



Creating public value through service design
Facilitation of human-centred service
transformation in the city-state of
Hamburg

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Citizens expect their governments to be as digital and easy to use as other service providers in their lives. However, many public service organisations still have a low level of digitalisation and try to catch up with people's expectations set by private companies. Digital public services are particularly immature in Germany. While Germany is an economic and political world leader, the country is a laggard in the digital transformation of its services to the public. This thesis studies a digital transformation project in the city-state of Hamburg, set up to create citizen-friendly services and modernise administration.

Public organisations try to create public value as they spend taxpayers' money. The thesis reviews different concepts of value creation, co-creation and co-production in public management and service management discourse. It evaluates the role of human-centred design approaches and service design and their contribution to value creation. Building on existing theories, it describes the input and effect of service design on public value creation.

Through a range of qualitative methods, the thesis studies how 'citizen-friendliness' is achieved in Hamburg's digitalisation projects and how citizens and their needs are considered in the design and development processes of new digital public services. The empirical research is conducted on two different levels - organisation and service. The research on the organisational level examines prevailing principles, mindsets, practices, and methods through contextual inquiries and interviews with administrative staff and consultants. Further research on a specific public service undergoing digitalisation is used as an instrumental case to gain additional insight into the ways of working and to investigate the benefit of a service design approach to an organisation and its role in public value creation. Several established frameworks are utilised to describe the set-up and maturity of design in the city-state.

The research shows how human-centred design is partially used in Hamburg's service transformation projects. At the same time, it uncovers how reliant the administration is on external capacity and which barriers hinder the creation of genuine citizen-friendly service offerings. Multiple intervention designs are created, and activities carried out to first further investigate and then facilitate a human-centred design approach to public service transformation. New approaches to organisational design and service design are proposed to improve how public services are developed and the public organisations designing them are set up.

The thesis has both theoretical and practical value. It proposes a new model to describe the contribution service design can make to the creation of public value. For the city-state of Hamburg, it identifies how a specific service offering can be improved and what organisational evolution can enable the development of more citizen-oriented offerings in the future.

Keywords: Service design, public value creation, public service logic, public management, digital transformation

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1 Introduction

Governments around the world are working hard on transforming their services for the digital age. Digital is seen as a key to make administrations operate faster, more efficient and more cost effective. In 2018, digital service offerings are also expected by citizens. But western governments have a weak track record with digital projects and their underlying information technology (IT). In the United States, 94% of federal IT projects are over budget or behind schedule. 40% of the projects are abandoned and need to be relaunched (Van Dyck 2016). The budget of the failing healthcare.gov website, supposed to implement the Obama administration's Affordable Care Act, increased from \$464 million to \$824 million (Levinson 2015). In the United Kingdom, the National Health Service stopped the development of a digital patient record system after spending almost £10 billion (Syal 2013). In Germany, the Federal Employment Agency cancelled the development of a unified IT platform after 6 years and an investment of 60 million euros (Strathmann 2017). Such a waste of public resources and the related negative media reports erode public confidence in governments and administrations.

The use of a public service is a rare direct interaction that citizens have with their state. People's experience of dealing with authorities can determine the level of trust they have in their governments - and in democratic structures (Greenway, Terrett, Bracken & Loosemore 2018). Good experiences with public services can result in increased engagement, participation, and transparency (Bason 2017a). For citizens, well designed digital public services prove to be simpler, cheaper, faster than their offline alternatives (Greenway et al. 2018). They are also more flexible as people can do necessary tasks on their computational devices in their own time instead of taking time off to visit a government office during fixed opening hours. For governments, the benefits of well designed public offerings, if done right, are higher productivity, decreased costs, or increased outputs (Bason 2017a). The application of service design - shaping the service with the input of future users through iterative loops - yields the promise of producing more useful and usable services. Design methods used in development projects enable better service experiences for citizens (Bason 2017b).

Germany's digital public services are immature compared to those of its neighbouring countries and less frequently used (Krcmar, Türkavci, Müller, Scheiber, Boberach, Exel & Baethge 2018). Multiple key projects launched in the last decade - like the barely used electronic signature of Germany's ID card - are considered political and financial failures (Nagel 2018; Kühl 2017). According to a report from the Standish Group, an international IT research advisory firm, only 6.4% of IT projects with a volume of \$10 million or higher were successful (Thibodeau 2013). A related study highlights that user involvement was the top project success factor, while the lack of user input was the top project challenger factor (The Standish Group 1995).

Earlier than others, political leaders and senior public servants in the city-state of Hamburg decided to take a novel approach. They embarked on a learning journey to California's Silicon Valley to see how successful technology companies are developing their offerings. Back home, they decided to establish a new digitalisation programme, bring in experts from the private sector and utilise design thinking as an approach (Senatskanzlei Hamburg 2015). As a city-state, Hamburg can operate faster and with reduced complexity as it has control over state-level law-making and municipality-level service delivery. Such level of authority and the city's openness to utilising design methods made Hamburg an attractive partner for this research-oriented thesis. Many of the results of the thesis are relevant and transferable to other government organisations in Germany and beyond.

1.1 Current state of e-government and digital public services in Germany

The European Union and its 28 member states coordinate various efforts around e-government and better public service provision, including ministerial declarations in 2009 and 2017 (EU Ministers for eGovernment 2009, 2017) and related action plans like the 'EU eGovernment Action Plan 2016-2020' (European Commission 2016). E-government is the application of modern information and communication technology (ICT) to transform government and the delivery of public services. Katsonis & Botros trace the term back to the 1990s while reviewing the different evolutionary waves of government digitalisation (2015). The OECD describes three dimensions of e-government: service provision through the internet, the usage of ICT in administration, and the transformation of administration through the application of ICT (2003).

Germany is the biggest economy in Europe (IMF 2018) and is perceived as a political and economic leader on the continent and the European Union (Noack 2016, Sauerbrey 2016). However, in terms of e-government and digital service provision and usage, Germany is not performing well compared to other parts of Europe, and this performance can't be attributed to lack of digital skills in the German population. A 2017 study of the EU found that 82% of German internet users shop online and 78% consume music, videos and games, but only 19% are users of digital government services (European Commission 2017b). Among the 28 member states, Germany is ranked third for online shopping and 23rd for using digital public services. The report states the inhabitants of Germany have comparably good digital skills with the country ranked seventh. According to the study, 68% of Germany's citizens have at least basic digital skills. It can be assumed the skills should be equally applicable to commercial and public online services.

Another e-government benchmark study conducted for the European Commission in 2017 looked at penetration and digitisation (European Commission 2017a, 108). Penetration is described as internet use when users are submitting completed online forms. The study remarks that Germany performs low in penetration with only a third of internet users using e-government services. Meanwhile, the country performs well in digitisation. According to the study,

three-fourths of services are digitised. 75% of services exist in electronic form, but only 33% of people with internet access use them. Regarding penetration, the study does not make clear what counts as a ‘submission of completed online forms’. It may include existing paper forms being made available through electronic channels which can be filled in on a computer, then printed and send via mail.

It is notable that the study uses the term *digitisation* instead of *digitalisation*. Digitisation and digitalisation are two related but distinct concepts. According to the US-based global research firm Gartner, digitisation “takes an analog process and changes it to a digital form without any different-in-kind changes to the process itself” (Gartner 2015). In contrast, the term digitalisation is described as “the use of digital technologies to change a business model and provide new [...] value-producing opportunities” by Gartner (2012) and as “the process of employing digital technologies and information to transform business operations” (Muro, Liu, Whiton & Kulkarni 2017). In the context of government service provision, digitisation can mean putting paper forms on the internet as electronic files while digitalisation comprises re-thinking how the service is provided, how it can be simplified including making changes to their underlying support processes.

A third European report issued by the European Commission on the Digital Economy and Society Index (DESI) captures five dimensions (European Commission 2018). Two of those dimensions describe the use of internet services and digital public services. In these categories, Germany is placed in the lowest performing third. In the European Union, 58% of citizens are using government-provided services online. In Italy, the Czech Republic, Greece and Germany less than 40% of the citizens use online public services. In the ranking, Germany is placed 25 out of 28. The second category of digital public services entails multiple indicators including the number of pre-filled forms and processes performed completely online. In this category, Germany is placed 21 out of 28.

The German government and its administration publicly acknowledge the country’s low performance in e-government plus digital service provision and usage. Reporting to the German chancellor, the National Regulatory Control Council publishes an annual report on bureaucracy reduction, better regulation and digital transformation (Nationaler Normenkontrollrat 2017). At the presentation of the 2016 report, its chairman stated: “E-government in Germany is *de facto non-existent*” and “in comparison to Austria we are 10 years behind” (Deutscher Bundestag 2016). While IT was used inside the administration, citizens would still have to go to local government offices for service provision. In 2013, the ‘law for the promotion of e-government’ came into force. It is designed to allow citizens and business to communicate with administration through secure digital channels, enable secure electronic signatures and digital case management (Bundesamts für Justiz 2013). Five years later, the practical impact is little.

The Federal Ministry of the Interior, Building and Community (BMI) is the leading body coordinating digital transformation on a federal, state and local level in Germany. On its website, it states that e-government would provide citizens and businesses with straightforward and time-independent access to government services, making direct interactions with administration mostly unnecessary. It would also accelerate processes, make services cheaper to run and increase efficiency and transparency (BMI 2018).

The Federal Ministry's State Secretary and Federal Government Commissioner for Information Technology is a project sponsor of an independently produced annual 'eGovernment MONITOR'. The report covers the usage and acceptance of digital public services in Germany, Austria and Switzerland. According to the 2017 study, 41% of German internet users have used an e-government offer in the previous 12 months - compared to 45% in 2012 (Krcmar, Türkavci, Müller, Dietrich, Boberach & Exel 2017). In Austria, the number rose from 67% to 74% in the same period. Hence, the usage of e-government offerings decreased in Germany in the past 5 years to an even lower level while it steadily increased in the neighbouring country Austria. The study found that only half of German internet users are satisfied with e-government offerings. Potential gains include decreased process time, decreased fees and the possibility of checking the progress of a task online. The main barriers described by the surveyed participants of the study were the lack of awareness of such offerings, the necessity of additional hardware and transactions only being partially digital (Krcmar et al. 2017).

According to these studies, German citizens are capable of using the internet and online services, but they are lacking useful and usable digital service offerings from their administration. The German government recognises people's needs and has created a plan to digitalise core services in the coming years.

In 2014, the Federal Ministry of the Interior published the German government's agenda on 'Digital Administration 2020'. The document explicitly distinguishes digitisation and digitalisation: *"A simple digitisation of the existing paper sphere is not enough [...] The goal is to enable integrated, consistent, single-channel, digital public service provision by utilising modern information technology"* (Bundesministerium des Innern 2014). In order to achieve the objective, the Federal government is working together with the IT Planning Council and Conference of State Ministers (Die Bundesregierung 2014). The IT Planning Council is tasked with the coordination of a Federal-State partnership related to information technology, the development of national IT standards and the controlling of e-government projects (IT-Planungsrat 2018a).

In August 2017, the act to improve online access to administrative services - or online access law - came into force (Bundesamt für Justiz 2017). According to the act, all services that can be made digital must become available online by 2022. The act states that they must be discoverable through a Federal service portal and enabled by a unified user account. In June

2018, the IT Planning Council published an implementation catalogue that prioritises 575 services from a list of 5,980 services in total which relate to 55 life and business events for citizens and companies (Stocksmeier & Hunnius 2018). The document also highlights the specific challenges of achieving this in Germany. Most policy and law-making take place on a federal and state level, but service delivery mainly happens on a local and municipal level. Less than 20% of services are both regulated and delivered on a federal level (Stocksmeier & Hunnius 2018). Both the IT Planning Council and National Regulatory Control Council emphasise Germany's challenges related to its federalist structure and the resulting fragmentation of policy-making and service delivery on different levels of national and local government (Nationaler Kontrollrat 2017). The split responsibility also leads to a duplication of development and implementation of new public services as the more than 11,000 individual municipalities and local governments are largely in charge of service provision. In its concluding chapter, the implementation catalogue reiterates the importance of cross-level collaboration between federal, state and local level to implement the online access law effectively and efficiently (Nationaler Kontrollrat 2017, 264). The IT Planning Council manages a federal information management kit, FIM, that captures and describes services, related forms and processes. In 2017, a cross-government working group established the Federal IT Cooperation, FITKO, tasked with coordinating and facilitating the digitalisation of administration (IT-Planungsrat 2018b). It is co-owned by all 16 states and Federal government.

The 2017 online access law describes *when* public services have to be digitalised. Its 2018 implementation catalogue provides an overview of *what* services need to be covered. *How* and *by whom* this is going to be done has not been fully described, as the authors indicate (Stocksmeier & Hunnius 2018, 2). This thesis investigates the *how* and *who*. It limits the context to a city-state. City-states have particular characteristics that distinguish them from bigger, less densely populated states. They are states with only a single municipality which brings state-level policy-making and local-level service delivery closer together as fewer organisational boundaries exist and the governance structure is less complex. The insights gained through the research of this thesis are therefore not equally applicable to all states of Germany, but there are many findings which can be generalised to other areas.

1.2 Research and development objectives

The focus of this thesis is the digital transformation of government-provided services in the German city-state of Hamburg. In late 2016, the Free and Hanseatic City of Hamburg created a new transformation unit called *Digital First* based on a Senate decree setting the goal of developing citizen-friendly digital public services (Hamburger Senat 2016). The transformation unit is located at the State Chancellery, the coordinating agency of the Senate. It is tasked with coordinating the transformation and digitalisation of about 470 public services by 2022. It works with the city's 11 government departments on making their services accessible

through ICT, i.e. through the internet, to 1.8 million citizens and other users. The *Digital First* unit and its related programme intend to take a ‘users first’ approach and to explicitly measure and evaluate the quality of the experience service users have (Hamburger Senat 2016).

The key research questions aim to understand what role service design, design thinking and a human-centred design approach may have in public value creation in the context of the Hamburg administration:

- A. What is the understanding and comprehension of design practices in the Hamburg administration?
- B. How can the application of human-centred design support public value creation?

The aim of the thesis is to assess the programme’s approach through the engagement with a specific service, understand potential challenges and barriers to taking a human-centred design approach, and then address them through productive interventions. The research includes capturing prevailing principles, practices, mindsets, and techniques in the administration, analyse their effectiveness and feedback the insights to the further transformation and design of public services in Hamburg. The guiding hypothesis is that public value is mainly created as value-in-use for members of the public, as experienced value during the use of government-provided service. To enable value creation for members of the public, government departments need to engage in research activities to first understand the needs and then design for the contexts of their service users.

The theoretical framework of this thesis focuses on public value as discussed in public management discourse and value creation as discussed in the field of service management. The aim is to link the two mostly separate academic discourses. Furthermore, it explores the contribution service design and human-centred design can make to public value creation.

The scope includes two empirical streams of work. The first comprises researching current practices and underlying beliefs and values in the Hamburg administration. This includes exploratory, qualitative research through semi-structured interviews. The second stream consists of engaging with a digital service currently under development and applying a human-centred design approach. Insights and learnings from these pieces of work will inform the further development of digital transformation processes and procedures in Hamburg’s administration.

1.3 Research-oriented development project

The thesis follows a research-oriented development approach as described by Ojasalo, Moilanen & Ritalahti (2009). It generates new data and text from practical activities. That includes identifying problems linked to the two research questions and finding ways to address them. Research-oriented development aims at solving real-world problems, creating information and producing new practices (Ojasalo et al. 2009). Such practices can be workplace practices. In the context of this work, the practices are related to the development of citizen-friendly administration and services in Hamburg.

In this thesis, the development activities are supported by the analysis of existing theories and theoretical data and the two empirical research streams on the organisation and a specific service. Research-oriented development involves finding opportunities, proposing solutions and implementing these. That relies on building partnerships and collaborating closely with others while also collecting data independently (Ojasalo et al. 2009). Furthermore, Ojasalo et al. describe five characteristics linked to a ‘learning by developing’ approach: authenticity, partnership, experiencing, research and creativity. Authenticity refers to a project being linked to a real-world issue. Partnership relates to collaborating with others, including experts, sharing knowledge and evaluating learnings. Experiencing means active participation of project partners, working with and not for or writing about them. Research points to investigation and gathering of reliable data, accumulated with scientific research methods. Creativity in the development project is needed to come up with new ideas and approaches and suggest them to partners.

As a research-oriented development approach suggests active interaction, sharing writing and doing presentations (Ojasalo et al. 2009), this thesis involved organising events, workshops, blogging and making preliminary research results available to partners, researchers and practitioners.

1.4 Key concepts, terms and theories of interest

This chapter defines the key concepts and terms which form the lens applied in the thesis and shape how the creation of public value through service design is depicted in this report. A more thorough understanding is built in chapter 2, covering existing theories and theoretical grounding.

Value

The Oxford Dictionary defines value as the importance, worth, or usefulness of something (2018a). In contrast to this popular definition, here, the term value refers to benefit or what an entity gains. Lusch and Vargo describe value as benefit or an “increase in the well-being of a particular actor” (2014, 57).

Value creation

Customers or service users are the sole creators of value. Therefore, value creation does not happen on the provider side, but the user side. Organisations like public service providers can only offer value propositions. Users will integrate the organisation's and other actors' resources to create value. The creation of value is subjective, experiential and context-specific (Chandler & Vargo 2011).

Service-dominant logic, service logic and customer-dominant logic

Service-dominant logic, service logic and customer-dominant logic are three distinct, yet related concepts. They share the fundamental belief that a service provider can not create value, but that value is contextually unique and depending on a beneficiary's view and assessment. This understanding differs from a goods-dominant logic which centres around the notion that value is embedded in the goods and services that a firm produces (Lusch & Vargo 2014). Service-dominant logic views both customers and suppliers as value co-creators (Vargo & Lusch 2004), even though value is defined by the customer. In contrast to that, the concept of service logic sees customers as the creators of value while suppliers co-create and facilitate the creation of value (Grönroos 2008). The third concept, customer-dominant logic, describes value not as being produced, but as emerging in people's lives in their contexts, activities, practices and experiences (Heinonen & Strandvik 2015). While there are apparent differences and essential nuances in the three concepts, these distinctions are slightly less significant in the context of the thesis. The thesis largely embraces a customer-dominant logic view in which it matters how services are embedded in people's lives (Heinonen, Strandvik, Mickelsson, Edvardsson, Sundström & Andersson 2010) and contextually support the emergence of value for members of the public.

Public value

Public value can be depicted from various perspectives. In this thesis, a socio-psychological view is adopted instead of a financial-managerial. Public value reflects basic human needs and is rooted in individuals' interpretations (Meynhardt 2009).

Service design

Service design is an interdisciplinary practice with the goal to transform and create value (Wetter-Edman 2011). It utilises visualisation, prototyping and participation to do so. It involves "*planning and organizing people, infrastructure, communication and material components*" related to a service and aims to increase its quality (Sangiorgi & Prendiville 2017).

Human-centred design

Human-centred design is a holistic design approach that puts people at its centre. In contrast to user-centred design, it is concerned with stakeholders beyond service users and with more than only improving the usage of a system (Winograd & Woods 1997). It considers ergonomic,

psychological, sociological and anthropological dimensions, but also addresses human dignity in social, economic, political, and cultural contexts (Buchanan 2001a).

Citizens and users

Customer is a commonly used term in service-dominant logic and customer dominant logic. The two concepts apply a business lens, relate to private markets and companies in competition with each other. According to the Oxford Dictionary, a customer is “a person who buys goods or services from a shop or business” (2018b). The activity described refers to choice. In contrast, a person who uses a public service has no choice regarding the public service provider - with the exception of moving to either a different municipality or even country. In the context of the public sector and public services, the term customer is therefore not suitable. In the following, the terms citizen and user are used. Citizen refers to “an inhabitant of a particular town or city” but also to a “legally recognized subject or national of a state [...] either native or naturalized” (2018c). The second definition excludes people who are not legally recognised such as asylum seekers or foreigners living, working or studying in the country. Also, people in prisons have only limited civil rights. In the following, the first, wider definition of a city’s inhabitants is used.

Due to legal circumstances, all citizens are either directly or indirectly users of public services. They live safe lives because of the work of the police and justice system. They enjoy livable cities through the activities of public cleansing service, public utility companies and energy suppliers. As all inhabitants of cities are beneficiaries of public services the terms user and citizens are used synonymously in this thesis. In addition, Saffer argues user being a “*gender-neutral, activity-positive term for the person engaged with [a] product or service*” (2017). Referring to existing theories, the term customer is used in the first part of this thesis, where, it is mostly used interchangeably with citizen and user.

1.5 Structure of the thesis

The thesis consists of theoretical and empirical parts. Both are complementary and contribute to the objectives of this work. The first chapter introduces the topic, research and development objectives, and key concepts. It begins with an overview of e-government and digital public services in Germany, zooming from a global to local view in the city-state of Hamburg. The key research questions and applied methodologies are described, and then the main concepts, terms and theories of interest are presented, and the limitations of the report are discussed.

The second chapter provides background to the research and development project by introducing the case organisations and related organisations who are involved in digitally transforming public services in the city-state of Hamburg. It introduces the service, its purpose and users, and describes the goals of the organisation.

Chapter three offers an overview of existing theories and builds a theoretical grounding. It summarises the discourse in public value management of the last 25 years, describes different perspectives on value creation, and identifies how service design contributes to value creation. Thereafter, it defines human-centred design, differentiates various approaches concerning co-production, co-creation and participation, and relates these to public sector organisations.

The fourth chapter gives an overview of design processes, principles and methods of service design. It describes techniques and methodologies applied in practice.

The fifth chapter covers the empirical work. It summarises the findings, documents activities and interventions, and describes results. In the chapter, emerging themes from the interviews conducted with organisational staff are presented. The distilled themes from this research describe how human-centred design practice is understood in the Hamburg administration. The section is complemented by data generated through inquiries and observations made during time spent at the administration. The next part contains the exploration, mapping and review of the researched and redesigned service, its service users and their needs. Based on this synthesis, generative work and proposals are presented. The sixth and last chapter contains a conclusive summary, reflects on the value of the study and the transferability of results. Finally, it suggests opportunities for further research.

1.6 Delimitations of the thesis

The thesis' objective is to answer the two key research questions presented in 1.2 through three major activities: 1. reviewing conceptual models and retracing distinct discourses in academic literature, 2. investigating the current organisational practices and prevailing understanding of design, 3. engaging with a case service to gather further data and verify models.

The thesis focuses on how digital government services are created in the German federal state of Hamburg. As the chapter on research and development objectives indicates, the first research question aims to assess the programme's approach and understand how services are planned and developed, acknowledging that the new Digital First unit's processes and approaches evolved and changed constantly throughout the research phase. The mostly interview-based research within a specific department is limited to one of the eleven government departments in Hamburg. Therefore, the results might not be generalisable for the other departments in the city as they might operate differently.

Furthermore, the conclusions are based on the interpretation of qualitative research data which are subject to the researcher's subjective interpretations. Therefore, the findings are not generalisable, and other researchers may find other patterns and draw different conclusions using the same data set. Although it is valuable to understand barriers to the adoption

of human-centred design in public service transformation, the research does not cover political context or funding models. Another beneficial area outside of the scope of the thesis is organisational design and related theory.

The development project and engagement with the case service is confined to one specific offering provided by the Administration of Work, Social Affairs, Family and Integration. Due to the complexity of the service, the work is limited to the citizen-facing part of the service. Further processes and areas of the service related to and used by professional users and organisational staff were not considered. Within the constraints of time, resources and availability of staff, various issues around data privacy, legal and policy could not be analysed in depth. As part of the user research and usability tests conducted, participants with more severe cognitive, visual or auditive impairments, who are eligible users of the service, were not involved due to challenges in recruitment and communication.

In the design and development process, the thesis follows the double-diamond process model developed by the British Design Council (2007). It has an emphasis on the first three phases, which are discover, define, and develop. In the develop phase, user research is limited to a smaller set of participants. More research took place during the end of the thesis project and continued afterwards but is not covered in the thesis documentation due to time limitations and reasonability of scope. On the grounds of complexity, a full end-to-end, cross-channel version of the proposed future service with development, testing and iteration was considered outside of the scope of the thesis. Suggestions for the final stage, deliver, where implementation would happen, as well as results and recommendations, have been shared with the external suppliers.

Broadly, responding to the second research question, one goal of the thesis is to understand what contribution human-centred design approaches and service design can make to public value creation. In a more narrow sense, it seeks to investigate how related principles, practises and techniques can help German administration to implement its online access law and transform public services digitally. While it only scratches the surface, the findings increase the knowledge and understanding on both levels. On the conceptual level, the thesis proposes a new theoretical model to the academic discourse in public management, and service management, and design management which requires more practical validation.

2 Research and development project

The focus of the thesis is the city-state of Hamburg and its ongoing digital service transformation efforts. After engaging with various parts of German government and administration on federal and state levels, Hamburg was chosen because of the city-state's reduced level of complexity in governance structures and general interest in taking a human-centred design

approach. The subject of work is both the *Digital First* programme, a unit within a newly established Agency for IT and Digitalisation and a service for the recognition of severe disability which members of the *Digital First* team help transform digitally.

The name and goal of the programme reflect what scholars observe as a global trend in governments. A digital-by-default agenda is followed in which the digital service channel becomes the preferred channel for service provision (cf. Katsonis & Botros 2015; Clarke 2017). The following section gives an overview of the related organisations and provides further information about their scope of work and goals.

Hamburg and its digital transformation of public services is the main case of this study. The service for recognising severe disability provided by Hamburg's Administration of Work, Social Affairs, Family and Integration (BASFI) and its subagency Versorgungsamt is the instrumental case within the Hamburg case.

2.1 Case organisations

In Hamburg, various actors are involved in the digital transformation of public services. The city operates the 'Hamburg Serviceportal' on its official website. It bundles together 80 online services and transactions for citizens, businesses and administration. About 140,000 of the 1.8 million citizens are registered and have an online account. The services are used about 1.4 million times per year, for example, to register for a postal vote, to apply for an excavation licence or to access a central pupils register. The service platform is operated by Dataport, a statutory public body managed by six federal states and a municipality (Dataport 2017). Dataport is the main IT service provider of Hamburg. All digital services are either developed or commissioned by Dataport. State-government departments are not permitted to bypass the IT service provider. Due to capacity constraints, Dataport subcontracts other companies for development work.

The 2015 coalition agreement between the social democratic party and the green party outlines the ambition of the incumbent government regarding digital transformation (Senatskanzlei Hamburg 2015). It states that public services need to be easily accessible and user-friendly. Digitalisation is no longer overseen by IT experts but is supposed to become a core area of public management. Usability and accessibility are explicitly mentioned as "obvious design criteria" as the city of Hamburg intends to serve as a role model (Senatskanzlei Hamburg 2015). The work is supported by various contracting companies and external suppliers, including large business consultancies like Capgemini or IT provider Microsoft and smaller businesses for design and development work, like Innoki and Synios (Bürgerschaft der Freien und Hansestadt Hamburg 2018).

2.2 Digital First unit in the State Chancellery

Following the strategy outlined in the coalition agreement, the *Digital First* unit was created in 2016 as the new coordinating function within the state administration. Initially part of the Revenue Office, it became part of the State Chancellery within a newly established Agency for IT and Digitalisation in early 2018 and was thereby given greater authority. An external Chief Digital Officer was hired to oversee the digital transformation efforts in the new agency (Senatskanzlei Hamburg 2018). The work is linked to the implementation of the Federal government's online access law, requiring 470 public services to be fully available online by 2022.

The unit's tasks include creating a framework for digitalising services effectively and efficiently, managing progress, overseeing suppliers and assessing the quality of outputs, and supporting the 11 government departments during their service transformation process. After phases of initiation, prototyping and piloting, it is expected to facilitate the digitalisation of 30 to 50 services from 2019 onwards, annually (Körber 2018). In mid-2017, the work on seven small to medium-sized services began, comprising service offerings with 120 to 6,000 transactions per year (Digital First 2018a). The Digital First team works with an external innovation consultancy, Innoki, to kick off new transformation projects with 4-day design thinking workshops. It operates in four steps in which one subteam hands over a project to the next. According to a minor enquiry in the Senate of Hamburg, the greater Agency for IT and Digitalisation had a full-time organisational staff of 68 in February 2018 and dedicated budgets for design thinking and user experience. The overall budget for the Digital First programme accounts for 18.6 million euros in 2018.

2.3 Administration of Work, Social Affairs, Family and Integration (BASFI) and service for recognising severe disability at Versorgungsamt

The Administration of Work, Social Affairs, Family and Integration is one of 11 state-government departments of Hamburg. The BASFI has subagencies for the areas of work and integration, social affairs, families, and central services (BASFI 2018a). It develops policy frameworks and provides services to integrate citizens in the labour market. The department is also responsible for childcare and supporting young people. It assists people independently of eligibility for social benefits. Furthermore, it aids citizens with migration background and disabilities to partake in communal activities and social life in Hamburg (BASFI 2018b).

The department's Versorgungsamt (Office for Social Security and Pensions) provides compensation for violent crime victims and war victims, it assesses disabilities and medical conditions according to the Disabilities Act and issues disabled ID cards. The services offered by the Versorgungsamt include the recognition of severe disability, application and renewal of disabled ID cards and related procedures for calling in expert opinions.

Together with *Digital First*, the Versorgungsamt works on an end-to-end digital service including the exchange of digital health records and documents with doctors, hospitals, and external medical assessors. The author of the thesis had the opportunity to spend significant time with the teams of *Digital First*, the Versorgungsamt and its service users between October 2017 and November 2018 in a hybrid capacity as a researcher, facilitator, and advisor.

3 Existing theories and theoretical grounding

To discuss the creation of public value through service design, various decade-long discourses need to be summarised and brought together. The four sections of this chapter explore existing theories and establish the theoretical grounding for the empirical work. Firstly, the chapter describes the emergence of the term public value and then traces the evolution of its meaning and interpretation. The second section examines value creation and how it is described in several schools of thought. It finds that only recently have the definitions and understandings of value creation among public management scholars and service management scholars have come closer together. The next section explores the characteristics of service, design for service, and service design. Next, it investigates how academic literature recognises the contribution of service design to value creation. The final section reviews the role citizen participation has for public service organisations and examines models of how citizens can be involved in designing services. Beyond that, definitions and distinctions between user-centred and human-centred design are considered, and examples and challenges related to their application in the public sector are discussed.

3.1 Public value

In the 1980s and 1990s, the new public management movement brought management theories and practices from the private to the public sector. The approach promotes the idea of running governments like businesses. New public management advocates outsourcing and privatisation, reduction of cost and staff, increasing efficiency and automation, competition and performance measurement. The goal is to achieve the same outcomes more efficiently and effectively (Hood 1991). Public servants are turned into public managers and citizens into customers (Moore 1995; 2013). Mirroring the popularisation of shareholder value, Moore in 1995 coined the term public value (Moore 1995, 21). Whereas the goal of a private company is to maximise the wealth of its shareholders under the shareholder value doctrine, Moore promotes the idea that public managers should “seek to produce public value” and “exploit [...] opportunities to create public value” (Moore 1995). Discussing multiple interpretations, Spano describes public value as a “corrective” to new public management as it would shift the focus from pure efficiency, cost reduction and increased competition to responding to citizen needs.

Described as a strategic triangle, Moore argues that public managers need to consider politics, substance, and administration in order to create public value (1995, 22-23). They need to be given political legitimacy from above, ensure feasibility and sustainability below, and validate usefulness with the outside - the citizens. In regards to understanding, if something is publicly valuable, he highlights one of the public manager's task as "judging the value of their imagined purpose" (Moore 1995). In this model, public value is created by public administrators and managers, not by citizens, but for them. For value creation, at least four groups need to be considered: 1. the individual and beneficiary of public offerings, 2. other people who may not directly benefit from the offering, 3. the community as a whole, and 4. future generations (Spano 2009, 333-334). Spano acknowledges that "co-makership" and collaboration between different public organisations and private companies as well as a "co operation of citizens" are success factors for public value creation (2009). For Nabatchi, public value refers to "an appraisal of what is created and sustained by government on behalf of the public" (2017). Public value creation requires addressing three key areas: high-quality public services, achieved measurable social outcomes and trust generated between citizens and government (Try & Radnor 2007; after Moore 1995).

Moore seeks an objective way to measure whether public value was "produced by government" (2013) and if so, how much. He argues that evaluating the impact and the value created in the public sector is significantly more difficult than in the private sector as citizens don't pay directly for service access and usage but indirectly through mandatory taxes. A public value scorecard is proposed to measure the financial cost on one side and satisfaction of 'clients of government' on the other side. He discusses utilising techniques applied in economics, statistics and operations research like policy analysis, cost-effectiveness and benefit-cost analysis (1995, 33-34). But Moore remains vague in terms of practical key performance indicators and ways of measuring the satisfaction of citizens. Spano emphasises the importance of understanding and capturing people's expectations before they use services and once the service was provided (2009). In his view, responding to people's needs is the primary focus of public sector organisations when trying to create public value and generate outcomes valued by the public. He discusses hypothetical ways to measure public value, such as the highest price users would be willing to pay for service access or the minimum compensation they would accept for the refusal of access to a service (2009). Moore rightfully remarks that government often has a hybrid role of both providing service and imposing obligations (1995, 37). Therefore, asking offenders how satisfied they are with the law enforcement services or requesting feedback from highly taxed citizens about their tax payment service might not be most useful.

Meynhardt reflects on socio-psychological views as an alternative to the financial-managerial perspective on public value Moore presents. While Moore tries to find objective ways to measure public value, Meynhardt acknowledges that it is down to the subjective evaluation of the

individual (2009). If people or groups of people perceive no value, there is no value. As value depends on individual evaluation, it cannot be created and delivered to them. Public value creation is connected to people's conception and perception of society. It requires a positive evaluation of experience with public action. The evaluation happens against basic human needs and how well a public organisation addresses them. Meynhardt translates the basic human needs to four high-level basic value dimensions: moral-ethical, hedonistic-aesthetical, utilitarian-instrumental, and political-social.

Meynhardt concludes that "public value starts and ends within the individual" (2009), but goes beyond that. It relies on the relationship between the individual and the society around them. Public value is seen as both value *for* the public and *from* the public. Value is derived from the public's experience. "Public value creation is situated in relationships between the individual and society, founded in individuals, constituted by subjective evaluations against basic needs, activated by and realized in emotional-motivational states, and produced and reproduced in experience-intense practices" (Meynhardt 2009). Table 1 below compares the different understandings of the concept of public value.

Moore (1995)	Spano (2009)	Meynhardt (2009)
Public value is created by public managers in public organisations for citizens.	Public value is created in co-operation between citizens and public organisations.	Public value is depending on the individual's evaluation and perception of experience with public actions.

Table 1: Comparison of various definitions of public value

The purpose of government and public administration is to respond to people's needs. The institutions' actions and activities are individually perceived, interpreted and judged by citizens. Moreover, if actions of public administration do not respond to basic human needs, no public value can be created. Therefore, a response to basic human needs is the foundation for the creation of any public value (Meynhardt, Brieger, Strathoff, Anderer & Bärö 2017).

3.2 Value creation

The discourse about public value creation in public sector management was long disconnected from the value creation debate in service management and service marketing of the last 15 years (cf. Osborne, Radnor & Nasi 2012). Moore's original description of public value creation is deeply rooted in a goods-dominant logic: Public sector organisations are the sole creators of value on behalf of the public and its individuals who then become recipients of the created

value (Moore 1995). Later, Meynhardt's psychological perspective on public value creation (2009; 2017) is conceptually closer to the understanding of value in service-dominant and customer-dominant logic. More recently, Osborne et al. propose a public service-dominant logic and public service logic with an attempt to bridge discourses and public service co-production to value co-creation (2012; Osborne 2017). Value is understood as benefit for an entity (Lusch & Vargo 2014, 57). Value is contextually unique and depending on an actor's perception. Lusch and Vargo describe value as "always uniquely and phenomenologically determined by the beneficiary" (2014). It cannot be provided by one entity to another, but only be co-created, they claim. The main argument for value always being co-created is that resources from multiple actors and sources need to be integrated. One single entity can never provide all the required resources to enable the creation of value. The service provider can only present a value proposition but not value itself. According to Osterwalder (2005) and Ojasalo & Ojasalo (2018), a value proposition describes a bundle of an organisation's offerings that helps create value for an entity. That entity can respond to the proposition, decide to use the organisation's capabilities and integrate its resources in a co-creation process. Value is not embedded in goods or services but determined by the beneficiaries.

A goods-dominant view depicts an exchange of value. Goods and services are exchanged for money. In contrast to this value-in-exchange perspective, service-dominant logic promotes the concept of value-in-use or value-in-context (Vargo, Maglio & Akaka 2008). Value-in-context is used as a term to emphasise the importance of the specific circumstances of value creation during usage. Context frames the value co-creation process and affects how different entity's resources can be integrated. Context is unique and its heterogeneity limits how entities can provide their capabilities and resources for service provision (Chandler & Vargo 2011).

In goods-dominant logic, a passport's value is generated once it is safely printed and produced with all its security features. A citizen exchanges value by purchasing it for some 60 euros. However, in service-dominant logic, the passport's value unfolds much later, only when it is used for crossing a border. In this context, a citizen needs to integrate the government-issued passport with other entity's resources like facilities and signage at the airport, the automated self-service e-passport barriers developed by a security firm, and the boarding pass provided by an air carrier. Unused in the drawer, the passport has no immediate value. The value co-creation - integrating multiple providers' resources - happens in a specific context at an airport and is unique to the individual user. One day, the automated barrier might not recognise the user with their new haircut and different glasses. In that context, the different resources could not be successfully integrated by the citizen in the value co-creation process at the border. If the integration of the automated barrier fails, the user will have to integrate other resources, like a border force officer and their capability, to match the passport with the person's appearance and characteristics.

The concept of value-in-achievement goes one step further (Bettencourt, Lusch & Vargo 2014). It considers value for the user only emerging once the task is accomplished and the desired outcome is reached. It links service-dominant logic with the jobs-to-be-done framework. Jobs-to-be-done centre around the belief that people use products and service in order to solve problems or reach goals. Successful offerings complement customer jobs. In this concept, the passport has neither value when it is first received, as in value-in-exchange, nor when it is shown at the border, as in value-in-use. For value-in-achievement, only when the border is successfully crossed, value is created. The service user needs to integrate the contextually adequate resources to accomplish their goal. In a situation where the automated barrier does not recognise the user's changed appearance, they will need to integrate other resources like the border force officer to get the job done. As no entity can provide all required resources to create value for itself, there are no self-sufficient value creators acting independently. All organisations and individuals are dependent on external resources to get the job done (Lusch & Vargo 2014).

Similar to the value-in-achievement concept and jobs-to-be-done framework, Woodruff describes desired and received customer value and their link to goal-based satisfaction (1997). To him, value is a person's perceived preference for and evaluation of products and services, their attributes and the consequences of usage. Received value requires the person to have reached their goal - and how, assessed against desired attributes. In the context of crossing the border, a user might assess the interplay of their passport and an automated self-service e-passport barrier against goal-based, consequence-based, and attribute-based satisfaction. Criteria for users on these three levels could be successfully crossing the border, not losing time or arriving late at the gate, and having an automated barrier that scans their passport swiftly. Reaching previously set goals are considered, but also the qualities of the offering in the moment of usage and following effects.

The beneficiaries of a service determine value individually, contextually, and phenomenologically, Lusch and Vargo assert (2014). Phenomenology refers to the study of phenomena as they are emerging from individual experiences. These can be action, perception, thought, memory, imagination, emotion, desire, or volition (Smith 2003). The concept of experiential value or value-in-the-experience describes iterative individual and collective sensemaking (Helkkula, Kelleher & Pihlström 2012). Exchanges and interactions between people can change the perception of value. Furthermore, the value-in-the experience model suggests that users can create perceived value from past, current and anticipated imaginary experiences. This means past experience and preunderstanding influence the perception of experienced value. After hearing from a friend about the benefits of newly automated barriers at the airport, a user might want to try it themselves and build certain expectations before using their passport there. The prospect of being able to cross a border with the newly issued passport can be perceived as a value in itself. Also, the socially transmitted experience of

others - such as a description of someone crossing a border using the automated barriers can lead to the perceived value creation for an individual. "Value-in-the experience can be both lived and imaginary", Helkkula et al. argue (2012). The idea that value is individually and socially subjective intersects with Meynhardt's description of value creation in the public sector. In both conceptualisations, value creation is situated in and affected by relationships of the individual and social groups.

A point of concern is who the creator of value is. This is perceived differently through the lens of service-dominant logic, service logic, and customer-dominant logic. The role of the service provider changes from the sole producer of value to only being a supporter of value creation or emersion as customers themselves become solely in charge of it. In service-dominant logic, both customers and suppliers are seen as value co-creators (Vargo & Lusch 2004). In service logic, customers are the creators of value while suppliers co-create and facilitate the value creation. They are needed as they provide customers with the required resources in the value-creation process (Grönroos 2008). Customer-dominant logic describes value not being produced but emerging when service is connected and integrated into the lifeworld of users. Lifeworlds include user's context, activities, practices and experiences. (Heinonen & Strandvik 2015). Value is not formed within service but emerges in customer's lives. This can happen through visible interaction or invisible and mental action (Medberg & Heinonen 2014). Service or exchange are no longer in the focus, but how service can be embedded in people's lives - shifting the view from the service organisation's world to the customer's world (Heinonen, Strandvik, Mickelsson, Edvardsson, Sundström & Andersson 2010).

The theories of value, how it is constructed and by whom which are discussed here have much in common. They describe value as being co-created and unique, perceived subjectively and contextually. The co-creation process is interactive, experiential and relational. Going forward, this thesis builds upon the concepts of customer-dominant logic, value-in-achievement and value-in-the-experience from the field of service marketing linked with the socio-psychological perspective on public value creation from the public value discourse.

Lusch and Vargo suspect that actors like government agencies might try to evaluate the value they help create - just like Moore (1995), Spano (2009) and other contributors to public value discourse attempt to do - but argue it is mostly done from a biased provider's perspective reflecting organisational goals, objectives and contexts (Lusch & Vargo 2014). Instead of contextually unique value, proxies for value like increased efficiency or productiveness might be measured and captured. The value-in-achievement approach of jobs-to-be-done offers an alternative way with precise value criteria and value barriers for each job step. Similarly, measuring multi-level goal-based, consequence-based, and attribute-based satisfaction can be used to reflect the success of responding to user needs instead of organisational goals.

3.3 Service design for value creation

In goods-dominant logic, service is a category of market offerings next to goods. Value is embedded in service and then offered to customers. In a service logic-based view, service is seen as a perspective on value creation (Edvardsson, Gustafsson & Roos 2005, 118). Service is defined as “the application of specialised competences through deeds, processes and performances for the benefit of another entity” (Lusch & Vargo 2014). Service providers offer access to operand and operant resources for service users. Operand resources are static, sometimes tangible resources that need to be acted upon by other resources. Operant resources are dynamic, mostly intangible resources with the capability to act on other resources (Lusch & Vargo 2014, 57). In the context of crossing a border, the passport is the operand resource while validating the authenticity of the passport through advanced marker detection is an operant resource. As in this case, operant and operand resources are often entangled. A provider’s operant and operand resources are used and integrated together with other available resources by the beneficiary, for example, a border-crossing citizen, to turn service into value. (Grönroos & Ravald 2011).

Service is characterised as interactive, processual, experiential and relational (Edvardsson et al. 2005, 118). Service is co-creational and requires reciprocal action from multiple actors, connection and communication - either direct or indirect through intermediaries. Edvardsson et al. remark that lower-level definitions of service constantly change as they are affected by a particular perspective, time, provider, and service. In service-dominant logic, the term service is used as a singular to differentiate it from the meaning of intangible products in goods-dominant logic. Service refers to the application of skills, knowledge and other resources for the benefit of another entity. Service helps customers solve a problem or achieve a goal and thereby create value (Bettencourt et al. 2014). It is understood as dynamic processes requiring interaction and collaboration through which value emerges. A provider of service is not able to provide value, only to propose value. With the relational nature of service and ongoing service-for-service exchange, a longer relationship view on service beyond situational value-in-use can be taken (cf. Edvardsson et al. 2005). Such a view is particularly relevant in the context of public service where citizens often do not have the option to choose their service provider.

Service logic and service-dominant logic use the singular of service to distinguish the application of knowledge and skills from services as intangible products in goods-dominant logic. This thesis applies a service logic-based view on service but uses the plural of service to recognise the different instances of skill and knowledge application in the public sector. Government and administration provide service in various areas like healthcare, law enforcement, education, transportation or waste management. As the nature of these service instances is vastly different from each other the term services is used to reflect it.

Similar to the understanding of service as a way to support value creation in the service marketing and service management discourse, more recent contributions to the public management discourse describe service as a contributor of public value creation. Try and Radnor expand Moore's strategic triangle and describe the provision of service (figure 1), the achievement of outcomes and the buildup of trust between citizens and administration as creators of public value (2007). Outcomes comprise the achievements of desirable results of a variety of actors such as citizens, businesses, public servants and suppliers of public administration. As different actors have different and often multiple objectives, measuring the contribution of outcomes to public value creation is difficult. The jobs-to-be-done lens and related concept of value-in-achievement presented earlier can be linked to outcomes as contributions to public value creation. Trust is referred to on several levels and between various actors. In the research Try and Radnor conducted, it was found that trust is influenced by experiences and perceptions formed over a long time, but also that the increase of accountability and communication in a specific context can contribute to increased trust in public administration. (2007, 665)

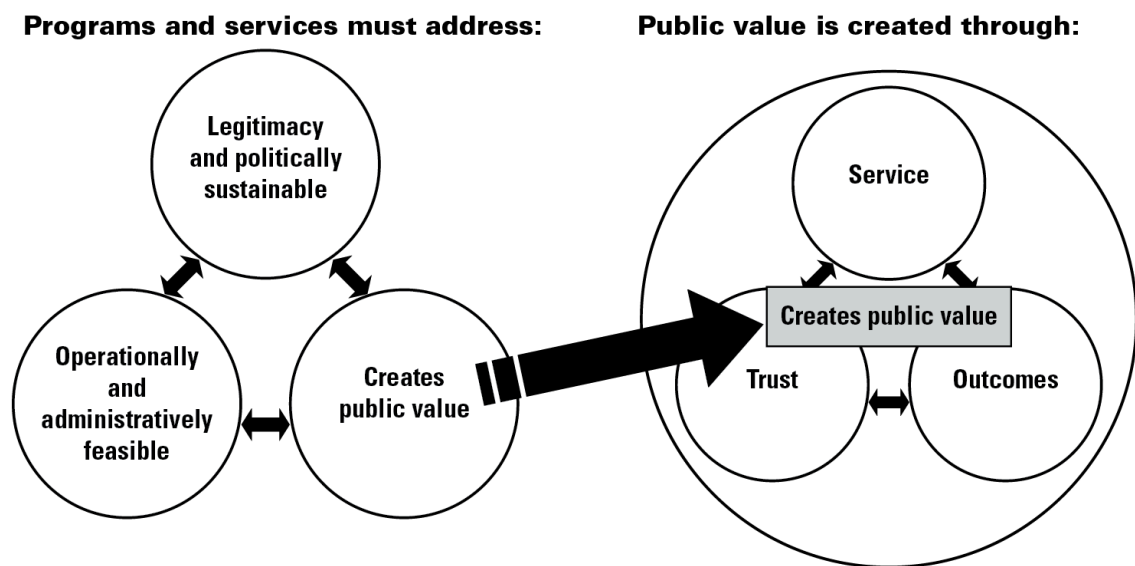


Figure 1: Service, trust and outcomes as contributors to public value creation (Try & Radnor 2007, 659)

Scholars like Heinonen argue that both goods-dominant and service-dominant logic apply a provider-dominant view. In their proposed customer-dominant logic, it is suggested that the provider's perspective on service is significantly different to the users' (Heinonen et al. 2010, 543). Not all of the users' activities and experiences are connected to the provider's service even during the use of the service. Users integrate other actors' operand and operant resources in parallel to integrating the provider's. Users' contexts, activities, practices, experiences and desired outcomes, their life worlds need to be explored and understood which are

mostly invisible to the provider (cf. Medberg & Heinonen 2014, 592). Practitioners working in the public sector like Jackson argue equivalently (2017). The provider's view on service is different from the user's. Governments and administrations shape policies in the form of laws or regulations which are translated into processes that become experienceable for people through services. Citizens start from the other side. They use a public service instance to achieve a certain outcome, may have a vague understanding of underlying processes, but are often far removed from a law's original intention (Jackson 2017). It can be concluded that capturing citizens' lifeworlds as Heinonen and others suggest is required to understand how public service and the outcomes of their usage can contribute to the creation of public value.

For service to respond to citizens' contexts, needs and capabilities, they have to be consciously designed to do so. Buchanan describes four areas of design, one of them being the design of "activities and organized services" (1992, 9). The area covers the logistical management of physical resources, appliances and people to reach a certain outcome. Furthermore, it involves the creative exploration of making experiences more satisfying and meaningful for users by utilising design thinking (Buchanan 1992). Recent definitions of the design of service, proposed 25 years later, are similar: "Service design is the activity of planning and organizing people, infrastructure, communication and material components of a service in order to improve its quality and the interaction between service provider and customers" (Sangiorgi & Prendiville 2017). The term service design and the related role of service designer were described as early as at the beginning of the 1980s (cf. Shostak 1982; 1984). Stickdorn, Lawrence, Hormess and Schneider emphasise the various natures of service design characterised by different scholars and practitioners, describing it as a mindset, a process, a toolset, a cross-disciplinary language and a management approach (2017). Comparably, in an attempt to framing the term design thinking from an academic and practical perspective, Carlgren, Rauth and Elmquist describe four categories: principles, mindsets, practices and techniques (2016). Stickdorn et al. use the term design thinking and service design almost interchangeably, arguing that both approaches have more commonalities than differences (2017, 20). A crowdsourced definition of service design created by hundreds of practitioners describes service design as rooted in design thinking (Stickdorn et al. 2017). Characteristics of design thinking are user focus, problem framing, visualisation, experimentation, and diversity (Carlgren et al. 2016). Similarly, service design is characterised as a "human-centered, collaborative, interdisciplinary, iterate approach which uses research, prototyping, and a set of [...] activities and visualization tools" (Stickdorn et al. 2017, 27). Others also identify the role of visualisation, prototyping and participation in the practice of service design (cf. Wetter-Edman 2011, 70). Concordantly, both approaches, service design and design thinking, are characterised by scholars having a focus on users or humans, utilising visualisation, embracing interdisciplinarity or diversity, and applying experimentation or iteration respectively. The

attribute of problem framing, presented by Carlgren et al. when characterising design thinking, cannot be found in definitions for service design. It can be argued, though, that the object of service design is services whose purpose is to solve problems for users and hence, problem framing must be equally inherent in service design.

The objective of service design is transformation on a lower or higher level - from the individual to society - and the creation of value (Wetter-Edman 2011). Therefore, the practice and activity of service design focuses not only on single service interactions and immediate outcomes but contribute to a longer-lasting benefit for the user. Wetter-Edman remarks that both design thinking, which emerged from management debates (cf. Carlgren et al. 2016), and service-dominant logic, which emerged from the service marketing discourse, are concerned with value creation (Wetter-Edman 2011, 98). Service design practice is seen as a way to realise service-dominant logic and therefore as an enabler of value creation (cf. Wetter-Edman 2011; 2014). Linking existing design practice with the theoretical academic model, the 'design for service' framework is presented and combines a service logic view with a design proposition concerned with experience and context (Wetter-Edman 2014, 95). It looks at existing service systems, captures their value co-creation activities and assesses value-in-context mechanics. The framework also considers actors and their approaches to resource integration and expands the understanding of value co-creation to incorporate public and private resources.

Beyond the application for service, the term design is described by Bason as "a systematic, creative process that combines different elements to achieve a particular commercial or societal purpose. The process is visual and experimental, with human experience and behaviour at its core" (2017b, 50). The impact of service design projects can range from service interaction design to service design interventions to organisational transformation (Junginger & Sangiorgi 2009, 4346). Service interaction design impacts artefacts and behaviours. Service design interventions influence norms and values, while organisational transformation affects fundamental assumptions and prevailing paradigms (cf. Sangiorgi 2010, 32). Design for service expands from designing experiences delivered through artefacts to creating new, more holistic value relations that compass artefacts and people (cf. Kimbell 2013, 25).

In sum, service is a perspective on value creation. It is characterised as interactive, processual, experiential and relational. Service design is concerned with design for service, with the objective of transformation and value creation. As a practice, it utilises visualisation, prototyping, and participation and is inherently collaborative, interdisciplinary, and iterative. Its scope reaches from influencing the individual to larger groups and shaping service interactions to organisational transformation. Service design understands actors, experience and context and is considered successful when value is created. Public value is created for users through provided service, achieved outcomes and generated trust. Service design supports all

three. It shapes the service offering and influences intended outcomes by taking a human-centred approach. It enables the buildup of trust by being participatory, interdisciplinary and collaborative. In more recent contributions to the public management discourse, public sector organisations are seen as providers of public services rather than public goods. A public service-dominant approach for public value creation (Osborne et al. 2012) and more recently public service logic (Osborne 2017) has emerged to which service design can contribute. This thesis asserts that Sangiorgi and Wetter-Edman's framework of *design for service* is equally applicable to the public service-dominant logic as it is to service-dominant logic.

3.4 Service design scope

Service design is described as a holistic activity (cf. Moritz 2005; Wetter-Edman 2011; Stickdorn et al. 2017) and as a “mediator between organisations and clients” (Moritz 2005, 150). Among many things, it deals with resources, operational context and constraints in the organisation, it also recognises and responds to the wider landscape beyond organisational boundaries. According to Moritz, service design contributes to strategy, reshapes processes, supports culture change and talent development (2005). Therefore, it overlaps with organisational design and change management. This overview model (figure 2) illustrates how service design looks equally inwards and outwards, how value emerges for stakeholders inside and outside of the organisation, and how there is a reciprocal influence on both sides.

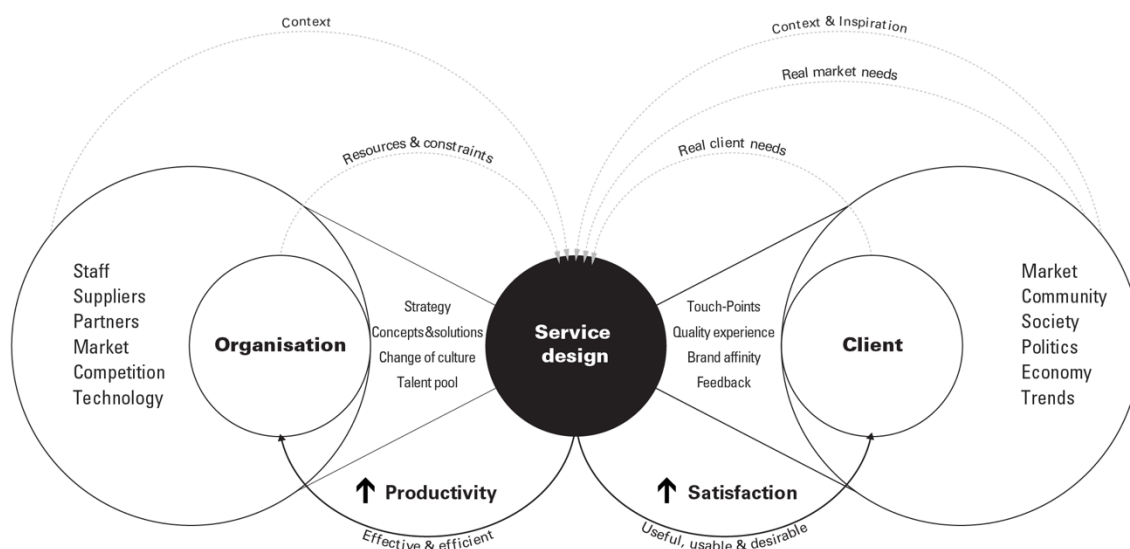


Figure 2: Service design overview model (Moritz 2005, 152-153)

Moritz describes four levels of design: design of features, of client experiences, of processes and systems, of strategy, philosophy, policy or ideology (2005, 33). Others, before and after, have described different areas of design and levels of complexity they deal with (cf. Buchanan 1992; Di Russo 2016). Junginger and Sangiorgi argue that service design projects gain

different levels of depth, can reach far into the organisation, and can have various outcomes and impacts (2009). Service design can ‘scale up’, ‘reach out’, and also ‘deepen in’ (Sangiorgi 2009). Thereby, it stretches far beyond service interfaces. The impacts and outcomes of service design can range from low to mid and high level effects. Low-level impacts include service interaction design where artefacts and behaviours are changed, but norms and values are unaffected. On a mid-level, service design interventions in redesign processes can question and change norms and values. The effect can be organisational change if the value is demonstrable, but fundamental assumptions remain the same. On a high level, service design can lead to organisational transformation, altering deeper assumptions held by people who make up the organisation. To achieve that, co-creation with multiple key stakeholders and collaboration over a longer period of time is required (Junginger & Sangiorgi 2009).

Areas of design (Buchanan 1992)	Levels of design (Moritz 2005)	Typology of design thinking (Di Russo 2016)	Impact levels of service design (Junginger & Sangiorgi 2009)
Design of symbolic and visual communications	Design of features	Artefacts	Service interaction design (artefacts & behaviours)
Design of material objects			
Design of activities and organized services	Design of client experience	Artefacts and experience	Service design intervention (norms & values)
Design of complex systems or environments for living, working, playing, and learning	Design of processes and systems	Systems and behaviours	Organisational transformation (fundamental assumptions)
	Design of strategy, philosophy, policy or ideology	Large scale systems	/

Table 2: Comparison of areas, levels, and impact levels of design and service design

A mapping of areas, levels, and impact levels of design indicates how far service design activities can reach and where their boundaries might be (table 2). If service designers can overcome organisational resistance and evidence value, service design projects can lead to organisational transformation. Designing transformative services may not actually be possible without a redesign of the organisation providing the service (cf. Hill 2012).

Human-centred design practitioners in governments have described the transformative power of service design in similar ways. In the public context, service design encompasses designing services end-to-end, from front to back, and in every channel. This includes the “user-facing service, internal processes, supporting policy or legislation and organisational, financial and governance structures of the service” (Downe 2016). It is acknowledged that services will shape government and its organisational set-up, not the other way round (Foresheew-Cain 2016).

As service design goes both inwards and outwards, it means applying its principles, processes and methods not only to the service but also to the servicing organisation. As service is the application of specialised competences, i.e. knowledge and skills (cf. Vargo & Lusch 2004), service design must include understanding the knowledge and skills in the service providing organisation to improve the service offering. This cannot be limited to the knowledge and skills in service operation but needs to expand to the knowledge and skills in service design and development, moving from designing for service to designing for the design of service (cf. Hara 2003). Service design has to be applied to the design of services, therefore, it needs to operate on multiple levels. As service design is strategic design by nature, it has to be equally concerned with the matter, e.g. a service, as with the meta, e.g. the organisation providing the service, including the organisational design, operating model, processes and skills of staff (cf. Hill 2012). Hill argues: “Strategic design must be [...] able to perceive how the entire organisation operates (this is a system) and move freely across the intersection of its elements, and to have the agency to suggest and enact a reorientation of the organisation” (Hill 2012, 121). Similarly, Brown and Martin discuss how design thinking practices need to be applied both to the outputs and activities of an organisation as well as to the organisation itself, describing cases where “every aspect of the organization had to be redesigned for the new service” (2015). Furthermore, other service management scholars have identified understanding organisation and employee issues linked to successful service as a research priority, next to leveraging service design (Ostrom, Parasuraman, Bowen, Patrício & Voss 2015).

3.5 Human-centred design for public services

Governments spend large parts of their annual budgets directly or indirectly on service provision. About 70% of Germany's federal budget of 2017 was allocated to labour and social affairs, education, healthcare, families, inner security, justice and consumer protection (Bundesministerium der Finanzen 2016). However, in public management discourse, public services are often not understood as services (Osborne et al. 2012, 136). Public organisations and scholars predominantly hold a goods-dominant view and describe goods and services as units of output (cf. Nabatchi 2017). A holistic service-for-service exchange perspective for public service organisations emerged only recently with the presentation of public service-dominant logic and public service logic (cf. Osborne et al. 2012; Osborne 2017). New Public Management and prevailing public value theory depict citizens as receivers of service and value, but do not suggest engaging with them in a direct, individual and qualitative way (cf. Moore 1995; 2004).

Citizen participation can make public services better, more effective, and improve their outcomes (cf. Fledderus, Brandsen & Honingh 2015). The term co-production in relation to public service delivery and as a manifestation of citizen participation was established in the 1970s, popularised in the 1980s and regained importance in the 2000s and 2010s (cf. Pestoff, Brandsen & Verschuere 2012). Co-production has multiple meanings and can be seen through various lenses - ranging from individual service relationships to connections between organisations (cf. Ewert & Evers 2012). The common goals are to increase the focus on end-users, make services more effective and to improve service outcomes (Ewert & Evers 2012). Differing definitions of co-production position it in the governance, planning/design or the production of public service provision itself. Scholars describe co-production in varying ways, as concerned with deciding what to do, how to do it or doing it (cf. Alford 2014). In face-to-face service provision, a government agent cannot deliver the service without active engagement and participation of and interaction with the citizen who requested the service. This is different to the delivery of finished public goods or products - where no citizen participation is needed (Whitaker 1980). Through the interaction, the service user becomes a co-producer of the desired transformation or outcome (Whitaker 1980).

Beyond that, citizen participation can refer to various activities: lobbying of interest groups, submitting inputs via public consultations, voting in elections, attending town hall meetings. All of these are ways to influence policy decisions and represent an *“upward flow of policy making”* (Best 1973, 138). Administrations may use forms of citizen participation as a symbolic act, to obtain citizen approval but not fundamentally change policies, appreciate input or acknowledge suggestions (Terkessidis 2015, 13). Other scholars mirror the notion that citizen participation in public service delivery can decrease uncertainty for users, but may in-

crease perceived uncertainty for public service organisations (Fledderus et al. 2015). However, citizen participation can be used to improve services and make them more effective through reciprocal transformation and by doing so increase the success of related programmes (Whitaker 1980, 245). In this model, citizens are providing information that leads to the iteration and improvement of existing public human-to-human services. Feedback forms and user satisfaction surveys in contemporary digital self-service have a similar function. Co-creation and co-production are separate, sequenced activities at different stages of service development and delivery. They both involve a government organisation and an external party (cf. Alford 2014). Co-creation relates to the planning and design of a service instance. Co-production is concerned with the service provision itself. Co-creation can be optional, co-production cannot. While some scholars describe co-production as an add-on, others have argued for a long time it is unavoidable, even though the degree of user contribution might vary (cf. Whitaker 1980; Alford 2016). Whitaker categorises three broad activity types of co-production of public service: citizens requesting assistance from public agents; citizens providing assistance to public agents; and citizens and agents interacting to adjust each other's service expectations and actions (1980). A service logic or service-dominant approach to public service considers citizen engagement and user involvement at all stages from policy-making to service provision (cf. Osborne et al. 2012, 142).

Human-centred and user-centred design are approaches increasingly used for policy making and service design in the public sector around the world since the 2010s (cf. Junginger 2017; Bason 2017b). Both design approaches have been discussed in relation to human-computer interaction. The International Organization for Standardization offers requirements and recommendations on human-centred design for interactive systems in section 210 of its ISO 9241 standard. There, it advises how hardware and software components of computer-based interactive systems should be designed and developed to make them more usable and useful for users. The documentation of the standard contains a note that the term human-centred design is used instead of user-centred design to reflect a broader application to stakeholders who might not be direct users of the system, acknowledging that both terms are often used synonymously (ISO 2010). Winograd & Woods characterise human-centred design as problem-driven, activity-centred, and context-bound (1997). In their report from a working group consisting of academics and practitioners, they look at different meanings of the term human-centred design - a closed interpretation concerned with the usability of technology and a wider interpretation concerned with how it is integrated into other user activities. In the wider reading, the attribute *problem-driven* refers to understanding people's routines and situations and the difficulties emerging from these. There, human-centred design being *activity-centred* relates to capturing people's goals and task contexts. The third characteristic *context-bound* deals with the circumstances and situations people are in and how these allow

them to act. All three attributes are connected, related and overlap. The closer interpretation assigns fixed roles to people such a user, operator or consumer which neglects fluidity. While still linked to technology, this wider interpretation of a human-centred design approach suggests using empirical research to understand human activity and investigate how computer-based systems can better be integrated into evidenced human behaviours and, moreover, to develop generalised concepts and techniques related to specific reoccurring contexts (Winograd & Woods 1997). The ISO standard goes further by arguing that this design approach increases effectiveness and efficiency, but also people's well-being, user satisfaction, accessibility and sustainability (2010). Other definitions of human-centred design imply a link to human rights and human dignity (Junginger 2017, 18).

User-centred design is described on a similar broad scale to human-centred design. For Kimbell, user-centred design zooms in on one object and tries to improve its usefulness, usability and desirability instead of reinvestigating what is value means to a person (2010). There, it is argued that user-centred design is rather about value-in-exchange. Ylirisku and Buur present a wider interpretation and see the approach - in combination with design thinking - moving from situational problem-solving to understanding and addressing wider societal needs (2007). It puts people at the centre of attention and elevates them from being helpers to co-developers in the process (Ylirisku & Buur 2007). Holmlid traces interaction design and experience design back to the 1990s and argues that interaction design became the main user-centred design discipline (2009). It is questioned whether interaction design, experience design, and user-centred design should be differentiated. The term was coined in 1988 by psychologist Don Norman in his book 'The Design of Everyday Things'. The original edition had dedicated an entire chapter to user-centred design and saw it as an approach "based on the needs and interests of users with an emphasis on making products usable and understandable" (1988). 25 years later, the revised version does not mention the term even once (Norman 2013). Instead, human-centred design is presented as a process to assure what is designed matches the needs, capabilities and behaviours of the people it is designed for. Other authors also revised their definitions. Stickdorn and Schneider iterated the principles of service design (cf. 2010; Stickdorn et al. 2017). The first principle 'user-centred' suggests the experience of a service must be seen through the eyes of service users (2010, 34). In 2017, the revised principles refer to 'human-centred' design, which more broadly refers to stakeholders, including service providers, customers, users, and non-customers. The changed language and increased scope integrate everyone who is affected by the service and has some experience with it, even if indirect. For some scholars and authors, the term user-centred design has expanded while others abandoned it and adopted the phrase human-centred design instead. The shift reflects mainly three things: 1. The focus is not limited to the better use of specific products, services, and systems; 2. More stakeholders than the immediate service users need to be considered; 3. A social dimension, human capacity and impact on other people need to be factored

into design considerations. This broader sociological angle is reflected in more recent additions to the discourses in both public management and service management (cf. Meynhardt et al. 2017; Heinonen et al. 2010).

Principles laid out in the ISO standard describe the nature of human-centred design process as generating an understanding of people, tasks and environment, involving them throughout the design and development process, doing ongoing user-centred evaluation, having an iterative process, considering the whole experience and working with a team that has multidisciplinary skills and perspectives (2010). Norman describes four different activities in the human-centred design process: observation, ideation, prototyping, testing (2013). These are part of an iterative cycle.

In various definitions of human-centred design, collaboration is attributed (cf. Winograd & Woods 1997; Junginger 2017). The concept of co-production in the context of public service is seen as a form of citizen participation. Service design is described as both collaborative and participative (cf. Wetter-Edman 2011; Stickdorn et al. 2017). An important differentiation to make: collaboration is distinct from the concept of cooperation. In cooperation, various actors get together, work together and, once the joint task is done, disband as intact and unchanged units. Collaboration, in contrast, means actors themselves are changed in and as a result of the process; actors actively welcome transformation (Terkessidis 2015, 14). Public organisations learn and evolve through the engagement and interactions they have with citizens and other actors. Furthermore, service design is characterised as co-creative (Stickdorn & Schneider 2010), a term that emerged in the public management discourse only recently (cf. Alford 2014; Osborne 2017). It acknowledges an earlier and stronger involvement of citizens not only in the phase of service provision but also planning and design.

Junginger proposes a framework to describe creation and co-creation in public organisations and categorise their design practices (figure 3). It visualises the choices to either design *for*, design *with* or design *by*. The visual nine-box grid provides an overview of what design possibilities there are and how external experts, citizens, the organisational staff are involved (2017, 48ff.). In the nine possible configurations, each of the three different parties are either included or excluded. Different situations, organisational settings and mindsets lead to a preference for one possibility over the others. A human-centred approach to designing for public service is described as design *with* or *by* citizens where organisational staff and external experts might be involved to various degrees. Design *with* citizens can either be led by external experts and exclude organisational staff, led by external experts and include both organisational staff and citizens or not rely on external support but be led by organisational staff. Design *by* citizens can exclude organisational staff when citizens design for organisations and organisational staff outside-in. In another configuration, citizens lead the design

work but involve organisational staff. When design work is done jointly *by* citizens and organisational staff, they co-create and produce. Both parties have ownership of what is being created. The matrix of common design practices in public organisations allows for the location and categorisation of existing practices of governments and administrations around the world. Furthermore, it can be used to compare an as-is and to-be state.

	<i>Designing for citizens</i>	<i>with citizens</i>	<i>by citizens</i>
<i>for organisations</i>	Design experts design for organisational staff and for citizens	Design experts design with citizens for organisational staff	Citizens design for organisational staff
<i>with organisations</i>	Design experts design with organisational staff for citizens	Design experts design with organisational staff and with citizens	Citizens design with organisational staff
<i>Designing by organisations</i>	Organisational staff designs for citizens	Organisational staff co-designs with citizens	Organisational staff and citizens co-create and 'co-produce'

Figure 3: Common design practises in public organisations (Junginger 2017, 51)

Government and administration have various tasks, among those are recognising societal issues, drafting responding policies, implementing these policies by shaping processes and providing service instances. In the larger service-logic understanding of service as value-exchange process, policy-making can be seen as an activity that is part of service that government provides. In a democratic environment, laws and policies should be made in the interest of most people. Government and administration have to address wider societal needs. While someone who committed a crime might not want to be imprisoned, a large group of society will desire that outcome. Iterative process cycles are common now as steps of policy-making, implementation and enforcement in many countries. An iterative policy cycle approximately reassembles the human-centred design cycle. It includes investigating a socially relevant problem, formulating a policy by analysing a problem, understanding the context, setting

goals, selecting instruments, and implementing and evaluating impact and effects (cf. Jansen, Van Oers, Kok & de Vries 2010). Although the idealised cycle appears similar, the policy design process often does not involve citizens, utilise quantitative data or make use of sociological techniques and methods (cf. Junginger 2017; Bason 2017b).

The latest wave of digitalisation in government and administration has brought a new view on culture, leadership, and governance. Katsonis and Botros retrace and specify the different phases. In the 1990s, initiatives under the label e-government were linked to New Public Management and driven by efficiency and market-orientation. In the 2000s, Government 2.0 comprised of evidence-based policy-making and public value creation. In the 2010s, digital government involved a government-as-a-platform approach, embraced co-design and co-production and relied on collaborative user input (2015). Stimulated by cost-saving programmes and reviews initiated after the global financial crisis in the late 2000s, public organisations looked for ways to improve their public offering while managing cost (cf. Junginger & Sangiorgi 2011). At the same time, new technologies like broadband, insight-driven decision-making through big data, and cheaper and more flexible cloud computing became available (Katsonis & Botros 2015). New behaviours in the public like using mobile devices required a response from the government and administration. Shifting to a digital-by-default approach and focusing on the digital channel as the primary one led to lower costs for service operations (Katsonis & Botros 2015). As part of the new digitalisation phase and the application of modern agile software development practices, design methods promised to empower organisations to operate faster, increase its effectiveness and enable better service experiences for citizens and businesses (Bason 2017b, 4-5). The digital government approach increases skill development inside of government and promotes collaboration and innovation internally.

Human-centred and user-centred design practices are applied in internal digital service teams within Denmark's Danish Agency for Digitisation, Italy's Digital Team, Australia's Digital Transformation Agency, at 18F, part of the United State's General Services Administration or the United Kingdom's Government Digital Service (Mergel 2017). Multidisciplinary teams work in agile development cycles following a design, build, test approach (Mergel 2016) similar to the human-centred design approach discussed earlier. In 2018, the UK Government employed 800 trained designers. About 10% of them are service designers (Kane & Jordan 2018). These experts research service users' contexts, needs and capabilities before developing services and reinterpret policies, map current systems and identify key stakeholders (Kane & Jordan 2018). The UK's Government Transformation Strategy, a policy paper published by the Cabinet Office in 2017, explicitly names "*user-centred, design-led*" approaches and sets transforming services for citizens as a 2020 goal (Government Digital Service 2017). Specific design techniques used in the context of government can include design ethnography, research probes, prototyping, co-design techniques or collaborative ideation (Bailey & Lloyd 2016). Other scholars documented the application of further human-centred design approaches like

persona tools to understand and represent users of a public service, visualisation and mapping techniques to capture service ecosystems and user journeys, and observational techniques to identify touchpoints people have or might miss with public service (Trischler & Scott 2015).

Different scholars wonder if those who apply human-centred design approaches can succeed beyond improving individual service interactions. Service designers might not be prepared for dealing with more substantial organisational challenges and operating in complex policy contexts (Junginger & Sangriori 2011, 480). More generalist civil servants might have to be trained accordingly. However, if applied well, human-centred design techniques and practices can address fourth-order design issues on a system or environmental level (cf. Buchanan 2001b, 12). As design for public sector innovation is still new, the interaction between design-minded practitioners and government officials may not be friction-less (Bason 2017b, 6).

Governments are providing thousands of different kinds of service to the public. In a growing number of countries, in-house designers and design-minded public servants are applying human-centred approaches and let citizens participate in the process of (re-)designing these services (cf. Mergel 2017; Jordan & Dribbisch 2018a). The government organisations employing them and encouraging this way of working seem to understand the contribution human-centred design can make to public service improvement and public value creation. On which level of complexity, as described by Buchanan (1992), the designerly public servants are operating might not have been researched substantially and neither their direct impact. For the context of the thesis and Hamburg as its subject, it can be concluded that human-centred design is already an established approach in administrations to create citizen-friendly services as the city-state intends to do.

4 Development process and methods

Designers and engineers have been developing endless variations of design processes since design became an established profession in the 20th century. In a time when design is used to shape everything from single artefacts to related experiences to systems and behaviours up to large-scale systems (Di Russo 2016, 42), activities, goals and results do differ, but the underlying processes are likely to be similar (Dubberly 2004, 4). The high-level approaches of both diffuse design and expert design are comparable (Manzini 2015). Even when everyone can design and everything can be designed, the process determines the quality of the outcome. In the purest design process archetype, an input is followed by analysis and synthesis which then leads to an output (cf. Dubberly 2004).

Design processes are “*a sequence of unique actions leading to the realization of some aim or intention*” (Koberg & Bagnall 1991). They help reduce risk, set expectations, and increase repeatability (Dubberly 2004, 6). From both a human as well as a business perspective, increasing the likelihood of success, limiting uncertainty, and allowing improvements are desirable

goals. In addition to problem-solving, Manzini describes sense-making as a core capability of design and design processes (2015, 35). It refers to the social construction of meaning which, again, is linked to the creation of public value as Meynhardt describes it; being what the public values (cf. 2009, 206). Therefore, the recognition of functions of design and consequent adaptation of design processes can induce improved outcomes.

This chapter introduces and compares service design principles, processes and methods. It also details the multi-level scope of service design. The approaches discussed in the following sections are then used in the development project and its related qualitative research. They are explicated and their application is documented in chapter five. The process and methods support the research regarding the understanding and comprehension of human-centred design practices in the Hamburg administration and how the application of human-centred design approaches can support public value creation.

4.1 Service design principles

As expounded in chapter three, service design as a practical approach to developing services is described by scholars and practitioners in similar ways. Stickdorn et al. characterise it as having six central principles of being human-centred, collaborative, iterative, sequential, real, and holistic (2017, 27). The first principle, human-centred, emphasises that all people involved in the creation, delivery, and usage of the service are considered. That includes organisational staff, suppliers, service users and non-users. The second principle highlights that service design is collaborative in its nature. The main stakeholders concerned with the service are actively involved in its design. Chapter 3.5 shows nine configurations for stakeholder engagement in the public sector (figure 3). Service design is not linear, it is explorative and iterative. That means designing services includes experimentation, evaluation, and potential repetition with variation to determine the most usable, feasible, and viable implementation. Service design being sequential refers to services being “*visualized and orchestrated as a sequence of interrelated actions*” (Stickdorn et al. 2017). As services stretch through time and space - and even though users might interact with them in their own way - orders of use need to be considered. Polaine, Løvlie and Reason remark that service design differs from other design fields like product or interaction design as it is concerned with multiple touchpoints used at different points in time (2013, 44). The fifth principle, real, refers to service design being bound to pragmatic reality. User needs have to be discovered in the real world, service prototypes need to be tested in the real world, and service outcomes must be measurable in the real world, too. Lastly, the principle of being holistic describes the comprehensiveness of service design. It is connected to the business, its operations and processes, and linked to a wider ecosystem of actors. Furthermore, its impact on all service stakeholders is acknowledged.

Similarly, Wetter-Edman specifies five characteristics of service design in three areas (2011, 69) based on attributes found in academic literature. The areas cover how, who, and what. The characteristics are 1. interdisciplinary, 2. visualisations and prototyping, 3. participation, 4. designing transformation and 5. value creation (Wetter-Edman 2011, 64-69). Interdisciplinary implies that multiple disciplines, not just designers, are involved and collaborate with each other in the design of services. The characteristics of visualisations and prototyping refer to activities and techniques service design practitioners apply. Visualisations refer to visual sense-making and the rendering of understanding while prototyping is visualisation that also involves people and artefacts. The testing of prototypes is reflected in the third characteristic: participation as various internal and external stakeholders take part in the design process. The fourth attribute describes the transformative character of service design in various levels as also described by Junginger & Sangiorgi, ranging from changes regarding core processes of a service system to changes in surrounding culture, mission, and paradigm (2009). As previously exhibited in 3.3, service design is concerned with value creation, described by the fifth characteristic. The five attributes can be mapped against the principles suggested by Stickdorn et al. as shown in table 3. Although there are not only direct matches, there are significant overlaps between the attributes.

Characteristics of service design (Wetter-Edman 2011)	Principles of service design (Stickdorn et al. 2017)	Themes of design thinking (Carlgren et al. 2016)
Interdisciplinary	Collaborative	Diversity
Participation		
Visualizations and prototyping	Real	Visualization
	Sequential	
	Iterative	Experimentation
Designing transformation	Holistic	Problem framing
Value creation	Human-centered	User focus

Table 3: Overlaps in characteristics and principles of service design, and themes of design thinking

As established in chapter two, service design utilises design thinking approaches (cf. Stickdorn et al. 2017, 20) which overlap in their characteristics. Design thinking is portrayed in five themes: user focus, problem framing, visualisation, experimentation, and diversity (cf. Carlgren et al. 2016). For comparison, the themes are also added to table 3. A conceptual model of design thinking proposed by Carlgren et al. and illustrated by Schmiedgen (2016) can be utilised beyond related managerial debates (figure 4). It helps to understand how principles relate to lower-level activities.

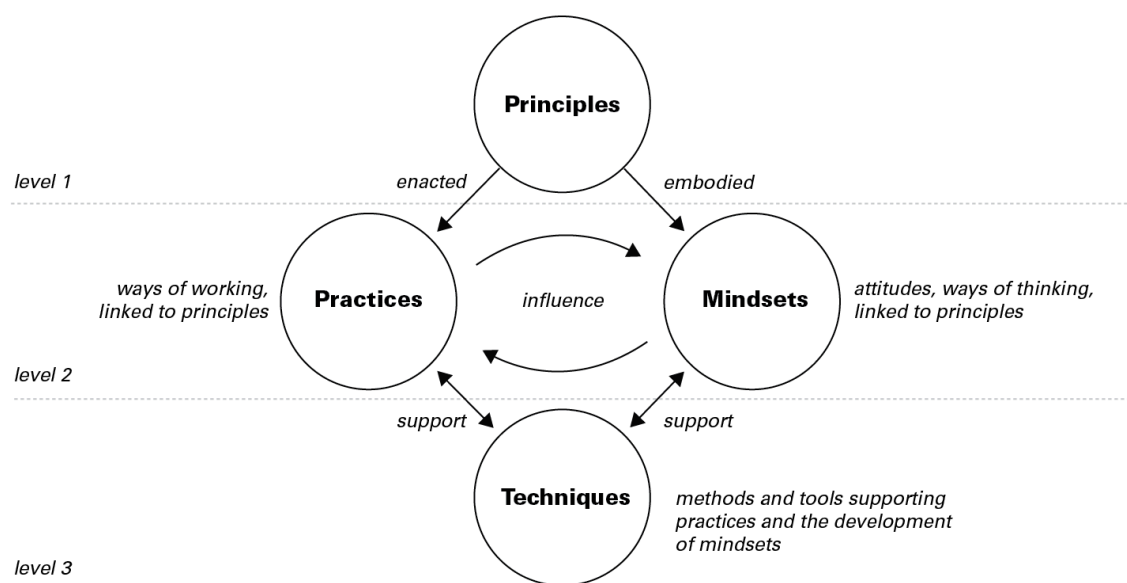


Figure 4: A conceptual model of design thinking (Schmiedgen 2016; after Carlgren et al. 2016)

The model distinguishes three levels, established and borrowed from other discourses like, for example, total quality management. The three-level conceptual model helps to understand and capture the interrelation of high-level guiding rules, mid-level ways of thinking and working, and low-level techniques. On level one, principles relate to the general approach an organisation is taking, unconnected from any one project. Principles are enacted through practices and embodied in mindsets. As a real-world example, the UK Government published its ten design principles in 2014 (Government Digital Service 2012). They contain fundamental rules like “Start with user needs”, “Iterate. Then iterate again”, or “This is for everyone”. On the second level, practices describe ways of working in an organisation. Practices are linked to the principles but can vary significantly from project to project depending on the context in particular parts of the organisation. Practices also depend on people’s skills and experiences. An example of human-centred design practice in government is the 2-hours/6-weeks routine at the UK Government Digital Service (Reichelt 2014). It asks that members of digital service

teams and the management team above have “exposure hours” of user research, regular time spent observing citizens using versions of public services. Practices influence and are influenced by mindsets. Mindsets are attributes or ways of thinking. They embody higher-level principles. The user research practice of exposure hours may over time shift how British civil servants think about co-design and co-creation of public services. Equally, their “users first” mindset may alter user research practices in the organisation (Williams 2015). Both mindsets and practices support and are supported by specific techniques. A method such as visualising systems and a related concrete tool like a service blueprint can assist the development of mindsets. They are also the concrete manifestation of practice (cf. Stickdorn et al. 2017, 37). As the three-level conceptual model helps to distinguish guiding rules, ways of thinking and working, and low-level techniques, it is utilised in chapter five to categorise research findings.

4.2 Service design process

Incorporating high-level service design principles and characteristics, the service design process describes the order and sequence of service design practices, the mid-level ways of working. The processes of mechanical engineers, software developers, business managers, and designers have large similarities, but these groups are often unaware of each other’s practices (Dubberly 2004, 7). Dubberly who collected more than one-hundred process models developed between the late 1930s and mid-2000s emphasises the resemblances of many process models. Comparing them, he argues each have steps, are focused on a goal, and suggest iteration and convergence. He separates the process models from the activities they describe. Most process models, Dubberly concludes, have between three to seven steps or phases (Dubberly 2004, 82). One of the most detailed models consists of 229 steps which industrial designers should follow, proposed by Archer in 1964 as a checklist of a systematic method (cf. DRS 2016). While Archer’s model was rigorous and highly prescriptive, contemporary practitioners and scholars hold the view that process models need to suit many different contexts and problem areas and therefore have to be adaptable (Stickdorn et al. 2017, 83).

One of the most prominent and oft-quoted design process models is the double-double developed by the British Design Council (2007). Its visual representation mirrors the shape of two linked rhombuses and represents two instances of divergent thinking and convergent thinking. In creative processes, the phase of diverging allows the generation of choices, the phase of converging reduces and decides (cf. Brown 2009, 67). The first part is concerned with the problem, the second deals with finding suitable solutions. Developed in 2005 and based on in-house research, the double-diamond is divided into four distinct phases: discover, define, develop and deliver (Design Council 2007). The first instance of divergent and convergent thinking contains a *discover* and a *define* phase. In these, an understanding of the problem is

gained and the area of focus is defined. At the end of the first diamond, a design brief is created and the problem is reframed. The second diamond consists of a *develop* and a *deliver* phase - to explore, select and implement solutions. A similar model was proposed by Banathy in 1996 for designing social systems. There, the first diamond transcends and envisions alternative images while the second diamond transforms through design by exploring alternative solutions (1996, 75). Most representations of the Design Council's double-double process model indicate a linear design process. An earlier, rarely issued version includes an illustration of small iterative loops for exploration and testing (depicted in its original form instead of redrawn in figure 5). It is complemented with a description of a prototype-test-refine cycle (2007, 10). In summary, activities in the first diamond support identifying the right problem while in the second diamond they help respond to human needs (cf. Norman 2013, 221).

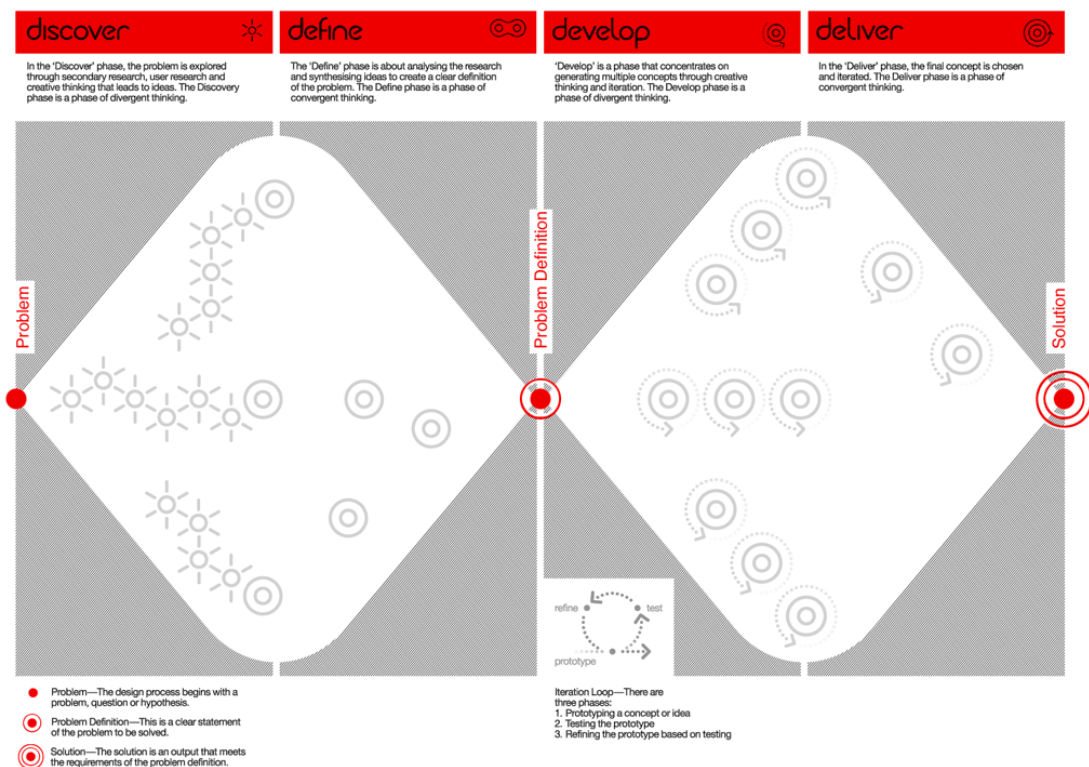


Figure 5: Double-diamond design process model by British Design Council (2007)

A third and more advanced double-diamond-shaped process model for service innovation, integrating foresight and service design, is presented by Ojasalo, Koskelo & Nousiainen (2015, 202). It depicts all its four phases as divergent and convergent: 1. map & understand, 2. forecast & ideate, 3. model & evaluate, 4. conceptualise & influence (figure 6). It transitions from sensing and seizing. It suggests a holistic, adaptable, and iterative approach.

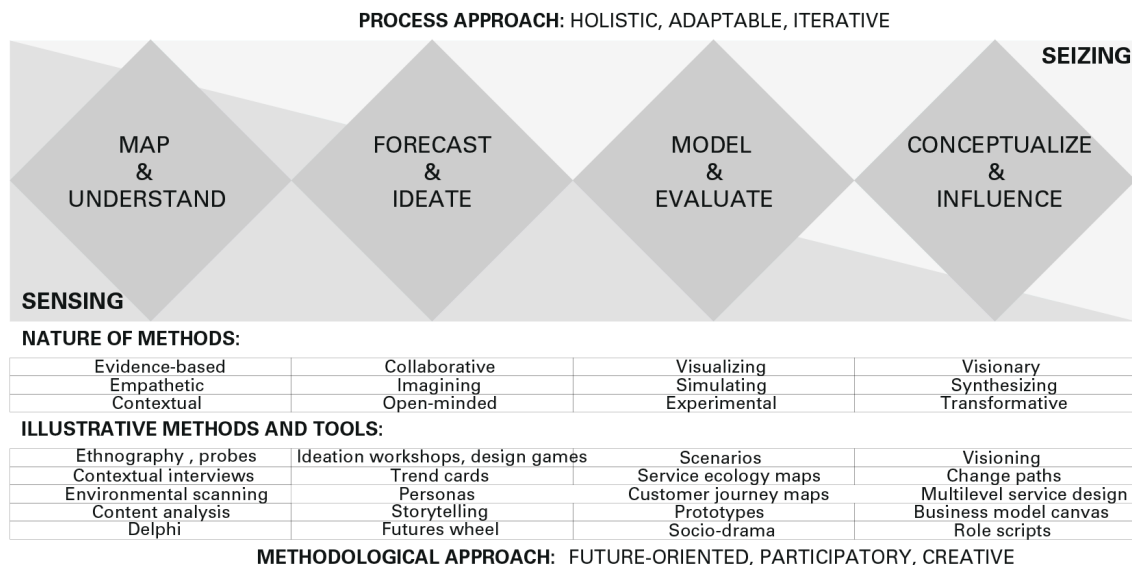


Figure 6: Service innovation process model for foresight and service design (Ojasalo et al. 2015, 202)

In its first phase, the service innovation process model proposes to map changes in business contexts and to recognise and forecast user needs and wants. In the second stage, the findings are used to stimulate the generation of new ideas and forecast alternative futures. In comparison to the four stages in the double-diamond model, more progress is made before the beginning of the third phase. While the Design Council model names a problem definition and therefore a synthesised understanding as the output of phase two, the model by Ojasalo et al. already progressed into solution space by proposing new ideas. In phase three of the combined foresight and service design model, new solutions are generated by zooming in and out, communicating and evaluating drafts of varying detail. The fourth and final phase is concerned with conceptualising a new service offering and affecting the future.

As service design and design thinking share many attributes, the related processes do also and have comparable phases. The design thinking process, as presented by the Hasso Plattner Institute of Design at Stanford University (figure 7), consists of five sequential steps: empathise, define, ideate, prototype, and test (2010). The empathise phase is about understanding people and the context of the work. The define step is concerned with framing the problem, similar to the second phase in the double-diamond process model. The phase ideate focuses on generating a broad range of possible ideas. The fourth phase is intended for generating artefacts and turning the ideas into concrete prototypes which happen in tandem with the last phase of testing. A transition between the two is suggested as they are intertwined. A prototype requires testing to be validated or invalidated. Even though the visual representation does not suggest iterative loops, a process guide remarks that iteration is a fundamental of good design (Hasso Plattner Institute 2010). Despite the waterfall-like appearance, it is noted

that the process model should be seen as a customisable framework that requires modification depending on the problem area and the design modes can be used in different orders.

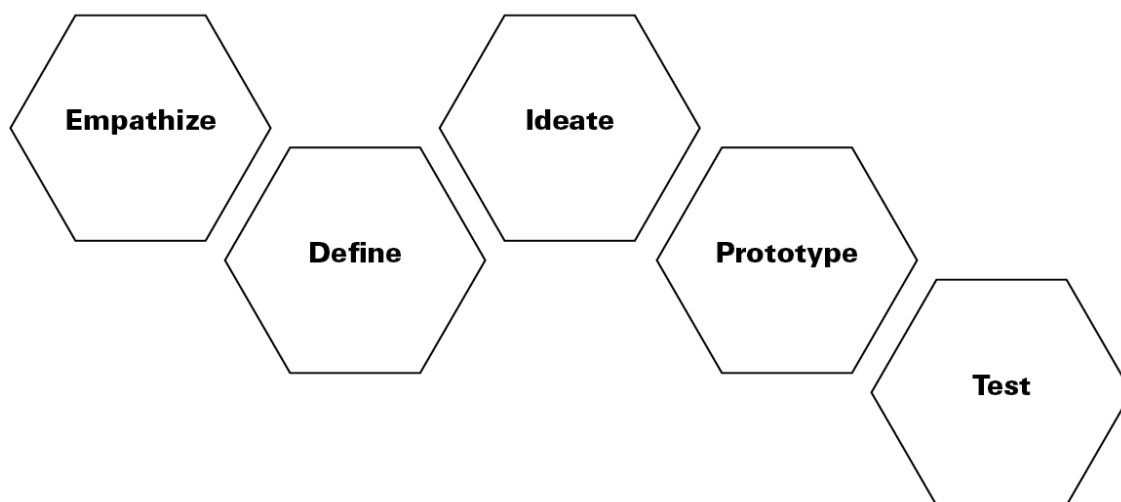


Figure 7: Design thinking process model by Dschool Stanford (Hasso Plattner Institute 2010)

An alternative design thinking process model is used by the Potsdam-based School of Design Thinking since 2007 (Hasso-Plattner-Institut 2018). It consists of six instead of five steps and visually represents an iterative approach by depicting loops of repetition (figure 8). Its last three phases of ideate, prototype, test mirror the Stanford model. The first two, though, split the emphasis stage into a understand and observe phase. In the step understand, teams are supposed to set the problem space and form an outside view by engaging with different stakeholders in the observe phase. The step point of view deals with reframing the problems, informed by the knowledge accumulated in the first two phases. It equates the step define in the Stanford model.

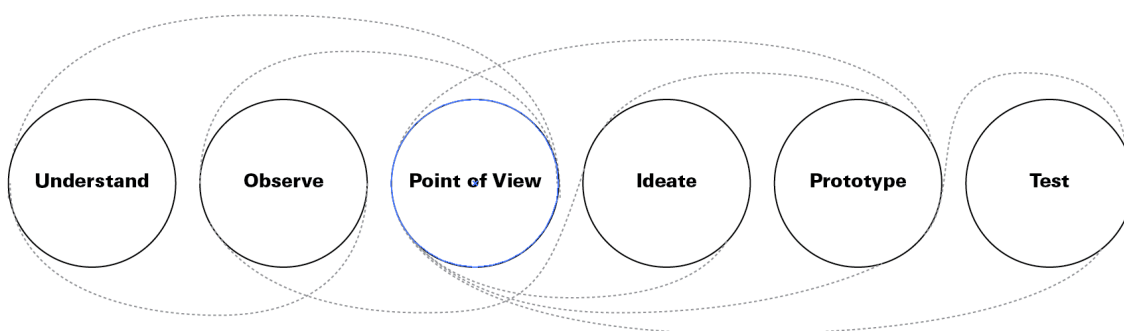


Figure 8: Design thinking process model by School of Design Thinking Potsdam (Hasso-Plattner-Institut 2018)

In the context of government and public service delivery, design and development teams have created similar process models. The UK Government Digital Service established its Digital by

Default Service Standard in 2014 (Scott 2014) and presented a related visualisation of a four-stage process (figure 9). The related practice combines human-centred design and agile software delivery approaches for digital service development. The first phase, Discovery, deals with understanding service users, their needs and contexts, what user journeys look like, which services are already addressing similar needs and what related policies exist. The stage includes carrying out user research and analysing policies, laws and business needs (Government Digital Service 2016a). The second phase, called *Alpha*, is concerned with building and testing prototypes as well as demonstrating the technical feasibility of the service to be built (Government Digital Service 2016b). Based on validated prototypes, phase three, named *Beta*, deals with developing a working version and continuously iterating it based on ongoing user feedback and screening of established key performance indicators (Government Digital Service 2016c). *Live*, the fourth phase, is about launching and operating a service that is constantly improved based on user feedback, analytics, and conducted user research (Government Digital Service 2016d).

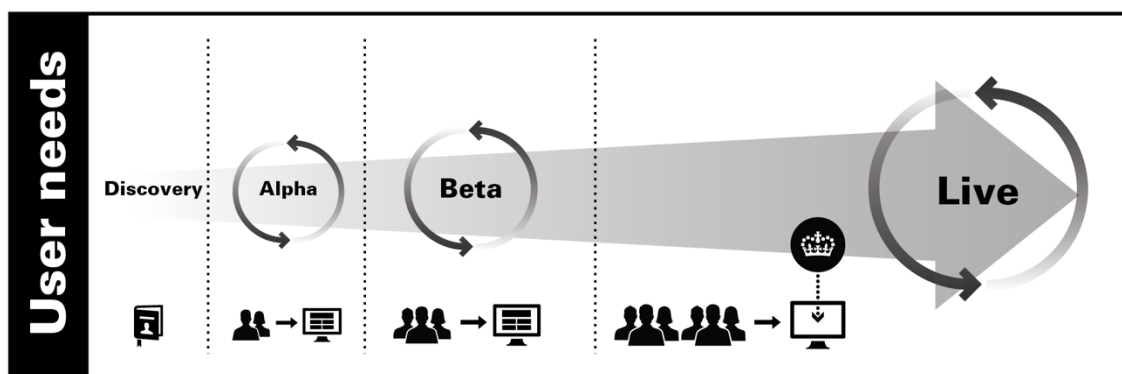


Figure 9: Digital service development process by UK Government Digital Service (Scott 2014)

Comparing and mapping the stages of the five design and development process models (table 4) highlights their different weighting of activities in the problem or solution space. Furthermore, it points out how holistic they are. Although all five involve investigating context, stakeholders and their needs, described in various nuances and degrees of detail, only two encompass implementation and delivery. The Design Council's double-diamond process model and digital service development process of the UK Government cover explicitly the realisation and launch of what has been designed throughout the various phases.

Double-diamond design process (Design Council 2007)	Service innovation process (Ojasalo et al. 2015)	Design thinking process (Dschool Stanford 2007)	Design thinking process (Dschool Potsdam 2018)	Digital service development process (Government Digital Service 2014)
Discover	Map & understand	Empathize	Understand	Discovery
			Observe	
Define		Define	Point of view	
Develop	Forecast & ideate	Ideate	Ideate	
	Model & evaluate	Prototype	Prototype	
	Conceptualize & influence	Test	Test	Beta
Deliver	/	/	/	Live

Table 4: Comparison of phases in five design and development process models

As this thesis investigates how service design can contribute to public value creation, the underlying process needs to consider implementation and launch of an offering to provide a benefit for citizens. Therefore, the thesis follows a discover-define-develop-deliver approach, similar to the double-diamond design process model. Described as overlapping and not mutually exclusive, Stickdorn et al. name four comparable core activities as part of the service design process: Research, ideation, prototyping, implementation (2017, 92-93). The development project, described in chapter five, follows an analogue process and similar steps.

4.3 Design process phases and methods in theory and practice

Service design is referred to in various ways. It is seen as a practice (Wetter-Edman 2011), activity (Sangiorgi 2017), design field (Segelström 2010), mindset, activity process, and as a toolkit (Stickdorn et al. 2017). As service design is a practical discipline, it requires methods

and related tools to be practised. Some methods are directly linked to the principles and characteristics of service design already discussed, like visualisation or prototyping methods. Many methods are borrowed from other disciplines like ethnography, sociology, psychology, human-computer interaction, or industrial design (cf. Polaine et al. 2013, 48).

Researchers and practitioners in various design areas have been exploring and discussing design methods for several decades. A dedicated ‘Conference on Design Methods’ was organised as early as 1962 by the London Royal College of Arts’ Department of Design Research, leading to the so-called design methods movement in the 1960s and 1970s with the ambition to codify and systemise the design process to turn it into a veritable science (cf. Langrish 2016; Dubberly 2004, 7). Today, there is a vast number of different methods and tools used for service design (Moritz 2005). By analysing various sources, Alves and Nunes extracted a total of 164 service design methods and tools (2013). A method refers to a structured and formalised practice or systematic process performed with a certain degree of accuracy and efficiency, often following a prescribed sequence. A tool is an instrument of any kind used to fulfil a task or achieve an outcome (Alves and Nunes 2013). As service design needs to be adaptive to the circumstances it is applied to, the tools and methods need be repurposed, adapted or recombined (cf. Stickdorn et al. 2010 148; Moritz 2005, 185). New approaches should be explored (Polaine et al. 2013, 48), especially as designers are capable and supposed to design their own tools and ways of working. This responds to the McLuhanian idea that people shape their tools and in return, the tools shape them (Culkin 1967).

The *Discover* phase is for generating a genuine understanding of the wider service area, stakeholders, and circumstances. To do that, primary and secondary research needs to be conducted (Nessler 2018) to collect rich data. This can happen as exploratory research through ethnographic methods (Kimbell 2011) by shadowing or observing how people behave in the real world. Techniques like user interviews help to learn about people’s experience (Marsh 2018). Furthermore, stakeholder maps are used to capture characteristics of the various stakeholders, their relevance and influence (Stickdorn & Schneider 2011). In addition, desk research and qualitative data gathering, for example through surveys, increases the sources and kinds of gathered information. Using mixed methodology, method and data triangulation leads to richer data sets and reduced subjectivity of individual researchers (Crouch & Pearce 2013, 64; Stickdorn et al. 2017, 108-109). As *Discover* is a diverging phase, the output is mostly unstructured research findings.

The *Define* phase is about sense-making of data accumulated in the first phase and making the research actionable. This can include clustering and affinity diagramming to allow the generation of insights and themes. (Marsh 2018) It is useful to state issues and user needs from multiple angles and describe user needs on various levels. Tools supporting such are job maps (Bettencourt et al. 2014) and activity-centred mapping (Norman 2013). Visualisations

like user journeys and experience maps can support making user research data more apparent and accessible (Segelström 2010). Personas and other types of user profiles used as compact research summaries can help increase empathy and comprehension of users' context, pains and wants (Moritz 2005).

In the *Develop* phase, new concepts are developed, prototyped, tested and iterated (Holmlid & Evenson 2007). Prototypes can have a number of manifestations from paper-based to code-based, as storyboards or scenarios (Stickdorn et al. 2017). They can be tested in formal usability tests, through guerilla testing, or in highly co-creative activities like card-sorting (Marsh 2018). The goal is to quickly understand which ideas work and which don't to identify desired and feasible solutions and test research-based hypothesis as soon as possible (Brown 2009).

Eventually, new concepts are finalised, implemented and launched in the *Deliver* phase. In the context of public digital services, it means making sure they are compliant with regulations, laws and policies and are securely built. Implementation can be supported by tools and methods like A/B testing and ongoing remote or lab-based usability testing. This can be combined with continuous monitoring of quantitative performance data to spot changes in user behaviours. Due to limitations in time, the *Deliver* phase and the activities described above are not part of the thesis, as noted in the delimitations section of the thesis.

The research and design activities conducted as part of the thesis and described in the next chapter followed the double-diamond approach. The researcher applied the previously mentioned approaches for the *Discover*, *Define*, *Develop* and *Deliver* phase. The various stages of the research and design process took place on two levels in parallel as suggested in chapter 3.4: organisation and service. The research on the organisational level started earlier and led to the identification of a service beneficial to investigate and engage with. A range of tools and methods were used throughout, partially the same on both levels. Figure 10 below gives an overview of the different methods and tools applied.

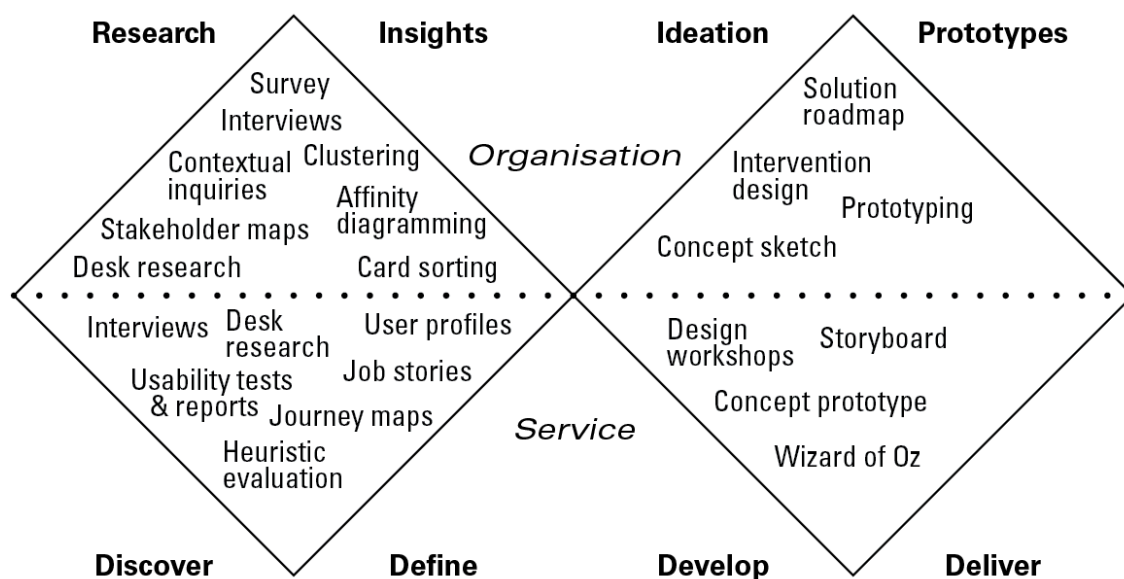


Figure 10: Visualisation of this study's research and design process and applied tools and methods

The visualisation describes and gives an overview of the stages of the process on both levels (figure 10). The next chapter summarises the findings of the investigation into the meta and the matter, as Hill distinguishes the levels (2012) - the research into the organisations tasked with designing services as well as one of the services it is supposed to transform.

5 Empirical findings, interventions and results

Chapter 5 of this thesis is a report and discussion of a research project carried out for almost a year, starting with interviews of staff and ending with a proposal of how to increase human-centred design capability. It is followed by a new theoretical model in 5.6, describing how service design contributes to public value creation. As it is not practical to separate research and its subsequent analysis and sense-making, subchapter 5.1 covers mostly set-up of the *Discover* phase related to the organisation and 5.2 focusses mainly on the related analysis in the *Define* phase. Correspondingly, 5.3.1 encompasses the research for the case service and 5.3.2. includes the gained insights. These are followed by the *Develop* phase for the service in 5.3.3. Subsequently, subchapter 5.4 contains provocations, interventions and probes for the organisation as short loops of prototyping to research further and gain additional insights. Afterwards, 5.5 zooms out and covers ideas for the organisation, describing its *Develop* phase.

The author's first interaction with representatives from the city-state of Hamburg took place in April 2017. The city's chief information officer attended a talk of the thesis' author during the annual congress of the German government's IT Planning Council. The encounter led to an invitation to a strategic management off-site in October 2017 at the Baltic Sea with an exchange on ways of working and introductions to the departments' heads of IT, members of

the Digital First teams, and the chief of Senate Chancellery. The primary activities took place between January 2018 and November 2018. The organisational research with the Digital First programme started in February 2018 and the engagement with the Versorgungsamt in May 2018. The last research workshops were run in November 2018. Further work including the creation and testing of advanced prototypes took place but is not covered in this report.

This chapter describes the approach taken, summarises the research conducted, and documents the activities, interventions and concepts created.

5.1 Capturing the current state of human-centred design practice

Hamburg's digital transformation agenda aims to create citizen-friendly services. To understand the level of citizen- and human-centredness in the operation of the Hamburg administration and what its staff's comprehension of design practice is, a range of research methods were used in the *Discover* phase. The research was conducted to answer the first of the two key research questions of the thesis: What is the understanding and comprehension of design practices in the Hamburg administration?

Over a period of eleven months, the author spent one or two days in Hamburg on nine occasions to conduct the research. As mixed methodologies for data collection yield richer results and reduce bias (Crouch & Pearce 2013; Stickdorn et al. 2017), semi-structured interviews with staff, contextual inquiries, observations and desk research were used as methods.

Understanding the organisation and staff is fundamental to recognising how to improve the service provided (cf. Ostrom et al. 2015; Moritz 2005). Therefore, a stakeholder mapping approach was followed to identify the people involved in shaping digital services in Hamburg. Stakeholder maps are a visual analysis technique to identify key constituents of a project and to plan research and design activities (Martin & Hanington 2012). Stakeholders can be identified by role or by name. The maps are first created as speculation and further refined based on additional research findings. They help locate key actors, their roles and relationships to each other and to the project. After identifying the key actors and building a rapport, they were approached for an interview. These can be categorised as subject matter expert interviews (Kumar 2012) as the respondents are involved in designing, developing, and providing service to citizens (and therefore contributing to their value creation). Beyond that, as described in chapter 3.4 and 4.3, the research is concerned with investigating both the matter - the service - and the meta - the design of the design of services. On the higher level, the respondents are providing service to each other. It is recommended to conduct interviews with multiple experts to get a full picture on a given subject (cf. Kumar 2012, 83). Interviews are a form of qualitative survey research through conversation (Martin & Hanington 2012, 102). They are exploratory and generative in nature.

Semi-structured interviews, as one variant of the method, balance structure and openness. A series of semi-structured interviews share the same questions which might be followed by different supplementary questions. Additional probes are useful when the interviewer senses there might be more to be disclosed. *Open* refers to questions leading to non-binary answers. In contrast to ethnographic interviews, semi-structured interviews have a particular and more narrow topic focus. The analysis of the interview is facilitated by the partial structure. Equivalent interview time is spent with each respondent (Gillham 2005, 70).

Desk research included the analysis of documents published by the administration either proactively or per public request through minor enquiries in the Hamburg Senate, articles from the local press, and internal presentations and documentation shared by the administration with the author. Throughout the nine on-site visits, a mix of observations and contextual inquiries were applied as techniques. Observations are an ethnographic method which gather baseline information in an unfamiliar area via the semi-structured or casual recording of phenomena (Martin & Hanington 2012, 120). At two locations, at the department's Versorgungssamt and Digital First programme office, observations were recorded through notes, photographs, and sketches in one board meeting and two 'jours fixes', team's weekly meetings. In addition, shorter ad-hoc contextual inquiries of up to 30 minutes were conducted. Contextual inquiries are a hybrid of ethnography and interviews. Respondents are questioned in their work environment which combines the advantages of in-depth conversation and observation (Marsh, 166). It is done for the benefit and ease of the interviewee but also to understand the context of their work, their set-up and how matches their statements. The contextual inquiries were done in addition to the more formalised semi-structured interviews, mainly captured through handwritten notes rather than being formally codified.

Semi-structured interviews with civil servants, public servants, and contractors were one of the key research activities used to examine the level of comprehension of human-centred design in the Hamburg administration (table 5). Overall, 11 interviews were conducted in Hamburg, Berlin, and London between July and September 2018 (cf. app. 2). All but one of the interviews were held face to face, one interview had to be done over the phone. Three took place in public locations, seven in people's offices. The people interviewed in their offices have an open door policy but did not mind closing their office door for the time of the interview to support an open conversation. They were assured that their name, role and position would not be recorded and that their data would be treated with confidentiality. The interviews were primarily between 60 and 70 minutes in duration, with one interview shorter and one longer. Eight of the respondents identified as male, three as female. The gender distribution was not deliberately chosen by the interviewer but reflects the gender balance in the organisations and specific roles. All but one of interviewed civil and public servants were men. The other two female interviewees were contractors. Most of the internal staff have mid-level to senior expert roles. A few respondents work in head-of or senior management roles.

Organisational affiliation	Employment status	Number of interviews
Department	Civil servant	2
	Public servant	1
Central <i>Digital First</i> team	Civil servant	2
	Contractor	2
	Public servant	1
External provider	Contractor	3
Summary		11

Table 5: Overview of interviewed people, their organisational affiliation and employment status

In table 5, the term civil servant refers to people employed by a government department while public servants work in the wider public sector, including government-owned businesses. Contractors are hired by government organisations for short-term to mid-term durations to achieve a specific outcome. As the focus of the thesis laid on the City of Hamburg and the services it is providing, eleven of the people interviewed work in or for the Hamburg administration.

The interviews were recorded with the consent of the respondents. Afterwards, for the *Define* phase, they were transcribed and then analysed by codifying through simultaneous reading and listening to the audio recording, as suggested by Marsh (2018, 209). The interview transcripts spread over 196 pages. In the process of codification, 27 different codes were assigned, with most interviews producing between 30 to 40 coded quotations. The software Atlas.ti was used to codify the 11 interviews. Several sections and answers in the interviews were given multiple codes, like ‘practice’ and ‘misuse’. Some codes were derived from theoretical models discussed in the previous chapter like the levels of design thinking proposed by Carlgren et al. (2016): *principles, practices, mindsets, techniques*. These were the codes with

the highest number of designations as well as the code *barriers*. Other codes are based on data like *culture*, *change*, or *goals*. After this, thematic clustering and affinity diagramming were used as techniques for synthesis. 187 discrete pieces of data relevant to the research were marked in the interview transcripts, coded and transferred to individual sticky notes and grouped (figure 11). When transferring the pieces of data from digital transcripts to physical sticky notes, the 27 codes were clustered and condensed to 12 themes (cf. Marsh 2018, 213). The titles of the most-used codes like *mindset*, *practice*, *techniques/tools and methods* were kept in the theme descriptions, while other codes were merged and new got new theme titles. The themes are listed in table 6. The consolidation of the codes into fewer themes allowed to understand the staff's topics of concern better and to clarify the concentrate the insights during the *Define* phase.

Themes	Roles	Mission	Mindset	Benefit	Practice	Change
	Barriers	Challenge	Ideas	Triggers	Misuse	Techniques

Table 6: Themes used for coding



Figure 11: Clustered data pieces from interviews with civil servants, public servants and consultants

5.2 Reviewing emerging patterns, barriers, challenges and opportunities

For the analysis of the interviews, statements were compared to data gathered with other research methods like observations, desk research or contextual inquiries. The research with triangulated methods provided a rich picture of the current state of human-centred practice

in the Hamburg administration. In the analysis of the diverse data, various patterns emerged. As described in the previous section, the 187 pieces of data were transferred from digital transcripts to physical sticky notes and thereby clustered, reducing 27 codes to 12 themes. In the following, they are described in summarised sections.

Prevailing ways of thinking in administration - mindsets

Respondents were asked to describe the citizen- and user-centredness of the Hamburg administration. They explained how civil servants and people in the administration are reluctant to involve citizens in the development and design of their services and how they prefer to work “on the quiet”. Without a specific prompt, several people gave a score of two out of ten to rate the level of citizen-orientation or described the administration as being in an “initial phase”. Respondents explained the heritage of German administration in the Prussian-style bureaucracy of the 1800s where citizens were petitioners making a request to a higher authority that may have been granted or denied. More recently, the roles had switched and the function of a service provider or servant to the public had emerged. Still, administrative staff had been trained to follow and execute, not to question or innovate. “Nebulous” phases or periods of uncertainty might be difficult to deal with for staff. Clear, detailed, predetermined documentation would be preferred. Safety-thinking and focus on legal certainty were prevailing, respondents stated. And there would be little reason to change the status quo as the government monopoly in public service provision did not require it to become more service-oriented. Moreover, after years of working in administration, members of staff had gained the impression that they know what the citizens want, understanding their higher-level needs, and maintaining an outside perspective. Respondents argued, they would be “citizens too” and “internal users are also users”. Conducting citizen surveys would not fit the classical self-image of departments or were largely unknown in the administration.

Emerged practice, its tools and methods, and drivers - triggers / practice / techniques / roles

Interviewees suggested that the mindset described above has changed slightly with Hamburg’s latest digitalisation initiative that introduced a human-centred design approach through design thinking workshops. The Digital First programme, related automation and business transformation work have been triggered by shifting demographics, including a significant portion of civil servants who are soon to retire, financial constraints, skills shortages in the labour market, and the passing of the online access law, participants stated. In summer 2017, a half-day design thinking introduction workshop presented the approach to the so-called ambassadors of the Digital First programme who act as digitalisation advisors, “sales people” and coordinators of change. Since then, 4-day design thinking sprints are used as kick-offs for all significant service transformation projects. Within that period, a diverse group of people - consisting of ambassadors, process specialists, software developers, caseworkers, legal experts

and decision makers - conduct ad-hoc user research, reexamine the service, develop prototypes and test concepts with users. Citizens, individuals or employees of companies, are partially brought in to provide input or feedback. The sprints are seen as co-creation sessions between the departments providing the service and the Digital First, facilitated by external coaches. The facilitators act as moderators, questioners, and sparring partners. They encourage the challenging of existing processes and procedures as multiple interview respondents emphasised. As it was consistently highlighted by almost all of the participants, the ambition is *digitalisation* in the sense of broader business transformation - in contrast to a narrowly scoped *digitisation* of existing paper-based processes. They valued the critical approach instead of replicating the paper forms one to one and simply “electrifying” them, a term several people used. This approach is supported by top management, including the State Secretary and Chief of Senate Chancellery of the city-state.

The Digital First unit initiates digital service transformation projects and brings in external design thinking experts to facilitate kick-off workshops. Representatives from the respective department providing the service actively participate, but do not steer the design thinking sprints. The departments are seen and see themselves as implementers, subject matter experts and project coordinators. Software developers are not employed in-house. Instead, most of the technical and IT public servants work for the spun-off public body Dataport. Dataport is described as a platform provider, guided by Digital First and the service-managing department. At the same time, the government-owned organisation is the only company that can be contracted, giving it some leverage. It plays a marginal or no role in the initial design thinking sprints. The sprints are a way to first describe existing processes and subsequently question them through which Digital First promotes a new user-centred way of working.

In the first year, between summer 2017 and summer 2018, 6 design thinking workshops for service digitalisation were run. The workshops took place outside of the regular offices, in a city-owned training centre. The civil servants highlighted the advantages of having no distractions like calls or meetings. One person stated that *“everything was unfamiliar”* about it: *“The change of perspective, as mentioned; one is stuck in their role, knows the Disabilities Act up and down, all the processes, but simply trying to assume the role of an applicant or another user was unfamiliar”*. Asked to describe the setup of the workshops, the respondents specified the first day being spent on gathering user input through interviews and observations - either face-to-face on the street, in the training centre or remotely. The wishes and expectations of citizens were captured through these techniques, interview participants said. For a service related to getting parking permits, the workshop group conducted ethnographic research and contextual inquiries with clipboards on the street. Intermediate artefacts and outputs of the semi-formalised design thinking workshops included stakeholder maps, personas as archetypical user profiles, process diagrams, summarised user needs, user stories as

short descriptions or users' desired outcomes, and digital prototypes of multiple possible solutions in various degrees of fidelity. Later, so-called click dummies, mid-fidelity-level prototypes of digital service concepts, were sent around to users who workshop participants had talked to earlier in the same week. When starting the workshops, BPMN (Business Process Model and Notations) maps were created as a graphical representation for specifying business process models. Later, these were abandoned as they proved to be useless, an interview participant reported. The focus shifted to case and workshop documentation, service journeys and process maps instead. In addition, for professional users of the service to recognise severe disability a mixed quantitative-qualitative survey was used with closed questions, an online-prototype, and open feedback fields. Interviewees reported that users were later invited to join review sessions in which the development team shared demos and asked how the latest service version would match their initial expectations. Interactive, task-oriented usability tests would be conducted with the first public release of the digital service, an interviewed person told. No usability tests would take place between the initial design thinking workshop and the first release of the service as the intermediate versions of the service would not be suitable for testing, interviewees said. The attendees of the design thinking workshops spent a comparably long time in the problem space and with understanding the service context in further depth, they stated. The workshop facilitators affirmed the same but also explained how early on solutions were brought up by the administrative staff in the workshops.

Due to related costs for running design thinking sprints with external coaches, smaller, low-volume and less-complex services like applying for a fishing license are excluded. Design thinking workshops would be *“far too expensive and far too oversized if it's about relatively trivial processes”*, an individual said. Another interviewee suggested that instead of conducting user research and prototyping potential solutions, two team members should spend an afternoon drafting a concept by applying common sense. Another person said: *“I see this as being inconsistent. Either it is handled consistently and involves users in all kinds - and the same is expected of departments, or there is the risk of statements like ‘Yes, I think, I know what the user wants’. But the user wanted something entirely else and as a result, [the service] is not being used”*. Another reason for this behaviour is that partially software solutions are already being procured which could not be changed in any case, an interviewee disclosed. Investigating user needs and exploring responding solution would be too late.

In addition to the design thinking workshops, a user experience and interface designer was brought in to support the development of a shared platform enabling all future digital services, several people mentioned in the interviews. Describing the remit of the hired designer, the work was mainly concerned with visual styles, interface components and interaction design patterns on the screen. While looking to replace the previous platform, the person's work did not include any user research or usability testing of the existing platform in the first six

months of their work, respondents stated. In another work stream, usability tests took place. A collaboration with a university in Hamburg was initiated. Throughout their semester, students tested prototypes for an asbestos notification service, trailing new research methods. Such work is supposed to continue, an interviewee told, but needs to be timed with students' semesters.

Perceived change in administration - change

When asked about the observed change since the Digital First service transformation efforts started, the people interviewed mentioned several themes: change, mindset, practice, techniques. The initial half-day design thinking introduction workshop had an ice-breaking effect for the Digital First team members who are on first-name terms across hierarchy levels since then - uncommon in German administration. In the flat hierarchy, old leadership styles would not be needed. The workshop also introduced them to the usage of sticky notes which are used as a tool for activities such as creating project plans, one respondent mentioned. Before the Digital First transformation, none of the civil or public servants would have approached a citizen on the street, while afterwards a new openness to approaching users had emerged. An earlier scepticism towards the direct involvement of users had disappeared and was replaced with design thinking workshops being welcomed with open arms. Multiple people stated that the interest in workshops and demand for them from departments had increased significantly. Previously, user surveys of any kind were uncommon with only interest groups and representatives ever providing inputs. User-friendliness had become an important matter through the establishment of the design thinking workshop as common practice. Development projects would no longer ignore users, their needs would be assessed ahead of a project start. Furthermore, 'users first' stickers on people's computers would express the changed mindset. At first, the duration of four days had been seen as a barrier to engage while now, an interest in working in a more user-oriented way had emerged, one person commented. The collaborative, multi-disciplinary approach had led to a new way of thinking while previously one individual had created a proposal which was then "noddled through" by some others. In the context of the Digital First initiative, mistakes and failures are allowed and accepted by top management, one interviewee asserted, different than in other parts of the Hamburg administration. This was enabled by top administrative leaders explicitly hiring experts from the private sector who had not worked with government and administration before. It caused anxiety and insecurity for civil servants, they admitted, but also brought in new ways of working and thinking.

Understood goals and vision of the digitalisation initiative - mission

Asked about the goals and measures of success, the interviewees gave a wide range of different answers. One person explicitly talked about the creation of public value in that a state is

not an end in itself but taxpayers' money needs to be spent to create value for the public. There might be a qualitative and a quantitative perspective, a respondent argued. Each would benefit a different stakeholder group, they stated: Creating a few excellent services for users vs. creating hundreds quickly to claim a political achievement. One interviewee mentioned that the best administration is invisible or hidden in the background, that digital services would not have to be used to get served and that user-centredness would lead to leaner organisations. The example given was an immediate transfer of child benefits to eligible parents' bank accounts after giving birth - instead of letting them apply via an online form. The respondent continued that digitalisation would happen in steps, moving from outside to the inside, starting with the citizen-facing parts as otherwise, projects would become too big. As part of the work, user involvement should be a "conditio sine qua non", an indispensable condition. As a result, processes would be simplified, lead time reduced, citizens more satisfied, and quality increased, interview participants said.

In the Discover phase, further data points than interview statements were used to investigate the mission from various stakeholder's viewpoints. According to internal presentations, the Digital First programme's vision is to *"create an innovation climate that enables the development of modern digital applications and supports the connection of involved citizens, businesses and institutions"*. It plans *"to make technical innovations usable for the development of Hamburg as a leading digital city"* (Digital First 2018b, 2). Its mission is to *"develop a service that supports the departments of Hamburg in providing cost-efficient, secure, low-threshold public services to citizens and businesses in a modern and intuitive way by utilising common innovation processes"*. Here, the term service refers not to a citizen-facing offering, but to activities around service transformation for city departments. It relates to the service of designing services. The goals of the programme described in a draft document from February 2018 include cost-efficiency, security, innovation, support and user-friendliness. According to the programme's description, user-friendliness refers to services that are simple to use and easy to understand (Digital First 2018b, 3). A related poster found in the Digital First programme office contains four guiding principles: communicate digitally, act proactively, automate processes and reduce data inputs (figure 20). In the interviews, multiple respondents mentioned the Digital First principles, too.

In addition to the interviews and documents, the observations and contextual inquiries added further useful data points which allow a comparison of the approach taken in Hamburg to the themes of design thinking, characteristics and principles of service design (Wetter-Edman 2011; Stickdorn et al. 2017; Carlgren et al. 2016). There was good evidence for interdisciplinary working, participation, collaboration and diversity found in the team set-up of the Digital First programme and involvement of multiple stakeholders in co-creation sessions during design thinking workshops. For visualisation, prototyping, experimentation and iterative working some evidence was found, but in service transformations of more than one year, it is

in almost all instances limited to four days. After those four days used for project kick-off, the approach is mostly abandoned. Little to no further prototyping, experimentation or iteration takes place afterwards.

Furthermore, the spaces and offices contain no visual artefacts related to the projects ongoing. None of the material described as outputs from design thinking workshops is exhibited in the buildings. There was some evidence for a holistic approach, a broader problem framing and the goal to design transformation. Some of the design thinking sprints led to a full re-framing and rescoping of a service, respondents stated, while others argued that many projects would focus on citizen-facing parts of service but neglect underlying backend and support processes. The core principles of the Digital First programme can be seen as linked to transformational change. The aspects of value creation, user-focus and a human-centred approach were mostly found in mission documents and interview statements. Notably, these aspects of creating value for people were missing from the guiding principles and core aims of the Digital First programme.

Challenges to integrating human-centredness, iteration and agility - challenges / misuse / ideas

The integration of design thinking with continuous user involvement into agile development practices was a topic brought up by multiple people in interviews and other forms of surveying. They described it being a problem that 4-day design thinking workshops are the only time user-involved iteration would happen. After the sprint, a design thinking approach in its wider and deeper sense would not be followed, a few people stated. “[Design thinking] *has its hype, but simply running one design thinking workshop is not enough [...] I am worried that people believe one design thinking workshop is conducted and the world is better off. But nothing else. If this happens all too often, the approach will not lead to better outcomes. [Design thinking] is not being practised, not rigid and consequent, therefore, will disappear again*”, one person voiced. Although the value of iteration loops is understood and development time would be the same, the false certainty of selecting one concept for development after a workshop would be preferred over iterating with users consecutively and building services in incremental steps. It was described as a perceived achievement and emotionally satisfying to have an agreed concept - even though it might not be the right one for the user. Incorporating an agile approach, which is focussed on testing feasibility quickly, in the slow, political context of administration is considered difficult, people argued. Moreover, true agility may occur in individual project teams, but not on a programme level, a respondent challenged. The phrase “*not consequent*” was used individuals to describe how the proclaimed user-centredness would be carried out on an operational level. An ongoing involvement of users beyond kick-off workshops would be required. Multiple people acknowledged that while

an agile, iterative way of working was the goal, a so-called waterfall approach of one discipline handing over an output to the next one would still be followed. Partially, that would be rooted in the dependency on other organisations being involved, including suppliers. A review of how human-centred design practice like design thinking can be better integrated with agile software development approaches such as scrum was suggested by people, but did not take place. More broadly, a person said that changing the way of working takes longer than they had expected but expressed confidence in their eventual success, arguing that many small steps would be required to change their immediate surroundings and people's mindsets. A dedicated digital appointee per department, who could investigate the opportunities and impact of larger organisational transformation projects in each part of the administration, would be beneficial.

Blockers and impediment to effective service transformation - barriers / misuse

In the interviews, contextual inquiries, and observations of internal team meetings, a number of blockers and barriers were recognised:

- German data privacy law and its interpretation within the administration
- Political decision-making and influence
- Technical challenges
- User involvement

A significant impediment is German data privacy law and its interpretation within the Hamburg administration, mentioned by six respondents in the interviews. As important the protection of data privacy is for services, legal teams and privacy experts would interpret it differently and data protection officers tighter than in other federal states and their more liberal legal colleagues. One person described how even apparently simple tasks for users turn into complex processes as data protection or a department's commissioner in charge would require it. Often, only a written form of user consent would be accepted and no fully digital service could be created.

The second kind of blocker and barrier described with equal frequency is political decision-making and stakeholders exerting a political influence. In one service transformation project, the implementation of a radically simplified user-centred service proposition was stopped at the highest political level. Although it was objectively the better approach for citizens, there was no willingness on a political level to make a significant change to the status quo and to spend political capital for it. It resulted in a deep running shock and lowered confidence in what could be achieved by the Digital First programme, as multiple people described it. Even several months later, there was confusion about why this decision was made resulting in a degree of anxiety about proposing bold service transformation in the future. Stakeholders at a

higher level of power were said to slow things down, but also lower-level civil servants were practically blocking progress in individual design thinking sprints, even though the second group of people could be isolated and removed from workshops. It was found to be a common experience that coordination on various organisational and political levels took several months. External and embedded consultants in particular found the “long battle” involved to be more arduous than expected. Moreover, top-level stakeholders would intervene in the design of services in a detailed manner, even participating in design thinking workshops. These micro-management behaviours were perceived as a lack of trust in the team. The participation of members of the top management irritated some public servants and resulted in them being less engaged in workshops when their superiors were in the room. Due to a high degree of hierarchy in the administration, other lower-ranked participating civil servants would be less likely to participate and express their views. Beyond that, a strong orientation towards results in politics as well as budget management and allocation would make it more difficult to work in a human-centred, agile, and iterative way, people argued.

A third obstacle is technical challenges, limited development capacity, and the lack of people to work on continuous iterations and improvements. Suppliers would not have the required capability, knowledge and people with an appropriate skill set to develop services in the desired iterative, fast and agile way. After running design thinking sprints in late summer 2017, testable versions of the digital services were supposed to be available by the end of the same year so they could be thoroughly iterated with further citizen input. 12 months later, the services were still not in that development stage, one interviewee pointed out. As the implementation of the online access law demands hundreds of services to be made digital by the year 2022, services are less likely to be improved services once they are released, it was found.

A fourth emerging pattern is challenges related to user involvement. In one transformation project, users were excluded for political reasons, an interviewee reported. For another service, the department in charge managed the recruitment of workshop participants instead of the external workshop facilitators or the Digital First team. It resulted in citizens being largely underrepresented in the design thinking workshop. People described an inertia, inhibition, and even fear of involving citizens in the service development process. A fear voiced by some people was that user involvement could lead to angered citizens if the wishes they expressed were not fulfilled or addressed. There was an understanding that the stated user wants had to be granted at face value instead of recognising underlying needs. Although citizens were understood as the key beneficiaries of services, it was argued that these user groups would not be needed or that recruitment of citizens with certain characteristics is difficult. The perceived difficulty of finding certain user groups for input sessions was mentioned by multiple respondents. On the other hand, one person commented that user involvement could be used as an alibi or false hallmark of good digitalisation to suggest that the opinion,

needs and wants of the public were considered when they haven't been. People interviewed witnessed user research methods being applied in an incorrect manner, with leading questions being asked in user input and feedback sessions. Because of this, user statements might have been utilised to support the agenda of the administration or a selection bias in the prioritisation of identified user needs can lead to favouring a departments' set agenda and neglecting core needs of citizens. In other instances, users were invited to join presentations of developed solutions and asked to comment, but not try out and experience the digital prototypes as they "*would not be far enough developed*". A different aspect mentioned by an interviewee was that involving users and responding to their wants and needs can lead to a displacement of decision-making. To the interviewee, a wide-spread indecisiveness of civil servants might benefit from citizen input guiding decision-making. It might lead to faster and better decisions, they stated.

Opportunities and value of taking a human-centred approach - benefit

In the interviews, the respondents were asked about the specific value of taking a human-centred approach. Individuals talked about opportunities ranging from a positive effect on service interaction design to implementing service design interventions and causing organisational transformation and public value creation. These responses reflect the various levels and layers of potential impact of service design projects described by Junginger & Sangiorgi (2009). On the level of service interaction design, an interviewee suggested improved ergonomics and usability would be the result of a human-centred approach. People mentioned clearer language and less officialese so citizens would find it easier to understand and use public services. On the level of service design interventions, the result of taking a human-centred approach can be significantly simpler, clearer, and more user-friendly services with lean processes, a person suggested. One person argued for a causal relationship between improved services, fulfilled citizen needs, public value creation, and improved democracy which reinforces society and its trust in government. Beyond that, user research statements, outputs, and artefacts are seen as powerful items to push back against top-level demands and prescribed solutions suggested by politicians. Also, users would be more likely to discover services, use them, and get to their desired outcome if they are developed in a user-centred way. User-centredness would help citizens to eventually prefer to use an online service over another channel. It would help administrative staff to get novel insights and look at aspects of a service not previously taken into consideration. Reaching dead-ends would be less likely and exploring new paths more likely, a person mentioned. Developing something that is not useful or beneficial to the public would not happen any longer when taking a human-centred approach, an individual working in the administration believed, or the lack of benefit would be realised earlier. Additionally, work would "*be more fun*" when citizens are involved, it was mentioned. The outcomes and results of projects would be that user needs are met and also

development goals are clearer. Service users would no longer have to “*read seven sheets of information and study law to use a service*”.

Further findings and reflections on gained insights

Reviewing emerging patterns, additional discoveries in the gathered data were made. All interviewees associated with the Digital First programme team shared coherent narratives, it was found, and their views had a high degree of similarity. The team members stated they are inspired by their mission and appeared to be intrinsically motivated by the type of work. Shortcomings were expressed by respondents who are not associated with the programme unit. They described how the value of the Digital First initiative still has to materialise as after ongoing work for one and a half year no service had launched yet. A person described it as a ‘bubble’ with pretty presentations, English catchphrases suggesting modernity but too few tangible outcomes. Another person recognised a too narrow technical perspective on digital transformation, not considering the impact on staff and also deeper organisational change.

Members of the Digital First team used the term ‘service design’ specifically and without a prompt. For them, it referred to the visual appearance of a digital service, not associated with the broader meaning found in academic literature and used by service design practitioners as exhibited in 3.3 and 4.1. The term design is used to describe influencing symbols and actions, similar to the first and third order of design presented by Buchanan (2001b). Design is perceived as a more narrow activity, not referring to change of processes or changing environments and systems. Notably, the compound term ‘design thinking’ seemed to be associated with a broader scope, able to affect systems and environments. However, it is only used in relation to workshops and therefore perceived as a method, not as a more holistic practice, mindset or set of principles. It was also noticed that the abbreviation MVP, for a minimum viable product is referred to as the first public release of a digital service after several months of development without much or any user input. In literature though, it is described as a learning vehicle, something to “rapidly assemble and immediately elicit customer feedback”, to correct assumptions in fast build-measure-learn cycles and lead to pivots and iterations (Blank 2013). Another difference in usage was observed for prototypes. In Digital First context, prototypes are not be discarded but to constitute live services, multiple people stated. While there are different levels of fidelity and applications of prototypes at the distinct stages of the service design (Holmlid & Evensson 2007), prototypes are explicitly “built to be thrown away” (Stickdorn et al. 2017). The various deviations in meaning can be seen as another indicator for agile, iterative, and human-centred ways of developing digital services not being fully recognised or implemented.

Examining the accounts on how human-centred design is implemented in Hamburg at the point of research, a model of possible relationships between a design function and the larger

organisation that it supports, developed by Junginger (2009) is instrumental in its visualisation. The model describes four key relationship types: separate, peripheral, central and integrated (figure 12).

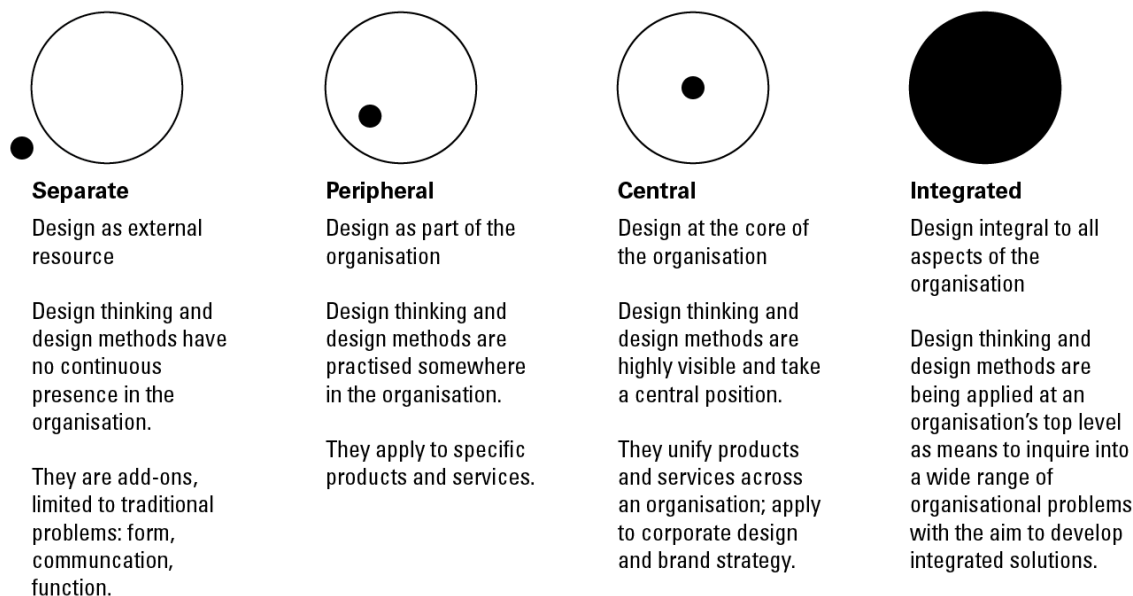
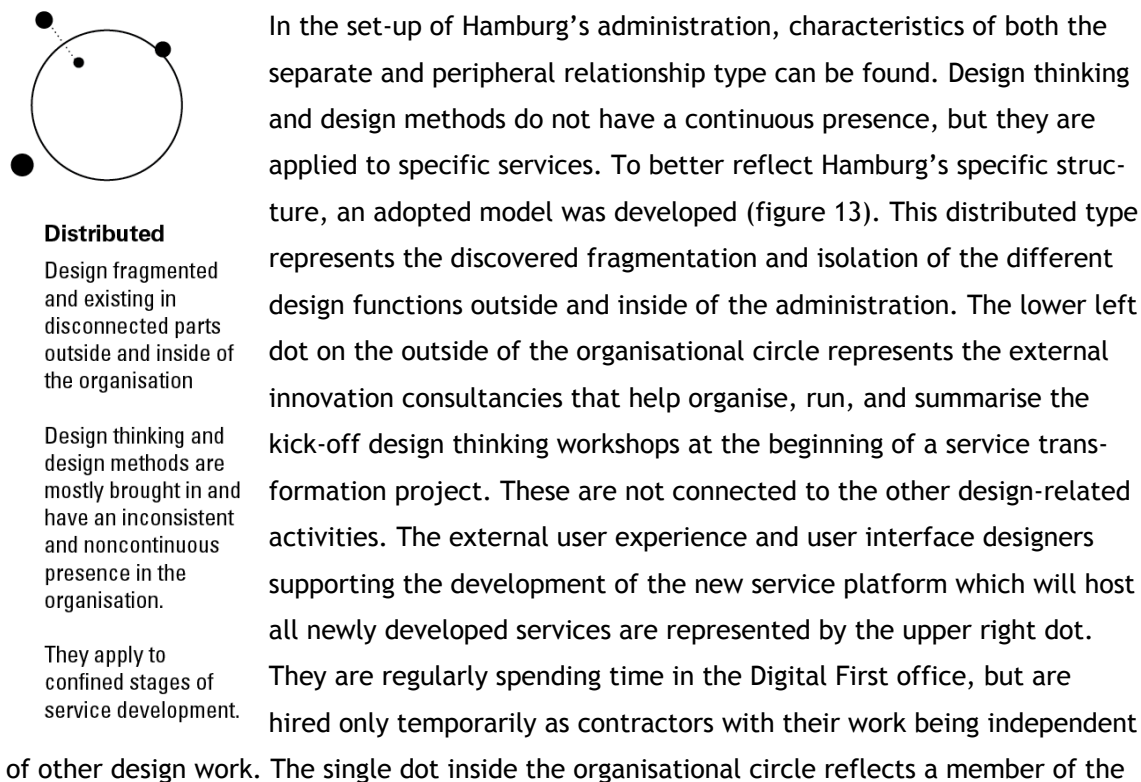


Figure 12: Possible relationships between a design function and a larger organisation (Junginger 2009, 24)

Figure 13: Type of relationship between design functions and the Hamburg administration



transformation team who has formal expertise with usability testing and initiated the collaboration with a university in Hamburg. The university students started testing pre-release versions of a service. Their work took place independently of the external innovation consultants and the contracted user experience designers focussing on the technical platform. The organisational circle only represents the Digital First programme team at the Agency for IT and Digitalisation. No other Hamburg department seem to have any design capability and is therefore not depicted in the visualisation.

5.3 Applying a human-centred design approach to a case service

For a period of six months, the researcher engaged with one specific service to further investigate both key research questions. The engagement allowed them to collect additional data points and gain more insights into the comprehension of human-centred design in Hamburg administration. Moreover, it allowed exploration of the second key research question on how human-centred design approaches can support public value creation.

One of the first seven services the Digital First team choose for its digital service transformation initiative is the service for recognising severely disabled people. From a list of seven initial projects, it has the greatest number of users and the highest volume of transactions per year. When discussing potential services to engage with as part of this research project, the Digital First team quickly discarded smaller services for applying for permits to fish in the city lake (120 transactions p.a.) or to fell a tree (6,000 permits p.a.). The service for recognising severe disability is used by about 30,000 applicants per year. Digital First's head of programme suggested engaging with a high-impact service as part of the thesis research to make better use of the engagement. At that time, in April 2018, the work of the central Digital First team on this particular service had started a few weeks earlier while other services had progressed significantly further. The service for the recognition of severe disability is based on the German Disabilities Act (SGB IX) that came into force from June 2001. Many related procedures, processes, and forms originate from the early 2000s. In late 2017, a first digital service for the recognition of severe disability was launched on the Hamburg service portal, part of the official website hamburg.de.

In the city of Hamburg, about 241,000 people are considered disabled. Therefore, the service for recognising severe disability might be used by 13% of the population. In 2017, the Versorgungsamt received 28,989 applications for assessing disabilities and medical conditions. The department sent 30,000 official letters notifying people of decisions and issued 24,700 disabled ID cards. The service is based on the Disabilities Act (SGB IX), a federal act which is executed on a municipal level. The law regulates rehabilitation and participation of disabled people in Germany. Related paper forms look similar and contain similar fields in all parts of the country. In Hamburg, the department offers the service through various channels, including telephony, face-to-face, paper, and online. The phone service is available through the 115

number, a central public administration's customer service telephone number. A centralised call centre in Hamburg handles the incoming calls during weekdays in the daytime. Its call-centre agents can respond to general requests related to disability services. More complex requests are forwarded to the department and answered within 48 hours. In 2017, about 50,000 calls related to disability services were received. Hamburg's Versorgungsamt provided a face-to-face service about 30,000 times in the same period. Its citizen centre is open two days per week.

The user-facing part of the application service is mostly paper-based. In July 2018, 7.3% of the applications were submitted through an online application form. The digital form was launched in November 2017 and the digital take-up increased continually from 2.15% in January to 7.4% in June. The internal goal is to receive 15% of the applications online by the end of 2018. There are two types of applications: first-time applications for the recognition of severe disability which accounts for about 45% of the filings and follow-up applications which account for about 55% of submissions. Claimants' degree of disability is diagnosed by assigning a number between 20 and 100. People are recognised as severely disabled if the degree of assessed disability is 50 or above. They are also given specific markers if they have significant visual, hearing or walking impairments. Severely disabled people can be entitled to tax reduction, subsidised public transport, subsidised insurance and reduced TV license fee. To offer the service for the recognition of severe disability, the department employs 60 caseworkers, 10 internal medical assessors, 12 people in its legal department and 10 registrars. It also works with 70 external medical assessors to review claimants' medical records and documents. The average processing time per claim was 117 days in 2017. Parts of the non-user-facing procedure has been digitalised in phases since 2006. The underlying backend system used by the department's caseworkers is computer-based and used by five other federal states in Germany.

From 26 February to 1 March 2018, a design thinking kick-off workshop, as described by interviewees in section 5.2, had been taken place before the researcher was made aware of the service. The researcher was given access to the 29-page documentation document summarising the 4-day workshop. The design thinking sprint was organised and run by an external innovation consultancy the Digital First team had worked with previously. (Employees of the specific firm were interviewed as part of the research subsumed in the 5.2.) The workshop agenda lists a half-day introduction to design thinking, an understanding phase, and empathy interviews on the first day, further interviews and their synthesis on the second day, and ideation, low-fidelity prototyping and testing on the third day. The agenda of the fourth day includes iteration, process visualisation, development of final prototypes, planning of next steps and closing. Apart from minor stylistic differences, the design process model presented in the documentation is nearly identical with fig. 7, the design thinking process model devel-

oped by the Potsdam-based School of Design Thinking. The challenge of the workshop is described as follows: *“Design an optimal way to give people with disabilities access to disadvantage compensation in the easiest and fastest way possible”*. As part of the exploration, four perspectives were considered by the workshop participants: people with disabilities as applicants, caseworkers in the department, treating physicians in medical institutions, and expert medical assessors. The concluding documentation lists 12 applicant insights and goals, 11 of insights and goals of caseworkers, 8 of physicians, and 10 of assessors. 23 core needs are identified. One of the key pain points identified is the long processing time, currently 105 days on average. As part of the ideation, the workshop participants decided to focus on an ‘inbox for diagnostic findings’, a non-citizen-facing process of the service. Applicants need to provide medical records and diagnostic findings from their doctors and clinicians or release them from their medical confidentiality so they can submit the documents to the department. According to the report, the workshop’s ideation and subsequent prototyping phase focussed entirely on expert users - the treating doctors. Paper-based mockups and simple process diagrams depict possible interactions between the department’s caseworkers and doctors in two iterations. The solution proposed at the end of the workshop is a mobile scanning app to allow physicians to share diagnostic findings and medical records with the Versorgungsamt faster.

The report and additional conversations with the administrative staff of both the Versorgungsamt and Digital First disclosed that focussing on the expert users was perceived as the most effective approach to responding to the design challenge of giving eligible citizens access to disability benefits. Furthermore, as there has been an online version of the citizen-facing application process of the service available since late 2017, the people involved considered improvements to the service front-end as not necessary. As part of the research project, this assumption was questioned by the author. In a meeting in May 2018, a contradictory hypothesis was proposed to the service leadership team. As the design thinking sprint documentation included more insights and needs of end users than of any user stakeholder group, it was argued that there are significant service improvements possible by responding to these needs and acting upon the insights. Moreover, it was suggested that focussing on the neglected side of the service offering would more suitable for the constraints of the current research timeframe and prevent interference with the ongoing work on the non-citizen-facing side. The proposal was accepted by the attendees of the meeting: the director of the Versorgungsamt, the digital transformation lead of the disability service, the IT director of the department, and the Digital First ambassador and project manager.

5.3.1 Discovering the service users and reviewing the existing service offering

In June 2018, one day at the BASFI’s Versorgungsamt was spent with various experts to gain a deeper understanding of service provision and to map the service front to back. One-on-one

meetings were organised that included hybrid interview-workshops for service blueprinting with the officer formerly responsible for case management, the lead in-house medical assessor, the digital transformation lead, and the director of the Versorgungsamt. Four weeks later, a second round of sessions with the business coordinator ('Fachleitstelle'), an administrative clerk, and a senior caseworker took place. The seven workshops informed the first version of a service blueprint, visualising the service for recognising severe disability. Service blueprinting is a workshop-based visualisation technique to create an overview of all processes related to the service provision, focussing on the user of the service. Furthermore, it represents points of contact, physical evidence part of the offering, and underlying business support processes (cf. Shostack 1982; Bitner, Ostrom & Morgan 2008). The output, a service blueprint, helps depict service as a process and an experience, furthermore, it supports the development and design of future iterations (Bitner et al. 2008). The technique was chosen as it is collaborative, co-creative, and multidisciplinary. It is highly flexible, adaptable, and can be used to create an image of the organisational structure of a service (Segelström 2010).

In the previously run design thinking workshop, a large process diagram was created by a Digital First ambassador. The process diagram contains similar steps as the service blueprint but represented in a single swimlane flow. It does not differentiate physical evidence, user actions, onstage/visible contact employee actions, backstage/invisible contact employee actions and support processes (Bitner et al. 2008). It does not contain any reference to process time either. In contrast, the service blueprint created reflects the activities of six different actors involved in service provision: the applying citizen, the caseworker in the Versorgungsamt, a registrar in the department, an internal medical assessor, an external medical assessor, and the applicant's medical specialist, clinicians and general practitioners holding their medical records. Over a period of eight weeks and two visits, the service process visualisation was iterated and refined in co-creation sessions with the administrative staff. During that time, the service blueprint remained attached to the wall of a highly-frequented main meeting room in the Versorgungsamt (figure 14). A prominent sticky note was attached to the top of the map stating: *"This visualisation contains errors. Please highlight and correct - thanks!"*. During that time, no edits were made or comments were added. The administrative staff only contributed through moderated feedback and iteration sessions. In these sessions, people were engaged and collaborated with a high degree of interest. At the end of the research phase, the service team at the Versorgungsamt insisted the service blueprint should not be removed, but remain on the wall of the meeting room.

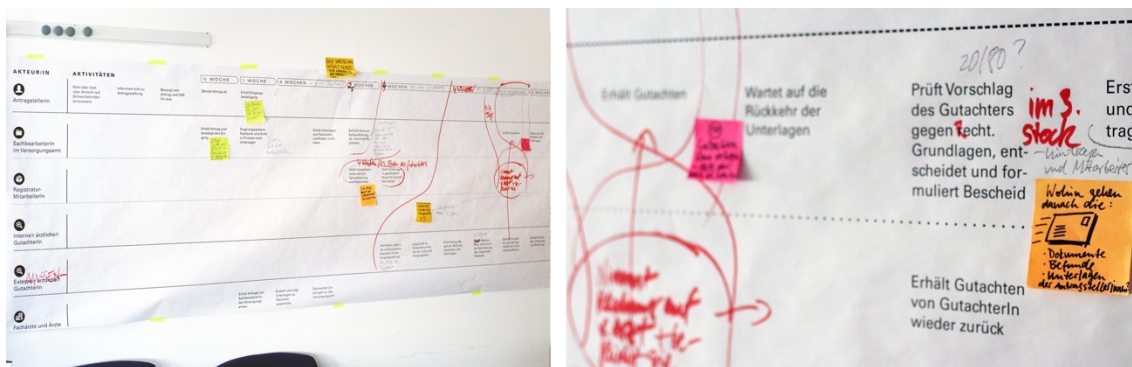


Figure 12: One version of the co-created service blueprint with annotations after a feedback session

The design thinking workshop documentation provided by Digital First lists twelve insights for applicants and seven core user needs. These were reviewed and further explorative user research was suggested since the initial workshop had only included 3 to 4 hours of user interviews. As an online application service existed already, a two-part format of interview and usability test was developed. Usability testing is a method in which a researcher observes users accomplishing specific tasks using a service with the intention to recognise potential issues during usage (Marsh 2018, 75). The tests can be moderated or unmoderated and take place face-to-face or remotely (Marsh 2018). A participant screener was used to identify people who spoke German, had German citizenship, were familiar with using a computer or mobile device, and were eligible applicants of the severe disability status. As the service is based on federal law, the service is provided in an almost identical way everywhere in Germany. Current paper-forms only contain minor differences unrelated to the underlying policy. Six interviews and five moderated usability tests were conducted in Hamburg, Berlin, London, and remotely throughout summer 2018. The interviews were recorded as audio only. Later, notes and quotes were extracted from the audio recording. For the usability tests, a recording application, Silverback, was used to capture a combined video of the user, all screen interactions including mouse clicks, and audio comments.

At the Versorgungsamt in Hamburg, participants were recruited with a poster in the waiting area during the department's consultation hours and approached face-to-face. The poster put up by the researcher read: "Today, we'd like to find out: How might we improve the online application for severe disability status?" (figure 15). A dedicated room for the test was provided by the department. In London, German citizens with severe disabilities were recruited through a Facebook group (figure 15). The interview-test sessions took place in a user research lab of a UK government department. Four interviews and tests were solely conducted by the researcher. One session in London was assisted by a native German speaker. Each session had a duration of 60 to 75 minutes. The first five minutes were used to build a rapport with the participant, followed by a semi-structured interview of 20 minutes about the

background of the person, life circumstances, medical history, and motivations and expectations of the application process.

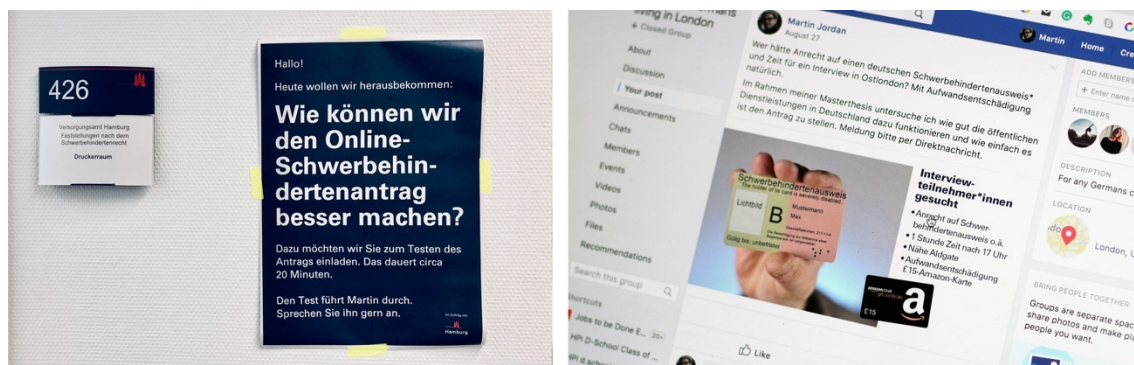


Figure 13: Recruitment artefacts used in Hamburg and London for finding research participants

Afterwards, the participants were told: “In Hamburg, the application for getting recognised as a severely disabled person is now available online. Please find it and file it.” They were provided a computer with a mouse and internet connection. No further guidance, tasks or information were given. Participants were asked to speak out loud during the test and express their thoughts, observations and considerations verbally. At times, users were asked to not progress immediately but share their expectations before interacting with an element on the screen. The fundamental research questions were: “How easy is it for users to discover the online application form?” and “How easy is it for users to use the form?”.

The purpose of usability testing is to improve the usability of a service, not to document every single issue. The focus is on insights instead of statistics. About 85% of the issues of a screen-based service can be identified with five test participants (Nielsen & Landauer 1993). The people involved were between 32 and 67 years old and included participants with bipolar disorder, paraplegia, carcinosis, diabetes mellitus, a stroke and postural deformity (figure 16).



Figure 14: Participants during an interview and usability test

The key findings were summarised in a 123-page report shared with all key stakeholders at the Versorgungsamt, BASFI, and Digital First. Reports with different levels of detail and including an executive summary are a useful method to communicate research findings and present results of the research conducted (Marsh 2018, 229). The report lists three top issues. Further problems, errors, and issues were grouped into seven categories derived from the research findings and flagged in three severity levels. The various levels were colour-coded in the report. They differentiated grave issues that prevent usage entirely or severely, serious issues that impacted usage significantly, and medium issues that obstructed users or confused them. The usability report describes 24 issues discovered in the test sessions of the currently available online application service. Each issue has a short description and illustrating image from the online service. 15 related quotes from the test participants were extracted from the video recordings and added to the report. Moreover, from each of the five tests, short video edits of five to seven minutes length were created to summarise the main findings of every session. Video is a powerful way of sharing how products and services are experienced by users. As service stakeholders' time and attention span are very limited, videos are supposed to be kept as short as possible and only contain the most important findings (Marsh 2018, 234). The videos were shared with all key stakeholders in the involved organisations. Two of the videos were watched together with two senior managers of the Versorgungsamt. Their responses and reactions were recorded in writing.

In addition to the empirical evaluation of the existing service through experiments with test users, a heuristic evaluation of the service was conducted. Heuristic evaluation is a non-formal usability review with a number of expert evaluators (Nielsen & Molich 1990). It is done by comparing digital service interfaces against a set of rules or guidelines (Nielsen & Molich 1990). Ten widely and internationally used heuristics, initially proposed by Nielsen in the mid-1990s, were used (Nielsen 1994; 1995). The heuristic evaluation uncovered eleven major issues, mostly not exposed in the usability test before. For the report, only one single evaluator, the researcher, performed the heuristic evaluation. Individual evaluators find about 20 to 51% of usability problems with an interface (Nielsen & Molich 1990) so that the study can only

be seen as complementary. As a method and data triangulation reduces the subjectivity of individual researchers and leads to better insights (cf. Crouch & Pearce 2013, 64; Stickdorn et al. 2017, 108-109), a second evaluator, an accessibility engineer, reviewed the service interface against the international WCAG 2.1 standard, the Web Content Accessibility Guidelines, specifically regarding the accessibility of the service for disabled users. This third evaluation of the existing citizen-facing application service was both done heuristically by an expert and automatically through computerised procedures. It revealed an additional seven significant issues. It was concluded with three recommendations and suggestions for follow-up activities to increase the accessibility of the service for disabled users.

The extensive three-part research report contains six closing proposals to improve and iterate the service. It is suggested that acting upon these will help the department to reach its target of 15% online applications. The findings were shared with key stakeholders in the Versorgungsamt, BASFI, and the Digital First programme in two presentations. Additionally, a digital copy of the report was shared electronically together with the five short video edits.

5.3.2 Synthesising needs of service users

Based on the user interviews conducted, statements extracted from the usability tests, and the reviewed insights and needs from the previous design thinking workshop, the needs of service users and eligible citizens were synthesised. The various items of the diverse data sources were re-read and re-listened to, similar issues were grouped together, connections between and within these groups made, and issues were prioritised, as suggested by Marsh (2018, 219). To make user needs easy to communicate and convey, two formats were chosen: personas and user/job stories. Both formats are quickly comprehensible and condensed representations of user research findings.

Personas are fictional, archetypical profiles of service users based on gathered qualitative and quantitative data (Marsh 2018, 235). In addition to the qualitative data from the interviews, tests, and previously synthesised data from the design thinking workshop, quantitative data from the German Federal Statistics Office on social benefits for disabled people was used (Statistisches Bundesamt 2017). Three personas with different disabilities, backgrounds, skill sets, and of different age were created, reflecting the statistical data. A visual template for the archetypical users was designed to describe their characteristics, goals, needs, motivations, kind and assessed degree of disability. In addition, high-level journeys and paraphrased statements from the interviews and usability tests were placed on a second part of the template. The personas were presented to the key service stakeholders and put up in the main meeting room of the Versorgungsamt (figure 17). The first profile was placed in August and was still attached to the same highly visible board during all subsequent visits in the following four months. Apparently, it was not moved or removed at any point during that time.



Figure 15: A persona representing an archetypical service user attached to a movable wall in the department

As a second format to communicate users' contexts and expected outcomes, user stories in the jobs-to-be-done format - or job stories - were written (Marsh 2018, 221, Stickdorn et al. 2017, 131). User stories are commonly used in digital service teams internationally to develop services in an agile and user-centred way (Mergel 2016). The format was chosen as the stories are comprehensible for a broad range of stakeholders, summarise the research, and make it actionable for the design and development phase. Often, they are used to close the Define stage of a service design project and bridge to the Develop stage. The jobs-to-be-done format of such stories follows the three-part structure of situation-motivation-goal. Jobs-to-be-done as an approach centres the view that services are used by people to solve problems or reach goals (cf. Bettencourt & Brown 2013). Job stories are a practical tool linked to the value-in-achievement concept discussed in chapter 3. Quantitative success metrics can be attached to the stories to track how well later developed solutions are performing (cf. Ulwick 2005). Three key stories for service users were written for the pre-service, in-service, and post-service stage of the application for recognition of severely disabled people. More granular stories would need to be composed for the Development and Deliver phase, and technical implementation.

5.3.3 Drafting and prototyping an improved service concept

The synthesised user research findings of the user profiles and job stories provided the input for an alternative service concept. Three of the specific findings highlighted in the report were related to the service scope, the findability of the service and its degree of digitalisation. These were addressed with priority. There was strong evidence established that service users do not only want a letter of an administrative decision about their disabled status but the (currently separately requested) severely disabled pass. Based on this insight, the service scope was broadened in the new concept. Small technical changes that significantly improve the discoverability of the online service were proposed. Responding to a perceived incompleteness of the digital service users described in the tests, ways to mitigate and bypass a current requirement to print and sign the application by hand were explored. Specific possibilities were discussed with an engaged legal professional at the Versorgungsamt. Together with a designer from Hamburg who is not currently associated with the administration, a completely rearranged service flow was drafted in a co-creation workshop. The logic and order of questions, the language used, how different user roles are reflected, and what happens after submitting the application was re-considered. Due to a narrow time frame, geographical distance of the researcher, and limited availability of the administrative staff, this approach was taken instead of running a co-design workshop with a mixed group of staff from the Versorgungsamt and Digital First. Afterwards, a schematic version of the new service flow was drawn, key screens designed and illustrated photographically. Accompanied by the three high-level job stories, a large-scale poster was printed with visualisations to explain the proposed iteration and improvement of the service.

A two-hour feedback workshop was organised and attended by eight key stakeholders of the service from Versorgungsamt, BASFI, and Digital First (figure 18). After giving a brief synopsis of the previously discovered research findings, they were shown the proposal of the iterated service flow, its main characteristics, and the three related job stories. Afterwards, they were asked to review the alternative approach and provide feedback. Within 20 minutes, the eight attendees added 27 questions, concerns, remarks, and ideas on sticky notes to the poster and discussed the most significant ones.

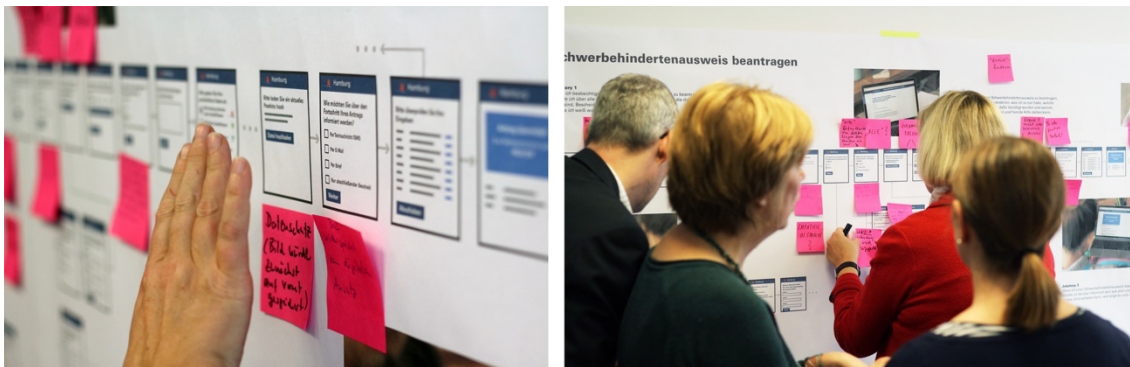


Figure 16: Key stakeholders providing feedback to an alternative service flow, scope and proposition

The feedback included notes about economic implications, interaction details, gaps and branches in the flow, or related projects. In the workshop, the group put forward a potential solution for eliminating the printout of the filled online form which is currently required, which was perceived as a breakthrough in the workshop. The feedback was reviewed and incorporated in the next version of the flow. Legal, technical, and user validations of the iterated service flow were authorised. For the validation cycles, a code-based prototype was created. A usability test of the advanced prototype with service users is intended to be conducted immediately after the completion of this report.

5.3.4 Reflecting on the engagement with the case service and Versorgungsamt

The engagement with the Versorgungsamt and the work on the service for recognising severely disabled people generated additional data points and subsequently insights into the practice of digital transformation in Hamburg. According to the interviews conducted, BASFI is considered the most engaged department in the Digital First initiative. It is the public provider of two of the seven initial services the programme is supposed to transform in its first year. The analysis of the interview findings already suggested that the design thinking workshops are a largely isolated activity and little to no interactions with service users take place after the initial project kick-off. This could be confirmed during the 6-month engagement with the case service. After the 4-day sprint in the last week of February 2018, the prototype developed was not refined or enhanced. The single follow-up engagement with expert users initiated by the Digital First team was a survey sent to medical assessors in early summer. It included the original workshop prototype and related questions. As the scope of the backend service evolved in the months after, further prototypes may have been useful to validate the iterated proposition and test the latest assumptions with affected users.

While design thinking is primarily understood and used as a workshop method at the beginning of a transformation project, a general commitment and interest in a human-centred approach were found. The leadership team the Versorgungsamt and leading people at BASFI were open-

minded, enabled and supported any research and design activities proposed. They showed a high degree of curiosity about service design and human-centred practices and its outputs. During a usability test conducted in the Versorgungsamt, two senior managers from the Versorgungsamt came by and observed the test for a couple of minutes. Afterwards, they reserved significant time in the late afternoon to watch video recordings and discuss findings. Later, one senior manager was keen to receive the videos so they could share them with other people in the department. Unsolicited feedback was provided on three individual occasions. In face-to-face conversations, the person described the approach taken and methods used as 'constructive'. After receiving the user research report and the videos, they wrote in an email: *"Thank you for the summary and special thanks for your work! This way, you have provided us with many important clues and evidence that we need to address now. I find the methodology very convincing and pragmatic. From our side, we will, of course, promote this (hopefully, that is fine with you)"*. Weeks later, a member of the team had transferred the various findings from user research report into a spreadsheet, filed with additional categories, the severity of the problem, associated cost, time frame for implementation, and required change. It shows that the findings were taken seriously in the department and that resources were allocated to assess and address the issues uncovered. The external software supplier who had developed the online service was contacted to get an estimate of the related cost and to estimate its availability for implementing changes.

In conversations, a key senior manager demonstrated an ambition for bigger service transformation. They highlighted how service-related affirmative actions and disability compensations such as benefits for blind people, housing benefits, tax benefits, reduced radio and TV license fees could be automated in the future. That would relate to one of the specific goals set out in the four Digital First principles. Mapped against a digital maturity model developed by the public sector design consultancy FutureGov (figure 19), the current version of the service for recognising severely disabled people must be considered as 'paper online' as existing paper forms were translated into a digital form without significant changes. The suggested changes can be seen as stage three in the model, as 'digital for service improvement', leading to a full online application. The expressed ambition for process automation and automated benefits put forward by the senior manager relate to change on level four or five of the digital maturity model - digital for service transformation and digital for organisational transformation.

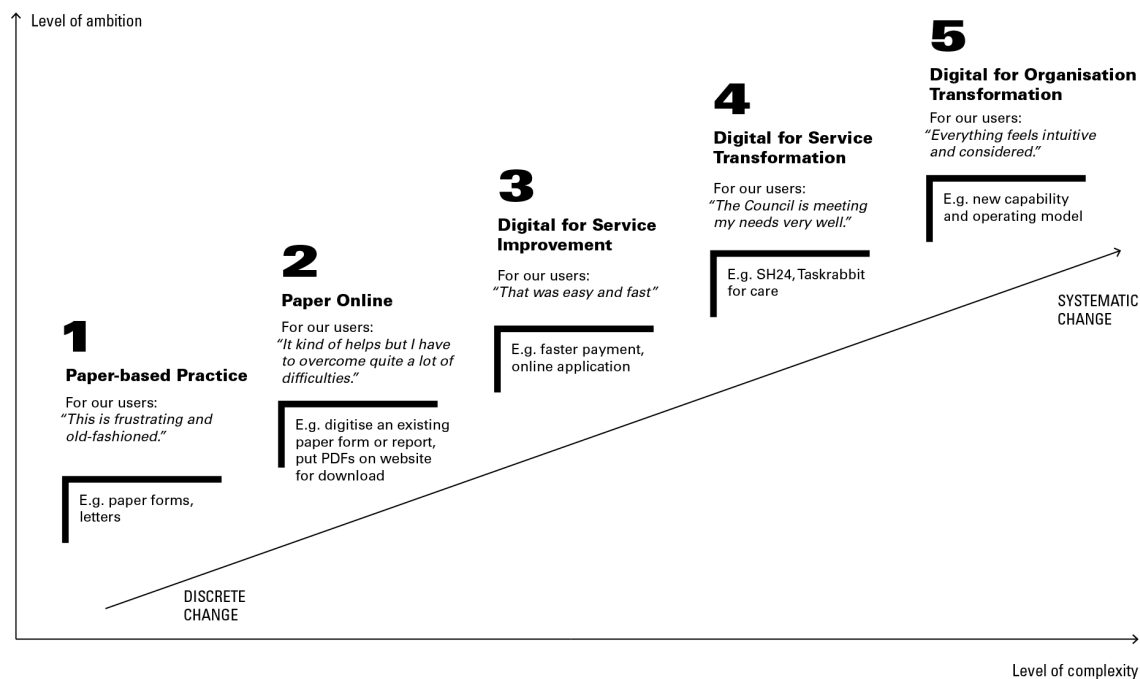


Figure 17: Digital Maturity Model by FutureGov (Unsworth 2017)

In regards to human-centred design practice, most of the formats, activities and methods carried out and applied in the six months were new to the administrative staff. They had not observed usability tests of their current digital service offering before. Most of them had not taken part in the initial design thinking workshop. The artefacts created during the process - user profiles, a service blueprint, and alternative service flow - were considered precious objects not to be removed from the main meeting room in the department. At the same time, the parallel workstream concerned with the backend service processes related to expert users such as caseworkers, doctors, clinicians, and medical assessors did not produce any similar artefacts. Based on observations, the work seem to have mainly progressed through meetings and documented with spreadsheets and presentations. Also, the initial design thinking workshop did not generate any physical artefacts. Therefore, useful findings from the initial user research carried out in February 2018 were contained in a digital document which was not accessible to the wider organisation.

Some of the concerns expressed by respondents in the interviews, described in section 5.2, could not be confirmed: The recruitment of service users was relatively easy. In the Versorgungsamts, citizens attending the department's consultation hours were willing and interested in taking part in the study. Equally, the online recruitment of Germans with severe disabilities took less than two days. Most of the participants stayed much longer than intended at the beginning of the session. No evidence for another concern regarding the setting of heightened expectations of citizens could be found either. Interview and test participants had

little expectations of the administration and were instead surprised such evaluation was taking place while not assuming issues would be fixed immediately. The mere idea that public service organisations were validating services to improve their quality was welcomed by the test participants. Capturing the current struggles users have and being able to instigate potentially significant changes that help improve the experience of applying citizens led to the view in the department that public value can be created through the applied service design approach. The hypothesised causal relationship between increased subjective service quality through applying a human-centred design approach and the creation of public value, expressed by a Digital First team member, was mirrored by other members of Versorgungsamt staff.

Overall, it was found that members of the leadership team at BASFI and its Versorgungsamt were very engaged in the collaborative process. Furthermore, they were interested in other activities and responded to interventions described in the next section.

5.4 Cultivating a holistic view on service creation

Responding to the patterns, barriers, challenges and opportunities, identified, a multitude of activities were carried out to further investigate the comprehension and test the ambition towards a human-centred design approach in the Hamburg administration.

Enhancing guiding principles

In its first year, the Digital First programme established four guiding principles. These are included in various presentations given by administrative staff internally and externally. In the Digital First office, a poster summarises the principles (figure 20): *communicate digitally, act proactively, automate processes* and *reduce data inputs*. From the interviews and further conversations with the administrative staff, it became apparent that their impact on service experiences is not universally understood. As a form of intervention design, five new poster prototypes were created by the researcher (figure 20). They utilised the original and official guiding principles and added a hypothesis what those might mean in the context of public service design:

Services that create less work - reduce data inputs

Services that are available online - communicate digitally

Services that anticipate needs - act proactively

Services that lead to the goal faster - automate processes

While the objective to address the needs of users was stated multiple times by various people from the Digital First team, Agency for IT and Digitalisation and the State Chancellery, no

core principle expressed that goal. Correspondingly, a fifth principle and service-related hypothesis were added:

Services that are useful and understandable - respond to user needs

The poster prototypes were presented to the programme director and put up in their well-frequented office with the intention to provoke and stimulate a discussion.

A few weeks later, the communication manager of the Digital First programme indeed responded to the intervention by creating a set of four new posters, adopting the perspective of potential citizen value (figure 20). The posters partially resemble the visual style of the provocation prototypes and state:

*Digital First so that you don't have to apply for something
- act proactively*

*Digital First so that you can spend time on things that matter
- automate processes*

Digital First so that you can date us online - act proactively

*Digital First so that you don't have to enter everything again
- reduce data inputs*

Notably, the posters refer to only three of the four original guiding principles, leaving one out. They also neglect the notion of responding to user needs proposed by the additional fifth provocation poster. The new posters replaced the provocation posters on the director's wall, while they remained on a nearby cupboard (figure 20).



Figure 18: Original Digital First poster, provocation prototypes and the Digital First response

Establishing service quality standards

In the office of Digital First's ambassador team lead, a different poster of the Australian government's Digital Service Standard was found stuck to the wall. Being asked about it, the

team lead articulated the need for clear standards, an orientation for building digital services, and also a general appreciation of such reference point. In parallel, the National Regulatory Control Council had advocated for a Digital Service Standard for Germany and urged the German government to establish one (2018, 39). It has been argued that these things help to create cost-efficient, user-friendly and digital offerings nationwide (Nationaler Normenkontrollrat 2016, 4). A German Digital Service Standard would accelerate the development of user-centred digital services and lead to a new quality of collaboration between administration on federal, state, and municipal level (Nationaler Normenkontrollrat 2018, 38). As of late 2018, no Digital Service Standard has been established in Germany.

One of the first standards of this kind was established in 2014 in the United Kingdom (Downe 2018). All online government services are assessed against it and must meet its 18 criteria before they can be published (Government Digital Service 2018). The UK standard takes a holistic approach and covers the areas technology, security, team setup, ways of working, service scope, usability, accessibility, open standards and open source.

Through desk research, similar service standards from Australia, British local government, Canada, Finland, and the United States were found. They contain between 9 and 18 standard criteria. Mostly, they replicate each other and cover similar topics. All criteria from the six different standards were translated into German, accumulating 82 different but partially similar points. Each was printed on an A5 card with a reference to its origin. A 90-minute workshop to discuss a possible Hamburg service standard was requested and prepared. Invited by the head of the programme, six attendees from the Digital First programme team with diverse backgrounds in technology, legal, management, and communication joined the workshop (figure 21). After a short introduction to the topic, they were split into two groups. Each group was given three foreign standard sets of about 40 unsorted criteria. They were tasked to group similar points and discuss them in their group for 40 minutes. Additionally, coloured stickers were handed out to assign each criteria card to one of the four categories:

Green: Should adopt criteria as is or in a similar way

Amber: Need to understand better or discuss further

Red: Should not be considered for Hamburg

Blue: Should be considered additionally

For potential additional standard points, empty cards were provided (figure 21). No blue or red stickers were used, no additional criteria were added and none were entirely discarded in either of the two groups. If any other colour than green was used, the groups had to write down an explanation and their reasoning. The two groups shared their individual discussion with each other. Out of 82 criteria, five received amber stickers and required further consideration. These were related to using open standards, testing services with ministers or senior

responsibles, setting up interdisciplinary teams, building upon existing services, and making all source code available. Some 17 cards related understanding user needs, working in human-centred ways, making sure users succeed first time and similar were universally marked green and hence should be considered for adoption by Hamburg. The notion of applying and demanding a human-centred design approach was not challenged by anyone but described as an ‘obvious hygiene factor’. The workshop participants were in favour of such a standard, showed no resistance, and discussed the five yellow-marked criteria in a balanced and constructive way.



Figure 19: Members of the Digital First programme team review six international service standards

A few months later, a second 90-minute workshop with a similar setup was suggested. Between the first and the second workshop, a Digital First design and development process with ‘quality gates’ had been drafted and published internally. A quality gate is a mandatory check-in point as part of service development processes in which a service team’s completed work is compared against set standards or other requirements. In Hamburg, six quality gates are installed by the central Agency for IT and Digitalisation to assure a high quality of services developed by departments. For each gate, a number of documents and checklists were created by the Digital First team. The workshop participants were asked to bring these documents along. Incorporating the discussions and feedback of the first standards workshop, a draft of a Hamburg Service Standard was presented. A bright red poster showing 14 standard points, covering the previously debated areas, was put up in the workshop space. In the workshop introduction, it was argued that the four Digital First principles support their work on a strategic level, and quality gates support their work on an operational level. In addition, the Hamburg Service Standard would be a tool on a tactical level, linked to principles and embedded and enforced through the quality gates. This view was not challenged by any of the workshop attendees. Afterwards, the eight participants with diverse professional backgrounds got the task to separate into three groups and to map how the 14 criteria would relate to the quality gates (figure 22). Each of the three groups was given two non-consecutive quality

gates to review. They had to describe which standard point is assessed at which gate, what progress is expected, and how it is evidenced and measured.



Figure 20: Members of the Digital First programme team map a Hamburg service standard draft against the quality gates of the Digital First development process

Although the Digital First team members had spent significant time working on the definition of the quality gates prior to the workshop, various assessment criteria needed to be discussed by the participants in the larger group. The prototype of the Hamburg service standard was seen as a holistic summary. At the end of the discussion, the participants reflected on their current practice and raised concerns about their current ways of working. One person argued that the workshop had highlighted that no iteration happens after the initial 4-day design thinking sprint. Afterwards, a development offer had to be put forward and a “*sink or swim*” approach taken, describing service teams were developing what whatever designs draft they had at the time without further citizen input and ongoing concept validation. Furthermore, the kick-off design thinking workshops were described as kind of a “*theatrical performance*” and in reality, all relevant data about users had to be gathered before running the sprint. Other attendees challenged that view. Another workshop participant predicted that working in an agile and iterative way might prove more difficult than expected as suppliers did not have the required skill set.

Five of the 14 standard points are directly or indirectly related to core principles and characteristics of service design described by scholars and practitioners. Those standard criteria relate to understanding user needs, making the service easy to use, making the service accessible and usable for everyone, working in an agile and user-centred way, and iterating and improving the service steadily. The workshop participants considered these criteria only relevant in the third quality gate at the end of a design and before a validation phase. In the preceding initiation and planning phases, the criteria linked to a human-centred design approach were merely considered. Only for the quality gate at the end of the planning phase, an “analysis of target groups” was expected of service teams. For the next quality gate, between the implementation and operation of a service, it was suggested to review if user needs had been

addressed while ensuring accessibility was only seen as a technical challenge and usability was not considered at all at the later stage of service development. The physical outputs and discussions during the workshop provided further evidence that human-centred design activities are perceived as somewhat isolated instead of being omnipresent and ubiquitous. Service design characteristics and principles described by Wetter-Edman and Stickdorn et al., like ‘collaborative’, ‘participation’, ‘visualisations’, ‘prototypes’, ‘iterative’, ‘human-centred’, represented by the five specific service standard points were not seen as transcending and universal elements necessary for all stages of the Digital First process. In that regard, the different kinds of data point show a high degree of consistency - as the similar statements were found in the interview transcripts and practices observed during the engagement with the case service.

Persuading with words

Accompanying the facilitation of workshops on service standards, the creation of provocative posters, and the practical work on the case service, three longer articles were authored and published. Their purpose was to explain the specific work, put it in a theoretical and practical context, and compare it to similar activities taking place in foreign governments where human-centred design practices are well-established. Moreover, no articles covering these topics in the context of German public service were found in German language. The three texts were first published on the platform Medium.com and shared with the staff of the Hamburg administration (figure 23). In six months, each of the articles was read between 270 and 410 times. While individual readers of stories cannot be identified, the Chief Digital Officer of the City of Hamburg did subscribe to the online publication and were therefore notified about newly published articles.

In addition to online articles, a physical newspaper, a special German edition of the existing publication Service Gazette, was created. Apart from articles already made available on Medium.com, further texts from other human-centred design practitioners also working for governments were commissioned. The newspaper was widely distributed and circulated in the Hamburg administration. Months after their publication, issues of the Service Gazette were still laid out in the offices of leading personnel of the both the Digital First team and BASFI. Asked about the purpose and value, the civil servants described the Service Gazette as tool show alternative ways of working and thinking. The newspaper sat next to copies of Behördenspiegel, a well-established monthly newspaper for German civil servants (figure 23). Another Digital First ambassador proactively gave feedback on how useful and insightful he found the publication’s content. Furthermore, after having received a Service Gazette copy, the State Secretary and Chief of Senate Chancellery sent a follow-up message, expressing gratitude for the newspaper which he “*had read with great interest*”, requesting additional 30 copies for further distribution among their subordinates (Krupp 2017. Pers. com.).

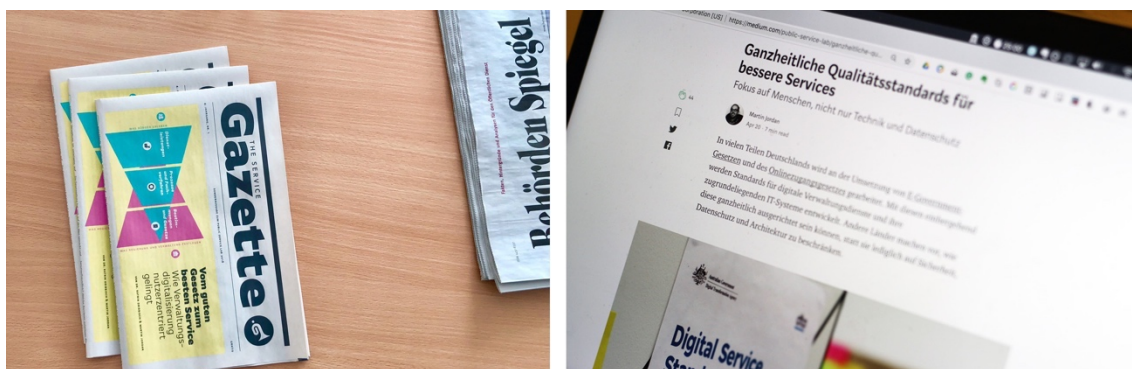


Figure 21: Articles and publications created to stimulate discussion and change mindsets in the Hamburg administration; newspaper re-discovered on a civil servant's desk months later

Another intervention design and persuasion activity was a public service design conference organised for German civil servants from Hamburg and other parts of German administration, held in Berlin in July 2018 (figure 24). Organised with two co-runners, it was set up as an interactive half-day congress. It included talks, workshops, and discussions on human-centred design practice in government. Speakers included administrative staff from other German government institutions who already utilise service design-related tools and methods in their work on public service improvements. Moreover, experienced human-centred design practitioners from industry-leading private sector firms and consultancies ran workshops, introducing civil servants to specific tools and methods. Three people from BASFI, two of them in leading positions, travelled from Hamburg to Berlin to participate in the conference. They actively contributed to the discourse by sharing their experiences and asking the speakers questions (figure 24). During the workshop track of the conference, one person from BASFI attended a workshop on understanding user needs and creating journey maps, while another went to a session about exploring hacks for bureaucratic culture and how to integrate human-centred design into daily work routines. People working in the Digital First team were invited, too, but had other obligations and therefore were not able to attend.

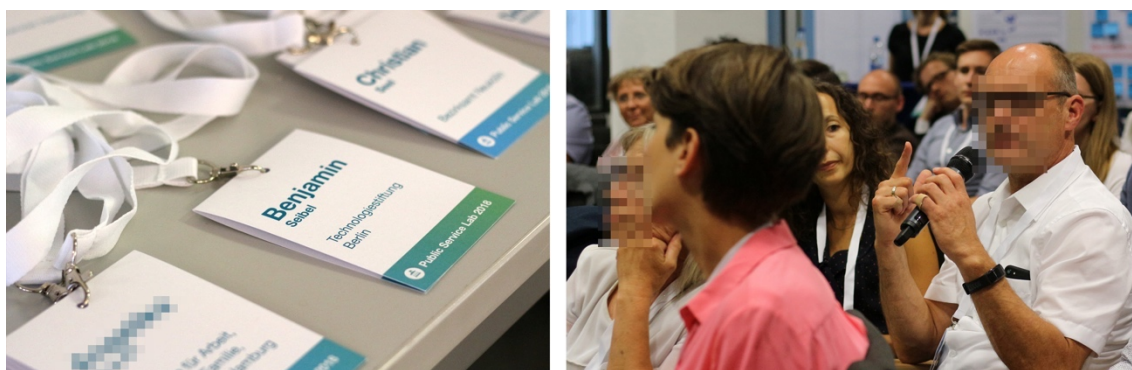


Figure 22: Civil servants from the Hamburg administration attending a dedicated public service design conference organised in July 2018

Additional probing artefacts included eight user research design and research method cards. They explain the purpose, value and effort of a particular method with the intention to lead to application. The card sets were handed over to administrative staff. No measurable effect or evidence of usage could be seen. No questions were asked regarding the presented methods.

The range of invention designs, probes, and prototypes created and tested during various months generated further data points that mostly match the insights accumulated through the interview-based research and the engagement with the case service. There are general interest and awareness of human-centred design. However, it is not part of the everyday practice in the context of Digital First service transformation. While the Digital First team is diverse in regards to specialisation, with people with backgrounds in technology, management, public policy, law, and communications, an experienced representative of human-centred design is missing in the ongoing discussions taking place in the transformation programme. Human-centred design remains an external capacity, temporarily bought and brought in via contractors and consultants to support distinct and isolated activities. Human-centred design and related characteristics of service design have not been adopted on a higher level like principles, everyday ways of working or mindsets. Currently, they remain tools and methods instead of forming a part of a holistic approach.

In BASFI and Versorgungsamt, awareness of human-centred design approaches was found to be low, while interest and level of participation were high. During the time of engagement with the department, the perceived value grew, evidenced by process artefacts not supposed to be removed and actions taken based on research-informed recommendations. The human-centred design capability in the department is marginal. One part-time project advisor had undergone dedicated usability training more than ten years ago but not applied the acquired skills since then. They had not made any recommendations suggesting that studies should be performed studies or tests should be conducted.

Having built a reasonable understanding of the comprehension of human-centred design in the Hamburg administration through the broad range of activities carried out over almost one year makes it possible to analyse and respond to it. Capturing the status quo allows for the formulation of an improved future state and the drafting of a strategy and action plan to reach it. The following section maps the current situation against established frameworks and describes how to progress.

5.5 Proposing an approach for increasing human-centred design capability

The human-centred design capability of Hamburg administration was found by the varied research data to be low. The city relies exclusively on external capacities. The digital maturity matrix, developed by public sector consultancy FutureGov (Unsworth 2017) and applied in

5.3.4, is helpful as a representation model. Even though it seems applicable for reviewing and recording the digital evolution of service transformation projects, it is less suitable for the description of design capability in an organisation as its scope is broader. Junginger's model for characterising the relationship between design functions and the larger organisation (2009) applied in 5.2 is appropriate for depicting where design is located, outside or inside an organisation. While it allows describing *where* design is, it does not capture *how* mature it is, even though there might be a correlation. The design management staircase, a model that allows describing design maturity, was put forward by Kootstra (2009). The framework describes four steps: 1, no design; 2, design as project; 3, design as function; 4, design as culture. For each step, it distinguishes five factors: awareness of benefits, planning of design, design resources, design expertise, and design process (figure 25). Acknowledging that no two organisations will ever be the same, the four-tier, five-factor model was developed to represent all main aspects of design (management) capability in a single coherent framework (Kootstra 2009). Its structure allows a higher degree of detail and specificity which makes it suitable for describing the current state and the desired next state of human-centred design capability in the Hamburg administration. Albeit the model has been developed for private sector businesses, the factors and tiers are equally applicable to large public organisations.

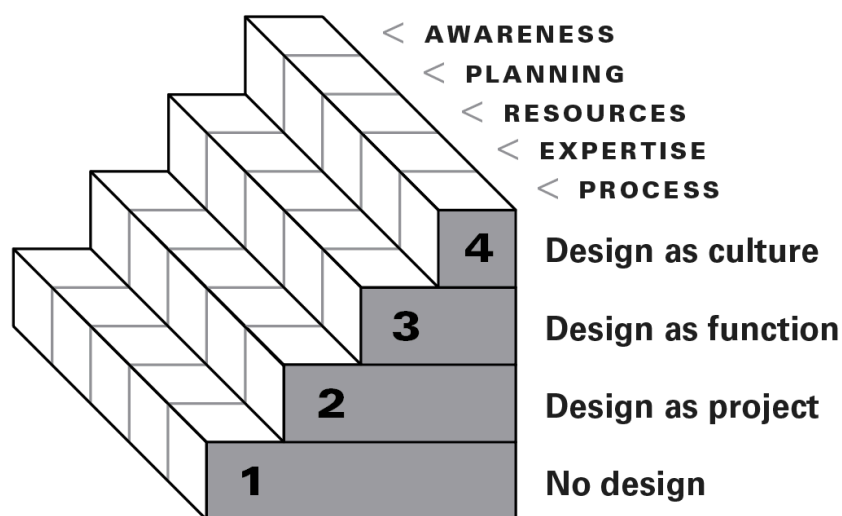


Figure 23: Design management staircase model with four tiers and five factors (Kootstra 2009, 12)

Level 1 describes some or no design activities, where design is either not repeated, defined or managed. The research findings show that Hamburg does use design thinking workshops repeatedly and as a kick-off sprint for any medium to large volume service. There is some design project management capability in place to make sure design thinking workshops take place. Level 2 is characterised by only limited use of design and low grade of integration into

other business processes. Tier two organisations share experience with design only to a limited extent within the institution, the responsibility for design is controlled on an operational level. Organisations on level 3 have a defined role for design, link design to both innovation and development, integrated it with other organisational processes, and a dedicated person or department to manage and coordinate different design specialists, parts of the organisation and senior management.

Furthermore, in tier three institutions, design is used permanently and proactively. Design as a function is identified with process quality and quick project turnarounds (Kootstra 2009, 13). Given the data accumulated and presented in the previous sections, the administration of Hamburg and its Digital First transformation programme can be labelled a level 2 organisation. Design is used ad-hoc on a limited basis with no personnel seconded to manage the distinct and unconnected design activities, executed by outside entities.

The five factors in the design management staircase model are described as indicators of good design management (Kootstra 2009). All factors - awareness, process, planning, expertise, resources - are represented in the four steps. The factor awareness refers to how the benefits of design are understood on different levels of the organisation, including the senior management level. A lack of awareness of the benefits design may bring to projects can lead to barriers to adequate use of design. Process as a factor describes how well the design activities are managed and timed, how they are linked to other core processes, and how much of a formal setup for such activities exist. Planning relates to the internal and external endorsement of design in business plans with related objectives and fundamental principles. The fourth factor, expertise, captures the experience, expertise, and level of skills of staff in regards to design as well as the variety and quality of methods and tools applied in design activities. Design resources as the fifth factor describe how much an organisation invests in design - through hiring, providing a suitable space, and supplying the necessary hardware and software tools

In organisations on level 2 of the staircase, only some specialists are aware of the benefits of design - something that was evidenced by the specific usage of design terminology in the administration, for example. Such organisations do not have a consistent design process, do not apply design to all projects in a coherent way. Not running design thinking workshops for all service transformation projects and not having any other design activities after the 4-day sprints scheduled can be seen as indicators for Hamburg operating on such lower maturity level. Planning on level 2 is limited to objectives and plans existing on project level only, and also lacking integration into other activities and missing a wider-reaching set of goals. Specific objectives and coherent measures of success linked to design activities were not found through the interviews or other research methods.

Regarding expertise and resourcing, only some basic design skills can be found in level 2 organisations; tools are applied inconsistently, leaving significant space for improvements. Furthermore, only limited resources are provided for design activities. Evidence for this can be found in the fact that Hamburg only sporadically utilises university students to conduct usability tests and that, according to interviewees, research methods were applied in wrong ways.

Stakeholders in multiple parts of the Hamburg administration, in the Digital First programme, in the Agency for IT and Digitalisation, and the departments learned about the benefits of design activities by experiencing them. Mostly, that happened through participation in design thinking workshops. For some people, engaged in the researcher's work on the case service, it happened by seeing the outputs of design activities like service blueprints, service flows, user profiles, or videos of usability studies. Several people named potential benefits of a more structured service design approach. With the proclaimed goal of taking not only a digital-first but also a users-first approach, a higher maturity level of human-centred design needs to be achieved. To do so, design needs to become an interconnected internal function instead of a range of distinct external projects.

In the following, a range of changes is suggested to assist the evolution of design in the Hamburg administration. A supporting framework for facilitating change in public sector organisations was presented by British innovation foundation Nesta (Christiansen 2018). Originally developed to steer public sector innovation labs, it has been adopted by the researcher to fit the context of human-centred design maturity within a service transformation programme (figure 26). It covers four areas. One is about governance structure and comprises decision-making, funding, and mandate. A second area covers impact and assessment, including how work is documented and communicated, and how design is held accountable. A third area considers activities and resources - what is done, by whom, and what is needed for it. The fourth area, attitude and skills, deals with the people who do the work, their skills, mindsets and also environments, and what methods and tools are used in their work.

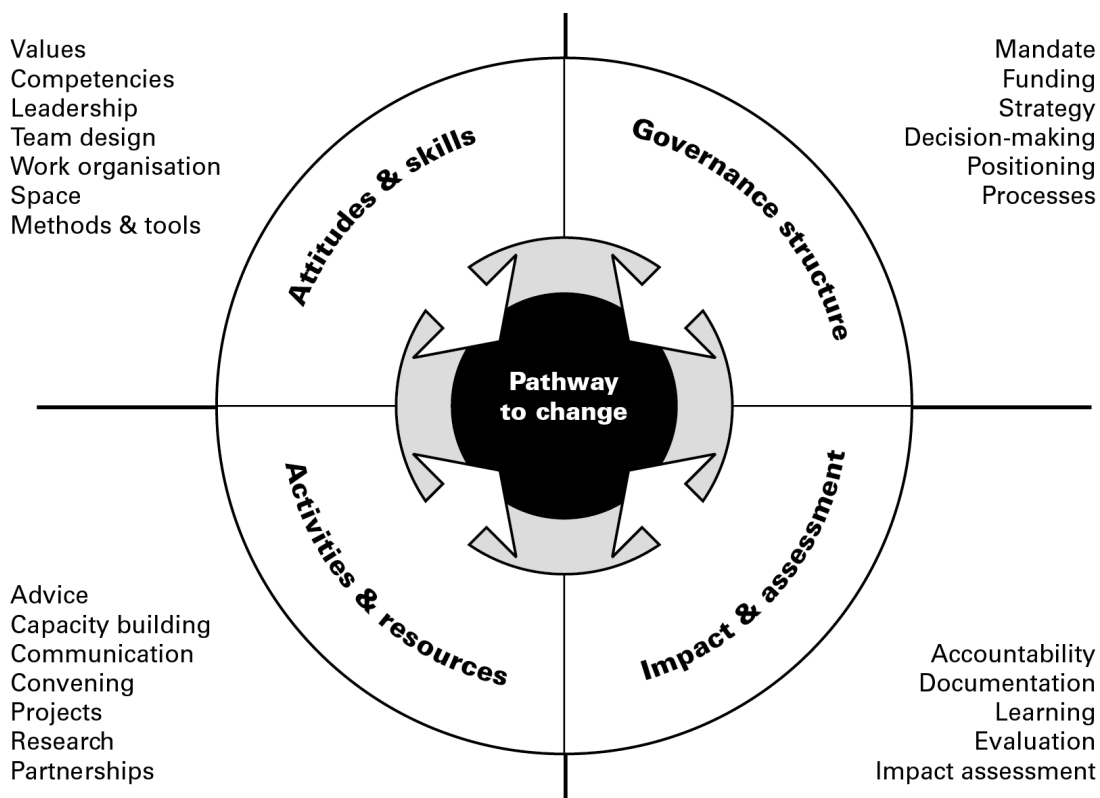


Figure 24: Systemic change model for public sector innovation labs (Christiansen 2018)

Altering the governance structure

For the Hamburg administration to progress in its design maturity, evolution needs to happen in all four areas. In the area of governance structure, design requires a mandate from the city's Chief Digital Officer to enhanced in its human-centred approach. For that, the benefits and costs must be described and presented in a business case to secure funding for building internal design capability. The current funding model that exclusively relies on external capacity must be reviewed. A shift from outsourced design-related services seen as capital expenditures to in-house staff and therefore operational expenditures is necessary. As activities like design thinking workshops have been anchored in the Digital First development process as core activities for most service types, the dependency on external capability needs to be reduced, thereby also reducing costs. A senior designer should be brought in who should participate in the board meetings of the Digital First senior programme team on a regular basis to provide input on key strategic decisions from a design management angle.

Moreover, currently fragmented design activities need to be connected. The Digital First development process model demands an iteration that adds further design activities to all stages of the process to reflect a continuously human-centred, iterative, and agile way of digitalising public services. The Hamburg Service Standard proposed in 5.4 needs to be enacted, published, and enforced. Various of the standard points related to human-centred design

practices and make user research, user involvement, usability and accessibility tests, cross-channel design, and multidisciplinary teams mandatory. Through in-house senior design expertise and additional design activities carried out, the perception, understanding, and positioning of design is likely to change and be enhanced.

Improvements to impact and assessment

Developing all future digital services in Hamburg according to the Hamburg Service Standard will measurably enable better services. One standard point demands key performance indicators for every service and requires anonymous service performance data to be collected. It should encompass not only quantitative indicators but also qualitative and experiential ones. With a mixed data set indicating the health of public services, the impact of design activities carried out will become measurable more easily. Besides, other contextual quality metrics for human-centred design should be explored (cf. Winograd & Woods 1997).

Furthermore, each service applying the standard should be represented on the Hamburg administration's intranet. Progress should be documented continuously and made accessible for other civil servants. So far, online process documentation has been published there by the Digital First programme. It will allow good practice to be spread and help administrative staff new to the Digital First process and Hamburg Service Standard learn more about it quickly. Additionally, such documentation and up-to-date progress information can reduce anxiety for teams in departments, increase transparency for them as well as management, and lead to clarity about how to work well.

Increase in activities and resources

Once an in-house design capability is established, the range of design activities can be expanded. At the same time, the cost can likely be reduced as the expenditure for designers as civil or public servants will be lower than for contractors with high day-rates. With hundreds more public services to be digitalised in the next few years, more design capability will be needed while the budget will be limited. Therefore, civil servants should be taught a basic understanding of design and fundamental human-centred design skills. Similar offerings exist in other countries like the United Kingdom where staff can take free 1-day training courses in 'research and design in government' and an 'introduction to service design' (HM Government 2018). The way that design work is communicated through the organisation needs to be altered. Currently, the documentation of design thinking workshops, containing many useful user insights, process representations, and prototype sketches, are only sent around digitally. No outputs from a whole year of workshops were visible in the offices at the time of observational research. In the future, all empathy-building artefacts and outputs from the design pro-

cess should be accessible in corridors of both the departments and the Digital First programme office, including user profiles, user journey maps, service blueprints, concept storyboards, and prototype compilations.

In the building, visitors should get an immediate idea what work is going on, what services are being transformed and who are they developed for. Once a month, one-hour long research and design show & tell sessions, open to all interested civil servants in the Hamburg administration, should take place to share progress, discuss findings, and feed-back learnings and insights. Moreover, the in-house designers should guide the work of contractors, answer questions from departments on how to meet the research and design-specific points in the standard. As part of this work stream, the cooperation with the university around usability testing should be continued as it reduces workload during certain periods of the year, in semesters, and introduces future talent to meaningful work in the public sector. Additionally, a low-budget in-house usability lab should be set up to allow regular testing of prototypes.

Changes to attitudes and skills

To evolve design as part of the digital transformation initiative, human-centricity has to be endorsed from top to ground level in the Agency or IT and Digitalisation and its Digital First unit, not just in the abstract but in the concrete. Already, the ambassadors are advocating and promoting design sprints and explaining the value of user involvement to service teams in departments. With a broader range of design activities to offer, gaps in the current process can be filled and the message to departments sharpened. Intro-level design training for Digital First staff should be made mandatory enabling them even better to communicate the benefits of design. Core human-centred design competencies, mindsets, and skills like divergent and convergent thinking, open-mindedness, holistic thinking, tenacity, facilitation, digging deep, reframing, visual thinking or willingness to fail should be taught in such training (cf. Kramer, Agogino & Roschuni 2016). Equally, design needs to be understood by the top management levels as a holistic problem-solving activity rather than as an aesthetic and cosmetic concern.

On a foundational level, 'responding to user needs' has to be added as a fifth guiding principle of the service transformation work as suggested in the previous section - to reflect the ambition and sincerity of the scheme. Depending on the budget available and approved business case, two to three people should be hired as in-house design staff. Person one should have a substantial user research background ranging from exploratory discovery research to usability testing in addition to workshop facilitation. User research before, during and after design thinking sprints as well as a co-facilitation of the workshops can be done by the person. Other critical skills needed in the programme are interaction design, service design, and design management. Ideally, these competencies and skills would be split between two people

given the volume of services in the transformation backlog. Person two as a hybrid interaction/service designer would be able to support the development of multiple services at once, shaping the service proposition, creating service flows, and building prototypes. Person three as a more senior design leader with design management experience should steer the work of the small team, develop processes and training formats, operationalise the high-level transformation strategy, and communicate the work of the team. As part of their work, design activities have to be reviewed, further service design-related methods and tools around user research, synthesis, co-creation, prototyping, testing, and visualising likely need to be added to the portfolio of regularly applied techniques (cf. Stickdorn et al. 2017; Marsh 2018).

To enable good design work, the team needs a collaborative design space with whiteboards allowing quick drafting of ideas and concepts. Such space can also be used for co-design activities with departmental staff, citizens, and other stakeholders as discussed in 3.5 (cf. Junginger 2017), similar to a co-lab the Australian government has opened (Pankhania 2018). Access to regular and large-scale printers to prepare workshops, as well as other material like sufficient sticky notes and more physical prototyping material, is necessary. Also, the corridors in the Digital First office need to be modified to support ongoing exposition of the most recent work. Similar to the integrated people/places/process approach promoted by the HPI School of Design Thinking (2018) focusing on multidisciplinary teams, flexible spaces, and an iterative method, an evolution in one single area will not lead to substantial change. It requires the combination of factors and contributors for the Agency for IT and digitalisation and its Digital First programme to reach the next level of design maturity.

In the light of the various proposed changes, it is necessary to acknowledge design legacy in organisations. Junginger points out that as “flawed and poorly suited” as design practices might be in organisations, design legacies always exist in one way or the other and make it difficult for service designers to bring change to organisations (2014). One is the organisational purpose as it may encourage or discourage specific ideas. Others are existing organisational design approaches and practices. Junginger hints that these are not always apparent (2013; 2014). The research conducted and summarised in this thesis report may not have revealed all existing approaches and practices, so incoming design staff should research them further and respond to them. As the Digital First programme is still a relatively new programme which continues to evolve, it has significantly less legacy than most other public sector organisations, which makes the facilitation of change towards a more human-centred design approach much more manageable. Initiating change within well-established departments of the Hamburg administration and understanding the design legacies there might prove more difficult and demand additional investigations.

5.6 Developing a new model for service design for public value creation

In the 1990s, Moore's strategic triangle (1995) described how managers who want to create public value depend on gaining legitimacy and support from an authorised position higher up in the organisation but also need to secure or build operational capacity further down (Moore & Khagram 2004). Without political legitimacy granted from above, and operational feasibility and sustainability ensured from below, no public value can emerge. All three factors are intertwined. As documented in chapter 5.2, reasonable evidence for this was found in the Hamburg administration. Through interviews with administrative staff and external partners, blockers and barriers were identified that prevent to get work done which benefits the public. These included lack of sponsorship from senior political leaders or them practically stopping the implementation of service concepts that directly responded to citizen needs. Another obstacle was technical capability and development capacity to deliver outputs to citizens in reasonable timeframes. Real-world evidence for the relevance and accuracy of Moore's strategic triangle model was found: lack of legitimacy and support and missing operational capability represent two of the three primary barriers to successful citizen-centred work in Hamburg as the research discovered.

In the late 2000s, Try & Radnor expanded Moore's strategic triangle and described service, trust, and outcomes as contributors and creators of public value (2007). The provision of service, the achievement of outcomes for citizens, and the buildup of trust between the administration and the people are connected and interdependent. Notably, the tagline of the Government Digital Service working on digital transformation in the United Kingdom is "trust, users, delivery" - expressing a similar focus on gaining the trust of the public, focussing on service users, and delivering something that results in practical benefit and outcomes for people (2011).

Service design is a practice concerned with value creation (Wetter-Edman 2011). Service design addresses all three public value contributors described in Try & Radnor's model. It shapes services from the level of service interactions to service interventions to organisational transformation (Sangiorgi & Junginger 2009). Service design focusses on people's needs and their desired outcomes, can address service users' jobs-to-be-done (Stickdorn et al. 2017, 113), and therefore support value-in-achievement (Bettencourt et al. 2014). By being human-centred (Stickdorn et al. 2017) and participatory (Wetter-Edman 2011), and designing with people instead of for them (Junginger 2017), it generates trust with internal and external stakeholders. Service design is directed at designing for service and seen as a way to realise service logic (Wetter-Edman 2011). Applied in the context of the public sector and through the lens of public service logic (Osborne 2017), service design realises public service logic and is a contributor to public value. Public value is grounded in basic human needs and is rooted in individuals' interpretations (Meynhardt et al. 2017). Service design helps to uncover people's

needs, their mental models and then designs for them, responding to their needs (Stickdorn et al. 2017, Young 2008).

To reflect the contribution of service design to public value creation, an enhanced model is proposed (figure 27). It expands the work of Try & Radnor which was built on Moore's strategic triangle. Service design is seen as a contributing practice that improves service, strengthens trust, and orientates towards outcomes. Service design applied in the public sector is a way to realise public service logic. Value creation is one of the characteristics of service design. When applied to a design object affecting a significant group of people, service design can contribute to the creation of public value. Public value reflects basic human needs. Service design uncovers and responds to people's need and therefore supports the creation of public value.

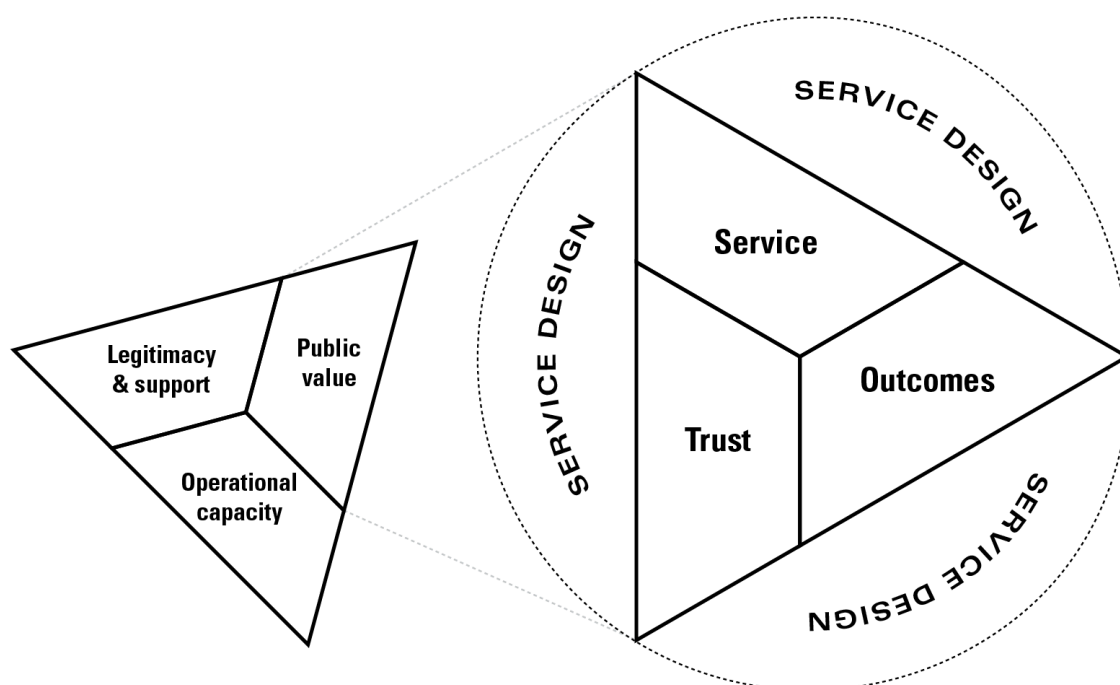


Figure 25: Service design contribution to public value creation (Jordan 2019 after Try & Radnor 2007 after Moore 1995)

The model responds to the second key research question of the thesis about how the application of human-centred design can support public value creation. Service design incorporates human-centredness as a core principle. The model can be used together with a public value scorecard proposed by Meynhardt which captures utilitarian-instrumental, political-social, and hedonistic-aesthetic values (2015). It rates how useful, how decent, how much of a positive experience there is, how profitable, and how politically acceptable an output of public investment is. Service design is capable of influencing all of these factors. Some initial evidence for this was found during the engagement with the case service, but it requires a long-

term study following the entire development process, launch, and impact assessment of a public service to gather sufficient data. Therefore, the model presented responds to the second research question on a conceptual level but requires further validation on a practical level.

6 Conclusion

After two decades, the digitalisation of public services is still in an early stage in many Western countries. Even in countries with a high degree of digitalisation like Estonia where almost all services are available online in some form, digital transformation is only now entering a stage in which human-centred design is used to improve their usefulness and usability (Enn 2018). In Europe, Germany is ranked low regarding usage of digital public services. The 2017 online access law is supposed to change that within five years as it demands 575 services to be available online nationwide by 2022. Triggered by the enactment of the law, numerous initiatives on federal, state and municipal level have been set up in all parts of the country to transform public services for the 21st century.

The digital transformation approach taken by the city-state of Hamburg is a more considered one with a strategy paper agreed in the city senate already in 2016, anticipating the federal law. This chapter summarises and evaluates the 20-month engagement with Hamburg, the process and results, reflecting on the key research questions of the thesis. Moreover, it reviews the value and contributions of the study and proposes opportunities for further research.

6.1 Summary

The purpose of the thesis is to explore how service design as a human-centred design approach can contribute to public value creation and to study how it is happening in practice. It is done in the context of the implementation of the online access law, taking place throughout all of Germany. Hamburg represents one of many federal states and municipalities where digital transformation projects and programmes are set up to improve public services. Three major activities undertaken as part of this study respond to two main research questions. A literature review was conducted to build a theoretical framework on public value creation through service design. Exploratory qualitative research was conducted to understand the organisations involved in Hamburg's digital service transformation and their approaches. As an instrumental case, an engagement with a specific service was initiated to understand current development approaches in a more detailed manner and to gather evidence for the validity of the theoretical framework.

The first research question “What is the understanding and comprehension of design practices in the Hamburg administration?” aims at the desire to investigate and capture how digitalisation of public services takes place. Hamburg has been of particular interest as its senate decision and foundational strategic policy paper for the Digital First initiative demands the development of citizen-friendly services and “user-friendliness as much as possible” (Hamburger Senat 2016) while the national law does not make any similar demands. Senior political leaders of the city-state claimed that “digital first means users first”. The subsequent research activities aimed at understanding how user-centredness is translated from policy to delivery and operations. One objective was to find out how citizen-friendliness in state-law links to principles, mindsets, practices, and tools and methods used by staff in the administration. That included recognising design legacies – practices that are handed down from one person or team to another over a more extended period (Junginger 2014).

Investigating the question, desk research and stakeholder maps were used to create an overview of the different stakeholders involved and identify the relevant one to engage with. During multiple visits to Hamburg, contextual inquiries and semi-structured interviews were used to understand the structure, ways of working and thinking, and perceived role and value of design. The members of the Hamburg administration that the researcher interacted with were notably open to sharing, discussing, and engaging in all proposed activities. Every person approached was supportive of the research and spoke frankly about barriers, challenges, and opportunities under agreed anonymity and confidentiality. None of the activities proposed were rejected. Despite busy schedules, workshops in both Digital First and the Versorgungssamt were attended by many team members who participated in the activities with interest. In the first few months, the researcher was even offered the role as a Digital First ambassador and asked to look after a digitalisation project himself and to coordinate the transformation of a service with a department and suppliers. Such immersive research approach would have yielded extensive research data and may have generated comprehensive insights into German administration and how digitalisation is done in the public sector. The offer can be seen as a sign of trust in the researcher and came unexpectedly. The researcher had to decline the proposal as such an integrated set-up would have demanded a continuous presence in Hamburg which was not reasonable while only researching in part-time.

The research uncovered an understanding of human-centred design as technique with related methods and tools, utilised in service transformation projects regularly. The term design is mainly associated with the visual appearance of something. Moreover, although design thinking is perceived to have a more profound impact on changing underlying business processes, it is considered a workshop format only. The administrative staff acknowledged that more user involvement would be favourable during service transformation projects and agreed on the goal of creating citizen-friendly, useful, and usable services. During interviews, contextual inquiries, and forms of conversations, the lack of specific skills was brought up by multiple

people. Notably, design-related skills were not mentioned by any member of administrative staff. The responses to the subsequent design interventions were mixed. Some were adapted, some were challenged, some were ignored. Printed newspapers and articles were spread, shared, and commented. Stickers with messages like ‘users first’ or ‘You ≠ user’ were placed on people’s work computers. Posters presenting alternative views on the guiding principles were disputed with counter proposals. The user research method cards created did not receive any attention, it seems, even though an interest in more and alternative ways of user involvement was expressed. At the same time, artefacts from design work on the case service were deemed precious and valuable by the service team and service owner. They were kept in the office and meeting room even after fulfilling their original purpose. Individuals shared photographs of the design artefacts on social media platforms through their personal accounts. Dedicated events and workshops organised outside the Hamburg administration were attended by a few people of the administration, substantiating an interest in human-centred design approaches.

The second research question “How can the application of human-centred design support public value creation?” has been approached conceptually through the study of existing academic papers, articles, book chapters, and further written material. Besides, it was approached practically by engaging with the case service. In academic literature, service design has been discussed in the context of the public sector by several scholars (Junginger 2009; Bason 2017a; Trischler & Scott 2015; Wetter-Edman & Malmberg 2018; Osborne et al. 2012). Service design and designing for service has also been attributed with realising service-dominant logic and characterised as value creating (Wetter-Edman 2011). Lately, the concept of public service logic has emerged and describes public service organisations co-producing services and co-creating value (Osborne 2017). What has been discussed less in the academic discourses in service management, public management, and design management is the contribution service design can make to public value creation. It was found that service design is capable of supporting the creation of public value. Service design is human-centred, responding to people’s needs, and designing services around them (Stickdorn et al. 2017), whereas public value is grounded in basic human needs (Meynhardt 2009; 2015). Furthermore, service, trust, and outcomes are creators of public value (Try & Radnor 2007). Service design contributes to service improvements, the buildup of public trust, and improved outcomes for citizens. In response to the second research question, a new model building on previous concepts presented by Moore (1995) and Try & Radnor (2007) is proposed to describe and depict the contribution service design makes to the creation of public value. Some evidence for the validity of the model could be found through the practical part of the study. More research is suggested, and opportunities for further research are outlined in one of the following sections.

Over time, the three areas of work - one conceptual and two practical activities - began to overlap and partially merge. The qualitative interviews exposed the barriers and blockers to

offering good human-centred services in Hamburg and proved the practical validity of Moore's conceptual strategic triangle, used as a foundation of the new proposed model. The engagement with the case service allowed to study the new model in response to the second research question while also collecting further data on the topic of the understanding of design of the first research question. At the same time, the research on the organisational and service level proved to be complementary. By working on these two different levels, not only the current understanding of design could be researched, but also the interest and curiosity of civil servants regarding the potential value of design verified. Besides, the work on the case service led to a perceived practical benefit for the Hamburg administration. The resulting increased trust in the researcher subsequently enabled additional research activities.

6.2 Value of the study and transferability of results

The study has both theoretical and empirical value. On a scientific level, the study traces back and compares multiple views on public value in the public management discourse with those on value creation in the service management discourse. The two distinct discourses came together rather recently in the newly established public service-dominant logic (Osborne et al. 2012) and public service logic (Osborne 2017). Grounded in a literature review, the study argues how service design applied in the public sector supports the creation of public value. So far, the role of service design in the context of public value creation has received little attention. The proposed model, built on the work of Moore (1995) and Try & Radnor (2007), offers a new framework to the discourse in design management, service management, and public management. The effect of service design on public value creation under a public service logic lens can be considered an appealing research area that deserves further attention.

On a practical level, the study findings are in line with Moore's strategic triangle (2012). It was found evidence in Hamburg that the creation of public value is relying on top-level support and operational capability. The study applies and then modifies Junginger's relationship model of design functions and larger organisations (2009). It also combines models on design maturity (Kootstraat 2009) and systemic change (Christiansen 2018) to facilitate the advancement of human-centred design in a public service organisation. The set of tools and models and their combined use are likely to have practical application in other contexts, too.

On a practical level, this might be the first study researching and evaluating how service design and human-centred design approaches are applied in a part of the German administration. Other papers, theses, and book chapters have examined the role of service design in the public sector in Australia (Trischler & Scott 2015), Denmark (Bason 2017a), Italy (Rizzo, Deserti & Cobanli 2016) Singapore (Dribbisch 2017), the United Kingdom (Bailey & Lloyd 2016), and United States (Junginger 2017). The timely completion of the study can inform the nationwide execution of the online access law which is likely to gain further traction in the

coming years until the implementation deadline in 2022. The study results gained from the engagement with the case service and from the investigation of a service transformation programme are likely to be relevant for other municipalities and state-level governments in Germany. First examples of the outputs which have been transferred are described in the following section.

Beyond that, the study follows a holistic service design research approach as instigated by Moritz (2005) and Ostrom et al. (2015), researching the design of services and the design of the design of services. While there is limited novelty in the way the user research methods and tools are applied individually, the multi-level research approach with intervention designs might be worth transferring to other contexts of evaluating service design transformation projects.

The specific research findings on barriers and blockers to linking a citizen-oriented policy - described in the Senate's strategic paper - with a human-centred design approach on an operational level are likely to be found in other contexts, too. A potential recurrence in other cities, countries, and contexts is probable and should be investigated. The transferability of other study outputs is discussed in the following section.

6.3 Impact assessment and opportunities

An immediate impact assessment at the end of a study is difficult. Too few data points are available, and more time may lead to additional measurable effects initiated by this study. Therefore, further research opportunities are described in the next section. Some practical results of the almost year-long interaction with the city-state of Hamburg have been recorded, however, and additional opportunities are described.

As the recognition for severe disability service is based on Federal law, the research findings, new service concept and prototype could be useful input for digital transformation in other parts of the German government, specifically on a state and municipal level. Artefacts created by the researcher during the engagement with the case service were shared and subsequently used by a practitioner working on the same service with councils in the southern state of Baden-Württemberg. In early December 2018, the user profiles and alternative service flow created in the study were used in a workshop to discuss service transformation. *"The expectations of Hamburg's users are identical to the expectations of our users"*, one workshop participant stated. As the underlying policy and law are the same and paper forms in different parts of the country have been almost identical for decade, it might be beneficial creating and sharing a user-validated and legally reviewed digital service pattern with other municipalities. Such could save time and money, reduce duplication of work, and increase the quality of service across the country. A collaboration with the existing IT Planning Council, its

Federal IT Cooperation unit, FITKO, and input into the federal information management kit, FIM, supposed to document service processes nationwide is recommended.



Figure 26: Civil servants in the state of Baden-Württemberg work with some of the study's outputs

In the interviews with Hamburg's administrative staff, one person suggested other municipalities and federal states could adopt services developed in Hamburg, expressing confidence in their work. This has been initiated by sharing the design outputs with the municipalities and state government of Baden-Württemberg (figure 28). More collaborations have been suggested.

In comparison to other digital transformation programme teams, the city of Hamburg is somewhat reluctant to share progress publicly and proactively. While digital service teams in the Australian, British, Italian, and US government, maintain public blogs on which they share updates several times per month, Hamburg stays quiet. Updates are instead enforced legally through minor enquiries in the city parliament. Unusually, one member of the Digital First programme team shared a series of five pictures from two internal workshops the researcher conducted on the social media platform LinkedIn (figure 29). They contained a service flow, user profiles, prototypes, and the proposed Hamburg Service Standard. The images were accompanied by the questions "How can service design support the design of better public services? How can we better understand user needs and integrate them in our services? This is what we discussed to today". As the photographs were of high quality, people were able to review the content and started discussing the political challenges related to enacting the Hamburg Service Standard on the social media platform publicly. Moreover, the post received

a public endorsement through likes from senior people of the Hamburg administration including c-level executives, heads of IT, and heads of programme as well as senior executives from Germany's federal government. Apart from the unusual openness and public affirmation from senior managers, the language of the post deviates from the expressions used in most of the conducted interviews and indicates a more holistic understanding of the term service design and how services should respond to user needs. The post might indicate a further evolution of mindsets in the Hamburg administration.



Figure 27: A civil servant's public social media blog post about the workshops conducted

Furthermore, the person stated they plan to get involved in a new cross-municipality working group in the beginning of 2019 and specifically to share the work for the BASFI on the case service. The focus of the working group will be on 'service design in process management' (KGSt 2018). The description of their activities suggests a broader and more holistic understanding of service design than found in the interviews previously. There, service design is described as an enabler for designing services in a user-centred way and improving quality, linked to interdisciplinary ways of working and feedback loops (KGSt 2018). The initiators of the working group also attended the Public Service Lab event, co-organised by the researcher as an intervention in summer 2018. Furthermore, they received copies of the printed Service Gazette publication, designed as an intervention in summer 2018, in which one article co-authored by the researcher describes service design has a holistic problem-solving approach to

improve service for citizens (Jordan & Dribbisch 2018b). A correlation is possible, but the emergence could be entirely coincidental.

Another request for 45 copies of the Service Gazette publication came from the Federal Chancellery in November 2018 after the researcher had the opportunity to converse with Germany's Minister of State for Digitalisation and hand over a copy of the printed matter. Consequently, the Head of Digital State reached out to the researcher and asked for additional copies for distribution in a digital cabinet meeting to discuss next steps in implementing the online access law and digitalising 575 services. A week later, German Chancellor Angela Merkel held a significant speech in parliament, arguing that digitalising services in a user-centred, agile way "is not a nerd project" and requires a new approach (Merkel 2018). Any impact of the researcher on the content of the speech would be laudable but is most unlikely. However, the speech highlights a shift of narratives. While state laws and senate policy papers in Berlin and Hamburg explicitly describe and demand a user-centredness and citizen-friendliness, the federal online access law does not prescribe how the digitalisation of services has to happen (cf. Bundesamt für Justiz 2017; Der Senat von Berlin 2015; Hamburger Senat 2016). The Federal law only demands services to be accessible for guaranteeing compliance with other existing Federal and EU law and eliminating channel shifts when digitalising public services. It is to be seen how the practice of digital service transformation evolves in Germany and what role service design and human-centred design approaches will have.

Working with the case service produced a usability report of 123 pages, which led to a new stream of work in the Versorgungsamt, investigating how the identified issues can be solved by whom in what time frame and at which cost. One person involved commented on the usefulness of the report as it allowed readers to instantly recognise the problems users face. The implementation of the recognised changes requires multiple external parties to participate. It needs to be seen if, how, and when the recommendations are followed. It is noteworthy that even if the design problem might be significant, the 'designer's share' and possible contribution might be comparably small. The design educator Papanek described and depicted the 'designer's share in design problems' as a small corner of a triangle less of 5% of the solution (1984, 57). Similarly, multiple scholars raise doubts about the impact of service design and service designers. Wetter-Edman argues, "it has proven difficult to fully integrate this holistic view of service in service-providing companies and organizations" (2011, 12). Junginger questions service designers' ability to recognise organisational design legacies and articulate beyond issues of service design (2015). Instead of only designing better services, they should link their activity to design work of the larger organisation (Junginger 2015). Should the recommendations made in 5.5 be followed, incoming in-house design staff should pay attention and invest time in understanding design legacies and shaping organisational design.

6.4 Opportunities for further research

This study focusses on the application of human-centred design and its contribution to public value creation in the context of the city-state of Hamburg. As described in 1.6 and 6., the empirical study was limited to a research period of several months and only included one of eleven departments of the city. A longer and broader study with more entities would allow a comparison of different departments and research into a potential change of principles, mindsets, and practices over time. Such long-term study could include investigating further prevailing design legacies in the administration (Junginger 2015). Utilising the data from the interviews and contextual inquiries in Hamburg, a comparative study including additional interviews with civil servants of digitally more mature service teams from countries like Denmark, the United Kingdom or United States (Mergel 2017) might be valuable.

This study explores three of the twelve service research priorities described by Ostrom et al. (2015): *understanding organisation & employee issues relevant to service; leveraging service design; understanding value creation*. A more comprehensive study would allow an in-depth examination of these areas, for example, it could help capture the capability of the various actors in higher fidelity or research which human-centred design skills would be most useful to acquire for civil servants to develop better and more citizen-friendly services (cf. Kramer et al. 2016). These could include cultivated mindsets, specialised disciplinary skills, essential skills for human-centred design, and skills necessary to perform contextualised tasks (Kramer et al. 2016) for civil servants and public servants working on the implementation of the Senate strategy.

Furthermore, a broader study would also permit expansion into other areas described by scholars. A study that covers the implementation of changes to the case service, a here uncovered *Deliver* phase, would allow investigating two further service research priorities described by Ostrom et al. (2015) in the context of the Hamburg administration: *enhancing the service experience; measuring and optimising service performance & impact*. The link between *understanding value creation* and *enhancing the service experience*, both designated research priorities, should be of particular interest as this study covered it mostly on a theoretical level. Concrete metrics and measures for service outcomes could provide useful indicators for assessing public value creation through service design and would be of high significance for service research. These could be linked to the four signs of value creation presented by Bason (2017b, 168-173): signs of better service experience, signs of increase of productivity, signs of better outcomes, signs of increased democratic engagement.

A theoretical research area, as mentioned in 3.3 and 5.6, that requires further study is the contribution of service design to public value creation which has been recognised by scholars only recently (Mergel, Kattel, Lember & McBride 2018). While the contribution of service de-

sign to value creation in the private sector under a service(-dominant) logic has been discussed by scholars (Wetter-Edman 2011), its application in the public sector and contribution under a public service logic lens (Osborne 2017) demands further research. Another study could include the utilisation of a public value scorecard proposed by Meynhardt et al. (2017), applied to measure the impact of human-centred service design approaches in public service transformation projects, as the scorecard explicitly covers usefulness and quality of citizen experience related to public sector investments.

Additional theoretical analysis could cover the overlap and differences of basic human needs described as the foundation of Meynhardt's public value definition (2009) and the taxonomy of fundamental human needs put forward by Max-Neef (Cruz, Stahel & Max-Neef 2009). The socio-philosophical angle of Max-Neef (1991) and socio-psychological view of Meynhardt seem to partially overlap and deserve further examination as service design researches and addresses human needs (cf. Stickdorn et al. 2017). To expand the body of research around service design and public value creation through the lens of public service logic, such future research is recommended.

In recent years, research into human-centred policy design (Junginger 2017), service design in policy making (Buchanan 2001b, Junginger & Terrey 2017), and the implications of design in policy making (Bailey 2017) has been conducted. In the case of Hamburg, the policy intent, as formulated in the Senate strategy, explicitly prescribed the outcome to be citizen-friendly. As the research suggests, the current implementation of the policy appears to be less citizen-friendly than initially intended. Therefore, future research projects into the link between policy intent, policy-making and policy implementation (cf. Junginger 2017, 172), their success factors and barriers can focus on this area. Such studies would connect the various research streams suggested above.

Finally, as the Hamburg service transformation project Digital First is part of the nation-wide implementation of the online access law to provide public services online to German citizens, further studies would be valuable. Such could concentrate on the implementation of the law, how it is done in different parts of the country and the federal system, what efforts lead to satisfying and unacceptable outcomes, and what the response of the public as primary service users is.

References

- Adebajo, A. 2018. Value co-creation and co-design in public services. In: 22nd Annual International Research Society for Public Management Conference, Edinburgh, Scotland.
- Alford, J. 2016. Co-Production, Interdependence and Publicness: Extending public service-dominant logic. *Public Management Review*, 18 (5), 673-691.
- Alford, J. 2014. Engaging public sector clients. Copenhagen: Copenhagen Business School, 1-29.
- Alves, R. & Nunes, N. J. 2013. Towards a Taxonomy of Service Design Methods and Tools. In: J. F. E. Cunha, M. Snene, & H. Novoa (eds.) *Exploring Services Science*. Porto: 4th International Conference, IESS 2013, 215-229.
- Asmuß, B. 2007. What Do People Expect from Public Services? *Hermes Journal of Language and Communication Studies*, 38 (2007), 66-83.
- Bailey, J. & Lloyd, P. 2016. A view from the other side: perspectives on an emergent design culture in Whitehall. In: ServDes 2016 - Fifth Service Design and Innovation conference, Copenhagen, Denmark, May 2016, 14-26.
- Bailey, J. 2017. Beyond Usefulness: Exploring the implications of design in policymaking. In: Nordes 2017 - Design + Power, Oslo, Norway, 7 (2017), 1-8.
- Banathy, B. H. 1996. *Designing Social Systems in a Changing World*. New York: Springer Science & Business Media.
- BASFI (Behörde für Arbeit, Soziales, Familie und Integration). 2018a. *Organigramm der Behörde für Arbeit, Soziales, Familie und Integration*. Accessed 1 November 2018. <https://www.hamburg.de/basfi/organisation/>
- BASFI (Behörde für Arbeit, Soziales, Familie und Integration). 2018b. Überblick: Aufgaben und Organisation. Accessed 26 October 2018. <https://www.hamburg.de/basfi/organisation/>
- Bason, C. 2017a. Leading Public Design: How managers engage with design to transform public governance. Copenhagen: Copenhagen Business School.
- Bason, C. 2017b. Leading Public Design: Discovering Human-Centred Governance. Bristol: Policy Press.
- Best, J. J. 1973. *Public opinion: micro and macro*. Homewood, Illinois: The Dorsey Press.
- Bettencourt, L. A. & Brown, S.W. 2013. From goods to great: Service innovation in a product-dominant firm. *Business Horizons*, 56 (3), 277-283.
- Bettencourt, L. A., Lusch, R. F. & Vargo, S. L. 2014. A Service Lens on Value Creation. *California Management Review*, 57 (1), 44-66.
- Bitner, M. J., Ostrom, A. L. & Morgan, F. N. 2008. Service Blueprinting. *California Management Review*, 50 (3), 66-94.
- Blank, S. 2013. Why the Lean Start-Up Changes Everything. *Harvard Business Review*, 2013 (May), 1-9.
- Brandsen, T., Pestoff, V. & Verschuere, B. 2012. Co-production as a maturing concept. In Brandsen, T., Pestoff, V. & Verschuere, B. (eds.) *New Public Governance, the Third Sector and Co-Production*. New York: Routledge, 5-17.

- Brown, T. 2009. *Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation*, New York: HarperCollins.
- Brown, T. & Martin, R.L. 2015. Design for Action. *Harvard Business Review*, 2015 (September), 1-13.
- Buchanan, R. 1992. Wicked Problems in Design Thinking. *Design Issues*, 8, 5-21.
- Buchanan, R. 2001a. Human Dignity and Human Rights. 1-5.
- Buchanan, R. 2001b. Design Research and the New Learning. In: *Researching Design Designing Research*. 3-23.
- Bundesamt für Justiz. 2013. *Gesetz zur Förderung der elektronischen Verwaltung*. Accessed 12 October 2018. <https://www.gesetze-im-internet.de/egovg/BJNR274910013.html>
- Bundesamt für Justiz. *Gesetz zur Verbesserung des Onlinezugangs zu Verwaltungsleistungen*. Accessed 9 September 2018. <http://www.gesetze-im-internet.de/ozg/BJNR313800017.html>
- Bundesministerium der Finanzen. 2016. *Regierungsentwurf zum Bundeshaushalt 2017 und Finanzplan des Bundes 2016 bis 2020*. Accessed 9 September 2018. <https://www.bundesfinanzministerium.de/Content/DE/Monatsberichte/2016/07/Inhalte/Kapitel-3-Analysen/3-1-Regierungsentwurf-zum-Bundeshaushalt-2017-Finanzplan-Bundes-2016-2020.html>
- Bundesministerium des Innern. 2014. *Digitale Verwaltung 2020*. Berlin: Bundesministerium des Innern.
- Bundesministerium des Innern, für Bau und Heimat. Behördengänge online erledigen: E-Government. Accessed 17 September 2018. <https://www.bmi.bund.de/DE/themen/moderne-verwaltung/e-government/e-government-node.html>
- Bürgerschaft der Freien und Hansestadt Hamburg. 2018. *Schriftliche Kleine Anfrage*,
- Carbone, L. P. & Berry, L. L. 2002. Managing the Total Customer Experience. *MIT Sloan Management Review*, 1-8.
- Carlgrén, L., Rauth, I. & Elmquist, M. 2016. Framing Design Thinking: The Concept in Idea and Enactment. *Creativity and Innovation Management*, 25(1), 38-57.
- Chandler, J.D. & Vargo, S.L. 2011. Contextualization and value-in-context: How context frames exchange. *Marketing Theory*, 11(1), 35-49.
- Chesbrough, H. 2007. Business model innovation: it's not just about technology anymore. *Strategy & Leadership*, 35(6), 12-17.
- Christiansen, J. 2018. Beyond the lab? In: Kane, K. (ed.) *International Design in Government Call*. London. Accessed 9 December 2018. <https://ops-entweb-iwgd.s3.amazonaws.com/GMT20181116-govuk%20innovation%20labs.mp4>
- Clarke, A. 2017. Digital Government Units: Origins, Orthodoxy and Critical Considerations for Public Management Theory and Practice. *SSRN Electronic Journal*, 1-54.
- Cross, N. 1993. *A History of Design Methodology*. 15-27.
- Crouch, C. & Pearce, J. 2013. *Doing Research in Design*, Bloomsbury Publishing.
- Cruz, I., Stahel, A. & Max-Neef, M. 2009. Towards a systemic development approach: Building on the Human-Scale Development paradigm. *Ecological Economics*, 68(7), 2021-2030.

- Culkin, J. M. 2018. A Schoolman's Guide to Marshall McLuhan. *The Saturday Review*, 1-4.
- Ćwiklicki, M. 2016. Comparison of public value measurement frameworks. *Zarządzanie Publiczne*, (1(35)/2016), 20-31.
- d.school Hasso Plattner Institute of Design at Stanford. 2010. An Introduction to Design Thinking. 1-6.
- Dataport. Über uns. Accessed 16 December 2018. <https://www.dataport.de/Seiten/Unternehmen/%C3%9Cber-uns.aspx>
- Der Senat von Berlin. 2015. *Berliner E-Government-Gesetz*. Accessed 9 September 2018. https://www.berlin.de/sen/inneres/service/publikationen/e-govg-blm_vorlage_agh.pdf
- Design Council. 2007. *A study of the design process*. Design Council. White paper from Design Council. Accessed 24 October 2018. [https://www.designcouncil.org.uk/sites/default/files/asset/document/ElevenLessons_Design_Council%20\(2\).pdf](https://www.designcouncil.org.uk/sites/default/files/asset/document/ElevenLessons_Design_Council%20(2).pdf)
- Destatis, S. B. 2017. Schwerbehinderte Menschen - Fachserie 3 Reihe 5.1 - 2015. 1-110.
- Deutscher Bundestag. 2016. "E-Government gibt es de facto nicht". Accessed 9 September 2018. <https://www.bundestag.de/presse/hib/201604/-/420654>
- Di Russo, S. 2016. *Understanding the behaviour of design thinking in complex environments*. PhD. Swinburne University of Technology.
- Die Bundesregierung. 2014. Regierungsprogramm „Digitale Verwaltung 2020“. Accessed 16 December 2018. https://www.verwaltung-innovativ.de/DE/Regierungsprogramm/aktuelles_regierungsprogramm/18_legislaturperiode_node.html;jsessionid=787F0AED95E746DB7565C00585CDA663.1_cid340
- Digital First. 2018a. Steuerungsgremium. [lecture slides]. Presented 26 January 2018. Unpublished.
- Digital First. 2018b. Mission und Ziele. [lecture slides]. Presented 7 February 2018. Unpublished.
- Downe, L. 2016. What we mean by service design. Government Digital Service. Accessed 17 October 2018. <https://gds.blog.gov.uk/2016/04/18/what-we-mean-by-service-design/>
- Downe, L. 2018. Embedding user-centred design in government. Jordan, M. & Dribbisch, K. (eds.) *The Service Gazette*, 4 (2), 3.
- Dribbisch, K. 2017. *Translating innovation: the adoption of Design Thinking in a Singaporean ministry*.
- DRS (Design Research Society). 2016. Systematic Method – DRS2016. Accessed 16 December 2018. <http://www.drs2016.org/ddr10/>
- Dubberly, H. 2004. How do you design? Accessed 17 October 2018. http://www.dubberly.com/wp-content/uploads/2008/06/ddo_designprocess.pdf
- Edvardsson, B., Gustafsson, A. & Roos, I. 2005. Service portraits in service research: a critical review. *International Journal of Service Industry Management*, 16 (1), 107-121.
- Enn, Ü. 2018. This is how we fixed public services in Estonia. In: Gov Design Meetup. London. Accessed 9 September 2018. <https://www.youtube.com/watch?v=nEGi4iY3E3Q&t=632s>

- EU Ministers for eGovernment. 2009. Ministerial Declaration on eGovernment. Accessed 9 September 2018. <https://ec.europa.eu/digital-single-market/sites/digital-agenda/files/ministerial-declaration-on-egovernment-malmo.pdf>
- EU Ministers for eGovernment. 2017. Tallinn Declaration on eGovernment. Accessed 19 September 2018. https://ec.europa.eu/newsroom/document.cfm?doc_id=47559
- European Commission. 2016. *EU eGovernment Action Plan 2016-2020*, Brussels. Accessed 19 September 2018. <https://ec.europa.eu/digital-single-market/en/news/communication-eu-egovernment-action-plan-2016-2020-accelerating-digital-transformation>.
- European Commission. 2017a. *eGovernment Benchmark 2017*. Brussels: European Commission.
- European Commission. 2017b. *Europe's Digital Progress Report (EDPR)*. Brussels: European Commission.
- European Commission. 2017c. *Europe's Digital Progress Report 2017*. Brussels: European Commission.
- European Commission. 2018. *Digital Economy and Society Index Report 2018*. Brussels: European Commission.
- Ewert, B. & Evers, A. 2012. An Ambiguous Concept: On the Meanings of Co-production for Health Care Users and User Organizations? *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 25(2), 425-442.
- Fishenden, J., Thompson, M. & Brown, A. W. 2014. Revolutionising Digital Public Service Delivery. 1-13.
- Fledderus, J., Brandsen, T. & Honingh, M. E. 2015. User co-production of public service delivery. *Public Policy and Administration*, 30(2), 145-164.
- Foglieni, F., Villari, B. & Maffei, S. 2017. From Service to Service Design. In *Designing Better Services*. SpringerBriefs in Applied Sciences and Technology. Cham: Springer International Publishing, 5-26.
- Foreshew-Cain, S. 2016. What GDS is for. Government Digital Service. Accessed 18 October 2018. <https://gds.blog.gov.uk/2016/06/29/what-gds-is-for/>
- Gartner. 2012. Digitalization - Gartner IT Glossary. Accessed 16 December 2018. <https://www.gartner.com/it-glossary/digitalization/>
- Gartner. 2015. Digitization - Gartner IT Glossary. Accessed 16 December 2018. <https://www.gartner.com/it-glossary/digitization>
- Gillham, B. 2005. *Research Interviewing*. London: Open University Press.
- Government Digital Service. 2011. A GDS Story 2011. *GOV.UK*. Accessed 2 December 2018. <https://gds.blog.gov.uk/story-2011/>
- Government Digital Service. 2012. Government design principles. Accessed 19 September 2018. <https://www.gov.uk/guidance/government-design-principles>
- Government Digital Service. 2016a. Agile delivery: How the alpha phase works. Accessed 19 September 2018. <https://www.gov.uk/service-manual/agile-delivery/how-the-alpha-phase-works>

- Government Digital Service. 2016b. *Agile delivery: How the beta phase works*, Accessed 19 September 2018. <https://www.gov.uk/service-manual/agile-delivery/how-the-beta-phase-works>
- Government Digital Service. 2016c. *Agile delivery: How the discovery phase works*, Accessed 19 September 2018. <https://www.gov.uk/service-manual/agile-delivery/how-the-discovery-phase-works>
- Government Digital Service. 2016d. *Agile delivery: How the live phase works*, Accessed 19 September 2018. <https://www.gov.uk/service-manual/agile-delivery/how-the-live-phase-works>
- Government Digital Service. *Digital Service Standard*, Government Digital Service. Accessed 21 September 2018. <https://www.gov.uk/service-manual/service-standard>
- Green, M., Rodgers, P. & Tennant, A. 2016. *Disrupting Service Design*. In: ServDes 2016 - Fifth Service Design and Innovation conference, Copenhagen, Denmark, May 2016, 180-191
- Greenway, A., Terrett, B., Bracken, M. & Loosemore, T. 2018. *Digital transformation at scale: why the strategy is delivery*. London: London Publishing Partnership.
- Grönroos, C. 2008. Service logic revisited: who creates value? And who co-creates? G. Svensson (ed.) *European Business Review*, 20(4), 298-314.
- Grönroos, C. & Ravald, A. 2009. Marketing and the Logic of Service. 1-40.
- Grönroos, C. & Ravald, A. 2011. Service as business logic: implications for value creation and marketing. *Journal of Service Management*, 22(1), 5-22.
- Grönroos, C. & Voima, P. 2012. Critical service logic: making sense of value creation and co-creation. *Journal of the Academy of Marketing Science*, 41(2), 133-150.
- Gruber, M., de Leon, N., George, G. & Thompson, P. 2015. Managing by Design. *Academy of Management Journal*, 58 (1), 1-7.
- Hara, K. 2003. *Designing Design*. Zürich: Lars Muller Publishers.
- Hamburger Senat. 2016. *Digital First - Chancen der Digitalisierung für eine bürgerfreundliche und moderne Verwaltung nutzen*. Hamburg: Hamburger Senat (Unpublished).
- Hartman, A., Jain, A. N., Ramanathan, J., Ramfos, A., Van der Heuvel, W.-J., Zirpins, C., Tai, S., Charalabidis, Y., Pasic, A., Johannessen, T. & Grønsund, T. 2010. Participatory Design of Public Sector Services. In *Electronic Government and the Information Systems Perspective*. Lecture Notes in Computer Science. Berlin, Heidelberg: Springer Berlin Heidelberg, 219-233.
- Hasso-Plattner-Institut. 2018. What is Design Thinking? Accessed 16 December 2018. <https://hpi-academy.de/en/design-thinking/what-is-design-thinking.html>
- Heinonen, K. & Strandvik, T. 2009. Monitoring value-in-use of e-service. *Journal of Service Management*, 20 (1), 33-51.
- Heinonen, K., Strandvik, T., Mickelsson, K.-J., Edvardsson, B., Sundström, E. & Andersson, P. 2010. A customer-dominant logic of service. Stauss, B. (ed.) *Journal of Service Management*, 21 (4), 531-548.
- Helkkula, A., Kelleher, C. & Pihlström, M. 2012. Characterizing Value as an Experience. *Journal of Service Research*, 15(1), 59-75.

- Hill, D. 2012. *Dark Matter and Trojan Horses*. Moscow: Strelka Press.
- HM Government. 2018. GDS Academy. Accessed 21 September 2018. <https://gdsacademy.campaign.gov.uk/>
- Holmlid, S. 2007. Interaction Design and Service Design. 1-8.
- Holmlid, S. & Evenson, S. 2007. Prototyping and enacting services. 1-8.
- Hood, C. 1991. A public management for all seasons?. *Public Administration*, 69 (Spring), 3-19.
- HPI School of Design Thinking, Mindsets. Accessed 2 December 2018. <https://hpi.de/en/school-of-design-thinking/design-thinking/mindset.html>
- IMF (International Monetary Fund). World Economic Outlook: GDP Based on PPP, Share of World. Accessed 21 September 2018. <https://www.imf.org/external/datamapper/PPPSH@WEO/OEMDC/ADVEC/WEOORLD/DEU>
- International Organization for Standardization. 2010. *Ergonomics of human-system interaction – Part 210*, Geneva.
- ISO (International Organization for Standardization). 2010. *ISO 9241-210:2010(en)*, Accessed 21 September 2018. <https://www.iso.org/obp/ui/#iso:std:iso:9241:-210:ed-1:v1:en>
- IT-Planungsrat. 2018a. Aufgaben des IT-Planungsrats. *IT-Planungsrat*. Accessed 10 October 2018. https://www.it-planungsrat.de/DE/ITPlanungsrat/Aufgabenspektrum/aufgabenspektrum_node.html
- IT-Planungsrat. 2018b. FITKO. Accessed 29 September 2018. https://www.it-planungsrat.de/DE/Projekte/Ma%C3%9Fnahmen/F%C3%B6derale%20IT-Kooperation/FITKO_node.htm
- Jaakkola, E., Helkkula, A. & Aarikka-Stenroos, L. 2015. Service experience co-creation: conceptualization, implications, and future research directions. *Journal of Service Management*, 26(2), 182-205.
- Jackson, P. 2017. Government Services Look Radically Different in the Customer's Eyes. Accessed 16 December 2018. <https://medium.com/ideo-stories/government-services-look-radically-different-in-the-customers-eyes-59998a310d2>
- Jansen, M. W., Van Oers, H. A., Kok, G. & de Vries, N. K. 2010. Public health: disconnections between policy, practice and research. *Health Research Policy and Systems*, 8 (1), 37.
- Jordan, M. & Dribbisch, K. 2018a. Design revolution in government: Three waves of transformation. *The Service Gazette*, 4 (2), 1.
- Jordan, M. & Dribbisch, K. 2018b. Services statt Fachverfahren gestalten: Wie Servicedesign Verwaltungsdienstleistungen für NutzerInnen verbessern kann. *The Service Gazette*, 4 (1), 7.
- Junginger, S. 2009. *Design in the Organization: Parts and Wholes*. *Design Research Journal*, 2 (9), 23-29.
- Junginger, S. 2014. Design Legacies. In: ServDes 2016 - Fifth Service Design and Innovation conference, Copenhagen, Denmark, May 2016, 164-172.
- Junginger, S. 2015. Organizational Design Legacies and Service Design. *The Design Journal*, 18 (2), 209-226.

- Junginger, S. 2017. *Transforming public services - transforming the public servant?* London: Routledge.
- Junginger, S. 2018. Design Research and Practice for the Public Good: A Reflection. *She Ji: The Journal of Design, Economics, and Innovation*, 3 (4), 290-302.
- Junginger, S. & Sangiorgi, D. 2011. Public Policy and Public Management: Contextualizing Service Design in the Public Sector. In: *The Handbook of Design Management*. London, United Kingdom: Bloomsbury Publishing, 480-494.
- Jørgensen, T.B. & Bozeman, B. 2016. Public Values. *Administration & Society*, 39 (3), 354-381.
- Kane, K. & Jordan, M. 2018. Scaling Service Design in the UK Government. *Touchpoint*, 9 (2), 36-39.
- Katsonis, M. & Botros, A. 2015. Digital Government: A Primer and Professional Perspectives. *Australian Journal of Public Administration*, 74(1), 42-52.
- Kimbell, L. 2010. *From user-centred design to designing for service*. In: Design Management Conference, London 2010.
- Kimbell, L. 2011. Designing for Service as One Way of Designing Services. *International Journal of Design*, 5(2), 41-52.
- Kimbell, L. 2013. An inventive practice perspective on designing. PhD. Lancaster University.
- Koberg, D. & Bagnall, J. 1991. *The universal traveler: a soft-systems guide to creativity, problem-solving & process of reaching goals*. Menlo Park, CA, USA: Crisp Publications.
- Kootstra, G.L. 2009. *The incorporation of design management in today's business practices*. Groningen/Houten: Noordhoff Uitgevers.
- Körber, B. 2018. Hamburg will Behördengänge überflüssig machen. *Welt*. Accessed 21 October 2018. <https://www.welt.de/regionales/hamburg/article175991600/Digital-First-Hamburg-will-Behoerdengaenge-ueberfluessig-machen.html>
- Kramer, J., Agogino, A.M. & Roschuni, C. 2016. Characterizing Competencies for Human-Centered Design. In: ASME 2016 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference. ASME, V007T06A026-13.
- Krcmar, H., Türkavci, C. A., Müller, L.-S., Dietrich, S., Boberach, M. & Exel, S., C. 2017. *eGovernment MONITOR 2017*. Berlin: Initiative D21 e. V.
- Krcmar, H., Türkavci, C. A., Müller, L.-S., Scheiber, P., Boberach, M., Exel, S. & Baethge, C. 2018. *eGovernment MONITOR 2018*. Berlin: Initiative D21 e. V.
- Krupp, C. 2017. Chief of Senate Chancellery. State Secretary. Email to the author. 28 November 2017. Personal communication.
- Kühl, E. 2017. Elektronische Personalausweis: Das tote Pferd soll auferstehen. *Zeit Online*. Accessed 21 October 2018. <https://zeit.de/digital/datenschutz/2017-04/elektronischer-personalausweis-eid-gesetz-biometrie-datenbank>
- Kumar, V. 2012. *101 Design Methods*. Hoboken, New Jersey: Wiley.
- Langrish, J. Z. 2016. *The Design Methods Movement*. In: 2016 Design Research Society 50th Anniversary Conference, Brighton, United Kingdom, June 2016, 1-13.

- Levinson, D. R. 2015. *Federal Marketplace*, Office of Inspector General. Accessed 21 September 2018. <https://oig.hhs.gov/oei/reports/oei-03-14-00230.pdf>
- Lusch, R. F. & Vargo, S. L. 2004. Evolving to a New Dominant Logic for Marketing. *Journal of Marketing*, 68, 1-17.
- Lusch, R. F. & Vargo, S. L. 2014. *Service-Dominant Logic*, Cambridge: Cambridge University Press.
- Lusch, R. F., Vargo, S. L. & O'Brien, M. 2007. Competing through service: Insights from service-dominant logic. *Journal of Retailing*, 83(1), 5-18.
- Manning, J. 2017. *In Vivo Coding* 2nd ed., Hoboken, NJ, USA: John Wiley & Sons, Inc.
- Martin, B. & Hanington, B. 2012. *Universal Methods of Design: 100 Ways to Research Complex Problems, Develop Innovative Ideas, and Design Effective Solutions*. Gloucester, MA, USA: Rockport Publishers.
- Marsh, S. 2018. *User Research: A Practical Guide to Designing Better Products and Services*. London: Kogan Page.
- McGrath, R.G. 2010. Business Models: A Discovery Driven Approach. *Long Range Planning*, 43 (2-3), 247-261.
- Medberg, G. & Heinonen, K. 2014. Invisible value formation: a netnography in retail banking. *International Journal of Bank Marketing*, 32(6), 590-607.
- Mergel, I. 2016. Agile innovation management in government: A research agenda. *Government Information Quarterly*, 33 (3), 516-523.
- Mergel, I. 2017. *Digital Service Teams: Challenges and Recommendations for Government*. Washington: IBM Center for The Business of Government.
- Merkel, A. 2018. Rede zum Haushaltsgesetz 2019. Accessed 21 September 2018. <https://www.bundesregierung.de/breg-de/suche/rede-von-bundestkanzlerin-dr-angela-merkel-1553398>
- Meynhardt, T. 2009. Public Value Inside: What is Public Value Creation? *International Journal of Public Administration*, 32(3-4), 192-219.
- Meynhardt, T. 2015. Public value. In J. M. Bryson, B. Crosby, & L. Bloomberg (eds.) *Public Value and Public Administration*. Turning a conceptual framework into a scorecard. 147-169.
- Meynhardt, T., Brieger, S. A., Strathoff, P., Anderer, S. & Bairo, A. 2017. Public Value Performance: What Does It Mean to Create Value in the Public Sector? In R. Andeßner, D. Greiling, & R. Vogel (eds.) *Public Sector Management in a Globalized World*. Wiesbaden: Springer Fachmedien Wiesbaden, 135-160.
- Mintrom, M. & Luetjens, J. 2016. Design Thinking in Policymaking Processes: Opportunities and Challenges. *Australian Journal of Public Administration*, 75 (3), 391-402.
- Moore, M. H. 1995. *Creating Public Value*. Cambridge, MA: Harvard University Press.
- Moore, M. H. 2013. *Recognizing Public Value*. 2013. *Recognizing Public Value*. Cambridge, MA: Harvard University Press
- Moore, M. H. & Khagram, S. 2004. On Creating Public Value. 1-27.

Moritz, S. 2005. Service Design. 1-125.

Muro, M., Liu, S., Whiton, J. & Kulkarni. 2017. *Digitalization and the American Workforce*. Washington: Metropolitan Policy Program at Brookings.

Nabatchi, T. 2017. Public Values Frames in Administration and Governance. *Perspectives on Public Management and Governance*, 1(1), 59-72.

Nagel, T. S. 2018. E-Personalausweis: Was den digitalen Amtsgang ausbremst. Heise online. Accessed 16 October 2018. <https://heise.de/newsticker/meldung/E-Personalausweis-Was-den-digitalen-Amtsgang-ausbremst-3983845.html>

Nationaler Normenkontrollrat. 2017. *Bureaucracy Reduction. Better Regulation. Digital Transformation*. Berlin: Nationaler Normenkontrollrat.

Nessler, D. 2018. How to apply a design thinking, HCD, UX or any creative process from scratch—Revised & New Version. Medium. Accessed 29 October 2018. <https://medium.com/digital-experience-design/how-to-apply-a-design-thinking-hcd-ux-or-any-creative-process-from-scratch-b8786efbf812>

Nielsen, J. 1995. 10 Heuristics for User Interface Design. *Nielsen Norman Group*. Accessed 1 December 2018. <https://www.nngroup.com/articles/ten-usability-heuristics/>

Nielsen, J. 1994. Enhancing the Explanatory Power of Usability Heuristics. In CHI. 152-158.

Nielsen, J. & Landauer, T.K. 1993. A Mathematical Model of the Finding of Usability Problems. *Proceedings of ACM INTERCHI Conference*, 206-213.

Nielsen, J. & Molich, R. 1990. HEURISTIC EVALUATION OF USER INTERFACES. In CHI. 249-256.

Noack, R. 2016. How Angela Merkel, a conservative, became the ‘leader of the free world’. The Washington Post. 21 November 2016. Washington D.C. Accessed 1 September 2018. <https://washingtonpost.com/news/worldviews/wp/2016/11/21/how-angela-merkel-a-conservative-became-the-leader-of-the-liberal-free-world/>

Norman, D. 1988. Design of Everyday Things. 1-261.

Norman, D. 2013. The Design of Everyday Things. 1-369.

Norman, D. A. 2005. Human-centered design considered harmful. *interactions*, 12(4), 14-6. OECD (Organization for Economic Cooperation and Development). 2003. *The E-Government Imperative*. Paris: OECD.

Ojasalo, J. & Ojasalo, K. 2018. Service Logic Business Model Canvas. *Journal of Research in Marketing and Entrepreneurship*, 20(1), 70-98.

Ojasalo, K., Koskelo, M. & Nousiainen, A. K. 2015. Foresight and Service Design Boosting Dynamic Capabilities in Service Innovation. In *The Handbook of Service Innovation*. London: Springer London, 193-212.

Ojasalo, K., Moilanen, T. & Ritalahti, J. 2009. Kehittämistyön menetelmät - Uudenlaista osaamista liiketoimintaan. Helsinki: WSOYpro.

Osborne, S.P. 2017. From public service-dominant logic to public service logic: are public service organizations capable of co-production and value co-creation? *Public Management Review*, 1-7.

- Osborne, S.P., Radnor, Z. & Nasi, G. 2012. A New Theory for Public Service Management? *The American Review of Public Administration*, 43(2), 135-158.
- Osterwalder, A., Pigneur, Y. & Tucci, C.L. 2005. Clarifying Business Models. *Communications of the Association for Information Systems*, 15, 1-43.
- Ostrom, A. L., Parasuraman, A., Bowen, D. E., Patrício, L. & Voss., C. A., 2015. Service Research Priorities in a Rapidly Changing Context. *Journal of Service Research*, 18(2), 127-159.
- Oxford Dictionaries. 2018a. value. Accessed 21 September 2018. <https://en.oxforddictionaries.com/definition/value>
- Oxford Dictionaries. 2018b. customer. Accessed 16 December 2018. <https://en.oxforddictionaries.com/definition/customer>
- Oxford Dictionaries. 2018c. citizen. Accessed 28 August 2018. <https://en.oxforddictionaries.com/definition/citizen>
- Pankhania, M. 2018. This is for everyone. In: Kane, K. (ed.) *International Design in Government Call*. Sydney. Accessed 21 November 2018. <https://ops-entweb-iwgd.s3.amazonaws.com/GMT20181116-govuk%20innovation%20labs.mp4>
- Papanek, V. 1984. *Design for the real world: Human ecology and social change*. London: Thames & Hudson Ltd.
- Polaine, A., Løvlie, L. & Reason, B. 2013. *Service Design: From Insight to Implementation*. Brooklyn, New York: Rosenfeld Media.
- Reichelt, L. 2014. How to be a better user researcher: shadow 2 hours every 6 weeks. User research in government. Accessed 16 December 2018. <https://userresearch.blog.gov.uk/2014/08/28/how-to-be-a-better-user-researcher-shadow-2-hours-every-6-weeks/>
- Rizzo, F., Deserti, A. & Cobanli, O. 2016. Service Design in Public Sector. In: *ServDes 2016 - Fifth Service Design and Innovation conference*, Copenhagen, Denmark, May 2016, 448-457.
- Saffer, D. 2017. In defense of “users.” Accessed 16 December 2018. <https://medium.com/@odannyboy/in-defense-of-users-2ea5964be3d2>
- Sandström, S., Edvardsson, B., Kristensson, P. & Magnusson, P. 2008. Value in use through service experience. *Managing Service Quality: An International Journal*, 18(2), 112-126.
- Sangiorgi, D. 2009. Building up a framework for Service Design research. In 1-7.
- Sangiorgi, D. 2010. Transformative Services and Transformation Design. *International Journal of Design*, 5(1), 29-40.
- Sangiorgi, D. & Junginger, S. 2009. Service Design and Organizational Change: Bridging the Gap Between Rigour and Relevance. 1-11.
- Sangiorgi, D. & Prendiville, A. 2017. *Designing for Service: Key Issues and new Directions*. London: Bloomsbury.
- Sauerbrey, A. 2016. After Brexit, Can Germany Lead Europe Alone?. *The New York Times*. Accessed 4 October 2018. <https://nytimes.com/2016/07/05/opinion/after-brexit-can-germany-lead-europe-alone.html>
- Schmiedgen, J. 2012. Innovating User Value. 1-140.

- Schmiedgen, J. 2016. What is "Design Thinking?" Accessed 16 December 2018. <https://thisisdesignthinking.net/on-design-thinking/discourse/#zp-ID-928-175089-8RTDNUDS>
- Scott, T. 2014. A year in the making - the Digital by Default Service Standard. Accessed 16 December 2018. <https://gds.blog.gov.uk/2014/04/01/a-year-in-the-making-the-digital-by-default-service-standard/>
- Segelstrom, F. 2010. *Visualisations in Service Design*. PhD. Linköpings universitet.
- Senatskanzlei Hamburg. 2015. *Koalitionsvertrag: Digitalisierung der großen Stadt*, Hamburg. Accessed 21 November 2018. <https://www.hamburg.de/digitalisierung/>
- Senatskanzlei Hamburg. 2018. *ITD Amt für IT und Digitalisierung*. Accessed 22 September 2018. <https://www.hamburg.de/contentblob/10411442/a243a1b91fded3dbc183f63ff65a4d43/data/organigramm-it-und-digitalisierung.pdf>
- Shostack, L. G. 1982. How to Design a Service. *European Journal of Marketing*, 16 (1), 49-63.
- Shostack, L. G. 1984. Designing Services That Deliver. *Harvard Business Review*, 1984 (January).
- Smith, D. W. 2003. Phenomenology. Zalta, E. N. (ed.) *Stanford Encyclopedia of Philosophy Archive*. Accessed 16 December 2018. <https://plato.stanford.edu/archives/sum2018/entries/phenomenology/>
- Spano, A. 2009. Public Value Creation and Management Control Systems. *International Journal of Public Administration*, 32(3-4), 328-348.
- Stickdorn, M. & Schneider, J. 2011. *This is Service Design Thinking*. Amsterdam, Netherlands: BIS Publishers.
- Stickdorn, M., Hormess, M. E., Lawrence, A & Schneider, J. 2017. *This is Service Design Doing*. Sebastopol, CA: O'Reilly Media.
- Stocksmeier, D. & Hunnius, S. 2018. *OZG-Umsetzungskatalog - Digitale Verwaltungsleistungen im Sinne des Onlinezugangsgesetzes*. Berlin:]init[AG im Auftrag des Bundesministeriums des Innern, für Bau und Heimat.
- Strathmann, M. 2017. Sechs Jahre, 60 Millionen Euro - aber keine Software für die Arbeitsagentur. *Süddeutsche Zeitung*. Accessed 21 November 2018. <https://www.sueddeutsche.de/digital/it-panne-sechs-jahre-millionen-euro-aber-keine-software-fuer-die-arbeitsagentur-1.3382464>
- Syal, R. 2013. Abandoned NHS IT system has cost £10bn so far. *The Guardian*. Accessed 21 November 2018. <https://www.theguardian.com/society/2013/sep/18/nhs-records-system-10bn>
- Terkessidis, M. 2015. *Kollaboration*. Berlin: Suhrkamp Verlag.
- The Standish Group. 1995. *The Standish Group Report: Chaos*. Accessed 7 October 2018. <https://www.projectsmart.co.uk/white-papers/chaos-report.pdf>
- Thibodeau, P. 2013. Healthcare.gov website 'didn't have a chance in hell'. *Computerworld*. Accessed 9 September 2018. <https://www.computerworld.com/article/2486426/healthcare-it/healthcare-gov-website--didnt-have-a-chance-in-hell-.html>

- Trischler, J. & Scott, D. R. 2015. Designing Public Services: The usefulness of three service design methods for identifying user experiences. *Public Management Review*, 18 (5), 718-739.
- Try, D. & Radnor, Z. 2007. Developing an understanding of results-based management through public value theory. *International Journal of Public Sector Management*, 20 (7), 655-673.
- Ulwick, A. W. 2005. *What Customers Want: Using Outcome-Driven Innovation to Create Breakthrough Products and Services*. New York: McGraw-Hill Education.
- Van Dyck, H. 2016. How a start-up in the White House is changing business as usual. 15:03. Accessed 21 November 2018. https://www.ted.com/talks/haley_van_dyck_how_a_start_up_in_the_white_house_is_changing_business_as_usual?language=en
- Vargo, S. L., Maglio, P. P. & Akaka, M. A. 2008. On value and value co-creation: A service systems and service logic perspective. *European Management Journal*, 26 (3), 145-152.
- Verba, S. & Nie, N. H. 1987. *Participation in America: Political Democracy and Social Equality*. Chicago: University of Chicago Press.
- Warkentin, M., Gefen, D., Pavlou, P. A. & Rose, G. M. 2002. Encouraging Citizen Adoption of e-Government by Building Trust. *Electronic Markets*, 12 (3), 157-162.
- Wetter-Edman, K. 2011. *Service Design - a conceptualisation of an emerging practice*. Göteborg: ArtMonitor / University of Gothenburg.
- Wetter-Edman, K. 2014. Design for service: A framework for articulating designers' contribution as interpreter of users' experience. 1-257. Göteborg: ArtMonitor / University of Gothenburg.
- Wetter-Edman, K. & Malmberg, L. 2014. Design for Value Co-Creation: Exploring Synergies Between Design for Service and Service Logic. *Service Science*, 6(2), 106-121.
- Wetter-Edman, K. & Malmberg, L. 2018. Insecure and Inefficient. In: Participatory Innovation Conference. 1-3.
- Whitaker, G. P. 1980. Coproduction: Citizen Participation in Service Delivery. *Public Administration Review*, 40 (3), 240-246.
- Williams, N. 2015. 2 billion and counting. Government Digital Service. Accessed 16 December 2018. <https://gds.blog.gov.uk/2015/11/20/2-billion-and-counting/>
- Winograd, T. & Woods, D. 1997. *The Challenge of Human-Centered Design*. In: *Human-Centered Systems: Information, Interactivity, and Intelligence*. Flanagan, J., Huang, T., Jones, P. & Kasif, S. (Eds.), National Science Foundation, Washington DC, July, 1997.
- Woodruff, R.B. 1997. Customer Value: The Next Source for Competitive Advantage. *Journal of the Academy of Marketing Science*, 25(2), 139-153.
- Ylirisku, S.P. & Buur, J. 2007. *Designing with Video: Focusing the user-centred design process*. London: Springer.
- Young, I. 2008. *Mental Models: Aligning Design Strategy with Human Behavior*. Brooklyn, New York: Rosenfeld Media.

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Appendix 1: Interview guide

Introduction

Please introduce yourself.

Where do you work?

What are your background and role?

Questions for public servants

How does/did the digitalisation of services take place? Please describe the process.

How

Questions for external consultants

What projects did you work on?

How did you work? Please describe.

How was the set-up of different roles? Please describe.

How would you describe the attitude and perspective on user-centred design in the Hamburg administration?

How would you describe

How were knowledge and experience transferred to the Hamburg administration?

What were the challenges in the working with the Hamburg administration?

What are challenges in implementing user-centred practices in the Hamburg administration?

How do you review the approach of Hamburg administration in regards to service transformation and digitalisation?

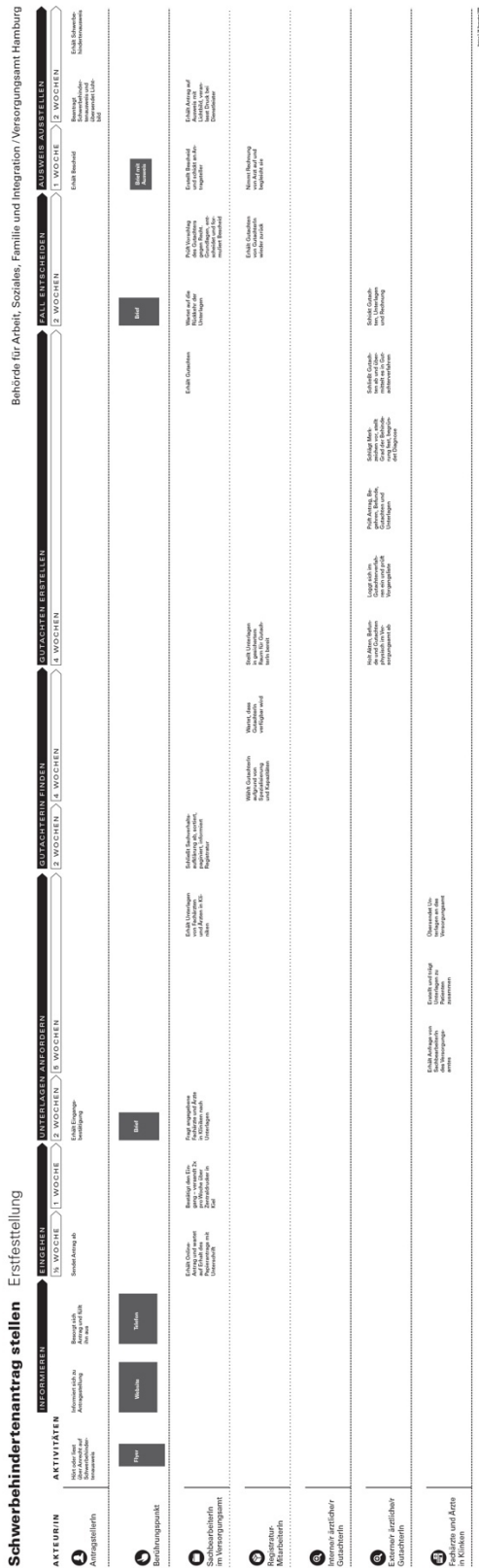
What has changed since you started working with the Hamburg administration?

How do you measure the success of your work?

Appendix 2: List of interview dates

Interviewee's organisation	Interview date
Innovation consultancy	5.7.2018
Innovation consultancy	16.8.2018
Public IT supplier	20.8.2018
Management consultancy	20.8.2018
Public IT supplier	21.8.2018
Hamburg department	17.9.2018
Digital First	17.9.2018
Digital First	18.9.2018
Hamburg department	18.9.2018
Management consultancy	18.9.2018
IT consultancy	28.9.2018

Appendix 3: Service blueprint of as-is recognition of severe disability service



Appendix 4: Personas with goals, needs, journeys and research quotes



GdB
100
befristet

Digitale Diana

47, freiberufliche Event-Managerin erkrankt an Lymphdrüsenkrebs

HINTERGRUND
ist privat
kranken-
versichert



FÄHIGKEITEN
hat alle ihre
Befunde digital
vorliegen



MOTIVATION
braucht Bescheid
zur Vorlage bei
Finanzamt & Reha



ZIEL

- Vorauszahlungen beim Finanzamt stoppen

BEDÜRFNISSE

- Möchte klar verstehen, was sie zu tun hat
- Möchte wissen, was sie einreichen muss
- Möchte wissen, was der Bearbeitungsstand ist

VERSTÄNDLICHKEIT

»Wenn man eine Chemotherapie bekommt, ist man Matsche im Kopf. Das nervt so was von, wenn man die richtige Information nicht findet. Ich hab das leider zu spät ausgefüllt – als ich schon in der Therapie war und gar keinen Kopf dafür hatte.«

»Die PDF kann man interaktiv ausfüllen. Das hab ich gemacht. Da werden jedoch Fragen gestellt, die ich überhaupt nicht beantworten kann.«

»Ich beantrage die Feststellung der angekreuzten Merkzeichen – What the fuck? Ich hab da irgendwas angekreuzt, weil irgendwie trifft das zu. Und wenn nicht, werden die das schon ablehnen. Ich hatte keine Ahnung, was diese Chemo mit mir macht. Deshalb hab ich das angekreuzt. Mir war nicht klar, wofür was ist. Anwendungsbeispiele würden da helfen.«



PROZESS

»Was soll das doofe Hin- und Hergehe? Das geht mir auf die Nerven. Man druckt etwas aus, die scannen das ein und schmeißen es weg. Was ist denn das für eine Ressourcenverschwendung?«

SPRACHE

»Rechtliche Grundlagen, Datenschutz, blabla – davon hab ich nichts gelesen. Ich bin nur drübergeflogen, ob ich irgendein Schlagwort finde was mir Bauchschmerzen bereitet.«

EIGENVERANTWORTUNG

»Bei mir ging es schnell, weil mir wurde am Telefon gesagt wurde, ich solle die Unterlagen mitschicken. Ich hab mir zusammengereimt was interessant sein könnte. Ich bekomme als Privatpatientin eh alles ausgehändigt. Da habe ich mir eine Dropbox gemacht, die ich auch vom Telefon immer ansteuern kann.«

TRANSPARENZ

»Warum kann ich den Status der Bearbeitung nicht einsehen? Das wie die Zeit als es keine Handys gab. Man wartet drauf und weiß nicht was passiert. Jedes DHL-Paket kann man tracken, aber so etwas Wichtiges nicht?«



GdB
50
unbefristet

Recherchierender Ralf

33, Lehrer im dritten Dienstjahr erkrankt an Diabetes Typ 1

HINTERGRUND
erfuhr von
Neuauslegung
des Gesetzes



FÄHIGKEITEN
ist digitalaffin
und informiert
sich im Netz



MOTIVATION
möchte seine
Beamtenstelle
sichern



ZIEL

- Beamtenstatus erlangen trotz seines Diabetes

BEDÜRFNISSE

- Möchte wissen, ob er ein Anrecht hat
- Möchte wissen, wie Andere erfolgreich waren
- Möchte verstehen, welche Unterlagen er braucht

BERECHTIGUNG

»Ich erfuhr, dass sich die Bedingungen für Schwerbehindertenausweise für Menschen mit Diabetes Typ 1 in den letzten Jahren geändert haben. Sobald man Blutzucker mehrfach am Tag misst, reguliert sowie Einschnitte in der Lebensführung hat, ist man berechtigt für einen mit Grad 50.«

»Als Schwerbehinderter dürfte ich nicht mehr bei der amtsärztlichen Untersuchung zum Beamtentum benachteiligt werden.«

RECHERCHE

»Was man in Foren liest von Leuten, die Anträge gestellt haben, ist möglichst viel Papieraufwand herzustellen. Die Erfahrung von Diabetikern ist es, möglichst viele Blutzuckerwerte zu dokumentieren, Lebens Einschränkungen zu formulieren, mit Akten und Fakten erschlagen – auch für den Fall des Widerspruchs. Das sollte nicht so sein, aber sind die Erfahrungen von Menschen, die zunächst Ablehnungen erhielten.«



VERSTÄNDLICHKEIT

»Ich finde es sehr bürokratisch und sehr vom Gesetzestext her gedacht. Und nicht von den Bürgern her gedacht. Ich finde man muss den Antrag stellen können ohne den Gesetzestext lesen zu können. Man muss nicht Jurist sein, um einen Schwerbehindertenausweis...im Gegenteil!«

»BVG, OEG oder Ähnliches. Den ersten Teil verstehe ich überhaupt nicht. Und halte mich für jemanden, der sich gut auskennt.«

SPRACHE

»Schwerbehindertenantrag. Voll das komische Wort. Ich beantrage doch keinen Schwerbehinderten, sondern 'nen Ausweis.«

»Merkzeichen. Das ist so stark von Behördensicht aufgebaut. Das ist nicht von Bürgerseite her gedacht.«

DIGITALISIERUNG

»Da kriege ich ja schon wieder die Krätze. Bei Diabetes legen Sie bitte Fotokopien ihrer Blutzuckerwerte bei. WARUM? Das kann ich alles viel besser digital machen.«



GdB
50
unbefristet

Eingeschränkte Elke

63, Einkäuferin wenige Jahre vor Ihrem Ruhestand erkrankt an entzündlichem Wirbelsäulerrheuma

HINTERGRUND
erfuhr von Arzt
über mögliche
Frührente



FÄHIGKEITEN
hat neues Lap-
top, nutzt HVV
& nebenan.de



MOTIVATION
fühlt sich Arbeit
körperlich nicht
mehr gewachsen



ZIEL

- 🚩 Altersrente zwei Jahre vorzeitig antreten

BEDÜRFNISSE

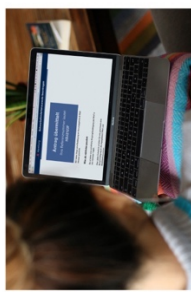
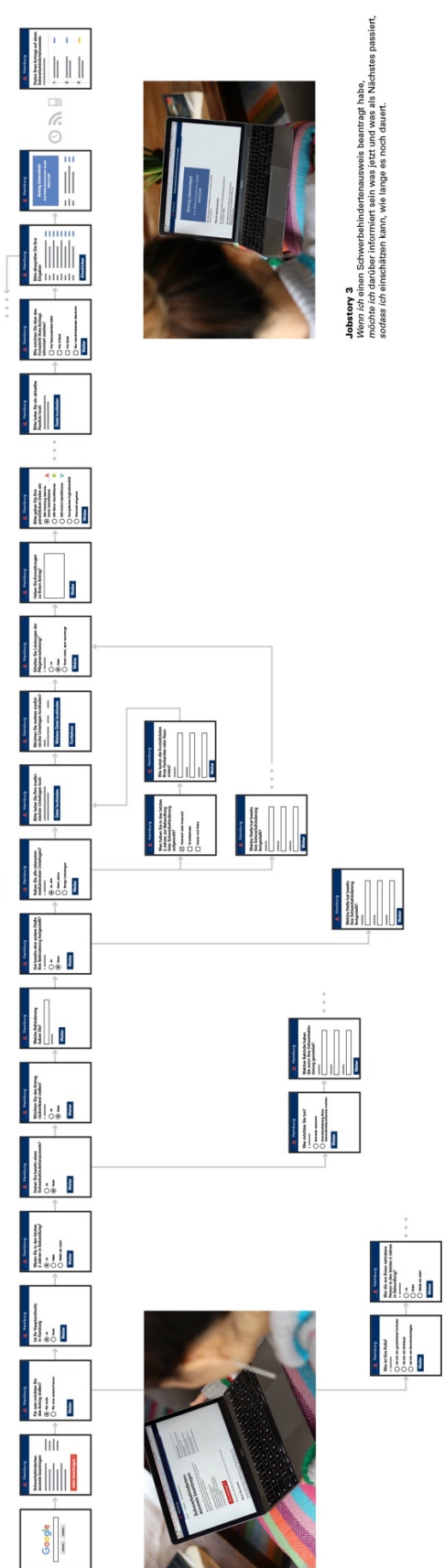
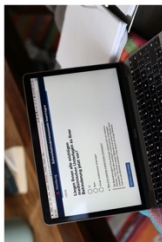
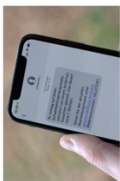
- ⚡ Möchte wissen, welche Unterlagen sie braucht
- ⚡ Möchte wissen, wie lange es dauert
- ⚡ Möchte nicht Andere um Hilfe bitten müssen

Appendix 5: To-be flow and prototype of recognition of severe disability service

Schwerbehindertenausweis beantragen

Jobstory 1
 Wenn ich beabsichtige, einen Schwerbehindertenausweis zu beantragen, möchte ich alle wichtigen Informationen und Schritte, die dafür nötig sind, leicht verstehen und alle Unterlagen haben, um loszulegen.

Jobstory 2
 Wenn ich dabei bin, einen Schwerbehindertenausweis zu beantragen, möchte ich alle wichtigen Informationen und Dokumente dafür bereitgestellt sehen, sodass ich den Antrag ohne Fehler und fremde Hilfe stellen kann.



Jobstory 3
 Wenn ich einen Schwerbehindertenausweis beantrage, möchte ich darüber informiert sein wie jetzt und was als Nächstes passiert, sodass ich einschätzen kann, wie lange es noch dauert.

Version 1, 2. November 2018

Appendix 6: Poster of Hamburg service standard



The poster features a red background with white text and icons. At the top left is the Hamburg logo, a stylized white castle on a wave. To its right is the title 'Hamburg Servicestandard' in a large, bold, white sans-serif font. Below the title are 14 numbered items, each consisting of a large white number followed by a short description in white text. The items are arranged in two columns. At the bottom center, there is a white right-pointing arrow followed by the URL 'service.hamburg.de/standard'.

Hamburg Servicestandard

- 1 Kontexte und Nutzerbedürfnisse verstehen
- 2 Den Service einfach benutzbar machen
- 3 Den Service barrierefrei und für alle gleich nutzbar machen
- 4 Den Service über alle Kanäle hinweg gestalten
- 5 Den Dienst mit einem multidisziplinären Team entwickeln
- 6 Auf agile und nutzerzentrierte Weise arbeiten
- 7 Beständig den Service iterieren und verbessern
- 8 Nutzerdaten schützen und Sicherheitsrisiken verstehen
- 9 Leistungskennzahlen festlegen und Leistungsdaten erfassen
- 10 Die richtigen Tools und Technologien verwenden
- 11 Offene Standards, gemeinsame Komponenten und Schnittstellen verwenden
- 12 Einen sicheren und zuverlässigen Dienst betreiben
- 13 Neuen Quellcode offen zugänglich machen
- 14 Bürokratische Komplexität hinterfragen und verringern

► service.hamburg.de/standard