tools used to obtain information, focus is instead on how the desired outcome affects the outcomes of the ethnographic endeavour.

Returning to the criticisms of how designers do ethnography, a change brought by the critique can be seen in the literature. There is an awareness of the appropriations done, but rather than trying to remove the appropriations from practice they are acknowledged as such. The quote below from a recent book on service design summarises the general stance in design towards ethnography as a method today well:

[...]It is important to note that, although we are using ethnographic methods and techniques, we are not doing proper ethnography in its own right. Ethnography is a term that has had some use and abuse by designers over the past few years in the sense of 'Yeah, we did some ethnography and then got on with the design work'' Ethnography has a history, approach, and rigor that is much more loosely interpreted for design research, and when we borrow its methodology, we should be respectful of how and why it was developed in the first place—to understand and document the knowledge, relationships, and beliefs of social or cultural groups, often through long-term participant observation of a year or more. (Polaine, Løvlie, & Reason, 2013, p. 50)

Summing up, it is clear that ethnography has gone through a series of transformations from its initial forms in anthropology to become what is practiced within design today. There is an (increasing) awareness within the design community of the appropriations which have been made to adapt ethnography to design. However, rather than trying to live up to the (Malinowskian) standards of anthropology designers seem content in using ethnography as is done today as it can provide them with the stakeholder insights they want.

Interestingly, similar discussions on misinterpretations of how tools are supposed to be used exist even for those tools developed specifically for design, the innovative methods.

3.1.2 Innovative methods

Tools and techniques developed within design are often referred to as innovative methods. Most of the existing innovative methods have originally been developed for specific cases but have later been re-used and adapted for other circumstances. This means that the innovative methods not only vary from the traditional and adapted methods in origin, but also in which kind of data they produce.

Based on Hanington's (2003) thoughts on the division of traditional, adapted and innovative methods Lee (2012) highlighted some of the unique characteristics of innovative methods. Lee (2012) notes that "innovative methods do not have a clear-cut formula" (p. 58) and "are inseparable from researchers and the context within which they are applied" (p. 58). Furthermore, she states that "since the outcomes of innovative methods are often produced in the forms of visual images, tangible creations, or stories, a researcher's interpretation and a designer's creativity are essential in dealing with the outcomes" (Lee, 2012, pp. 58-59). This means, that to be able to use innovative methods successfully a person needs to be able to be both a researcher and a designer at the same time.

Lee (2012) identifies a number of potential misinterpretations of innovative methods, as their use has become widespread. These misinterpretations come from people focusing on the form rather than the essence and mind-set of the methods. Lee (2012) identifies the following three misinterpretations:

- **Turning Innovative Methods into Reproducible Techniques:** Instead of appreciating the uniqueness of the situation in which an innovative method has been applied, designers try to generalise their method to other situations. A review of how design probes had been used within HCI for example showed that “[t]he original probes were presented as subverting methods, but tend to be picked up as a recipe or reproducible method” (Boehner, Vertesi, Sengers, & Dourish, 2007, p. 1084).
- **Seeking Scientific Validity:** When using an innovative method the designer/researcher is an active part of the data creation, and thus cannot try to keep a (scientific) objective distance to what is studied. Instead an awareness of the designer/researcher’s own influence on the process becomes important (this echoes discussions in anthropology on the anthropologists’ influence on those studied).
- **Where is Data Legitimate for Analysis?:** When using innovative methods it becomes important to not only see the end-product as the data available for analysis, but rather see the whole process of using the method as data available for analysis. That is, designers/researchers need to make notes throughout the process and make use of them when analysing the materials created.

Misinterpreted or not, the innovative methods have become increasingly popular within design and the probe-approach belongs to the most-cited ways of collecting data. Below, the probe approach and some other innovative methods are introduced briefly to give readers an idea of how innovative methods can be designed.

3.1.2.1 Probes

First introduced as cultural probes by Gaver, Dunne & Pacenti (1999), the probe-approach has quickly become very popular. As different versions of probes have been developed, the name before the probe part has often changed to reflect the author(s) intentions, such as in design probes (Mattelmäki, 2006) and technology probes (Hutchinson, et al., 2003). What all these approaches have in common is that their basic thinking is based on the metaphor of probes in healthcare and astronomy; “[l]ike astronomic or surgical probes, we left them behind

when we had gone and waited for them to return fragmentary data over time” (Gaver, Dunne, & Pacenti, 1999, p. 22). The probes used by designers are different artefacts created to elicit reactions and use from the participants, with the important difference that they require active participation of those studied. As an example, the artefacts used in the original study (and which have become the recipe criticised by Boehner, Vertesi, Sengers & Dourish (2007)) were; postcards, disposable cameras, maps, photo albums and diaries (Gaver, Dunne, & Pacenti, 1999). When the materials are returned, it is up to a skilled researcher/designer to handle them in such a way that they provide meaningful information for the project. The following two quotes illustrate the art of using probes well (the first being the beginning of the conclusion of the initial article on probes and the second being the final two sentences of Mattelmäki’s PhD thesis on probes):

Although the probes were central to our understanding of the sites, they didn’t directly lead to our designs. They were invaluable in making us aware of the detailed texture of the sites, allowing us shape proposals to fit them. But we were also influenced by our pre-existing conceptual interests, our visits to the sites, anecdotes and data about the areas from the local coordinators, and readings from the popular and specialist press. (Gaver, Dunne, & Pacenti, 1999, p. 29)

Although the methodological instructions can in principle be taken to the extreme, the outcome finally depends on the agents, i.e., researchers, designers and even users in the case of probes. Practical instructions are helpful, but somebody conducting research must personally be tuned-in to receive signals, interpret them and be surprised at them, as well as tolerate the ambiguous nature of the probing process (and design). (Mattelmäki, 2006, p. 103)

3.1.2.2 Design games

Design games are a wide-ranging family of approaches to design, unified by their focus on playfulness through games. In her PhD thesis on design games, Vaajakallio (2012) highlights four ways in which design games have been used within design: as a research tool, for building design competence, to empower users and for engaging multiple stakeholders. Vaajakallio notes that different design games make use of different aspects of the potential linguistic connotations related to design

and games. However, she also notes that the strengths of the individual games come from them highlighting different aspects of design and games. A reoccurring key idea is however identified, namely the make-believe world associated with games which let people break out of their normal roles:

As I demonstrated through my account, one of the main play-qualities is the magic circle, where the laws of ordinary life no longer apply. Communicating to the participants that they are in this play-sphere may free them from the practical restrictions of daily life, and allow them to travel between past experiences, current interests and future opportunities, augmenting creative interplay between the existing and imagined, and to experiment with alternatives without the fear of immediate consequences. As I see it, that is the meaning of the 'game' as a metaphor and activity in co-design gatherings. (Vaajakallio, 2012, p. 235)

Interestingly, similar thoughts are highlighted by proponents of using dramatic methods in design (cf. Iacucci, Iacucci, & Kuutti, 2002; Brandt & Grunnet, 2000).

3.1.2.3 *Design documentaries*

Whereas design probes lets designers learn about a context without being present the whole time, and design games exist in an simulated context there also are innovative methods which are fully based in the context of research. One such example is video-based techniques such as design documentaries. Design documentaries were described by Raijmakers (2007) as adapting techniques from the making of documentary film to designer's needs. He claims that the characteristics of design documentaries are "embracing diversity, exploring aesthetics and creating conversations" (Raijmakers, 2007, p. 210).

These three examples of innovative methods are meant to provide readers unfamiliar with the notion of innovative methods an idea of what they are and how varied they can be in their nature. As stated in the Lee-quote above, what unifies them is the importance of the researcher taking a more active role in the research than trying to stay objective when identifying insights about the stakeholders' wishes and driving forces.

3.2 Communicating stakeholder insights through visualisations

Identifying the stakeholder insights is however not the end-point of the research section of user-centred design projects; the insights need to be communicated to the clients as well as within the design team. As discussed in relation to Schön's (1983) work on designer's professional practice, designers to a large degree externalise their thinking with the help of sketching and similar approaches. Service design practitioners are no different in this respect than the architects which Schön studied. Service design practitioners do face a new set of challenges when faced with dynamic service systems in comparison to static artefacts (products or buildings). The practice of making external representations to communicate stakeholder insights is commonly referred to as visualisation¹².

Froukje Sleeswijk Visser (2009) describes the role of visualisations in developing a framework for transferring user knowledge from those who have gathered user insights to designers (which may not be the same persons). She developed her framework in relation to products as well as services, and uses visualisation as a tool to communicate three aims in the knowledge transfer; enhancing empathy, providing inspiration and supporting engagement. Sleeswijk Visser (2009) explores issues relating to visualisations, in regard to the look and feel of the visualisations and their effect on the knowledge transfer. She finds that designers prefer 'real' material such as photos over sketched material.

The ability to visualise service systems is often held forward as one of the prime skills of service designers. Kimbell (2009) highlights it as one of the three core features of service design in her review of service design practice and Holmlid (2007) draws the conclusion that service design is a highly visual design discipline. Other sources which highlight the

¹² The use of visualisation as the term for this activity is however not unproblematic from an academic perspective. The term, and to a large degree the same techniques, is used to describe stakeholder insights, some prototyping activities and when design solutions are presented visually. Other proposed terms carry similar multiple meanings, which open for misinterpretations. Thus, in lack of a better term visualisation is used in this thesis. Visualisation and visualising are to be understood as referring exclusively to the visualisation of stakeholder insights in this thesis unless explicitly stated otherwise.

importance of the visualisation skill are the Service Design Network and the Swedish National Council for Innovation and Quality in the Public Sector:

The Service Designer can [...] visualise, express and choreograph what other people can't see, envisage solutions that do not yet exist. (Service Design Network, n.d., p. 2)

The designer can visualise complex problems and make them perspicuous. (SOU 2013:40, 2013, p. 106, my translation)

Given the prominence given to visualisations in describing unique skills of service designers, research on the visualisation practices of service designers is still scarce. In contrast, publications by practitioners on projects they have conducted mostly feature visualisations prominently (Parker & Heapy, 2006; Vanstone & Winhall, 2006; Engine, 2007; Samalionis, 2009; Koivisto, 2009; Transformator Design, n.d.; Care Info Scotland & Snook, 2013). Examples of visualisations techniques are blueprints, customer journeys, personas, storyboards, desktop walkthroughs and system maps¹³. Most of these techniques have been borrowed from other disciplines and come from areas such as service marketing, interaction design and movie making.

When visualisations have been discussed in academic writing, it has usually been as a tool in case studies or with a focus on the development of specific techniques. The academically based case studies where visualisations feature prominently have had a focus on showing the value of service design and its tools rather than exploring the actual usage of the tools. Viñá & Mattelmäki (2010) explored the use of visualisation techniques as storytelling tools whilst redesigning a Metro-station. Trischler & Zehrer (2012) used visualisation techniques such as a customer journey, to find the key moments of a theme park visit. Morelli (2011) took a product-service systems perspective on improving service delivery organisations, mapping them with the help of various visualisation techniques. In all these three examples, the authors describe how redesign was aided by visualisations but do not reflect much on the purpose of the tools.

¹³ These techniques are presented in Appendix B.

Research focusing in detail on the use of visualisations has to a large extent focused on improving specific visualisation techniques, particularly the blueprinting technique. Blueprinting has been adopted from service marketing and management, which has a stronger focus on day-to-day operations than service design. This has led service design researchers to investigate various ways of adding people's emotions to the blueprint (Aebersold, Polaine, & Schäfer, 2010; Sparagen & Chan, 2008) and how to show different stakeholders' perspectives on the same service (Wreiner, et al., 2009).

There are however a few studies which highlight the overall use of visualisations. Christine De Lille conducted an interview study from a product-service systems perspective with Dutch designers in which she found that visualisations are used to translate information as well as support collaboration (De Lille, Roscam Abbing, & Kleinsmann, 2012; ten Bhömer, De Lille, Tomico Plasencia, & Kleinsmann, 2013). Another important study on visualisations was done by Chiara Diana, Elena Pacenti and Roberta Tassi (2009; 2010)¹⁴.

Diana, Pacenti & Tassi (2009) developed a framework for categorising different visualisation tools (although they refer to them as representations) based on how they represented the service depicted. Their framework consists of two main notions for analysing visualisations: *iconicity* and *time*. Both are constructed as scales with two opposing endpoints. Iconicity refers to the type of material used in visualisations and whether realistic material (such as photographs) is used or abstractions (such as symbols and diagrams). The scale goes from realistic to abstract. Time refers to whether the visualisation "can give an instantaneous picture of the service –synchronic– or can [...] visualise the sequence of actions and stages that compose the service experience –diachronic" (Diana, Pacenti, & Tassi, 2009, p. 3).

Diana, Pacenti & Tassi (2009) continue by depicting the two scales as intersecting axes as in Figure 4 below. This creates four distinct descriptions of types of visualisations, based on how they score on the

¹⁴ The 2010-publication is basically a shortened version of the 2009, so henceforth only the 2009-version will be cited.

two scales time and iconicity, e.g. abstract and diachronic visualisations are grouped together as being of the type “flows”.

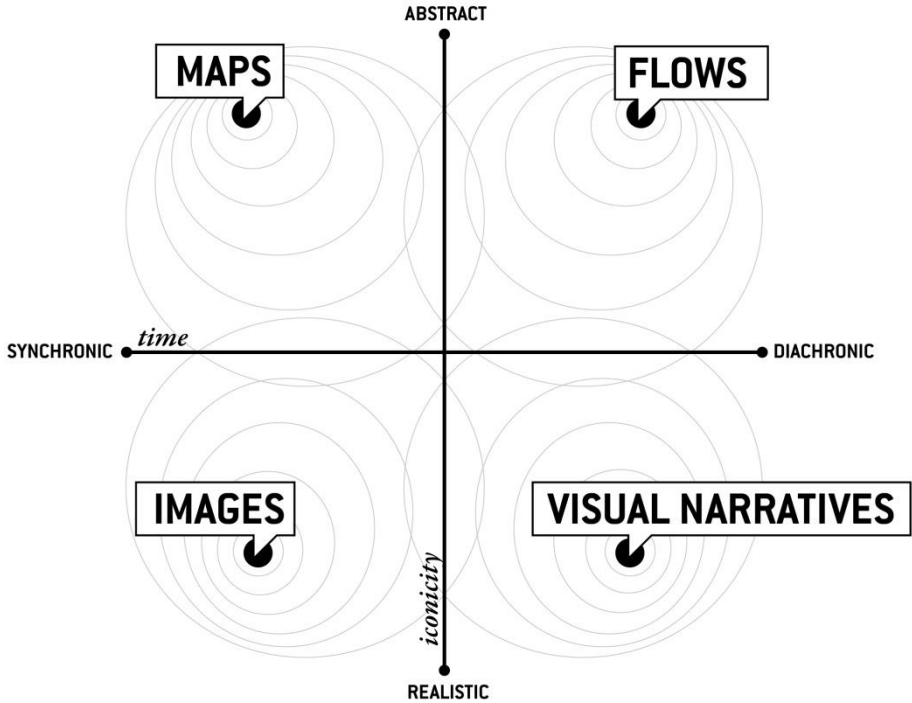


Figure 4 - The two axes time and iconicity visualised together with the four categories of visualisations from Diana, Pacenti & Tassi (2009). Reprinted with permission.

Diana, Pacenti & Tassi (2009) provide examples of visualisation techniques belonging to the four general types:

- **Maps:** system map, mind map, affinity diagrams, service ecologies.
- **Flows:** blueprint, customer journey map.
- **Images:** moodboards, service image, evidencing, tomorrow headlines, posters.
- **Narratives:** storyboarding, filming the interaction, experience prototype, service prototype.

The techniques listed might however not be known to all readers. In Appendix B, six of the most common visualisation techniques (as identified in the interview study and used in the study on what visualisations communicate) are introduced in more detail.

3.3 Research questions revisited

Looking back at the contents of chapters 2 and 3, they have provided a theoretical background for this thesis. Whereas Chapter 2 focused on describing the emergence of service design and what influenced it, Chapter 3 has focused on describing research related to the contents of this thesis.

A background has been given to three of the research questions and the fourth has been touched upon implicitly. The research questions are reiterated below, with a short summary of existing knowledge on and motivations for the research questions. The research questions have been formulated to encompass all activities during the research phase of service design projects.

Do service designers work according to a human-centred design tradition?

Chapter 2 described how the user/human-centred design tradition has grown in importance over time, and how its practice was a foundation for service design as it emerged. This however does not necessarily mean that service design practice is user/human-centred. As the following research questions build on the premise that service design is user/human-centred it is important to make sure it in fact is so.

How do service designers engage with stakeholders when building the understanding of a service context? Which tools are used?

The first section of this chapter surveyed the tools suggested by textbooks on service design and related fields for engaging with stakeholders when building an understanding of a service. It was suggested that service designers to a large degree use the same tools as other qualitative fields with the addition of the so-called innovative methods. A closer look at ethnographic praxis suggested that the goals of design however differ from other fields which use qualitative methods. The descriptions available are however brief and in isolation from one another. The aim of this two-fold research question is not to provide

another listing or recipe-like description (although the second part indicates that the confirmation of tools used is of interest), rather it is to provide a rich description of the thinking behind using the tools. Which considerations are made, which goals influence decisions and what has to be done to successfully engage with stakeholders?

What do service designers do with the material they have obtained about the stakeholders?

This is the research question which has only received implicit attention this far. The reason for this is that the process of translating collected information into something actionable seems to be somewhat of a black box in the literature¹⁵. That it occurs is however implied in several places; the comparison of ethnographic approaches discusses how different questions lead to different outcomes and how designers want actionable insights, the background on visualisations presupposes that stakeholder information has been translated into a form which allows for visualisation. The purpose of this research question is thus to outline how the analysis of stakeholder information is done.

What is done with the insights about stakeholder behaviour and desires? (How) Is it communicated with the team and to clients?

The importance of visualisations for service design practice according to the literature has been described above. It has also been shown that visualisations are used prominently by practitioners as well as academics when communicating on service design projects. It was however identified that research on visualisation as an activity is scarce, and that research focus has been on individual tools. The research which does exist was introduced in detail, but as more research is needed to understand all aspects of the activity to visualise this research question aims at understanding how visualisations are used strategically, both as a tool for analysis and communication. The research question is formulated in such a way as to also include forms of communicating research insights other than visualisations.

¹⁵ As an example, a recent book called "Interviewing Users: How to Uncover Compelling Insights" by Steve Portigal (2013) - one of the most well-known design researchers -, only discusses the analysis of data on 6 of 147 pages.

Having reiterated the research questions and clarified the motivations for them, it is now time to focus on the studies done. The upcoming four chapters are devoted to the four studies conducted to answer the research questions.

4 Interviews with service designers

The first data set collected during my PhD studies consisted of interviews with service design practitioners. Although service design has been described as a user/human-centred design discipline since its inception, no research has been done to confirm that it in fact is so in practice. What is known about service design practice is often based on “common knowledge” rather than research findings, and was so to an even further extent when the PhD work presented in this thesis was started. Therefore, the overall goal of the study was to gain an academic understanding of how practicing service designers go about understanding the users of the service at hand.

4.1 Data collection

The interviews were semi-structured, with a prepared set of questions complemented by unplanned follow-up questions. The structured part of the interviews consisted of four main themes, all with a number of questions associated with them. The questions used for the structured part of the interviews can be found in Appendix A.

In total, 14 interviews were made between October 2008 and January 2009. Ten interviews were face-to-face and four were performed over telephone/Skype. 13 of the interviews were conducted by the author and

one by a second interviewer¹⁶. The majority of the interviews were held with one interviewee, but at four interviews two interviewees were present. The median interview lasted for 56 minutes.

The offices of the interviewees were at the time of the interviews spread over seven countries in Europe and North America. The companies in which the interviewees worked at the time of the interviews ranged from world-leading to newly started companies; from large design firms to small service design firms; from commercial and public to social innovation firms; some were multi-national and others were national. All but one worked as consultants.

The analysis of the interviews was done at different times during the PhD project, corresponding to the part of the stakeholder research which was in focus for the investigations at that time. The analysis was divided into two main parts, one focusing on the why and how of doing stakeholder research, whereas the second part focused on how the insights obtained are being communicated. The two parts are presented separately below, each starting with a description of the analysis procedure for that section.

4.2 Focus: How stakeholder research is done

One of the two analyses done of the interview material focused on why and how stakeholder research is done for service design. The analysis was done in an iterative fashion, each iteration loop producing new and more detailed questions to which the answers were sought in the next iteration. The first iteration stayed close to the interviews and the questions asked there, trying to summarise attitudes and opinions to related questions under single headings such as “General attitude towards methods”. The second iteration built on the patterns which emerged from the first iteration and focused on extracting key quotes from the interview material, and sorting these quotes into subcategories. An example of such a new focus area is “Issues influencing research negatively”.

Iteration three used the key quotes from the previous iteration, sorting them into new and more detailed patterns. For each of the new patterns,

¹⁶ Johan Blomkvist performed the interview not performed by the author of the thesis.

the most illustrative quotes were selected. These patterns and illustrative key quotes were then used to write the text below. Quotes were transcribed without hesitations and false-starts for readability.

The presentation of research insights is divided into subsections as they were identified in the first iteration of the analysis.

4.2.1 Fundamental approach to service design

One of the strongest patterns to emerge throughout the interviews was that all participants seemed to view user-centred design as a fundamental approach to service design. That design work should be centred on the users/customers/stakeholders (all these terms were used, partly overlapping, partly referring to different roles) was not even questioned by the participants, and quotes like the two below were common in the interviews:

[Interview 9] *Everything we do is centred around the user.*

[Interview 10] *The process has to begin with some kind of immersion in context and exposure to people who are perhaps experiencing that aspect of life right now. It starts by finding out where we are gonna go, who we are going to speak to, what is their world and really stepping into their shoes. For us to start a design project without that is a bit like cutting of our arms and legs and probably our head as well, we don't know where to start in that case.*

In the eyes of the service designers interviewed, being user-centred means doing research on the lives of those which the design will impact. Research is held forward as one of the crucial activities in the design work, if not the single most important, by most interviewees. This high valuation of research to a large degree stems from the fact that the research results are the platform on which the rest of the project is built:

[Interview 11] *Research really helps you understand what the constraints are, the real human social constraints and design helps you work within that to find the best solution.*

The quotes above establish the need for user-centred research in the service design projects run by the interviewees, but do not reveal much about how the user input is used by the service designers. The co-creation trend in service design (Wetter Edman, 2011) has received

Interviews with service designers

much attention over the last few years. Co-creation in service design refers to the joint creation of ideas in teams of various stakeholders with the designer as both a facilitator and participants. In co-creation the users/stakeholders become a source of ideas. Given the attention given to the co-creation trend, it was somewhat surprising to find that most interviewees primarily seemed to view users as inspiration for ideas:

[Interview 7] *Users are inspiration for designers.*

[Interview 5] *Of course when you go and observe how people act and behave you get ideas already there.*

Being user-centred does not mean focusing only on the end-user or customers of a service. Several interviewees stress the importance of understanding the client organisation, for the design to have an impact:

[Interview 7] *Most service designers will tell you that it starts all with the end-user, but first it starts with the company actually because if you don't understand the culture of the company or what they want, the history of the service they ask you to improve, you don't know their hidden agendas. You know you have to immerse yourself in the world your end-user lives in, but actually you have to immerse yourself first into the reality of the clients.*

Put together the fundamental approach to service design (research) is to be user-centred. Being user-centred implies doing research on the various stakeholders affected by the service. User is thus to be understood as referring to more stakeholders than just the end-customer of the service. Therefore, it makes sense to talk about stakeholder research rather than user research when it comes to service design.

4.2.2 Influences on research planning

In view of the importance given to stakeholder research by service designers it was surprising to find that only about half of the interviewees stressed the need for preparations (which, however, echoes the criticism put forward by van Veggel (2005) that designers are not preparing sufficiently for stakeholder research). Those who highlighted the need for preparation did so in relation to every project being unique, with its own circumstances:

[Interview 6] *Well, there are a few factors I guess that influences [research methodology]. [...] One is who we do the research with, who are the participants? The second one is the situation we are looking at, what is the topic of the research? Third one is location of research, where do we do research? And a fourth one, of course, is what will the results be used for?*

The argument above is supported by one of the other interviewees, who also hints at a reason why so few talk about the importance of preparation – the specific tools used are almost seen as a commodity:

[Interview 9] *None of these techniques are very special, but what is special is the questions that we ask, the tasks that we set and the goals that we ask our participants to aim for whilst we're conducting this kind of research. So preparation is very important.*

Another reason for the limited amount of attention given to preparation is the relationship to the client. Several interviewees point out that the tools and techniques to be used are decided on together with the client. In some cases this means the tools are already decided upon before the designers and researchers enter the project, but it can also mean that the clients have a strong urge to cling onto techniques they are familiar with, even if the designers try to make a case for other techniques:

[Interview 4] *The client tends to use always the same tools, because if in the previous project it was happy it tends to propose the same methods.*

In this section the limited (outspoken) attention given to the preparations of stakeholder research has been highlighted, and it is suggested that the tools used are commoditised as most companies use the same. As attention can be assumed to be put on the parts of the design process which are not commoditised, it might be the case that preparations are not emphasised when the stakeholder research is discussed. Finally, the effect of the client on research preparation was shown.

4.2.3 Performing stakeholder research

Having established the perceived importance of research for service design, but also seen that preparation of research is not highlighted in a corresponding way, it is time to focus on how the stakeholder research is

Interviews with service designers

performed. When asked about which tools and techniques they use regularly, the interviewees almost exclusively answered that they use various qualitative techniques. Quantitative research is not done by the service designers; if they made use of quantitative material it usually originated from previous research by the client organisation. Most of the techniques used are contextual in their nature:

[Interview 9] *[User research] can take many forms, most of which are empathically contextual user research techniques.*

[Interview 11] *I firmly believe you get something very special out of doing contextual work, when you go into someone's context.*

A detailed listening of all the techniques which the participants stated that they use reinforces their statements about which kinds of tools and techniques they use. After grouping similar methods (e.g. observations and contextual observations) Table 3 was compiled, highlighting which tool families were used the most:

Table 3 - Research techniques for service design mentioned by at least 3 interviewees. n=number of interviews a technique in the group were mentioned in. The relationship of this table's contents to the tools suggested by textbooks is commented on in the study discussion below.

Technique	n
Interviews	9
Observations	8
Probes	7
Ethnographic methods	5

It is a quite short list, with rather vague descriptions – especially “ethnographic methods” (which is exactly what was said by the interviewees). This vagueness echoes the comment cited earlier about none of the techniques being something special, insofar that the interviewees probably would be much more specific on the tools used, if that is where they put their professional pride and identity (as could be hypothesised based on the importance given to stakeholder research). There is however a professional pride to be found in regard to research, but on a more emotional level; the interviewees in various ways express pride about their ability to know how to make people open up and to know what to listen for. Understanding this perspective, it is not a

surprise that all of the interviewees stated that they use textbook tools and techniques as inspiration rather than as a blueprint. A “methods are for tweaking”-perspective was shared by all participants, as illustrated by the quotes below:

[Interview 8] *Participant 1: We don't copy-paste from different people, from different companies one-on-one.*

P2: We are inspired by different methods.

P1: Sure, and we use parts of them.

[Interview 2] *You kind of have to be able to all the time in the real time stretch your method. That has been a really good learning experience for me. It's not like you can take from a book "ooh, this is the right way to do it".*

[Interview 7] *The research is more about getting people to talk. So we do whatever it takes to make them talk.*

This tweaking and appropriation of methods takes place due to many reasons. Some such as context, available participants, intended use and clients have already been introduced in various quotes in the last two sections. An additional, and very important one, is available time:

[Interview 10] *It's a trade-off of prioritising and being creative about what we can get from the right people in the amount of time that we have.*

Doing the best of the time available in most cases acts as a constraint on how the stakeholder research can be planned, but a few examples of cases where the designers had too much time were also shared with us. The cases of too much research were both cases of misjudgement of the time needed to gain insights from a place and requests from clients to do a larger amount of research than needed for the design process, so that the contact person at the client could use the research as leverage in the client's internal discussions. As stated earlier, it is more common that the designers wish that they had more time for research as echoed in the quote below:

Interviews with service designers

[Interview 1] *In most of the cases, [the time spent on stakeholder research] is too little. Because when we get to analysis, there is always a hole, there is always some bit of information we want more. I think what would be the ideal is doing a round of research, coming back, doing analysis and then going back out again into the field.*

Given the various and ever-changing constraints on stakeholder research for service design it is no surprise that service designers have taken a pragmatic approach to their tools and techniques. The service designers do what they think is the best thing in the current situation, and worry less about adhering to specific methods and tools. An additional example of the “whatever fits”-mentality came when the interviewees were asked about tools and techniques which had not been successful; only two participants shared a tool they did not want to use again and both based that judgement on their personal enjoyment of the tool (card sorting in both cases) rather than how well the tool worked in the specific case. The rest stated that although research techniques sometimes failed them, it was rather a case of the wrong tool for the job than a non-functioning tool.

In short, the investigations into the tools used for stakeholder research showed that there is a small set of tools used by many service designers, all of them qualitative. These structured tools and techniques were seen as inspiration for finding an appropriate approach for the current project rather than being the recipes most textbooks describe them as. This meant that the service designers were open to changing the tools as they saw fit to be able to achieve the intended outcomes of the stakeholder research.

4.2.4 Intended outcomes of stakeholder research

By now the importance of stakeholder research and the service designers’ tweaking-approach to the basic tools and techniques has been established. One important question still remains unanswered though; what are the intended outcomes of the stakeholder research? There are two connected answers to this question, one relating to the design work which will be done and the other relating to the communication of the design process and solutions to the client.

As reported above, most service designers look to stakeholder research to provide them with inspiration for their upcoming design work. The ideal form of inspiration for the interviewees seems to be achieving empathy with the users. As the second of the two illustrating quotes below shows, the empathy is seen as understanding the users so well that it will give the designers insight into issues which might not even have been touched upon in the research:

[Interview 1] *This woman was in for a particular kind of test, so she had to give blood and then wait for an hour, and then give blood again and then wait for an hour and then give blood again. So we sat with her and understood how painful that experience was, like not the giving blood part but the sitting around for two hours' time.*

[Interview 11] *I would say that an ounce of empathy is worth so much more than a really well detailed marketing report, because a marketing report is almost always very specific. It got certain things and it tells you percentages of what happened or who does what. But empathy is something, which once you have it you can take it as a designer and apply it in almost any situation that comes up for your customers. It actually lets you deal with the uncertainty and complexity.*

This quest for empathy leads to the adaption of research techniques illustrated in the previous section. The service designers choose tool as they see fit to achieve their intended outcome:

[Interview 2] *Actually, if it's about empathy I have to kind of create my own way of, how to be able to use the empathy.*

But to be able to achieve empathy in the first place you need to see and experience what the users see and experience. This has led to that the common practice amongst the interviewees is for the designers to take part of the research themselves (although it might be led by research specialists). Several interviewees also stated that they have taken this approach one step further and have agency-internal rules stating that everyone who is involved in a project has to partake to a certain degree. Some also bring their clients as assistants during the research so that key members of the client organisation experience some degree of empathy with the users:

Interviews with service designers

[Interview 4] *I think that if you're able to follow the whole [user research] process its better. [...] You can remember: "Oh, yeah in the interview my user say this this".*

[Interview 11] *I try to have someone from my client team on every single contextual session. And not the same person, but have several different persons come, so the whole team has some kind of really visual understanding of what we were seeing and what was happening.*

The designers know that the input needs to be analysed to provide actionable insights which can be communicated to the clients. This means not taking everything at face value, but rather being able to see the reason for why the users say certain things even if they do not see it themselves. A distinction made by many interviewees in regard to this is the distinction between information and insight.

[Interview 1] *A lot of the work that we do is in translating all of the information into real usable insights.*

[Interview 3] *It is in synthesis we translate the observations into insights. The insights usually are more high-level compared to the observations. So five interesting observations are merged into one insight. (my translation)*

[Interview 6] *We explain this in three words usually, which are immersion, insight and ideas. You could see these as stages although we like to mix them a bit as well in the process. But immersion is that you immerse yourself in the world of the people you design for, to discover what matters to them. And insight is that you create insights from this experience of the immersion. That you really look behind the practices that people have, also to their motivations for instance. And try to really understand why people behave like that. That's the insights.*

Bringing the clients into the field so that they can gain empathy however also comes with a risk. As shown when the two designers in interview 1 expanded on their initial comment later in the interview, it may however be tricky to make the clients understand the need for this translation process. If the clients not are used to working with qualitative methods, there is a risk that they will accept what is said by users without reflection on why that might have been said:

[Interview 1] *Participant 1: Where the talent & skill comes down is in analysing the research and synthesising that to strategy and frame. And that is a very difficult thing, I found that difficult to explain to clients - how you make the link.*

P2: That is because information is not equal to insight.

P1: Exactly. Exactly. That's the thing. Whereas clients will be like, one thing will be said by a customer and the client will like the answer and cling on to that.

P2: Yeah, that's another thing the customer doesn't often give you the answer they just give you clues to what could make a good answer.

P1: And clients love the tangible, and think that is the answer.

One of the ways to overcome this hindrance in the clients' understanding coincides with the most used way to communicate the insights; by creating visualisations. It was found that the interviewees all deemed their visualisation skill as crucial, or as interviewee 11 put it:

[Interview 11] *We don't do research reports [...] I sort of operate by a law: "The effectiveness of a piece of research is sort of inversionally proportional to how thick the binding is".*

The use of visualisations as a way to communicate insights became the other main point for analysis of the interview data, and the outcome thereof is presented in the next section. To conclude this section, the interview study has shown that the user-centred design approach is at the heart of service design. Being able to do stakeholder research thus becomes a key element to service design. The service designers primarily see the users as inspiration for the design work, and thus steer the research efforts towards gaining empathy for the users. This is done by building on existing methods, but constantly tweaking them as to help the team members gain empathy. Once empathy is achieved it is used to drive the design work. Put in the words of one of the interviewees:

[Interview 9] *We use research to help us generate ideas and to help us validate ideas.*

4.3 Focus: Communicating through visualisations

The analysis of how the interviewees claimed to communicate the insights from their stakeholder interactions was set up somewhat differently than the analysis of the rest of the interview material. A set of research questions were prepared up, and the mode of analysis was

adapted to answer each question in the best possible way. The research questions and the approach taken to answer them were as follows:

To what degree are visualisation techniques used by service designers and what are they based on: The question was answered by quantitatively counting the answers of the interviewees on the direct question “Do you visualise the data you have collected?”. The process of finding what the visualisations are based on was primarily based on responses to one question “Do you choose type of visualisation depending on the data you have collected, or do you look for certain types of data to be able to fit it into a preferred way of visualising?”, and it was complemented by discussions interviewees held based on other questions.

In which stages of the design process do service designers use visualisation techniques: To answer the question, all visualisation techniques mentioned throughout the interviews were mapped onto the corresponding section of the model used for analysis support (see below). The balance between the various segments then provided a visualisation of its own, describing in which stages of the design process the visualisation techniques are used first.

What types of visualisation techniques are used by service designers: The segmentation from the previous question was then used as the base for a clustering of the various visualisation techniques that are used by service designers. A separate clustering of visualisation techniques was done within each section of the model used for analysis support. The various clusters found were given names based on their characteristics.

For what reasons are visualisations used in service design: The question was answered by mapping the reasons stated by the interviewees and then grouping them together according to themes in the answers.

Which factors influence the choice of visualisation type: The influence on the kind of visualisation type was asked by a direct interview question, and the analysis aimed at finding the common aspects in the interviewees' answers.

Are there any patterns in choices of visualisation type based on the underlying reason for visualising: The last research question was answered by performing a meta-analysis of the results of the earlier research question. The various answers were matched together to find patterns which the interviewees might not be aware of themselves.

4.3.1 Analysis framework

In framing the results found in the study the Analysis-Synthesis Bridge Model (henceforth ASB model) was used. It was suggested by Dubberly, Evenson, & Robinson (2008) as a way of describing the design process. It was deemed as an appropriate model as the goal of the model is to capture the connection between the analysis and synthesis phases in the design process, which the creators of the model felt were missing in earlier models (see Dubberly (2005) for a wide range of other models). Figure 5 outlines the ASB model.

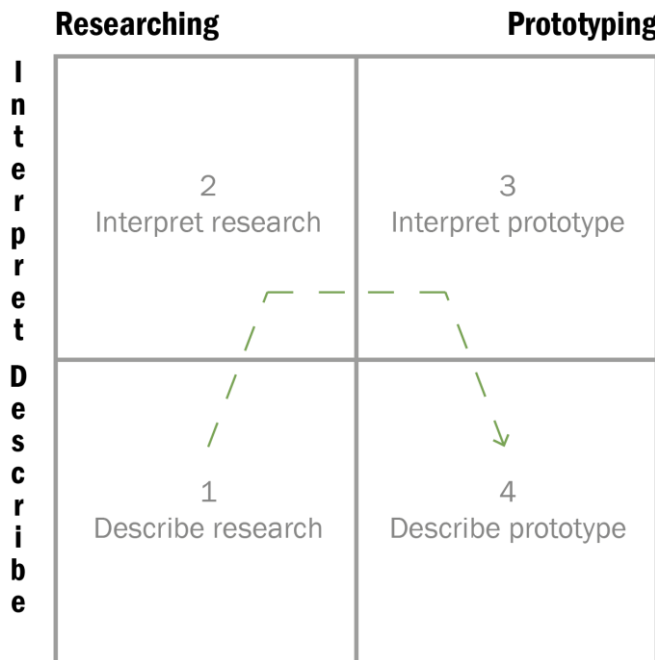


Figure 5 - The Analysis-Synthesis Bridge Model with its four sections numbered according to their placement in the design process.

The model is constructed as a two-by-two matrix where the flow starts in the lower left corner and ends in the lower right corner. The left hand

side is labelled “Researching” and the right hand “Prototyping”. These two labels also correspond to the analysis and synthesis in the name of the model. The top row of the model is labelled “Interpret” and deals with the designer’s abstractions of the world, whereas the bottom row is labelled “Describe” and deals with the concrete.

The schema proposed in Dubberly, Evenson, & Robinson (2008) can be used as a way of structuring visualisation techniques. The left column is of most interest to the work presented here, and the move from field 1 to field 2 is described as follows: “We make sense of research by analysis, filtering data we collect to highlight points we decide are important” (Dubberly, Evenson, & Robinson, 2008, p. 57).

4.3.2 Findings

The result section is divided into sections for each research question, presented in the same order as previously.

4.3.2.1 *To what degree are visualisations used?*

As a part of the interviews the participants were asked whether they visualise the findings from their user research in any way, and all but one answered that they did. Interestingly enough, the interviewee who claimed that he did not visualise the findings, later actually mentioned various techniques for visualising data (such as personas) as a part of his regular tool kit. Most respondents seem to perceive visualisation as a part of the design process.

When asked what their choice of visualisation was influenced by, most interviewees claimed that the nature of the data collected decides how to visualise the findings. Interestingly, a few interviewees stress the importance of choosing the visualisation technique based on what they perceive as the most effective way to communicate their findings to their client organization. Others have developed ways of co-creating the visualisations with their clients, using these techniques almost exclusively. No one claimed to try to find data to fit certain preferred ways of visualising.

The findings above clearly show that visualisation techniques are, if not universally, almost universally claimed to be used by service designers. There are, however, differences in regard to which criteria these

visualisations are based on. The nature of the data is claimed to always play a major role in creating a good visualisation.

4.3.2.2 *In which stages are visualisations used?*

Throughout the interviews, a total of 57 various techniques were mentioned, with 89 instances of a technique being named. Note that only techniques mentioned by exactly the same name were integrated to one technique. To help understand when in the service design process the visualisation first can be used the ASB model was used. Every technique was analysed in regard to what it is used for, and was then placed in the section of the ASB model where it could be used for the first time. As an example customer journeys are first used in the *interpret research* stage, as it is made based on service designers' abstractions of their analysis results. Table 4 shows how many tools were sorted into each quadrant of the ASB model.

Table 4 - Numbers of techniques found spread across the ASB model

	Researching	Prototyping
Interpret	40	3
Describe	13	1

These numbers show that about two thirds of all visualisation techniques in the study can be used for the first time in a project to interpret data in some way. Naturally, many of the techniques can be used at later stages as well – a description of the existing (interpret research) and the suggested (describe prototype) service is likely to be formulated in similar ways.

4.3.2.3 *Types of visualisation techniques used*

Continuing on the work done to answer the previous research questions, the various visualisation techniques were sorted into tool families. This was done by grouping the various tools from each quadrant in the ASB model according to how similar they were. Using the customer journey as an example again, it was grouped into the tool family *journeys* together with tools such as scenarios, experience journey and journey mapping. In total, 17 tool families were identified in this process. Table 5 on the following page lists the tool families identified, including the various techniques which are included in tool family. The numbers refer to how many times a tool in the family had been mentioned by an interviewee.

Interviews with service designers

Table 5 - Groups of visualisation methods found listed with the sum of instances named.

Group	Technique	n	Group	Technique	n
Interactions	Interactive story	1	Pre- modelling	Preparing workshop tools	1
Σ 2	Interactive session	1	Σ 2	Metaphors	1
Drama	Acting	1	Process	Use-cases	1
Σ 3	Enacting personas	1	Σ 2	Process map	1
	Role play	1	Sensitising	Moodboard	1
Highlighting	Critical service moments	1	Σ 2	Coffee table books	1
Σ 5	Opportunity map	1	Synthesis	Conceptual mapping	1
	Vignette	1	Σ 4	Frameworks	1
	One-liners / Quotes	2		Post-its in project rooms	1
Journey	Illustrations	1		Synthesis of observations	1
Σ 17	Customer journey	6	Presentation	Diagrams	1
	Experience journey	1	Σ 6	Schemes	1
	Stakeholder journey	1		Functional analysis	1
	Journey mapping	1		Data clustering	1
	Layered journey mapping	1		Tree structures	1
	Scenario	4		Blueprint	1
	User scenario	1	Props	Actionable artefacts	1
	Sketches	1	Σ 2	Tangibles	1
Persona	Persona	9	Prototype	Prototype	2
Σ 10	Portrait	1	Σ 2		
Material	Video from research	1	Media	Film	6
Σ 3	Photo from research	1	Σ 10	Photo	2
	Sounds from research	1		Sounds	1
Narratives	Story	3		Websites	1
Σ 12	Comics	1	Compiling	De-brief documents	1
	Narrative	1	Σ 4	Video blog	1
	Posters	1		Blog	1
	Storyboard	4		'Normal research rapport'	1
	Pictures+text	2	Testing Σ 1	Mock-up	1

Among the 17 tool families one was excluded from further analysis; Media. The reason for this was that the characters of the mentioned techniques under this heading either are so general that they can be used to represent several different things, or are to be considered as vehicles for presentation of visualisations and not visualisations of their own.

As the tool families originated from the sorting of techniques into the ASB model, the tool families can also be mapped into the ASB model. The position of the tool families in the ASB model are visualised in Figure 6, where the sizes of the bubbles indicate the number of methods included in the group.



Figure 6 - Visualisation tool families. The size of the bubble indicates the number of times a tool in the tool family was mentioned.

As can be seen in Figure 6, the majority of the groups found are located in the “Interpret Research” section of the ASB model. As the names indicate, the various groups in this section have a somewhat different nature – some are tools for translating raw data into more accessible data and some aim to communicate insights.

4.3.2.4 Motivations for visualisations in service design

To find the main reasons for professional service designers to use visualisations, all reasons for visualising stated in the interviews were compiled. In total, 20 different lines of arguments were found in the interview material. These 20 arguments were sorted into piles based on what the focus of the argument was. Three main motivations to visualise emerged from this process. Figure 7 below lists the 20 arguments and their relation to the three motivations to visualise.

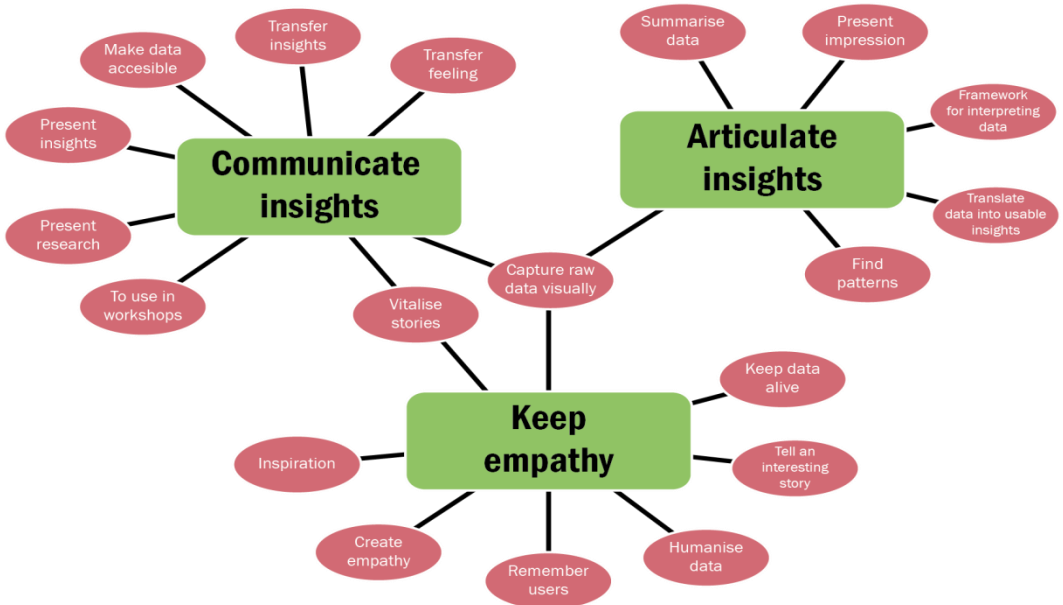


Figure 7 - Reasons to visualise insights.

As the figure shows, three main reasons emerged from the data: to help the service designers formulate insights from the user material collected, to communicate these insights to their clients and as a way of keeping the data ‘alive’. Out of the 20 reasons to visualise, 17 could be mapped directly to one group; two were connected to more than one group. These two were ‘Vitalise stories’, which relates to both keeping empathy and communicating insights and ‘Capture raw data visually’ which relates to all three groups. The final argument can be seen as a summarisation of the other 19: ‘It depends on the goal’.

4.3.2.5 *Influences on the choice of visualisation type*

When it comes to influences on the choice of visualisation type, the interviewees give two main reasons; the nature of the data collected and the goal of the visualisation. The goals vary in many ways as can be seen in Figure 7 above. The two reasons may be broken down even further, as the communication of insights might be aimed at the client organization just as well as to participants in co-creation workshops. Interviewees also stress the difference in nature of the visualisation in regard to whether they are meant to be viewed by external persons or to facilitate the process within the design team. Visualisations directed towards external persons are usually made simpler and more aesthetically appealing than internal visualisations which are often left complex and crude in their style – it may be as simple as a wall of post-its.

The nature of the data influences in multiple ways as well – different projects lead to different ways of collecting user input. Some projects may support recording of video material, whereas others not – something which naturally has a major impact on how the data later is visualised. The other way is related to the content, rather than the shape, of the data. When improving on an existing service, making a service blueprint of the current situation might help the understanding of the context as well as identifying design opportunities, whereas creating a new service requires other approaches, such as future scenarios.

4.3.2.6 *Patterns in choice of visualisation type*

When investigating the visualisation techniques used, it was found that the interviewees universally claimed to let the data and the goal of the visualisation influence how user input was visualised, rather than choosing to fall back on preferred ways of doing things.

However, a look at the tabulation of visualisation techniques listed above (see page 64) gives the impression that there is a basic set of visualisation techniques for service designers. A renewed and expanded look at the categories of techniques further strengthens this impression.

If the number of companies mentioning a technique in a category is added, one can see that there are a few basic techniques which most

Interviews with service designers

companies use, such as customer journeys and personas. Additionally, a long tail of types of visualisations only used by a small number of companies exists.

An adaptation of the table from page 64, with the tools used for prototyping removed, is presented in Table 6 below. The table is extended with the number of companies that mentioned a technique within each category.

Table 6 - Visualisation techniques for research interpretation, total number of times they were mentioned and the number of companies mentioning them.

Category	Total	Comp.	Category	Total	Comp.	Category	Total	Comp.
Journeys	17	11	Highlighting	5	5	Co-creation	2	2
Narratives	12	8	Compiling	4	3	Pre-modelling	2	2
Personas	10	9	Synthesis	4	3	Sensitising	2	2
Media	10	6	Drama	3	3	Process	2	2
Presentation	6	4	Material	3	2	Props	2	1

4.4 Discussion of study results

The goal of the interview study was to gain an initial, academic, understanding of how practicing service designers go about understanding the stakeholders of the service being designed. Below, some of the main insights from the study are discussed.

First and foremost, the confirmation that service design is seen as human-centred design discipline by its practitioners needs to be reiterated. Given the wide range of different roles of those affected by the efforts of the service designers the material however points to that the most fitting terminology is to talk about stakeholder-centred design. The reason the service designers engage with the stakeholders is to get inspiration for their design work.

4.4.1 Stakeholders as inspiration

When the designers engage with a service's stakeholders for inspiration they primarily do so to get a feeling for the motivations, attitudes and feelings of the stakeholders. That is, the designers want to understand the stakeholders in such a way that they can emphasise with them. The interviewees feel that when they achieve empathy they gain such a deep knowledge about the stakeholders that they can envision how they

would react and feel in situations which might not have been discussed during the research sessions. It is important to remember that these stakeholders can be have many other roles than customer, one of the most important being the client's employees and the circumstances under which the client organisation operates.

The empathy can serve as inspiration for design no matter which direction the design work takes according to the service designers interviewed. To be able to achieve this empathy it is important that service designers themselves partake in the stakeholder research, so they have had first-hand contact with the stakeholders.

If possible, several of the interviewees also bring their clients with them to the research sessions. They argue that the better understanding the clients have of the stakeholders' attitudes, the better they will be able to evaluate the design solutions put forward to them at the end of the project. Some of the interviewees even had outspoken plans for involving as many key employees as possible from their clients so that the client's overall understanding of the service increased.

Having met the various stakeholders does however not mean that the stakeholder research part is finished. The service designers in the study stress the importance of being able to filter the information gained. A clear pride could be seen in the skill to transform information into insights, and it was stressed that the real inspiration could be found in the insights. The analysis and formulation of insights is often supported and/or done through the development of visualisations. A majority of the visualisation techniques mentioned in the study can be used to interpret research results. That is, the visualisation techniques suggested by the designers are not only used as tools to map and describe what is, but rather serve the purpose of interpretation and understanding of the data collected throughout the stakeholder research.

To summarise, actionable insights and empathy is the inspiration the service designers' look for when they perform their stakeholder research.

4.4.2 Tools for stakeholder research

So which tools do the service designers use for gaining this empathy? Interesting, it was found that most interviewees had difficulties in articulating their approach well in the interviews. The interviewees had an easier time in explaining which factors and constraints there are which influence choice of research approach; among the more common ones were available time, learning goals and the client's predisposition towards certain tools.

A large overlap exists between the tools which the designers claimed to use and the tools suggested by the overview of textbooks in chapter 3. The one thing which the service designers did mention, which was not listed in the textbooks was "ethnographic methods". Interestingly, the arguably most common techniques when doing ethnographic work (interviews and observations) were also mentioned by the interviewees. Likewise, these techniques were also present in the textbooks cited. There are several reasons for why the service designers state that they use ethnographic methods and mention the most common techniques as well; the interviewees may have a weak understanding of what ethnography truly means and just mean in-situ research (as suggested by Dourish (2006)), the service designers might want to emphasise the qualitative aspects of their stakeholder research so much that they use many terms which refer to the same activity or the openness of the term makes it a good term for saying something without having to be to be to specific. These possible reasons will be discussed further in the thesis discussion in light of insights on service designer's approach to ethnography found in the other studies.

The list of tools and techniques which are used by several of the interviewees was rather short. This is probably linked to the "tools are for tweaking"-attitude held by the participants. This means that the formal tools described in textbooks and elsewhere are not seen as recipes for how to do the stakeholder research, they are rather inspiration for how things could be done. This inspiration is then mixed with previous experiences to form the approach used for specific projects.

Once the information obtained has been transformed into insights (sometimes with the help of visualisations and sometimes without) it is

time for the service designers to think about how to communicate the insights.

4.4.3 Visualisations as a communication tool

The interviews reveal that there are three main influences affecting the choice of how to design a visualisation of service design research: intended audience of the visualisation and the nature and content of the research data. The fact that the audience of the visualisation is very important for how the end result will look can also be noted in the fact that ‘communicate insights’ to clients is one of the three main reasons for creating visualisations, whereas the two other reasons are mainly directed at the design team.

Looking at which kind of visualisation types are used by the service designers, one can see that certain types are predominant among the answers by the interviewees, whereas most types are only used by a few. Journeys, narratives, personas and the use of data collected through visual and/or audio media seem to be the basic visualisation techniques of service design. Visualisations outside these groups are usually developed and used by only one company. A key difference between the basic visualisation techniques and the proprietary ones is that the basic techniques can be used to achieve more than one of the goals stated for which visualisations are created. The proprietary ones, however, usually only achieve one of the goals for visualising. Personas, for example, is a technique which can be used to achieve all three goals behind visualisation and thus becomes an effective technique (in light of this it is not surprising that persona was the single most cited technique in the interviews).

Reflecting on the role the three reasons to visualise have in the design process, one sees that they have distinct places in various parts of the design process. Creating visualisations to articulate insights helps members of the design team to externalise the results of their sensemaking of the user research (see Krippendorff (1989)), thus creating a common ground (Clark, 1996) within the design team. This helps the team to define the design space available for the particular project. In other words, the ‘articulating insights’-reason for visualising can be seen as *communication within the design team*.

Service designers also create visualisations with the aim of keeping empathy. This is a way of making sure that the user input is not forgotten throughout the design process. The fact that knowledge collected is forgotten over time has been known for a long time, just like the fact that people tend to remember information which fits their world view better (a classic example is Bartlett's 1932 experiment with the tale of Native American ghosts (1995)). If designers do not keep in touch with stakeholder input, there is a risk of ending up with self-centered rather than stakeholder-centered design (Pruitt & Adlin, 2006). Thus, being able to remember user data the way it was initially understood is important so that the final designs created always suit the users' needs and wishes even in the long run. In other words, the 'keep empathy'-reason for visualising can be seen as *communication with one's memory*.

As noted in regard to the influences on the choice of visualisation type, there may be various different types of receivers of information outside the design team (such as clients, workshop participants and authorities). The information directed towards these different groups may also have various aims (aims which can or cannot be met in a single visualisation) – creating and showing visualisation for clients might be a way of showing progress just as well as a way of grounding the design suggestions that are made at a later stage. In other words, the 'communicate insights'-reason for visualising can be seen as *communication with stakeholders outside the design team*.

Put together, this means that the different visualisations of stakeholder research serve the purpose of communicating the information collected, but with different recipients. In fact, Clark (1996, p. 153) states that: "To communicate is, according to its Latin roots, 'to make common', to make known within a group of people". And that is exactly what visualisations do when they translate stakeholder research insights into easily accessible formats.

5 Comparing ethnographic styles

As the literature on designers and user/human/stakeholder-research is filled with criticisms in regard to quality and misappropriations, it was seen as of interest to the thesis get a better understanding of how the design approach actually differs from other qualitative approaches. This study zoomed in on the oft-repeated argument that the ethnography done by designers not is proper ethnography. The differences between an (applied) anthropological approach and a designerly approach were investigated, by looking at how data was collected, analysed and presented.

A case was identified which simultaneously provided access to a large number of possible informants and constrained the field work so that as few external factors as possible could influence how, when and which kind of research could be done. Events in general were seen as a good candidate to fulfil these requirements. Having decided that the research should be done at an event, different events which were held at a good time for the research were surveyed. An advent fair in a historical environment was seen as the most suitable event as the environment added extra need to be in the context of the fair and had large attendance numbers. Thus, the organisation managing the environment in which the fair is held was approached to participate in the research.

Comparing ethnographic styles

They accepted and provided help with contacts with stakeholders, participant recruitment and a locale during the fair.

The fair was held in an area called Gamla Linköping (“Old Linköping”), which at the same time is an open air museum and a small neighbourhood where people live and work. The neighbourhood was constructed in the 1950’s as Linköping, like most other Swedish towns, was modernized in terms of building standard (Gamla Linköping, n.d.). The neighbourhood consists of houses originally built in other parts of Linköping, but instead of being torn down they were moved to Gamla Linköping. The neighbourhood is meant to give its’ visitors a feeling of what a Swedish town looked like in the early 20th century. Some smaller adaptations to modern life have however been made, such as opening up a gravel path in the streets to ease the pushing of trolleys and replicas of old houses being built.

The goal of the study was to compare how different the ethnographic styles of anthropology and design are given under as similar circumstances as possible¹⁷. Below, the selection of ethnographers and their chosen way of working is described. This is followed by a discussion on similarities and differences between the two approaches.

5.1 Social anthropology

For the anthropology perspective, two thesis students from social anthropology were recruited to be a part of the broader study whilst writing their theses. Both were supervised in their process by the head of social anthropology at the university where the study was conducted, and he also wrote a summarising report on their efforts of their studies reported here (Alm, 2012). The brief given to the anthropologists was applied in its nature¹⁸.

¹⁷ The study originally included a third approach, mobile ethnography, which is omitted in this thesis. This is due that mobile ethnography as an approach is closely tied to which tool (/app) is used, so it would be a matter of evaluating an app rather than the approach. Please see Segelström & Holmlid (2012a; 2012b) for details on the mobile ethnography part of the study.

¹⁸ The applied brief was given both to better match the applied nature of design work and with regard to that the short time frame of the project (from an anthropological perspective) would make a more academic project unfeasible time-wise.

The two anthropologists took very similar routes through their field work, albeit working individually (see Karlsson (2012) and Nyman (2012) for their individual reports). They quickly narrowed the scope of their study, to focus on a particular aspect of the fair experience. Figure 8 on page 77 provides a visual summary of how the anthropologists worked. As can be seen in Figure 8 the anthropologists' research plan had a clear funnel shape in contrast to the designers.

The anthropologists started as broadly as the designers, but they quickly narrowed down their scope, based on existing literatures within their respective general area of interest (one focused on shopping experience and the other on the effect the environment in which the fair was held on visitors). This process led them to the formulation of research questions which they set out to answer. The research questions were kept intact during the whole study.

During the same time period as they canvassed the existing literature, the anthropologists recruited three informants each. These informants were interviewed a few weeks prior to the advent fair, focusing on their relation to topics suggested by the literature and their research questions. The interviews were semi-structured. The audio-recordings of the interviews were then transcribed and a preliminary analysis was done, with the aim of verifying/falsifying what had been suggested by the literature and find reoccurring themes in the answers.

At the advent fair, the anthropologists did participatory observation with their three respective informants. They used the insights gained by the analysis of the initial interviews to help them focus on specific topics during these participatory observations.

After the fair, the observations were analysed together with the previously collected material, and the informants were interviewed once more for follow-up questions which came to light during the analysis. The final analysis was based on all the material collected and the insights therefrom were reflected against the existing literature. The analysis was driven by the search for patterned themes in the material, taking advantage of the differences between the various types of data which had been collected. The various data sources were used together to build a

Comparing ethnographic styles

stronger argument for the conclusions, showing how the conclusions were based on different types of input to the research process.

By working in this way the anthropologists managed to abstract their conclusions away from specific data points to larger trends in the material and still maintain the individual voices of their informants. One example was when one of the anthropologists noticed that all her informants complained about the presence of knick-knack at the fair, but upon further investigation she found that they all had different ideas of what actually constituted knick-knack.

Framing their analysis as they did, with the individual voices of the informants being important for the final analysis the anthropologists designed their research in such a way that synthesising the material never became a focus. The little synthesis which happened in the anthropologists' projects can best be described as a by-product of the analysis.

The anthropologists produced written reports to communicate their insights. The reports were text-based and presented the insights and how they related to the existing body of knowledge within the scope of the study. The focus of the reports was to describe human behaviour in the context at hand, in such a way that it fit with what can be seen as the goal of anthropology – to understand humanity by puzzling together many small pieces.

5.2 Design

For the design segment of the study, six master students enrolled in the final interaction design course on offer in their line of education (students were enrolled in either design or cognitive science master programmes) were recruited to do the study. As the common practice in design is to work in teams, the students were split into two teams. They were given the brief to develop concept ideas for interactive artefacts, based on the wishes and driving forces of the visitors to the advent fair. The user research and the presentation of it were stressed as a key learning moment in the brief. The two teams were not given any instructions as to how to conduct their research, which led to differences in between the two teams' field work.

Brief on how visitors to the advent fair experience it

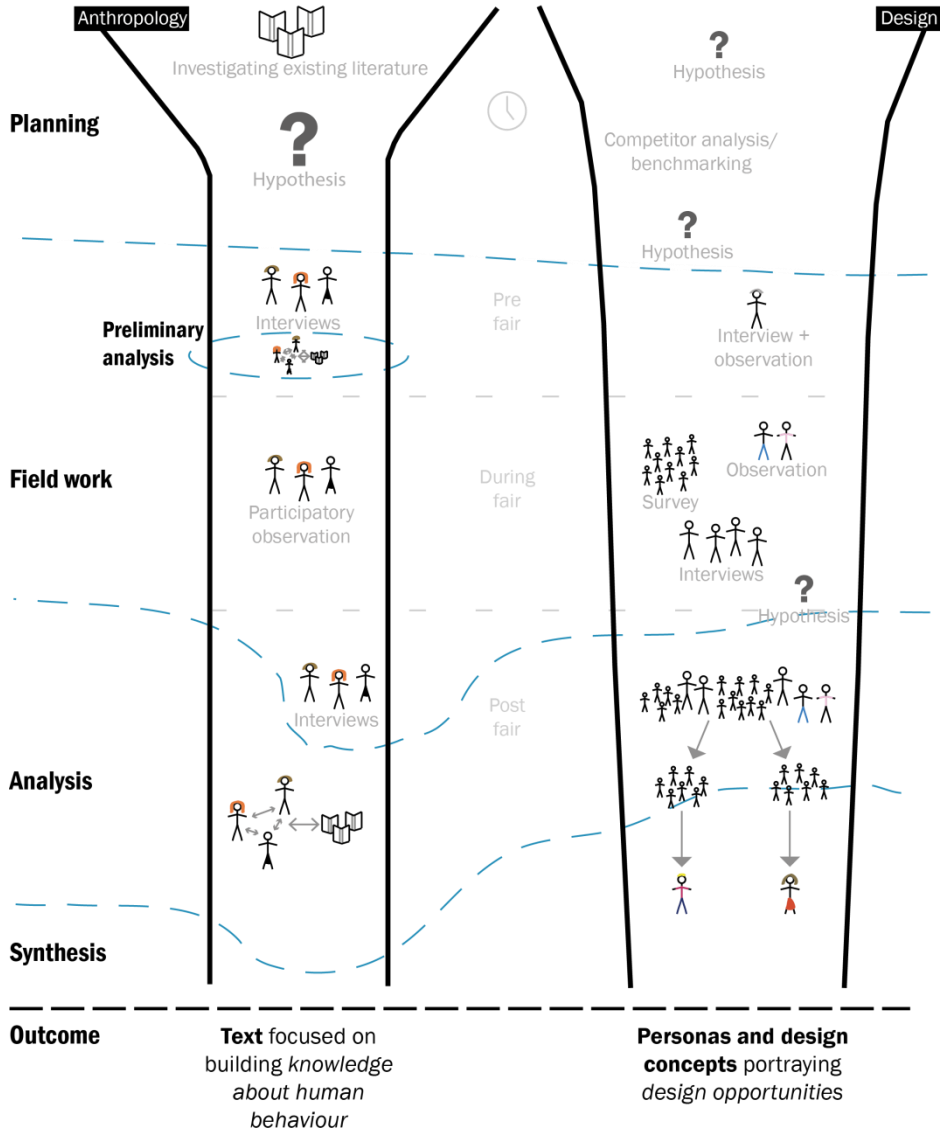


Figure 8- A visual comparison of the methodology chosen by the anthropologists and the designers respectively

Comparing ethnographic styles

Both teams started by formulating a hypothesis on what they thought could be interesting aspects to study. However, they did not see their hypothesis as something that should guide all the research efforts. The hypothesis was rather seen as an initial direction for their research which could (and indeed was) changed as research findings pointed towards other areas suitable for design ideas. This is reflected by the research funnel of the designers as depicted in Figure 8, which looks more like a cone than a funnel. Research findings helped the interaction designers to narrow their scope over time, but they never became as focused as the anthropologists in their research. The designers and anthropologists thus made different choices in the trade-off between flexibility and depth in their studies.

The two design teams took somewhat different approaches to what needed to be done prior to the fair. One of the teams researched other similar fairs and how they had solved the issues which the team had hypothesised would be interesting, which included making a visit to another regional fair together with informants. These informants were observed and interviewed while visiting the competing fair. The other team focused on formulating more distinct hypotheses and decided to concentrate on two user groups during the fair (young families and the elderly). Based on this, they formulated a questionnaire for each group.

Once the fair started, the group which had constructed questionnaires set out to get people to fill out their questionnaire. After the first day of the fair they had however only reached a fourth of the amount which they were aiming for in total, which made them change their approach the second day. Instead they opted to do undirected observations at the fair's second day. The team which had done benchmarking and competitor analysis repeated their research approach from their visit to the competing fair, doing a combination of observation and interviews with a group of friends which visited the fair. Additionally they approached fair visitors to do short structured interviews with them.

After the fair the two teams went straight into analysis-mode. Both teams relied heavily on their interview/questionnaire data in their analysis, one team even stating that “we’ve only used a small section of the observational data” (author’s translation) in their project report. The

analysis processes of both teams focused on finding patterns in their material. The patterns identified served as bridges from analysis to synthesis. Both teams synthesised their information into personas/user profiles, depicting typical fair visitors according to their research. This result of the synthesis was given a higher importance than the rest of their insights when the teams presented their research efforts.

The designers' focus on synthesising their insights had the effect that the outcomes of the analysis and synthesis were very different compared to that of the anthropologists in regard to the nature of the material presented. There was no attempt to abstract the findings into a larger context; rather the aim was to pinpoint the design opportunities for this specific fair. Also in contrast with the anthropologists, the individual voices of the study participants were nowhere to be seen in the material presented.

When reporting on their projects a mixture of visual tools and texts were used by both teams; the personas and user profiles the core of their reports together with their design concepts. This was supported by explanatory text, going into more detail. The personas/user profiles all hinted at design opportunities, which the design concepts then took up and proposed solutions for. The goal of the ethnographic work was to find design opportunities, both by improving current solutions and by finding new ones.

5.3 Study discussion

To summarise the results from the study, we see that the designers and anthropologists use the same techniques in similar fashion to conduct their ethnographic work. The main difference lies in what is seen as the goal of the ethnography, and how the input from the participants is treated. This means that the procedural differences are the clearest once the ethnographic material has been obtained, in how it is analysed and synthesised.

In the case of the anthropologists, they want to describe behaviors and make mental models apparent based on a very specific focus of the study. This narrow focus made it possible for the anthropologists to go deep into the worlds of their informants and to get an understanding which was abstracted from their informants while still maintaining each

Comparing ethnographic styles

informants perspective on the issues discussed. The focus of the post-data collection work for the anthropologists was to make the analysis true to the informant's voices and produce an ethnographic text where the informants and their opinions were placed in a larger, descriptive, context. This is in line with the anthropological tradition.

Looking at the designers, we can similarly see how the overarching aim of their fieldwork (guided by the theoretical commitments of design) affected their methodological choices throughout the project. Their ethnographic work was directed at getting actionable insights; the initial focus was open to change at any time if the fieldwork pointed to more promising areas for future design work. This openness meant that the studies did not go as deep into any single aspect of the visitors' experience of the fair as the anthropological studies did. On the other hand the designers studied more aspects of the fair. Their post-data collection work likewise focused on getting actionable insights for design, which meant that synthesis became the main focus in the processing of the material. This also meant that individual informants disappeared from the material (and the commonalities between various types of fair visitors were highlighted). The synthesis is however not seen as an end-goal, it is used as the inspiration for the design work, and later on as the guarantee for the relevance of the design solutions.

With these differences in mind, it is time to return to one of the motivations for the study – to understand the relationship between ethnography for design and more traditional forms of ethnography. To understand this, one needs to decide what doing ethnographic work means. One could go by the definition of Radcliffe-Brown (quoted on page 32) – ethnography as the study of non-literate peoples –, design ethnography not is ethnography but neither would most modern anthropology be. A delimitation focusing on activities rather than objects of study is presented by Michael Agar in his popular textbook on ethnography “The professional stranger”. Agar (1996) suggests the use of a student-child-apprentice learning role and the search for patterns as the defining qualities for ethnographies. The latter of the two is something which the study showed that the designers are very strong in, and in some sense even excel in as finding the patterns is their gateway into the next section of the design process.

The use of an apprentice role is however not as clear in design as in anthropology. The results obtained here indicate that the designers talk to a larger number of informants, and also were less confident in making use of observational data. An early description of the emerging field design ethnography described it as follows:

Design ethnography is a way of understanding the particulars of daily life in such a way as to increase the success probability of a new product or service or, more appropriately, to reduce the probability of failure specifically due to a lack of understanding of the basic behaviors and frameworks of consumers. (Salvador, Bell, & Anderson, 1999, p. 37)

Taking the first part of the quote (“understanding the particulars of daily life”) and putting it in the context of ethnography as apprenticeship offers an explanation to where the apprenticeship is in design ethnography. Designers do not take an apprenticeship with a single/few informant(s) but rather in relation to a large group – to extend the apprenticeship metaphor it can be said that designers rather go to normal schools/universities than learn from a master. This of course lessens the chance of learning from the very best masters, but also the risk of learning from the worst masters. The learning is spread out over a number of teachers, which both lessens the impact of a bad teacher and the rewards of a good teacher. Considering design’s goal of changing what has been studied this is a sensible adaption of anthropological ethnography.

This study thus points out that the version of ethnography practiced by designers does belong in the family of ethnographic approaches which exist today. It is however not ethnography as practiced by anthropologists, and given the difference in goals for doing ethnography in the two disciplines, neither should it try to be. This finding is in line with what has been argued by van Veggel and Tunstall.

The establishment of design ethnography can hopefully lead to that the old question “is it really ethnography?” can be put aside, allowing for a focus on developing its own tools. Design ethnography should however make sure not to forget lessons learned throughout the history of anthropological ethnography. As stated by Polaine, Løvlie and Reason

Comparing ethnographic styles

(see page 36) designers need to be aware of the long ethnographic tradition in anthropology and other disciplines such as sociology and make sure (to continue) to learn from methodological advances made there, whilst remembering the specific goals of ethnography for design¹⁹.

¹⁹ This argument is developed further in Segelström & Holmlid (submitted). In it, potential gains and pitfalls in the development of design ethnography are discussed in the context of the study presented in this chapter in relation to research through artefacts such as design probes or smartphone apps.

6 Analysis of visualisations

Having understood the importance given to visualisations in communicating insights to clients and within the design team through the interview study, the follow-up question of what the visualisations actually communicate arose. A study was thus set up to investigate the communicative qualities of various types of visualisations. Four different theoretical frameworks were selected and the visualisations were tested against which traits could be expected according to the frameworks. Visualisations from live, commissioned projects were used.

This chapter starts with an introduction to how the data was collected. The second section presents the theoretical frameworks used in this study, followed by a description of the methodology of the study. Thereafter the results are presented. Finally they are discussed in the chapter's final section.

6.1 Data collection

Visualisations were collected via two sources; material shared by service design consultancies and through creative commons-licensed material available on the Internet.

At the beginning of the study a number of service design consultancies were approached with a question in regard to whether they would be willing to share the visualisations they had produced in projects with their clients. Four consultancies did share their material; from two of

them employees had participated in the interview study. Two of them did not participate in any other study for this thesis.

Additionally visualisations were collected online. The selection criteria for these visualisations were that they had to have originated from service design consultancies and be creative commons licensed. Most were found through the Service Design Tools-website (Tassi, 2009), which explains service design tools with the help of community submitted examples.

In total 18 visualisations were used in the analysis, submitted to the thesis author between November 2009 and January 2010.

6.2 Analysis

The analysis started with sorting the collected visualisations into categories based on similarities in their appearance. A total of six categories were identified, these were (with the number of visualisations in each category in brackets):

- System maps (3)
- Personas (3)
- Blueprints (4)
- Desktop walkthroughs (2)
- Customer journeys (3)
- Storyboards (2)

Thereafter, the visualisations were analysed with the help of the frameworks. The appraisals were done by two persons, the thesis author and his main supervisor (Stefan Holmlid). An analysis schema was created for each analysis framework (both schema and frameworks are introduced in the next section). The same procedure was followed for all four frameworks and consisted of two iterations per framework.

The first iteration consisted of appraising every single visualisation separately. With the analysis schemas as guidance the two judges appraised one category jointly to establish a mutual understanding of the scale and criteria. Thereafter they analysed the remaining five visualisation categories independently. The results were added in a joint spread sheet.

The second iteration was to create an overall appraisal of each category, based on the individual appraisals. This iteration was done together by the two researchers. The appraisals of the different visualisations were presented and discussed, and a category level appraisal was decided on based on the appraisals of the individual visualisations and discussions.

6.3 Analysis frameworks

The study evaluates the visualisations according to four different frameworks. This section introduces the frameworks. A variety of service-related frameworks are used to analyse the material: results from the interview study, the findings by Diana, Pacenti & Tassi (2009), IHIP and service dominant logic.

6.3.1 Framework: Interview study

The findings from the interview study were used to create a framework for analysis. The visualisations were tested in comparison to the three reasons stated by the interviewees for visualising (see page 66). The three reasons are:

- To articulate insights
- To keep empathy
- To communicate insights to stakeholders

For each of the visualisations a question was formulated, and answered by one of four alternatives (very high, high, low and very low):

- To what degree are insights articulated by the visualisation?
- To what degree do the visualisations help designers keep up empathy with the users?
- To what degree are the insights communicated to stakeholders not included in the user research?

6.3.2 Framework: Diana, Pacenti & Tassi

The second framework used was based on the framework developed by Diana, Pacenti & Tassi (2009), previously presented on pages 43-44. One question each was formulated for both axes. The research questions were formulated as follows:

Analysis of visualisations

- Is the visualisation synchronic or diachronic? And to which degree, fully or mostly?
- Is the visualisation abstract or realistic? And to which degree, fully or mostly?

6.3.3 Framework: IHIP

The IHIP-framework was introduced in the general background chapter on the development of service theory (see page 18). The framework is, however, somewhat adapted for this study. Only three of the four concepts were used here; intangibility, heterogeneity and perishability.

Inseparability was left out of the analysis as it was deemed to be omnipresent or non-present; if the service is produced and consumed simultaneously it will be a part of any visualisation and if the production and consumption are separated the visualisation will show this. Thus it is the nature of the service rather than of the visualisation that decides if a specific visualisation expresses issues of inseparability.

Three questions were formulated according to the same pattern: “To which degree does the visualisation represent and express the [service trait] aspects of services”, where service trait is exchanged for intangibility, heterogeneity and perishability. The scale for each trait was very strong, strong, weak and very weak.

6.3.4 Framework: Service dominant logic

The S-D logic perspective was introduced as a part of the development of service theory in the general background chapter (see page 19). The ten foundational premises of S-D logic, as listed in Vargo & Lusch (2008), were analysed in regard of their aspects of service delivery. Four out of the ten FPs were found to deal with service delivery, whereas the other six were of a higher level (such as FP1: “Service is the fundamental basis of exchange”). The four FP’s used as a basis for the analysis framework are:

- FP3: Goods are a distribution mechanism for service provision
- FP6: The customer is always a co-creator of value
- FP7: The enterprise cannot deliver value, but only offer value propositions
- FP8: A service-centered view is inherently customer oriented and relational (Vargo & Lusch, Service-dominant logic: Continuing the evolution, 2008, p. 7)

These foundational premises were adapted into five research questions (FP8 was split into separate questions for customer orientation and relationships):

- To what degree is the fact that value is created in use represented? *From FP7 and shortened as value-in-use.*
- To what degree is the fact that the value is co-produced²⁰ between service provider and service recipient portrayed? *From FP6 and shortened as co-production.*
- To what degree is the fact that goods function as distribution mechanisms for service portrayed? *From FP3 and shortened as goods as distribution.*
- To what degree is the fact that services are customer oriented portrayed? *From FP8 and shortened as customer orientation.*
- To what degree is the fact that services are based on relationships between service recipients and employees represented? *From FP8 and shortened as relationships.*

The questions were answered with one of four options ranging from very strong to very weak and entered into the analysis schema.

²⁰ Vargo & Lusch (2008) use the word co-creation in FP6, whereas co-production is used here. This is to avoid confusion for the expected main audience (service designers) as the word co-creation in service design usually is taken to mean the joint creation of the service structure. When Vargo & Lusch use the word co-creation they mean that the service is produced by the beneficiary and provider jointly as it is used. Somewhat simplified it can be said that what Vargo & Lusch call co-creation service designers would call co-production and the other way around (when Vargo & Lusch say co-production they refer to what service designers would call co-creation). For more on this terminology confusion, please refer to a blog post written by the thesis author available at <http://segelstrom.se/2012/02/co-creation-co-production-and-co-design-in-service-dominant-logic/> (Segelström, 2012a).

6.4 Results and result discussion

In this section the results of the analysis and a discussion of the specific framework-related insights are presented. The discussion on cross-framework insights are presented in the chapter’s final section. Here, the category summarisations are present – the interested reader can find the full results in Appendix C.

6.4.1 Framework: Interview study

In Table 7 below, the average appraisals are shown.

Table 7 - The aggregated appraisals for each category on the three reasons to visualise found in the interview study.

	System maps	Personas	Blueprints	Desktop walkthroughs	Customer Journeys	Story-boards
Empathy	Very low	High	Very low	Low	High	High
Communication	Low	Very high	Low	Low	High	High
Insight	High	High	High	High	High	Low

The analysis shows that service design visualisations provide a high level of insights. Although the argument for using visualisations to formulate insights was not stronger than the other arguments in the interview study (see page 66), this analysis shows that the visualisations are strong in communicating insights. It should be noted that the visualisations submitted to the study are selected by companies to show insights gathered. Still, the basis for a visualisation which is finalized and shown to clients will have to be the insights which the designer feels are important. The material thus indicates that insights are the foundation on which visualisations rest.

The two other main reasons to visualise – to keep empathy and to communicate to stakeholders – received more varied appraisals in this study. The appraisals for the two follow each other closely however, but with the communication to stakeholders aspect receiving slightly higher appraisals overall. The somewhat higher judgements for the communication aspect could be a result of the fact that the visualisations originally had been prepared for stakeholders rather than to keep empathy within the team. This conclusion is also supported by interview results (see page 67).

As can be seen in the tabulation of the most commonly mentioned techniques from the interview study (see page 67), there is a connection between the top scoring categories in the interview study and this study. The three categories herein with the highest overall scores in the analysis (both on category and individual level) are personas, customer journeys and storyboard. In the interview study the most cited techniques are customer journeys, narratives (to which storyboards are sorted) and personas. Thus, there is a correspondence between the techniques service designers as a group claim to use the most and the techniques that to the furthest extent deliver on the motives behind creating visualisations.

6.4.2 Framework: Diana, Pacenti & Tassi

Since Diana, Pacenti & Tassi (2009) use a matrix to present their results, the analysis of the visualisations built on their framework utilises their matrix as a basis. The matrix has been adapted to include the results from the analysis.

However, before the matrix is presented an example is provided on how the placement of the six visualisation categories was done. The individual appraisals of both judges were placed in a table. Table 8 below gives an example of the appraisals of the visualisations in the system maps-category:

Table 8 - Results from the individual analysis of each visualisation in system maps according to the Diana, Pacenti & Tassi (2009) framework.

System maps		Fully	Mostly	Mostly	Fully	n/a
Time	Synchronic	4	2			Diachronic
Iconicity	Abstract	4	2			Realistic

As can be seen, the system maps were deemed as fully or mostly synchronic as well as fully or mostly synchronic. The appraisal scale was translated into numerical values (1 for fully synchronic/abstract, 0,5 for mostly synchronic/abstract, -0,5 for mostly diachronic/realistic and -1 for fully diachronic/realistic). Based on the individual appraisals of each category, an average value on the two axes was calculated (e.g. system maps would be 0.83 on both scales as $((4*1)+(2*0.5))/6 = 0.83$). The

Analysis of visualisations

marker for the first category is thus placed at 0.83 on the time axis (close to synchronic) and at 0.83 on the iconicity axis (close to abstract).

Figure 9 shows the adapted matrix with the visualisation categories placed on the points indicated by the analysis. Table 9 gives an overview of the exact average values of the six categories.

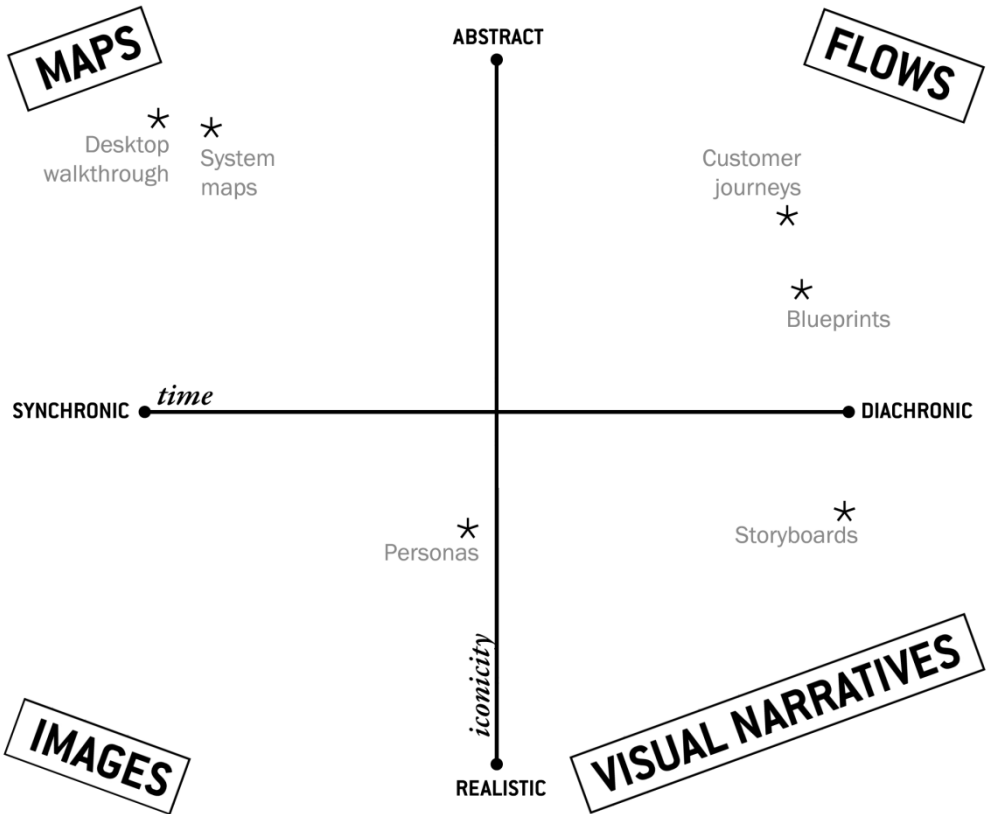


Figure 9 - Matrix from Diana, Pacenti & Tassi (2009) adapted to include the placements of the visualisation categories based on the analysis.

Table 9 – Average values of the visualisation categories based on the analysis according to the Diana, Pacenti & Tassi (2009) framework.

	System maps	Personas	Blueprints	Desktop walkthroughs	Customer Journeys	Storyboards
Time	0.83	0.1	-0.88	1	-0.83	-1
Iconicity	0.83	-0.33	0.38	0.88	0.58	-0.25

Based on the mapping in Figure 9, one can easily create a list of the visualisation techniques analysed according to the four types of visualisation techniques proposed by Diana, Pacenti & Tassi (2009) (see page 44 for their list):

- **Maps:** system map, desktop walkthrough.
- **Flows:** blueprint, customer journey map.
- **Images:** persona.
- **Narratives:** storyboard.

Four techniques are represented in both this and the original study — system map, blueprint, customer journey map and storyboard. All four are placed in the same type by both sources.

In the iconicity-scale there is a skew towards abstract visualisations in the available material. An explanation could be that visualisations by their nature already are abstractions of reality, in one way or another. Working with already existing abstractions, designers perhaps use more of icons, symbols and less realistic materials. The material at hand somewhat supports such a hypothesis as there are several visualisations which could have been created by using more realistic materials as well. This stands in contrast with previous research, showing that designers prefer more realistic material if given the choice (Sleeswijk Visser, 2009).

Scrutinising the material further, it is apparent that the two categories which were appraised as mostly realistic, personas and storyboards, also were two in which the communication to stakeholders was deemed as stronger than the communication of insight. This is interesting as they both belong to the most widely cited techniques in the interview study. This means that the techniques which provide the most realistic visualisations belong to the favourite techniques of designers (which is supported by Sleeswijk Visser (2009)). Furthermore, personas and storyboards are the two techniques in the study that have clear roots outside the service sector. This means that the visualisations which provide the most realistic visualisations are the ones which service design has inherited from other design fields, indicating that the complexity of services is leading to abstractions of reality being preferable as visualisations.

Analysis of visualisations

Put together, the analysis points towards a dilemma in visualising services. That is, whereas (service) designers prefer to work with realistic material, services rather lend themselves to being depicted in abstract ways.

6.4.3 Framework: IHIP

Table 10 gives an overview of how the different categories were appraised to represent the service traits according to the IHIP-framework.

Table 10 – Results from the analysis of visualisations techniques based on the IHIP-framework.

	System maps	Personas	Blueprints	Desktop walkthroughs	Customer Journeys	Storyboards
Intangibility	High	n/a	High	High	High	Very high
Heterogeneity	Very high	Low	High	High	High	High
Perishability	Very low	n/a	Low	Low	High	High

The results show that focusing on service traits rather than design goals, gives a different image of how well the different visualisation techniques work. Most strikingly, the persona technique which previously was noted as a good design technique now to a large extent is deemed as not being able to express any of the traits traditionally associated with services (well). This is due to the fact that the persona technique creates an idealised image of the customers, and little in the persona technique per se has to do with the service the persona is created for. Instead, in exploring the service system the persona needs to be used in conjunction with other visualisation techniques.

Looking at the IHIP framework we find that most visualisations were able to represent the intangibility and heterogeneity of services well, but had problems in expressing the perishability of services. That the intangibility of services is well represented in the visualisations is no surprise as the need to visualise often is argued for in relation to the fact that services cannot be touched or represented in the same simple manner as a product. Heterogeneity is related to how individuals' behaviour changes over time, which means that it is a likely feature to be highlighted by a discipline which puts user-centeredness at the core of its' values.

There are two possible explanations to why perishability is weak in service design visualisations; the first one is that service design as a field has not realised that services are perishable. This explanation is given plausibility by the fact that it was the least identified trait in the literature study by Zeithaml, Parasuraman, & Berry (1985), and that is not commonly mentioned in service design literature. The other possible explanation is that since visualisations focus on the service delivery the greater context in which services are delivered is missing; for example motivations for service use.

6.4.4 Framework: Service dominant logic

Table 11 depicts the results of the second iteration of the analysis in regard to basic values in S-D logic.

Table 11 - Results from the second iteration of the analysis of visualisation techniques based on the S-D logic-framework.

	System maps	Personas	Blueprints	Desktop walkthroughs	Customer Journeys	Story-boards
Value-In-use	Very low	n/a	Very low	Low	High	High
Co-production	Low	n/a	Low	High	Very high	High
Goods as distribution	Low	Very low	High	Low	High	High
Customer orientation	High	High	Low	Low	Very high	High
Relationships	High	High	Low	Very high	Very high	Low

The analysis according to the S-D logic framework highlights some interesting aspects of service design visualisations. The mantra of the S-D logic, value-in-use, is the aspect which is highlighted the least by the visualisation techniques. In only two techniques – customer journey and storyboarding – the value in use is communicated strongly. This might be due to the fact that the design community to a large extent focuses on the experience of the service, maybe to such a degree that underlying values are presumed or forgotten.

On the other hand, two of the main changes in the view on how to perform business activities proposed by the S-D logic – customer orientation and a focus on relationships – are supported in a good way by most techniques. In fact, the one technique with only a weak emphasis on the changed business focus is the one which has been

adopted from the traditional service research environment without much change; blueprinting. This aligns well with design's traditional focus on the end-users and on the emotions brought about by the design artefact.

In light of these results, the fact that the persona technique once again cannot be applied to certain aspects of the framework is no big surprise. In the areas covered by S-D logic where design traditionally has its strengths, the persona technique fares well, but it is deemed as not having the possibility to express the business-sides of S-D logic.

6.5 General discussion

Based on the frameworks used to analyse the visualisations collected, some general conclusions can be drawn. Looking at the fundamental aspects of visualisations, it seems that the ability to articulate insights with the help of visualisations is the basis on which visualisations are built. The data also shows a slight skew towards the standpoint that the ability to communicate insights is more important than the ability to create/maintain empathy for the stakeholders. This should however be interpreted with caution as the material submitted is likely to originally have been produced to be shown for others than the designers, which would make the skew a result of the material collected rather than being inherent in visualisations.

When the results of the analysis based on the framework suggested by Diana, Pacenti, & Tassi (2009) is studied in conjunction with the results from the other frameworks, interesting results emerge. Starting with the time-axis there seems to be a difference in how the fact that goods are used for distribution (from the S-D logic framework) is portrayed; the synchronic visualisation techniques have a weak representation of the goods used to deliver the service whereas the diachronic techniques have a strong representation of it. This is due to the fact that it is easier to show the role of the goods (be it as a distribution channel or touchpoint) in the service process in a visualisation which shows how service develops over time (diachronic) than to give an instantaneous view of service (synchronic). Without a flow, it is difficult to articulate the roles of different components of service.

When attention is directed towards the iconicity-axis, most visualisation techniques belong to the abstract category. This indicates that services lend themselves to be depicted in abstract ways. However, previous knowledge suggests that designers prefer to work with as realistic material as possible for reasons of empathy. Service designers thus need to balance between depicting the complexity of the service and the wish to use as realistic material as possible; leading to a service design visualisation dilemma is being identified.

As the most popular visualisation techniques (as concluded in the interview study) were compared with the mapping in the Diana, Pacenti, & Tassi-framework, it was found that the two techniques which were deemed as more realistic than abstract both belonged to the top 3 cited in the interview study. The two – storyboarding and personas – are also the two techniques in the study which have the clearest roots within the larger design field.

When analysed from a design perspective, the two visualisation techniques received fairly similar appraisals (with personas getting slightly higher appraisals). However, when the two service-frameworks were used the appraisals were very different. Whereas storyboarding continued to receive high appraisals on most service characteristics, personas were deemed as lacking the traits needed to express four of the eight service characteristics and received low scores on two others. The only two characteristics on which it was deemed as strong were the two which best reflect design's traditional focus; customer orientation and relationships. Thus, from a service perspective the use of personas in isolation seems like a bad decision. This underlines the service design visualisation dilemma identified above. Personas need to be used in conjunction with other techniques which can highlight the service characteristics in a better way – personas should be used to show different ways to interact with the service.

Overall, the analysis of the visualisations according to the service-oriented frameworks highlights the strengths and weaknesses of service design in comparison to service marketing/management. Service design is strong in putting a focus on the customers of the service as well as on the relationships between customers and service providers. In regard to

Analysis of visualisations

other service characteristics, most visualisation techniques are good at highlighting some aspects and weak at others. This means that service designers need to be conscious of which aspects of services they neglect when they choose a particular visualisation type. There are two exceptions however; both customer journeys and storyboarding communicate most characteristics in a strong way.

7 Participatory observation at service design agencies

While the three other studies provided insights into idealised service design practice, they were not set up in such a way that they could take all the interfering factors which occur in live projects into account. To be able to provide a full description of service design practice, a study needed to be set up which could investigate the effects of all these interfering factors on service design practice. The best way to do so is by participating in the everyday practice of service designers. Thus, a participatory observation was set up as the final study of the PhD effort.

The goal of the participatory observation study was to get deep insight into the everyday practice of service design agencies in regard to the subject area of the thesis. To be able to study how the agencies create an understanding for the stakeholders of a project and how this understanding is communicated, several projects needed to be observed in multiple agencies. The study was thus set up in such a way as to be able to work with several agencies and to be able to observe several projects at each agency.

With those basic requirements decided upon, the next task became to identify and approach three mutually complementing agencies. The following factors were taken into consideration when approaching

Participatory observation at service design agencies

agencies. The first three were there to get as good a variety in agencies as possible while the fourth was included to understand all aspects of what was done.

- **Age of the agency:** As practices mature of time, seeing agencies of different age was of interest.
- **Size of the agency:** Similarly, the size of the agency is bound to have an impact on work practices.
- **Where in the world:** As the business climate differs across the world, it could also have an impact on service design practice.
- **Language spoken in the office:** To keep the data as complete as possible, it was seen as important that the researcher spoke the office language fluently.

As agencies were approached with the question whether they were willing to participate in the research these factors were taken into account, trying to find as good a balance as possible between participating agencies. In the end, the differences between the agencies were affected by which agencies choose to participate (for example, agencies in the UK were approached to participate but declined) and their current workload (the amount of designers at the agencies did change between the start of negotiations on doing participatory observation and the actually field work). The agencies which participated in the study are described briefly in Table 12 below, and then presented individually on the upcoming pages.

Table 12 - Summary of key data of the three agencies studied

	Founded	Designers at time of research	Where in the world	Fieldwork conducted
Agency A	1998	9/10	Sweden	May - June 2011
Agency B	2009	3	Germany	September - October 2011
Agency C	2009	12	Australia	February - March 2012

The time spent at the agencies was five weeks at agency A and six weeks each at agencies B and C.

7.1 Participating agencies

The following three sections introduce the three participating agencies in more detail.

7.1.1 Agency A: Transformator Design

The first agency to be involved in this study was Transformator Design. Transformator is a Swedish service design agency with their office in Stockholm. The agency was founded in 1998 and initially did product and strategic design. Over time their projects got more and more focused on the service sector and since 2008 they exclusively brand themselves as a service design agency.

Transformator was approached in the role of a mid-sized agency. The agency was however growing during the time of research. When the research started they were 9 designers employed at the agency, but during the five weeks spent with them additional staff were hired, both designers and administrative functions. Their clients during the time of research came from sectors such as public transport, banking and societal services. The projects included both redesigns of existing services and concept development for new potential services.

7.1.2 Agency B: minds & makers

The second participatory observation was done at minds & makers, a German agency based in Cologne. The agency was founded in 2009, with the outspoken goal of wanting to work largely with pressing social issues.

minds & makers were approached in the role of a young and relatively small agency. At the time of research the team consisted of the three founders. The clients during the time of research were different charitable organisations, both independent charities and corporate social responsibility programs. The projects included strategic work for charity programs and educational efforts in design at a summer camp.

7.1.3 Agency C: Huddle Design

The third and final agency was Huddle design, based in Melbourne, Australia. Huddle is also a young agency and started operations in 2009. The agency grew rapidly and had up towards 20 designers and freelancers working for them by 2011.

Huddle was thus approached as it was located outside northern Europe and was one of the larger agencies in the world focusing exclusively on service design. During the time at Huddle, they had 12 designers employed. The main client during the field study was in telecommunications, with a case focusing on refinement and communication of long-term strategy.

7.2 Data collection process

The overall approach for the study was to do participatory observation. This meant being an active member of project teams, doing activities which needed to be done in the project (such as interviewing users, analysing data and preparing artefacts for research). The only exception to this was during the planning of the project, during which I maintained a purely observational stance as to not influence choices in approach²¹.

Information on how the agencies work was collected through continuous note-taking in and of the activities conducted and discussions held in the projects I was a member of. This was complemented with participation in key meetings of other projects, detailed walkthroughs of previous projects by those had done them and plentiful of informal conversations between meetings, over lunch or at after work drinks (what Agar, 1996, calls informal interviews). In those cases in which it was unfeasible to make notes during the conversations, they were taken at the first chance possible.

Notes were taken by hand in a notebook. The handwritten notes were later rewritten (and expanded) in digital form. In the case of the first field study the notes were digitalised after the fieldwork had ended, whereas the digitalisation was started during the fieldwork period during the latter two field studies. Additionally, at each company a company internal e-mail address was used to receive project materials

²¹ Of course, me being there at all could (and probably did in minor ways) affect how the service designers conducted their projects. Care was taken to avoid any direct influence on project methodology however. Similarly, what is observed depends on who the researcher is (see the preface for a short personal background on me). These issues have been discussed much in the humanities and social science over the years and are not discussed further in this thesis (cf. Hammersley & Atkinson, 2007; Agar, 1996; Johansson, 2003).

and handle the internal communication. Key documents (mainly visualisations) were saved together with the digital notes in cases in which the notes discuss the contents of these documents.

7.3 Analysis

As all notes from the field work had been digitalised, there were 1224 distinct entries in total, averaging 21,6 words (26405 words in total). These digital notes were printed and used for the analysis of the material. The analysis was done by the thesis author, unless stated otherwise.

The analysis was done in loops, each loop focusing on further detail. The first loop consisted of creating thematic categories in the data set. The categories identified were:

- Preparations
- User involvement
- Interactions
- Analysis of research data
- Presentation of insights and ideas
- The project team
- Client's influence on the project progress
- Miscellaneous
- Irrelevant?

The “irrelevant?”-pile was handed to a person who had not participated in the field work (the primary thesis supervisor, Stefan Holmlid) for questioning and confirmation of status as irrelevant for the thesis objectives. Stefan Holmlid sorted the pile into three new piles: Irrelevant, borderline and possibly relevant. From there on, the analysis was solely done by the thesis author. The pile with notes which had been marked irrelevant twice was removed from further analysis whereas the borderline and possibly relevant-piles were sorted once more. Three categories were identified in this re-evaluation: Meta information, irrelevant for thesis and return to categories. The “meta information”-pile consisted of summaries of meeting information and were usually the first notes taken at meetings and had been followed by notes on what was done in the meetings. “Irrelevant for thesis” contained (potentially)

interesting information, but outside the scope of this thesis. The notes in the “return to categories”-pile were sorted back into the other piles.

The next iteration loop consisted of the existing categories being sorted into subcategories focusing on specific aspects of the overall theme. As an example the category “Preparations” was sorted into the following subcategories:

- Benchmarking
- Expectation management
- Planning of work tasks
- Preparations of artefacts used to support research
- Balance between available time and what to do
- Contents of stakeholder research

In most cases, these subcategories were used to plan the presentation of the material. The larger categories were divided into even smaller categories and in the case of the “interactions”-category the category was split into “internal interactions” and “external interactions”. After each category had been sorted the notes in the “Miscellaneous”-pile were read, and those which fit into one of the subcategories were integrated into them.

During the writing process each category was analysed in further detail, focusing on the specific content of the notes. The results of this third loop were used as the basis for the texts presented in this thesis.

7.4 Findings

Below the analysis of the field studies is presented. It is divided into several sections, which all highlight different activities from the start of a project until the insights of the stakeholder research had been communicated to clients. The order of the sections follows the order according to which the steps would be initiated in a normal project. It is however important to stress that the various activities overlap in service design projects in a way which text on a page does not convey.

7.4.1 Building the internal project structure

After securing a new contract, and in many cases even before the go-ahead was given, the first thing the agencies did was to decide on which

employees should be a part of the project team. Key factors for inclusion in a project were availability and the wish to create a good mix of competences. Maximising the competence they got within the frames of time and money was important to all the three agencies, but dealt with in different ways; of the two larger agencies one created a set project team with both junior and senior members in the beginning of projects whereas the other used small core teams, with people with specific competences stepping in as needed. The smaller agency to a large extent hired external persons with domain knowledge to provide input at key times in their projects.

Another important consideration is how much support the team needs from outside the team. Of the two larger agencies, one made sure to have senior staff in their teams whereas the other agency did not consider seniority to a large extent when choosing the project team. This agency rather talked about low, medium and high touch projects based on how involved senior staff outside the project team needed to be. Outside support is closely related to empowerment of the teams, where the organisations' senior staff need to find the balance between making sure that the organisation delivers and that the individual team members grow as designers so they can take a more prominent role in future projects.

Once the team is decided upon, the planning of the project starts. The observations showed that planning is an activity which goes on continuously during service design projects. There are three time frames according to which planning is done; the whole project, full weeks and the upcoming working hours (up to a day). The content of the planning naturally changes depending on the time frame, from activities in long time frames to specific tasks in a short time frame. Likewise, the setting for the planning changes – projects are planned in specific meetings for that purpose whereas tasks are decided on in the fly as the need to do them occurs.

Much of the initial planning is strategic in its nature and the main reoccurring issue in the projects studied was how to balance the time (and money) available with the wish to create a successful project. The teams had to decide which activities to prioritise, and where to take

shortcuts in comparison to how they would have done the project at hand given more time and/or money. Factors influencing these decisions are willingness to take risks in terms of methodology, which ways of addressing problems are preferred and company culture. Two of the agencies prioritised involving as many stakeholders as possible whereas one put the emphasis on delivering something which was well adapted to fit into their client organisation. In practice these philosophical differences meant that more time was allocated for producing the final presentation in the agency which put more emphasis on adapting to the client organisation compared to the other two agencies.

Different forms of expectation management are another task given much attention early in projects. The agencies try to understand what the clients expect from the project and what they as service designers need to know to live up to those expectations. Making sure that they know what the clients expect is like the two sides of a coin; on one hand it is important to have all the knowledge needed but also to understand the internal politics of their clients. The champion for service design is usually known, but other gatekeepers²² need to be identified and handled in a suitable way. One way of doing this is to show competence. Many cases of showing and promoting their own competence were observed in the early interactions with clients. The managing director of one of the agencies studied put it well: "As service designers we need to be amazing at delivering a service. Do not let go of the thought that you deliver a service". Early efforts to understand the client and build a mutual understanding with them are a way of making sure that the final design suggestions land well.

When the team has been created, the overall project structure decided upon and the client's expectations are understood the project teams can start preparing for the stakeholder involvement.

7.4.2 Preparing for stakeholder involvement

Benchmarking in some form was one of the first things to be done in many of the projects observed. The benchmarking however did not

²² Gatekeepers, or stranger-handlers, are persons with (formal or informal) authority over a social group. Getting their approval is key to being accepted by the larger group (cf. Agar, 1996; Hammersley & Atkinson, 2007).

appear to be structured, but rather were born out of discussions in early project meetings when the nature of the service to be designed was discussed. This meant that the form of benchmarking differed from case to case. The types of benchmarking observed (some however later in the design process than the start of the project) were:

- Knowledge gathered in earlier projects for the same client
- Using the service anonymously
- Using the client's existing material
- Comparing to the client's competitors
- Inspiration in forms of tool kits, reports etc.

Of the five types of benchmarking done, the three listed first are done early in the design process whereas the two others come into play during ideation. The by far most frequently used form of benchmarking is the building on knowledge from earlier projects for the same clients. Projects for returning clients started with briefings on the earlier projects for those who had not worked in them. Based on what was known from earlier projects, decisions were made as to what needed to be included in the research.

Early discussions on what to include in the research centre on which kind of knowledge is needed to be able to design well, and which limitations which exist to the research efforts. The most common limitation observed were in small projects in which the agencies were hired to run creative workshops for the clients rather than full projects. In these cases no time was available for doing stakeholder research prior to the workshops, which in the eyes of the agencies became a major hurdle to overcome. The way this was solved in all cases observed was to create some kind of home work for the workshop participants in advance of the workshops. This was done to set the participants in the right frame of mind prior to starting the workshop. It was argued that this both saved plenty of start-up time in the workshops and led to higher quality outcomes.

Other reoccurring topics when preparing for stakeholder involvement were how to make use of the physical space available for the interactions in cases where the stakeholders came to the designers, and how to

Participatory observation at service design agencies

balance quantity and quality of the stakeholder interactions. In many cases, the clients were more used to quantitative data and asked the agencies to do more interviews or other interactions than they felt was needed²³. This meant that the service designers needed to plan not only according to their needs, but at times also to fulfil their client's wishes which did not help the project progress.

It should however be noted that a few cases were observed in which little overall planning seemed to occur. In these cases the teams started working straight away without taking the time to build a strategy for the project.

The final thing to be done before stakeholder research was started was consistent in all projects observed, namely the preparation of the artefacts used to support research. Depending on the amount of artefacts used the timing for when the preparations were done changed somewhat, but no case was observed in which the materials were completely finished more than a day prior to the set deadline (which usually was when they were going to be used, but in some cases when they needed to be sent or delivered somewhere). The preparation of supporting artefacts usually was one of the most intense parts of the projects, with the designers often working long hours to finish the artefacts such as drawing material and provoking questions. The how's had usually been solved by this point, but in some cases it was observed how the creation of the artefacts posed new, more detailed questions on the tasks for the research participants compared to what had been discussed previously.

When the preparation of the physical artefacts is concluded, the designers (finally) get to do their stakeholder interactions.

²³ One of the agencies had once been asked to do at least 50 interviews in a project, although their champion understood that no new insights were gained after the initial 20. The client however felt that he needed big numbers of interviewees to gain leverage internally in his company, even if most of them did not contribute with any new knowledge!

7.4.3 Stakeholder interaction

When it comes to the stakeholder interactions, there is a strong focus on the users²⁴. The agencies see being user-centred as being part of their DNA. In discussions they talk about such things as seeing the users holistically, that the level of how innovative they can be depends on what they learn from the users of the service and that the amount of possible user interactions is a main factor of how successful a project can be. Similarly, projects where the project team does not feel that they know enough about the users are seen as highly problematic and discussed much in the offices of the agencies. A rough estimate is that the time for user interactions in a project ideally should be 10-20% of the total project time according to agencies.

Being user-centred is not only the preferred way of working, it is also a way for the agencies to distinguish themselves from competitors working in other traditions. The director of one of the agencies described the difference between the different ways of doing research in design and marketing as design research being about discovering the hypothesis to test, whereas market research is about testing a given hypothesis.

Although the stakeholder research mainly focuses on the users, the agencies also do research on staff of the service provider in most cases in which the service designed was non-digital. In discussions based on user research this was also often balanced in comparison to the client's situation.

Although the processes leading up to the stakeholder research have been similar between the three agencies, the normal way of working differs quite clearly between the three. Interestingly, the differences are greater than one would expect based on how they market themselves. All three agencies try to adapt their methodology on the specific cases at hand, but over time in the participatory observations it became clear that they have signature approaches which are the starting points for their discussions on methodology. One of the participants described it as a tricky balance which needed to be handled – the safe and proven way

²⁴ This focus on users is mirrored in the following quote by a client of a service design agency: "Service design is about putting together all the different parts, without forgetting the consumer gets the most attention" (Trevett, 2010).

Participatory observation at service design agencies

versus trying something new which might prove successful or fail. The agency she worked for tried to add some new element to each project they did, but based their methodology on what they knew worked well. Although never stated as clearly, similar patterns were observed in the other two agencies.

The signature approaches of the three agencies can be described as follows:

Agency A – Their signature approach was to interview a fairly large number of users (in one project occurring during the observation, over 110 interviews were done). The interviews formed the basis for their user research, but were complemented in various ways in the cases observed. The interviewee selection was based on identified target groups for the service at hand.

Agency B – Agency B worked in a highly co-creative fashion, with a focus on the joint development of ideas between the agency, their clients and often external experts. This meant that the user research that the agency did was done to inform the co-creation workshops. A small numbers of users were observed and interviewed in the service context, and the insights were translated into input for the workshops. In comparison to the other agencies, more time was spent with each user during the research phase.

Agency C – The favourite approach of this agency was to do a set of workshops with users, exploring their wants and wishes. The signature approach was to do five workshops with five participants each. Each workshop had participants belonging to the same segment of users of the service. The workshops usually started broadly, and the participants often did not know the specific topic at the start. Rather it was explored how they would talk about the general area of the service without having been asked to. During the later stages of the workshops, the participants often were asked to map their journey to and through the service.

Overall, the techniques which were used during the observations or had recently been used by any of the three agencies were:

- Interviews
- Workshops
- Observations
- Design probes/Homework
- Heat-mapping of movements in physical space
- Jam-sessions

The first four techniques were all used several times and were done in quite different ways from project to project. These four can be described as the standard techniques for stakeholder involvement for service design based on the participatory observation study.

Examples of how the techniques vary from project to project are plentiful in the observational data, for example from workshops. Workshop tasks include letting participants map their own service journey, design new solutions for websites/apps, show the importance of various parts of their life, creating fictional newspaper headlines and much more. Once the tasks are introduced the designers take a facilitating role and try to get the participants to open up and share their thoughts and feelings with the rest of the group.

To be able to do stakeholder research the service designers need to find and get access to the various stakeholders. The stakeholders approached were mostly regular users/customers, but in two cases extreme users were involved consciously. If the stakeholders were approached according to a set plan for whom to involve, this was usually done based on hypothesis of which kind of stakeholder groups would be of interest for the projects. Three main strategies for getting in contact with stakeholders were identified, roughly equally common:

- Through the clients or recruitment agencies.
- By contacting organisations where certain types of stakeholders could be expected to be found (e.g. schools when working with children).

Participatory observation at service design agencies

- By chance, which meant by making exit interviews with people who just used the service. In cases in which new service concepts were developed, the service designers went to environments in which many people whom the service was intended to attract could be expected to be.

Once the interactions with the users and other stakeholders had been started the differences observed between various cases seem to be more about seniority and personality of the designers than between the agencies. A reoccurring pattern was that senior project team members took the leading role in the interactions with stakeholders. The senior staff members were also more prone to do changes to the plans on the fly as they saw fit, especially after having done a number of stakeholder interactions according to the initial plans. Junior staff also changed plans, but to a lesser degree and usually later in the process. A different kind of change which occurred during the stakeholder interactions was the changing of roles. At times the designers would be leaders and at other times they would be facilitators (these changing roles of designers have been discussed by Han (2010) and Tan (2012) among others).

Being prepared to change is however no sure way of avoiding failures and mistakes. When the designers look back at recently finished projects and activities they often find that things could have been done differently and better. Examples of things which the service designers said could have been done better are estimating the work burden they can ask their participants to do, the choice of tools and sometimes just the feeling of not having done enough.

7.4.4 The project team

The observations showed that one of the most important things for team work seemed to be to make sure that knowledge always is distributed within the group and that everybody has all information. Over time, the teams build up lots of information which does not need to be articulated but informs the design solutions in ways which might puzzle an outsider. During the fieldwork it was repeatedly observed how the first thing which was done as soon as something had happened with someone was absent was to inform them on what had happened and discuss their take on the events. Similarly, if someone in the team was lacking experience

in a relevant technique for the project they were educated by their peers to be able to use the technique.

In the two larger agencies of the study, level of seniority affects individual team member's roles clearly. Senior designers consistently took a more prominent role in the teams, be it from them being in front of the whiteboards and steering the direction of projects to leading the discussions with various stakeholders. The difficult decisions also falls within the responsibilities of the senior staff; the amount of decisions they needed to do seemed to follow how well a project was going – the worse, the more decisions. As long as projects were going well all three agencies had a consensus culture in their decision making. Different solutions were discussed and the team jointly decided what they thought would be the best solution.

7.4.5 Analysing the stakeholder interactions

As shown by the observations, just interacting with the various stakeholders does not provide the designers with all the information they need to do good design work. Analysing the material and finding the underlying patterns in the material gives the designers an even better understanding of the various stakeholders. The analysis is where the data goes from being data to being insights into stakeholder behaviour. The skill for the designers lies in going beyond what is said and understand the underlying motivations. Or as one of the designers in the study put it: “We keep getting the answer faster horses”²⁵. Understanding which value the faster horses would bring is what can make the final design stand out from the competitors.

Similarly to when planning the stakeholder research, time and money is a factor here. The designers need to decide the depth and width they can afford to go in their analysis given the overall project time and scope. At the same time, the analysis phase is where the first design ideas are being articulated. Interestingly, the designers see it as important to not focus on ideas whilst analysing. When ideas were presented during the analysis, they were excused by either the one who had them or by

²⁵ This refers back to the famous Henry Ford quote: “If I had asked people what they wanted, they would have said faster horses” (although attempts to uncover the true origins point towards the quote being apocryphal (Vlaskovits, 2011)).

Participatory observation at service design agencies

someone else in the team. That analysis should be separated from ideation seemed to be a firmly held notion, although the two in reality did overlap in most projects observed. Understanding the driving forces of the stakeholders will lead to ideas on how to meet them.

The actual process of analysing the material consists of three main stages, with transitions at times being so smooth that the differences between stages hardly are noticeable or clearly stated:

- Initial rough analysis, based on gut feeling
- Structured, detailed analysis
- Visualisation of insights

The goal of the analysis is to find actionable insights of the stakeholders' behaviours and desires. One of the service designers at one point referred to the process as pulling out insights from the material. To do so, the service designers start by analysing the material based on their gut feeling of what is important, based on their previous experiences. Every stakeholder interaction is usually analysed in this quick and dirty way as soon as the service designers are alone again (Portugal (2013) calls this process debrief). The highlights and any new information are discussed in relation to the rest of the project. Similarly, in many cases observed the analysis started by mapping out the main sections of the data based on gut feeling and the service designer's memories before a note-based structured analysis was done. This smooth transition from informal to formal analysis was described as key by one of the service designers in the study which claimed that the gut feeling served as the basis for when the search for insights started.

The second step in the analysis consists of a more structured approach to understanding the data at hand. In this stage a set way of working is used to understand the material; notes and other written material are analysed and structured and if audio and video data exists, they are also re-investigated, albeit not as rigorous. In contrast to the gut feeling analysis there is also an unspoken goal of reaching consensus in the group, to make sure everyone understands the material in the same way. The structured analysis varies greatly in length from project to project. This is likely due to it being the closing point of the pre-ideation part of the design process, so the analysis is given the time needed for everyone

in the project team to feel satisfied that they have uncovered all the insights need for a successful ideation.

In some cases the analysis stops there, but in most cases yet another step is taken, namely making the insights more easily accessible through a visualisation. The insights are synthesised into stories, often with the help of customer journeys, personas/user profiles²⁶ or another form of visual representation. Creating a journey was by far the most common approach observed, often in conjunction with user profiles. The journeys were often fairly abstract, combining aspects of a traditional customer journey and a touchpoint matrix. This means that the journeys showed the various channels which different user profiles would access the service through and how the users would move between different channels at different stages of the service. These visualisations had often become one of the main deliverables in the eyes of previous clients although the agencies did not seem to view them as a deliverable, but rather as conversation pieces. In doing visualisations like this, the service designers had easily accessible descriptions of the service in which they could pinpoint the pain points of the customers of their clients. In addition, by visualising their insights the agency staff learned whether they had understood all parts of the customer journeys or if there still were blank spaces in their knowledge.

7.4.6 Communicating insights

As already indicated in the previous section, service designers communicate the insights of their stakeholder research by using visualisations of different kinds, with the customer journey being the by far most common technique. The persona technique comes in a clear second place, often used in conjunction with the customer journey. Other techniques for communicating stakeholder insights observed include blueprints, scenarios, films, storyboards and different types of documents (text based, PowerPoint and posters).

The type of format which the insights are presented in is decided by a combination of time available, project contents and how the service designers think that their clients will understand the material the best.

²⁶ User profile is often used instead of the word persona when a visualisation is in the style of a persona but without the rigorous demands of a persona fulfilled.

Participatory observation at service design agencies

Trying to understand the communication needs of the client and adapting to them is important, whilst still making use of the various visualisation techniques in service design. The visualisations are something which differentiates service designers from marketing and/or management agencies which they might be competing with.

The first step of creating visualisations is to decide which content to communicate. After that the service designers think about which format fits the content and the recipients the best, sometimes based on experience and sometimes by browsing through old visualisations (either their own or those available online) for inspiration. A part of this discussion is to consider the feasibility and effort to create such a visualisation (for example, the option to do a short movie was raised in several projects observed but discarded in almost all as it would take more time than was available). When the planning is done, the time-taking effort of creating the visualisations is started. In most cases the layout is tested by a series of sketches, of which the most suiting ones are refined on the computer. For smaller projects, corporate templates are usually followed whereas a larger project allows the time to develop a new visualisation (which often is inspired by the corporate template).

Producing the material is however not the end-point of communicating the insights of the stakeholder research to the clients. In one way or another, the material needs to be handed over to the clients as well. Sometimes the clients only want to have the files sent over, but in the majority of the cases the agencies hand over the material in conjunction with a presentation of their key insights (either as a half-way report of the project or in the final presentation together with the design ideas). These presentations are usually done by the senior project staff. The presentations focus on the insights found, and less on the process of finding them except for the amount of stakeholder interactions which is clearly emphasised. This is often done with the prepared material as support. The designers show their clients the visualisations and walk the clients through the different segments of the visualisations, explaining what the different parts mean and why they are included. The goal is to communicate the empathy for the stakeholders which the designers have achieved during the project, in the most accessible manner possible. Often the material also has properties which aim at standing out from an

average consultancy report - such as customer journeys being printed on giant posters to be hung on the office walls, the report being pre-printed in full colour at a professional printer rather than having people print it themselves on their office printers and the like.

Presenting the insights in this way has the side effect that the stakeholder research becomes one of the main deliverables from the research projects, although the agencies mostly see the ideas which they deliver as their (main) deliverable. Still, all three agencies shared stories of how they in one way or another had found out that their visualisations had lived on within their client organisations outside the context they were created for. One of the designers in the study said that their clients usually knew the parts fairly well, but were not used to the holistic image of how all parts belong together. A successful visualisation often becomes an office-wide conversation piece at the client organisation. One of the participating agencies had even once been commissioned to reproduce what they had done for one part of the client organisation by another part as they wanted to have the same holistic overview.

7.4.7 The client and the project team

One factor which has influenced many of the activities undertaken by the service designers presented above, but has not been addressed explicitly is the relationship to the client which commissioned the project the service designers are working on. This section addresses some of the ways clients are affecting the service design process.

Making sure that the client understands what is done by the service designers and feel comfortable throughout the project is an important task if the project is to be successful. Likewise is to understand which constraints for the design exists in the client organisation. A common way of making sure that clients are comfortable is by trying to involve employees at the client organisation as project team members. The basic argument for doing so is that this creates client engagement in the project. This way of creating engagement however depends on the client organisations' willingness and desire to be involved in the day-to-day work in the project. Nevertheless, to have them involved in one way or another was a goal of all three agencies studied. One of the agencies mainly used multiple presentations in which decisions were made

Participatory observation at service design agencies

throughout the project, whereas the two others tried to build a closer working relationship with their clients.

There are several positive effects for the service designers if the client is engaged in the design process. Some of the things which can be gained by including someone from the client organisation (usually the project owner) in the project team during the research are:

- **Increased understanding of service designers' work:** By involving the clients in the daily design work, they better understand what can be expected to be produced and in which time. This includes a better understanding of the language used by the service designers and the need for being human-centred. The agencies often brought clients to stakeholder interviews, during which clients helped with documentation or even did interviews. Participating in such a way gives the clients' staff a sense of empathy for the perspectives of the users and other stakeholders, even if they only participate to a small degree. Having experienced this empathy mostly led client staff to become stakeholder research champions, thus easing the way for the service designers in promoting their way of working within the client organisation.
- **Support:** Having the client staff involved in the day-to-day work not only generates support for the project in the client organisation, it also helps in clarifying a lot of the small questions which arise during a project. In a particularly close collaboration observed, the project team had almost daily interactions with client staff. This meant that they could easily have any small question answered, and got help in making sure that the design fitted well with the client company. The project had however started out rather chaotic and the service designers had to face a lot of internal obstacles as they navigated their way through reluctant participants. As parts of the client staff understood the goals of the project and the agency's role better, they however changed from being a great hurdle to overcome to the greatest supporters.

- **Reassurance:** No matter in which way the client is involved throughout the project, the involvement provides a way of making sure that they are comfortable with the projects' progress by reassuring them about their decision to hire the agency. Two main ways of reinforcing the clients were observed; by showing them progress and by showing them competence. As stated above one of the agencies mainly involved clients by having regular presentations for them, meaning that the reinforcement that the project was going in the right direction was the agency's main gain from making the clients an active part of projects. The other two agencies mainly seemed to use this form of reinforcement in projects with new clients. All three agencies however were good at seizing opportunities to show their competences when given the chance.
- **More feasible design suggestions:** By having the clients' voice present in the discussions throughout the project, the service designers can adapt their stakeholder research to focus closer on ideas which have the potential of being implemented by their clients. This advantage is however mainly noticed in later stages of a project than is the focus of this thesis.

Making the client an active team member does not only bring advantages for the project team. Having the clients deeply involved in the project can also slow down the project. For one, it is easy to become dependent on the project members from the client side, which can lead to the project not moving forward if they do not live up to expectations. Another potential trap is when the client imposes extra constraints in the middle of the project, something which is bound to create a lot of frustration for the service designers. This happened repeatedly in two different projects during the field studies, and in both cases created stress and anger for the service designers. In both cases this meant that much of the progress and plans made needed to be changed with short notice.

During the observations three main types of hindrances that clients added during on-going projects were observed. One way which occurred early in projects was the insistence on specific methods or reluctance towards a proposed one. A second one was when the project

owners did not feel reassured enough on the project's progress, and specifically asked for reassuring information. The most common one however was to add various constraints; such as late information on internal rules, demands to change details or changed wishes for content. This last type of hindrance was not only the most common, but also the one which created the most frustration for the service designers.

No matter how well a project is done and how good the relationship to the project owner at the client organisation is, there is one factor which might ruin the whole project – the internal politics at the client. This was observed in many ways during the observations; in one project presentation with roughly 10 participants from the client it was evident that if one of the highest ranking said something no one would say anything against it whereas the discussions were open until the high-rankers entered the conversations. That meant, even if the majority in the room liked the agency's ideas they probably would not be implemented unless the high ranking liked them (luckily they did). This shows the importance of having a project owner at the clients' side which can provide or secure enough internal power to push the ideas forward. If this does not happen there is a great risk that the proposed service design ends up as a casualty as the various silos struggle for power in the client organisation.

7.5 Study discussion

This section discusses and summarises the main findings from the participatory observations. The discussion is divided into three sections; before, during and after the stakeholder research.

Before that, it should be reiterated that this study confirmed that the three agencies observed all had a stakeholder-centred approach to their work. That means that the basis for their work was insights from stakeholder research. Doing stakeholder-centred design is also how they see that they distinguish themselves from other consultancies which might compete for the same commissions but come from other traditions.

7.5.1 Before the stakeholder research starts

Once a service design project has been commissioned, the agencies start by forming a project team. Important considerations here are to fit the

competencies of the employees to the perceived skills needed for a successful project and how involved non-project members within the agency can and/or should be. The management needs to find a balance between short-term success of project and long-term employee growth in making these decisions.

Once the team has been assembled they need to start planning their work. Long-term planning tends to be done in a very structured manner, following a clear structure whereas short-term planning happens on the fly, often with only parts of the team present. Considerations for the long-term planning of the projects include time-frame for the project, formulating a working hypothesis for what needs to be learned during the stakeholder research and which resources are available for the project team. Furthermore, if it is a returning client the work done for the client previously is surveyed as a starting point for the new project.

Another process which needs to be started before the stakeholder research is initiated is the engagement of the clients into the process. The designers try to involve their clients to the furthest extent possible to be able to gain support for their process and have buy-in for their approach when design solutions are presented. A part of this process is also about expectation management, so that the clients expectations on what will be delivered match what the service designers actually deliver. Making sure that the clients are comfortable with the choices made is crucial here, a reoccurring example of this is that the designers prefer qualitative methods whereas many clients are accustomed to quantitative methods and can be uneasy with qualitative methods.

The planning of the project and the engagement with the client tends to happen in parallel. When the planning is done and the methodology is decided upon, stakeholders identified and approached, the designers start what tends to be the final task before the actual stakeholder research starts; to prepare the artefacts which will be used to support the research.

7.5.2 Performing the stakeholder research

Looking at how the three agencies studied engaged with the stakeholders, it quickly became clear that this was one of the areas where

the difference between the agencies was the greatest. Based on how they market themselves, such large differences could not be expected. All three agencies had distinct signature approaches, which they (consciously or subconsciously) used as a starting point when planning new stakeholder research. These signature approaches were modified to the current situation, but never challenged. Finding the balance between trying new things and being certain that an approach would deliver the wished for results was a reoccurring concern in regard to challenging the normal way of working.

The techniques which were used in more than the odd project during the observation were the ones which could be expected by the survey of textbooks with one notable example; the extensive use of workshops. Workshops are in their format similar to focus groups (a number of participants in a location out of context), but the activities used were distinctly different. The workshops the service design agencies used were co-creative in the nature, meaning that they were planned around activities in which the participants created materials. These materials sometimes only were for research, like mapping out their journeys through a service, but in several cases also contained ideas for service development.

When the service designers start to interact with the stakeholders of the service they are developing, there is a strong focus on the users/customers of the service. In the case of digital services this is natural, but when it comes to services in the physical space this is somewhat surprising. This does not mean that the employees and other stakeholders are not taken into account, but they are under-represented in the research in relation to how any changes would affect them. Put plainly, the stakeholder research for service design to a large extent is user research.

As a project progresses, various things will happen which lead to not all members of the project team being present at all times. In these cases it is important for the team to have a well-functioning structure of internal communication. In most observed projects it was a clear, albeit not outspoken, priority to always inform anyone who had missed something on what transpired as soon as possible. When (not if) something

happened which forced the service designers to change their plans, the teams tended to look for guidance from their senior team members. As long as projects go smoothly, there is only a small difference between the members of varied experience but when things heat up the junior team members expect the senior ones (or even management) to use their experience to find quick solutions to the problems at hand. But overall, to run a successful project is a team effort.

7.5.3 After the stakeholder research

Having finished the interactive part of the stakeholder research does however not mean that the stakeholder research is finished. The service designers still need to transform the information gathered into insights, which design can be built upon. The depth of the analysis is dependent on the time available; in many of the observed projects the designers saw that there still were interesting insights to be found in the material but that they were out of the scope of their brief. This meant that these potential insights were left unexplored.

The analysis of the stakeholder information is usually done in two or three steps (the first two always occurring and the third being done most of the time):

1. Quick analysis based on gut feeling. Can happen after every single session. Also known as debrief.
2. Structured analysis. Starts when the majority of all stakeholder interactions have been done. The last few interactions can then be used to test initial insights.
3. Visual mapping of insights. Helps in articulating insights and seeing the patterns.

Several cases were observed in which initial ideas were articulated during the structured analysis. These were however always excused, as analysis and ideation are different things. This is interesting as this follows the structured academic model of stages in the design process, which the designers do not seem to care about following otherwise.

The visual mapping of insights done in the third step not only provides insights but also leads to visualisations of the insights which can be used to communicate to the clients. The service designers try to choose

Participatory observation at service design agencies

visualisation technique based on which kind of data they have, the goal for visualising, their experience and (once again) the time available to them. However, the customer journey technique has over time become the far most common technique, especially in projects in which there are several ways of accessing the service (various digital channels and/or physical spaces).

When the insights are ready to be presented to the clients the designers prefer to do so in person (although they do not always get the opportunity to do so). No matter how the material is presented to the clients the overall goal is to transfer some of the empathy gained through the research (if it has been possible to do so in the project, likelihood is that members of the client staff will have accompanied the designers to user interactions).

Although seldom seen as such by the service designers themselves the visualisations of stakeholder insights often become key deliverables in the eyes of the clients. Very few clients have such a holistic view of their service, and particularly their customers' relation to it, as is provided by the visualisations. So, no matter how the rest of the project goes in terms of implementation the outcomes of the stakeholder research has an impact on the client organisation. The research approach in general and in the visualised outcomes of it thus becomes a key differentiator for service design agencies in comparison to competitors from other fields.

8 Discussion

The discussion chapter is divided into two main sections; the first section discusses the different studies in relation to one another, forming an overall image of how stakeholder research is done in service design today. The second section discusses the findings of this thesis in relation to current thinking on service design practice, problematizing current practice as well as pointing towards the implications for practice and education of the findings.

8.1 Result discussion

This section of the discussion highlights similarities and differences between the findings of the various studies performed. The main themes emerging from the data and the overall focus of the data are discussed under their respective subheadings below.

8.1.1 Preferred way of working

As was shown in the background sections, one of the fundamental assumptions about service design is that it is a design discipline which involves those affected by a service in the development of it. Those persons are often referred to as users and the approach as user-centred, but other terminology has also been suggested. As the focus of this thesis is on the practices of service designers in involving the so-called users, the two larger studies (the interviews and the participatory observation)

Discussion

needed to confirm that service design is user-centred in practice and not only in theory.

From both studies, the answer on whether service design is user-centred was a clear yes. The interviewees said things like “everything we do is centred around the user” (see page 51) and overall clearly stated that they want to work as closely involved with the users as possible. During the fieldwork a similar picture emerged, and the impression was that the service designers feel uncomfortable when they not have been able to do as much user research as they would like. Even in the projects observed focusing on internal aspects of the client organisations the designers made sure to understand all different perspectives present.

The studies confirm my theoretical suggestion that user might be a too narrow term. Although the users/customers of the client are put in the centre of the research done, research is not limited to them. Various other stakeholders are involved and taken into account, both humans and non-humans (such as organisations and regulations). The suggestion that service design practice should be referred to as stakeholder-centred design is thus reinforced by the studies.

Being stakeholder-centred can however mean many things, so the follow-up question to the statement that service design practice is stakeholder-centred is “what does being stakeholder-centred entail?”. The interview study portrayed the image that service designers see the stakeholders as inspiration for their design work. The goal of the involvement of stakeholders in the design process was seen as gaining empathy for those affected by the service. The comparison of approaches to ethnography confirmed this view. Somewhat contrasting, the participatory observation study showed that what being stakeholder-centred means differs from agency to agency – for some it is co-creating with stakeholders whereas others use the stakeholders as inspiration.

The contrast between companies became clear in the field studies of service design agencies. Although the agencies market how they work in fairly similar ways, the differences in approach in how the actual work was done was distinct. As emerges from the summary of the signature approaches of the three companies studied (page 108), the notion of what stakeholder-centred means varies quite a lot within service design.

Agency A was the agency whose way of working was the closest to how service design practice had been portrayed in the interview study. Agency B on the other hand was the one which worked in the most co-creative fashion, whereas Agency C's approach was somewhere in between. This means that the three agencies all had a different approach to being stakeholder-centred, from stakeholders as inspiration for design work to stakeholders doing large parts of the ideation (supported and later refined by the agency).

Being stakeholder-centred should thus be understood as making the input from stakeholders a key piece of work practice. This mostly means as inspiration, but can also entail using the stakeholders own creativity to form ideas.

8.1.2 Engaging with stakeholders

Knowing that service designers make the input of stakeholders central to their work, the next question which arises is how the service designers go about in getting input from the various stakeholders.

The first step in getting the required input is to understand which input is needed and make a plan for how to get it. van Veggel (2005) criticised designers for often lacking in their preparations before engaging with stakeholders. The studies performed however suggest that service designers do enough planning for their purposes. As the designers want to gain as much information as possible relating to the project at hand, they start by formulating a working hypothesis for the research to be done. If the input they receive shows that there is relevant information which the current approach does not capture, they will change the approach to be able to understand that aspect as well. This was seen both in the observations of the agencies' work practices and the study of ethnographic styles. Considering this and the reoccurring time pressure of service design projects, the somewhat limited planning of research can be explained. If the service designers at any point might change their entire plan, it makes sense to not plan more than what they know that they will do next. The field study included several cases in which late changes to the plans needed to be made for various reasons. Overall, the studies show that the service designers plan sufficiently for their

Discussion

purposes but that planning of stakeholder engagement only concern as a short time period.

When it comes to which techniques the designers use to actually engage with the stakeholders, three different lists of techniques have been presented this far in the thesis (based on textbooks, interview answers and observed techniques during the fieldwork). Table 13 below summarises which techniques the three different sources suggest are used in service design.

Table 13 - A summary of the three different lists of techniques service designers can be expected to use. The textbook list has been shortened to only include techniques introduced in at least half of the textbooks. Similarly, the list from the participatory observation study only includes techniques used in more than one case.

	Textbooks	Interview study	Participatory observation study
Interviews	X	X	X
Observations	X	X	X
Design probes	X	X	X
Focus groups	X		
Ethnographic methods		X	
Workshops			X

This summary shows that there are three main ways of engaging with stakeholders in service design; interviews, observations and design probes. A close runner-up is the gathering of various stakeholders in a room, to do joint tasks with them. This is reflected in the fact that the textbooks suggested focus groups and several workshops were observed during the fieldwork which could be describes as focus groups plus (this is discussed in more detail on page 120). The final item on the list is the mysterious mention of ethnographic methods on top of the techniques usually used for doing ethnography. The summary in Table 13 thus shows which techniques for stakeholder engagement aspiring service designers should learn to master and service design education focus on teaching new students.

As the service designers claim to be doing ethnography and additionally highlight that they use the techniques used for ethnography, a specific study was set up to understand the use of ethnography in design. As

seen in Table 13, all sources used on which techniques service designers use for engaging stakeholders show that the core techniques of an ethnographic approach are used by service designers. Looking at which techniques were used in the study which compared different ethnographic approaches, the data showed that the techniques used by the designers are the same as those used by the anthropologists (with the addition of a questionnaire). The difference between the designers and the anthropologists was not so much in what was done as why and how it was done. These differences are also reflected in van Veggel's (2005) summary of the differences between designers' and anthropologists' use of ethnography: designers want input to design projects whereas anthropologists want to understand humanity. This huge difference leads to that the questions asked and the details noticed become very different between the approaches. Furthermore, the focuses of the analyses are distinctly different. The tools may be the same, but the application of them varies greatly.

This however does not answer why designers claim to be using both ethnographic methods and the individual techniques used for ethnography. A reason as to why service designers claim to be using ethnographic methods is that the individual techniques used also can be used without doing ethnographic work – for example interviews can be very strict and formal outside of context, and as the ethnographic study showed, designers are not always comfortable in translating observations into insights. So, when service designers say that they are doing ethnography they might be referring to the cases in which they go deeper into context than normally and apply an apprentice role in their stakeholder interactions. Furthermore, the discussion section of the comparison of ethnographic styles highlighted that what the designers do can be called ethnography according to modern definitions of ethnography, although it would be helpful to add a qualifier like the proposed design ethnography (Salvador, Bell, & Anderson, 1999).

Summing this section up, it has become clear that interviews, observations and design probes are the standard tools of service designers with workshops with a variety of stakeholders being close to making the list. Service designers use these approaches to get answers to the questions they currently think are the most relevant to their project,

Discussion

which means that the service designers continuously change and adapt their approach during a project. The techniques used are similar to other social science disciplines, but the motivations for using them are different in service design (and other disciplines in the human-centred design approach).

8.1.3 Analysing stakeholder input

Once information has been gathered through the interactions with the stakeholders it needs to be analysed. Three of the studies performed help build a understanding of the role of analysis in the service design process; the interview study, the comparison of ethnographic styles and the participatory observation study. The interview study underlined the importance of analysing the material gathered through the stakeholder interactions, but also the difficulty in making sure that the clients understood this. For the unskilled design researcher (which clients usually are) it is easy to interpret what is said too literally. The interviews showed that the designers took professional pride in their skill to transform what the stakeholders had said into actionable insights. This transformation is done by analysing the material gathered.

The comparison of ethnographic styles highlighted some interesting details in how designers analyse their data. For one, when designers talk about analysis they actually refer to analysis as well as synthesis. When put in direct contrast with the anthropologists' way of working the importance given to the synthesis becomes evident. For the designers in the study the analysis was as much a step towards the synthesis as a goal in itself.

The participatory observations then showed the process of analysis and synthesis in more detail. It was found that there are three distinct stages in the analysis process; first an informal analysis based on gut feeling which was followed by a structured analysis following a set plan, working closely with the data. Finally the insights found were transformed into material which could be presented to the clients and used within the design team when the material was revisited later. The three stages built on each other, so that the initial structure of the structured analysis followed the results of the gut feeling analysis. The change from analysis to synthesis usually occurred towards the end of the structured analysis

as the service designers felt comfortable with having understood all the individual perspectives present in the data.

In summary, the process of transforming information to insights is something which service designers take professional pride in having the ability to do. What is usually referred to as analysis in fact consists of both analysis and synthesis. As the analysis becomes more formal the longer it progresses, it also changes from trying to understand all the perspectives (analysis) to trying to find patterns among the perspectives (synthesis). In most cases, it is the outcome of the synthesis which is used to communicate the results of the stakeholder interactions.

8.1.4 Visualising stakeholder insights

As has been found in all three studies which follow service designers through their design process, the communication of insights is often done in the form of visualisations. The interview study showed that the designers put an emphasis on the communication of stakeholder insights through visualisations. Similarly, both the participatory observation study and the study focusing on the ethnographic practices of designers found that the designers (in most cases) visualised their insights before communicating them to their clients.

Looking at the decisions made in selecting what to visualise and how, the interview study found that there were two main factors which influenced the choice of visualisation; the type of data available and the goal of the visualisation. The participatory observations confirmed this, but also added one more constraint – time. Time acted as a constraint insofar that the service designers needed to ask themselves which approach would be most rewarding compared to the amount of time invested.

This however does not answer why the visualisations are done in the first place. The interview study identified three main arguments for visualising: to articulate insights, to communicate the insights to clients and to keep empathy. As was argued in the discussion section of the interview study, these three are all different forms of communication (within the design team, to stakeholders outside of the project team and with one's memory).

Discussion

Considering that the visualisations are to express three different forms of communication in a variety of situations, the tools used are crucial for the success. In a similar way to the techniques used for engaging stakeholders, there seems to be a small set of standard techniques and a long tail of techniques used only by the odd agency when it comes to the techniques used for engaging stakeholders. The interview study found that journey maps, narratives and personas were widespread in use and that recorded media, formal diagrams and the highlighting of specific aspects were commonly used.

What the interview study however did not reveal is what actually was portrayed by the visualisations. A specific study was set up to understand what the visualisations communicate, and if the effectiveness of specific techniques changed depending on the perspective they were viewed from. This study showed that visualisation techniques commonly used for design are stronger in articulating insights than communicating the insights to clients or to maintain empathy.

Two of the other perspectives used in the study provided interesting insight into how service designers portray services. The visualisations analysed were overall strong in portraying service aspects highlighted by the IHIP-framework, with only the perishable aspects of services being somewhat absent from several of the visualisation types. Moreover, when compared with the S-D logic framework it was found that the visualisations commonly used by the service designers were strong in highlighting aspects traditionally emphasised in design (such as a user/customer focus) but struggled in relating the value provided to the customers as well as how the service actually is delivered.

There was one shining star amongst the techniques, which was strong in portraying all aspects studied, the customer journey. The journey approach was the most popular in the interviews and similarly the customer journey was the most used visualisation technique in the projects observed during the participatory observations. Based on the studies performed for this thesis the customer journey can be crowned the king of service design visualisation techniques as it is both the most popular one and the one which express the most service traits.

8.2 Connecting the findings to service design theory

This section of the discussion focuses on relating the results of the studies to the larger service design context. This discussion is divided into three parts; how service design fits together with related disciplines and the notion of design for service, which potential issues exist in current stakeholder research practice and what the implications of the findings are for service design as a discipline.

8.2.1 On the nature of service design

The theoretical background placed service design in the human-centred design tradition, and the various studies performed have all confirmed that service design practice is indeed human-centred. But little has been said on how the results relate to the design for service notion.

The starting point for such a discussion can be found in another repeatedly stated hypothesis, namely that service design should be seen as stakeholder-centred rather than user- or human-centred. This was first suggested based on the understanding of service design as the meeting point of the human-centred design tradition and modern notions of the service concept. The interview and participatory observation studies confirmed that research indeed is done with not only users, but also employees and attempts are made to understand the client organisation. The highlighting of that not only users but also other stakeholders are important for the service relates to the understanding of service which exists in service marketing and management. It was however found that the main focus of the stakeholder engagement is to include customers. If the idea of being stakeholder-centred is to be taken seriously, service designers need to become better in including those who are affected by their designs without for that sake being customers.

Design for service is understood as the intersection of service dominant logic and human-centred design. In service dominant logic, a service is a transaction creating value for the customer. This value is created through the interactions between customers, employees and artefacts. Similarly, prominent thinkers on design have highlighted the role of artefacts in the lives of people; Krippendorff (2004) noted that artefacts are what people perceive them to be and Buchanan (2001) emphasised

Discussion

how artefacts are situated in all aspects of society (see pages 15 and 14 for the original quotes).

Given this emphasis on not only people, but also artefacts in both design and service research it could be expected that the relation between artefacts and people are highlighted as a part of the service delivery. However, the analysis of visualisations and how they relate to the service dominant logic framework shows that a majority of the analysed techniques did not express the interactive (co-production) aspects as well as the artefacts' role in delivering (goods as distribution) a service. It thus lies close at hand to suspect that some of the tools used in service design by their nature are constructed in line with the IHIP understanding of service and will not be able to support designers working with the mental model of design for service. To transition from service design to design for service, the tools and techniques used need to be improved or replaced to accommodate the change in mental model²⁷. That the customer journey has become the most used visualisation technique, often featuring different modes of access to a service, can be interpreted as an important stepping stone in the transformation from service design to design for service. The customer journey was one of two studied techniques which did highlight all the aspects of service-dominant logic which is not a part of design's traditional focus.

However, this does not mean that the techniques do not have value from a design for service perspective. As was highlighted in the introduction of current service thinking, service dominant logic has recently been criticised for being too focused on the companies' perspective of a service transaction. Several authors have argued that service thinking needs to see companies as aiding customers in getting the desired value rather than customers as helping companies to provide value for the

²⁷ Johan Blomkvist's research on prototyping for service design practice can be re-interpreted as supporting this conclusion, although he does not discuss this transition explicitly. He criticises service designers for focusing too much on the interaction with specific artefacts (or as they are known in service design, touchpoints) and not testing the whole service flow (Blomkvist, Åberg & Holmlid, 2012; Blomkvist & Bode, 2012). He suggests that service designers need to learn to prototype on four different levels: artefacts, use, context and service (Blomkvist, 2012). These four encompass the traits of service dominant logic relevant for the design of services well (although relationships seldom are prototyped as they develop over time), whereas the prototyping of only certain artefacts miss several aspects.

same customers. As thinking on the nature of service progresses, so should it do in design for services²⁸.

If the perspective is changed to how the visualisation techniques used in service design can help those with a background in service management and marketing to better understand how design can aid in improving services, the current visualisation techniques are in a position to aid in this process. The visualisation techniques currently used in service design are overall strong in communicating the customer orientation and relationships which service management and marketing authors argue for the need of. This means that although the current nature of many common visualisation techniques might hinder designers in progressing their thinking on service they can aid service practitioners in progressing their thinking on design.

Having already touched upon the need for better tools for future service design practice in this section, the next section will focus solely on areas for improvement.

8.2.2 Issues with current tools and techniques for service design

So far this thesis has described stakeholder research for service design as it is conducted today and offered explanations as to why it is conducted as it is, but offered little criticism of current practice. This section will change that as it focuses on highlighting areas which the findings and other literature show is problematic in its current form.

8.2.2.1 Tools for stakeholder engagement

A reoccurring topic throughout the thesis has been the criticism held forward by many scholars, particularly from the humanities and social sciences, is the lack of rigour in how designers engage with stakeholders. Examples of this include Dourish and many others criticising designers approach to ethnography, van Veggel that designers do not prepare their ethnographic work properly and Lee's critique that innovative methods are used without understanding the motivations for them. These shortcomings of designers have, in this thesis, been explained as

²⁸ Secomandi (2012) similarly warns that service design should not approach theories on service as set in stone, but rather remember that they are constantly evolving. A merging of service and design thinking thus should not be seen as anything else than a current thought model, to be challenged over time.

Discussion

being a result of time pressure in conjunction with different motivations for doing the ethnographic work compared to social sciences. That is however not to be taken to imply that the critiques not are valid.

The service designers overall do a good job in balancing their efforts and knowledge needs with the time available. However, having a larger awareness of the thinking which has led to development of different approaches will sharpen the service designers' skills in finding suitable approaches. Here, the challenge lies primary with the education system in teaching new generations not only the tools to do stakeholder research but also why the tools were developed. Rather than just introducing the tools, the circumstances under which they were developed need to be thoroughly explained so service design students understand which appropriations they do and why. Knowing so will hopefully lead to better appropriations (e.g. design probes are understood as an approach to understand people when it is not feasible to be present with the stakeholders rather than a pack with a disposable camera and postcards).

In doing so, it is important for educators to emphasise that it is not a matter of shaming designers for not using a tool in the right way but rather a way of learning all the possible uses of the tool. If the current use of a tool provides a desired outcome, there is no need to discourage from the use of it, but rather show other possible uses. Furthermore, recent similar cases have shown how a shaming approach not leads to a change in how designers work but rather how they talk about the tools – examples include disclaimers about not doing proper ethnography when doing ethnographic work and the re-naming of not rigorously made personas as user profiles.

Similarly, service design students need to learn to embrace the change in plans which constantly occur during the stakeholder engagement, and to see which new areas need to be investigated. At the same time, this cannot be used as an excuse to not make proper plans prior to initiating stakeholder engagement (see van Veggel's criticism). Service design students thus need to make well thought-through plans, which at the same time are so flexible that they can be changed at any time. Most of the time this will mean making small changes such as omitting or adding

a few interview question. But it can also mean a complete change of approach, if the one selected from the beginning for one reason or another does not work. This includes choosing which stakeholders to include in the study. Here it is important to not only think about customer/user-types but also key staff at the client organisation, especially if a physical service is being redesigned (which will affect frontline staff). The field study showed that there was a strong focus on users in the stakeholder research, which means that service designers need to consciously need to work on integrating client staff to a larger degree (where suitable).

Returning to the criticisms of Dourish, van Veggel, Lee and others, the data from the studies provides a better understanding of why designers conduct their stakeholder engagement in the way which is criticised. The discussion however also underlines the importance of taking the criticism to heart and consider how the stakeholder engagements can be conducted to avoid this criticism. To be able to do so, service designers need to be trained in critically considering the tools they use which has meant that the discussion mainly focuses on efforts which can be done in education.

8.2.2.2 *Tools for visualising stakeholder insights*

Another issue identified when comparing the results of studies for this thesis with existing literature is what was dubbed the visualisation dilemma. In short the dilemma arises from the fact that services seem to lend themselves to be visualised in an abstract way whereas previous research has found that designers prefer to work with realistic material whenever possible. Among the common visualisation techniques, the persona stands out as the most realistic one. At the same time, personas do not communicate anything about the service – it only describes archetypical stakeholders (usually customers) and their motivations for using the service.

Furthermore, it was suggested above that the visualisation techniques currently used in service design might not be able to encompass all aspects needed for designers who want to take a design for service perspective on their work. Put together, this shows that there is a need

for visualisation techniques for service design which are realistic and encompass more aspects of a service than the current ones²⁹.

All in all, this section highlights the need for service design to continuously improve on the methodology used. The techniques which currently are good enough are quickly becoming unsuitable as the thinking on service progresses and service design is applied to larger societal issues. To be able to do so in a good way, academia and practice need to work together. New approaches are incrementally innovated all the time in practice, but there is no systemic approach to spreading these approaches. This is where academia can help, in being there to find and further develop promising approaches. Academia furthermore has an important role to play when educating new generations of service designers. They need to be taught the current tools, but also to understand the thinking which led to their creation and the limitations inherent in the different approaches. Students need to learn to see the thinking behind an approach rather than the exact design of the approach – there is much more to learn from the thinking than exactly how something was done³⁰.

8.2.3 Implications for service design

Having identified areas for improvement of service design practice based on the findings, it is time to change focus and look at which implications the findings have for how service design is discussed and taught. The research highlights a number of areas which have not been discussed sufficiently in service design thus far.

One such area is that although visualisations of the current design of a service is only considered as a stepping stone on the way to suggestions for improvements by service designers, it is seen as one of the main deliverables by clients. Few organisations have such a holistic image of how their service functions from the customers' perspective as portrayed

²⁹ I have elsewhere investigated how the theory of distributed cognition can help explain visualisation practices (Segelström, 2012b; Blomkvist & Segelström, 2013). I would argue that an understanding of distributed cognition can aid in creating better visualisations as well.

³⁰ This mirrors the critiques of Dourish (2006) and Button (2000) on designers approach to ethnography and of Lee (2012) on the use of innovative methods.

in service design visualisations. The outcomes of stakeholder research, especially in the form of visualisations, provides genuine value for client organisations and could thus be promoted much more aggressively when a project is pitched to potential clients.

Regarding clients, the field work furthermore showed that one of the factors which influences service design projects the most are the clients themselves. Still, the client's relation to the project has rarely been discussed in the literature on service design. Learning to understand and deal with the client's impact on a project should be integrated into service design education if students are to enter the work force better prepared. This includes aspects such as expectation management, (sudden) changes to the project plans and aligning design ideas with the client organisation. In regard to aligning ideas with the client organisation the designers will constantly need to balance this against being user-centred.

Another area in which the research results and the popular image of service design practice do not match is on the tools used for stakeholder research. The studies and the background research showed that the tools used indeed are fairly similar, but the field work revealed a distinct difference from agency to agency in how they were used and to which extent. As has been discussed earlier, the difference between the agencies' work practices were larger than could be expected from how they portrayed themselves outwards. In part this difference followed the same dichotomy in mind-set identified by Sanders (as introduced on page 12); are the designers designing for or with the stakeholders? But only parts of the non-acknowledgement of the differences can be explained by different mind-sets. The lack of differentiation in comparison to other service design agencies is likely also an effect of the field still being in an emerging stage, where the main competitors in most cases are consultancies from other disciplinary traditions rather than other service design agencies. As the discipline continues to grow, with more agencies as well as more clients looking specifically for service designers the need to differentiate becomes stronger.

In fact, based on the insights formulated in the previous two paragraphs and the experience gained through the work summarised in this thesis a

Discussion

model similar to the one suggested by Sanders (Sanders & Stappers, 2012) can be formulated. The model describes two areas in which service designers need to find a balance when doing their projects; how to treat stakeholder input to the process (as inspiration or as co-creators of ideas) and how to balance design suggestions in terms of being oriented towards the organisation’s capabilities and customer’s wishes. All options are valid ones and can lead to good design, but still pose design philosophical questions to the service designers. The model is presented in Figure 10 below and can be used both within a company to compare approaches in different projects and on an agency-level to position it in comparison to competitors from within the field.

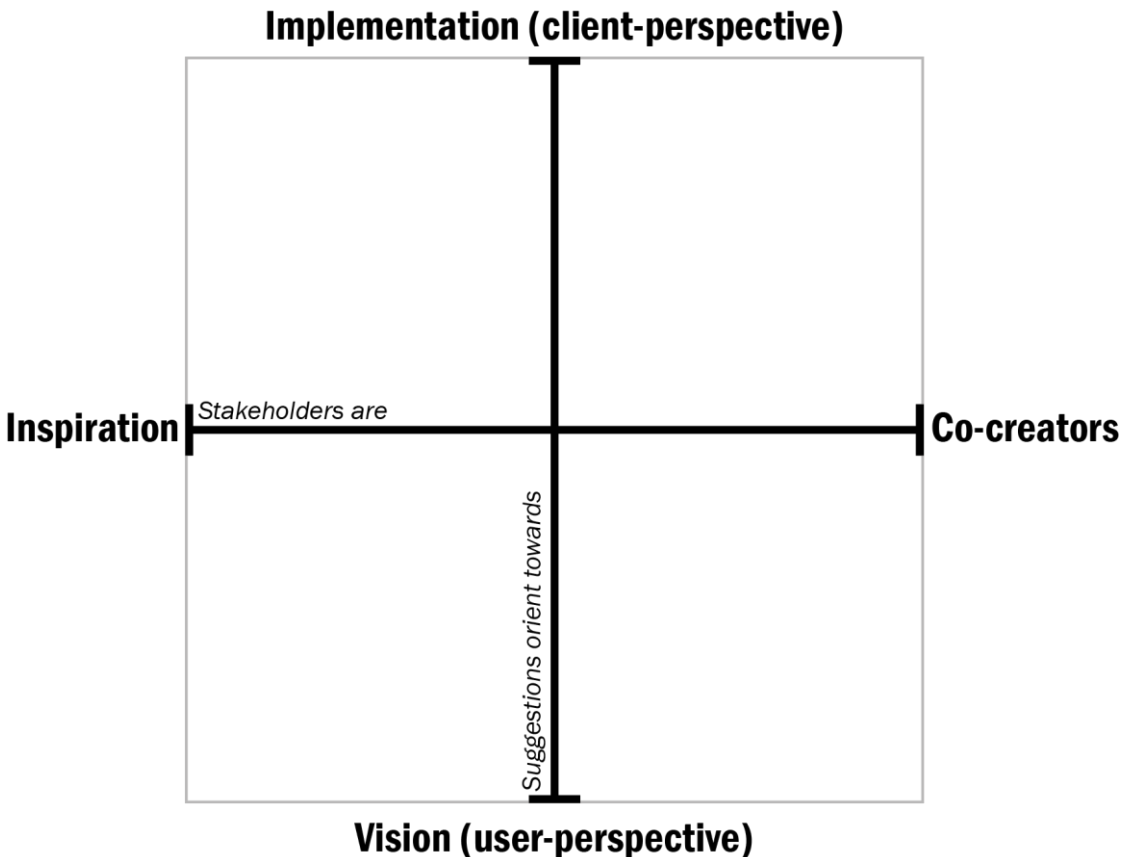


Figure 10 - A model for differentiating service design projects from one another based on approach taken

As can be seen, the two areas in which designers need to decide on a mind-set are placed so they intersect each other. On the horizontal axis, the question on how the role of stakeholder input is placed whereas the vertical axis contains the question on whether to orient ideas towards ease of implementation (taking a client-perspective when needed) or to be visionary in the ideas (a user/customer perspective). As an example of how different various approaches to conduct service design are, the model is presented again below – this time with my interpretation of where the three agencies in the study would be placed as well as the image portrayed by the interview study.

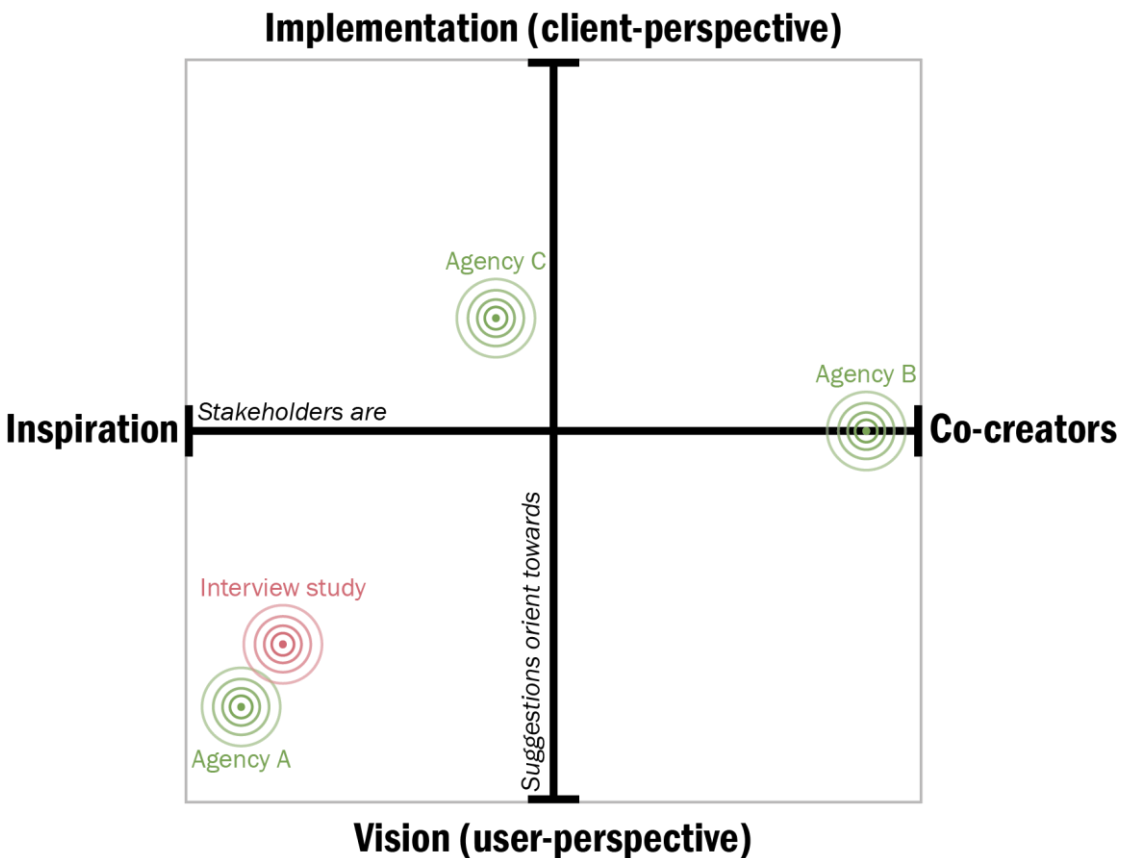


Figure 11 - The model to differentiate approaches in different service design projects with the agencies and impression of interviews marked out as an example of the difference between various approaches.

Discussion

The figure shows that only one of the agencies involved in the field study worked in a way similar to the image portrayed by the interviews on service design practice. What is interesting is that two of the agencies are considerably more oriented towards the clients than the image portrayed by the interviews. This can be interpreted as the agencies making an effort to adapt their suggestions to their clients' reality so the ideas can be implemented. If service design wants to be able to make a real business case for itself, it is probably necessary to make this concession to the idealistic user-first. At the same time, if too much of a concession is made the strength of service design in comparison to competing disciplines is in risk of being lost. Service design agencies thus need to find the right balance between having a user-perspective and suggesting changes which are feasible for implementation. Naturally, the nature of the project and time frame for implementation continuously changes what the right balance is.

Summarising this section, a series of implications for service design have been identified based on the research results. Two of these implications are mainly directed towards practice, the first being that the stakeholder research should be seen (and marketed) as a deliverable and not only a stepping stone for creating design suggestions. Secondly, it was noted that the difference between modes of working in the agencies studied were much larger than could be expected by how they market themselves. Based on this a model was suggested, which can be used both to position an agency in relation to competitors and to help in planning the approach for the various projects done within the agency. Furthermore, it was noted that service design education needs to become stronger in highlighting the effect of the client on the ability to conduct a project as wished.

With that, it is time to summarise the whole thesis. The conclusions chapter re-iterates the main findings and arguments made in a condensed form.

9 Conclusions

The conclusions chapter summarises the main outcomes of the research presented in this thesis. This summarisation is divided into two main sections, one summarising the findings and the other the challenges for service design over the coming years as identified in the research. The end of the chapter (and thesis) contains a a paragraph-long summary of the contents of this thesis and suggestions for future research.

9.1 Summary of findings

The findings from the studies performed confirm that service design belongs to the user/human-centred design tradition. It is however suggested that it is more appropriate to call service design stakeholder-centred as service designers need to consider users/customers, employees and whole organisations when devising design suggestions.

The studies furthermore make it possible to describe the steps undertaken from when a project team has been formed to when the insights identified through the research have been communicated. In brief, the activities done to support stakeholder engagement for service design should be roughly these:

Preparations start with understanding if material already exists which could be helpful for the project. This includes going back to previous work for the client, learning from other projects in the client organisation and the designers using the service themselves (and

Conclusions

potential competitors' services). Based on the knowledge gathered from this process an initial plan for the stakeholder engagement is done, focusing on what should be learned from whom. The plan needs to be well thought-through, in such a way that it not has a rigid structure and can be changed if so needed. The tools presumed to be the most suitable for the project should be selected, not the most convenient ones. When the planning is done and participants recruitment is finished or at least started, it is time for the detailed preparations; formulating interview questions, preparing artefacts needed etc.

Stakeholder interaction is the part of the stakeholder engagement in which the stakeholders are involved. It is done to understand the users and staff of the service by engaging with them in various ways. Common approaches to stakeholder interactions are interviews, observations, design probes and various kinds of workshops. However, how these techniques are used varies greatly between the agencies observed. Two main approaches to which kind of data is desired exist; in the first approach the designers see the participants as inspiration for the designers' upcoming design work and thus aim at achieving empathy with them. In the second the designers see the participants as co-creators of ideas, with the designers acting as facilitators of the participants' ideation. As the research develops the service designers will find areas of interest which they did not plan for, as well as some areas they expected to be of interest not being as interesting as expected. This makes it important to have a plan for the stakeholder interactions which allows for changes without lowering the quality of the research. The aim of the research is to find insights which can be acted upon in the design stage, and the service designers need to be able and willing to adapt their approach to identify as many good insights as possible.

Analysis is the process in which information is transformed into insights. The initial analysis is done based on the gut feeling of the service designers, and happens in-between the stakeholder interaction-sessions during the research phase. The changes to the research plan are in most cases made based on this gut feeling, which underlines the importance of service designers honing their analysis skills from early on in their careers. When the stakeholder interactions have finished, the structured analysis starts. The structured analysis takes the initial analysis as its

starting point, scrutinising it by making sure that all available data fits the analysis. If all data does not fit the initial analysis, new perspectives on the data are investigated. Exactly how the structured analysis is done depends on the nature of the project, but it includes a lot of sorting and resorting of notes and going through various recordings (audio, video, photo, notes). Clusters of information lead to the identification of insights.

Visualisations are the most common way of communicating the insights. This means making the insights more easily accessible by transforming pages of text into visual representations of the same information. As well as making the insights more accessible, the process of representing them visually can lead to new insights being identified or the respective importance of already found ones becoming clearer. To visualise can thus be seen as a third stage in the analysis process as well as a communicative effort. Depending on the intended audience (clients or within the project) the visualisations need various degrees of refinement. If the visualisation is done for the client, it is important to remember that a successful visualisation is likely to be seen by many more in the client organisation than are present when it is first presented to the client.

Presenting research results is however not the only time when it is important to consider the client during the stakeholder research. The studies showed that the client is a constant factor which influences what service designers can do when. An important take-away for educators from this thesis should be to consider how they can prepare their students for interacting with clients and manage the clients' expectations. This includes understanding what in service design practice clients see value in. One such example is that service designers could sell the visualisations of the stakeholder research as a main deliverable, as they provide a unique image of a service from the customer's perspective which most organisations miss.

Having briefly re-iterated the main findings of the studies for this thesis, it is time to focus on the challenges identified for stakeholder engagement for service design as the discipline continues to mature.

9.2 Challenges ahead

As the service design discipline continues to mature, it is bound to meet new challenges. This section highlights some of the (potential) future challenges identified through the research. Three main challenges have been identified; the quality of stakeholder interactions, that many of the standard visualisation tools are ill-equipped to communicate all aspects of services according to current thinking and finally that there is greater diversity in practice than language use portrays.

The first challenge identified is to ensure the quality of the stakeholder engagement. Criticism against the rigour of (service) designers' use of various qualitative tools for research is plentiful in the literature. The research showed that the designers constantly needed to balance time and money pressure against all their actions during the stakeholder engagement. This means that parts of the criticism can be solved by finding ways to get clients to pay for more research (such as making the research outcomes more prominent deliverables). The other part of the criticism can however only be answered by improving the quality of stakeholder interactions. Here educators have an important role to play, as they need to remember to not only focus on introducing the tools of service design to students but also to make sure that they understand the rationale behind the various tools. To be able to appropriate the tools for their needs in a good way, service designers need to understand why the tools were designed as they were. Knowing the thinking behind the tools available also helps in understanding when they are not appropriate and a new approach needs to be found to achieve the intended outcome.

The second challenge emerges as service designers' visualisation practices meet a changing image of the service concept. The importance of visualisation practice is highlighted throughout the thesis, and is seen as one of the unique and distinguishing features of service design. However, it seems that many of the most common visualisation techniques are constructed along the view of services as something that is different from products (that is, services are defined based on how they are different from products – the IHIP-model is the most famous example of this). At the same time, influential scholars have been propagating the idea of two forms of service design, one which views services as not-products and a second one in which service is seen as the

basis for all economic transactions. The latter of these forms is seen as the desirable by the same scholars, and service design according to this (service dominant logic) mind-set is dubbed design for service. If the design for service-perspective on service design takes a widespread hold in practice as well, many of the current visualisation techniques are ill suited to portray all aspects of a service. This means that the change to a design for service-perspective on service design will lead to a need for new visualisation techniques being developed (or vice-versa, the move to design for service can possibly be sped up by new visualisation techniques which better support the service dominant logic view on services).

The third main challenge for service design as it matures is for competing agencies to find a way to differentiate themselves from one another. It was found that the three participating agencies in the participatory observation study all had distinct signature approaches to their stakeholder engagements. These differences were much larger in practice than could be expected by how they communicated outwards. This led to the suggestion of a model with two axes which capture the main differences between the agencies. One axis focuses on which perspective is taken on the stakeholders participating in the research sessions; are they inspiration for or co-creators of design suggestions? The second axis deals with the balance between making design suggestions which are oriented towards the implementation or vision. As the choices made along these axes can differ from project to project as well, the model can also be used internally within different projects.

9.3 In summary

Service design is a stakeholder-centred design discipline, which means that various stakeholders are involved in the process of service designers designing new services. Current tools for stakeholder engagement have been developed within the discipline as well as been borrowed from elsewhere. The tools used today serve service designers well, but there is still room for improvement. Service designers are proud over their ability to understand people and their needs. It is stressed that this includes being able to not take everything a stakeholder says at face-value, but that thorough analysis is needed to formulate insights. These insights are visualised to provide easily accessible depictions of service

systems, a skill and practice which distinguishes service designers from other service professionals. The techniques used will however need to change as service design adapts the theoretical grounds of other service fields although the techniques can help other service professionals understand the design perspective better.

9.4 Suggestions for future research

This thesis has provided an academic overview of how stakeholder engagement for service design is currently practiced. As was shown in the background sections little other research exists in this area. The findings in the thesis thus can provide a starting platform for any further research on stakeholder engagement for service design. Some areas which I see would be extra interesting, based on my experiences during the time I have conducted my PhD studies are:

- **Basic research:** As service design is a new field, building on the traditions of several other fields it is important to continue to investigate the basic premises for service design practice. In many cases knowledge inherited from the other fields might be true, but this thesis and other research have shown that service design faces unique challenges. These challenges need to be identified, and ways of dealing with them need to be found. More basic research on service design practice is thus needed.
- **The challenges identified herein:** The discussion and conclusion chapters have identified a number of challenges for service design practice and education. Research is needed on how to solve these challenges, such as finding tools which are able to support a design for service perspective on services. If the design for service-perspective is to be more than a theoretical construct, research needs to suggest ways for practice to implement it.
- **Finding ways to include more types of stakeholders:** As has been identified, and criticised, stakeholder research for service design to a large degree is user/customer research. Ways of involving other key stakeholders, such as frontline staff need to be found. The tools used will likely be the same, so it is a matter of finding working practices which do not exclude some stakeholders as a side-effect of including others.

- **Client's impact on project progress:** The participatory observations identified the client as an important factor to consider when conducting design work. At the same time little research exists on the client's impact on design efforts, especially in the service sector. Within services most clients will be unfamiliar with buying design, which makes the expectation management extra crucial.

10 References

- Aebersold, R., Polaine, A., & Schäfer, A. (2010). Blueprint+: Developing a tool for designing and managing service processes. *Proceedings of AMA SERV SIG 2010*. Porto, Portugal.
- Agar, M. H. (1996). *The professional stranger: an informal introduction to ethnography, 2nd edition*. USA: Academic Press.
- Allen, J., Reichheld, F. F., Hamilton, B., & Markey, R. (2005). *Closing the delivery gap*. Bain & Company. Retrieved from <http://www.bain.com/bainweb/pdfs/cms/hottopics/closingdeliverygap.pdf>
- Alm, B. (2012). *The Advent Fair in Gamla Linköping, 2012: A report on two student theses*. Project report, Linköping, Sweden. Retrieved from www.ida.liu.se/~fabse/alm-adventfair.docx
- Arvola, M. (2009, 12 10). *Interaction design tools*. Retrieved 08 31, 2010, from Mattias Arvola: <http://www.ida.liu.se/~matar/tools.en.shtml>
- Baron, S., Warnaby, G., & Hunter-Jones, P. (2013). Service(s) Marketing Research: Developments and Directions. *International Journal of Management Reviews*.
- Bartlett, F. C. (1995). *Remembering - A study in Experimental and Social Psychology*. USA: Cambridge University Press.
- Bayazit, N. (2004). Investigating Design: A Review of Forty Years of Design Research. *Design Issues*, 20(1), 16-29.

- Benyon, D. (2010). *Designing Interactive Systems - A comprehensive guide to HCI and interaction design* (2nd ed.). Rotalito Lombarda, Italy: Pearson Education Limited.
- Bitner, M. J. (1992). Servicescapes: The Impact of Physical Surroundings on Customers and Employees. *Journal of Marketing*, 56(2), 56-71.
- Bitner, M. J., Ostrom, A. L., & Morgan, F. N. (2008). Service Blueprinting: A practical Technique for Service Innovation. *California Management Review*, 50(3), 66-94.
- Blomkvist, J. (2011). *Conceptualising Prototypes in Service Design*. Linköping, Sweden: Liu-Tryck. Licentiate thesis.
- Blomkvist, J. (2012). Conceptualisations of Service Prototyping: Service Sketches, Walkthroughs and Live Service Prototypes. In S. Miettinen, & A. Valtonen (Eds.), *Service Design with Theory* (pp. 177-188). Vantaa, Finland: Lapland University Press.
- Blomkvist, J., & Bode, A. (2012). Using Service Walkthroughs to Co-Create Whole Service Experiences: A Prototyping Technique for Service Design. *Proceedings of ISIDC 2012*. Tainan, Taiwan.
- Blomkvist, J., Holmlid, S., & Segelström, F. (2010). This is Service Design Research. In M. Stickdorn, & J. Schneider (Eds.), *This is Service Design Thinking*. Amsterdam, Netherlands: BIS Publishers.
- Blomkvist, J., Segelström, F., & Holmlid, S. (2011). Investigating Prototyping Practices of Service Designers from a Service Logic Perspective. *Nordic Academy of Management conference, NFF*. Stockholm, Sweden.
- Blomkvist, J., & Segelström, F. (2013). External Representations in Service Design: a distributed cognition perspective. *European Academy of Design*. Göteborg, Sweden.
- Blomkvist, J., Åberg, J., & Holmlid, S. (2012). Service walkthroughs to support service development. *Service design and service innovation conference, ServDes*. Espoo, Finland.
- Boehner, K., Vertesi, J., Sengers, P., & Dourish, P. (2007). How HCI Interprets the Probes. *CHI 2007 Proceedings* (pp. 1077-1086). San Jose, CA, USA: ACM.
- Boellstorff, T. (2008). *Coming of Age in Second Life - An Anthropologist Explores the Virtually Human*. Princeton, NJ, USA: Princeton University Press.
- Brandt, E., & Grunnet, C. (2000). Evoking the future: Drama and props in user centered design. *Participatory Design Conference*. CPSR.

References

- Brown, S. W., Fisk, R. P., & Bitner, M. J. (1994). The Development and Emergence of Services Marketing Thought. *International Journal of Service Industry Management*, 5(1), 21-48.
- Buchanan, R. (2001). Design Research and the New Learning. *Design Issues*, 17(4), 3-23.
- Burns, C., & Winhall, J. (2006). *The Diabetes Agenda*. London: Design Council.
- Button, G. (2000). The ethnographic tradition and design. *Design Studies*, 21(4), 319-332.
- Care Info Scotland & Snook. (2013). *Redesigning the Service Model for CIS: The service blueprint*. Retrieved September 11, 2013, from Care Info Scotland:
<http://www.careinfoscotland.co.uk/media/86610/1.the%20service%20blueprint.pdf>
- Carroll, J. M. (1999). *Scenario-Based Design: Envisioning Work and Technology in System Development*. New York: John Wiley & Sons.
- Clark, H. H. (1996). *Using Language* (6th ed.). Cambridge: Cambridge University Press.
- Clatworthy, S. (2013). *Design support at the front end of the New Service Development (NSD) process: The role of touch-points and service personality in supporting team work and innovation processes*. Oslo, Norway: Arkitektthøgskolen i Oslo. PhD thesis.
- Cooper, A. (1999). *The Inmates are Running the Asylum: Why High-Tech Products Drive Us Crazy and How to Restore the Sanity*. Indianapolis, Indiana: Macmillan Computer Publishing.
- Cooper, A., Reimann, R., & Cronin, D. (2007). *About Face 3 - The Essentials of Interaction Design*. Indianapolis, IN, USA: Wiley Publishing.
- Cross, N. (2001). Designerly Ways of Knowing: Design Discipline versus Design Science. *Design Issues*, 17(3), 49-55.
- De Lille, C., Roscam Abbing, E., & Kleinsmann, M. (2012). A designerly approach to enable organizations to deliver Product-Service Systems. *Leading Innovation through Design: Proceedings of the DMI 2012 International Research Conference* (pp. 459-471). Boston, MA, USA: Design Management Institute.
- Diana, C., Pacenti, E., & Tassi, R. (2009). Visualtiles - Communication tools for (service) design. *First Nordic Conference on Service Design and*

- Service Innovation* (pp. 65-77). Oslo, Norway: Linköping University Electronic Press.
- Diana, C., Pacenti, E., & Tassi, R. (2010). Visual Tools to Design: About the role of visualization techniques for Service Design. *Design Research Journal*(1.10), 49-55.
- Dorst, K. (2011). The core of 'design thinking' and its application. *Design Studies*(32), 521-532.
- Dourish, P. (2006). Implications for Design. *CHI 2006* (pp. 541-550). Montreal, Canada: ACM.
- Dubberly, H. (2005, 03 18). *How do you design?* Retrieved 06 21, 2010, from http://www.dubberly.com/wp-content/uploads/2008/06/ddo_designprocess.pdf
- Dubberly, H., Evenson, S., & Robinson, R. (2008, March + April). The Analysis-Synthesis Bridge Model. *interactions*, 57-61.
- Edvardsson, B., Gustafsson, A., & Roos, I. (2005). Service portraits in service research: a critical review. *International Journal of Service Industry Management*, 16(1), 107-120.
- Ehn, P. (1988). *Work-Oriented Design of Computer Artifacts*. Stockholm: Arbetslivscentrum. PhD thesis.
- Engine. (2007, 10 19). *Dear Architect*. Retrieved 06 29, 2009, from Our New School: http://www.ournewschool.org/assets/pdf/Dear_Architect.pdf
- Engine. (n.d.). *Desktop walkthroughs*. Retrieved 08 31, 2010, from Engine Service Design: http://www.enginegroup.co.uk/service_design/m_page/desktop_walkthroughs
- Erlhoff, M., Mager, B., & Manzini, E. (1997). *Dienstleistung braucht Design - Professioneller Produkt- und Markenauftritt für Serviceanbieter*. Berlin: Hermann Luchterhand Verlag GmbH.
- Freeman, R. E. (1984). *Strategic Management: A Stakeholder Approach*. Boston, USA: Pitman Publishing.
- Gamla Linköping. (n.d.). *Mer om oss > Historik*. Retrieved June 29, 2012, from Gamla Linköping: <http://www.gamlalinkoping.info/index.php/sv/mer-om-oss/historik>
- Gaver, W., Dunne, T., & Pacenti, E. (1999). Cultural probes. *interactions*, 6(1), 21-29.

References

- Gedenryd, H. (1998). *How Designers Work - making sense of authentic cognitive activities*. Lund, Sweden: Lund University Cognitive Studies 75. PhD thesis.
- Geertz, C. (1995). *After the fact. Two countries, four decades, one anthropologist*. Cambridge, MA, USA: Harvard University Press.
- Gloppen, J. (2012). *Service design leadership: Shaping service innovations at the intersection of design and strategic management*. Oslo, Norway: Arkitektur- og designhøgskolen i Oslo. PhD thesis.
- Goodwin, K. (2009). *Designing for the Digital Age: How to create human-centered products and services*. Indianapolis, IN, USA: Wiley Publishing.
- Gropius, W. (1919). *Bauhaus Manifest*. Retrieved May 20, 2010, from Bauhaus-archiv Museum für Gestaltung:
<http://www.bauhaus.de/bauhaus1919/manifest1919.html>
- Grudin, J. (1990). The Computer Reaches Out: The Historical Continuity of Interface Design. *Proceedings of Computer-Human Interaction, CHI, 1990* (pp. 261-268). Seattle, WA, USA: ACM.
- Grudin, J. (1994). Computer-Supported Cooperative Work: History and Focus. *Computer*, 27(5), 19-26.
- Grönroos, C. (2006). Adopting a service logic for marketing. *Marketing Theory*, 6(3), 317-333.
- Grönroos, C. (2008). Service logic revisited: who creates value? And who co-creates? *European Business Review*, 20(4), 298-314.
- Hammersley, M., & Atkinson, P. (2007). *Ethnography: Principles in Practice* (3rd ed.). Routledge.
- Han, Q. (2010). *Practices and principles in Service Design: stakeholders, knowledge and Community of Service*. Dundee, Scotland: University of Dundee. PhD thesis.
- Hanington, B. (2003). Methods in the Making: A Perspective on the State of Human Research in Design. *Design Issues*, 19(4), 9-18.
- Heinonen, K., Strandvik, T., Mickelsson, K.-J., Edvardsson, B., Sundström, E., & Andersson, P. (2010). A Customer-Dominant Logic of Service. *Journal of Service Management*, 21(4), 531-548.
- Holmlid, S. (2007). Interaction design and service design: Expanding a comparison of design disciplines. *Nordic Design Research, NorDes 2007*. Stockholm.

- Holmlid, S., & Evenson, S. (2006). Bringing design to services. *Invited to IBM Service Sciences, Management and Engineering Summit: Education for the 21st century*. New York.
- Howard, Z. (2012). From concept to capability: Developing design thinking within a professional services firm. *Design Research Society*, (pp. 729-739). Bangkok, Thailand.
- Hughes, J., King, V., Rodden, T., & Andersen, H. (1994). Moving Out from the Control Room: Ethnography in System Design. *Proceedings of the 1994 ACM conference on Computer supported cooperative work*, 429-439.
- Hutchinson, H., Mackay, W., Westerlund, B., Bederson, B. B., Druin, A., Plaisant, C., Beaudouin-Lafon, M., Conversy, S., Evans, H., Hansen H., Roussel, N., Eiderbäck, B., Lindquist, S., & Sundblad, Y. (2003). Technology Probes: Inspiring Design for and with Families. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '03)* (pp. 17-24). Ft. Lauderdale, FL, USA: ACM.
- Iacucci, G., Iacucci, C., & Kuutti, K. (2002). Imagining and experiencing in design, the role of performances. *NordiCHI* (pp. 167-176). Århus, Denmark: ACM.
- IDEO. (2011). *Human Centered Design Toolkit* (2nd ed.). Canada: IDEO.
- ISO. (2010). Ergonomics of human-system interaction - Part 210: Human-centred design for interactive systems. ISO.
- Johansson, L.-G. (2003). *Introduktion till vetenskapsteorin*. Riga, Latvia: Thales.
- Johnson, E. M. (1969). *Are Goods and Services Different? An Exercise in Marketing Theory*. Washington University. PhD thesis.
- Jones, J. C. (1992). *Design Methods* (2 ed.). USA: John Wiley & Sons.
- Karlsson, H. (2012). *Shop until you drop: En studie i konsumentbeteende och julmarknadens betydelse*. Linköping: Linköping University Electronic Press. Retrieved from <http://urn.kb.se/resolve?urn=urn:nbn:se:liu:diva-74412>
- Kimbell, L. (2009). Insights from Service Design Practice. *8th European Academy of Design Conference*, (pp. 249-253). Aberdeen.
- Kimbell, L. (2010, October 19). *Service design at a crossroads*. Retrieved September 10, 2013, from Design leads us where exactly?: <http://designleadership.blogspot.se/2010/10/service-design-at-crossroads.html>

References

- Kimbell, L. (2011a). Designing for Service as One Way of Designing Services. *International Journal of Design*, 5(2), 41-52.
- Kimbell, L. (2011b). Rethinking Design Thinking: Part 1. *Design and Culture*, 3(3), 285-306.
- Kimbell, L., & Siedel, P. (2008). *Designing for Services - Multidisciplinary Perspectives: Proceedings from the Exploratory Project on Designing for Services in Science and Technology-based Enterprises*, . Oxford: Saïd Business School.
- Koivisto, M. (2009). Frameworks for structuring services and customer experiences. In S. Miettinen, & M. Koivisto, *Designing Services with Innovative Methods* (pp. 136-149). Keuruu, Finland: Kuopio Academy of Design.
- Krippendorff, K. (1989). On the Essential Contexts of Artifacts or on the Proposition that "Design Is Making Sense (of Things)". *Design Issues*, 5(2), 9-39.
- Krippendorff, K. (2004). Intrinsic motivation and human-centred design. *Theoretical Issues in Ergonomics Science*, 5(1), 43-72.
- Kumar, V. (2013). *101 Design Methods: A Structured Approach for Driving Innovation in Your Organization*. Hoboken, New Jersey, USA: John Wiley & Sons.
- Kuper, A. (1996). *Anthropology and anthropologists: The modern British school*. (3 ed.). Great Britain: Routledge.
- Lee, J.-J. (2012). *Against Method: The portability of Method in Human-Centered Design*. Helsinki: Aalto University Publication series. PhD thesis.
- Lindgren, I. (2013). *Public e-Service Stakeholders: A study on who matters for public e-service development and implementation*. Linköping: Department of Management and Engineering, Linköping University. PhD thesis.
- Lovelock, C., & Gummesson, E. (2004). Whither Services Marketing? In Search of a New Paradigm and Fresh Perspectives. *Journal of Service Research*, 7(1), 20-41.
- Mager, B. (2004). *Service design: A review*. Köln: KISD.
- Malinowski, B. (1987). *Argonauts of the Western Pacific*. Great Britain: Routledge & Kegan Paul.
- Marcus, G. E. (1995). Ethnography in/of the World System: The Emergence of Multi-Sited Ethnography. *Annual Review of Anthropology*, 24, 95-117.

- Mattelmäki, T. (2006). *Design Probes*. Helsinki: University of Art and Design. PhD thesis.
- McCloud, S. (1993). *Understanding comics: The invisible art*. USA: HarperPerennial.
- Meroni, A., & Sangiorgi, D. (2011). *Design for Services*. Farnham, England: Gower Publishing.
- Miettinen, S., & Koivisto, M. (Eds.). (2009). *Designing Services with Innovative Methods*. Keuruu, Finland: Kuopio Academy of Design.
- Millen, D. R. (2000). Rapid ethnography: time deepening strategies for HCI field research. *DIS '00* (pp. 280-286). Brooklyn, New York, USA: ACM.
- Moggridge, B. (2007). Services. In B. Moggridge, *Designing Interactions* (pp. 383-447). The MIT Press.
- Morelli, N. (2011). Active, Local, Connected: Strategic and Methodological Insights in Three Cases. *Design Issues*, 27(2), 90-110.
- Moritz, S. (2005). *Service Design: Practical Access to an Evolving Field*. Cologne, Germany: Köln International School of Design.
- Nyman, M. (2012). *Mysiga Gamla Linköping: Det konstruerade kulturarvets historieanspråk och dess autencitet*. Linköping, Sweden: Linköping University Electronic Press. Retrieved from <http://urn.kb.se/resolve?urn=urn:nbn:se:liu:diva-75162>
- Pacenti, E., & Sangiorgi, D. (2010). Service Design Research Pioneers: An overview of Service Design research developed in Italy since the '90s. *Design Research Journal*(1.2010), 26-33.
- Parker, S., & Heapy, J. (2006). *The Journey to the Interface*. London: Demos.
- Polaine, A. (2009). Blueprint+: Developing a Tool for Service Design. *Service Design Network Conference 2009*. Madeira, Portugal.
- Polaine, A., Løvlie, L., & Reason, B. (2013). *Service Design: From Insight to Implementation*. New York, USA: Rosenfeld Media.
- Portugal, S. (2013). *Interviewing Users: How to Uncover Compelling Insights*. USA: Rosenfeld Media.
- Pruitt, J., & Adlin, T. (2006). *The Persona Lifecycle: Keeping People in Mind Through Product Design*. San Fransisco, CA: Elsevier.
- Radcliffe-Brown, A. R. (1952). Historical Note on British Social Anthropology [Letter to the editor]. *American Anthropologist*, 54(2), 275-277.

References

- Raijmakers, B. (2007). *Design Documentaries: Using documentary film to inspire design*. London, United Kingdom: The Royal College Of Art. PhD thesis.
- Randall, D., Harper, R., & Rouncefield, M. (2005). Fieldwork and Ethnography: A Perspective from CSCW. *EPIC 2005, Proceedings of Ethnographic Praxis in Industries Conference 2005* (1), 81-99. American Anthropological Association.
- Rao, P. (2012). *Connecting the dots: A design approach to services for the poor*. Newcastle upon Tyne, UK: Northumbria University. PhD thesis.
- Redström, J. (2005). Towards user design? On the shift from object to user as the subject of design. *Design Studies*, 27, 123-139.
- Rose, A., Shneiderman, B., & Plaisant, C. (1995). An applied ethnographic method for redesigning user interfaces. *Proceedings of the 1st Conference on Designing interactive Systems: Processes, Practices, Methods, & Techniques*, 115-122.
- Rowe, P. G. (1987). *Design Thinking*. Cambridge, Massachusetts, USA: MIT Press.
- Saffer, D. (2010). *Designing for Interaction - Creating Innovative Applications and Devices* (2nd ed.). Berkley, CA, USA: New Riders.
- Salvador, T., Bell, G., & Anderson, K. (1999). Design Ethnography. *Design Management Journal*, 10(4), 35-41.
- Samalionis, F. (2009). Die Zukunft des Service Design. In B. Mager, *Service Design* (pp. 138-145). Paderborn: Wilhelm Fink GmbH.
- Sanders, E. (2006). Design Research in 2006. *Design Research Quarterly*, 1(1), 1-8.
- Sanders, E. B., & Stappers, P. J. (2012). *Convivial toolbox*. Amsterdam, The Netherlands: BIS Publishers.
- Sangiorgi, D. (2012). Value Co-Creation in Design for Services. In S. Miettinen, & A. Valtonen (Eds.), *Service Design with Theory* (pp. 95-104). Vantaa, Finland: Lapland University Press.
- Schmidt, K. (2009). Divided by a common acronym: On the fragmentation of CSCW. *11th European Conference on Computer Supported Cooperative Work* (pp. 223-242). Vienna, Austria: Springer.
- Schuler, D., & Namioka, A. (1993). *Participatory Design: Principles and Practices*. Lawrence Erlbaum Associates.

- Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. USA: Basic Books.
- Secomandi, F. (2012). *Interface Matters: Postphenomenological perspectives on service design*. Delft, The Netherlands. PhD thesis.
- Segelström, F. (2012a, February 20). *Co-creation, co-production and co-design in Service Dominant Logic*. Retrieved July 23, 2013, from Fabian Segelström's blog: <http://segelstrom.se/2012/02/co-creation-co-production-and-co-design-in-service-dominant-logic/>
- Segelström, F. (2012b). Understanding Visualisation Practices: A distributed cognition perspective. In S. Miettinen, & A. Valtonen, *Service Design with Theory*. Vantaa: Lapland University Press.
- Segelström, F., & Holmlid, S. (2012a). Gamla Linköping: Christmas market in early 19th century environment in Linköping/Sweden. In M. Stickdorn, & B. Frischhut (Eds.), *Case Studies of Applied Research Projects on Mobile Ethnography for Tourism Destinations* (pp. 72-77). Norderstedt, Germany: Books on Demand GmbH.
- Segelström, F., & Holmlid, S. (2012b). One Case, Three Ethnographic Styles: Exploring different ethnographic approaches to the same broad brief. *EPIC 2012, Proceedings of Ethnographic Praxis in Industries Conference, 2012(1)*, 48-62. American Anthropological Association.
- Segelström, F., & Holmlid, S. (submitted). Ethnography by Design: On goals and mediating artefacts. *Arts & Humanities in Higher Education*.
- Segelström, F., Holmlid, S., & Alm, B. (2009). Back to the Roots: An New Ideal for Ethnographic Research for Interface Design. *Proceedings of the International Association of Societies of Design Research, IASDR 2009*. Seoul.
- Service Design Network. (n.d.). *SDN Manifesto*. Retrieved 06 16, 2010, from Service Design Network: <http://www.service-design-network.org/content/sdn-manifesto>
- Shostack, L. (1977). Breaking Free from Product Marketing. *Journal of Marketing*, 41(April), 73-80.
- Shostack, L. (1982). How to Design a Service. *European Journal of Marketing*(161), 49-63.
- Shostack, L. (1984). Designing Services that Deliver. *Harvard Business Review*, 62(1), 133-139.
- Simon, H. A. (1981). *The Science of the Artificial* (2nd edition ed.). Cambridge, MA, USA: MIT Press.

References

- Singleton, B. (2012). *On Craft and Being Crafty: Human Behaviour as the Object of Design*. Newcastle, UK. PhD thesis.
- Sleeswijk Visser, F. (2009). *Bringing the Everyday Life of People into Design*. Delft: Technische Universiteit Delft. PhD thesis.
- SOU 2013:40. (2013). *Att tänka nytt för att göra nytta - om perspektivskiften i offentlig verksamhet*. Stockholm, Sweden: Fritzes Offentliga Publikationer. Retrieved 07 29, 2013, from <http://www.regeringen.se/content/1/c6/21/88/17/e781bfac.pdf>
- Sparagen, S. L., & Chan, C. (2008). Service Blueprinting: When Customer Satisfaction Numbers are not enough. *International DMI Education Conference. Design Thinking: New Challenges for Designers, Managers and Organizations*. Cergy-Pointose, France.
- Sperschneider, W., & Bagger, K. (2003). Ethnographic Fieldwork Under Industrial Constraints: Toward Design-in-Context. *International Journal of Human-Computer Interaction*, 15(1), 41-50.
- Steen, M. (2012). Human-Centered Design as a Fragile Encounter. *Design Issues*, 28(1), 72-80.
- Stickdorn, M., & Schneider, J. (Eds.). (2010). *This is Service Design Thinking: Basics - Tools - Cases*. Amsterdam, The Netherlands: BIS Publishers.
- Suchman, L. A. (1983). Office Procedure as Practical Action: models of work and system design. *ACM Transactions on Information Systems*, 1(4), 320-328.
- Tan, L. (2012). *Understanding the Different Roles of the Designer in Design for Social Good: A study of design methodology in the DOTT 07 (Design of the Times) project*. Newcastle upon Tyne, UK: Northumbria University. PhD thesis.
- Tassi, R. (2009). Retrieved 07 30, 2013, from Service Design Tools | Communication methods supporting design processes: <http://servicedesigntools.org/>
- ten Bhömer, M., De Lille, C., Tomico Plasencia, O., & Kleinsmann, M. (2013). From products to services: reflections on the challenges in designing for services. *Proceedings of IASDR 2013*. Tokyo, Japan.
- Transformator Design. (n.d.). *Det goda kundmötet*. Retrieved September 11, 2013, from Transformator Design: <http://www.transformatordesign.se/case/det-goda-kundmotet/>

- Trevett, N. (2010, March 12). 'People matter' is key message on the road to recovery. Retrieved September 11, 2013, from The Guardian: <http://www.theguardian.com/service-design/people-matter>
- Trischler, J., & Zehrer, A. (2012). Service design: Suggesting a qualitative multistep approach for analyzing and examining theme park experiences. *Journal of Vacation Marketing*, 18(1), 57-71.
- Tunstall, E. (2008). The QAME of Trans-disciplinary Ethnography: Making Visible Disciplinary Theories of Ethnographic Praxis as Boundary Object. *EPIC 2008, Proceedings of Ethnographic Praxis in Industries Conference 2008(1)*, 218-233. American Anthropological Association.
- Ulrich, K. T., & Eppinger, S. D. (2012). *Product Design and Development* (5th ed.). Singapore: McGraw-Hill.
- Unger, R., & Chandler, C. (2009). *A project guide to UX design - For user experience designers in the field or in the making*. Berkeley, California, USA: New Riders.
- Vaajakallio, K. (2012). *Design games as a tool, a mindset and a structure*. Helsinki, Finland: Aalto University. PhD thesis.
- van Dijk, G. (2008). HCI informing Service Design, and vice versa. *HCI08 Workshop: HCI and the Analysis and Design of Services*. Liverpool, UK.
- van Veggel, R. J. (2005). Where the Two Sides of Ethnography Collide. *Design Issues*, 21(3), 3-16.
- Vanstone, C., & Winhall, J. (2006). *Activmobs*. London: Design Council.
- Vargo, S., & Lusch, R. (2004). Evolving to a new dominant logic for marketing. *Journal of Marketing*, 68, 1-17.
- Vargo, S., & Lusch, R. (2008). Service-dominant logic: Continuing the evolution. *Journal of the Academy of Marketing Science*(36), 1-10.
- Wetter Edman, K. (2011). *Service Design - a conceptualization of an emerging practice*. Gothenburg: ArtMonitor. Licentiate thesis.
- Viña, S., & Mattelmäki, T. (2010). Spicing up Public Journeys - storytelling as a design strategy. *ServDes, 2nd Nordic Conference on Service Design and Service Innovation* (pp. 77-86). Linköping, Sweden: Linköping University Electronic Press.
- Vlaskovits, P. (2011, August 29). *Henry Ford, Innovation, and That "Faster Horse" Quote*. Retrieved July 10, 2013, from Harvard Business Review Blogs: http://blogs.hbr.org/cs/2011/08/henry_ford_never_said_the_fast.html

References

- Wreiner, T., Mårtensson, I., Arnell, O., Gonzalez, N., Holmlid, S., & Segelström, F. (2009). Exploring Service Blueprints for Multiple Actors: A Case Study of Car Parking Services. *First Nordic Conference on Service Design and Service Innovation* (pp. 213-223). Oslo, Norway: Linköping University Electronic Press.
- Zeithaml, V. A., Parasuraman, A., & Berry, L. L. (1985). Problems and Strategies in Services Marketing. *Journal of Marketing*, 49(2), 33-46.

Appendix

Appendix A - Interview questions

Below the structured part of the interviews is listed, with the questions in lighter colour only being asked if the interviewees had the time after the main section had been concluded.

Background

To be able to place the interviews in a professional context, I'd like to know more about your professional background; where and what did you study, what has your work life looked like and so on?

The "average" project

- What does your work process in an average project look like?
- How much (relative) time do you use for data collection? Do you consider the amount to be enough, too little or too much?
- How do you use the data you collect? (How) do you make sure that you connect back to collected data throughout the process?
- How is the data collection performed?
- How do you present the results of your data collection? Internally as well as externally?
- Do you visualize the data you've collected? How?
- Do you choose type of visualization depending on the data you've collected or do you look for certain types of data to be able to fit it in to a preferred way of visualizing?

Design methods in practice

- What is your attitude towards specific design methods (like contextual interviews)? Do you consciously use specific design methods in your work or do you tweak several design methods as you think is appropriate?
- About how many different design methods would you say that you use regularly? Which ones?
- Which design methods are used when?
- Have you evaluated the various design methods you (might) use? Formally/Informally?
- Do you have a favourite method which you think gives extra good results? Which one and what are the objectives with using this method?
- Is there any method which you wouldn't use again? (If yes, which one and why)
- Who is collecting user data in your projects? Is it the designers who will do the design or other persons (Designers, ethnographers...)
- Do you have any more comments surrounding how you use design methods in the field?

Design methods in theory

- Do you work theoretically with design methods?
- Do you ever develop design methods of your own? (How often? More details please)
- (How) do you learn new design methods? Papers, conferences...
- In which way do you think your academic background influences your choice of methodology? How were design methods treated during your education?

Design methods in comparison to what?

- In your opinion, what can design methods contribute with to the design process as a whole?
- How important are design methods to service design?
- In your opinion, what are you designing?
- What is a service according to you?
- What is service design according to you?

- Could you please talk a bit about a project that has made an extra big impact on you? Why did you choose this project? What did you learn from it? How was it performed?

Appendix B - Examples of visualisation techniques

To give the readers of this thesis a clearer understanding of visualisation techniques used in service design, this section describes those reoccurring later in this thesis. Each is described by text and illustration. The text segments describe the main traits of each technique and the illustrations give an example of how such a visualisation might look.

Just like the visualisations studied, the visualisations presented herein all have different degrees of refinement. To highlight the differences between the various visualisation techniques better, all visualisations are based on the same scenario:

A PhD student at Linköping University is working on his thesis in the middle of the summer. The hallways of his department are empty. The only other person who still is working is one of the administrative staff which is preparing the material to be sent out to the new students accepted to the university's fall semester. The sun is shining outside and as the afternoon progresses the two of them just long to go outside. Finally, the PhD student decides to take a break and get an ice-cream. He asks his colleague if she wants to come along, and they both go to the on-campus convenience store to get an ice-cream. Upon arrival, they select and pay for their ice-creams before they find a nice spot outside to sit and enjoy their ice-creams.

The techniques which are introduced are:

- Customer Journey
- Desktop Walkthrough
- Persona
- Storyboard
- System map
- Blueprinting

Blueprint

As the name indicates, the service blueprint concept is inspired by architectural blueprints. They provide a mapping of how the service process is meant to work. This is done by sorting the various actions in a service into categories, connecting these actions to each other as they would occur in the service transaction.

The service blueprint has been adopted from the service management/marketing field. Originally introduced by Lynn Shostack (1982; 1984) in the early 1980s, the technique has received much attention and has been the subject of many research papers. Bitner, Ostrom, & Morgan (2008) summarised the improvements made over a period of 25 years and presents the blueprint in the form it has developed into, as it has grown more complex with time.

From a service design perspective, the technique has been explored from a variety of angles; Wreiner et al. (2009) explored how blueprints could be used in a setting where the service delivery company acts as the middleman between the end customer and the owner of facilities, in this case parking houses. Sparagen & Chan (2008) investigated ways of integrating an emotional view of the customer's experience and expectations in the blueprint. Similarly a research group from Lucerne has developed Blueprint+, which expands the blueprint with emotional and cost aspects. They also suggest a change from the traditional stages to mapping according to characters (Polaine, 2009; Aebersold, Polaine, & Schäfer, 2010).

In Shostack's (1982) original presentation of the idea there were only two sections – frontstage and backstage. Parts of the service which the customer noticed were placed in the frontstage and those she did not see (such as re-stocking) in the backstage. In the updated model presented by Bitner, Ostrom, & Morgan (2008) there were five sections:

Appendix

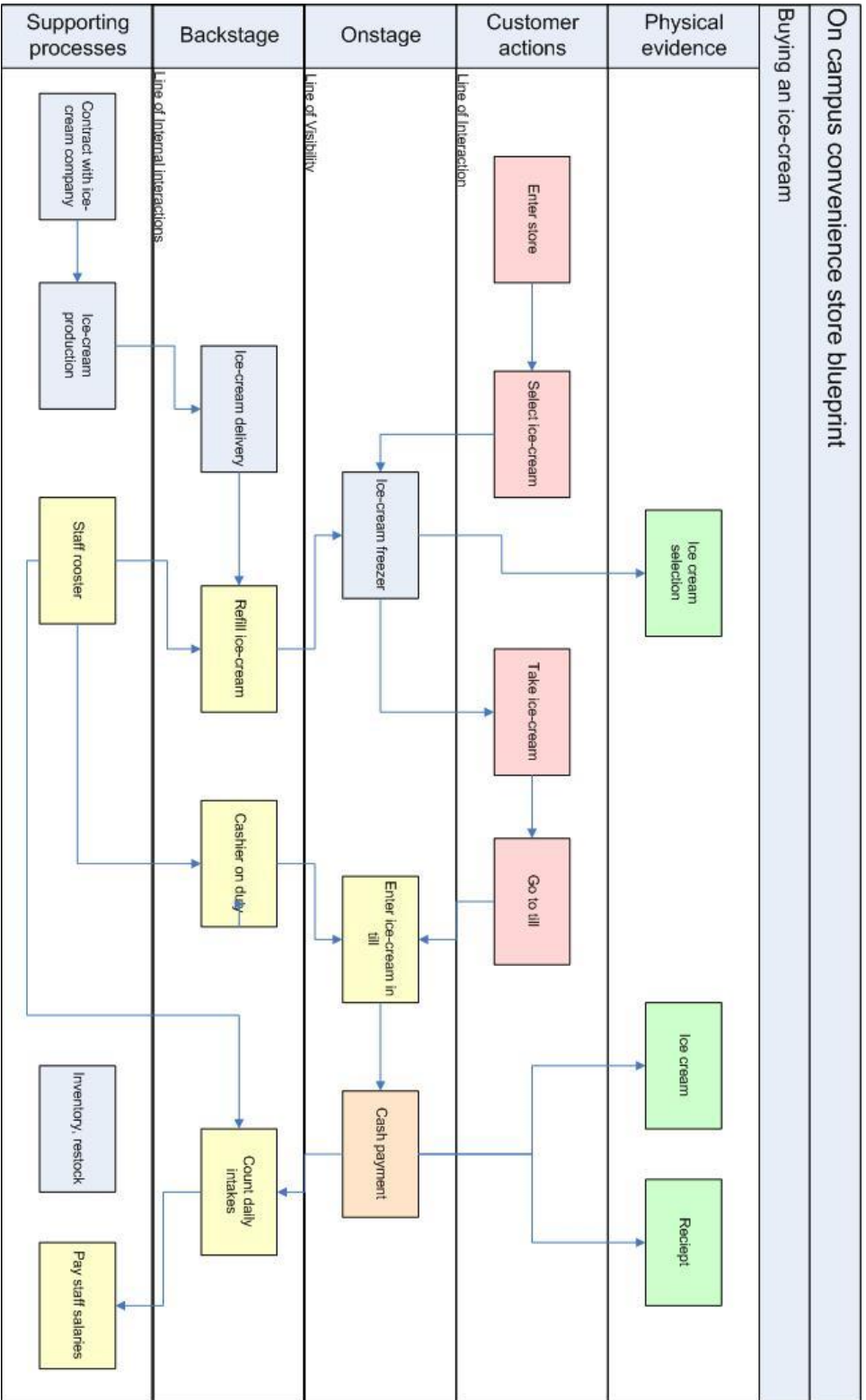
- *Physical Evidence*: A tangible evidence of that the service has been provided.
- *Customer Actions*: Actions by the customer without interacting with the service touchpoints³¹.
- *Onstage*: Interactions between the customer and the service touchpoints.
- *Backstage*: Actions by service employees which are not directly visible for the customer.
- *Support Processes*: Subcontractors and actions easing other actions, such as scheduling.

The different sections are divided from each other by lines, which are named after their role from a customer perspective. The *line of interaction* goes between customer actions and onstage, the *line of visibility* divides onstage and backstage from each other and finally the *line of internal interaction* is placed between backstage and support processes.

Blueprints are very flexible in regard to the amount of detail which needs to be put into them – they can be a tool to map out the main activities in a service or a detailed explanation of everything that is going on within the service system. They provide an idealised image of the organisational structure of the service.

³¹ A touchpoint is a place in the service where direct interaction occurs between the customer and a representative (human or artefact) of the service.

Appendix B - Examples of visualisation techniques



Customer journey

The customer journey follows a customer throughout a service delivery process, and often also in the stages before and after the service interaction. As it depicts the service from the customer's perspective, it focuses on what the customer sees and experiences, which not necessarily are the most important moments to make the service work. Alas, it does not provide a structure of how the service works. Instead it highlights the process which will be the basis of how the customer will experience the service – the focus is emotional rather than operational.

Customer journeys (also known as experience journeys, user journeys or customer journey maps) emerged early in service design, originally with a strong focus on touchpoints (see Parker & Heapy (2006) for an early publication with a service design customer journey). The customer journey is probably the most used visualisation technique for public presentations of service design projects. In spite of this, it is hard to find any publications focusing on customer journeys; Koivisto (2009) has a descriptive focus of how the technique works. The customer journey is a dynamic tool. It can take many forms and the evolution of the technique seems to be based on inspiration and adaptation of other's customer journeys rather than guided efforts.

Customer journeys and blueprints thus complement each other in giving an overview of the service. Customer journeys are ideally created by following and documenting actual customers in the service setting. Elements that are reoccurring in many customer journeys are:

- Time-aspect
- Interactions
- Emotional triggers

Being the (probably) most commonly used visualisation tool in service design, the customer journey is also the technique which has evolved the most as service design has continued to develop its' practice. Modern customer journeys often incorporate elements from what where initially separate visualisation techniques such as the touchpoint matrix. It is thus quite common to see customer journeys which emphasise service transactions over a long time and how customers use different channels at various times.



1. Decision to shop
Our customers decide that they want ice-cream and go to the store



2. Choosing ice-cream
Having arrived at the store, the customers select which ice-cream they want to buy



3. Pay and leave
After having chosen ice-cream the customers proceed to pay and than leave the store



4. Eat ice-cream

Appendix

Desktop walkthrough

Desktop walkthroughs can both serve as a visualisation and a quick-n-dirty prototyping tool. Desktop walkthroughs are representations (or imaginations when used as a prototyping tool) of the service in a small scale. Focus is often put on the humans in the system and small figurines (such as Lego) are used to depict their place in the service system. Various kinds of markers are used to depict the tangibles in the service – drawings on the surface and small Lego props are both common. The basic setting thus recreates the servicescape³² and lets the designers enact the service delivery in it for a low cost. By using it in conjunction with the persona visualisation technique a variety of situations can be imagined.

Desktop walkthroughs have not been described as such in the literature, and are known under a variety of names depending on the context. For example, there is no single entry on desktop walkthroughs on the Service Design Tools website (Tassi, 2009) but various examples of desktop walkthroughs can be found under the headings “Lego serious play”, “Role playing” and “Rough prototyping”.

The service design consultancy Engine defined the value of using desktop walkthroughs on their previous website: “[a] better understanding of the choreography of the service elements, and insight into any inpractical [sic!] or illogical ideas and moments” (Engine, n.d.).

³² The servicescape denotes the physical environment in which the service takes place. See Bitner (1992) for an introduction to servicescapes.

Appendix B - Examples of visualisation techniques



Appendix


Persona

A persona is a representation of a customer segment in the form of an idealized person. Personas should always be based on thorough research of the users of a service or product. A large number of users/customers should be interviewed and the results of the interviews should be analysed and clustered according to common traits. Based on the clustering the persona categories emerge with different traits influencing their interactions and/or attitude towards the service. From these traits and other commonalities between the individuals in the cluster an imaginary person is constructed. The various personas constructed should together capture all important attitudes which are held by the users of the service³³. Recently, it has become common to use the communicative benefits of personas without having done the rigorous work which go into a persona. These representations are usually not distinguishable from personas in any other way than by their name, as they are often called something other than persona like user profile.

As the design process continues, the personas are used as stand-ins for the actual users of the service to check feasibility of ideas and that any important features are not missing. Personas, however, are not meant to replace the actual users, rather they are meant to be a good way of reflecting on user needs between user testing sessions.

Personas emerged as a technique within interaction design and were first presented by Cooper (1999). The technique quickly became very popular and is well documented in literature (see Pruitt & Adlin (2006) for a full book on the technique) as well as a standard feature in textbooks on (interaction) design (Cooper, Reimann, & Cronin, 2007; Goodwin, 2009; Saffer, 2010).

³³ The persona example is based on the persona sheet developed by Mattias Arvola and available through his webpage (Arvola, 2009). Used with permission.

ON CAMPUS CONVENIENCE STORE CUSTOMERS				
Name	Fabian Segelström			Picture 
Role	Now and then customer			
Age	28	Sex	M	
Tag line	"I need my afternoon break"			
Description	PhD student working hard towards dissertation deadline			
MOTIVATIONS AND GOALS		ACTIVITIES		
Experience goals	Wants to relax and think about other things than work		Work place Linköping University	
End goals	Recharge energy		Typical purchases Ice-cream, lunch, coffee	
Life goals	Help spread the word about service design			
Business- and organisational goals	Hand in dissertation		Important atypical purchases Cigarettes, magazines	
Technical goals	No hassle service			

Appendix

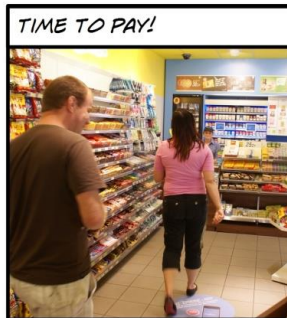
Storyboard

Like the customer journey, the storyboard shows how a service exchange develops over time. Storyboards consist of images or drawings of crucial moments in the service exchange, putting focus on touchpoints and interactions. Compared to customer journeys they provide a more focused version of the service in which the non-interacting moments often are disregarded.

The storyboard technique has its origins in the movie industry that adapted the storytelling-style of comic books (McCloud, 1993) to depict the storyline of a movie pre-production (Goodwin, 2009). Storyboarding was adopted for use within interaction design as a way of depicting how the interaction develops over time (Carroll, 1999; Goodwin, 2009; Cooper, Reimann, & Cronin, 2007). In service design storyboards are usually used to depict a customer's interaction with the service, but could also be used to tell how the service develops for an employee.

Storyboards can be either sketched or built by using photographs. When building the storyboard, the designer should pinpoint the most important aspects of the service and highlight them as the customer interacts with/notices them.

Appendix B - Examples of visualisation techniques

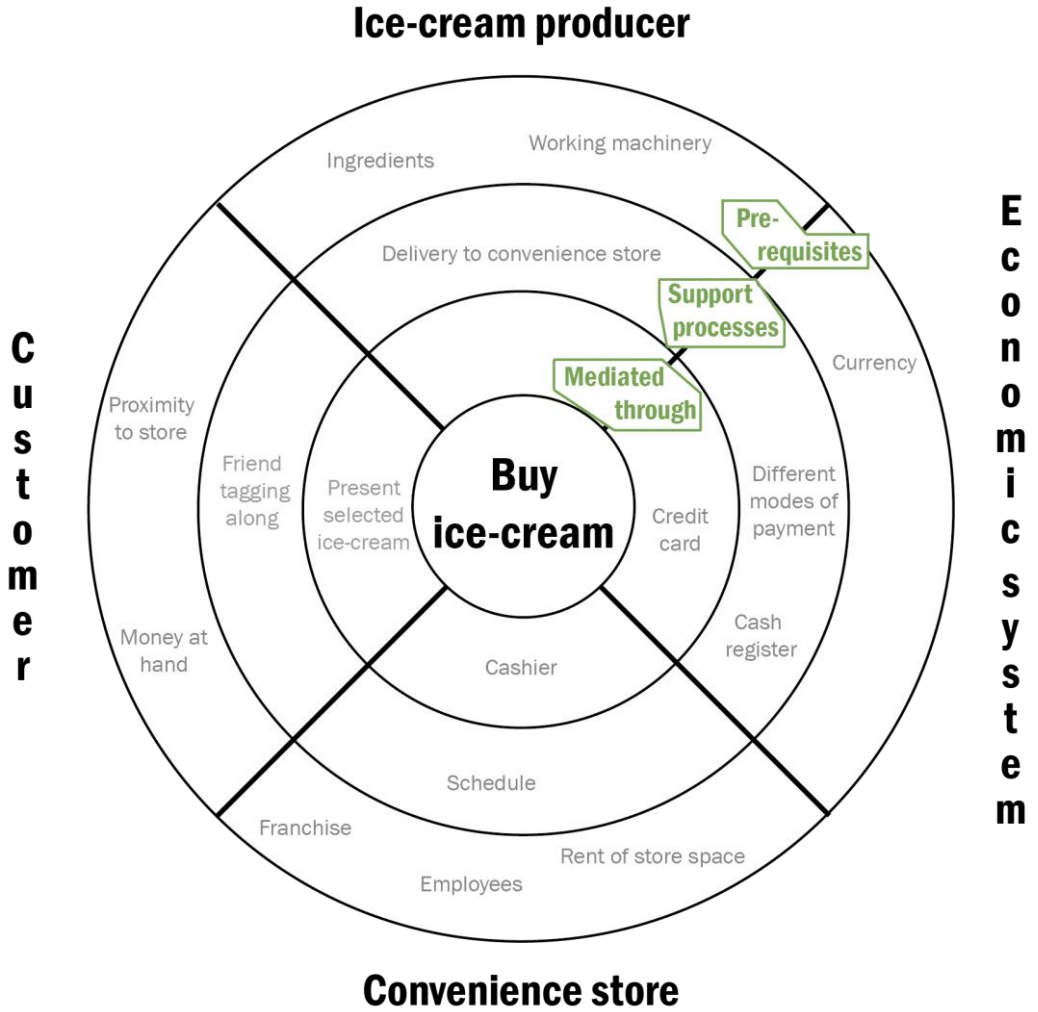


Appendix

System map

System maps are the most diverse group of the visualisation techniques presented here. As the name indicates this technique focuses on mapping the components in the system. In contrast to blueprints, the mapping is usually done according to groups rather than stages. Different stakeholders might influence a service in various ways and from different angles; the effect on a service of the frontline staff and the laws of the nation are very different. Groups can be defined in various ways; they need not to be stakeholders. They could also answer questions like how and why.

Various tools which can be described as system maps have been used since the early days of design methods (Jones, 1992). Published examples from service design include stakeholder mappings in Holmlid & Evenson (2006) and co-design opportunities in Burns & Winhall (2006).



Appendix C - Full analysis data from study on what visualisations communicate

Below the results from the study of what visualisations communicate are presented in their full form. The presentation order is as follows: On the top level the results are ordered after which framework they have been analysed. Within each framework there are two subcategories – each representing one of the analysis-iterations. Finally within each subcategory the categories are presented one by one.

Interview study

Analysis iteration 1

System maps	Very high	High	Low	Very low	n/a
Insight	1	2	3		
Empathy		1	2	3	
Communicate		1	4	1	

Personas	Very high	High	Low	Very low	n/a
Insight		4	2		
Empathy	2	4			
Communicate	4	2			

Blueprints	Very high	High	Low	Very low	n/a
Insight	2	3	2	1	
Empathy	1	1	1	5	
Communicate	2	2	3	1	

Desktop walkthroughs	Very high	High	Low	Very low	n/a
Insight		2	2		
Empathy		2		2	
Communicate		1	3		

Customer journeys	Very high	High	Low	Very low	n/a
Insight	1	3	2		
Empathy	2	2	1	1	
Communicate	2	2	2		

Storyboards	Very high	High	Low	Very low	n/a
Insight		1	3		
Empathy	1	1	1	1	
Communicate	1	1	1	1	

Appendix C - Full analysis data from study on what visualisations communicate

Analysis iteration 2

System maps	Very high	High	Low	Very low	n/a
Insight		X			
Empathy				X	
Communicate			X		

Personas	Very high	High	Low	Very low	n/a
Insight		X			
Empathy		X			
Communicate	X				

Blueprints	Very high	High	Low	Very low	n/a
Insight		X			
Empathy				X	
Communicate			X		

Desktop walkthroughs	Very high	High	Low	Very low	n/a
Insight		X			
Empathy			X		
Communicate			X		

Customer journeys	Very high	High	Low	Very low	n/a
Insight		X			
Empathy		X			
Communicate		X			

Storyboards	Very high	High	Low	Very low	n/a
Insight			X		
Empathy		X			
Communicate		X			

Appendix

Diana, Pacenti & Tassi

Analysis iteration 1

System maps		Fully	Mostly	Mostly	Fully	n/a
Time	Synchronic	4	2			Diachronic
Iconicity	Abstract	4	2			Realistic

Personas		Fully	Mostly	Mostly	Fully	n/a
Time	Synchronic	2		3		Diachronic
Iconicity	Abstract		1	5		Realistic

Blueprints		Fully	Mostly	Mostly	Fully	n/a
Time	Synchronic			2	6	Diachronic
Iconicity	Abstract	2	4	2		Realistic

Desktop walkthroughs		Fully	Mostly	Mostly	Fully	n/a
Time	Synchronic	4				Diachronic
Iconicity	Abstract	3	1			Realistic

Customer journeys		Fully	Mostly	Mostly	Fully	n/a
Time	Synchronic			2	4	Diachronic
Iconicity	Abstract	3	2	1		Realistic

Storyboards		Fully	Mostly	Mostly	Fully	n/a
Time	Synchronic				4	Diachronic
Iconicity	Abstract		2		2	Realistic

Appendix C - Full analysis data from study on what visualisations communicate

Analysis iteration 2

System maps		Fully	Mostly	Mostly	Fully	n/a
Time	Synchronic	X				Diachronic
Iconicity	Abstract	X				Realistic

Personas		Fully	Mostly	Mostly	Fully	n/a
Time	Synchronic			X		Diachronic
Iconicity	Abstract			X		Realistic

Blueprints		Fully	Mostly	Mostly	Fully	n/a
Time	Synchronic				X	Diachronic
Iconicity	Abstract		X			Realistic

Desktop walkthroughs		Fully	Mostly	Mostly	Fully	n/a
Time	Synchronic	X				Diachronic
Iconicity	Abstract	X				Realistic

Customer journeys		Fully	Mostly	Mostly	Fully	n/a
Time	Synchronic				X	Diachronic
Iconicity	Abstract		X			Realistic

Storyboards		Fully	Mostly	Mostly	Fully	n/a
Time	Synchronic				X	Diachronic
Iconicity	Abstract			X		Realistic

Appendix

IHIP

Analysis iteration 1

System maps	Very strong	Strong	Weak	Very weak	n/a
Intangibility		3	2		1
Tangibility	1	2	1	2	
Heterogeneity	4	2			
Perishability		1	2	3	

Personas	Very strong	Strong	Weak	Very weak	n/a
Intangibility	1	1	1	1	2
Tangibility	1	1	1	1	2
Heterogeneity		2	1		3
Perishability					6

Blueprints	Very strong	Strong	Weak	Very weak	n/a
Intangibility	2	3		2	1
Tangibility	2	3		1	1
Heterogeneity	2	4	1	1	
Perishability	1	1	2	2	2

Desktop walkthroughs	Very strong	Strong	Weak	Very weak	n/a
Intangibility		2			2
Tangibility	1			1	1
Heterogeneity	2	2			
Perishability		1		1	2

Customer journeys	Very strong	Strong	Weak	Very weak	n/a
Intangibility	2	2	1	1	
Tangibility	1	1	4		
Heterogeneity	2	3	1		
Perishability	1	4	1		

Storyboards	Very strong	Strong	Weak	Very weak	n/a
Intangibility	3		1		
Tangibility	1	1	1	1	
Heterogeneity	2	2			
Perishability		3			1

Appendix C - Full analysis data from study on what visualisations communicate

Analysis iteration 2

Category 1	Very strong	Strong	Weak	Very weak	n/a
Intangibility		X			
Tangibility					
Heterogeneity	X				
Perishability				X	
<hr/>					
Personas	Very strong	Strong	Weak	Very weak	n/a
Intangibility					
Tangibility					
Heterogeneity			X		
Perishability					X
<hr/>					
Blueprints	Very strong	Strong	Weak	Very weak	n/a
Intangibility		X			
Tangibility		X			
Heterogeneity		X			
Perishability			X		
<hr/>					
Desktop walkthroughs	Very strong	Strong	Weak	Very weak	n/a
Intangibility		X			
Tangibility			X		
Heterogeneity		X			
Perishability			X		
<hr/>					
Customer journeys	Very strong	Strong	Weak	Very weak	n/a
Intangibility		X			
Tangibility			X		
Heterogeneity		X			
Perishability		X			
<hr/>					
Storyboards	Very strong	Strong	Weak	Very weak	n/a
Intangibility	X				
Tangibility		X			
Heterogeneity		X			
Perishability		X			

Appendix

S-D logic

Analysis iteration 1

System maps	Very strong	Strong	Weak	Very weak	n/a
Value-in-use			1	5	
Co-production		2	2	2	
Goods as distribution		3	2	1	
Customer orientation		4	1	1	
Relationships	2	2	2		

Personas	Very strong	Strong	Weak	Very weak	n/a
Value-in-use		1	1	1	3
Co-production			1	1	4
Goods as distribution			1	3	2
Customer orientation	3	2	1		
Relationships		3		1	2

Blueprints	Very strong	Strong	Weak	Very weak	n/a
Value-in-use	1	1	1	4	1
Co-production	1	2		4	1
Goods as distribution	1	3		2	2
Customer orientation	2		3	2	1
Relationships	2	1	3	2	

Desktop walkthroughs	Very strong	Strong	Weak	Very weak	n/a
Value-in-use		1		1	2
Co-production	2	1		1	
Goods as distribution			1	1	2
Customer orientation		2		1	1
Relationships	3	1			

Customer journeys	Very strong	Strong	Weak	Very weak	n/a
Value-in-use	2	1	3		
Co-production	4		1	1	
Goods as distribution	2	2	1	1	
Customer orientation	5		1		
Relationships	4	1	1		

Storyboards	Very strong	Strong	Weak	Very weak	n/a
Value-in-use	2	1		1	
Co-production	1	2		1	
Goods as distribution	1	1		1	1
Customer orientation	1	1	2		
Relationships	1	1	1		1

Appendix C - Full analysis data from study on what visualisations communicate

Analysis iteration 2

System maps	Very strong	Strong	Weak	Very weak	n/a
Value-in-use				X	
Co-production			X		
Goods as distribution			X		
Customer orientation		X			
Relationships		X			

Personas	Very strong	Strong	Weak	Very weak	n/a
Value-in-use					X
Co-production					X
Goods as distribution				X	
Customer orientation		X			
Relationships		X			

Blueprints	Very strong	Strong	Weak	Very weak	n/a
Value-in-use				X	
Co-production			X		
Goods as distribution		X			
Customer orientation			X		
Relationships			X		

Desktop walkthroughs	Very strong	Strong	Weak	Very weak	n/a
Value-in-use			X		
Co-production		X			
Goods as distribution			X		
Customer orientation			X		
Relationships	X				

Customer journeys	Very strong	Strong	Weak	Very weak	n/a
Value-in-use		X			
Co-production	X				
Goods as distribution		X			
Customer orientation	X				
Relationships	X				

Storyboards	Very strong	Strong	Weak	Very weak	n/a
Value-in-use		X			
Co-production		X			
Goods as distribution		X			
Customer orientation		X			
Relationships			X		

Department of Computer and Information Science
Linköping University

Dissertations

Linköping Studies in Science and Technology

Linköping Studies in Arts and Science

Linköping Studies in Statistics

Linköpings Studies in Informatics

Linköping Studies in Science and Technology

- | | | | |
|-------|---|--------|--|
| No 14 | Anders Haraldsson: A Program Manipulation System Based on Partial Evaluation, 1977, ISBN 91-7372-144-1. | No 77 | Östen Oskarsson: Mechanisms of Modifiability in large Software Systems, 1982, ISBN 91-7372-527-7. |
| No 17 | Bengt Magnhagen: Probability Based Verification of Time Margins in Digital Designs, 1977, ISBN 91-7372-157-3. | No 94 | Hans Lunell: Code Generator Writing Systems, 1983, ISBN 91-7372-652-4. |
| No 18 | Mats Cedwall: Semantisk analys av processbeskrivningar i naturligt språk, 1977, ISBN 91-7372-168-9. | No 97 | Andrzej Lingas: Advances in Minimum Weight Triangulation, 1983, ISBN 91-7372-660-5. |
| No 22 | Jaak Urmi: A Machine Independent LISP Compiler and its Implications for Ideal Hardware, 1978, ISBN 91-7372-188-3. | No 109 | Peter Fritzson: Towards a Distributed Programming Environment based on Incremental Compilation, 1984, ISBN 91-7372-801-2. |
| No 33 | Tore Risch: Compilation of Multiple File Queries in a Meta-Database System 1978, ISBN 91-7372-232-4. | No 111 | Erik Tengvald: The Design of Expert Planning Systems. An Experimental Operations Planning System for Turning, 1984, ISBN 91-7372-805-5. |
| No 51 | Erland Jungert: Synthesizing Database Structures from a User Oriented Data Model, 1980, ISBN 91-7372-387-8. | No 155 | Christos Levcopoulos: Heuristics for Minimum Decompositions of Polygons, 1987, ISBN 91-7870-133-3. |
| No 54 | Sture Hägglund: Contributions to the Development of Methods and Tools for Interactive Design of Applications Software, 1980, ISBN 91-7372-404-1. | No 165 | James W. Goodwin: A Theory and System for Non-Monotonic Reasoning, 1987, ISBN 91-7870-183-X. |
| No 55 | Pär Emanuelson: Performance Enhancement in a Well-Structured Pattern Matcher through Partial Evaluation, 1980, ISBN 91-7372-403-3. | No 170 | Zebo Peng: A Formal Methodology for Automated Synthesis of VLSI Systems, 1987, ISBN 91-7870-225-9. |
| No 58 | Bengt Johnsson, Bertil Andersson: The Human-Computer Interface in Commercial Systems, 1981, ISBN 91-7372-414-9. | No 174 | Johan Fagerström: A Paradigm and System for Design of Distributed Systems, 1988, ISBN 91-7870-301-8. |
| No 69 | H. Jan Komorowski: A Specification of an Abstract Prolog Machine and its Application to Partial Evaluation, 1981, ISBN 91-7372-479-3. | No 192 | Dimiter Driankov: Towards a Many Valued Logic of Quantified Belief, 1988, ISBN 91-7870-374-3. |
| No 71 | René Reboh: Knowledge Engineering Techniques and Tools for Expert Systems, 1981, ISBN 91-7372-489-0. | No 213 | Lin Padgham: Non-Monotonic Inheritance for an Object Oriented Knowledge Base, 1989, ISBN 91-7870-485-5. |
| | | No 214 | Tony Larsson: A Formal Hardware Description and Verification Method, 1989, ISBN 91-7870-517-7. |

- No 221 **Michael Reinfrank:** Fundamentals and Logical Foundations of Truth Maintenance, 1989, ISBN 91-7870-546-0.
- No 239 **Jonas Löwgren:** Knowledge-Based Design Support and Discourse Management in User Interface Management Systems, 1991, ISBN 91-7870-720-X.
- No 244 **Henrik Eriksson:** Meta-Tool Support for Knowledge Acquisition, 1991, ISBN 91-7870-746-3.
- No 252 **Peter Eklund:** An Epistemic Approach to Interactive Design in Multiple Inheritance Hierarchies, 1991, ISBN 91-7870-784-6.
- No 258 **Patrick Doherty:** NML3 - A Non-Monotonic Formalism with Explicit Defaults, 1991, ISBN 91-7870-816-8.
- No 260 **Nahid Shahmehri:** Generalized Algorithmic Debugging, 1991, ISBN 91-7870-828-1.
- No 264 **Nils Dahlbäck:** Representation of Discourse-Cognitive and Computational Aspects, 1992, ISBN 91-7870-850-8.
- No 265 **Ulf Nilsson:** Abstract Interpretations and Abstract Machines: Contributions to a Methodology for the Implementation of Logic Programs, 1992, ISBN 91-7870-858-3.
- No 270 **Ralph Rönquist:** Theory and Practice of Tense-bound Object References, 1992, ISBN 91-7870-873-7.
- No 273 **Björn Fjellborg:** Pipeline Extraction for VLSI Data Path Synthesis, 1992, ISBN 91-7870-880-X.
- No 276 **Staffan Bonnier:** A Formal Basis for Horn Clause Logic with External Polymorphic Functions, 1992, ISBN 91-7870-896-6.
- No 277 **Kristian Sandahl:** Developing Knowledge Management Systems with an Active Expert Methodology, 1992, ISBN 91-7870-897-4.
- No 281 **Christer Bäckström:** Computational Complexity of Reasoning about Plans, 1992, ISBN 91-7870-979-2.
- No 292 **Mats Wirén:** Studies in Incremental Natural Language Analysis, 1992, ISBN 91-7871-027-8.
- No 297 **Mariam Kamkar:** Interprocedural Dynamic Slicing with Applications to Debugging and Testing, 1993, ISBN 91-7871-065-0.
- No 302 **Tingting Zhang:** A Study in Diagnosis Using Classification and Defaults, 1993, ISBN 91-7871-078-2.
- No 312 **Arne Jönsson:** Dialogue Management for Natural Language Interfaces - An Empirical Approach, 1993, ISBN 91-7871-110-X.
- No 338 **Simin Nadjm-Tehrani:** Reactive Systems in Physical Environments: Compositional Modelling and Framework for Verification, 1994, ISBN 91-7871-237-8.
- No 371 **Bengt Savén:** Business Models for Decision Support and Learning. A Study of Discrete-Event Manufacturing Simulation at Asea/ ABB 1968-1993, 1995, ISBN 91-7871-494-X.
- No 375 **Ulf Söderman:** Conceptual Modelling of Mode Switching Physical Systems, 1995, ISBN 91-7871-516-4.
- No 383 **Andreas Kågedal:** Exploiting Groundness in Logic Programs, 1995, ISBN 91-7871-538-5.
- No 396 **George Fodor:** Ontological Control, Description, Identification and Recovery from Problematic Control Situations, 1995, ISBN 91-7871-603-9.
- No 413 **Mikael Pettersson:** Compiling Natural Semantics, 1995, ISBN 91-7871-641-1.
- No 414 **Xinli Gu:** RT Level Testability Improvement by Testability Analysis and Transformations, 1996, ISBN 91-7871-654-3.
- No 416 **Hua Shu:** Distributed Default Reasoning, 1996, ISBN 91-7871-665-9.
- No 429 **Jaime Villegas:** Simulation Supported Industrial Training from an Organisational Learning Perspective - Development and Evaluation of the SSIT Method, 1996, ISBN 91-7871-700-0.
- No 431 **Peter Jonsson:** Studies in Action Planning: Algorithms and Complexity, 1996, ISBN 91-7871-704-3.
- No 437 **Johan Boye:** Directional Types in Logic Programming, 1996, ISBN 91-7871-725-6.
- No 439 **Cecilia Sjöberg:** Activities, Voices and Arenas: Participatory Design in Practice, 1996, ISBN 91-7871-728-0.
- No 448 **Patrick Lambrix:** Part-Whole Reasoning in Description Logics, 1996, ISBN 91-7871-820-1.
- No 452 **Kjell Orsbom:** On Extensible and Object-Relational Database Technology

- for Finite Element Analysis Applications, 1996, ISBN 91-7871-827-9.
- No 459 **Olof Johansson:** Development Environments for Complex Product Models, 1996, ISBN 91-7871-855-4.
- No 461 **Lena Strömbäck:** User-Defined Constructions in Unification-Based Formalisms, 1997, ISBN 91-7871-857-0.
- No 462 **Lars Degerstedt:** Tabulation-based Logic Programming: A Multi-Level View of Query Answering, 1996, ISBN 91-7871-858-9.
- No 475 **Fredrik Nilsson:** Strategi och ekonomisk styrning - En studie av hur ekonomiska styrsystem utformas och används efter företagsförvärv, 1997, ISBN 91-7871-914-3.
- No 480 **Mikael Lindvall:** An Empirical Study of Requirements-Driven Impact Analysis in Object-Oriented Software Evolution, 1997, ISBN 91-7871-927-5.
- No 485 **Göran Forslund:** Opinion-Based Systems: The Cooperative Perspective on Knowledge-Based Decision Support, 1997, ISBN 91-7871-938-0.
- No 494 **Martin Sköld:** Active Database Management Systems for Monitoring and Control, 1997, ISBN 91-7219-002-7.
- No 495 **Hans Olsén:** Automatic Verification of Petri Nets in a CLP framework, 1997, ISBN 91-7219-011-6.
- No 498 **Thomas Drakengren:** Algorithms and Complexity for Temporal and Spatial Formalisms, 1997, ISBN 91-7219-019-1.
- No 502 **Jakob Axelsson:** Analysis and Synthesis of Heterogeneous Real-Time Systems, 1997, ISBN 91-7219-035-3.
- No 503 **Johan Ringström:** Compiler Generation for Data-Parallel Programming Languages from Two-Level Semantics Specifications, 1997, ISBN 91-7219-045-0.
- No 512 **Anna Moberg:** Närhet och distans - Studier av kommunikationsmönster i satellitkontor och flexibla kontor, 1997, ISBN 91-7219-119-8.
- No 520 **Mikael Ronström:** Design and Modelling of a Parallel Data Server for Telecom Applications, 1998, ISBN 91-7219-169-4.
- No 522 **Niclas Ohlsson:** Towards Effective Fault Prevention - An Empirical Study in Software Engineering, 1998, ISBN 91-7219-176-7.
- No 526 **Joachim Karlsson:** A Systematic Approach for Prioritizing Software Requirements, 1998, ISBN 91-7219-184-8.
- No 530 **Henrik Nilsson:** Declarative Debugging for Lazy Functional Languages, 1998, ISBN 91-7219-197-x.
- No 555 **Jonas Hallberg:** Timing Issues in High-Level Synthesis, 1998, ISBN 91-7219-369-7.
- No 561 **Ling Lin:** Management of 1-D Sequence Data - From Discrete to Continuous, 1999, ISBN 91-7219-402-2.
- No 563 **Eva L Ragnemalm:** Student Modelling based on Collaborative Dialogue with a Learning Companion, 1999, ISBN 91-7219-412-X.
- No 567 **Jörgen Lindström:** Does Distance matter? On geographical dispersion in organisations, 1999, ISBN 91-7219-439-1.
- No 582 **Vanja Josifovski:** Design, Implementation and Evaluation of a Distributed Mediator System for Data Integration, 1999, ISBN 91-7219-482-0.
- No 589 **Rita Kovordányi:** Modeling and Simulating Inhibitory Mechanisms in Mental Image Reinterpretation - Towards Cooperative Human-Computer Creativity, 1999, ISBN 91-7219-506-1.
- No 592 **Mikael Ericsson:** Supporting the Use of Design Knowledge - An Assessment of Commenting Agents, 1999, ISBN 91-7219-532-0.
- No 593 **Lars Karlsson:** Actions, Interactions and Narratives, 1999, ISBN 91-7219-534-7.
- No 594 **C. G. Mikael Johansson:** Social and Organizational Aspects of Requirements Engineering Methods - A practice-oriented approach, 1999, ISBN 91-7219-541-X.
- No 595 **Jörgen Hansson:** Value-Driven Multi-Class Overload Management in Real-Time Database Systems, 1999, ISBN 91-7219-542-8.
- No 596 **Niklas Hallberg:** Incorporating User Values in the Design of Information Systems and Services in the Public Sector: A Methods Approach, 1999, ISBN 91-7219-543-6.
- No 597 **Vivian Vimarlund:** An Economic Perspective on the Analysis of Impacts

- of Information Technology: From Case Studies in Health-Care towards General Models and Theories, 1999, ISBN 91-7219-544-4.
- No 598 **Johan Jenvald:** Methods and Tools in Computer-Supported Taskforce Training, 1999, ISBN 91-7219-547-9.
- No 607 **Magnus Merkel:** Understanding and enhancing translation by parallel text processing, 1999, ISBN 91-7219-614-9.
- No 611 **Silvia Coradeschi:** Anchoring symbols to sensory data, 1999, ISBN 91-7219-623-8.
- No 613 **Man Lin:** Analysis and Synthesis of Reactive Systems: A Generic Layered Architecture Perspective, 1999, ISBN 91-7219-630-0.
- No 618 **Jimmy Tjäder:** Systemimplementering i praktiken - En studie av logiker i fyra projekt, 1999, ISBN 91-7219-657-2.
- No 627 **Vadim Engelson:** Tools for Design, Interactive Simulation, and Visualization of Object-Oriented Models in Scientific Computing, 2000, ISBN 91-7219-709-9.
- No 637 **Esa Falkenroth:** Database Technology for Control and Simulation, 2000, ISBN 91-7219-766-8.
- No 639 **Per-Arne Persson:** Bringing Power and Knowledge Together: Information Systems Design for Autonomy and Control in Command Work, 2000, ISBN 91-7219-796-X.
- No 660 **Erik Larsson:** An Integrated System-Level Design for Testability Methodology, 2000, ISBN 91-7219-890-7.
- No 688 **Marcus Bjärelund:** Model-based Execution Monitoring, 2001, ISBN 91-7373-016-5.
- No 689 **Joakim Gustafsson:** Extending Temporal Action Logic, 2001, ISBN 91-7373-017-3.
- No 720 **Carl-Johan Petri:** Organizational Information Provision - Managing Mandatory and Discretionary Use of Information Technology, 2001, ISBN-91-7373-126-9.
- No 724 **Paul Scerri:** Designing Agents for Systems with Adjustable Autonomy, 2001, ISBN 91 7373 207 9.
- No 725 **Tim Heyer:** Semantic Inspection of Software Artifacts: From Theory to Practice, 2001, ISBN 91 7373 208 7.
- No 726 **Pär Carlshamre:** A Usability Perspective on Requirements Engineering - From Methodology to Product Development, 2001, ISBN 91 7373 212 5.
- No 732 **Juha Takkinen:** From Information Management to Task Management in Electronic Mail, 2002, ISBN 91 7373 258 3.
- No 745 **Johan Åberg:** Live Help Systems: An Approach to Intelligent Help for Web Information Systems, 2002, ISBN 91-7373-311-3.
- No 746 **Rego Granlund:** Monitoring Distributed Teamwork Training, 2002, ISBN 91-7373-312-1.
- No 757 **Henrik André-Jönsson:** Indexing Strategies for Time Series Data, 2002, ISBN 917373-346-6.
- No 747 **Anneli Hagdahl:** Development of IT-supported Interorganisational Collaboration - A Case Study in the Swedish Public Sector, 2002, ISBN 91-7373-314-8.
- No 749 **Sofie Pilemalm:** Information Technology for Non-Profit Organisations - Extended Participatory Design of an Information System for Trade Union Shop Stewards, 2002, ISBN 91-7373-318-0.
- No 765 **Stefan Holmlid:** Adapting users: Towards a theory of use quality, 2002, ISBN 91-7373-397-0.
- No 771 **Magnus Morin:** Multimedia Representations of Distributed Tactical Operations, 2002, ISBN 91-7373-421-7.
- No 772 **Pawel Pietrzak:** A Type-Based Framework for Locating Errors in Constraint Logic Programs, 2002, ISBN 91-7373-422-5.
- No 758 **Erik Berglund:** Library Communication Among Programmers Worldwide, 2002, ISBN 91-7373-349-0.
- No 774 **Choong-ho Yi:** Modelling Object-Oriented Dynamic Systems Using a Logic-Based Framework, 2002, ISBN 91-7373-424-1.
- No 779 **Mathias Broxvall:** A Study in the Computational Complexity of Temporal Reasoning, 2002, ISBN 91-7373-440-3.
- No 793 **Asmus Pandikow:** A Generic Principle for Enabling Interoperability of Structured and Object-Oriented

- Analysis and Design Tools, 2002, ISBN 91-7373-479-9.
- No 785 **Lars Hult:** Publika Informationstjänster. En studie av den Internetbaserade encyklopedins bruksegenskaper, 2003, ISBN 91-7373-461-6.
- No 800 **Lars Taxén:** A Framework for the Coordination of Complex Systems' Development, 2003, ISBN 91-7373-604-X
- No 808 **Klas Gäre:** Tre perspektiv på förväntningar och förändringar i samband med införande av informationssystem, 2003, ISBN 91-7373-618-X.
- No 821 **Mikael Kindborg:** Concurrent Comics - programming of social agents by children, 2003, ISBN 91-7373-651-1.
- No 823 **Christina Ölvingson:** On Development of Information Systems with GIS Functionality in Public Health Informatics: A Requirements Engineering Approach, 2003, ISBN 91-7373-656-2.
- No 828 **Tobias Ritzau:** Memory Efficient Hard Real-Time Garbage Collection, 2003, ISBN 91-7373-666-X.
- No 833 **Paul Pop:** Analysis and Synthesis of Communication-Intensive Heterogeneous Real-Time Systems, 2003, ISBN 91-7373-683-X.
- No 852 **Johan Moe:** Observing the Dynamic Behaviour of Large Distributed Systems to Improve Development and Testing – An Empirical Study in Software Engineering, 2003, ISBN 91-7373-779-8.
- No 867 **Erik Herzog:** An Approach to Systems Engineering Tool Data Representation and Exchange, 2004, ISBN 91-7373-929-4.
- No 872 **Aseel Berglund:** Augmenting the Remote Control: Studies in Complex Information Navigation for Digital TV, 2004, ISBN 91-7373-940-5.
- No 869 **Jo Skåmedal:** Telecommuting's Implications on Travel and Travel Patterns, 2004, ISBN 91-7373-935-9.
- No 870 **Linda Askenäs:** The Roles of IT - Studies of Organising when Implementing and Using Enterprise Systems, 2004, ISBN 91-7373-936-7.
- No 874 **Annika Flycht-Eriksson:** Design and Use of Ontologies in Information-Providing Dialogue Systems, 2004, ISBN 91-7373-947-2.
- No 873 **Peter Bunus:** Debugging Techniques for Equation-Based Languages, 2004, ISBN 91-7373-941-3.
- No 876 **Jonas Mellin:** Resource-Predictable and Efficient Monitoring of Events, 2004, ISBN 91-7373-956-1.
- No 883 **Magnus Bång:** Computing at the Speed of Paper: Ubiquitous Computing Environments for Healthcare Professionals, 2004, ISBN 91-7373-971-5
- No 882 **Robert Eklund:** Disfluency in Swedish human-human and human-machine travel booking dialogues, 2004, ISBN 91-7373-966-9.
- No 887 **Anders Lindström:** English and other Foreign Linguistic Elements in Spoken Swedish. Studies of Productive Processes and their Modelling using Finite-State Tools, 2004, ISBN 91-7373-981-2.
- No 889 **Zhiping Wang:** Capacity-Constrained Production-inventory systems - Modelling and Analysis in both a traditional and an e-business context, 2004, ISBN 91-85295-08-6.
- No 893 **Pernilla Qvarfordt:** Eyes on Multimodal Interaction, 2004, ISBN 91-85295-30-2.
- No 910 **Magnus Kald:** In the Borderland between Strategy and Management Control - Theoretical Framework and Empirical Evidence, 2004, ISBN 91-85295-82-5.
- No 918 **Jonas Lundberg:** Shaping Electronic News: Genre Perspectives on Interaction Design, 2004, ISBN 91-85297-14-3.
- No 900 **Mattias Arvola:** Shades of use: The dynamics of interaction design for sociable use, 2004, ISBN 91-85295-42-6.
- No 920 **Luis Alejandro Cortés:** Verification and Scheduling Techniques for Real-Time Embedded Systems, 2004, ISBN 91-85297-21-6.
- No 929 **Diana Szentivanyi:** Performance Studies of Fault-Tolerant Middleware, 2005, ISBN 91-85297-58-5.
- No 933 **Mikael Cäker:** Management Accounting as Constructing and Opposing Customer Focus: Three Case Studies on Management Accounting

- and Customer Relations, 2005, ISBN 91-85297-64-X.
- No 937 **Jonas Kvarnström:** TALplanner and Other Extensions to Temporal Action Logic, 2005, ISBN 91-85297-75-5.
- No 938 **Bourhane Kadmiry:** Fuzzy Gain-Scheduled Visual Servoing for Unmanned Helicopter, 2005, ISBN 91-85297-76-3.
- No 945 **Gert Jervan:** Hybrid Built-In Self-Test and Test Generation Techniques for Digital Systems, 2005, ISBN: 91-85297-97-6.
- No 946 **Anders Arpteg:** Intelligent Semi-Structured Information Extraction, 2005, ISBN 91-85297-98-4.
- No 947 **Ola Angelsmark:** Constructing Algorithms for Constraint Satisfaction and Related Problems - Methods and Applications, 2005, ISBN 91-85297-99-2.
- No 963 **Calin Curescu:** Utility-based Optimisation of Resource Allocation for Wireless Networks, 2005, ISBN 91-85457-07-8.
- No 972 **Björn Johansson:** Joint Control in Dynamic Situations, 2005, ISBN 91-85457-31-0.
- No 974 **Dan Lawesson:** An Approach to Diagnosability Analysis for Interacting Finite State Systems, 2005, ISBN 91-85457-39-6.
- No 979 **Claudiu Duma:** Security and Trust Mechanisms for Groups in Distributed Services, 2005, ISBN 91-85457-54-X.
- No 983 **Sorin Manolache:** Analysis and Optimisation of Real-Time Systems with Stochastic Behaviour, 2005, ISBN 91-85457-60-4.
- No 986 **Yuxiao Zhao:** Standards-Based Application Integration for Business-to-Business Communications, 2005, ISBN 91-85457-66-3.
- No 1004 **Patrik Haslum:** Admissible Heuristics for Automated Planning, 2006, ISBN 91-85497-28-2.
- No 1005 **Aleksandra Tešanovic:** Developing Reusable and Reconfigurable Real-Time Software using Aspects and Components, 2006, ISBN 91-85497-29-0.
- No 1008 **David Dinka:** Role, Identity and Work: Extending the design and development agenda, 2006, ISBN 91-85497-42-8.
- No 1009 **Iakov Nakhimovski:** Contributions to the Modeling and Simulation of Mechanical Systems with Detailed Contact Analysis, 2006, ISBN 91-85497-43-X.
- No 1013 **Wilhelm Dahllöf:** Exact Algorithms for Exact Satisfiability Problems, 2006, ISBN 91-85523-97-6.
- No 1016 **Levon Saldamli:** PDEModelica - A High-Level Language for Modeling with Partial Differential Equations, 2006, ISBN 91-85523-84-4.
- No 1017 **Daniel Karlsson:** Verification of Component-based Embedded System Designs, 2006, ISBN 91-85523-79-8
- No 1018 **Ioan Chisalita:** Communication and Networking Techniques for Traffic Safety Systems, 2006, ISBN 91-85523-77-1.
- No 1019 **Tarja Susi:** The Puzzle of Social Activity - The Significance of Tools in Cognition and Cooperation, 2006, ISBN 91-85523-71-2.
- No 1021 **Andrzej Bednarski:** Integrated Optimal Code Generation for Digital Signal Processors, 2006, ISBN 91-85523-69-0.
- No 1022 **Peter Aronsson:** Automatic Parallelization of Equation-Based Simulation Programs, 2006, ISBN 91-85523-68-2.
- No 1030 **Robert Nilsson:** A Mutation-based Framework for Automated Testing of Timeliness, 2006, ISBN 91-85523-35-6.
- No 1034 **Jon Edvardsson:** Techniques for Automatic Generation of Tests from Programs and Specifications, 2006, ISBN 91-85523-31-3.
- No 1035 **Vaida Jakoniene:** Integration of Biological Data, 2006, ISBN 91-85523-28-3.
- No 1045 **Genevieve Gorrell:** Generalized Hebbian Algorithms for Dimensionality Reduction in Natural Language Processing, 2006, ISBN 91-85643-88-2.
- No 1051 **Yu-Hsing Huang:** Having a New Pair of Glasses - Applying Systemic Accident Models on Road Safety, 2006, ISBN 91-85643-64-5.
- No 1054 **Åsa Hedenskog:** Perceive those things which cannot be seen - A Cognitive Systems Engineering perspective on requirements management, 2006, ISBN 91-85643-57-2.
- No 1061 **Cécile Åberg:** An Evaluation Platform for Semantic Web Technology, 2007, ISBN 91-85643-31-9.

- No 1073 **Mats Grindal:** Handling Combinatorial Explosion in Software Testing, 2007, ISBN 978-91-85715-74-9.
- No 1075 **Almut Herzog:** Usable Security Policies for Runtime Environments, 2007, ISBN 978-91-85715-65-7.
- No 1079 **Magnus Wahlström:** Algorithms, measures, and upper bounds for Satisfiability and related problems, 2007, ISBN 978-91-85715-55-8.
- No 1083 **Jesper Andersson:** Dynamic Software Architectures, 2007, ISBN 978-91-85715-46-6.
- No 1086 **Ulf Johansson:** Obtaining Accurate and Comprehensive Data Mining Models - An Evolutionary Approach, 2007, ISBN 978-91-85715-34-3.
- No 1089 **Traian Pop:** Analysis and Optimisation of Distributed Embedded Systems with Heterogeneous Scheduling Policies, 2007, ISBN 978-91-85715-27-5.
- No 1091 **Gustav Nordh:** Complexity Dichotomies for CSP-related Problems, 2007, ISBN 978-91-85715-20-6.
- No 1106 **Per Ola Kristensson:** Discrete and Continuous Shape Writing for Text Entry and Control, 2007, ISBN 978-91-85831-77-7.
- No 1110 **He Tan:** Aligning Biomedical Ontologies, 2007, ISBN 978-91-85831-56-2.
- No 1112 **Jessica Lindblom:** Minding the body - Interacting socially through embodied action, 2007, ISBN 978-91-85831-48-7.
- No 1113 **Pontus Wärnestål:** Dialogue Behavior Management in Conversational Recommender Systems, 2007, ISBN 978-91-85831-47-0.
- No 1120 **Thomas Gustafsson:** Management of Real-Time Data Consistency and Transient Overloads in Embedded Systems, 2007, ISBN 978-91-85831-33-3.
- No 1127 **Alexandru Andrei:** Energy Efficient and Predictable Design of Real-time Embedded Systems, 2007, ISBN 978-91-85831-06-7.
- No 1139 **Per Wikberg:** Eliciting Knowledge from Experts in Modeling of Complex Systems: Managing Variation and Interactions, 2007, ISBN 978-91-85895-66-3.
- No 1143 **Mehdi Amirjoo:** QoS Control of Real-Time Data Services under Uncertain Workload, 2007, ISBN 978-91-85895-49-6.
- No 1150 **Sanny Syberfeldt:** Optimistic Replication with Forward Conflict Resolution in Distributed Real-Time Databases, 2007, ISBN 978-91-85895-27-4.
- No 1155 **Beatrice Alenljung:** Envisioning a Future Decision Support System for Requirements Engineering - A Holistic and Human-centred Perspective, 2008, ISBN 978-91-85895-11-3.
- No 1156 **Artur Wilk:** Types for XML with Application to Xcerpt, 2008, ISBN 978-91-85895-08-3.
- No 1183 **Adrian Pop:** Integrated Model-Driven Development Environments for Equation-Based Object-Oriented Languages, 2008, ISBN 978-91-7393-895-2.
- No 1185 **Jörgen Skågeby:** Gifting Technologies - Ethnographic Studies of End-users and Social Media Sharing, 2008, ISBN 978-91-7393-892-1.
- No 1187 **Imad-Eldin Ali Abugessaisa:** Analytical tools and information-sharing methods supporting road safety organizations, 2008, ISBN 978-91-7393-887-7.
- No 1204 **H. Joe Steinhauer:** A Representation Scheme for Description and Reconstruction of Object Configurations Based on Qualitative Relations, 2008, ISBN 978-91-7393-823-5.
- No 1222 **Anders Larsson:** Test Optimization for Core-based System-on-Chip, 2008, ISBN 978-91-7393-768-9.
- No 1238 **Andreas Borg:** Processes and Models for Capacity Requirements in Telecommunication Systems, 2009, ISBN 978-91-7393-700-9.
- No 1240 **Fredrik Heintz:** DyKnow: A Stream-Based Knowledge Processing Middleware Framework, 2009, ISBN 978-91-7393-696-5.
- No 1241 **Birgitta Lindström:** Testability of Dynamic Real-Time Systems, 2009, ISBN 978-91-7393-695-8.
- No 1244 **Eva Blomqvist:** Semi-automatic Ontology Construction based on Patterns, 2009, ISBN 978-91-7393-683-5.
- No 1249 **Rogier Woltjer:** Functional Modeling of Constraint Management in Aviation

- Safety and Command and Control, 2009, ISBN 978-91-7393-659-0.
- No 1260 **Gianpaolo Conte:** Vision-Based Localization and Guidance for Unmanned Aerial Vehicles, 2009, ISBN 978-91-7393-603-3.
- No 1262 **AnnMarie Ericsson:** Enabling Tool Support for Formal Analysis of ECA Rules, 2009, ISBN 978-91-7393-598-2.
- No 1266 **Jiri Trnka:** Exploring Tactical Command and Control: A Role-Playing Simulation Approach, 2009, ISBN 978-91-7393-571-5.
- No 1268 **Bahlol Rahimi:** Supporting Collaborative Work through ICT - How End-users Think of and Adopt Integrated Health Information Systems, 2009, ISBN 978-91-7393-550-0.
- No 1274 **Fredrik Kuivinen:** Algorithms and Hardness Results for Some Valued CSPs, 2009, ISBN 978-91-7393-525-8.
- No 1281 **Gunnar Mathiason:** Virtual Full Replication for Scalable Distributed Real-Time Databases, 2009, ISBN 978-91-7393-503-6.
- No 1290 **Viacheslav Izosimov:** Scheduling and Optimization of Fault-Tolerant Distributed Embedded Systems, 2009, ISBN 978-91-7393-482-4.
- No 1294 **Johan Thapper:** Aspects of a Constraint Optimisation Problem, 2010, ISBN 978-91-7393-464-0.
- No 1306 **Susanna Nilsson:** Augmentation in the Wild: User Centered Development and Evaluation of Augmented Reality Applications, 2010, ISBN 978-91-7393-416-9.
- No 1313 **Christer Thöm:** On the Quality of Feature Models, 2010, ISBN 978-91-7393-394-0.
- No 1321 **Zhiyuan He:** Temperature Aware and Defect-Probability Driven Test Scheduling for System-on-Chip, 2010, ISBN 978-91-7393-378-0.
- No 1333 **David Broman:** Meta-Languages and Semantics for Equation-Based Modeling and Simulation, 2010, ISBN 978-91-7393-335-3.
- No 1337 **Alexander Siemers:** Contributions to Modelling and Visualisation of Multibody Systems Simulations with Detailed Contact Analysis, 2010, ISBN 978-91-7393-317-9.
- No 1354 **Mikael Asplund:** Disconnected Discoveries: Availability Studies in Partitioned Networks, 2010, ISBN 978-91-7393-278-3.
- No 1359 **Jana Rambusch:** Mind Games Extended: Understanding Gameplay as Situated Activity, 2010, ISBN 978-91-7393-252-3.
- No 1373 **Sonia Sangari:** Head Movement Correlates to Focus Assignment in Swedish, 2011, ISBN 978-91-7393-154-0.
- No 1374 **Jan-Erik Källhammer:** Using False Alarms when Developing Automotive Active Safety Systems, 2011, ISBN 978-91-7393-153-3.
- No 1375 **Mattias Eriksson:** Integrated Code Generation, 2011, ISBN 978-91-7393-147-2.
- No 1381 **Ola Leifler:** Affordances and Constraints of Intelligent Decision Support for Military Command and Control – Three Case Studies of Support Systems, 2011, ISBN 978-91-7393-133-5.
- No 1386 **Soheil Samii:** Quality-Driven Synthesis and Optimization of Embedded Control Systems, 2011, ISBN 978-91-7393-102-1.
- No 1419 **Erik Kuiper:** Geographic Routing in Intermittently-connected Mobile Ad Hoc Networks: Algorithms and Performance Models, 2012, ISBN 978-91-7519-981-8.
- No 1451 **Sara Stymne:** Text Harmonization Strategies for Phrase-Based Statistical Machine Translation, 2012, ISBN 978-91-7519-887-3.
- No 1455 **Alberto Montebelli:** Modeling the Role of Energy Management in Embodied Cognition, 2012, ISBN 978-91-7519-882-8.
- No 1465 **Mohammad Saifullah:** Biologically-Based Interactive Neural Network Models for Visual Attention and Object Recognition, 2012, ISBN 978-91-7519-838-5.
- No 1490 **Tomas Bengtsson:** Testing and Logic Optimization Techniques for Systems on Chip, 2012, ISBN 978-91-7519-742-5.
- No 1481 **David Byers:** Improving Software Security by Preventing Known Vulnerabilities, 2012, ISBN 978-91-7519-784-5.

- No 1496 **Tommy Färnqvist:** Exploiting Structure in CSP-related Problems, 2013, ISBN 978-91-7519-711-1.
- No 1503 **John Wilander:** Contributions to Specification, Implementation, and Execution of Secure Software, 2013, ISBN 978-91-7519-681-7.
- No 1506 **Magnus Ingmarsson:** Creating and Enabling the Useful Service Discovery Experience, 2013, ISBN 978-91-7519-662-6.

Linköping Studies in Arts and Science

- No 504 **Ing-Marie Jonsson:** Social and Emotional Characteristics of Speech-based In-Vehicle Information Systems: Impact on Attitude and Driving Behaviour, 2009, ISBN 978-91-7393-478-7.
- No 586 **Fabian Segelström:** Stakeholder Engagement for Service Design: How service designers identify and communicate insights, 2013, ISBN 978-91-7519-554-4.

Linköping Studies in Statistics

- No 9 **Davood Shahsavani:** Computer Experiments Designed to Explore and Approximate Complex Deterministic Models, 2008, ISBN 978-91-7393-976-8.
- No 10 **Karl Wahlin:** Roadmap for Trend Detection and Assessment of Data Quality, 2008, ISBN 978-91-7393-792-4.
- No 11 **Oleg Sysoev:** Monotonic regression for large multivariate datasets, 2010, ISBN 978-91-7393-412-1.
- No 13 **Agné Burauskaite-Harju:** Characterizing Temporal Change and Inter-Site Correlations in Daily and Sub-daily Precipitation Extremes, 2011, ISBN 978-91-7393-110-6.

Linköping Studies in Information Science

- No 1 **Karin Axelsson:** Metodisk systemstrukturering - att skapa samstämmighet mellan informationssystem-arkitektur och verksamhet, 1998, ISBN -9172-19-296-8.
- No 2 **Stefan Cronholm:** Metodverktyg och användbarhet - en studie av datorstödd metodbaserad systemutveckling, 1998, ISBN -9172-19-299-2.

- No 3 **Anders Avdic:** Användare och utvecklare - om anveckling med kalkylprogram, 1999, ISBN-91-7219-606-8.
- No 4 **Owen Eriksson:** Kommunikationskvalitet hos informationssystem och affärsprocesser, 2000, ISBN 91-7219-811-7.
- No 5 **Mikael Lind:** Från system till process - kriterier för processbestämning vid verksamhetsanalys, 2001, ISBN 91-7373-067-X.
- No 6 **Ulf Melin:** Koordination och informationssystem i företag och nätverk, 2002, ISBN 91-7373-278-8.
- No 7 **Pär J. Ågerfalk:** Information Systems Actability - Understanding Information Technology as a Tool for Business Action and Communication, 2003, ISBN 91-7373-628-7.
- No 8 **Ulf Seigerroth:** Att förstå och förändra system-utvecklingsverksamheter - en taxonomi för metautveckling, 2003, ISBN 91-7373-736-4.
- No 9 **Karin Hedström:** Spår av datoriseringens värden - Effekter av IT i äldreomsorg, 2004, ISBN 91-7373-963-4.
- No 10 **Ewa Braf:** Knowledge Demanded for Action - Studies on Knowledge Mediation in Organisations, 2004, ISBN 91-85295-47-7.
- No 11 **Fredrik Karlsson:** Method Configuration method and computerized tool support, 2005, ISBN 91-85297-48-8.
- No 12 **Malin Nordström:** Styrbar systemförvaltning - Att organisera systemförvaltningsverksamhet med hjälp av effektiva förvaltningsobjekt, 2005, ISBN 91-85297-60-7.
- No 13 **Stefan Holgersson:** Yrke: POLIS - Yrkeskunskap, motivation, IT-system och andra förutsättningar för polisarbete, 2005, ISBN 91-85299-43-X.
- No 14 **Benneth Christiansson, Marie-Therese Christiansson:** Mötet mellan process och komponent - mot ett ramverk för en verksamhetsnära kravspecifikation vid anskaffning av komponent-baserade informationssystem, 2006, ISBN 91-85643-22-X.

