



# Identification and Identity Management: Co-Creating a Concept for Self-Service

Jenni Leppänen

2022 Laurea



Laurea University of Applied Sciences

**Identification and Identity Management:  
Co-Creating a Concept for Self-Service**

Jenni Leppänen  
Degree Programme in  
Service Innovation and Design  
Master's Thesis  
December, 2022

Jenni Leppänen

Identification and Identity Management: Co-Creating a Concept for Self-Service

Year	2022	Number of pages	120
------	------	-----------------	-----

---

Finland's working-age population is decreasing, and population growth is based exclusively on immigration (Ministry of Economic Affairs and Employment of Finland). In 2021 the Finnish Government adopted a roadmap that aims to have "the best immigration experience in the world" through clarifying and digitalising residence permit processes (The Finnish Government).

The thesis was commissioned by the Finnish Immigration Service "Migri". Migri receives an increasing number of applications for residence permits, causing a bottleneck to the identification part of the application process, where Migri's customers must prove their identity in person. This has resulted in long waiting times for appointments at some of the Migri service points in Finland, causing customer dissatisfaction and a delay in the process.

To urgently tackle the increasing volumes of pending applications, Migri commissioned a study on whether automated self-service machines could serve as an alternative for customers to clear the identification step at the service points. The purpose of this thesis was to create a concept for self-service machines and study customers' initial reactions to the idea.

The theoretical framework consists of value co-creation according to the customer-dominant logic, the elements and development process of a service concept, the service automation framework, and the mindset and methods of service design.

The development process followed the Double Diamond Process and its four phases. First, the needs of both customers and Migri's official process were identified. Next, the collected materials were analysed and converged into versatile preliminary findings, serving as the basis for the primary outcome: a brochure describing the co-created self-service concept. Finally, the brochure was presented to customers and staff, who provided feedback on the self-service concept.

Altogether 51 individuals participated in the development of the self-service concept, mainly through interviews and workshops with both customers and staff. Both validated that the concept will address the right problem, and is desirable and worthy of further examination on feasibility and viability. Next, based on the co-created concept, Migri will plan an experiment phase with user testing to create more learning in practice before the decision on procuring self-service machines is made.

The concept of automated identity management in the form of self-service machines has shown great potential in scalability and use beyond the initial use cases. If the developed concept is proven functional, the limitations of expansion within governmental use are minute and the usability world-wide.

**Keywords:** service design, service concept creation, self-service, service automation

Jenni Leppänen

Tunnistautuminen ja henkilöllisyyden hallinta - itsepalvelukonseptin yhteiskehittäminen

Year	2022	Number of pages	120
------	------	-----------------	-----

---

Suomen työikäisten määrä vähenee ja väestönlisäys tapahtuu yksinomaan maahanmuuton kautta (Työ- ja elinkeinoministeriö). Hallituksen budjettiriihessä on syksyllä 2021 vahvistettu tiekartta, jonka yhtenä tavoitteena on tarjota maailman paras maahanmuutkokemus. Se vaatii oleskelulupaprosessien digitalisoimista ja selkiyttämistä (Valtioneuvosto).

Opinnäytetyö tehtiin toimeksiantona Maahanmuuttovirastolle (lyhenne Migri). Migri vastaanottaa kasvavissa määrin oleskelulupahakemuksia, mikä aiheuttaa pullonkaulan hakuprosessin tunnistautumisvaiheeseen, jossa Migrin asiakkaan tulee todistaa henkilöllisyytensä palvelupisteessä. Ajanvarausasioinnin ruuhkautuminen joissakin Migrin palvelupisteissä on aiheuttanut asiakastytymättömyyttä ja viivästystä käsittelyprosessin aloittamisessa.

Vastataksaan kasvavan hakemusjonon haasteeseen, Migri tilasi esitutkimuksen itsepalveluautomaattien käyttämisestä tunnistautumisessa, täydentävänä vaihtoehtona perinteiselle tiskiasioinnille. Opinnäytetyön tarkoitus on luoda konsepti itsepalveluautomaateille ja tutkia asiakkaiden ensireaktioita ideaa kohtaan.

Teoreettisen viitekehyksen muodostavat arvot yhteiskehittäminen (kuten se on kuvattu asiakaskeskeisissä logiikoissa), palvelukonseptin elementit ja kehitysprosessin vaiheet, palveluautomaatiomalli, sekä palvelumuotoilun ajattelutapa ja menetelmät.

Kehitysprosessi noudatti tuplatimanttimallin periaatteita ja sen neljää vaihetta. Alkuun tunnistettiin sekä asiakkaiden että Migrin tarpeet hakuprosessissa, minkä jälkeen kerätty aineisto analysoitiin ja vedettiin yhteen. Alustavat löydökset toimivat lähtökohtana päätuotoksen, eli yhteiskehitetyn konseptikuvauksen, luomiselle. Lopuksi konseptikuvaus esiteltiin asiakkaille ja henkilöstölle, jotka antoivat palautetta.

Yhteensä 51 henkilöä osallistui itsepalveluautomaatin konseptin kehitystyöhön, lähinnä haastatteluiden ja työpajojen muodossa. Sekä haastatellut asiakkaat että henkilöstö validoivat, että konsepti on toivottu ja ottaa kantaa oikeaan ongelmaan. Idea nähtiin jatkokehityskelpoisena ja sen toteutuskelpoisuuden tutkimista kannatettiin. Seuraavaksi Migri järjestää kokeilun ja käyttäjätestauksia yhteiskehitetyn konseptin pohjalta, jotta sitä voidaan kehittää ja testata tarkemmin ennen mahdollista automaattien hankintapäätöstä.

Automatisoidun henkilöllisyydenhallinnan ja itsepalveluautomaatin konsepti on osoittanut suurta skaalauspotentiaalia ja odotettua laajempia käyttötapauksia. Jos kehitetystä konseptista saadaan toteutuskelpoinen malli, sen mahdollisuudet viranomaiskäytössä ovat laajat ja kansainvälisesti käyttökelpoiset.

Avainsanat: palvelumuotoilu, palvelukonseptin kehittäminen, itsepalvelu, palveluautomaatio

## Contents

1	Introduction .....	7
1.1	Migri and its customers .....	7
1.2	Development challenges and special characteristics of the context .....	9
1.3	Problem to be solved.....	10
1.4	Purpose and aim of the thesis .....	11
1.5	Research questions .....	13
1.6	Terminology and key concepts .....	15
1.7	Structure of the thesis .....	17
2	Customer-centric approach to developing a concept for self-service machines.....	17
2.1	Business logics and value creation .....	18
2.2	Service concept .....	20
2.2.1	Elements of a service concept .....	22
2.2.2	Process of a service concept development .....	23
2.3	Service Automation and Self-Service Portals .....	28
2.3.1	Service Automation Framework .....	28
2.3.2	Examples of Self-Service Portals .....	29
2.3.3	Succeeding with Self-Service Portals .....	31
2.3.4	The Service Automation Blueprint .....	32
3	Development setting.....	34
3.1	Design process .....	34
3.2	Methods for data collection.....	36
3.2.1	Interviewing.....	36
3.2.2	Facilitated workshops .....	38
3.3	Methods for data analysis and synthesis .....	40
3.4	Service design tools .....	42
3.4.1	Customer Journey Map.....	42
3.4.2	User stories.....	43
3.4.3	Value Proposition Canvas .....	43
4	Development process .....	45
4.1	Discover: Interviews of customers and Migri staff .....	48
4.1.1	Interviews with Migri staff.....	48
4.1.2	Interviews of customers.....	52
4.2	Define: Workshops with the Migri staff .....	57
4.2.1	Possible features of the self-service machines .....	58
4.2.2	Target group of the experiment phase, and evaluation criteria .....	59
4.2.3	Customer's journey .....	64

4.2.4	User stories.....	68
4.2.5	Delimitations in the Discover and Design phases.....	69
4.3	Design: Prototype of the self-service concept.....	70
4.3.1	Defining the content .....	72
4.3.2	Delimitations to the prototyping phase .....	73
4.4	Deliver: Validation round.....	74
4.4.1	Validation with Migri staff.....	76
4.4.2	Validation with customers.....	80
4.5	Summary of the gathered customer insights.....	89
5	Results.....	91
6	Discussion .....	94
6.1	Reflection on the theoretical framework.....	96
6.2	Reflection on the chosen methodology and methods .....	96
6.3	Reflection on the development process .....	99
6.4	Reflection on results .....	101
6.5	Next steps in the development process.....	105
	References .....	107
	Figures .....	110
	Tables.....	111
	Appendices .....	112

## 1 Introduction

“According to a number of reports, the availability of talent is one of the biggest obstacles to growth and internationalisation in companies and other organisations. Finland’s working age population is decreasing, and population growth is based exclusively on immigration. Without sufficient immigration, the supply of labour and, in the longer term, employment will fall significantly, which will affect Finland’s economic wellbeing, dependency ratio, employment rate and sustainability gap.” (Ministry of Economic Affairs and Employment of Finland.)

Labour and the best talent is sought after, and Finland is competing with the rest of the world for it. In order to strengthen Finland’s vitality and public finances, in 2021 the Finnish Government has adopted a roadmap compiling “measures to make Finland an attractive country to work and study, where the **immigration process is easy and seamless**”. (The Finnish Government.)

By 2030, the Government’s ambitious objective is to at least **double work-based immigration** from its current level, setting an action plan to promote the immigration of skilled labour: specialists, entrepreneurs, researchers and students. In practice, the roadmap sets a challenge for the Finnish Immigration process: the Government’s aim is to have “**the best immigration experience in the world**”, through “**clarifying and digitalising residence permit processes** and other public services”. Achieving this goal requires both seamless digital service paths at the stage of entering Finland and supporting immigrants with settling in and becoming a part of the society. (The Finnish Government.)

### 1.1 Migri and its customers

The thesis was commissioned by the Finnish Immigration Service, later “Migri” in short. Migri is a governmental agency, granting qualified applicants the right to enter and reside in Finland. A vast majority of applicants come from outside Europe. Migri implements the Finnish immigration policy and handles the decision-making in matters related to immigration, asylum, refugee status, and citizenship. Migri works in collaboration with several ministries and public authorities, and is funded by the Ministry of the Interior of Finland. (Migri.fi)

There are about 1300 staff working at Migri, out of which the majority processes applications from customers. Annually, Migri makes altogether ~180,000 decisions to applications. Approximately 10% of Migri’s staff work in service points, which customers can visit in person. Migri has ten service points across Finland, and staff serves customers with various administrative tasks, such as proving one’s identity, inquiring about the process and filling

paper applications for permits. The working language of the agency is Finnish, but the customers receive service in English, Finnish and Swedish. (Migri.fi)

The customers of Migri are foreign nationals who come to reside in Finland mainly from outside Europe. The customers can also be called applicants, as their main goal is to apply for a permit to enter and stay in Finland (and thus the European Union) legally. Strictly speaking, Migri's customer is just the applicant, but in practice, the permit process often involves many others too: for instance, family members and a possible employer in Finland. The grounds for entering Finland vary, as well as the expected duration of stay: the customers can apply for a residence permit to come to Finland to e.g. study for a semester up to a full degree, work for a Finnish organisation, or reunite members of a family for good. Migri also handles the applications for citizenship and welcomes refugees. All these different groups of customers have different application processes and laws that guide the decision-making. (Migri.fi)

Figure 1 summarizes the total numbers of matters instituted at Migri at the six main categories of applications: residence permits, international protection, right of residence on grounds other than residence permit, citizenship, travel documents, and removal from the country. In 12 months, in between November 2021 and October 2022, a total of 197,648 matters were instituted. (Migri.fi)

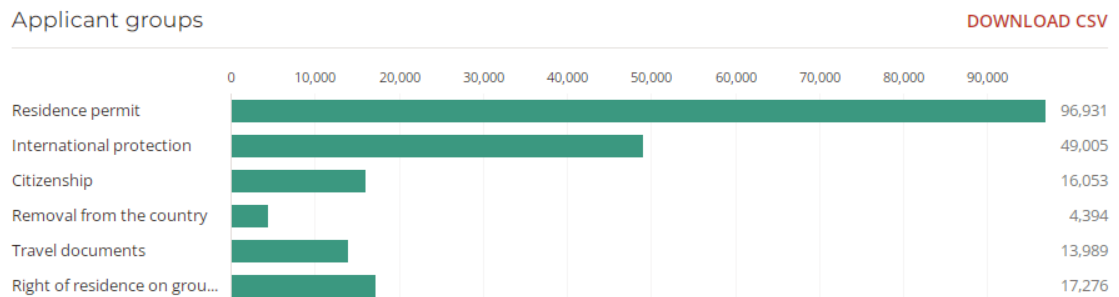


Figure 1: Matters instituted at the Finnish Immigration Service (11/2021-10/2022)

(Migri.fi)

The biggest group, the applicants of residence permits, consists mostly of first-time applicants. About a third of Migri's residence permit applicants apply for the so-called extended permits, meaning that the same customer wants to reapply for the same permit before the expiry of their current permit and extend the duration of their legal stay, based on the same grounds (e.g. family ties). If a customer is granted a permanent residence permit, it is valid until further notice and no extension applications are needed - unless the person chooses to apply for the Finnish citizenship. However, the permit cards expire every five years, so they will also have to renew their proof of lawful stay, and provide new biometrics

to be saved on the permit card. Therefore, a lot of Migri's customers return and apply again for some type of permit or card renewal. (Migri.fi).

## 1.2 Development challenges and special characteristics of the context

Migri is constantly developing its services with a focus on improving the customer experience. In its strategy for 2017-2021, two of Migri's main goals were 1) Focusing on the customer, and having 2) More effective operations - "We focus on the customer and make it easy for our customers to handle matters" (Migri.fi). Migri receives a lot of public attention and feedback both from its customers (foreign nationals) as well as Finnish citizens, and the topic of immigration has become highly opinionated and politicised.

Consequently, the funding varies from year to year, depending on the Government's budget sessions. The uncertainty and discontinuity make it hard to hire enough staff for permanent positions. Regular changes in staff can cause loss in productivity, as recruiting and training new staff ties resources. However, change is somehow rooted in the organisation; even the position of the Director General is always a fixed five-year contract by law. Furthermore, the legislation and practices regarding immigration are renewed quite often, so the staff at Migri's service points must continuously adapt, learn, and unlearn the latest information. For example, the scope of Migri's duties has been extended many times by the Ministry of Interior, and the latest bigger addition occurred in 2017 through the incorporation of some of the immigration matters that used to belong to the Police of Finland and the Finnish Border Guard. (Migri.fi)

From the perspective of managing customer experience, Migri's clientele is especially challenging, because it is diverse in so many aspects. In addition to the varying personal needs, demographics, and background (such as citizenship, age, and culture), the language skills, IT literacy, level of education etc. vary dramatically from one individual to another. Within 30 minutes, Migri customer service staff might help someone who is illiterate and arrives with a translator to the appointment, and next someone with a doctoral degree, who would have rather completed everything remotely. Furthermore, when providing guidance Migri staff needs to bear in mind that each individual's situation is subject to change: even in the middle of an application process of a residence permit, children are born, divorces occur etc., and thus the customer's needs for information change. Some changes might affect the application process and grounds for permit approval, some changes might not.

From the customer's perspective, the customership with Migri is multi-faceted. As a governmental agency, Migri has no competitors for customers to choose from: everyone who needs to apply for a permit to reside in Finland has to complete the application process at Migri in order to receive legal status. Thus, Migri's efforts in service development are less about increasing customer loyalty or long-term engagement, and more about the customer

experience resulting in an enhanced reputation and trust the customers express toward the agency, Finnish society, and authorities in general.

The residence permit as the outcome of the customership is a very personal matter, potentially life-changing, and therefore some customers might be emotionally invested. According to secondary customer research, this can create additional stress: if you make a major mistake or shortcoming in the application that results in a denial of entry, the chance to live in Finland is delayed. Having to reapply can cause a delay in arrival of almost a year (which could result in the customer losing a study place or a job offer), and causes other inconveniences, such as having to refill the required documents and pay another application fee.

In addition, there are cultural and personal differences regarding the displayed attitudes and trust concerning public authorities. Some customers may choose to double-check everything (e.g. with calling the service line, even though they have already read the same instructions online), and some might hire a company to pre-check or even complete the application for them, to ensure that there were no misunderstandings of the requirements e.g. due to a language barrier. It is therefore important to co-create services with customers and continuously gather more customer insights.

### 1.3 Problem to be solved

As described earlier, the main job of Migri's customer is to apply for e.g. a residence permit and thus gain the legal right to live and work in Finland. The application process contains six phases and altogether 25 steps, as described later in Figure 20. As digitalization spreads through society, more and more of Migri's services are available online. Consequently, about 90% of applications arrive online through Migri's Enter Finland web service.

Despite the high level of digitalization in the application process, the current Finnish legislation requires applicants to come prove one's identity in person (at the current home country), before the processing of the application can start. In practice, within three months of sending the application, customers travel to either a Migri service point in Finland or an embassy/Finnish mission abroad to present a valid passport, provide a signature, and scan fingerprints.

This thesis focuses particularly on this phase of identification, examining only those customers who complete this step at one of the Migri service points in Finland. Even though the actual visit takes about 10-30 minutes, it is identified as one of the moments of truth: it is one of the few moments when the customer is in active, direct contact with Migri, evaluating the experience. There are often long instructions on how to prepare for the visit thoroughly in advance, and the visit can be considered important, very personal, and loaded

with emotions and expectations. The visit might affect the image of Migri for a longer time - in addition, the experiences are often shared with one's family members, friends, and colleagues in Finland and abroad.

The challenge with the identification phase is that there is more demand than supply for the customer service in some of Migri's service points in Finland, and customers often must wait for months to get an appointment. Due to the law, processing of the application cannot start before a personal identification visit, but it causes a major bottleneck, automatically adding up to the total time the customer must wait for the decision. It causes major dissatisfaction because the customers need to put their life on hold, not knowing if and when they can enter Finland or continue living here legally. In addition, there are only 10 Migri service points across Finland, meaning that some customers need to travel further away for their appointment, and possibly causing the need to book a hotel room and take a day off work to be able to book an appointment by the deadline. The long queues for the service points are a regular topic mentioned in the feedback collected from customers. In the customer satisfaction survey in March 2022, customers were requesting better availabilities to the identification visits (both more appointments available as well as shorter walk-in queues) as well as more flexible time slots.

In addition to being inconvenient for the customer, the delay in the beginning of the process causes problems directly for Migri as well. As an example, the information originally provided by the customer on the application can be outdated by the time it reaches the handling unit of Migri and cause extra work for Migri staff, as they contact the customer confirming if the information is still up-to-date and complete. Furthermore, the identification phase is not standardised, as different individuals are viewing the passports and detecting possible frauds, instead of technology.

#### 1.4 Purpose and aim of the thesis

The current model with face-to-face customer service is difficult to scale up. In addition to the number of applications increasing, a backlog from the previous months must be cleared. The Finnish Government wants to at least double work-based immigration from its current level by 2030, setting higher expectations to the speed of application processes for residence permits (The Finnish Government).

In order to urgently tackle the increasing volumes of pending applications, Migri has started the search for technologies that might bring the opportunity to automate some parts of the application process. In 2021, Migri started looking for new ways of handling the identification phase, which is causing the bottleneck for the process.

Consequently, one possible solution identified was the idea of a self-service machine that could automate some of the tasks of the identification visit, increase the performance of the service points and thus shorten the queues to customer service. Migri started an R&D project to investigate this idea further, and applied for funding from the European Union for the preliminary study and small-scale experiment phase of testing whether a self-service concept could work for Migri and its customers. As the idea received support from the top management and the ministry, the researcher was invited to the project as service designer to contribute to the planning of the concept in May 2022.

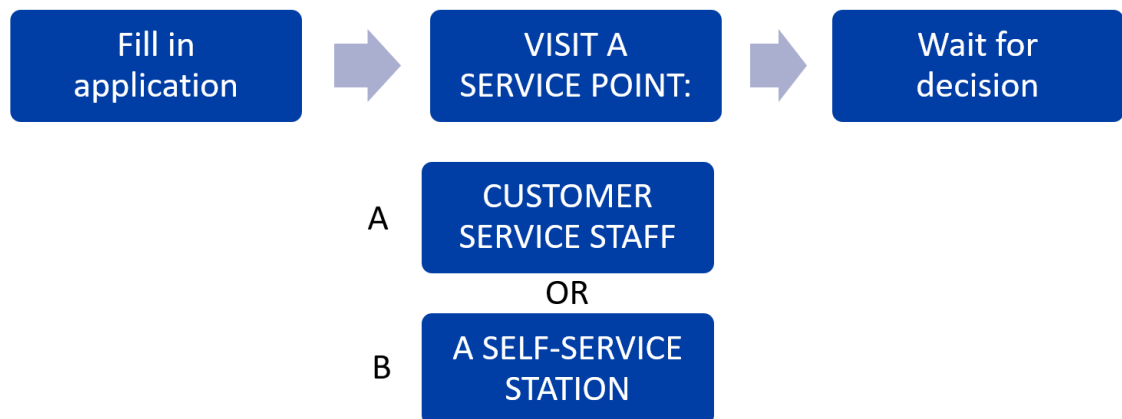


Figure 2: The three main actions for the customers in the application process.

Accordingly, the purpose of this thesis is to create a concept for self-service machines, which would serve as an alternative way for customers to clear the second stage of the application process, the personal identification visit to a Migri service point (see Figure 2). The thesis aims at identifying tasks of the identification phase that customers could complete on their own, and the groups of customers who would be the most suitable users of the possible self-service machine - as the self-service model would be introduced gradually, all of Migri's customers would not be part of the target group in the beginning.

The initial expected benefits of the self-service machines were drafted from Migri's point of view: shortening queues and standardising the identification process and quality of checks. The task of the service designer was to bring the customer's perspective into the planning, and bring forth the customers' opinions and needs from the beginning of the project, before any decisions, procurements or test periods would happen. The roadmap of the project of the self-service machines is illustrated in Figure 3: starting from the idea of self-service machines, and ending with the implementation of the procured machines. The scope of the thesis is marked in blue.

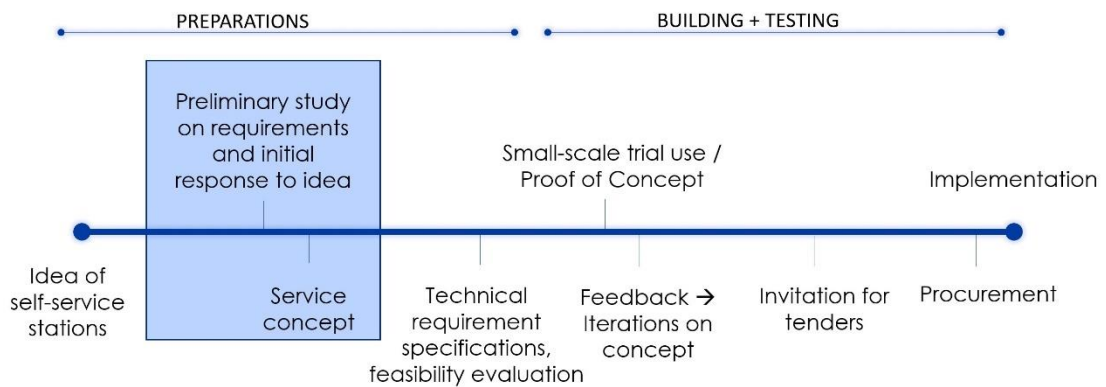


Figure 3: The roadmap of the project of self-service machines, with the scope of the thesis marked in blue.

### 1.5 Research questions

The research problem is the beginning, body, and end of all research projects. It acts as a guide to the researcher in their decision-making and "determines the type of research, the strategy and sample" (Tuomi & Sarajärvi 2002, 70). In practice, a researcher uses the research problem to crop the subject area and focus on the main points that are of interest in this particular study, making decisions that are true to the original goal.

In a qualitative study, Creswell instructs to state research questions instead of objectives or hypotheses. The researcher should ask one or two central research questions and complement them with about six sub-questions that narrow the focus to some extent. "The central question is a broad question that asks for an exploration of the central phenomenon or concept in a study." (Creswell 2014, 139-140.)

As mentioned earlier, the purpose of this thesis is to create a concept for self-service machines that customers can use independently at Migri service points. As part of the preliminary study, we want to investigate the possibility of creating an alternative way for customers to clear the second stage of the application process, the identification visit to a Migri service point. The purpose is reached by answering to the following research questions:

1. What kind of self-service concept could accommodate the needs of Migri customers and the official process at the identification phase?
  - a. Features: what are the needs, elements, and requirements for the machines? What would bring value?
  - b. Potential users: which groups of customers would be the most suitable to use the self-service machines?
2. Reception: what is the initial response to the idea of employing self-service machines?

In practice, at this stage of preparations we are focusing on questions “What”, “Why”, and “Who”, more than e.g. “How” or “When”. In further detail, the research questions can be elaborated with sub-questions:

1. Features: what are the requirements for the machines?
  - a. Requirements: what are the needs of different people
    - i. of Migri’s customers, the potential users?
    - ii. of Migri’s staff, who normally would meet the customers face-to-face?
  - b. Alignment: do the needs of all parties match or conflict?
  - c. Coverage: are all required features suitable for self-service?
  - d. Potential: are there any new opportunities that we have not discovered?
  - e. How does the new process differ from the current model? What changes does it bring, and where/to whom?
  - f. How can we communicate the concept before implementation?
2. Potential users: which groups of customers would be the most suitable to use the self-service machines
  - a. first, in a small-scale experiment?
  - b. in the possible launch of the self-service machines?
3. Reception: what is the initial response to the idea of employing self-service machines
  - a. Response: what are the reactions and expectations of different people
    - i. of Migri’s customers, the potential users?
    - ii. of Migri’s staff, who normally would meet the customers face-to-face?
  - b. Feasibility:
    - i. is it worth investigating the self-service machines further: are the value and benefits clear? What are the criteria of success?
    - ii. are there any major worries, risks or showstoppers that can be identified at this point?

All in all, we are collecting the requirements from both the customers (who would later start using the machines as self-service) and the staff that now handles every part of the process in the traditional customer service setting face-to-face. As a result, we are aiming for a thorough-enough concept that could later be tested in an experiment phase, creating an opportunity to learn in practice. In addition, the end result will be used as a starting point when complementing the experiment phase (or so-called POC, Proof of Concept) and preparing to publish an invitation of tenders for the hardware and software required.

#### Delimitations of the thesis

There are limitations to the research questions. For instance, we will not study the ways on improving the current model of serving customers at the identification phase in the

traditional customer service setting nor ideate completely new service concepts to tackle the same problem - the focus is on gaining insights regarding the potential self-service setting.

In addition, we are focusing on the ideal world scenario for the self-service machines, excluding all exceptions to the standard process, variables and less frequent cases etc. We are creating the very first concept for the new self-service machines, so we want to first identify the core of the concept, with the features matching the MVP (minimum viable product). If and when we receive ideas more relevant to the later phases of the project, we will store them for later, but not analyse or dig deeper into examining them.

The scope is also restricted to the preliminary planning stage of the self-service machine: the process ends with the delivery of the first draft of the concept and the its feedback collection. Thus, building prototypes of the self-service machines, first user tests, and the procurement phases are out of the scope of this thesis. As a result, the co-creation of the new concept will only happen on the theoretical level at this point, focusing on researching the users' perspective.

Furthermore, this thesis will not include any technical definitions or requirement specifications on a detailed level, such as the user interface or hardware of the self-service machines. In addition, we will not include risk assessments or any monetary aspects, e.g. budgeting or calculations of potential costs, savings, break-even points etc. There were other colleagues in charge of these aspects in the small project group.

## 1.6 Terminology and key concepts

The terms, abbreviations and key concepts that are used in this thesis are defined below. The aim is to familiarise the reader in the repeating terms as well as create a common understanding of how they are used in the context of this thesis.

### Biometrics

Different kinds of body measurements and calculations linked to unique biological or behavioral characteristics, such as fingerprints, signature, and face recognition. When measured and analysed (with automation or manually), they can be used as a means of verifying the personal identity of an individual.

### Enter Finland (EF)

“EF” is Migri’s online service EnterFinland.fi, where customers can send an online application for e.g. a residence permit. One can create a user account, fill in the application form and add the required documents there. It is also possible to pay the application fee, follow the status of one’s application, and reply to possible requests for additional information on EF.

## Experiment

Temporary tests or trials of e.g. a tentative process or service. Tested procedures are carried out under controlled conditions, portraying the elements of the planned service. The goal is to gain knowledge about specific topics, effects, responses, and the potential of the tentative idea.

## (Migri) Service Point

The ten offices of Migri across Finland that serve customers on-site. Customers come there to handle official matters in person with the Migri staff regarding their application for e.g. residence permits, and provide their biometrics. In Finnish: "*palvelupiste*".

## Prove one's identity, or identification

Identification is required from all customers after sending an application to Migri. Applicants can prove their identity in person by visiting a Migri service point in Finland (or a Finnish embassy or consulate abroad, if the applicant is living abroad at the moment) and presenting their valid passport as well as the required biometrics. In Finnish: "*tunnistautuminen*".

## Residence permit

An official document granting e.g. an immigrant the legal right to live in a foreign country, for other than tourism purposes. The permits are issued by a public authority, e.g. the Finnish Immigration Service. There are many different types of residence permits one can apply for, and the requirements on who can apply for which type of permit in which case is based on the legislation of the country. In Finnish: "*oleskelulupa*".

## Self-service

The practice of customers serving themselves to complete the required actions, e.g. payment with a credit or debit card, without the immediate help of customer service staff.

## Self-service machine

A machine, kiosk or station of some sort that provides a mechanism for the customer to process their own service activation, modification, and/or validation.

## Service automation

... "the practice of an industry that enables their autonomous users to procure, manage and adjust services through self-service technology and concepts in order to systematically exceed user expectations" (Middelburg 2017, 21).

## Service Concept

Service concept is the big picture of the service, describing the core idea of (often a new) service entity. It summarises and visualises the main points (rather than details and individual ideas), including the target customers, journey with service encounters and touchpoints, and the match in between the customer job and need with the service offering.

### 1.7 Structure of the thesis

This thesis is divided into six chapters. Chapter 1 introduces the topic and its background, including the commissioning case organisation, its context and terminology. The first chapter also defines the development challenge, purpose and aim of the thesis, and the research questions for the development work.

Next, the theoretical framework and knowledge base are established. Chapter 2 discusses the three central concepts of the thesis: the business logics and value creation, the elements and development process of a service concept, as well as the concepts of Service Automation and Self-Service Portals.

Chapter 3 introduces the development setting: the Double Diamond Process for design and innovation. Furthermore, the used methods for data collection, and data analysis and synthesis are discussed.

Chapter 4 describes the stages of the design process: how the service design approach was adapted and implemented, and which results each phase of the process created. Chapter 5 summarises the development project and presents the primary result: the concept for self-service machines. Finally, Chapter 6 concludes the thesis by answering the research questions, evaluating the thesis process and reflecting on the learnings, and discussing the future prospects of the development project.

## 2 Customer-centric approach to developing a concept for self-service machines

This chapter discusses the theoretical framework and the central concepts of the thesis. First, the business logics and value creation are discussed, explaining the customer-centric approach to service development. Next, we explore the definition and elements of a service concept and address why it is important to an organisation to have a well-stated service concept. Furthermore, we discuss the development process of the service concept, which is the purpose of this thesis.

Thirdly, the concepts of Service Automation and Self-Service Portals are introduced, and we discuss the factors that affect their successful adoption. We will examine the structured

approach to the design of automated services Middelburg has developed, the Service Automation Framework, and the modelling approach Service Automation Blueprint that builds upon the more widely known Service Blueprint. Middelburg's focus is on transforming an existing organisation by adopting automation, instead of those pioneer organisations that by their very nature are using technology to provide an enhanced customer experience. Middelburg approaches the topic as the customer-centric management and business process issue, instead of a technology issue.

## 2.1 Business logics and value creation

Since the change of the millennium the role of customers in a service setting has radically changed. The power has shifted from organisations to customers, who are taking an increasingly active role in value creation. The different business logics focus on the identification and creation of customer value, compiling a strategic mindset or a mental model of an organisation and its business activities. It guides conscious and unconscious decisions made in organisations. (Ojasalo & Ojasalo 2015.)

Most businesses operate in terms of the traditional business logic based on goods-dominant logic (GDL), where the value-creation is thought to occur in a linear manner: each organisation positioned in the production chain adds value to inputs and passes the output to the next actor in the chain. "In a value chain, value creation takes place inside an organisation through its own activities, and organisations act autonomously with little or no interference from customers." The value chain stops upon a customer purchasing a product or service, the unit of output in exchange for e.g. money, as customer fulfils the scripts and process defined by the supplier. (Ojasalo & Ojasalo 2015.)

This classical theory of value, reflecting value as cumulated sequentially in the production process, has been challenged within the academic literature by emphasising the process-oriented field of service management (Voima, Heinonen & Strandvik, 2010). Instead, the contemporary theories of service logic emphasise customers' active role, where the value is co-created through use and the customer's context (Vargo & Lusch 2014, 15-16).

As an example, the customer-dominant logic (CDL) provides a dramatic change to the understanding of business thinking and value creation. In the CDL, value emerges when a service "becomes embedded in the customer's context, activities, practices, and experiences together with the service organisation's activities". From the organisation's perspective, this requires gaining a deeper understanding of the customer's everyday life and the service experience as a long-term, individual and context-bound process, also before and after an interaction. However, as most customer practices, activities and experiences in order to accomplish their goals are often more or less subconscious, value creation may be described

as value emergence or formation. Organisations should search for possibilities to understand and support the customer's value creation processes. (Ojasalo & Ojasalo 2015.)

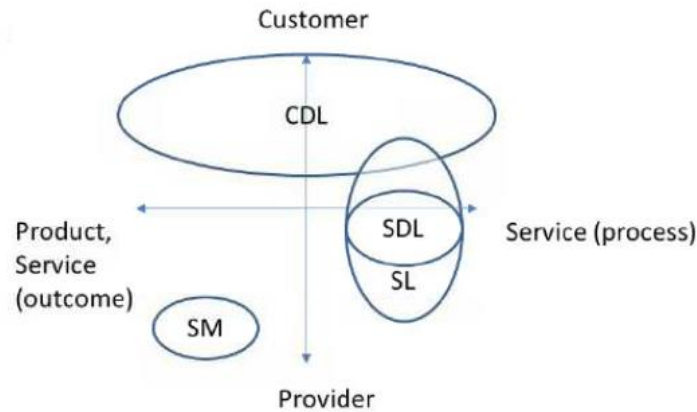


Figure 4: Different foci of the business logics

(Heinonen & Strandvik, 2015).

Heinonen & Strandvik (2015) visualize these differences in the focus of the actor and the characteristics of the offering in Figure 4. The customer-dominant logic (CDL) is the only business logic that does not cover the provider's perspective. On the service part of the axis are also service-dominant logic (SDL) and service logic (SL), but on the other side is the service marketing (SM) that focuses more on the provider and product.

Furthermore, Table 1 provides practical examples of how the traditional provider-dominant logic differs from the more modern business logic CDL. Many aspects are contrary: starting from the terms used, the traditional approach uses value creation, whereas CDL calls it value formation, more passively. On the contrary, some aspects are similar, but CDL takes the traditional approach further. As an example, traditionally, it has been viewed that the value creation is relative in a service context, whereas CDL claims that the value is relative on multiple levels. (Voima et al. 2010.)

	<b>Provider-dominant logic</b>	<b>Customer-dominant logic</b>
HOW	<ul style="list-style-type: none"> <li>- Value creation is an active process</li> <li>- Value creation is a cognitive and conscious process</li> </ul>	<ul style="list-style-type: none"> <li>- Value formation may also be a passive process</li> <li>- Value formation is also a mental and emotional process</li> </ul>
WHERE	<ul style="list-style-type: none"> <li>- Value creation has a special focal context</li> <li>- The scope of value is the (extended) service</li> <li>- Value creation takes place in the control zone of the organisation</li> </ul>	<ul style="list-style-type: none"> <li>- Value is formed in multiple visible and invisible spaces</li> <li>- The scope of value is the life of the customer</li> <li>- Value formation takes place in the customer's often uncontrollable life space</li> </ul>
WHEN	<ul style="list-style-type: none"> <li>- Value creation has a temporal context defined by the organisation</li> </ul>	<ul style="list-style-type: none"> <li>- Value is longitudinal and has multiple dynamic time frames</li> </ul>
WHAT	<ul style="list-style-type: none"> <li>- Value creation is relative in a service context</li> <li>- Value creation may be measured through traditional research instruments</li> </ul>	<ul style="list-style-type: none"> <li>- Value is relative on multiple levels</li> <li>- New methods and instruments are needed to study value formation</li> </ul>
WHO	<ul style="list-style-type: none"> <li>- Value is perceived subjectively</li> <li>- Value is embedded in the object (interaction, service)</li> <li>- Value is often individual</li> <li>- Value creation is orchestrated by the service provider</li> <li>- Value is created in the mutual co-creation process</li> </ul>	<ul style="list-style-type: none"> <li>- Value is personal</li> <li>- Value is embedded in the life of the customer</li> <li>- Value is collective and shared</li> <li>- Even the customer cannot always orchestrate value formation</li> <li>- The customer determines what value is</li> </ul>

Table 1: Transition from a provider-dominant logic to a customer-dominant logic

(adapted from Voima, Heinonen & Strandvik 2010).

## 2.2 Service concept

“Service innovation is the process of devising new or improved service concepts that satisfy the customer's unmet needs”. To succeed at service innovation, organisations have two tasks: first, to discover and understand what these unmet needs are, and next, to create innovative service concepts that address these needs. Producing this alignment with the customers' needs and the freshly created service concepts requires a disciplined approach, resulting in

focused innovation efforts of the organisation and avoidance of problems in service development and delivery. (Bettencourt 2010, 189.)

A service concept is a description of the service that explains how the service satisfies customer needs. It is a way of expressing the notion that the organisation intends to solve certain types of problems in a particular manner and what the differentiating features of the service are. In practice, a service concept specifies what the service provides to customers to satisfy their needs and how the service delivery system is designed to provide value to both the customer and organisation. The connection between the service's key features and processes and customer jobs and outcomes should be clear. A service concept relates to the framework of the business mission and is a critical component of a service strategy. (Grönroos 2015, 81; Bettencourt 2010, 190-191.) “Ultimately, the service concept might form the foundation upon which organisations can start managing their service portfolio, which is the collection of various services a service provider offers” (Middelburg 2017, 20).

Figure 5 provides the Service System Model by Grönroos, illustrating the various quality-generating resources and the location of the service concept in the overall service system. The business mission and the corresponding service concepts should guide the planning and managing the service system, like an umbrella. (Grönroos 2015, 389-390.)

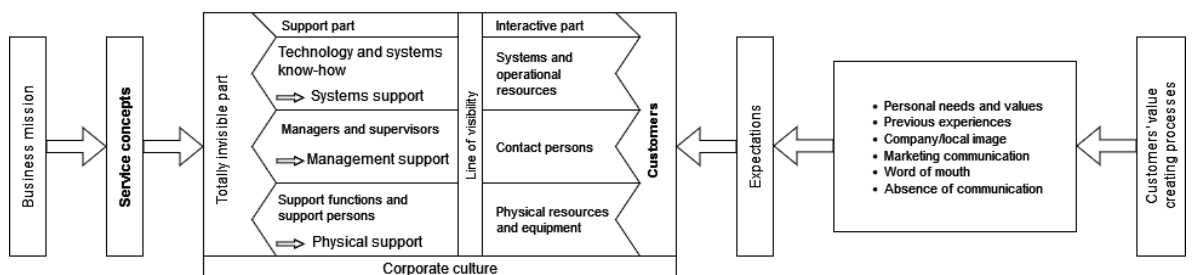


Figure 5: Service System Model by Grönroos.  
(adapted from Grönroos 2015, 389)

Depending on how differentiated the operations are and how many different customer segments exist, there can be one or several service concepts. They must all fit the overall service vision or business mission. Before a service concept can be determined, careful market research must be carried out to minimise the risk of an insufficient market for service produced according to the service concept. (Grönroos 2015, 82.)

“The primary goal of the service concept is to define the desired service outcomes and value of a service provider, which is subsequently incorporated into the design of the organisation’s various services”. A service concept directs the design of all services of the organisation: each of the organisation’s services, which are all individual processes of value creation, can be related and designed based on the service concept. “The service concept aligns an

organisation's service offering towards a common direction by setting overall goals and objectives that apply for the complete collection of services." (Middelburg 2017, 20.)

The service concept should be as concrete as possible so that everybody can understand it - at the minimum, it can be stated in just one sentence. If no service concept is defined, no clear goals nor direction can be set for the organisation, and the risk of confusion and inconsistent behaviour is high. Similar problems can occur if there is no service concept that is well-known, clear or understandable enough, or agreed upon and accepted. With no well-stated service concept, the organisation lacks a stable foundation for discussion of goals, resources to be used, routines and performance standards, which results in disarray both in planning and in the everyday implementation of plans. Furthermore, it is harder to know what to do in certain situations or how to react to changes in the environment and to unexpected customer behavior. When staff nor supervisors do not know what should be achieved and what priorities to set, a situation develops in which different parts of the organisation perform inconsistently. (Grönroos 2015, 82, 451, 506-507.)

#### 2.2.1 Elements of a service concept

There are different approaches to describing the service concept: what the content is and how it might be visualised. According to Grönroos, the service concept has to include information about what the organisation intends to do for a certain customer segment, how this should be achieved, and with what kinds of resources. "The service concept states *what* should be done, to *whom*, *how* and with *which resources*, and *what benefits* are supposed to do." The service concept should thus state what kind of core, enabling and enhancing services are to be used, how the basic package could be made accessible, how interactions are to be developed, and how customers should be prepared to participate in the process. (Grönroos 2015, 82, 212 & 451.)

Middelburg claims that there are four dimensions in a service concept: Service Operation, User Experience, Service outcomes, and Value. They form a holistic combination where all elements should be considered equally, just like customers tend to see a service as a *whole experience*. "The service concept facilitates this holistic approach by providing a detailed description of what is to be done for the user (what needs and wishes are to be satisfied) and how this is to be achieved".

1. **Service operation:** the way in which the service is delivered;
2. **User experience:** the user's direct experience of the service;
3. **Service outcome:** the benefits and results of the service for the user;
4. **Value:** the benefits the user perceives as inherent in the service, weighed against the cost of the service."

(Middelburg 2017, 18-19.)

Furthermore, Bettencourt provides another structure that can be used for documenting a service concept, called the Service Concept Worksheet Template. Table 2 summarises the content suggested by Bettencourt (2010, 191): the name, high-level description, features and their justifications, and the concept visual.

<b>Concept Name:</b> A descriptive and memorable name	
<b>Concept Description:</b> A high-level description of what the service is in terms of what it does for the customer and what makes it unique and valuable; possibly a description of the target customer	
<b>Concept Features:</b> Key features or offerings that deliver value to the customer	<b>Feature Justifications:</b> Justification based on specific outcomes, related jobs, or emotional jobs of customers
Key design dimensions that make the service unique and valuable	Justification based on specific outcomes, related jobs, or emotional jobs of customers
Key service system characteristics, such as the role of people, technology, and procedures	Justification based on specific outcomes, related jobs, or emotional jobs of customers
<b>Concept Visual:</b> A concept rendering or preliminary service blueprint, including identification of key supporting processes and systems	

Table 2: Service Concept Worksheet Template

(Bettencourt 2010, 191)

Before starting the process of service concept development, the organisation should decide whether it wants to improve a current service or create an entirely new service. Whenever possible, Bettencourt recommends the redesign of a current service rather than a creation of a new service: new services come with greater risk and considerably higher investment. However, the current service is sometimes difficult or impossible to fix. A new service creation should be considered when the focus of the development is on additional jobs that the customer would like to accomplish, and the additional features or offerings cannot be added to a current service, nor how the service is provided changed. (Bettencourt 2010, 196.)

### 2.2.2 Process of a service concept development

Wilson et al. present a Service innovation and development process (Figure 6 below). It has similar phases to the Double Diamond Process (described in chapter 3.1), but it focuses especially on developing a service concept. On the top-level, the model has two phases,

Front-end planning (with five steps) and Implementation (with four steps). (Wilson, Zeithaml, Bither & Gremler 2016, 168.)

FRONT-END PLANNING	<b>1. Business strategy development or review</b>
	<b>2. New service strategy development</b>
	<b>3. Idea generation</b> Screen ideas against new service strategy. STOP
	<b>4. Concept development and evaluation</b> Test concept with customers and employees. STOP
	<b>5. Business analysis</b> Test for profitability and feasibility. STOP
IMPLEMENTATION	<b>6. Service development and testing</b> Conduct service prototype test. STOP
	<b>7. Market testing</b> Test service and other marketing mix elements. STOP
	<b>8. Commercialization</b>
	<b>9. Post-introduction evaluation</b>

Figure 6: Service innovation and development process

(adapted from Wilson et al. 2016, 168.)

The “STOP” signs in between represent the checkpoints that separate critical stages of the development processes. The sections are

#### 1) Front-end planning

- Business strategy development or review
  - review the organisation’s overall strategic orientation, vision and mission to plot a direction for growth through new service development.
- New service strategy development (to focus the idea generation)

- develop a clear new service strategy, portfolio of new services, and an organisational structure that facilitates product development via ongoing communications and cross-functional sharing of responsibilities.
- Idea generation (to find possibilities that match the new service strategy screen)
  - encourage service innovation both inside and outside the organisation, and establish some mechanism for ensuring an ongoing stream of new service possibilities.
- Concept development and evaluation: produce a description of the service concept + collect feedback from customers and employees
  - *\*a more detailed description below*
- Business analysis: estimate its economic feasibility and potential profit implications
  - e.g. demand analysis, revenue projections, cost analyses and operational feasibility studies.
  - make preliminary assumptions about the costs of staff recruitment and training, delivery system enhancements, facility changes, and projected operations costs.
  - determine whether the new service idea meets the minimum requirements.

## 2) Implementation

- Service development and testing: refine the concept and its details with a service blueprint
  - produce a detailed service blueprint representing the implementation plan for the service.
  - evolve the blueprint over a series of iterations based on input from all the possible stakeholders involved.
- Market testing: do a rehearsal of the service
  - choose a way of testing the response to marketing mix variables, e.g., by presenting customers with hypothetical mixes in pricing and promotion in less realistic contexts and getting responses on whether they would try the service under varying circumstances.
  - extremely important: do a pilot run of the service to be sure that the operational details are functioning smoothly.
- Commercialisation: go live with the service and introduce it to customers
  - Two goals: 1) to communicate the new service internally and build and maintain acceptance and enthusiasm of the new service among large numbers of service delivery personnel, and 2) to track and monitor all aspects of the service during the introduction, through all parts of the complete service cycle.

- Post-introduction evaluation: final changes based on customers' responses.
  - The information gathered during the commercialisation of the service can be reviewed and changes made to the delivery process, staffing or marketing mix variables based on response to the offering. It is critical to formalise the review process to make those changes that enhance service quality from the customer's point of view.

(Wilson et al. 2016, 168 & 171-173.)

As this thesis focuses on the step "Concept development and evaluation", it is described in further detail below from the perspectives of Wilson et al. and Bettencourt.

"The service concept is made up of the core benefit provided to the customer, supported by a variety of tangible and intangible elements that assist in the delivery of that benefit".

However, due to the inherent characteristics of services, particularly intangibility and simultaneous production and consumption, this phase of the service innovation and development process is challenging. Drawing pictures and describing an intangible service in concrete terms can be complicated, and yet very different service concepts can address the same core benefit that the customer seeks. Thus, it is important to produce a clear description of the service concept. Such service design document might include

- the specific features and characteristics of the service
- description of the problem addressed by the service
- the reasons for offering the new service
- itemisation of the service process and its benefits
- provision of a rationale for purchasing the service
- the roles of customers and employees in the delivery process.

(Wilson et al. 2016, 171.)

According to Bettencourt, there are two stages to creating new service concepts. First, "the process of developing a high-level concept that provides a general description of the proposed new service and how it creates value for customers relative to the competition". Next, the details of the service concept are designed, anticipating what it will take to actually deliver the service: with regard to providers, customers, and service partners specifically.

(Bettencourt 2010, 202-203.)

Bettencourt provides a list of questions to consider, refine and evaluate at both stages of developing a service concept, summarised in Table 3:

High-level concept	Detailed concept
<ul style="list-style-type: none"> <li>- Does the service concept satisfy customer needs in a unique and meaningful way? Will the service concept deliver meaningful value to a customer segment at a sustainable price?</li> <li>- Does the service concept make the appropriate trade-offs between benefits and costs and among different constituencies-customers, company, providers, partners, and so on? How will service providers respond to the concept?</li> <li>- Are the service concept features and design elements internally consistent? Is there synergy among them? Is it clear how quality and costs will be controlled?</li> <li>- Can the company develop and deliver on the service concept as designed? What new capabilities or resources will be required? Is the time it will take to develop the service justified by the value created? Are the costs of developing the service justified by the value created?</li> </ul>	<ul style="list-style-type: none"> <li>- What new capabilities or resources will be required to deliver the service?</li> <li>- What must be developed or modified to deliver the service?</li> <li>- What actions must be taken to ensure success in getting the job done?</li> </ul> <p>Critical areas for service delivery:</p> <ul style="list-style-type: none"> <li>- Facility design</li> <li>- Technology (materials, methods, and information management systems)</li> <li>- Equipment</li> <li>- Processes, policies, and controls (including service standards)</li> <li>- The employee management system (job design, selection, training, evaluation, feedback and control, and compensation and incentive systems)</li> <li>- The customer management system (possibly job design, selection, training, evaluation, feedback and control, and reward systems)</li> <li>- Service partners and suppliers (possibly job design, selection, training, evaluation, feedback and control, and reward systems)</li> <li>- Deliverables, supplies, and tangible evidence</li> </ul>

Table 3: Service concept development: a list of questions to consider, refine and evaluate.

(adapted from Bettencourt 2010, 202-204)

Working with these questions will guide concept development. Furthermore, especially for a new service, it is important to consider the entire job-to-be-done from a customer and provider perspective. (Bettencourt 2010, 203)

It is especially important at this stage to cooperate with stakeholders and iterate the concept to collect different perspectives. The goal is to be clear and specific to agree upon exactly what the concept is and what customer need it fills. Involve multiple parties in sharpening the definition of the service concept, as not everyone in the organisation has the same idea about how this description would translate into an actual service. There is a variety of ways the concept could be developed. (Wilson et al. 2016, 171.)

As the last part of the step “Concept development and evaluation”, the new service concept is presented to customers and employees for feedback and validation. The goal is to collect initial responses to the concept by asking whether they understand the idea of the proposed

service, whether they are favourable to the concept and whether they feel it satisfies an unmet need. (Wilson et al. 2016, 171-172.)

### 2.3 Service Automation and Self-Service Portals

One of the major current changes in consumer behavior is that the consumers have a growing tendency to interact with technology to create services instead of interacting with a live employee of the organisation offering the service. Self-service technologies (SSTs) are technological interfaces that allow customers to produce services independent of any direct service employee involvement or interaction. (Wilson et al. 2016, 33 & 270.) In Finland, we see self-service options on a regular basis, as a normal part of the every-day life: one can self-scan items at the grocery store, order a meal in a fast-food chain, pay for petrol at a gas station - not to mention all the online services out there. According to Middelburg, "Service Automation is the practice of an industry that enables their autonomous users to procure, manage and adjust services through self-service technology and concepts". The aim is to "systematically exceed user expectations". (Middelburg 2017, 21.)

The self-service technologies provide potential cost savings and efficiencies to the organisations, as well as potential to increased customer satisfaction and competitive advantage. However, the self-service option should provide customer with apparent personal benefits: an SST is likely to fail, if customers perceive the cost saving as the only reason why a self-service portal is introduced by an organisation. (Wilson et al. 2016, 271-272.) The factors behind a successful and a failed concept of self-service portals are discussed later in this chapter.

Next, we will examine the structured approach to the design of automated services Middelburg has developed, the Service Automation Framework, and the modelling approach Service Automation Blueprint that builds upon the more widely known Service Blueprint.

#### 2.3.1 Service Automation Framework

To provide a structured approach to the design of automated services Middelburg has developed a framework called Service Automation Framework. It divides the automated services into six elements and building blocks, the first three summarising the "heart" and the latter three the "brains" of service automation (Middelburg 2017, 23-25):

1. **User:** the building block that defines the key characteristics of the groups of people a service provider aims to serve
  - a. Whom exactly are you delivering your service to?

2. **Service Design:** the business function that designs and defines the service offering of a service provider. It is the concretizations of the service concepts into an actual design, including the relevant support structures and digital interfaces
  - a. What services exactly are you delivering or selling?
3. **Technology:** the building block that defines the setup and usability of the digital interfaces, connecting service providers with their users.
  - a. Which tools exactly do you need to deliver the service?"

The last three elements of the Service Automation Framework compile the “brain” of the model: they provide the service with the methods and processes that enable the service to interact with the users without human intervention:

4. **“Automated Deployment:** the processes that enable a user to start using a service based on his or her own action;
5. **Service Delivery Automation:** the processes that enable a user to change or resolve any aspect of the service based on his or her own action;
6. **Serendipity Management:** the processes that facilitate a planned and continuous approach in order to constantly exceed the expectations of users.”

Middelburg compares the Automated Deployment element with the check-in procedure of a hotel. It contains all the elements of a service that enable users to start using the service. The Service Delivery element contains all the elements of service while it is being used. Following the hotel analogy, the Service Delivery Automation deals with all the elements the guest could come across after checking in. Finally, the Serendipity Management considers the practices of how to constantly exceed the used expectations in a structured and planned way. From a business point of view, it is a crucial element since it can provide a competitive advantage. (Middelburg 2017, 25-26.)

### 2.3.2 Examples of Self-Service Portals

According to Middelburg, “a Self-Service Portal is a (two-tier) platform where several Technology Interfaces have been combined into a Single-Point-of-Contact Interface for users”. Here the term two-tier means an automated service that interacts two-directionally with other systems and web services at the back end. With a one-tier service, the information is exchanged only between the user and the processing unit of the technology interface. (Middelburg 2017, 76.)

The technological possibilities of multi-tier services have contributed to the development of service platforms that allow users to interact through a standardised access point. They also enable the development of scalable and measurable systems and services that can constitute new business models. (Middelburg 2017, 76-77.)

A clear overview of the purpose of the technology interface is essential when delivering automated services. Service Automation Framework presents different options for designing the technology interface between users and the processes of the service providers depending on the purpose of the service. According to Middelburg, organisations often take the technology first approach and tailor their services based on their selected technologies, whereas in Service Automation the technology is considered an integral part of the complete design. (Middelburg 2017, 83.)

Middelburg states that according to several studies, four key purposes have been identified for offering services through a self-service portal: 1) customer service, 2) transaction, 3) self-help and 4) information exchange self-service portals. Table 4 consists of these for key purposes for self-service portals from the customer's perspective. It explains the primary objective of each type of self-service portal and gives examples of use cases for it via different interfaces (mobile, online, interactive kiosk). (Middelburg 2017, 83.) Customers use the portals to provide customer service, order and buy something to conduct transactions and provide self-help to learn and receive information (Wilson et al. 2016, 34).

Purpose	Interface	Mobile/tablet/Telephone	Online / Internet	Interactive Kiosk
<b>Customer Service:</b> to support users with service-related questions and issues		<ul style="list-style-type: none"> <li>Account information</li> <li>Credit card history</li> <li>Flight information</li> <li>Order status</li> </ul>	<ul style="list-style-type: none"> <li>Account information</li> <li>Package tracking</li> <li>Frequent Flyer Miles</li> </ul>	<ul style="list-style-type: none"> <li>ATMs</li> <li>Hotel checkout</li> </ul>
<b>Transactions:</b> to generate transactions for the organisation		<ul style="list-style-type: none"> <li>E-Commerce</li> <li>In app purchases</li> <li>Prescription refills</li> </ul>	<ul style="list-style-type: none"> <li>E-Commerce</li> <li>Online training</li> <li>Financial transactions</li> </ul>	<ul style="list-style-type: none"> <li>Pay-at-the-pump</li> <li>Car rental</li> <li>Drive-in restaurants</li> <li>Photo printing</li> </ul>
<b>Self-Help:</b> to enable users to help themselves based on one-directional communication		<ul style="list-style-type: none"> <li>Online training</li> <li>Information telephone lines</li> </ul>	<ul style="list-style-type: none"> <li>Photo Platform</li> <li>Software instructions</li> <li>Distance learning</li> </ul>	<ul style="list-style-type: none"> <li>Tourist information</li> <li>Blood pressure machine</li> </ul>
<b>Information Exchange:</b> to exchange information between stakeholders		<ul style="list-style-type: none"> <li>Diet coach</li> </ul>	<ul style="list-style-type: none"> <li>e-Health</li> <li>Meter readings</li> </ul>	<ul style="list-style-type: none"> <li>Airline check-in</li> </ul>

Table 4: Examples of different Self-Service Portal purposes

(adapted from Middelburg 2017, 83-84; Wilson et al. 2016, 34).

### 2.3.3 Succeeding with Self-Service Portals

According to Grönroos (2015, 252 & 255), organisations should study which activities customers could consider being moved to self-service: which activities customers would find interesting and accept to perform independently. Problems can arise if self-service is offered for all types of service to all segments of customers in all situations - which Grönroos claims to be often the case. "Self-service processes increase customer's quality perception provided that they do not create unnecessary perceived sacrifice for them (increase relationship costs)". If customers don't find self-service quality-enhancing, it does not work. However, there is a possibility to simultaneously increase the internal efficiency (cost efficiency) and the service provider's external effectiveness (perceived service quality).

There are two aspects of improving productivity and quality. First, customers have to be rewarded for taking part in self-service elements, and they have to be motivated to do so. The perceived quality suffers, if customers do not find the benefits from participating in self-service processes. One should remember that especially those actions which require customers to change their traditional behaviours are not necessarily immediately accepted. Thus, the participation skills of customers have to be improved next. "Better-informed customers feel more secure, make fewer mistakes and need less unnecessary attention from employees". If customers do not know exactly what they are supposed to do and how to fulfill their new role in the service process, it hurts the functional quality aspect of the self-service. Moreover, it can affect the technical quality of the outcome, requiring more attention from the employees and thus affecting overall productivity. (Grönroos 2015, 252.)

Wilson et al. remind us that customers may have strong feelings about self-service technologies, both positive and negative ones. Customer readiness is a major factor in determining whether customers would even try a new self-service option: the organisation should consider the personal motivation, ability, and role clarity of the customers before adoption of self-service technologies. Customers love self-service portals when they 1) provide an easy solution and bail customers out of situations that would be more difficult to complete as traditional customer service. Furthermore, if the self-service portal is 2) better than the interpersonal alternative, it can save customers time, money and psychological costs (such as negative feelings felt when interacting with an employee, e.g., feeling nervous or judged). Most importantly, when the 3) self-service technologies work as they are supposed to, customers are impressed by the speed and smoothness of the proper setup. (Wilson et al. 2016, 34 & 272.)

On the contrary, customers may have strong negative feelings about self-service portals if they 1) fail to work - are broken or out of use, or something else is preventing their smooth usage. In addition, 2) poorly designed technologies may make customers shun a self-service

option: if the service is difficult to use or understand, creates hassles and is too slow to use, customers might feel it's not worth the effort. Service providers should also plan ahead for 3) customers' mistakes and 4) service recovery in cases of service failure. Common frustrations for customers might be features that limit the use of the self-service portal. For instance, if a customer would not remember their username and password required for the use, they might give up and use another service channel. Furthermore, the service provider should plan a back-up process on how to fulfill the customer's need if the technology or the process fails - either through a simple way to recover on the spot or later on with the support of an employee of the organisation. Consequently, "if these technologies are to succeed, they must become more reliable, be better than the interpersonal alternatives and have recovery systems in place when they fail". (Wilson et al. 2016, 34-35.)

As a summary, Wilson et al. provide a checklist for organisations considering the implementation of self-service technologies, from a strategic perspective:

- "What is our strategy? What do we hope to achieve through the SST (cost savings, revenue growth, competitive advantage)?"
- What are the benefits to customers of producing the service on their own through the SST? Do they know and understand these benefits?
- How can customers be motivated to try the SST? Do they understand their role? Do they have the capability to perform this role?
- How 'technology ready' are our customers? Are some segments of customers more ready to use the technology than others?
- How can customers be involved in the design of the service technology system and processes so that they will be more likely to adopt and use the SST?
- What forms of customer education will be needed to encourage adoption? Will other incentives be needed?
- How will inevitable SST failures be handled to regain customer confidence?"

(Wilson et al. 2016, 272.)

#### 2.3.4 The Service Automation Blueprint

Middelburg has created a user-centric modelling approach called Service Automation Blueprint - a technique organisations can use to visualise services systematically and step-by-step. It helps organisations take the first real step towards a visual and tangible model of Service Automation. The Service Automation Blueprint builds upon the more widely known Service Blueprint (by Lynn Shostack) - the main difference between these two approaches is that the Service Automation Blueprint is customised to design automated interactions and interfaces. As presented in Figure 7, the canvas consists of five layers, each with a specific focus and key characteristics:

1. **“User actions:** includes all the steps that the users take as part of the delivery process.
2. **Physical evidence:** a Service Provider action that has value for users and establishes a level of trust between a user and a service provider.
3. **Technology interface:** the layer between users and service providers that facilitates interactions.
4. **Support processes:** the (automated) sequential steps that service providers take in order to process User Actions.
5. **Company functions:** the organisational departments that exist in any company, encompassing knowledge or areas of expertise.”

(Middelburg 2017, 57-61.)

Furthermore, demographics, psychographics can be included to explain the user in further detail. The Service Automation Blueprint provides an easy-to-use Canvas for bringing all the key terms and design elements together. The Service Automation Blueprint also includes three Design Lanes (marked in Figure 7 in dashed lines): Line of Trust, Line of Interaction, and Line of Automation. They describe the different types of interactions - the messages and pieces of information that is transferred between the different layers. The layer “technology interface” divides service to the front-end part (user actions and physical evidence) and to the back-end (support processes and company functions). (Middelburg 2017, 59, 61-62 & 64.)

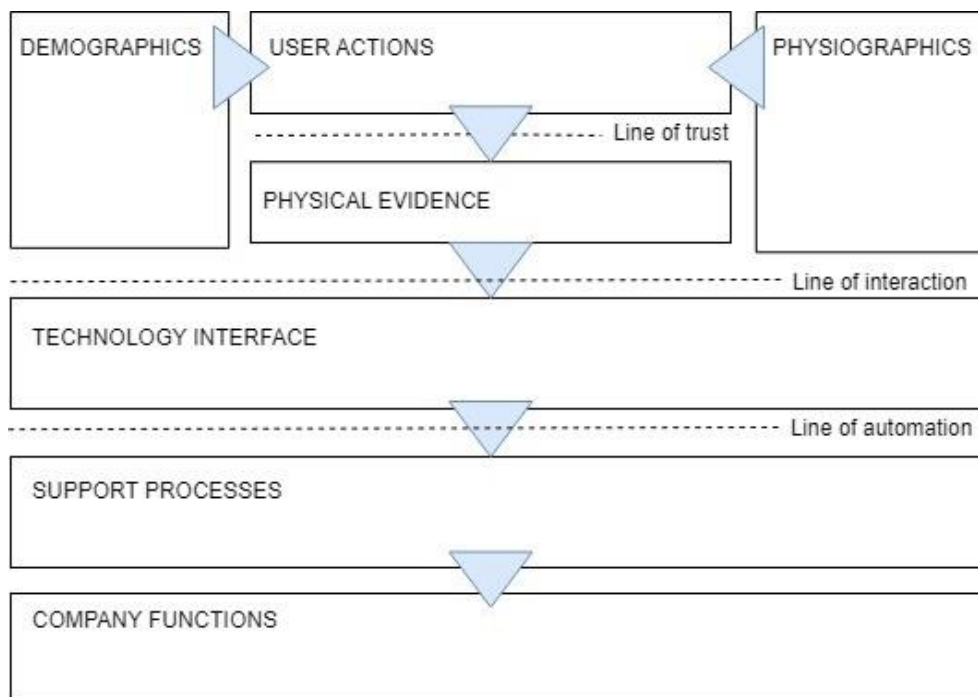


Figure 7: The Service Automation Blueprint Canvas

(adapted from Middelburg 2017, 64).

To facilitate the adoption and implementation of Service Automation, the Blueprint can be filled out in collaborative group discussions or workshops. First, the group should identify the user group and the service to define the topic and have a common understanding of the focus. Next, as Figure 7 illustrates, the groups starts from the top corners, proceeding to the center, filling each of the five layers from top to bottom. (Middelburg 2017, 64-65.)

In conclusion, self-service technologies can be successful, when the preparations of the organisation are thorough: the new delivery mode is confirmed to offer clear benefits (such as faster service or discounts) to customers, the benefits are well understood and appreciated compared with the traditional delivery modes, and the technology is user-friendly and reliable. In addition, customers understand their roles and have the capability to use the technology. (Wilson et al. 2016, 272.)

In conclusion, Chapter 2 discussed the theoretical framework and the three central concepts of this thesis. The concepts of business logics and contemporary value creation explained the customer-centric approach to service development. Next, the service concept, including its importance, role, elements, and development process, was discussed. Finally, the context of development, self-service technologies and service automation was discussed, with the structured approach to the design of automated services Middelburg has developed and the modelling approach Service Automation Blueprint.

### 3 Development setting

This chapter discusses the key concepts regarding the development setting. First, the design process Double Diamond and its four phases (Discover, Define, Develop, Deliver) are introduced. Next, the selected methods for data collection (interviewing and facilitated workshops) are discussed, proceeding to the introduction to methods for data analysis and synthesis. Finally, the selected service design tools are examined: Customer Journey Map, User stories and Value Proposition Canvas.

#### 3.1 Design process

There are dozens of great descriptions of service design processes from both the industry and academia. No one uniform model has been agreed upon in the field of service design, even though the process models often contain groups of similar kinds of actions (with differing terminology) and the recurring mindsets of divergence and convergence. The four steps often include exploration, creation, reflection, and implementation as a basic approach to structure and simplification of a complex design process (Stickdorn & Schneider 2010, 126).

Probably the best-known visualisation of the design and innovation process is the Double Diamond Process popularized by the British Design Council in 2005. The Design Council published an evolved version of the framework for innovation in 2019, with the original four phases: Discover, Define + Develop, Deliver. (Design Council 2019.) The Double Diamond portrays two consecutive phases of design: the first “diamond” is more exploratory and aims at finding the right problem to solve, gaining a clear understanding of the situation from the perspective of the customers and the goals of the organisation providing the service. The second diamond focuses on creativity and aims at finding the right kind of solution to the identified root problem. Within that range, smaller parts of the process explore and iterate the understanding gathered, moving constantly forward and adapting. (Stickdorn & Schneider 2010, 124-126 & 128.)

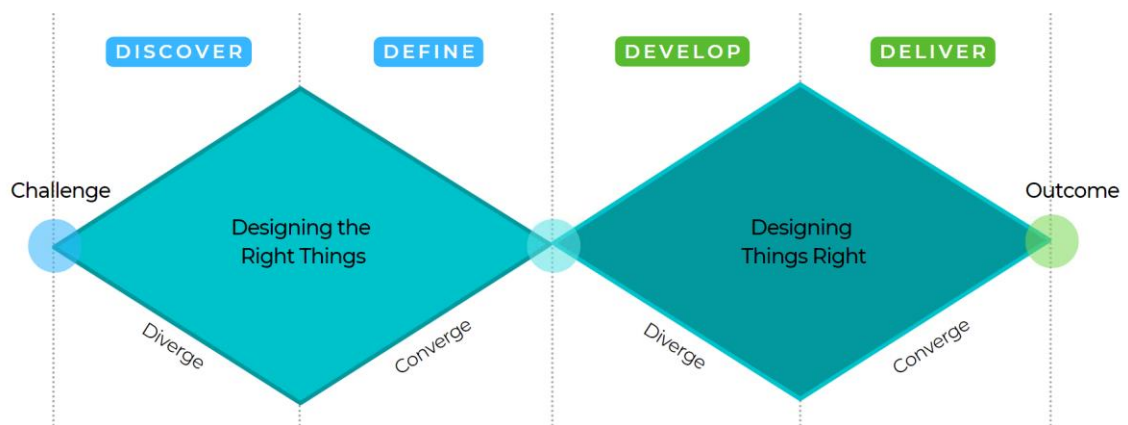


Figure 8: A simplified version of the Double Diamond diagram

(adapted from British Design Council 2019).

Both diamonds start with a divergent phase, that increases the number of ideas, alternatives, and opportunities, and their second part is converging towards a decision with reducing options. For the designer, the challenge is to choose when it is the time to change mindset and select the tools that are the most effective to support the work of all stakeholders involved in the current situation. In addition, people have a natural bias toward one of the mindsets, requiring active facilitation and selection of tools that would minimise the effect of the participants’ natural tendencies and skillsets on the phase we are working on. “For a successful project, you will always need both: divergent skills to create enough base material to have great results or breakthrough concepts, and convergent skills to help you stay legal, stay within the budget, or manage real risks and - in the end - come to a decision. The key is to consciously plan and manage when to do which, which specific methods to use, and who to involve.” (Stickdorn, Lawrence, Hormess & Schneider 2018, 85-86.)

The Double Diamond has received critique that it might give an impression of a more linear design process than what the process often actually is (Design Council 2019). There is no fixed

plan of sequenced activities that are executed one by one - some phases might take place simultaneously. The process also changes and evolves as we gain more insights. “It might be necessary to take a step back or even start again from scratch. The single but very important difference is ensuring that you learn from the mistakes of the previous iteration.” (Stickdorn & Schneider 2010, 124-126.)

Whichever model is used as the starting point of the service design process, the designer must first identify and articulate it, to be able to reflect on their own influence on the designed outcome (Stickdorn & Schneider 2010, 126). In addition, each process must always be adapted to one’s own context, and one must take into consideration the “organisation, the challenge, the complexity of the challenge, the people involved, the underlying ideas or problems, and of course (and not least) the available budget, time, and other resources” (Stickdorn et al. 2018, 82).

### 3.2 Methods for data collection

This research is of qualitative nature. The research questions guided the selection of methods. Next, conducting interviews and facilitating workshops are discussed.

#### 3.2.1 Interviewing

Portigal defines interviewing as conducting contextual research and analysing it to reveal a deep understanding of people, aiming at gathering “information about users in order to support the organisation when creating products, services and more” (Portigal 2013, 3). In layman’s terms, Martin & Hanington (2018, 48) describe the interview as a “conversation to collect first-hand accounts of experience, opinions, attitudes, and perceptions”. However, Portigal remarks that interviewing people is an art which requires a special skillset. Although it might appear so, interviews are not a social conversation where you can rely on your everyday social skills. (Portigal 2013, 10.)

Interviewing is the most popular way of gathering qualitative data. There is high flexibility in the gathering of information: the interviewer is often able to choose the informants for the interview based on who are considered knowledgeable about the topic and more likely to participate when personally invited. During the material collection, the interviewer is able to increase the validity of the results by rephrasing and correcting misconceptions of questions and asking additional questions. (Tuomi & Sarajärvi 2002, 75-76.) However, the disadvantages of interviewing include the slowness of the interviewing and transcribing project, possible misconceptions by both the interviewer and interviewee, and the lack of ready “models” for analysing, interpreting, and reporting the data (Hirsjärvi & Hurme 2001, 34-35). Interviewing

is not the right approach for every problem - for instance, it is not a source for statistically significant data, because it favours depth over sample size compared to the other existing user research approaches (Portigal 2013, 8).

Depending on the desired participants for the interviews, researcher can invite customers, key informants, and/or stakeholders to join the discussions. Stakeholder interviews focus on collecting information from specific roles or people who may have a vested interest in the particular topic, whereas key informant interviews concentrate on people who can contribute to the research by sharing their specialised or expert knowledge. (Martin & Hanington 2018, 48.)

One of the techniques of conducting qualitative research is an intensive individual interview, known as an in-depth interview. In-depth interviews can be used for gaining knowledge on a user's needs and experiences with a service or product as well as the attitude, problems, and ideas. Often, they are conducted face to face, which allows researchers to create a more intimate atmosphere and observe cues from e.g. the body language of the interviewee, but online implementation and telephone calls work too. In-depth interviews can also help researchers learn more about "particular expectations, experiences, products, services, goods, operations, processes, and concerns". (Stickdorn et al. 2018, 122.)

In-depth interviews are mostly done in a semi-structured way to collect data. Thus, each interview will be unique, making it hard to objectively tally data points across the sample (Portigal 2013, 8). "Because there are few prestructured or standardised procedures for conducting qualitative interviews, many of the methodical decisions have to be made on the spot, during the interview. This requires a high level of skill on behalf of the interviewer, who needs to be knowledgeable about the interview topic and familiar with the methodological options available, as well as have an understanding of the conceptual issues of producing knowledge through conversation" (Brinkmann & Kvale 2015, 19).

Kalbach recommends the use of a discussion guide: a short document that you can refer to during the session. It is a prompt for the interviewer, a reminder of topics and themes, instead of a survey or a script to read from top to bottom. "A discussion guide typically begins with a standard greeting to set expectations. The body of the discussion guide consists of questions to prompt a conversation about the topics relevant to the study. These prompts should address the questions, assumptions, and gaps in knowledge you have." Often the discussion flows naturally to one of the topics on the list, and the interviewer should go with the flow even if the theme was further down the guide and ask open-ended questions to keep the participant talking. (Kalbach 2016, 118-119.)

### 3.2.2 Facilitated workshops

Stickdorn & Schneider summarised the five principles of service design thinking as follows: 1) user-centred, 2) co-creative, 3) sequencing, 4) evidencing, and 5) holistic (2010, 34).

Focusing on the second principle of co-creation reminds us to include all stakeholders in the service design process: customers and all other stakeholders involved. In practice, “service designers consciously generate an environment that facilitates the generation and evaluation of ideas within heterogeneous stakeholder groups. There are a variety of methods and tools for gaining genuine insights from different user perspectives in the creation of services and for the development, prototyping and testing of these service concepts”. Bringing this diverse group of people together in a workshop can facilitate a smooth interaction between the stakeholders during the actual service provision, increasing both customer and employee satisfaction. The more a customer or a staff member gets involved in the service provision, the more likely this service is to evoke co-ownership. (Stickdorn & Schneider 2010, 39.)

However, co-creation and its benefits do not happen on their own.

Facilitation is a core skill of a service designer. The goal of a facilitator is to support the work of a group on a particular topic, by being an outsider “guide on the side” in the workshop. As opposed to regular meetings or group discussions, the facilitator plans the process in advance by preparing for the workshop ahead of time and selecting the suitable methods and techniques according to the brief (such as the task at hand, time available, and the number of participants). In addition to considering the overall group process, the facilitator’s work includes the implementation and adjustment of the plan according to the progress and mood of the participants at the workshop, moment by moment.

According to Lewrick, Link and Leifer (2018, 188), there are four simple steps in the planning and implementation of a workshop: 1) Context, 2) Planning, 3) Implementation, and 4)

Reflection. Table 5 examines the thoughts and role of a facilitator in each step:

1. CONTEXT	2. PLANNING	3. IMPLEMENTATION	4. REFLECTION
<ul style="list-style-type: none"> <li>- Why?</li> <li>- What are we supposed to achieve?</li> </ul>	<ul style="list-style-type: none"> <li>- What exactly? How?</li> <li>Who?</li> <li>- Who does what?</li> <li>- What do we need?</li> </ul>	<ul style="list-style-type: none"> <li>- How is the group doing?</li> <li>- Are we in flow?</li> <li>- Will we achieve the goals this way?</li> <li>- Do we have to adapt?</li> </ul>	<ul style="list-style-type: none"> <li>- Goals achieved?</li> <li>- Next steps?</li> <li>- What went well?</li> <li>- What would be even better?</li> </ul>
<ul style="list-style-type: none"> <li>- Assumptions</li> <li>- Desired result</li> <li>- Goals</li> </ul>	<ul style="list-style-type: none"> <li>- The right process</li> <li>- The right participants</li> <li>- The right environment / space</li> <li>- The right information</li> </ul>	<ul style="list-style-type: none"> <li>- Preparation, e.g., space</li> <li>- Welcome/warmup</li> <li>- Sequence/methods/facilitation</li> <li>- Conclusion</li> </ul>	<ul style="list-style-type: none"> <li>- Reflect and learn</li> <li>- Continuation</li> </ul>

Table 5: The four steps in the planning and implementation of a workshop

(Lewrick et al. 2018, 188)

Facilitating workshops requires a mindset and skillset of its own. The facilitator should support equal and engaged participation, in order to ensure that the full capacity of the group is utilised. Thus, a facilitator can help a group remain focused and energised, learn, solve problems, pursue an opportunity or whichever issue they are supposed to address in the workshop. On their own part, the facilitator should remain neutral, impartial, and transparent, and focus on listening and building rapport. In addition, the documentation is often planned and/or implemented by the facilitator. Even the simplest methods, such as writing down the comments of the participants for everyone to see, creates group memory and enhances participation. (Kaner, Lind, Toldi, Fisk & Berger 2014, 37 & 66.)

Often, there are five stages in a workshop: the beginning, current state, future, action, and ending. Through skilled facilitation, the facilitator can warm up the participants to focus on the task with an open and curious mind, as well as continue promoting cooperation, creation of common understanding, and safe space. Most importantly, the facilitator must manage time, in order to make sure the group makes it to a converging phase and will not leave the room undecided or unagreed on the outcome of the workshop. If and when the group hits a groan zone, the facilitator helps them forward from the challenging part of the decision-making process, and encourages to think beyond the “business as usual” through a careful selection on techniques and behaviours (Kaner et al. 2014, 369).

The facilitator often promotes “full participation” where all workshop members are encouraged to share their own experiences and ideas (Kaner et al. 2014, 24). Furthermore, a skilled facilitator can create an anonymous space for ideation and voting, where the original source of each idea is no longer trackable back to a specific participant. This brings equal participation to the room, as the idea possibly presented by the boss is no longer distinguishable and more favourable. In addition, it will bring more joint ownership to the outcomes in the group, and the potential to enhance the relationships in a team (Kaner et al. 2014, 124).

There can be significant variations in the role of a facilitator between processes and the steps of each process. Schwarz defines the Facilitator Role through six elements (2017, 14-16): a group facilitator is a person who

1. “is not a member of the group but a neutral third party
2. is content neutral and does not share one’s personal views on the topic nor even agree or disagree with the participant’s views
3. has no content decision-making authority or input
4. is acceptable to all members of the group
5. diagnoses and intervenes in a group, to

6. help it improve the processes by which it identifies and solves problems and makes decisions, in order to increase the group's effectiveness".

### 3.3 Methods for data analysis and synthesis

The aim of the analysis of data is to create solid insights for the commissioner. This process is called sensemaking and is about creating collective meaning for the data gathered from interviews and observations. It requires the researcher to reorganise the data and find patterns, ideas, and relationships. Consequently, "the analysis of an interview is interspersed between the initial story told by the interviewee to the researcher and the final story told by the researcher to an audience" (Brinkmann & Kvale 2015, 219).

Conducting interviews often produces a big quantity of data: not just the audio recordings and possible videos, but field notes and other formats too. Miles et al. strongly advise interweaving data collection and analysis from the very start, and carrying out the analysis of interviews throughout the interviewing process, as new data becomes available. This is especially useful if the production of interim reports is required in the research project, and it helps with cutting the analysis task in smaller, more manageable pieces. (Miles, Huberman & Saldaña 2014, 70.)

Another major benefit of the use of parallel phases is to create a feedback loop, where the researcher analyses the current data and uses it to tune the existing strategies or create new ones, test new hypotheses that emerge during analysis and fill gaps in the existing hypotheses, collect new possibly better-quality data, analyse that, and so on. The more linear approach to these two phases rules out the possibility of the feedback loop and iterations. Cycling "back and forth between thinking about the existing data and generating strategies for collecting new, often better, data. It can be a healthy corrective for built-in blind spots". (Miles et al. 2014, 70.)

When synthesising the gathered data, the task is to seek out the common patterns and extract relevant findings. On a general level, this includes two phases: group the insights by theme and then align the conclusions into a flow or pattern of your diagram. Something as simple as an Excel spreadsheet can get you started on analysing data. (Kalbach 2016, 125.) One way to analyse research material is through Affinity Diagramming, where one clusters insights into meaningful categories and relationships. In practice, the researcher captures the collected insights on individual sticky notes - possibly with color-coding, to help efficiently parse information by issue or task. The aim is to facilitate research synthesis by making visible the tacit knowledge or information that was originally buried in transcripts. "Rather than grouping notes into predefined categories, specific details are clustered, which then give

rise to named category themes based on shared affinity or similar intent, issues, or problems.” (Martin & Hanington 2018, 3.)

Qualitative researchers build their patterns, categories, and themes from the bottom up by organising the data into increasingly more abstract units of information. This inductive process illustrates working back and forth between the themes and the database until the researchers have established a comprehensive set of themes. Then deductively, the researchers look back at their data from the themes to determine if more evidence can support each theme or whether they need to gather additional information. Thus, while the process begins inductively, deductive thinking also plays an important role as the analysis moves forward. (Creswell 2014, 186.)

On a more detailed level, Creswell (2014, 197-200) summarises the eight steps of data analysis as follows:

1. Organise and prepare the data for analysis
  - a. transcribing interviews, optically scanning material, typing up field notes, cataloguing all of the visual material
  - b. sorting and arranging the data into different types depending on the sources of information.
2. Read or look at all the data
  - a. create a general sense of the information and reflect on its overall meaning
  - b. possible actions: writing notes in margins of transcripts or observational field notes, recording general thoughts about the data at this stage, or starting a sketchbook of ideas
3. Start the coding process of all the data
  - a. Coding is the process of organising the data by bracketing chunks (or text or image segments) and writing a word representing a category in the margins.
  - b. Take text data or pictures gathered during data collection, segmenting sentences (or paragraphs) or images into categories, and labelling those categories with a term, often a term based in the actual language of the participant (called an *in vivo* term).
  - c. Often the researcher develops codes only on the basis of the emerging information collected from participants, but the use of a predetermined codebook is also an option.
4. Use the coding process to generate a description of the setting (or people as well as categories or themes) for analysis.
  - a. Generate codes for this description and identify roughly 5-7 themes or categories during the coding process. These themes are the ones to appear as major findings.

- b. In a sophisticated qualitative study, go beyond: build additional layers of analysis and form complex theme connections.
- 5. Advance how the description and themes will be represented in the qualitative narrative.
  - a. Consider using a narrative passage to convey the findings of the analysis, and/or the use of visuals, figures, or tables as adjuncts to the discussions.
- 6. Make an interpretation in qualitative research of the findings or results.
  - a. Capture the essence, “What were the lessons learned?”. The findings might confirm past information or diverge from it. It can also suggest new questions to be asked, not foreseen earlier in the process.
  - b. “Interpretation in qualitative research can take many forms; be adapted for different types of designs; and be flexible to convey personal, research-based, and action meanings”.

### 3.4 Service design tools

#### 3.4.1 Customer Journey Map

Customer Journey Maps visualise the specific experience of a person (or a specific group of customers, or a persona) using a service over time. Journey maps are used for finding gaps in customer experiences, exploring potential solutions, and supporting a creation of common understanding between team members and organisational silos. “Journey maps can develop into living documents that evolve and change over several workshops and research loops and that bridge different departments and stakeholders in organisations”. (Stickdorn et al. 2018, 44-46.) The vivid but structured visual representation also facilitates a quick comparison between a service and its competitors (Stickdorn & Schneider 2010, 159).

Journey maps contain all the main stages and steps of a service experience from the perspective of the customer: the formal and informal steps, and the less obvious points of interaction with the service that influence the experience. This structured sequence of steps can also be called events, experiences, moments, or interactions. The level of detail that should be mentioned at each step depends on the selected scale and scope of a journey map: a high-level map provides a comprehensive overview of the end-to-end experience, whereas one could choose to focus on the details of steps taken in just a few minutes. Journey maps usually focus on one main actor such as a group of customers but can sometimes combine multiple perspectives in one map, e.g. those of another group of customers, or the employees. (Stickdorn et al. 2018, 44-47.)

Mapping the journey brings understanding of what customers are feeling, thinking, and doing at any given point in time when they are interacting with a service, and recognition of how that changes (Polaine, Loevlie & Reason 2013, 105). The most refined Customer Journey Maps include multiple lanes that provide different perspectives to each step, such as customer expectations and goals, a quote by an interviewed customer, image or storyboard, emotion, as well as problems or opportunities identified in the specific step. In addition, when including the channels that the customer is using as means to communicate at a specific step, it helps us understand cross-channel experiences. Maps can describe the existing experiences as well as the future ones, but they should always have a solid foundation on research data rather than assumptions. (Stickdorn et al. 2018, 44-47.)

#### 3.4.2 User stories

User stories are short descriptions of each feature of a product that are needed to achieve the desired outcomes. They are told from the user's perspective, guiding the conversations and decisions made in the design and/or software team. User stories strive to both illustrate the big picture with the interrelations, and break the product down into small chunks. The user stories are categorised, prioritised and utilised, making the product development more focused and manageable. (Kalbach 2016, 214-217.)

Stickdorn et al. define user stories as a summary of what customers want to be able to do, building a bridge from design research into defining requirements for the development of a service or a product. They ensure a common language with a multidisciplinary team - thus, the stories should be formulated with simple, general words that everyone understands, and that do not nudge or limit the way in which the particular wish of the customer should be implemented in practice. (Stickdorn et al. 2018, 132.)

Each insight or need is written on its own row e.g. in an Excel spreadsheet. User stories have often a common format: *As a (type of user/persona/role), I want (action, goal)... so that.. (outcome, reason)*. It helps find gaps and iterate the requirements. User stories are often used in software development, but in service design, they are used to “connect design research with actionable input for IT development to turn insights and/or ideas into productive software”. (Stickdorn et al. 2018, 132.)

#### 3.4.3 Value Proposition Canvas

Value proposition portrays the benefits a customer can expect from your service offering: the products and services. A Value Proposition Canvas is a tool for conceptualising and iterating a value proposition. It works both for inventing new value propositions as well as for improving existing ones. (Osterwalder, Pigneur, Bernarda & Smith 2014, 6.)

A Value Proposition Canvas consists of two blocks from the original Business Model Canvas: the Customer Segment (Customer Profile) includes the “groups of people... an organisation aims to reach and create value for with a dedicated value proposition”, whereas the Value Propositions (Value Map) are “based on a bundle of products and services that create value for a customer segment” (Osterwalder et al. 2014, XVI). According to Stickdorn et al. (2018, 76-77), the block Customer Profile is connected with the creation of persons and system maps, whereas Value map is connected with customer journey maps and prototypes.

In order to fill out the canvas, you need to consider the following elements on its two sides, and study the relevance of each point to the customers:

- **Customer Profile**, aiming to help obtain clear customer (segment) understanding and visualisation on what matters to customers, and Value Proposition through
  - Jobs (functional, social, personal, emotional, supporting jobs): what customers are trying to get done in their lives?
    - tasks to perform,
    - problems to solve, and/or
    - needs to satisfy.
  - Pains: what annoys customers?
    - before, during, and after trying to get their jobs done
    - results in undesired outcomes (functional and emotional), problems and characteristics, obstacles and risks
    - preventing them from getting the job done.
  - Gains: what outcomes and benefits the customer wants?
    - the required, expected, desired, and unexpected gain
- **Value Map**: used to describe the offering and how it is supposed to create value for the customer
  - Products and services that you offer (tangible, intangible, digital, financial)
  - Pain relievers: description on how your offering alleviates explicit customer pains
  - Gain creators: description on how your offering creates positive outcomes and benefits that your customer expects

(Osterwalder et al. 2014, 12-17 & 29-33)

The process of value proposition design is searching for a fit between the Value Map and the Customer Profile. These two fit together when the customer acknowledges that the value proposition addresses important jobs, relieves the hardest pains and provides critical gains the customer cares about. No organisation can possibly address all possible gains and pains of customers: instead, one should focus on those that matter most to customers and are insufficiently addressed. (Osterwalder et al. 2014, 42.)

Table 6 describes how three different kinds of fits of the specified value proposition need to be achieved throughout the lifecycle of the organisation:

Fit / stage	Type of evidence required
Problem-solution fit	customers care about the jobs, pains, and gains you intend to address with your value proposition
Product-market fit	customers want your value proposition, and your products and services are actually creating customer value
Business model fit	the business model for your value proposition is scalable and profitable

Table 6: Fit created through value propositions

(adapted from Osterwalder et al. 2014, 49 & 60).

Value propositions can be designed throughout their lifecycles through a process of designing, building, testing, and managing value propositions. The Value Proposition Canvas can be applied on its own, as an iterative, living document. The created Customer Profile and Value Map can be used as a “scoreboard” for future customer interviews and research: organisations can track if the collected customer jobs, pains, and gains exist more widely, and if the created solutions actually ease these pains and gains in the opinion of the customers. If new findings appear, the canvas is updated accordingly. (Osterwalder et al. 2014, 60 & 62.)

#### 4 Development process

“Although service design aims to put the customer at the centre of its process, the process seldom starts with the customer. The first task of a service designer is to understand the culture and goals of the company providing a service. ... the process starts by identifying the problem a service designer should work on; this problem is usually an organisational one or is initially viewed from the organisational perspective. It is important to understand the company’s point of view on a certain problem, and in fact it could be argued that much of a service designer’s role is in articulating the organisational problem from the perspective of the customer.” (Stickdorn & Schneider 2010, 128.)

For this case project at Migri, the level of the original design brief was very general - the task of the service designer was to “bring the customer’s perspective into the planning” of the

self-service machines and bring forth the customers' opinions and needs from the beginning of the project, before any decisions or procurements would be made.

As the first step, we started with the secondary research. As pre-existing material, we found a draft of the project plan and a list of Migri staff members from the customer service points, who had been allocated (to be available when needed) for this development work. More importantly, we had a customer's journey map on a general level and open comments from the customer satisfaction surveys, so the problem statement was quite clear, as described in chapter 1.3. We also looked into benchmarks of other public authorities, such as the "ABC" self-service machines by the Finnish Border Guard, used for checking passports at the airports. Furthermore, the desk research included a search for literature regarding self-service and service automation, summarised in Chapter 2. All this material was combined as a pre-study summary to serve as a foundation for the preparations of the development process.

Next, we drafted a plan for the research. The goal of this development process was to answer the following research questions (in further detail in Chapter 1.5):

1. What kind of self-service concept could accommodate the needs of Migri customers and official process at the identification phase?
  - a. Features: what are the needs, elements, and requirements for the machines? What would bring value?
  - b. Potential users: which groups of customers would be the most suitable to use the self-service machines?
2. Reception: what is the initial response to the idea of employing self-service machines?

We wanted to include co-creation with both Migri staff and customers in the development process. Thus, interviews and facilitated workshops were used as a method to gather research material in two phases. The first phase of the development process included data collection through individual interviews with both the customers and Migri staff, on a more general and abstract level. The gathered material was analysed and presented, to be enriched in a subsequent series of three workshops of staff from the Migri service points. Each phase created concrete outputs that were building on the previous results.

In further detail, when embedding the research and development process to the Double Diamond model (described further in chapter 3.1), we can more clearly identify the parts where iteration took place. Most iteration occurred in the three workshops with Migri staff: we started with the understanding we had collected in the initial round of interviews, and the initial understanding was enriched, modified (and discarded in some parts) throughout the series of the workshops. In addition, the prototype was iterated based on the feedback provided by customer interviews and feedback from customers and staff. Analysing the

discussions occurred at all stages, even though the Figure 9 presents this in a more simplified manner.

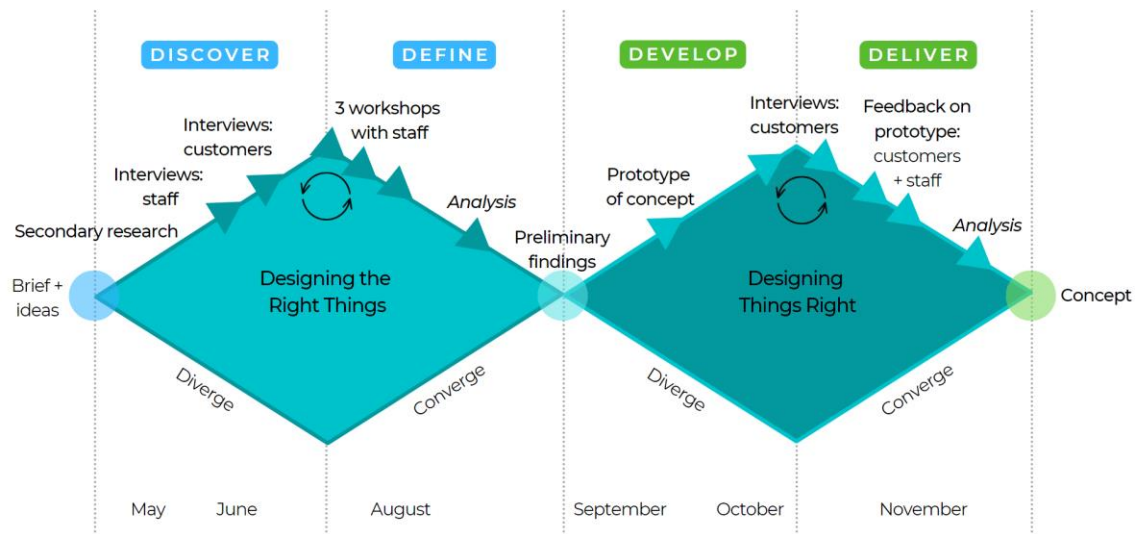


Figure 9: The research and development process embedded into the double diamond.

In the middle of the development process we summarised the preliminary findings of the interviews and workshops in order to collect content to the concept for self-service machines. Consequently, a prototype of the concept was created, to summarise the preparations and understanding gathered so far. We did two first drafts of the concept description, and presented it to customers and staff for feedback. In the final interviews, most parts of the concept were validated, and other areas inspired participants to ideate more opportunities, although the majority of them were outside the scope of the MVP and the first small-scale experiment phase. The end result of the thesis is the visualisation of the self-service concept.

As a whole, the development process took 5.5 months. Altogether 51 individuals participated in the co-creation of the self-service concept in some form and to some extent:

- 21 Migri staff through interviews, workshops and/or other form of feedback, and
- 30 customers through interviews (11) or providing feedback for the prototype (19).

Next, we will discuss all parts of the development process in further detail, through the phases of Discover, Define, Design and Deliver.

#### 4.1 Discover: Interviews of customers and Migri staff

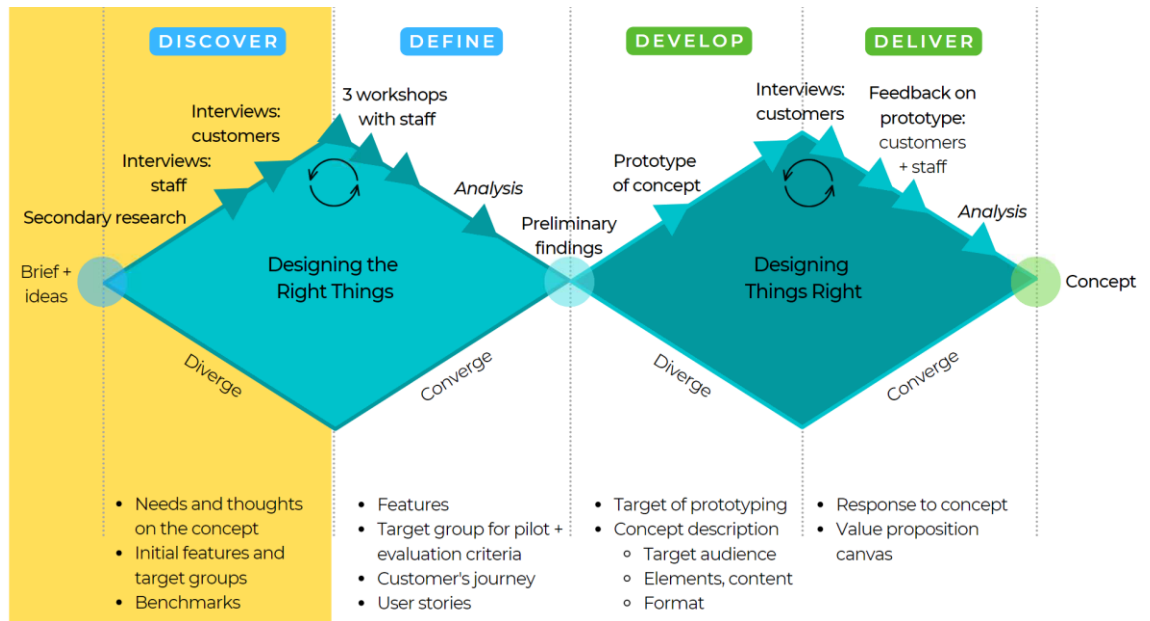


Figure 10: The first phase of research, initial interviews of customers and Migri staff.

The first part of the research included individual interviews with both the customers and Migri staff. As we were focusing on a particular point in the customer's journey, the part where the customer proves their identity to Migri by visiting a service point in person, we wanted to involve both parties early on in the development: the customer as well as the Migri staff that meets them. It can be determined as one "moment of truth" in the process: the contact itself takes only 10-30 minutes, but customers often have to wait several weeks to get an appointment, and it is often the only time the customer meets someone to discuss their application. Some of the challenges identified earlier were discussed in chapter 1.3.

The goal of the Discover phase was to collect first-hand information on the experience from both sides, and over the first eight weeks altogether 12 people shared their initial views on the idea of a self-service machine. The interviews resulted in the first building blocks for drafting the new concept: possible features for the self-service machine as well as suggestions for the customer group that could start the experiment. As Kalbach states, "at this point, your investigation is exploratory: you want to uncover the main themes to research further" (2016, 112).

##### 4.1.1 Interviews with Migri staff

###### Recruitment and implementation

For staff interviews, we recruited altogether nine people who work at Migri. Five of the interviewees work in different Migri service points across Finland, and their duties include

50% of the time customer service and 50% handling and making decisions on the applications. This background helped insure that the interviewees have a broad view on the application process and the causalities on how any changes to the process can influence some other parts of the chain. Most participants were already allocated to participate in the project, so we had a guarantee of motivation and level of expertise in the appointments made by their supervisors. For instance, even though the interviewees were not asked to do any preliminary assignments or planning about the topic, a couple of them had voluntarily written down some ideas based on the title of the meeting beforehand.

All discussions took place in Skype, and were recorded for documentation and further analysis. The interviews were implemented in two rounds: first there were four individual interviews, and later two complimentary discussions with 2-3 people to clarify and deepen points made in the individual interviews. Although the researcher works for Migri, she was a new employee and not familiar with the application process and its requirements for different kinds of customers. This helped to discuss and document all parts, as nothing was considered self-explanatory.

#### The goal of the interviews

The focus of the staff interviews was very practical. We wanted to gather understanding on the experience and needs of staff, which can be considered the internal customer in the administrative process, and learn if they thought we were solving the right problem. We wanted to learn their perspective on the possibility of implementing a self-service machine to do a part of their work for them, and the implications they are assuming the change would bring: both positive and negative.

Most importantly, we wanted to start getting more concrete and ideate possible features of the self-service machines as well as suggestions for the most suitable target groups that should be considered for the experiment.

The interview was semi-structured, and evolved around the following themes:

- possible features: which tasks of the service point could be done by the customer as a self-service
  - o hypothesis: list of functions regarding the proving of identity
- which customer segment / target group would be possible for experiment (+ criteria for selection of the most suitable group)
  - o comments on the initial thoughts
    - registrations of EU citizens, or extended permit applicants?
  - o any other types of residence permits and other immigration processes that should be considered

- altogether there are about 120 possibilities, including the first and extended permit types (Migri.fi)
- get a complete picture of what we should know:
  - similar concepts and processes to benchmark
  - relations/links to other topics and phenomena / projects and discussions / people and roles...
  - different scenarios, variables in the concept

The full Staff interview field Guide is enclosed as the Appendix 2.

The role of the researcher was to facilitate the discussion: ask the right questions to keep the interviewee talking about the topic, and document the outcome. As a starting point, we already had some initial thoughts on some of the questions, compiled by the project manager. For example, some of the requirements for the visit at the Migri service point are based on Finnish legislation, and thus cannot be reinvented, so they served as a starting point. However, the preliminary assumptions were kept hidden and presented only when the interviewee got stuck in their ideation, or had already claimed that they have run out of ideas, in order to carry on the discussions. We were curious in seeing what kind of comments would arise when we did not guide the discussion too much with questions.

#### Results of the interviews with Migri staff

We collected altogether 10 hours of interview recordings from the Migri staff. We listened to the recordings and wrote down the comments and thoughts. These notes were categorised and combined, resulting in a summary document to report the preliminary findings, and some visualisations of them, presented later in this chapter 4.

The attitudes towards the idea of customers using self-service machines were mainly positive; nobody thought that the idea was bad or impossible to implement. However, the views were not identical: a few interviewees were more reserved in terms of how much we can expect from the customer (skill-wise, e.g. language skills and their abilities to independently use technology). They saw more risks with providing such new service platform, thus suggesting a narrower use for it - regardless, they did not discard the idea. The tentative view seemed to be common at the very beginning of the planning: when interviewees told us they had shared with their peers that they are participating in these interviews, most colleagues had not been convinced at all that the project would be successful. This proved that the topic was new, complex, and required good planning and testing prior to making any commitments.

The joint worry of even the optimistic interviewees was that although this self-service solution would allow more flexibility for customers at the service point visit, it might cause them delay at a later part of the handling process, causing the total waiting time to increase,

which is the opposite of what is targeted. If there was a mistake made by the customer that was unnoticed at the start of the process, it would take time to be clarified later, or in the worst case, it would require the customer to start the application process again. The interviewees had examples of similar changes that had backfired like that, e.g. when quickly recruiting new workforce but not being able to provide them a thorough enough orientation to the job, the workload and waiting times accidentally increased. A skilled customer service person would know what to discuss with the customer about their holistic situation, in order to check that they were applying for the right type of permit.

Regardless, no showstoppers were identified for the self-service machines, and the interviewees displayed genuine interest and enthusiasm into investigating the idea further. In addition, the unstructured discussions confirmed that the preliminary list of possible features to the self-service machine made by the project manager was a good start. The list was mainly based on legislation, but there were no objections on whether the same criteria could be met as self-service. Some clarifications were made to paint a more detailed picture, but the core of the draft remained the same.

The biggest change after the staff interviews, however, concerned the potential target group that would first experiment the use of the self-service machine. The interviewees recommended us to focus more on the people applying for an extension to their existing residence permit, instead of the registrations of the citizens from within the European Union, which had a lot of very easy cases but surprisingly many exceptions and room for error.

The interviewees were very enthusiastic and experienced, and provided real-life details one would never guess: as an example, there could be a need to restart the payment system if the table or the machine happened to move a little bit, or that the scanning of fingerprints is difficult in winter when customers' fingers are cold and dry - one should advice the customer to rub their finger against their forehead to make it naturally a little bit warmer and greasier. This brought forth the potential needs for guidance and instruction for also those customers that would need to know these tips and tricks in the self-service context. From the expectation management perspective, we also learned that sometimes it might be impossible to detect some biometrics of a customer even with the support of the customer service staff, so we should plan a good process for those exceptions.

As this part of the development we considered implementing a stakeholder map, but chose not to make one, as there were only few roles identified in the self-service concept: the customer as the active user of the self-service machine, and a staff member from Migri nearby for the possible support needs of the customer as the internal stakeholder. From the technological point of view the ecosystem would be more elaborate, but the back end,

interfaces to Migri's databases, and application systems and other technical definitions are outside of the scope of this thesis.

After the interviews had taken place, we drafted a very general customer's journey map to summarise the interviews, as a "quick and dirty" method. The graph describes which steps are required from the customer, which IT systems are involved and which kinds of dependencies exist. The aim was to reveal parts of the process that had many open questions and scenarios, and required further examination (see chapter 4.2.3). Indeed, we recognised that e.g. the preconditions of using the self-service machine needed to be cleared further, and the order of the steps and options that the customer would be given.

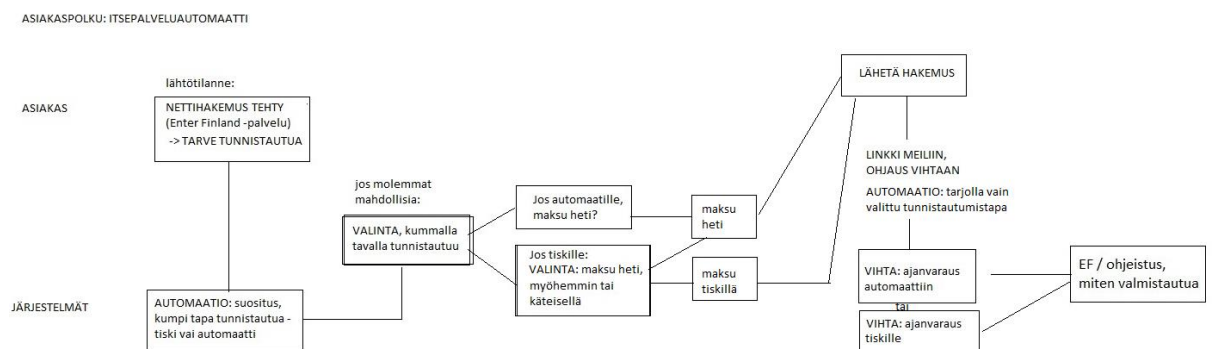


Figure 11: A preliminary and unfinished draft of the customer's process.

Figure 11 portrays the sketching of a possible order of the required steps, e.g. sending an online application, choosing the way of proving one's identity, paying for the application and booking an appointment for the self-service machine.

#### 4.1.2 Interviews of customers

In the first research phase, customers were equally involved right at the beginning of the concept development. Soon after the initial interviews with Migri staff had taken place, we wanted to receive initial comments and reactions from the real customers who would be influenced by the change, if the plans are realised. We were curious in collecting insight regarding the inconvenience the current service model caused them, and the expectations they would have for an ideal way of clearing through the identification phase. The aim was to also elaborate on the secondary research and the customer feedback we had received regarding the identification visit at the service points.

#### Recruitment and implementation

We recruited customers to the interviews by posting an advertisement at the official Facebook page of Migri, with ~9400 followers. The post received 51 likes and altogether 216

people opened the link to the sign-up form, resulting in 10 volunteers within just one day. The Facebook page is active and Migri posts at least one new topic every day, so there were no new candidates signing up the next day after the post was no longer on the top of the newsfeed. That was fine, as we wanted to keep the registration period short, expecting that people would know their schedules for the next days better than for a couple of weeks ahead.



Figure 12: A screenshot of the recruitment ad posted on the official Facebook page of the Finnish Immigration Service.

It is characteristic for qualitative research to have a small number of participants involved in the study (Creswell 2014, 189). Based on our previous experience with customer interviews, we wanted a sample of five interviewees. Indeed, we found five candidates that match the desired profile of customers who would have prior experience in applying for an extended permit. Further screener was not needed, as many candidates were hoping to be interviewed during the same time slots, or had special requests that we could not accommodate (e.g. one candidate claimed that they were not capable of conducting the interview in English and asked if we could speak French instead, and some others asked if they could meet us and address some more general topics other than the idea of self-service machines).

Consequently, five interviewees were selected and invited to visit a Migri service point. We had booked a negotiation room there for two days, hoping to do 2+3 interviews in a row. However, eventually two of the interviewees cancelled their appointment due to personal reasons and did not want to reschedule it, and one interview was postponed once. Thus, we had three interviews within one week. We had not overbooked other candidates, and there were no other candidates for the slots that became available, so all available slots were not filled. The communications unit of Migri was reluctant to repost the ad for interviews, as they have a lot of new posts waiting to be published, so we settled for the three interviewees.

The three customers who came to the interview included two men and one woman who have experience in applying for an extension to a residence permit. They were originally from Russia, Turkey, and Bangladesh: countries which all rank in the top15 by volumes of Migri's applications for extended permits during the past year, and they seemed to fit to the most common age category 18-34 years (Migri.fi). We did not ask for background information like their gender, profession, age, or citizenship on the sign-up form or during the interview, as this was not relevant for the research questions, and we wanted to minimise the amount of personal data collected.

All discussions took place face-to-face, and were recorded for documentation and further analysis. The researcher was assisted by a summer trainee, who was present to take instant notes on laptop. The role of the researcher was to facilitate the discussion: ask the right questions to keep the interviewee talking about the topic, manage the mood and motivation of the interviewee, and document the outcome. As Kalbach instructs, "it's the interviewer's job to drive the conversation, letting go of control at times, and jumping in and steering the session at others" (2016, 118).

#### The goal of the interviews

As with the staff interviews, we wanted to gather understanding on the experience and needs of our customers, and learn if they thought we were solving the right problem by building self-service machines. Furthermore, we wanted to learn their perspective on the possibility of implementing a self-service machine to do part of the work of Migri staff, and the implications they are assuming the change would bring: both positive and negative.

Most importantly, we wanted to study the initial responses and gather ideas on what the customers would like to know about such a change in the application process. We were hoping to also study how they compared the alternatives of the identification phase: the traditional face-to-face customer service and the potential self-service model, which one they would prefer to use, and why. Furthermore, we wanted to find out which kind of benchmarks they would know of self-service machines either abroad or in Finland.

The full Customer interview field Guide is enclosed as the Appendix 1.

Preliminary customer reactions: “It’s a very great idea”

We collected altogether three hours of interview recordings from customers. We listened to the recordings and wrote the comments and thoughts down. These notes were categorised and combined, resulting in a summary document to report the preliminary findings.

The overall tone of customers’ feedback was positive towards the idea of implementing self-service machines at Migri service points. One of the interviewees described being curious about the idea, and felt that they would prefer automation as it e.g. makes less human mistakes. They all shared that the main challenge of Migri services is the long processing time, so any means that would minimise the waiting time, especially the unnecessary waits, were considered important.

In the traditional model of meeting Migri staff the customers liked the opportunity to ask private questions and doublecheck that everything is fine, but were also aware of the alternative ways of receiving customer service remotely (e.g. e-mail, where the response is documented and can be saved for reviewing later), if they would not receive this kind of discussions with the self-service model. Interviewees felt that the younger the customer the better the reception and attitudes towards the self-service machine would be. However, they emphasised that everyone should have the opportunity to choose whether they meet a staff member or use the self-service machine.

The customers were hoping to have proper instructions (such as video, animation) as well as support from a staff member there by the machines, if needed: but the machines and their user interface should be made so intuitive and simple that it would not require you to study any guides beforehand or on site. Anything too complex should be reserved the actual online application system Enter Finland, where one can take their time and complete the steps at their own pace. The customers also wanted the staff members to monitor the use of the machines. A question was raised on how the original documents are presented: traditionally the customer service staff member would evaluate them at the same visit as the biometrics are collected. The question displayed how familiar the interviewees were with the application process and the requirements.

One of the interviewees mentioned an interesting self-service concept by the Russian government to benchmark, and discussing its features and user experience was the main topic of one of the interviews. Another special focus by one of the interviewees was the data security approach - how Migri should prepare for bugs, attacks and intentional harm, frauds or misuse of the machines. One customer also asked for a feature of instant printing of the

permit card, so that there would be no need of waiting for postal delivery to home address, if all human interference and actions had taken place prior to the last step of authentication.

As a summary, two of the three interviewees were very helpful and motivated. They had a constructive attitude and focus. However, one of the interviewees had an agenda of their own: to talk about different negative experiences they had encountered with Migri and the process of moving to Finland. This was a new challenge for the researcher, as she struggled to get the interview back on track to the pre-announced themes. As Portigal instructs, in these situations we must reset our expectations and explore if there is something we can get out of this session (Portigal 2013, 121). It was important to let the customer be heard and met with empathy, and kindly explain the questions and practices they found unclear. From the research point of view the goals in this particular session were not met, as the interviewee eventually had few opinions regarding the self-service machines: they would have preferred to give feedback of a ready machine, not just a theoretical idea, and indicated that the priority areas for Migri to develop lie elsewhere. However, seeing a friendly face who explained the process was calming to the customer, and they left happy, saying that they will advise their friends and family to sign up for the interviews too. This was a good reminder though about the challenging context we are working in: the topic of immigration is very personal and can cause strong feelings in customers as well as local people. Migri's customers vary greatly e.g. in their needs, expectations and experiences, skill sets, cultural backgrounds, and behavior (described more in chapter 1.2). The interview was also a good reminder that the iterative process of service design is not rooted in everyone, and expectation management in the recruitment ads has to be clear.

## 4.2 Define: Workshops with the Migri staff

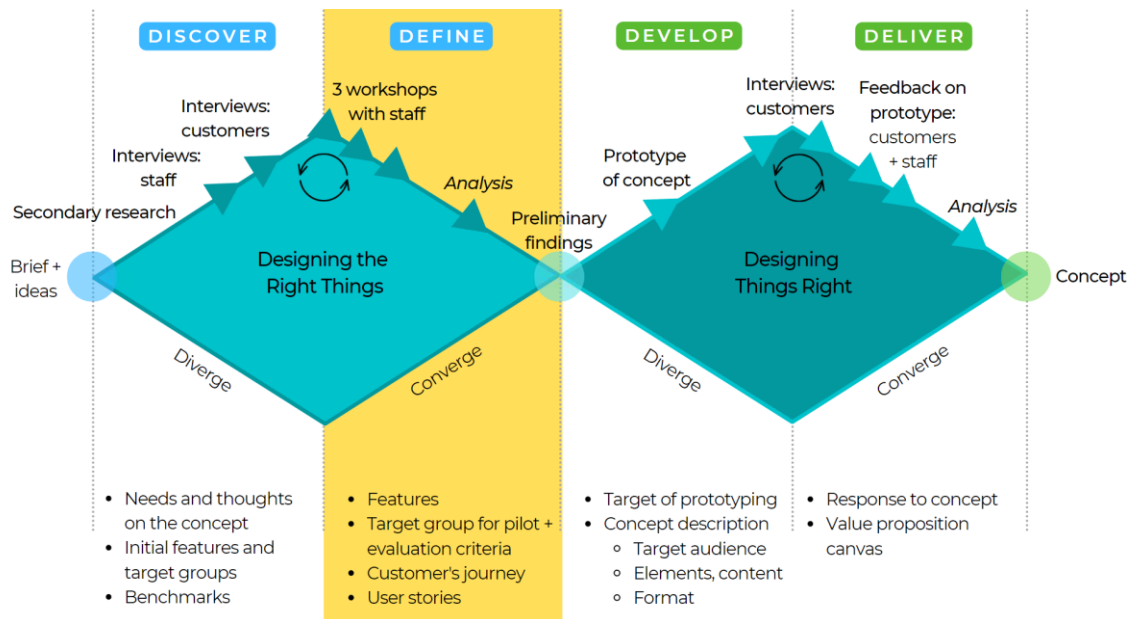


Figure 13: The second phase of research, workshops with Migri staff.

In the second phase of the research, we hosted a series of three workshops with the Migri staff. The goal of the workshops was to validate and complement the understanding gathered during the interviews, especially the internal ones that had a more practical focus.

Therefore, the participants of the workshops were four of the same people who had participated in the individual interviews earlier. This time they were all working together, and the focus was on painting a more detailed and practical picture of the topic. The four participants work in similar customer service duties but in different cities and service points in Migri. They were selected by their supervisors who allowed them to allocate some of their working time into development work, but they did not know each other prior to these workshops.

The workshops took place virtually in the Skype video call environment, and the meetings were recorded with the permission of all participants. Each workshop took about three hours (with a small break), so the recording helped in the documentation and analysis of the altogether 10 hours of teamwork.

Previously, as an outcome of the interviews, we had analysed the discussions and compiled a preliminary understanding of some of the elements required to define the concept for the self-service machines at Migri. It was documented in a preliminary report, and this material served as a good starting point to discuss further the possible features of the self-service machine as well as an ideal target group/s for testing the machines first in the experiment

phase. As a new approach, we introduced the customer journey map, to bring forth the required steps of the customer. The idea was to confirm if the staff members had expressed all their perspectives on the individual interviews, and whether we would proceed to the convergent phase in bringing alignment to the views.

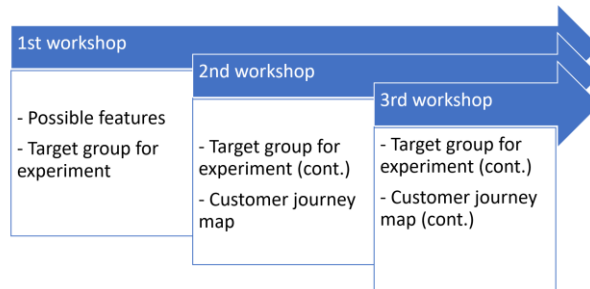


Figure 14: Focusing on the concrete outputs in internal workshops.

Next, we will focus on the themes and outcomes of the workshops, and see how the discussion evolved over the sessions. They are grouped here topic by topic, instead of the chronological division by the workshops, even though the three main areas of discussion were handled in a parallel manner. The outputs that the series of three workshops created are the possible features of the self-service machines, options for the target group of the experiment phase, customer's journey, and the user stories. The full Plan for the staff workshops is enclosed as the Appendix 3.

#### 4.2.1 Possible features of the self-service machines

Evaluating the list of potential features of the self-service machine was a surprisingly easy task: we managed to finish the work in the first workshop. We had created a preliminary list after the individual interviews, and the aim was to validate the list with everyone. The analysis based on the interviews was proven to be complete enough, and no major additions or removals were needed at this stage. Instead, the focus was on adding some details, and listing some open questions to be clarified.

As a result of the first workshop, we concluded with a list of features (and guidance texts for the customer) that the user interface designers can use as a foundation for their concept. The potential features included the same list that we had summarised based on the interviews:

- scanning one's passport
- scanning one's fingerprints
- taking a facial picture
- giving a sample of one's signature
- paying for the application

Over the two remaining workshops we did return to the documentation, and added some open questions to the material, but the list of features was found to be complete enough for this phase of the development, as well as the scope of minimum viable product.

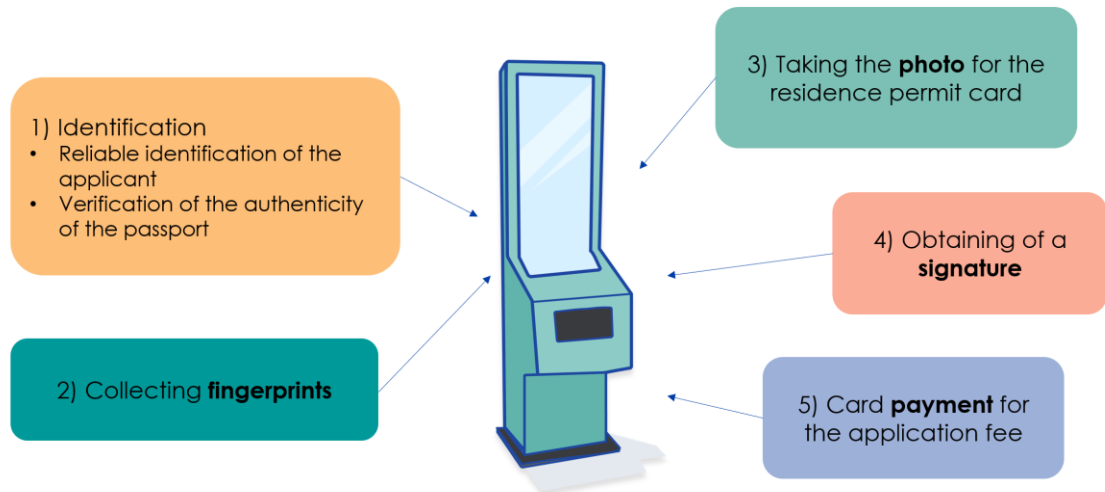


Figure 15: List of basic features identified for the first test use period.

The categorisation and the examples of different self-service portals presented by Middelburg demonstrated that the self-service concept created for Migri is indeed an ambitious one. Migri's self-service machines aim to combine all key purposes known for self-service portals: customer service (through creation of user support actions), transactions (paying for the application fee), self-help (reading about the next steps in the application process), and information exchange with Migri and the customer (Middelburg 2017, 83-84).

#### 4.2.2 Target group of the experiment phase, and evaluation criteria

Instead, it was a complex topic to narrow down the potential target group that would use the self-service machines at the experiment phase of the project. We started the discussion already in the individual interviews, and worked on it at all the workshop 1 - 3. The complexity surprised the researcher, but the methods of working evolved along as new layers of discussions were found.

Theoretically, about 120 types of permits could have been possible for the self-service machine, as there are many variables for grounds of entering Finland legally, and many subgroups within each category (Migri.fi). In practice, we excluded a few grounds in the beginning of the process (such as international protection, with seekers of asylum and temporary protection), leaving about 50 options for discussion in the interviews and workshops.



Figure 16: Iterative process of selecting the target groups for the experiment phase.

After the individual interviews we had compiled a list of six suggestions that were spontaneously shared with the target group for the experiment.

- Registration of an EU citizen (*not a permit*)
- Extended permits for the work-based permits (especially the specialists)
- Extended permits for the study-based permits
- Extended permits for spouses of Finnish citizens
- Permanent residence permits
- Citizenship applications

At the first workshop, we had a round of comments by all participants and analysed the suggested six target groups for the experiment: which type of customers and/or residence permit would be ideal to use the self-service machine first. The preliminary criteria were to look both for the application process and permit type that would have the simplest requirements, and most independent customers (e.g. regarding language proficiency in English and IT skills). The topic quickly raised contradictory opinions, and the discussion on this one question was active for 45 minutes.

As a result, we agreed to discard one of the preliminary suggestions, the Registration of an EU citizen. Instead, we added a new idea that had not yet been suggested in the interviews (card renewal of customers with a permanent status, not a permit either), concluding with revised six potential target groups. However, there was not enough alignment yet on the views regarding the six finalists, so we decided to take a time-out and continue the analysis next time in a more structured way.

In the second workshop, we continued to evaluate the six identified potential groups further. To structure and document the thoughts, we used a virtual Flinga.fi whiteboard. The group had not used Flinga before, but it was intuitive and easy enough, so that the focus was on the topic, not on learning its features.

Using the me-we-us method, everyone worked alone first and wrote down pros and cons for each identified option. After a few minutes of ideation, everyone posted their points on sticky notes on the common whiteboard. The tool allowed to post sticky notes as anonymous, but in this case it was less crucial, as the points were not too personal, and the group had

quite similar experiences on serving these customer groups. Next, we read through all the sticky notes and grouped similar notes next to each other.

A discussion followed: we checked if there were points that were contradictory, and shared arguments on why the points raised were relevant. Participants were asked to add more sticky notes as the discussion progressed. We discussed all six potential target groups one by one, first with the individual planning, then sharing, grouping, and exchanging thoughts together.



Figure 17: A part of the Flinga whiteboard at the end of the second workshop.

Next, we completed a round of votes, to see if we had a shared view on which target groups would work best in the experiment. Everyone got a moment to contemplate on their personal top 3 groups, and then we posted red dots with priority labels 1, 2 and 3. Two potential target groups were identified, but their priority labels varied. We agreed to continue the evaluation and comparison in the next workshop, as some participants had to leave early, and the result of the votes were ambiguous. Figure 17 illustrates the 1) drafted pros and cons of different target groups, grouped according to the topic, and 2) votes casted on the suitability level of these customer groups for the experiment phase.

After the second workshop, the researcher continued with the analysis of the posted sticky notes on their own. While reading through the listed pros and cons, the presented arguments started to repeat in many of the considered target groups. Therefore, the analysis from there on focused on the type of the arguments given: identifying patterns in different kinds of arguments and points that were addressed by the workshop participants, raising an interesting approach - could they serve as a set of criteria for the selection of the final target

group? As an example, the workshop participants had written examples of which type of biometric data would need to be collected at the service point: some types of permits would require the customer to provide a facial photo, finger prints as well a signature, whereas other permits would require only a photo. When selecting the final target group, it is important to compare the possible use cases.

The further analysis produced the following list of different kinds of arguments and approaches to the selection of the target group for the experiment:

- impact / volumes: number of applicants per year (new + those who renew their status)
- number of years since the previous formal authentication / proof of identity checked
- simplicity:
  - o how often customers have selected the correct type of permit to apply for
  - o how many / what kinds of attachments the permit requires to submit
- probability of receiving support in one's application process (e.g. from a spouse / employer in Finland)
- average level of skills with customers of that permit
  - o language proficiency (English or Finnish)
  - o IT skills
- number of required steps to be completed on the self-service machine
  - o payment
  - o facial photo
  - o finger prints
  - o signature
- required actions at the appointment
  - o number and type of actions by the customer service staff
  - o potential value to customer in face-to-face service
- current level of automation / availability of checks to databases and registers

KOHDERYHMÄ	Määrät	Rajaus	Tarve / toistuvuus	Hakemus-tyypin valinta	Maksu kioskissa	Biometriikka	Kielitaito (I/II/en/sv)	Edellinen tunnistautuminen	Tekninen osaaminen	Hakemuksen taso	Avun saaminen	Asiainnin tarve	Liitteitä	Tarkistettavaa	Rekisterit	Automaation taso	Muuta
Ole-kortin uusijat	?	Vain ne, kenellä jo pysyvä status	5v välein + Tarvitessa (katoaminen, nimenmuutos...)	- Menee sekaisin jatkolluvan kanssa: - Hakevat usein pysyvä lupaa		KAIKKI: Kasvokuva; Sormenjäljet; Allekirjotus							Vähän				
Jatko: SK-perhejäsenet	?	- Vain SK-puolisot? - SK-lapset - SK-lapsen huoltajat? - Muun kansalaisen perhejäsenet?				- Kasvokuva; - Ei sormenjalkia; - sama allekirjotus?					SK-puolisolta	(vähäinen / ei tuo lisäarvoa)	Perhesideseakirjat: Passikuvat ja matkustusasiakirjat pakollisia	(Perhesidettä / perhe-elämää ym on jo tarkisteltu l. luvan yhteydessä)	VTI: perheside ja huoltosuhteet	Pitkällä; päätösin perustuu pitkälti automaatioon	- Perheenkokoaja ei tarvitse lupaa / ei toimeentuloedellytyksiä - Alakäisten huomiointi: toisen huoltajan oltava paikalla?
Jatko: Työperäiset	14.400 / v	TTOL; Yrittäjät; Entisyssiassiantuntijat				- Kasvokuva; - Ei sormenjalkia; - sama allekirjotus?	Vaihteleva		Vaihteleva	Hyvä	Työnantajalta	(vähäinen / ei tuo lisäarvoa)	TEI-lomake riittää vireytykseen				Ihmiskauppa? Sukulaisten työnantajana?
Jatko: Opiskelijat	4.000/v	Korkeakouluopiskelijat; Vaihto-opiskelijat				- Kasvokuva; - Ei sormenjalkia; - sama allekirjotus?	Hyvä		Hyvä								Pitkällä + Luotetaan paljon hakijan itse täyttämien tietojen
Pysyvät luvut	12.500/v	+ Pitkään oleskelleen... EU-ole?				KAIKKI: Kasvokuva; Sormenjäljet; Allekirjotus		Voi olla 4v sitten		Puutteellista		Voi tulla esille muutakin perustetta pysyvää varten		Av-asuinpaikka (tapauskohde-aviranomaisuus)	Paljon tietoa viranomaisrekisteristä		- Yleensä peruste on sama koko ajan - Hakijolla aiempaa hakukokemusta, todhak. - Järkköinnukset ym - Passillemoja ei kopioida enää
Kansalaisuus	8.700/v	+ Kansalaisuus-aseman määrittäminen? + K-ilmotus?			Ei (jo hakemusvaiheessa)	Ei (ei tarvetta)		Voi olla 4-5v sitten			(hakemukseen usein täyttyä joku muu kuin hakija itse?)	(vähäinen / ei tuo lisäarvoa) kysymyksiä, jos testejä kaverille	(- Pitkät käsitellyt: haastattelu ei tarkistaminen usein turhaa vireytyksen yhteydessä)	Kielitaito, mutta hylkäysperuste (+ automaatio: jos testejä -> vihreäksi)		- Voisiko vireyttää vahvasti tunnustautumee - Ei jälkkontrolloilla, na, ilman vilpittösten tapausen selvitys vaikkeampaa?	

Figure 18: Unvalidated first draft of the evaluation table of target groups.

The table with potential target groups (y axis) and the types of arguments (x axis) used to compare the potential target groups' suitability for the experimental use of the self-service machine.

In the third workshop, the final decision for the potential target group for the experiment was made utilising these two outcomes of the earlier work: the table of criteria and approaches to be considered in the evaluation, and the preliminary comparison of the six groups identified in the discussions. We made further restrictions on the suggestion of permits based on family ties, to focus only on the spouses instead of all possible kinds of family members. As all participants were present at the last workshop, they were all asked to again share a list of three most suitable target groups based on their personal assessment.

As a result, there were three common favorites identified, in varying order in ranking (1-3). To narrow down the decision, we used the new draft of a table (Figure 18 above) created after the second workshop, and filled in the gaps that it revealed. Altogether four different groups were suggested in the top 3 voting, and three favorite groups were analysed with all the aspects identified in the second workshop. This examination formed a more complete understanding of the groups' pros and cons in terms of suitability for the experiment.

As a result of the three workshops, the participants recommended three customer groups to be considered by the managers, and provided arguments pro and con the selection.

- **Renewal of card (if permanent residence permit)**

- **Extended permits of spouses of Finnish citizens**
- **Citizenship applications**

In addition, we had created a table with prefilled criteria that would help compare and evaluate different target groups not just for the experiment, but for the potential scaling of the concept later on. As the general criteria at the beginning of the process was to select an application process and permit type that would have the simplest requirements, and most independent customers (e.g. regarding language proficiency in English and IT skills), the co-created table included further qualitative and quantitative approaches to form a more complete evaluation and comparison of options.

After the workshop, this material was presented to the manager of the unit that handles these customer groups. The final decision was made there, based on the arguments and statistics collected by the project group. More on the validation phase and results follows in chapter 4.4.1.

#### 4.2.3 Customer's journey



Figure 19: Iterative process of defining the customer's journey.

An important task was to define the application process from the perspective of the customer. A customer journey map was selected as the tool to visualise it - more in chapter 3.4.1. We did not need to start totally from scratch, as Migri had defined a general customer path a year earlier, discovered in the secondary research (Figure 20 below). It was made from the perspective of the most common groups of customers: people applying for a residence permit based on a job or study place in Finland. However, as the path is described on a general enough level, it applies to most customers as well. Consequently, the downside to that was that the path description was on a too general level for our purpose, so we needed to start with mapping the current state of the path in a more detailed manner.

## Yleinen asiakaspolku työ- ja opiskelulupaprosesseissa

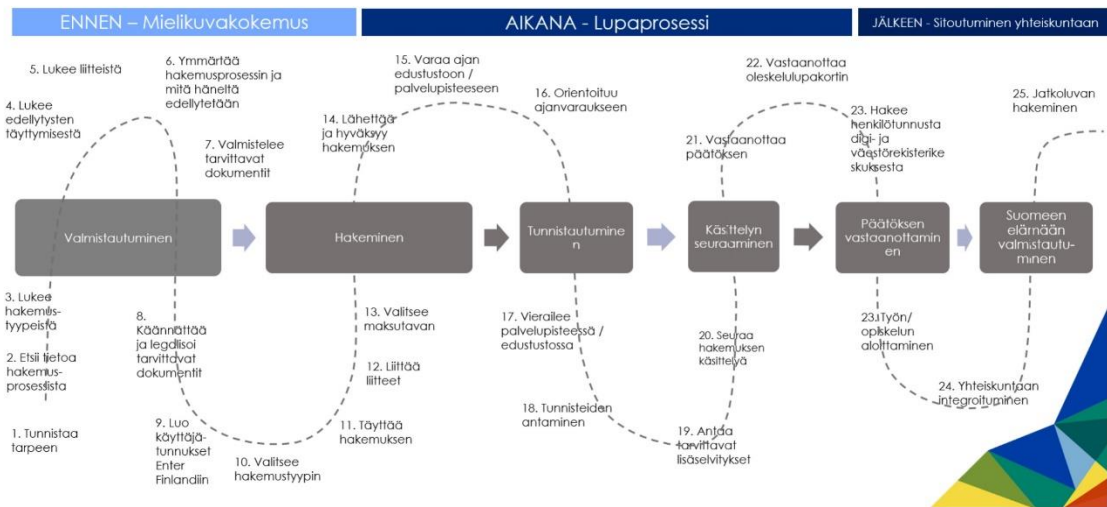


Figure 20: General customer path of employees and students, identified by a previous project at Migri.

The task for the participants of this project was to build on the existing understanding, and go deeper on certain parts of the general path. The scope of this project was limited to two of the six grey boxes in Figure 20, called “Applying” and “Proving one’s identity”, and the steps number 13 - 18 in particular. Our goal was to create an alternative service platform for the steps 17 and 18, and see if it would impact other steps of the customer’s journey.

In two of the three workshops we started to work on mapping the required steps of the customer and his journey. The task of identifying the steps in the customer’s application process turned out to be difficult for the participants in the workshops. The challenge was that the participants had not worked with customer journey mapping before, nor seen such visualisation: we had not touched the topic in the individual interviews either. We started the work by looking at a few examples of customer paths, but the participants were not familiar with any other type of process visualisations either. Already looking at the application process with the eyes of the customer seemed confusing: the focus of the customer service staff was on the actions they were trained to perform at the point of contact.

Therefore, instead of co-creation, this particular output was conducted with a heavier input from the researcher, with making a quick draft of possible steps and drawing them on the Flinga whiteboard, and the workshop participants mainly commenting on them. The first draft was a mix of the customer’s steps as well as those of the customer service staff, in the current state as well as the parts that would remain in the experiment as well. We agreed to

keep the customer’s perspective in mind and actively identify the customer’s action in the service encounter, and finish the customer journey map together in our final workshop.

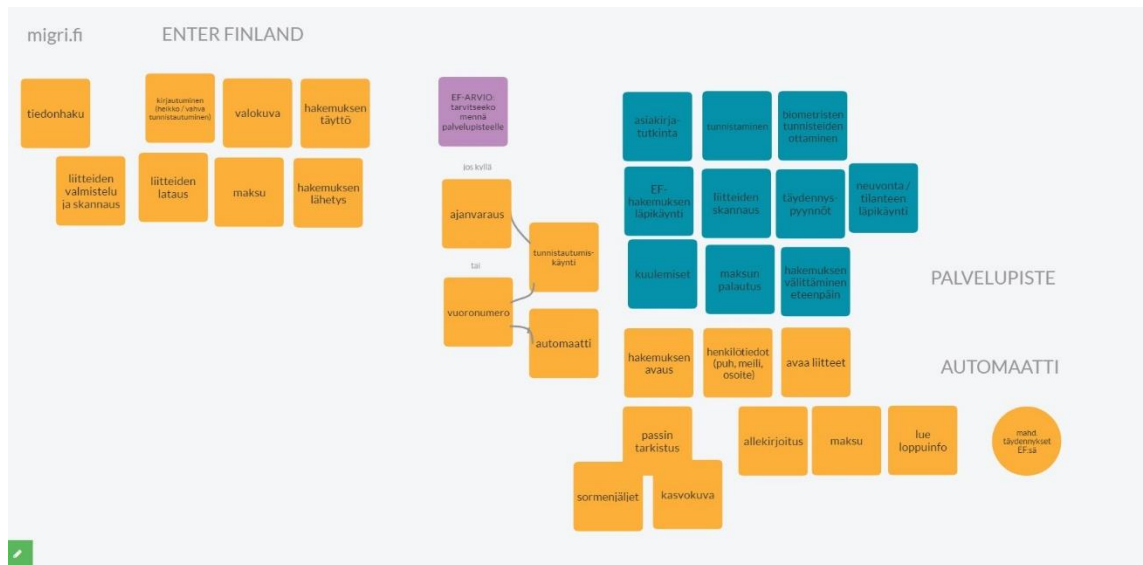


Figure 21: First draft of customer’s journey (in orange boxes) with the current steps that the officials take (in blue boxes).

After the second workshop, the researcher continued to write a more structured version of the draft created at the workshop. The dependencies and a chronological order were included, and drafted steps that belonged outside the scope of the new journey were eliminated. The second version of the customer’s path was shared with the workshop participants before the last workshop, and participants were asked to prepare feedback on the draft.

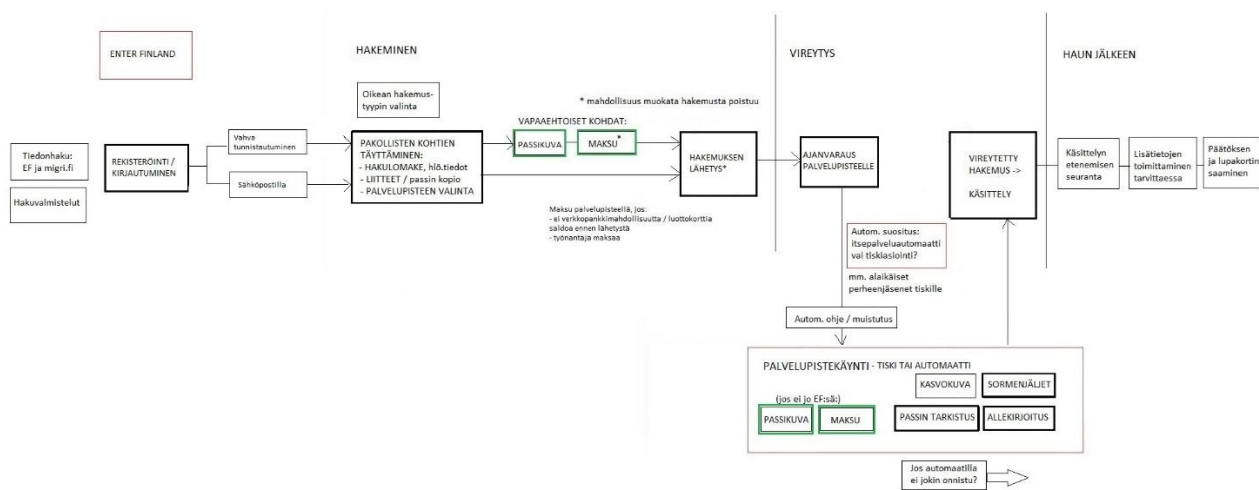


Figure 22: Second draft of customer’s journey.

Finally, at the third workshop the participants were more on track and gave feedback about the second draft. The steps were validated, but a change into a more linear approach was suggested. After the check of the content at the workshop, an improved, third version was created by the researcher. It was polished in design and translated into English.

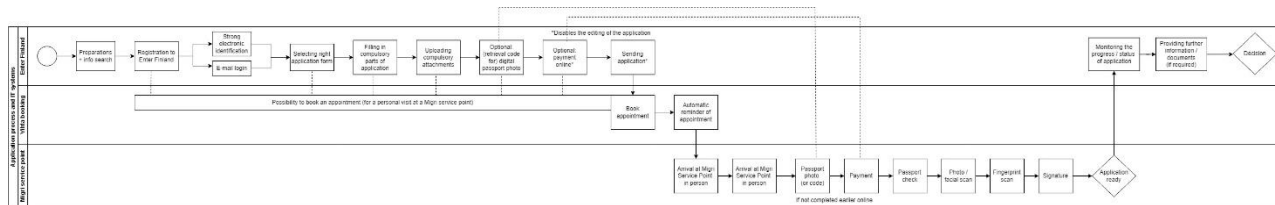


Figure 23: Customer's journey, final version.

As an outcome of the third workshop we created a journey map, listing all required steps of the application process. The three lanes include the service channels that the customer uses in order to complete the application process. Starting from top left, the customer prepares themselves for applying and registers a profile into the online application system “Enter Finland”. Next, he selects the right application form and fills in the required fields, uploads the compulsory attachments and sends the application.

At any point of the application process, the customer can book an appointment at a Migri service point, or come spontaneously and wait in line to finish the application process. The visit to come prove one's identity is compulsory for the vast majority of applicants, and it includes e.g. a check of one's passport, collecting fingerprints and a signature from the customer. At this point at the latest the customer will have to pay for the application and provide a passport photo, if they have not done so already as an optional step in the online application, in order to activate the application for processing. These are also the functionalities defined earlier (in chapter 4.2.1) as the potential features of the self-service machine.

As a result of the customer journey mapping, the big revelation for the workshop participants was to realise that the same visualisation would work for also the selected sample of customers in the experiment. The only difference in the test phase and the current states would be the service channels that the target group would use, so just labeling the two bottom lanes differently. The customers of the experiment would not book an appointment from the booking system, but directly with the Migri staff involved in the test, and instead of being instructed by a human at the service point, the customer would be instructed by the self-service machine.

As a result, we reached the predefined goals. As the main revelation, the additional steps that the group in the experiment would do would mainly concern the actions of the Migri

staff. From the customer-centric approach this was great news, as we did not want to cause extra burden and confusion on this temporary experiment to the customer nor the IT systems in use. It had to be examined though, in order to plan a smooth experiment.

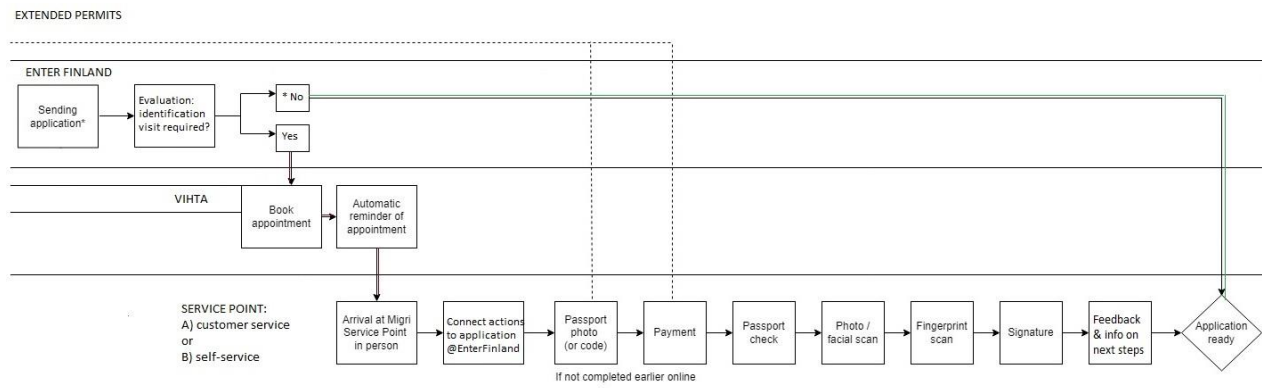


Figure 24: A close-up from the part of the customer's journey during the visit at the service point.

#### 4.2.4 User stories

User stories were compiled as the final building block for preparing to define the concept for the self-service machines. Stickdorn et al. (2018, 132) define user stories as a summary of what customers want to be able to do, building a bridge from design research into defining requirements for the development of a service or a product. Each insight or need is written on its own row e.g. in an Excel spreadsheet. It is recommended to use general words that do not nudge or limit the way in which the particular wish of the customer should be implemented in practice.

User stories were used as the format to summarise all preliminary findings, and present them in one file. The starting point was the customer journey map, defining the steps and their order. On top of that, we took into consideration more features and actions, such as possible malfunctions and other exceptions: the format of a table was more flexible and scalable than the customer journey map in this level of detail. As the material already existed and was analysed, the researched translated that content into the format of user stories alone.

As a result, we concluded with altogether 55 lines in an Excel file (see Appendix 4). The benefit of using the user story format was that it allowed to document a more thorough explanation of the customer's actions and the information they would need to complete each step. Moreover, we described any pending questions or decisions to be made on all points in need of clarification, pointing out the pain points of the concept development at this stage.

#### 4.2.5 Delimitations in the Discover and Design phases

In addition to the selected methods and tools, many others were considered in the Discover and Design phase. Instead of the customer journey mapping, the initial thought was to use the service blueprint. However, as described earlier, such analysis of processes proved to be too different and difficult for the Migri staff members participating in the workshop that we wanted to start with the customer journey map instead.

Outside the scope of this thesis we will proceed with building a more sophisticated customer's journey with more lanes and perspectives included. It will also be on a more detailed level, including the process for handling possible malfunctions and other situations that might happen outside the ideal scenario of a self-service customer. Next, we will focus more on the experience of the customer: the emotions and expectations, as well as the challenges and opportunities that the new process and touchpoint raise. Comparing the results of the self-service customers with those of the traditional customer service model would be interesting, as in practice there will be more differences identified that we could speculate at this point. It will also help Migri identify where the changes are, and how they affect: for instance, are there differences in the IT systems, the instructions and guidance of customers, or actions of staff.

The service blueprint would also work well for deepening the understanding. Next, we will be focusing more on the actions of the staff, as we have identified that there are many steps for the staff too in the handling of the application and decision-making, and parts for just waiting, also in the ideal scenarios. Looking for possible bottlenecks and ideas for making the handling process of applications smoother and quicker at Migri's end would be a good topic for another thesis.

Another development phase that will continue outside the thesis is to define personas and the empathy map. As described in the introduction, Migri customers are very diverse, and personas had not been created before. However, we first needed to select the groups of customers for the self-service machines, in order to be able to focus better on the profiles and needs of those customers. The requirements also vary according to the permit type, so the needs and experiences of customers vary based on the type of permit they have applied for. Instead of making one very general persona, we decided to first narrow down our options and conduct a proper study on the potential users of the self-service machines.

### 4.3 Design: Prototype of the self-service concept

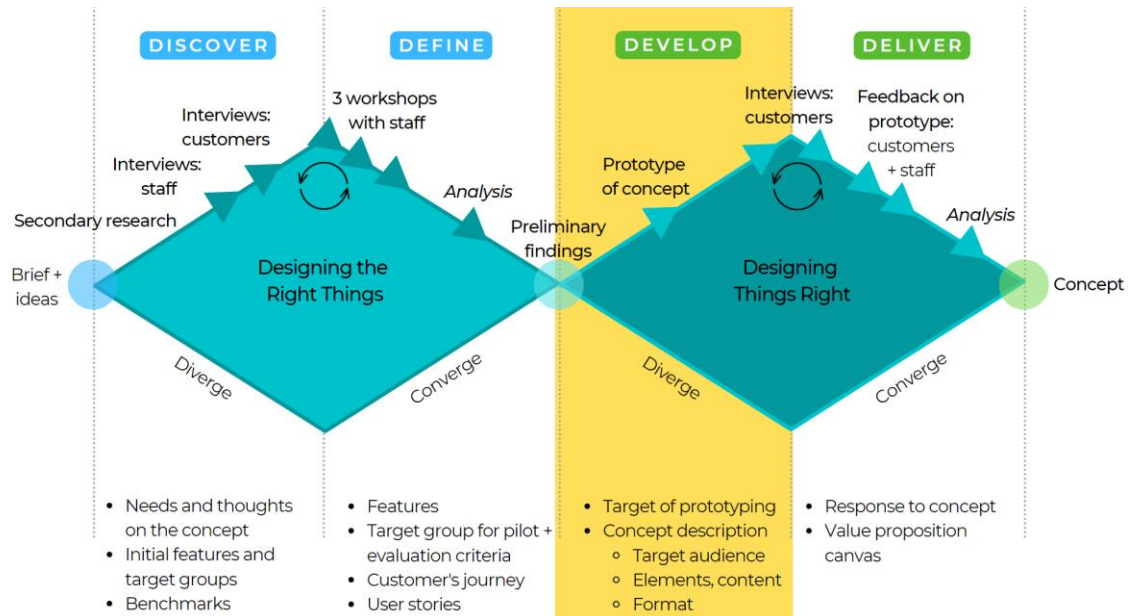


Figure 25: The third phase of research, creation of a prototype of the concept description.

Finally, the two initial phases of data collection and synthesis were summarised. The collected research material was composed of both written and audio material provided by the participants, including altogether

- 17.5 hours of interview recordings
  - o 7.5 hours with 11 customers (1st round: 3h, 2nd round: 4.5h)
  - o 10 hours with 5 Migri staff members
- 8 hours of recordings from the staff workshops with 4 staff members (3 rounds)
- 4 pages of written responses to the prototype of a concept description
  - o 2 pages from 19 customers
  - o 2 pages from 8 staff.

In addition, this material was complemented by the field notes the researcher made of the interviews and workshops. Furthermore, a countless number of other supporting material were co-created in the workshops as well as in between the interviews and validation phase, such as different drafts and iterative versions of the

- list of basic features for the MVP of the self-service machine
- customer's journey maps
- user stories
- lists of target customer groups for the experiment phase

- a table with evaluation criteria to support selecting the next target groups to use the self-service machines
- value proposition map
- concept description and its elements
- lists of pending questions and topics to clarify.

Furthermore, a folder included an extensive number of files related to the preparations of the interviews and workshops.

In order to build on the understanding, the next step was to create the first draft of a concept description - a prototype that could be iterated further. “Customers need a good mental picture of the future service concept. Generating such a vision of a service concept in the mind of customers is the task at this stage. In this context it is important to consider the emotional aspects of a service. A mere description is seldom enough to create a clear vision.” (Stickdorn & Schneider 2010, 132.)

Drawing from the theoretical framework and the models of Bettencourt and Middelburg in Chapter 2, the researcher wanted to first identify key elements that were crucial in explaining the overview of the concept, and test which kind of text would deliver the message. “The service concept states *what* should be done, to *whom*, *how* and with *which resources*, and *what benefits* are supposed to do.” (Grönroos 2015, 451.)

The concept description would be used as a tool for communicating and educating the new solution to people who had not yet heard of it (but who needed to understand the basics of it on a general level). Moreover, the goal was to create a short yet visual description of it that is easy to understand and quick for grasping the big picture. Ideally, the material could work as a brochure that is pitching the concept on its own, in one glimpse, without the need for someone from the project group to explain it through.

Many decisions needed to be made to guide the creation of the concept description. As the first step, we acknowledged that there would be many potential stakeholders that would be interested in hearing about the new concept - customers, Migri’s staff in different units and roles, top management, external stakeholders (such as the ministry funding Migri, other governmental organisations), companies providing consulting and technological solutions in enrollment and authentication, and so on. We quickly agreed to start small and first create a general overview, mainly catering to the customers’ needs. If the concept description was validated and proven to explain the idea successfully, we would either expand the version to target other audiences as well, or make more customised versions of it.

Secondly, the format was carefully considered. We compared many options, including e.g. a traditional PowerPoint presentation, and a storyboard. The storyboarding technique comes

from filmmaking - “the process organises a series of illustrated panels to represent the flow from scene to scene”, with each panel containing a rough description what happens at that step for the customer (Kalbach 2016, 204). Eventually we chose to compare options in formats that would allow the reader to grasp the concept with just one view, without having to browse through many slides or pictures: something similar to a flyer, brochure or poster. We wanted to keep the order of reading flexible, since though we had identified the customer’s journey, it was not desirable to make it look linear or fixed in order. Furthermore, we wanted to include more things on the concept description than the steps the customers would need to take. Videos and animations were found intriguing, but as making changes and updates to them can take a lot of work, we chose not to start prototyping with them at this early stage.

#### 4.3.1 Defining the content

We were happy with the selected target group (customers) and the format (a brochure of some sort) of the prototype. Next, the content needed to be defined for the concept description. In practice, the aim was to combine the results from interviews with both staff and customers, and the iterative enrichments to them from the staff workshops. In order to ideate different possible focuses for the content, we started to draft this into a mindmap, which is a useful but easy way to group data.

The previous outcomes of the research phase included 1) a list of basic features, 2) customer’s journey, 3) recommendation of a target group for the experiment and 4) an evaluation table to compare different groups in the future too, as well as 5) the user stories. For the customer, it was important to include mainly the following in the concept description: features, some highlights of the customers’ journey, and target groups for experiment, as the evaluation table for selecting further target groups and user stories was a more internal matter for Migri. This resulted in two main elements on the drafted mindmap, and some smaller, clarifying text.

Furthermore, we looked back at what kind of questions the interviewees had asked about the idea earlier, and what kind of assumptions those customers had made of the concept (correct or false), based on just the two lines of text we shared with them in the recruitment ad. Thus, we added a few more new elements: the value and benefits of use to the customer, preconditions for using the self-service machine, support and monitoring, and the concrete outcome.

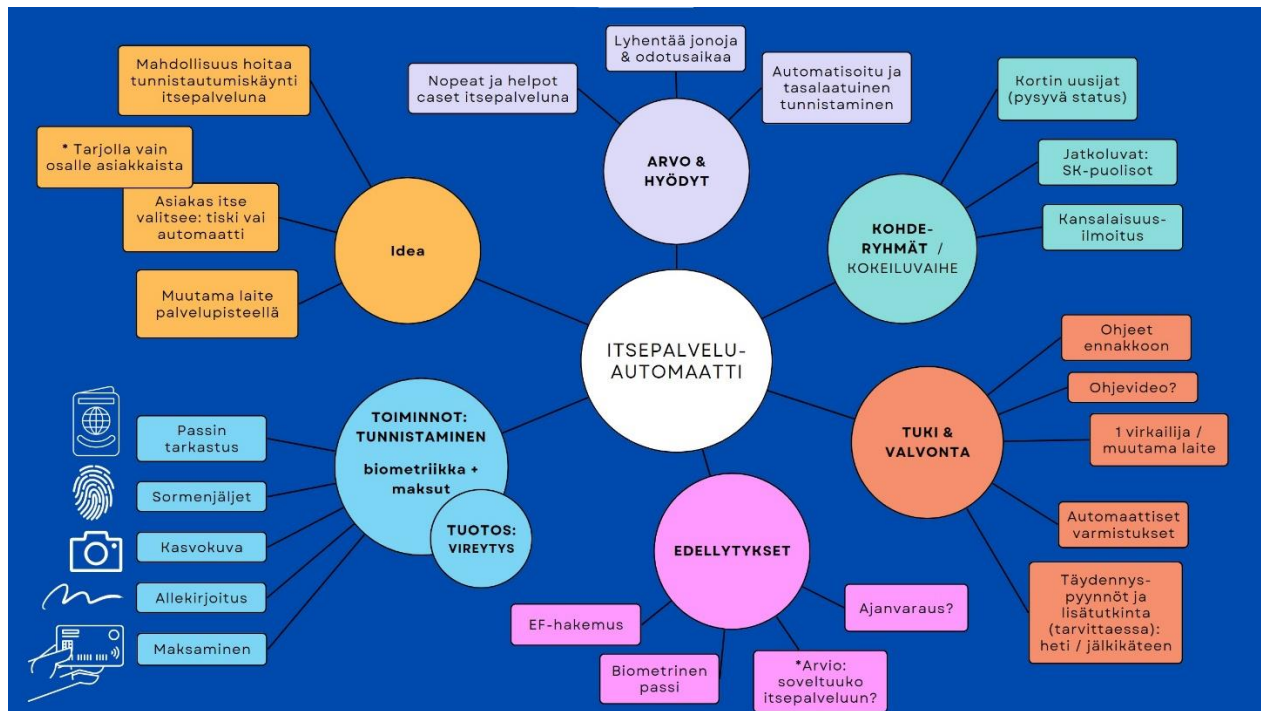


Figure 26: The very first version of the concept description (in Finnish).

As we remember from the interviews, many customers had concerns regarding their language skills, and the use of online dictionaries and translator tools (such as Google Translator) was broad. Thus, we wanted to minimise the amount of text used, and wanted to use as simple expressions as possible. We were happy with the very first draft of the concept description and wanted to receive feedback on it before it was developed any further. Again, the goal at this point was to identify and validate the content and the elements that needed to be presented in the concept description. Therefore, we did not ideate more on the format or the appearance of the general prototype.

#### 4.3.2 Delimitations to the prototyping phase

The research questions (in chapter 1.5) would have allowed other aspects to be prototyped as well. For instance, it was considered whether we could prototype the customer's journey with some customers of the identified target groups and the actual moment of using the selected features on the self-service machine. Stickdorn et al. (2018, 93) categorise various methods for prototyping different kinds of things:

- service processes and experiences
  - o e.g. partial service rehearsals or walkthroughs
- objects and environments
  - o e.g. cardboard prototyping
- prototyping for the digital

- e.g. paper prototyping, or wireframing
- ecosystems and business value
  - e.g. service advertisement, or Business Model Canvas

We did carefully consider whether we could have prototyped the service process. Potentially we could have brought in a cardboard prototype of a self-service machine to a Migri service point, and staple simple views on paper of which elements would be included in the user interface. However, the idea was discarded: at this point of the project, we had discovered some producers of self-service machines, and their products already had many of the features built in that we had identified as the needs of Migri. In addition, they had their own teams of service designers that had iterated the user interface and user experience much further than we could do on our own in just the few weeks that we had available in the project. Thus, we made the plan to do the small-scale experiment with those real and complete products in just a few months, and thought it might not be worthwhile to spend time on creating our own low-fidelity prototypes at this point. We would learn a lot more from interaction with a real product than a paper prototype, by hosting a proper user testing, with observation and interviews. Therefore, we decided on postponing the prototyping phase with interaction of the customer, and focused now on creating a written prototype of the concept, somewhat similar to the “service advertisement” that Stickdorn et al mentioned (2018, 93).

#### 4.4 Deliver: Validation round

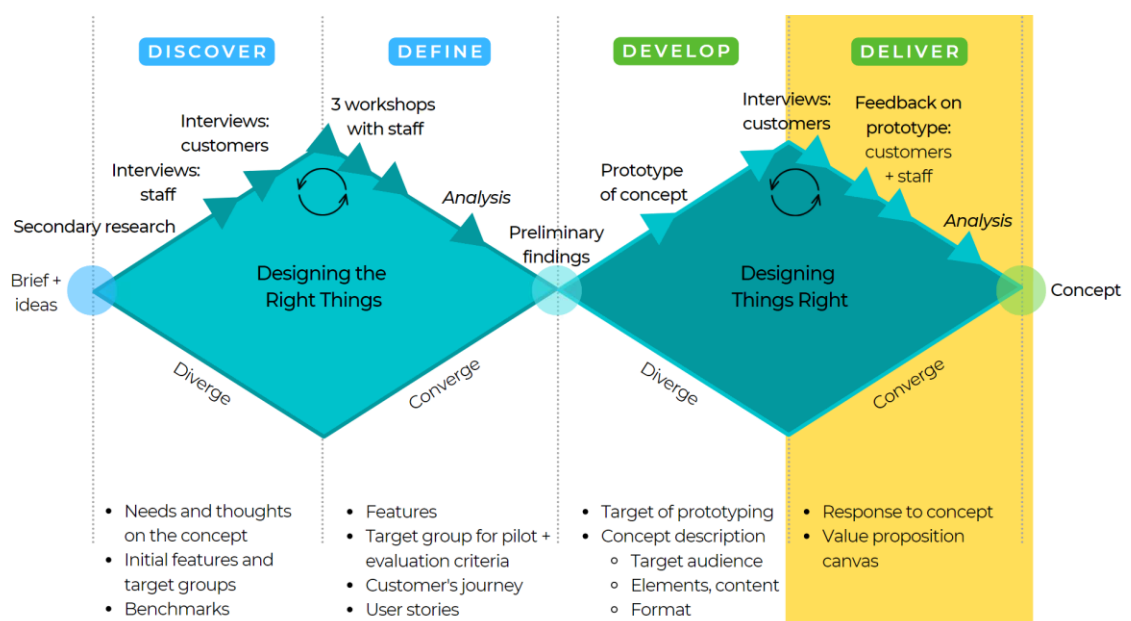


Figure 27: The final phase of research, validation with Migri staff and customers.

The earlier two phases consisted of data collection and its iterative enrichment. As described in the previous chapters, data was first collected through individual interviews from both the customers and Migri staff. The gathered material was then analysed and presented as a preliminary finding, to be enriched in phase two, a series of three workshops with staff from the Migri service points.

At this point, the interviews and workshops had resulted in the six outputs in various formats, summarised in the Table 7:

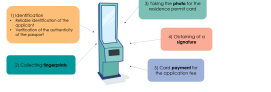
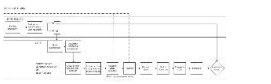


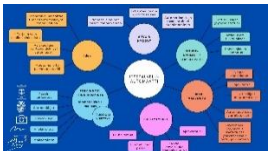
Figure	Outcome	Description	More in chapter
	List of basic features	A list of actions the customers would complete on the self-service machine.	4.2.1
	Customer's journey	A visual summary of the customer's steps in the application process.	4.2.3
	User stories	A summary of customer needs and actions, reported as requirements for the self-service machine, one sentence at a time.	4.2.4
1. Renewal of card (if permanent residence permit) 2. Extended permits of spouses of Finnish citizens 3. Citizenship applications	Customer groups for experiment phase	The identified target groups of customers that would be most suitable as the first users of the self-service machine.	4.2.2
	Table with evaluation criteria	A table with different criteria on which to evaluate and compare different customer groups and their suitability for self-service.	4.2.2
	Concept description	A brochure for the customer: short and visual overview of the basic information about the co-created concept.	4.3

Table 7: The six preliminary findings of the development process.

The final step was to validate the outputs with a last round of interviews. The goal of the validation round was to present the findings and outcomes to people who had not seen them before, and collect feedback on their initial reactions. This way we could end the

development process with a convergent phase, and validate if the data collection was indeed saturated, or are there more views or elements to be found before we can further focus the development.

Thus, we were hoping to receive a lot of comments and new ideas, but also evaluated that if we did not receive needs for making major changes, we could consider our preparative work adequate and successful for this phase. In this case, it would be presented to the project manager to be included in the official requirement specification for tendering. As a criterion, we determined that the reception was considered good if the materials were found understandable and no major needs to change or add something would be discovered. On the contrary, if there would be a lot of objections and criticism from the customers and staff, we would learn that there is a need to iterate the plan further, before we could proceed towards building anything more sophisticated. “Ideally, employees should contribute to the prototyping of certain service moments and therefore have a clear vision of the concept” (Stickdorn & Schneider 2010, 135).

#### 4.4.1 Validation with Migri staff

##### Validation of features, customer’s journey and user stories

The preparations in the staff workshops were extensive. The collected list of basic features, customer’s journey and user stories were presented to the rest of the project group regularly as the work progressed, and the validation occurred partially, guiding the work along the way. The preliminary results also showed that the first three outputs were not causing disagreements, but instead received a harmonious response throughout, so we could validate them at an earlier point in the development process.

##### Validation of target groups and the evaluation table

After the workshops had taken place, we put a lot of effort into validating the outputs for the research questions that had caused more debate among the interviewed staff members and the workshop participants.

In the workshops for staff we had compared different target groups for the experiment phase of the self-service machine. The arguments given (pros and cons) were categorised into different aspects that should be taken into consideration, creating a table of 17 aspects to evaluate when assessing and comparing the suitability of new customer groups to the self-service model now and in the future. After the working group had finished identifying new aspects, the table was used to create a recommendation of three most suitable target groups for the first experiment phase: applicants of

- Renewal of card (if permanent residence permit)

- Extended permits of spouses of Finnish citizens
- Citizenship

In the validation phase, both the evaluation table and the three recommended groups were presented to the managers of 'Permits and Nationality', the unit in charge of all the applications we have considered for the self-service machine. We invited the managers in an e-mail to come discuss the suggestion in further detail in a meeting. Three managers came, and we first introduced the timeline of the project, and the general idea of the self-service machine. We explained how the workshop participants had evaluated each aspect for the three suggested target groups, and discussed the points, making a few corrections - e.g. in the annual volumes and numbers of applicants in the group. However, there was little need for changes, and the managers were happy with the level of preparation and the arguments gathered for the evaluation. Thus, the evaluation table was proven to work, and they agreed with the selection of the three recommended groups.

However, there were two main findings at the validation meeting with managers. The first change was that they wanted to restrict further the third recommended target group. There are two ways of gaining the Finnish citizenship, and the workshop participants suggested to include both. After the discussion with managers, the applicants of citizenship were excluded, as the change in the process would have required further legal examinations. Consequently, the third target group was iterated into the following: applicants of

- **Renewal of card (if permanent residence permit)**
- **Extended permits of spouses of Finnish citizens**
- ~~Citizenship~~
- >
- **Citizenship by declaration** (only, excluding citizenship applications).

In addition, the managers suggested that we would try to include at least two of the three target groups in the experiment of the self-service machines. They agreed that the first suggested target group of card renewals was a great group to start the experiment, but also wanted to include either one or both of the other recommended groups, as the process and requirements were different in the latter two. Originally, we had thought of starting the experiment with just one group, to make the experiment as simple as possible, but are now planning towards the experiment phase with multiple target groups, in order to be able to learn more from more versatile processes. As we will not be able to serve the entire group of applicants in either of these groups anyway, we have to restrict the size of these three target groups further, and plan well on how we instruct customers on whether they have the option for self-service or not. These preparations are outside the scope of this thesis.

As a result, we had now heard feedback from Migri staff who work at different ends of the customer's journey: the very beginning, the customer service staff that meets all customers of Migri, as well as the last part which is more specialized towards a specific type of applications and where the most decisions on applications are made. The interviewed staff members included people who work on the grassroots level in customer service as well as the managers just below the board of directors.

#### Validation of concept description

After the draft of the concept description was created (described in chapter 4.3), we e-mailed it to selected members of Migri staff for comments. The total of 12 recipients included both the project members who know a lot about the topic, and also some colleagues that are not at all familiar with the concept, but who the researcher had worked with in other projects. In the e-mail we attached the picture, explained the design drivers (such as being able to see the big picture in one view, with all the basic information needed, and that it would not require further explanations), and explained that the draft was targeted for customers. We asked for any and all comments in free format as a response to the e-mail and chose not to make anything formal (like a survey, or any pre-set evaluation criteria) for the feedback collection.

We emphasised in the e-mail that this was the very first draft of the concept description, and the more critique we would receive the better. However, we asked the colleagues to focus on the content of the picture, not so much on the visual looks of it at this point.

As a result, received the following feedback from eight staff members. They gave two pages worth of feedback, and the comments were categorised in three groups: 1) strengths, 2) terms to be clarified, 3) new ideas on what to include in the concept description, 4) general questions:

##### 1) Strengths:

- good (5/8 used this word spontaneously)
- clear (4/8 used this word), understandable, easy to read
- informative, provides all necessary information
- very easy to understand the big picture / grasp the topic at a glance
- visuals really good and raise interest

##### 2) Terms and details to be clarified further:

- Quick and easy "cases" -> -II- applications / applications suitable for self-service
- "Automated checks" -> what is checked by automation?
- remove any abbreviations, such as "EF application" -> Enter Finland webservice
- precondition of booking an appointment ->

- clarify that the booking would be made to the self-service machine, not e.g. having visited Migri by an appointment earlier
  - how is the booking done? In the same booking system than the appointments for the traditional face-to-face customer service?
  - located at the “service points” -> Migri’s service points, with monitoring / surveillance
- 3) New ideas on what to include in the concept description:
- Benefits:
    - no need to include a photo in the online application in advance.
    - impact on the total duration of the application process
  - How long does it take to complete all steps on the self-service machine?
  - Is it a closed space / a private booth of some sort?
  - Customer support and guidance
    - How easy is the use of the machine, does it guide the user?
    - Which languages are available for use?
    - Are Migri staff users of the machine at all, or just there to support in the use?
    - Is there any remote user support available (if the staff on site happens to be busy)?
    - What will happen if there’s a problem, and the user cannot complete all steps?
- 4) General questions
- Who are the target group(s) / potential readers of the brochure?
  - Do we focus on the concept for the experiment, or the first launched version?
    - e.g. the number and locations of the machines
      - are the machines used in all Migri service points during the first experiments, or just some of them?
      - At a later stage of the development the machines could be located abroad in Finnish missions / representative offices as well, do we mention it here already?
    - are the staff members present to guide the customers only at the experimental stage, or later on as well?
  - How many potential users the machines would have in the first stage?
    - Some customers in the target groups may already skip the entire part of visiting the service points, if all criteria are met: are there any benefits for these applicants (or just those who cannot skip the visit)?
  - How many of the users do we expect to fulfill all criteria and complete this last part of application process successfully on their own?

- If booking an appointment is a precondition to using the machine, how long queues do we assume to have? Equally long as for the traditional, face-to-face customer service?

The feedback validated the concept description, but also gave ideas for finalising touches and the next steps of the project roadmap.

#### 4.4.2 Validation with customers

Like in the first research phase, customers participated in the development of the service concept. As the idea had evolved a lot since the start of the project, we wanted to receive more comments and reactions from the real customers who would be influenced by the change, if the plans are realised. The target of the final validation with customers was the first draft of the concept description. As Kalbach states, “the visual aid guides the conversation and keeps participants engaged” (2016, 113).

While we were collecting feedback from Migri staff, we made minor iterations to the initial content of the concept description, and translated it into English. The biggest changes to the first version in Finnish were the following:

- different style in visualisation
- removing the points that were more interesting to the staff than the customer, e.g. the quality of the authentication
- highlighting the outcome as its own title, explaining it in a full sentence

The first draft was then ready to be shared with customers in 1-on-1 interviews.

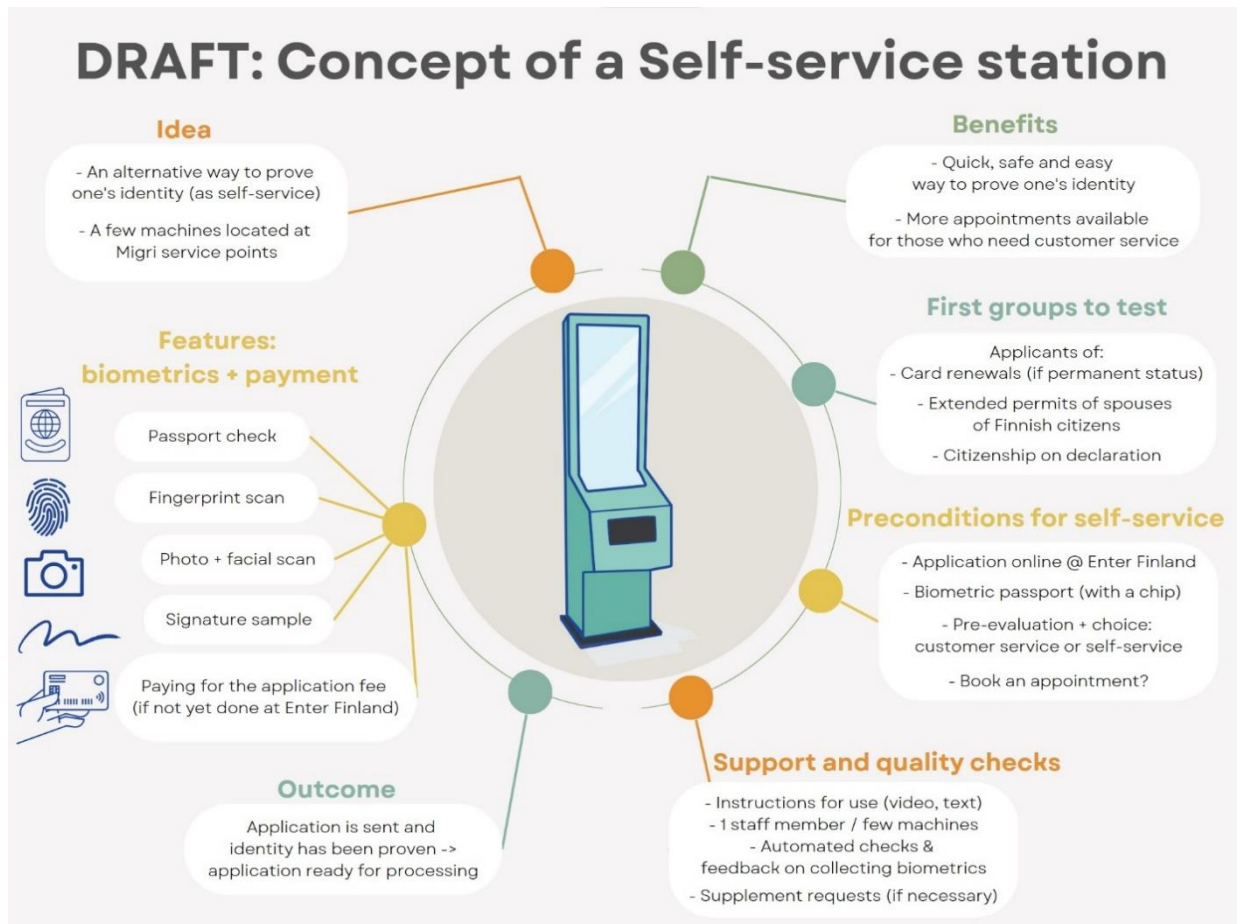


Figure 28: The second version of the concept description (first in English).

### Recruitment and implementation

We recruited customers to the interviews by sending an e-mail to 364 customers who had registered into the “Migri Customer Panel”. Migri has three panels that customers, employers and other stakeholders can join in order to assist in the development work of Migri operations. In practice, one provides an e-mail address and will receive requests every once in a while, to respond to different kinds of surveys regarding e.g. new services that are being developed. Panel members may always choose to which research they want to participate in, if any, and they can leave the e-mail list at any point. (Migri.fi).

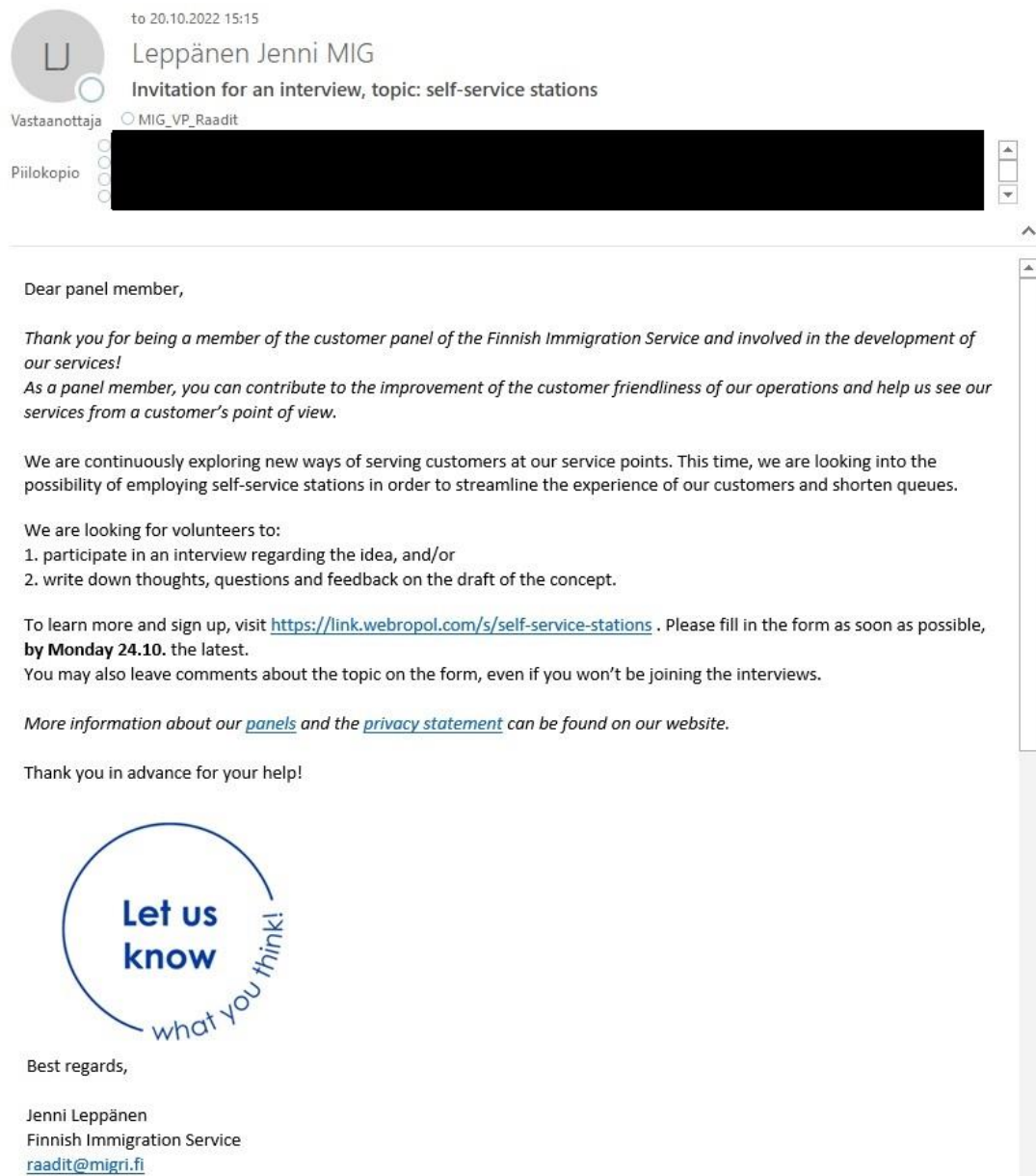


Figure 29: A screenshot of the recruitment e-mail sent to the members of the Customer Panel of the Finnish Immigration Service on October 20, 2022.

Therefore, the recruitment of customers was implemented in a different way than for the first round of interviews: previously we had posted an ad on the Facebook page of Migri. This did not result in large pool of candidates (we received 10 volunteers), and not all of them were suitable for the interview. The decision to change the way of recruiting interviewees proved to be a good one. Even though the number of potential viewers was just a fraction of that of the Facebook page, altogether 165 people opened the link to the sign-up form, meaning 45% of all members of the Customer Panel. This resulted in 42 volunteers for the offered time slots, 32 of them responded already during the first day.

We were again aiming at five interviewees, so this time we needed to be more selective. Once more, the main criterion was to focus on those customers that have experience with applying for the extended permits, because that was identified as the most potential target group for the experiment phase. This cut down the number of potential interviewees into half. Next, the time slots with less interest were handed out. The final interview slots were randomly offered to people who could make it. Due to the European data protection regulations (GDPR) we only collected the minimum number of personal information from the volunteers on the sign-up form. Having learned from the earlier round of customer interviews (with two cancellations at the last minute), we also overbooked one additional slot of interviews, to cover up for potential cancellations. This time, however, nobody cancelled.

As there was such huge interest in the topic, we considered changing the format into workshops, which would have allowed more people to discuss the topic at the same time, and could have resulted in more views in the same amount of time. However, the idea was discarded after a thorough consideration. The main reason to do so was to keep the deal that made the volunteers to sign up in the first place - individual interview of about 45 minutes and one movie ticket as compensation. We did not have more movie tickets budgeted, and changing the format could have decreased the interest of an individual to participate. From the facilitation point of view, our main concern was that the variety of participants could be too broad: we did not know the level of their language skills in English, their profession or familiarity with workshop-type group work. The worst-case scenario we considered was that the discussion and mood of the workshop would be distracted with cultural differences, or comments regarding religion, politics or of any other personal, sensitive or opinion-provoking type, making it harder to focus on the topic at hand. On the initial round of interviews managing the discussion of one challenging interviewee was difficult enough, so we chose to play it safe and focus on one participant at a time. The workshop might be an option later, if we would prepare a more thorough screening process to select the participants, and have more time to prepare how to deal with facilitation situations that can provoke strong opinions and feelings.

However, we chose to experiment and make the one slot that we overbooked as extra into a group interview of three people. We e-mailed them in advance and asked if they would like to participate still, if we only had a joint slot available. Consequently, altogether eight interviewees were selected for six sessions. This time all discussions took place online in the Teams Meetings environment, and were recorded for documentation and further analysis. The researcher conducted the interviews alone, and made some instant notes on paper while facilitating the discussion.

The eight customers who participated in the interviews included five men and three women who have experience in applying for an extension to a residence permit - some of them

multiple times, throughout a decade or more. Some of them mentioned their country of origin (e.g. India, Brazil), and they seemed to fit the high side of the most common age category 18-34 years (Migri.fi). We did not ask for background information like their gender, profession, age or citizenship on the sign-up form or during the interview, as this was not relevant for the research questions.

### The goal of the validation

Building on the first three customer interviews in the first phase of the development process, we wanted to receive initial reactions and feedback by customers who had not yet heard of the idea of implementing self-service machines at Migri. Again, we wanted to study the needs of our customers, and learn if they thought we were solving the right problem by building self-service machines. Most importantly, we wanted to study the initial responses to the concept description (Figure 28).

As we learned during the first round of interviews with customers, the topic was quite easy to comprehend and resulted in a natural flow of discussion. The first three interviewed customers were talkative and required little guidance from the interviewer. For this round of interviews, we wanted to continue using a flexible format and ask questions only when needed: for instance, if the interviewee got stuck, was about to drift too far away from the research themes, or we wanted to clarify something.

The full Customer interview field Guide is enclosed as the Appendix 1.

We mainly wanted to do interviews to gain a deeper understanding of the customer's perspective on the topic. However, we also chose to do a mini survey to collect views in writing from those who were not selected for the interview. Thus, on the sign-up form we included the picture of the draft of the concept description (Figure 28), as well as one text field to provide comments about it. The point in providing the concept description was to both motivate customers to participate in the interviews by providing further information about the topic, as well as provide a way for all interested customers to share their initial thoughts on the topic.

### Results from validation with customers: "It is an excellent idea"

We collected altogether 4,5 hours of interview recordings from the six sessions with customers during the validation round. We listened to the recordings and wrote down the comments and thoughts. These notes were categorised and combined, resulting in a summary document to report the preliminary findings.

All eight participants of the customer interviews were highly motivated and presented positive attitudes regarding the idea. Those customers whose application type was not

considered to be included in the first phase of experiments asked if they could be included in it as well. Two of the interviewees mentioned spontaneously that they really trust Migri to do good work with this project, even though they would not trust every country to build such machines to handle their personal data.

Many also displayed high satisfaction in already the current service Migri provides - one interviewee mentioned that they had worked in many countries and felt that the online application system Enter Finland is one of the best ones out there, straightforward and “90% easier” than others. It was clear that the experienced customers knew what was expected of them, knew to start preparing early enough, and how to complete the process successfully.

#### Feedback given by the interviewees

The comments given by the interviewees were transcribed and categorised. Finally, they were divided in three groups: those comments that 1) matched and validated our current thoughts on the concept, 2) comments that provided new ideas, and 3) questions that we either need to clarify or communicate more clearly with our customers.

#### **1) Validated: matched the initial thoughts / concept**

- Migri should create **awareness and trust** in advance
  - o market and promote the new service to the target groups
    - on social media, via an e-mail campaign...
  - o show demo / video guide (in order to educate and instruct)
    - online, at the Enter Finland webservice (EF)
    - before the customer needs to choose whether they want to use the self-service machine or not
- it is OK to **require an online application** at EF in advance
  - o guarantees that customer is tech-savvy enough and motivated to finish and pay for the application
- **no need to book an appointment** to come use the self-service machine
  - o restricting the access from people outside the scope of the experiment
    - by e.g. providing suitable customers a personal code from EF to login and activate the possibility to use the machine
- create a sense of **privacy**
  - o e.g. place a wall or a screen behind the customer, to prevent other people seeing the screen of the machine
- have **staff available**
  - o for questions, reassurance + monitoring
  - o for possible complications: call agent, or switch to manual processing?
- criteria for the **user interface**

- easy, simple to use
  - with limited options and design elements
- accessible: e.g. if disabilities, missing fingers...
- different options for language selection
- + simple words, if one wants to use Google Translator for support
- + audio option in the future
- help icons with further information
- also graphical instructions available
  - e.g. video, comics, animations (rather than text)
  - pictograms for the special-needs customers
- **feedback to confirm a successful visit, everything is ready:**
  - proof to confirm what was done and that all criteria was met
    - e.g. a paper print-out, e-mail or SMS text message
  - possibility to see&review later what inserted (e.g. at home): show at EF?
- **information provided on the next steps of the process**

## 2) New ideas

- add a **countdown timer**, to restrict the use to max \_\_\_ minutes
  - if customer is too slow or something does not work, they use the traditional way
- have **camera surveillance** in the facilities
- have staff make **random tests** (to ask for passport and biometrics the traditional way)
  - in order to control quality and scare off cheaters
- display additional information regarding your application status after the use
  - display **estimated processing time**, number of people before you on queue
    - could come and check it later at the self-service machine
  - display your personal **diary number** / QR code, which you can use to follow-up the application at EF webservice
- provide more **transparency with fingerprints / biometrics**: explain when needed to be collected and stored, when used just to authenticate the individual
- + **After the experiment, ideas for the wider implementation:**
  - provide **wider opening hours** for the self-service customers (also evening, weekend)
  - serve **more locations and more cities** with the self-service machines (not just available at the current Migri offices)
    - creating a mission/station at every major city
    - restrict the use to applicant's own municipality: machine checks if there is a match in between the address given at the EF application and the location of self-service machine being used

- run **minivan tours** across Finland with portable self-service machines
- **reward customers for providing extra data**
  - e.g. if they mark that they want to join the customer panel & mailing list
- 2-step visit at service point - **everyone should first authenticate** at the self-service machine
  - resulting in shorter appointments also at the traditional customer service
- consider alternative technology: **block-chain based ID system** could be a more sophisticated solution than the self-service machine

### 3) Questions / to be clarified further, or communicated more clearly

- does the use of a self-service machine require you to have the
  - Finnish online banking credentials -> no
  - **biometric passport with a chip** -> no, a machine-readable passport is enough
- the current process requires me to bring in **original certificates** and documents to be viewed by Migri staff - how do I do it, if I am a self-service customer?
- if the **machine does not work** (e.g. it cannot detect my fingerprints), how do I finish the step at the service point?
- if I want to cancel the use of the machine, how can I get the **traditional customer service** in person?
  - straight-away, during this visit at the service point?
  - come back later -> book an appointment with the self-service machine?
- if I made a **mistake** while doing the self-service, how can I **correct** it afterwards?
- does the visit need to be **approved by staff**? if yes, do I get feedback when it is done?
- can you fill out the entire **application form** on the self-service machine?
- are the self-service machines **placed outside** (like ATM machines)?
- how is **data secured** (from hackers, and other external exploitations)?

Most importantly, the interviewees were motivated to use the self-service machine, but not immediately committed. They said they would prioritise whichever way available that would be the most convenient for them to complete the identification step at the moment. For instance, they would book whichever option that would be more quickly available and in the most convenient location and time. As opposed to the preference most Migri staff stated, basically all customers specified that they would rather not book an appointment for the self-service machine. Customers hoped it to be so quick to use, and there would be enough of the machines for the target group, that they would not have to wait long in line even if they spontaneously dropped in to do the identification part.

The traditional model with customer service staff was also appreciated, as they would have the possibility to ask questions and have someone skim through the application and ask if

there was anything to clarify or correct. However, they mentioned that if people are shy or have social anxiety, the machine and remote customer service options would be ideal.

There were interesting comments also outside the scope of the research questions. One of the interviewees also encouraged Migri to ask customers for a fee for the use of this new “faster track”, as they had seen e.g. in other European countries. They argued that in the beginning we might not have as many machines in use as we would require to, and a fee for “priority process with the minimum waiting time” might be a product some customers would be willing to pay.

#### Additional feedback given by those who were not interviewed

As we were recruiting volunteers for the interviews, we also asked if the customers wanted to provide any general feedback on the self-service concept on the sign-up form. 19 of the 42 people who volunteered for an interview had also provided written comments about the concept description, which was available as a picture on the form (Figure 28).

As a result, we received two pages worth of feedback. All respondents except two made very positive comments, highlighting how the idea is “excellent”, “great”, “laudable”, or “amazing”. The two negative comments had a different focus: instead, they wanted Migri to hire more staff to be more efficient, especially in the processing phase where there is more “slowness and blockage”. They also worried about the limited use cases: “if it’s just information collection, I believe this is a waste of your financial resources and waste of clients time”.

Regardless, we concluded that the reception of the idea was generally very good. Some customers were already motivated to expand the experiment to also their own type of applications, to cater to as broad a target group as possible. Customers were able to identify the possible positive impact the self-service machines could have, focusing especially on saving time and making it easier to gain access to Migri service points to complete the identification step. Customers wanted to have many languages available in the user interface and wished for clear feedback and transparency on their actions, whether all required steps were completed correctly as a self-service.

The main message from customers was clear - the self-service model needs to save time. We need to ensure that the machines shorten the overall duration of the process at all stages: the initial wait for the customer to come complete the authentication visit in person and preferably also the duration of the wait for the decision on the application. Another main point was to ensure that we could include as broad user groups as possible, including as many passport types as possible, not just the most sophisticated ones with a chip with biometric data.

However, some of the comments were out of the scope of the first experiment: for instance, the wish to locate Migri's self-service machines across the country, serving more cities than Migri currently operates in. However, this can be considered for the later stages of the project. Furthermore, one customer saw potential in the machines only if they could provide an immediate decision on the application and print the residence permit card on the spot. There are significant legislative matters to be discussed first, so that feature will not be included for now.

#### 4.5 Summary of the gathered customer insights

Finally, we summarised the thoughts altogether 30 customers had presented either in the two rounds of interviews or in writing on the sign-up form regarding the concept. First, the customer comments were used to iterate the content of the concept description and provide a deeper understanding of the first reactions and impressions customers might get when hearing about a self-service model at Migri service points. Next, we used the material to create a new output in the format of a Value Proposition Canvas.

##### Finalising the concept description

Based on the customer interviews and the written feedback, the prototype of the concept was iterated further. As described earlier, the vast majority of the content was validated, proving that we were indeed converging towards a solution as the last step of the Double Diamond Process.

However, some minor changes were made to the concept description. For example, some words or sentences customers found unclear were either removed or replaced. The biggest changes were related to the preconditions of the type of passport one would need and that the self-service machines would be located inside the Migri service points, not outside like some ATMs or train ticket vending machines.

Moreover, some new ideas were added based on the discussions with the customers. For instance, we mentioned that a broad selection of languages and information on the next steps will be offered, as well as guidance and feedback on the actions required from the customer. One of the biggest surprises in the interviews was that many customers wished for monitoring, camera surveillance, and random tests to ensure that the self-service option was not misused. In addition, we also adjusted the color palate to match the brand look of Migri. The final concept description is presented later in the Results, in Figure 32.

We also collected many ideas outside the scope of this thesis. Customers suggested future-state features for the self-service machines and ideas for the customer's journey. Most

importantly, it helped Migri prepare better to the marketing phase of this new change. It provided an understanding of what kind of information should be provided, what kinds of assumptions or questions customers might have, and which parts should be emphasised to motivate customers to try the self-service option instead of the traditional customer service.

Value Proposition Canvas

As discussed in Chapter 2.1, organisations should search for possibilities to understand and support the customer’s value creation processes. In the Customer-Dominant Logic, value emerges when a service “becomes embedded in the customer’s context, activities, practices and experiences together with the service organisation’s activities”. From the organisation’s perspective, this requires gaining a deeper understanding of the customer’s everyday life and the service experience as a long-term, individual and context-bound process, also before and after an interaction. (Ojasalo & Ojasalo 2015.)

As the last output of the development process, we summarised all the customers’ thoughts in the Value Proposition Canvas (described more in chapter 3.4.3). We focused especially on the insights collected regarding the inconvenience the current service model caused customers, and the expectations they would have for the ideal way of clearing through the identification phase. Value Proposition Canvas is a practical tool for conceptualising and iterating a new value proposition. We filled the boxes “gain creators” and “pain relievers” with the ideas customers gave us, and mirrored to the experiences of the current model as well as the wishes for the ideal world.

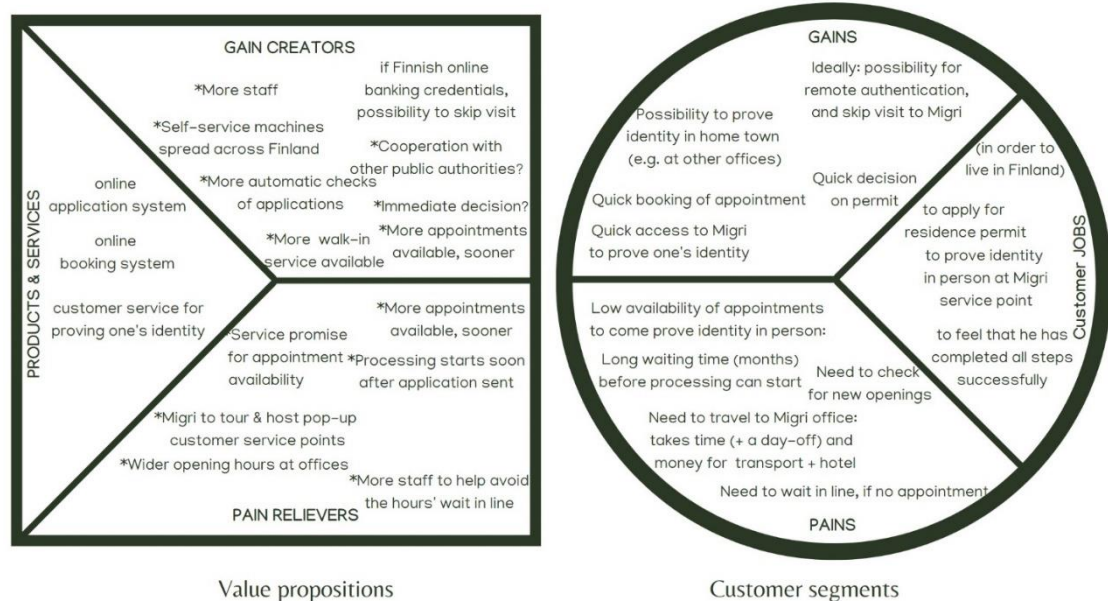


Figure 30: The Value Proposition Canvas, filled with customer’s feedback and wishes for the future. New opportunities are marked with an asterisk (\*).

We learned that the main pain points were caused by waiting: first, waiting to go to the identification visit, and next the waiting for the decision to arrive. When describing options for how one would like to improve the phase of making it to the Migri service point, most of the points raised were applicable to the concept for the self-service machine, such as considering “a touring Migri roadshow”, or further cooperation with other public authorities when choosing the locations where Migri services are offered. However, we noticed that the self-service machines were not the only way to create the suggested gain - there were many more ways to create the same gains for customers and relieve their pains. Searching for alternative solutions for the self-service machines was not a research question, however, but the other ideas were collected to be used in other development projects of Migri.

For instance, the findings on alternative gains provided insight on how Migri could serve those customers that would be excluded in the self-service model, due to unsuitability of the permit type (e.g. if the specific type of application and its requirements were too complex, and it was considered the best for the customer to meet with Migri customer service staff in person to double-check they have understood instructions correctly, in order to enable smooth processing of a complete application). Not all of the suggested solutions are possible for Migri at the moment, but all ideas are presented to the management for further consideration and investigation. The ideas that are feasible can be considered to be implemented already before any self-service machines are procured and launched for use.

Moreover, just becoming familiar with the description helps create a shared understanding on customers and our intention on creating value. The Value Proposition Canvas can be applied on its own, as an iterative, living document. The created Customer Profile and Value Map can be used as a “scoreboard” for future customer interviews and research: Migri can track if the collected customer jobs, pains, and gains exist more widely, and if the created solutions actually ease these pains and gains in the opinions of the customers. If new findings appear, the canvas is updated accordingly. (Osterwalder et al. 2014, 60.)

## 5 Results

As a whole, the development process took 5.5 months. Altogether 51 individuals participated in the co-creation of the self-service concept in some form and to some extent:

- 21 Migri staff through interviews, workshops and/or other form of feedback, and
- 30 customers through interviews (11) or providing feedback for the prototype (19).

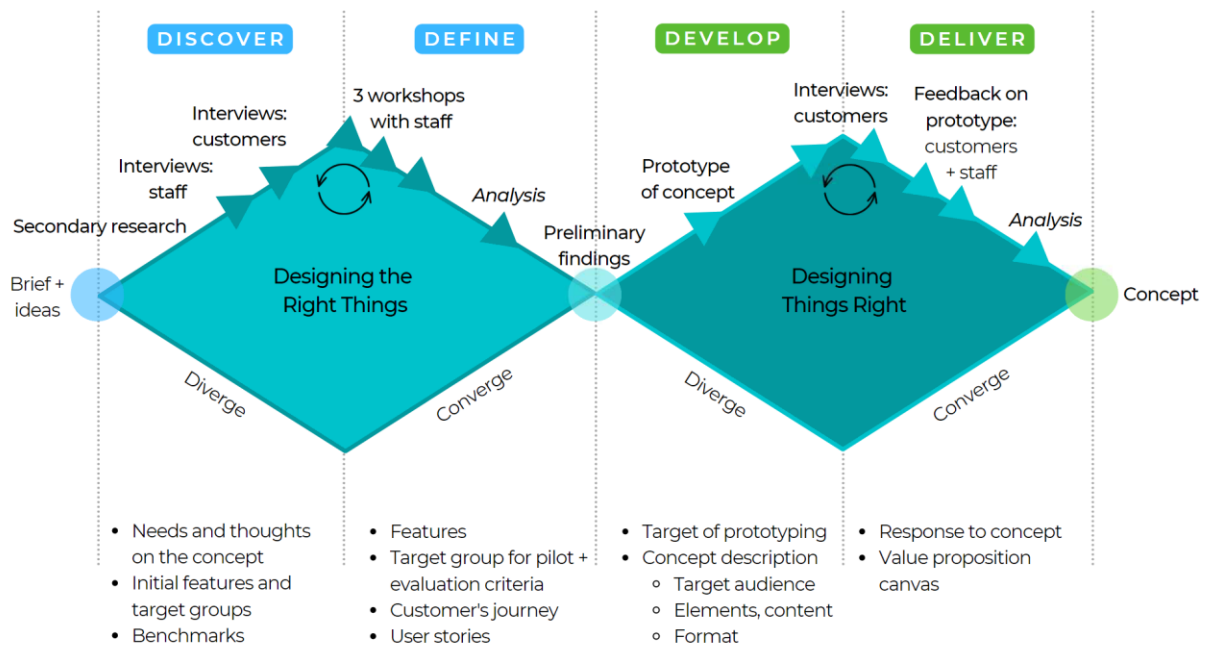


Figure 31: The outputs of each phase of development

Each phase of the development process contributed to answering the research questions. The collected material and its analysis resulted in many preliminary findings that the next phases of the development could build on. Figure 31 displays the concrete outputs on how the collected understanding was synthesised into preliminary findings at each stage of the development process.

As a summary, the development process resulted in a 1) list of basic features for the MVP of the self-service machine, 2) a description of customer’s journey and the 3) user stories.

Furthermore, we agreed on 4) target customer groups for the experiment phase, and created a 5) table with evaluation criteria to support in selecting the next target groups to use the self-service machines.

All this was summarised into a 6) concept description prototype. Finally, it was presented to customers and Migri staff for response and feedback, and resulted in an expanded 7) value proposition of customers. Table 8 illustrates all seven outputs of the development process.

Figure	Outcome	Description	More in chapter
	List of basic features	A list of actions the customers would complete on the self-service machine.	4.2.1

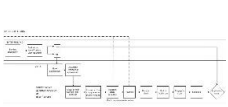
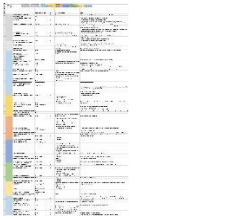



	Customer's journey	A visual summary of the customer's steps in the application process.	4.2.3
	User stories	A summary of customer needs and actions, reported as requirements for the self-service machine, one sentence at a time.	4.2.4
1. Renewal of card (if permanent residence permit) 2. Extended permits of spouses of Finnish citizens 3. Citizenship declarations	Customer groups for experiment phase	The identified target groups of customers that would be most suitable as the first users of the self-service machine.	4.2.2
	Table with evaluation criteria	A table with different criteria for the evaluation and comparison of different customer groups and their suitability for self-service.	4.2.2
	Concept description	A brochure for the customer: short and visual overview of the basic information about the co-created concept.	4.3
	Value proposition for customers	A summary of the current problems and potential solutions customers presented.	4.5

Table 8: The seven outcomes of the development process.

The primary output of the development process was the concept for a self-service machine. As presented in Figure 32 (below), the concept was summarised in the form of a brochure, and updated based on the feedback given by customers and staff in the validation round. The brochure described the basic idea, MVP features with biometric collection and payment, the outcome of the use of the self-service machine, the benefits for the customers, first groups of customers who would be provided the option to use the self-service machines if the defined preconditions are met, and how the user support and quality checks would occur to ensure that the required steps can be successfully completed as a self-service.

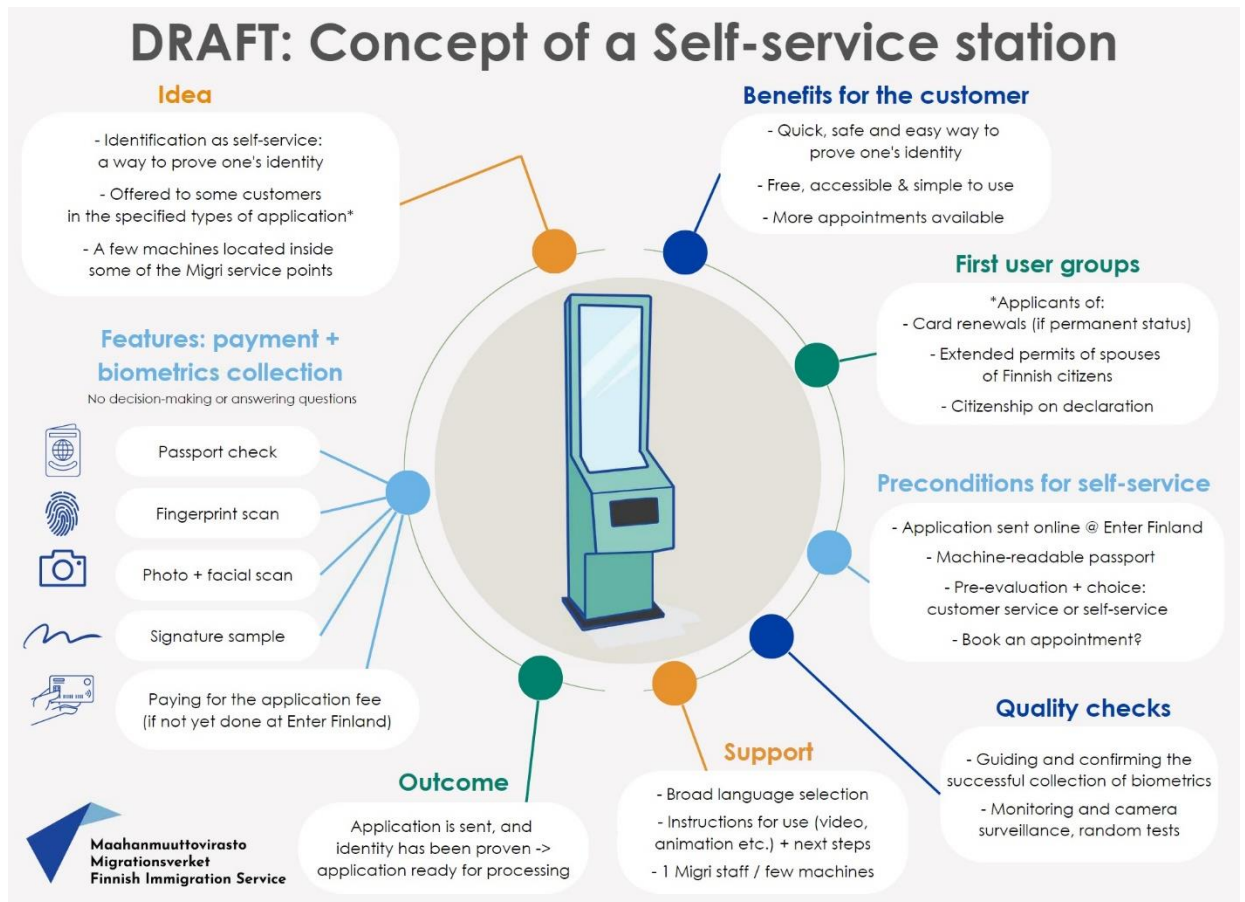


Figure 32: The concept description of the self-service machines, final version.

Furthermore, the reception of the idea of self-service machines was studied. The response from both customers (the potential users) as well as Migri staff who would normally meet those customers face-to-face was positive and encouraged further investigation on the concept through building an interactive prototype to test the concept in practice. Naturally, there were also individuals in both groups that presented concerns and risks regarding the idea, but those concerns served as a useful checklist for the design as well as for communicating the concept thoroughly enough upon going live with this new alternative way of identification. No showstoppers were identified from the customer's perspective, which was the scope of this thesis.

## 6 Discussion

The thesis was commissioned by the Finnish Immigration Service "Migri", a governmental agency that grants the legal right to foreign nationals to live and work in Finland. Migri has faced an increasing number of applications for residence permits, causing a bottleneck to one part of the application process. All customers of Migri have to complete a so-called identification phase and prove their identity in person by providing their biometrics and

presenting a valid passport at one of the ten customer service points of Migri (if the applicant is already living in Finland). This has resulted in a long waiting period for appointments at some of the service points, causing customer dissatisfaction. This thesis suggests a solution to this problem.

One of the challenges is that about 90% of Migri's applications are sent from the online system, making the identification phase the only time most customers must travel to the Migri service point in person. Often customers need to travel there from other cities further away, making it harder to choose a suitable time for the appointment from the few options available. In addition to the inconvenience for the customer, the delay in the beginning of the process means that the handling of the application cannot start yet. This causes a risk that some of the information the customer originally provided on the application can be outdated by the time the identification phase is cleared, and the application reaches the handling unit of Migri. This causes extra work for customers and Migri staff, who often need to contact the customer again to confirm if the information provided on the application a few months ago is still up-to-date and complete, in order to make a decision on the residence permit based on current facts.

In order to urgently tackle the increasing volumes of pending applications, Migri has started looking for new ways of handling the identification phase. One possible solution might be building a self-service machine that could automate some of the tasks of the service points, and thus shorten the queues to customer service. The purpose of this thesis was to create a concept for self-service machines, which would serve as a complementary alternative for customers to clear the identification phase at a Migri service point. The thesis aimed at identifying tasks of the identification phase that customers could and would like to complete on their own, and the groups of customers who would be most suitable first users of the possible self-service machine. In addition, the initial reactions of customers to the idea were studied.

The development task was approached with the mindset of design thinking, value co-creation and customer-dominant logic, guiding each decision made. Appropriate tools and methods of service design were utilised in the development process according to the goal and requirements of each step, following the Double Diamond Process. All central principles of design thinking were present at the innovation process: human-centricity, solving the right problem, exploration, iteration, dialogue of divergent and convergent thinking, prototyping and testing, co-creation, and multidisciplinary approach (Koivisto, Säynäjäkangas & Forsberg 2019, 36). Furthermore, the service concept as well as service automation framework was studied in order to target the design efforts to the special context of development.

## 6.1 Reflection on the theoretical framework

The theoretical framework discussed the three central concepts of this thesis. The concepts of business logics and contemporary value creation explained the customer-centric approach to service development. Next, the service concept, including its importance, role, elements, and development process, was discussed. Finally, the context of development, self-service technologies and service automation was discussed, with the structured approach to the design of automated services Middelburg has developed, as well as the modelling approach Service Automation Blueprint.

The categorisation and the examples of different self-service portals presented by Middelburg demonstrated that the self-service concept created for Migri is indeed an ambitious one. Migri's self-service machines aim to combine all key purposes known for self-service portals: customer service, transactions, self-help, and information exchange (Middelburg 2017, 83-84). Wilson et al. concluded with the checklist on how to make self-service technologies successful: the new delivery mode is confirmed to offer clear benefits (such as faster service) to customers, the benefits are well understood and appreciated compared with the traditional delivery modes, and the technology is user-friendly and reliable. In addition, customers understand their roles and have the capability to use the technology. (Wilson et al. 2016, 272.)

The full implementation of the Service Automation Blueprint by Middelburg did not make this thesis due to the change in the scope. However, the first step "user actions" was discussed through the features of the self-service machines, and the next steps will be utilised in the next step of the project, as we will proceed to specifying the hardware and technology interface. Instead, we implemented the full content of the stage "Concept development and evaluation" of the model Wilson et al. presented, through producing a description of the service concept and collecting feedback from customers and employees (Wilson et al. 2016, 171).

## 6.2 Reflection on the chosen methodology and methods

The used methods were qualitative of nature. Data collection occurred mainly through individual interviews, facilitated workshops and different forms of written feedback. The selected research methods fit the purpose and resulted in material more plentiful than expected.

Except for the three first customer interviews, all research took place virtually in the video call environment of Skype or Teams. We also utilised the virtual Flinga whiteboard, Canva and Draw.io online diagram software. For the staff workshops, a preliminary task was introduced in 2/3 workshops, but just one of the participants found the time for it.

When the working methods were selected and the agenda planned carefully, it was equally easy to facilitate the remote discussion, share pre-existing material, and ask for contributions from the participants as it is in live sessions. Working online made it easy to record the discussions and transcribe the material. Furthermore, it allowed more diversity in collecting the needs and approaches of the participants, both customers and staff, as the interviewees could join the remote discussions from all parts of Finland.

There were no major challenges identified with the selection of methods per se. The researcher was experienced in interviewing and workshop facilitation, and made a thorough plan on how to adapt the methods to suit the research questions at hand. However, the original plan was to use a broader range of methods, including user testing and observation, but due to some delays in the project, the prototyping of interaction was left outside the scope of this thesis.

Regardless, learning happened during the process. The researcher was surprised how challenging it was to prepare for the broad variety of customers (with different cultures, skillsets, opinions on Migri and so on), and be ready to also meet strong feelings provoked by the topic of Migri services. Customership to Migri is of a compulsory type, and immigration and applying for a permit to reside in another country was described as very emotionally straining. Customers can have extremely versatile service experiences and attitudes towards Migri depending e.g. on their personal situation and background or the type of permit they apply for. When one customer might receive a decision on a straight-forward application in two days, it might take another customer two years with multiple rounds of providing additional documents, if the situation is something more complex and rare. These two customers would have very different experiences and pain points to share.

Thus, the discussions held with customers varied. For instance, with one customer interview the customer had arrived with an agenda of their own to discuss, and the researcher struggled in motivating them to focus on the pre-agreed topic of self-service machines. With another customer, the level of English skills was quite elementary, so conducting the interview required a different touch. Speculating if both of these participants had been invited to a workshop together, it would have been a challenging scenario to facilitate. Thus, the takeaway for the researcher was to continue considering facilitating workshops for customers when suitable, but to complete a thorough screener for selecting the participants and carefully prepare the participatory methods so that the skillset or personality of one individual cannot take over the cooperation. However, with the individual interviews these areas did not cause any problems. In addition, the vast majority of the interviewees were very talkative and focused, making the interviewing process very enjoyable and interesting.

With the workshops for staff, the surprising element was that there was no need for warm-up exercises: the best kind of warm-up was to go straight to the topic that the participants knew best. The staff members were immediately focused and motivated on the topic, felt safe and comfortable with presenting contradictory views to someone else's thoughts, and did not even seem to mind the fact that they did not know each other beforehand. The working mode was expert-like and constructive, yet more formal than the researcher was used to (or tried to promote), as participants preferred to use some formal elements of remote meetings, such as sending a chat message first asking for a turn to speak. The researcher adjusted quickly to the culture the staff members naturally created, so that the workshop would be as much in the comfort zone of the participants as possible. We are aiming at "full participation" where all workshop members are encouraged to share their own experiences and ideas (Kaner et al. 2014, 24), and most of the time the discussion was indeed active.

On the contrary, when we hit the groan zone in the workshops, the group got very quiet and required quite intense facilitation from the researcher in order to keep going. The decision to spread out the work over three sessions was useful, as the group appreciated some time to reflect on the points raised by other participants, and also to discuss the idea with their colleagues outside the workshops. Another challenge with facilitation was the introduction of some service design tools that the participants were not familiar with: the mode of working changed quickly to more tentative when the participants were further away from their comfort zone. However, with active input and supportive facilitation the groan zones were conquered. Retrospectively, we should have asked in advance what the experience and maturity level of design thinking of the participants was, but self-evaluation could have been a challenge too: the choice of just slowing down and working through the tools one part at a time was enough to conclude in good results.

The challenge with the online workshops was that the Internet connections of the participants were not stable enough to allow the use of video cameras: to provide the voice, screen sharing and recording, we did not use video. This caused challenges for the researcher to "read the room" and gather more direct feedback as well as subtle cues on how the participants felt: if they were happy with the progress, clear with the task at hand, had enough time to think about each topic, and so on. Therefore, a lot depended on the direct communication given by the participants either verbally or in the chat. Even though the researcher did not know the participants personally, the energy and the "flow" of the workshop participants was often easy to detect, and gave confidence in assessing if the current discussion felt relevant to the participant. Regardless, it is important to differentiate low energy from the "groan zone". Feeling stuck or challenged is different from being out of ideas or unmotivated. Ideally, we would have hosted the workshops face-to-face, but as we wanted to recruit participants from different offices across Finland, it was not possible.

### 6.3 Reflection on the development process

Altogether 51 individuals participated in the development of the self-service concept over the 5.5 months of the thesis project. The development process followed the Double Diamond Process by the British Design Council. First, the needs of both customers and Migri's official process at the identification phase were recognised through interviews with customers and Migri staff, as well as staff workshops. Next, the collected materials were analysed and converged into versatile preliminary findings, serving as the foundation for the main output: a brochure describing the self-service concept. Finally, the brochure was presented to customers and staff, who provided feedback on the concept and the value it presented them.

The development process proved to work well: each phase created more understanding to build on in the next phase. As described earlier, the selection of research methods was successful and resulted in relevant insights at every stage of the development. The collected research material was composed of both written and audio material provided by the participants, including altogether

- 17.5 hours of interview recordings
  - o 7.5 hours with 11 customers (1st round: 3h, 2nd round: 4.5h)
  - o 10 hours with 5 Migri staff members
- 8 hours of recordings from the staff workshops with 4 staff members (3 rounds)
- 4 pages of written responses to the prototype of a concept description
  - o 2 pages from 19 customers
  - o 2 pages from 8 staff.

In addition, this material was complemented by the field notes the researcher made of the interviews and workshops. Furthermore, a countless number of other supporting material were co-created in the workshops as well as in between the interviews and validation phase, such as different drafts and iterative versions of the final outputs.

Furthermore, the decision on the number of participants was successful, especially with the workshops; the group of four staff members proved to be very efficient, yet versatile enough. Similarly with the customer interviews we stopped collecting data when the categories were saturated and gathering fresh data was no longer sparking new insights. As a pleasant surprise, the recruitment of participants for the interviews and workshops was much easier than expected: with detailed advertisements, all available spots for customer interviews were filled in less than an hour in both rounds. All participants were skilled and motivated, making the discussions focused.

As a reflection, we learned that some of the research questions could be answered very easily, in just a couple of weeks, whereas some others required months of examination and discussion. As the workload of each research question and the consequent part of the project

was unknown in the beginning, the challenge was to try to hold the different-sized pieces of the jigsaw puzzle in hand, and plan the research schedule and steady progress along the way. As the researcher was not familiar with the topic of immigration application process or identification itself, it was difficult to predict how long each task would take to work on. Flexibility in both the content and the time was planned ahead: most often, however, there was too much content planned for the workshops, causing some parts to be left for the next workshop.

In practice, the challenge was to determine when to diverge and converge with each different research question and its subtasks. As Stickdorn et al. put it, “successful design and problem-solving process can be described as interplay between divergence (where we seek or create opportunities) and convergence (where we make decisions)” (2018, 85). For instance, in the same workshop we might conclude with the definition of the preliminary features with the staff members, but also discover that there was more disagreement on the potential target groups than expected. We were continuously adjusting the plan based on the progress made, both schedule-wise and content-wise: we ended up adding one more workshop for staff than originally planned, and prolonging the duration with 30 minutes.

One of the biggest groan zones for the researcher was to redefine the scope and research questions of the thesis after the first two months of the development process. Due to many reasons, i.e. changes in the staff of the project, the second phase of the project (with user testing of an interactive prototype) was postponed six months ahead. The decision caused the thesis to only include the first phase of the project, with less focus on the customer experience, and adapt the rest of the project accordingly. As discussed in chapter 4.3, the change also changed the format of prototyping, resulting in a brochure that was created to serve as a visual summary of the concept that was co-created so far, instead of a prototype of an interactive user interface of the machine. However, we implemented the full content of the stage “Concept development and evaluation” of the model Wilson et al. presented, through producing a description of the service concept and collecting feedback from customers and employees (Wilson et al. 2016, 171).

It would have been interesting to work more on the concept together with the future end users of the self-service machines already in the beginning of the design as well. However, there were too many formal restrictions such as legal requirements that guided the concept design, so ideating more with staff (as internal customers) instead of external customers was more meaningful at this stage. As we proceed to designing the user interface, customer service and guidance, there is more flexibility on implementation, and it is also more rewarding for the customers to come work on something more concrete.

#### 6.4 Reflection on results

Overall, the development process was a success: due to good planning, we achieved the set goals and were able to conclude with a concept for the self-service machines. The collected material was so useful that it could be refined to multiple purposes and ways of describing the insights - for instance, all content of the concept description prototype was based on the earlier work and the preliminary findings. The developed service concept includes the needs of both customers and Migri's official process at the identification phase. The customers and staff validated that the suggested self-service concept will target to solve the right problem of long waiting times for the identification phase, and the concept is worthy of further examination on feasibility and viability.

The thesis resulted in seven practical outcomes, described in further detail in chapter 5:

1. List of basic features
  - a. A list of actions the customers would complete on the self-service machine.
2. Customer's journey
  - a. A visual summary of the customer's steps in the application process.
3. User stories
  - a. A summary of customer needs and actions, reported as requirements for the self-service machine, one sentence at a time.
4. Customer groups for experiment phase
  - a. The identified target groups of customers that would be most suitable as the first users of the self-service machine.
5. Table with evaluation criteria
  - a. A table with different criteria on which to evaluate and compare different customer groups and their suitability for self-service.
6. Concept description
  - a. A brochure for the customer: short and visual overview of the basic information about the co-created concept.
7. Value proposition for customers
  - a. A summary of the current problems and potential solutions customers presented.

Although the scope of this thesis included only the early phases of planning the concept, we reached a comfortable stage where we have a solid starting point that can be tested and iterated further before implementation. Compared to the theoretical framework of self-service portals, we discovered that the planned concept is a hybrid of many traditional self-service portals, including elements of information exchange, customer service, self-help and transactions (Middelburg 2017, 83) - as explained in chapter 2.3.2.

In a nutshell, the concrete answers to the research questions are summarised in Table 9:

RQ#	Research question	Result
1a	<p>Requirements: what are the needs of different people</p> <ul style="list-style-type: none"> <li>- of Migri's customers, the potential users?</li> <li>- of Migri's staff, who normally would meet the customers face-to-face?</li> </ul>	<p>The self-service machines must be easy to use independently, without the help of staff. The speed and quality of the actions completed should at least match those of the face-to-face service. Customer should receive clear feedback on whether each requirement was met successfully, and receive both automated and personal guidance on how to correct any shortcomings before leaving the service point.</p>
1b	<p>Alignment: do the needs of all parties match or conflict?</p>	<p>Yes, the needs of customers and the official Migri process match.</p> <p><i>Only major difference in views was about the need to book an appointment to use the self-service machine, which is still under consideration.</i></p>
1c	<p>Coverage: are all required features suitable for self-service?</p>	<p>Yes, from the customer and staff point of view they can be included in the self-service machine. Technical and legal examinations will follow.</p> <p><i>Only point to still consider is the need to present original certificates -&gt; for the experiment phase, groups that require this are excluded.</i></p>
1d	<p>Potential: are there any new opportunities that we have not discovered?</p>	<p>Yes. As the biggest new idea to consider, customers suggested a "Migri roadshow" with a van and a portable self-service machine.</p>
1e	<p>How does the new process differ from the current model? What changes does it bring, and where/to whom?</p>	<p>On a general level, there are no major differences in the ideal process. The change would be for the customer to get to choose one of the two ways of clearing the identification phase, making it faster to gain access to the service point. Later, the changes are studied in further detail, in addition to any exceptions to the ideal case.</p>

1f	How can we communicate the concept before implementation?	A brochure was prototyped for the customer, with a short and visual overview of the basic information about the co-created concept.
2a	Potential users: which groups of customers would be the most suitable to use the self-service machines a. first, in a small-scale experiment?	Depending on the final number of participants in the experiment, some of the applicants of  - card renewals (only if permanent status)  - extended permits of the spouses of Finnish citizens  - citizenship by declaration (only, excluding citizenship applications).
2b	-II- b. in the possible launch of the self-service machines?	To be decided based on the experiences of the small-scale experiment. <i>If we can increase the number of participants, we will determine the next groups of applicants with the table of evaluation criteria co-created in this thesis.</i>
3a	Response: what are the reactions and expectations of different people a. of Migri's customers, the potential users?	The response was very positive, even enthusiastic. Customers expect the self-service machine to be easy and quick to use, with clear support systems and proof that the use was successful. Moreover, customers hope for wider opening hours and more cities served with the automated machines.
3a	Response: what are the reactions and expectations of different people b. of Migri's staff, who normally would meet the customers face-to-face?	The response was positive. Staff validated the need by identifying many groups of customers that do not gain extra value from the traditional customer service, but currently have to wait longer for it.
3b	Feasibility: a. is it worth investigating the self-service machines further: are the value and benefits clear? What are the criteria for success?	Yes, it is worth investigating the concept further. Value perceived by both customers and Migri staff was the expected flexibility and efficiency of the model, leaving more appointment available for other customers who need customer service.

		The main criteria for success are to both enable faster access to the identification visit for customers and to ensure that the quality remains on a similar level with the cases handled manually.
3b	Feasibility: b. are there any major worries, risks or showstoppers that can be identified at this point?	No major risks or showstoppers were identified by customers nor staff. The main concerns detected were linked to quality issues (causing workload at a later stage), and failing to meet the expected benefits of the concept.

Table 9: The results to the research questions.

The thesis was commissioned by the Finnish Immigration Service, “Migri” for short. Since the researcher works for Migri as service designer in the development project of the self-service machines, all preliminary findings and the final results were presented on a regular basis to the rest of the project group. This helped ensure that the design efforts were aligned with the overall project needs and schedule. As a result, the commissioner was very happy with the outcomes and described the thesis results as “very usable and valuable”. The thesis and especially the customer’s journey and interest in using the self-service machines were considered crucial lessons for an agency that is improving and renewing its customer service based on the customers’ needs and experiences. The gathered insights through customer interviews were considered unique information and were planned to be utilised in the agency, even on a strategic level.

In addition to answering the original research questions, the thesis provided more details and clarity to the roadmap and the project’s next steps. Moreover, we collected many development ideas from customers also outside the scope of this thesis: for instance, related to the expectations for the next stages of the project of self-service machines, as well as other important pain points in the general Migri application process that customers presented.

The concept of automated identity management in the form of self-service machines has proven great potential in scalability and use beyond the initial use cases. Consequently, the results of this thesis will be shared within in the Ministry of Interior, but also Ministry of Foreign Affairs for the utilisation of a global perspective. If indeed, the developed concept for self-service machines is proven to be functional, the limitations of expansion within governmental use are minute and usability world-wide.

The results on customer needs and expectations are interesting also to other organisations serving immigrants. In addition, the thesis provides practical value to any organisation that is considering automation and creation of customer-centric self-service concepts, across all sectors, fields, and industries. The methods and tools selected will work for many development processes in the preliminary planning stage, regardless of the context.

#### 6.5 Next steps in the development process

Next, based on the co-created concept, Migri will specify the technical requirement that could bring the self-service concept to life. Within the next months, Migri will plan an experiment phase and create more learning in practice, before making the actual decision on procuring any self-service machines. The entire project roadmap was presented in Figure 3. However, should we discover any showstoppers or major needs on pivoting the concept as a result of the experiment phase, it is still possible to change course easily, as only minor investments have been made to the development of the first draft of the concept. It is quicker and cheaper to fail early, although failing in front of actual customers (although a very small sample) might seem discouraging.

From the service design perspective, we will continue further development work with the concept for self-service machines through many avenues. Until now we have been focusing on creating an MVP (minimum viable product) that fulfils the core needs of the concept, in order to get the testing and feedback loop started as soon as possible. However, next we can go further into the details of the concept during the experiment phase, as well as including exceptions to the ideal process, such as variables and less frequent cases and the process for handling possible malfunctions. A more detailed customer's journey will be defined, as well as the service blueprint, which will help focus on the back-office functions and actions of the staff. Both the traditional service blueprint and the Service Automation Blueprint (described in Figure 7) will be utilised as the preparations from the technology side advance. An interesting option would be to get to go abroad and benchmark the concepts and practices of foreign public authorities in identification.

Another major avenue for research in the next phase is planning the user tests with an interactive prototype, including observation and feedback collection from both customers and the supporting staff. Comparing the results of the self-service customers with those of the traditional customer service model would be interesting, as in practice there will be more differences identified that we could speculate at this point. Defining how to measure the experience and impact of the dual service model needs to be decided on, as well as the measurement of the starting level, in order to compare it to the change upon implementing the self-service machines. Studying the customer experience of both types of identification visit will also help Migri identify where the changes are, and how the changes affect: for

instance, are there differences in the IT systems, the instructions and guidance of customers, or actions of staff, as well as the construction of the physical service points.

Next, we will proceed to preparing the next phase of the project, designing the full concept with more features. From the usability and accessibility perspectives, we will study whether some of the pre-existing products can cover the needs of Migri customers, or whether we would have to customise part of the hardware and/or the user interface, or build our own solution. Getting on the more concrete level will help design the customer experience and study the emotions and expectations, as well as the challenges and opportunities that the new process and touchpoint raise. Personas and empathy map will be created based on the decision on who the first user group of customers are in the experiment phase, to study the characteristics of that segment. Another important angle is to manage the introduction of this change and prepare how to communicate the self-service model to the customers and staff, both from an educational and a marketing point of view.

#### The future of Migri services

As a brand new avenue of research, the possibility of creating a mobile “Migri app” was raised during the discussions with both the customers and the project group of Migri. Looking for a mobile version on the application process and possibly also the identification phase would be a fantastic topic for another thesis. In addition, the possibility to enable remote appointments at Migri is a very interesting area of investigation, but first some analysis must be made on the current legislation and the possibilities it allows.

Migri will continue developing its services in close cooperation with the customers. As promised in the Migri strategy, “we focus on the customer and make it easy for our customers to handle matters” (Migri.fi). The development of automation can also increase the job satisfaction of Migri staff at the customer service points: if the easiest of cases are automated, there is more time and effort to put into the more complex cases of customers that require expertise and human evaluation. Most importantly, Migri is working hard on preparing its application process to meet the increased volumes of future customers, as well as the quality goals set by the Finnish Government on providing “the best immigration experience in the world”.

## References

### Printed

Bettencourt, L. 2010. *Service innovation: How to go from customer needs to breakthrough services*. 1st ed. New York: McGraw-Hill.

Brinkmann, S. & Kvale, S. 2015. *InterViews: Learning the craft of qualitative research interviewing*. 3rd ed. Los Angeles, CA: Sage

Creswell, J. W. 2014. *Research design: Qualitative, quantitative, and mixed methods approaches*. 4th ed. Los Angeles: Sage.

Grönroos, C. 2015. *Service management and marketing: managing the service profit logic*. 4th ed. Chichester: John Wiley & Sons Ltd.

Hirsjärvi, S. & Hurme, H. 2001. *Tutkimushaastattelu. Teemahaastattelun teoria ja käytäntö*. Helsinki: Yliopistopaino.

Kalbach, J. 2016. *Mapping Experiences*. Sebastopol, CA: O'Reilly Media, Inc.

Kaner, S., Lind, L., Toldi, C., Fisk, S., Berger, D. 2014. *Facilitator's guide to participatory decision-making*. 3rd ed. San Francisco: Jossey-Bass, A Wiley Brand.

Koivisto, M., Säynäjäkangas J. and Forsberg S. 2019. *Palvelumuotoilun bisneskirja*. Alma Talent.

Lewrick, M., Link, P. and Leifer, L. 2018. *The design thinking playbook: mindful digital transformation of teams, products, services, businesses and ecosystems*. Hoboken, New Jersey: John Wiley & Sons Inc.

Lusch, R. F. & Vargo, S. L. 2014. *Service-dominant logic: Premises, perspectives, possibilities*. Cambridge: Cambridge University Press.

Martin, B. & Hanington B. 2018. *The pocket universal methods of design: 100 Ways to research complex problems, develop innovative ideas, and design effective solutions*. Beverly, MA: Rockport Publishers.

Middelburg, J.W. 2017. *Service Automation Framework. For the design and delivery of automated services*. 1st ed. Zaltbommel: Van Haren Publishing.

Miles, M. B., Huberman, A. M. and Saldaña, J. 2014. *Qualitative data analysis: A methods sourcebook*. 3rd ed. Los Angeles: Sage.

Osterwalder, A., Pigneur, Y., Bernarda, G. and Smith, Al. 2014. Value Proposition Design. Hoboken, New Jersey: John Wiley & Sons Inc.

Polaine, A., Loevlie, L. & Reason, B. 2013. Service Design - From insight to implementation. Brooklyn, New York, the United States: Rosenfeld Media.

Portigal, S. 2013. Interviewing Users: How to Uncover Compelling Insights. Brooklyn, New York: Rosenfeld Media.

Stickdorn, M. & Schneider, J. 2010. This is service design thinking: Basics - tools - cases. Amsterdam: BIS Publishers.

Stickdorn, M., Lawrence, A., Hormess, M.E. and Schneider, J. 2018. This is Service design doing: applying Service design thinking in the real world: a Practitioner's handbook. 1st ed. Sebastopol, CA: O'Reilly Media, Inc.

Tuomi, J. & Sarajärvi, A. 2002. Laadullinen tutkimus ja sisällönanalyysi. 1.-2. Ed. Helsinki: Tammi.

Wilson, A., Zeithaml, V. A., Bithier M. J. and Gremler, D. D. 2016. Services Marketing: Integrating Customer Focus Across the Firm. Third European Edition. London: McGraw-Hill Education.

## Electronic

Design Council. Framework for Innovation: Design Council's evolved Double Diamond. Accessed 26 November 2022.

<https://www.designcouncil.org.uk/our-work/skills-learning/tools-frameworks/framework-for-innovation-design-councils-evolved-double-diamond/>

Design Council. The Double Diamond: 15 years on. Article. Accessed 26 November 2022.

<https://www.designcouncil.org.uk/our-work/news-opinion/double-diamond-15-years/>

Finnish Government. 2021. Government roadmap compiles measures to increase education-based and work-based immigration. News item. Accessed 20 November 2022.

[https://valtioneuvosto.fi/-/1410877/hallituksen-tiekartta-kokoaa-toimet-koulutus-ja-tyoperustaisen-maahanmuuton-lisaamiseksi?languageld=en\\_US](https://valtioneuvosto.fi/-/1410877/hallituksen-tiekartta-kokoaa-toimet-koulutus-ja-tyoperustaisen-maahanmuuton-lisaamiseksi?languageld=en_US)

Finnish Immigration Service. <https://migri.fi/en/>

Finnish Immigration Service. The Statistical service. Accessed 20 November 2022.

<https://statistics.migri.fi/>

Finnish Immigration Service. Facebook page. Accessed 30 May 2022.

<https://www.facebook.com/Maahanmuuttovir/>

Heinonen, K. & Strandvik, T. (2015), "Customer-dominant logic: foundations and implications", *Journal of Services Marketing*, vol 29, nr 6/7, pp. 472-484.

Ministry of Economic Affairs and Employment of Finland. Accessed 20 November 2022.

<https://tem.fi/en/international-expertise-and-labour>

Ojasalo, K. & Ojasalo, J. (2015). "Adapting business model thinking to service logic: an empirical study on developing a service design tool". In *The Nordic School - Service marketing and management for the future*. Edited by Gummerus, J. & von Koskull, K. Helsinki, Finland: Hanken School of Economics, 309-333.

Voima, P., Heinonen, K. & Strandvik, T. (2010), "Exploring customer value formation - A customer dominant logic perspective", *Hanken School of Economics, Working Papers*, 552.

## Figures

Figure 1: Matters instituted at the Finnish Immigration Service .....	8
Figure 2: The three main actions for the customers in the application process. ....	12
Figure 3: The roadmap of the project of self-service machines.....	13
Figure 4: Different foci of the business logics .....	19
Figure 5: Service System Model by Grönroos.....	21
Figure 6: Service innovation and development process .....	24
Figure 7: The Service Automation Blueprint Canvas.....	33
Figure 8: A simplified version of the Double Diamond diagram .....	35
Figure 9: The research and development process embedded into the double diamond. ....	47
Figure 10: The first phase of research, initial interviews of customers and Migri staff. ....	48
Figure 11: A preliminary and unfinished draft of the customer's process. ....	52
Figure 12: A screenshot of the recruitment ad. ....	53
Figure 13: The second phase of research, workshops with Migri staff. ....	57
Figure 14: Focusing on the concrete outputs in internal workshops. ....	58
Figure 15: List of basic features identified for the first test use period. ....	59
Figure 16: Iterative process of selecting the target groups for the experiment phase.....	60
Figure 17: A part of the Flinga whiteboard at the end of the second workshop. ....	61
Figure 18: Unvalidated first draft of the evaluation table of target groups. ....	63
Figure 19: Iterative process of defining the customer's journey. ....	64
Figure 20: General customer path of employees and students .....	65
Figure 21: First draft of customer's journey. ....	66
Figure 22: Second draft of customer's journey.....	66
Figure 23: Customer's journey, final version. ....	67
Figure 24: A close-up from the part of the customer's journey during the visit at the service point.....	68
Figure 25: The third phase of research, creation of a prototype of the concept description..	70
Figure 26: The first version of the concept description (in Finnish). ....	73
Figure 27: The final phase of research, validation with Migri staff and customers. ....	74
Figure 28: The second version of the concept description (first in English). ....	81
Figure 29: A screenshot of the recruitment e-mail .....	82
Figure 30: The Value Proposition Canvas. ....	90
Figure 31: The outputs of each phase of development .....	92
Figure 32: The concept description of the self-service machines, final version. ....	94

## Tables

Table 1: Transition from a provider-dominant logic to a customer-dominant logic .....	20
Table 2: Service Concept Worksheet Template .....	23
Table 3: Service concept development: a list of questions to consider, refine and evaluate. ....	27
Table 4: Examples of different Self-Service Portal purposes .....	30
Table 5: The four steps in the planning and implementation of a workshop .....	38
Table 6: Fit created through value propositions .....	45
Table 7: The six preliminary findings of the development process. ....	75
Table 8: The seven outcomes of the development process. ....	93
Table 9: The results to the research questions.....	104

## Appendices

Appendix 1: The customer interview field guide.....	113
Appendix 2: The staff interview field guide (in Finnish).....	115
Appendix 3: Plan for the staff workshops .....	117
Appendix 4: User stories, the first draft.....	120

## Appendix 1: The customer interview field guide

### Customer interview field guide

June & October 2022

Jenni Leppänen

#### INTRO

- Welcome
- (*if in person*: did you find the service point easily? Been here before?)
- (*if on Teams*: would you like to talk with the video camera on or off?)
- Recording OK? Just for my personal reference, deleted in one month
- Introductions: Jenni - Service Designer + *Miia* - *intern (the first 3 interviews only)*:
  - o Both students, but working at Migri back office on improving the services:
    - We only meet customers through research interviews + started a few months ago - you might know Migri better than we do :)
    - This project is searching for ways to improve the visit at the service point. We want to hear directly from our customers how this new idea sounds, and plan a new process together.
- We will take about 45min time: do you have to leave at a certain time?
  - o Two parts: questions about your last identification visit, and comments on the idea of self-service machines
  - o I will ask questions (*Miia takes notes*) -> you can also ask and stop at any point, and take your time before you answer
  - o A matter of opinions: no right/wrong answers
- Questions of comments at this point?
- Thank you for volunteering: how did you feel about the invitation? have you done interviews for developing Migri before?

#### THEME 1: CUSTOMER JOURNEY

- When you first arrived in Finland, did you do your identification visit at your country of origin? Did you give biometrics for the residence permit abroad or at Migri's office?
- What steps did you take? What did you do with the staff at the front desk?
- Can you remember still what kind of questions you had at that point?
- How did the identification visit go, do you remember? How long did it take? When was it?
- What is your definition on a good visit at Migri service point?
  - o Criteria? Expectations? Needs? How can you tell?

#### THEME 2: SELF-SERVICE MACHINES

- We are looking into the possibility of employing a self-service machine: just exploring an idea on a hypothetical level (additional option for those that cannot skip the visit totally)

- Goal would be to streamline the experience of our customers: possibly shorter queues, longer opening hours etc?
- Some functionalities as self-service, not everything -> staff still needed and available
  - Biometric passport, fingerprints, photo, card payment...
- Can you think of examples of self-service machines?
  - Have you seen/used some, how often? Where? How was the user experience?
- What was your first impression when you heard about the idea? Initial thoughts? +/-
- What do you think other customers would think about having such machine here?
- Who do you think would be most eager to use the self-service machine?
- How would you feel about using one here for Migri?
  - benefits / opportunities / solutions to problems
- What could go wrong with the machines? Worries, risks? Trust?
- What features and tasks would be OK to do with the machine? What not?
- Comparison: differences in machine/person: +/-, what/how/why
- Would you rather meet a person or use a machine alone?
  - Who / in which case would rather -II-
- How would you feel about never meeting a Migri staff member?
  - Need for guidance/support/monitoring?
- + *Do you know how to contact Migri for information and support?*
- How would it affect/change the visit here at service point if we had machine?
  - What/how/why, +/-
- What would you like to know in advance (FAQ)
  - before making the decision on whether to use the self-service machine or choose to go meet customer service staff?
  - before coming to use the machine?
- + *Would you have ideas of names for the machine? Criteria for a name?*

## OUTRO

- Thank you for your excellent comments, much appreciated and helpful for Migri
- How do you feel? Feedback?
- Any questions or comments? You can also e-mail me
- Compensation: movie ticket
- Next:
  - Make notes of the recording, delete it
  - Continue with more interviews, summarise the comments (anonymous)

## Appendix 2: The staff interview field guide (in Finnish)

Staff interview field guide

May 2022

Jenni Leppänen

### ALOITUS

- Yleistä
  - o Kiitos osallistumisesta
  - o Haluatko jutella kamerat päällä? *Näytä ainakin alkuun omat kasvot*
  - o Nauhoitus OK? Vain omaan käyttöön, muistin tueksi
- Esittäytymiset
  - o Palvelumuotoilija + Laurean yamk-opiskelija:
    - uusi virastossa, termit hakusessa jne
    - raportoin nämä keskustelut yhtenä menetelmänä opinnäytetyön tiedonkeruussa
  - o Sinut + muutama muu oli jo aiemmin ilmoitettu käytettäväksi projektiin:
    - 4 keskustelua varattu, ensi viikolla myös asiakkaita
  - o Miten tuttua palvelupistetyö on? Paljonko teet, mitä / rooli + toimipiste?
  - o Mikä fiilis, kun kutsu tuli? Oletko jo jotenkin osallistunut tähän projektiin aiemmin?
- Taustat itsepalveluautomaatille - kerron kohta lisää: saat kertoa ensin mitä itse olet kuullut tähän mennessä?
  - o (Esiselvitysvaihe, suunnitellaan konseptia, haetaan rahaa toteutukseen)
- Tavoitteet tänään (aikaa varattu tunti - myös mahdollista jatkaa, jos haluat)
  - o Keskustella aiheesta, kartoittaa fiiliksiä ja mahdollisia toiminnallisuuksia
    - Ei oikeita/väriä vastauksia
  - o Kommentoidaan aiempia luonnoksia / muiden haastateltujen ajatuksia
- Preferenssit
  - o Tykkäätkö miettiä ensin hetken itse, vai ajatella ääneen?
  - o Olen utelias, paljon kysymyksiä: sano jos haluat tauon tms
- Kysymyksiä, toiveita? Voit keskeyttää missä kohtaa vaan.

### ENSIREAKTIOT

- Mitä olet kuullut ajatuksesta aiemmin? Oletko nähnyt jotain materiaaleja tms?
- (braindump) Mitä ajatuksia tuli ensiksi ideasta mieleen?
- Mitä esimerkkejä tulee mieleen itsepalveluasioinnista tai -laitteista?
  - o Millaisia olet käyttänyt / nähnyt? Miten toimi, mikä fiilis jäi?
- Mitä tunteita tunnistautumisautomaatti herättää? Sinussa ja/ tai kollegoissa yleisesti

- *positiivisia - mitä ratkaisee/toimisi: S vahvuuksia, O mahdollisuuksia*
- *negatiivisia: W heikkouksia, T huolia, riskejä jne*
- Miten luulet asiakkaiden suhtautuvan? *Yleisin? (ääri)positiivin? (ääri)negatiivisin?*

## KONSEPTI

- Mitä nykytilassa haasteena? Mitä ongelmia automaatti voisi ratkaista?
- Millä asioilla asiakkaat tulevat tiskille? Mitä tehtäviä (tarve, tavoite)?
- Kenelle / minkälaiselle asiakkaalle itsepalvelu sopisi? Valintakriteerejä?
  - Henk.koht. ominaisuuksiltaan?
  - Lupatyypiltään? Keskitytään jatkossa vain tähän kohderyhmään keskusteluissa
- Mihin asiaan/millaiseen asiointiin automaatti sopii? Miksi?
  - Mitä asiakas voisi tehdä itse kokonaan automaatilla? *käyttötapaukset*
  - Mitkä näistä olisi helpoimpia, varmimpia? (onnistuisi melkein kaikilta, ei herätä kysymyksiä jne)?
- Miten tuki, neuvonta ja valvonta?
- Mihin ei sovi, milloin paras mennä tiskille? Miksi?
- *Kun keskusteltu, NÄYTÄ LUONNOSTELTU TOIMINTOLISTAUS: KOMMENTTEJA?*
  - Mitkä OK sellaisenaan / mitä lisätä/muokata/poistaa listalta? Miksi?
- Mitä muuttujia / eri skenaarioita tulisi huomioida konseptissa?
  - *Eri lupatyypit / saapumistilanteet tms*
- Miten vaikuttaisi pisteillä asiointiin / muuttuisi: kenelle, miten (+/-), miksi?
  - *henkilöstöön, asiakkaisiin, vartijoihin, järjestelmiin?*
- Miten varmistetaan muutoksen onnistuminen: mitä vaatii / keneltä?
- Miten minimoidaan mahd. negatiivisten seuraukset / riskien toteutuminen: mitä vaatii / keneltä?
- Mitkä toiminnot olisi minimissään oltava, jotta hankinta kannattaa?
- Mitkä riskit olisivat showstoppereita?
- Mitä näkökulmia tuotekehitykseen? *tekninen, tietosuoja, helppokäyttöisyys tms*
- + Millainen olisi hyvä nimi automaatille? Omia kriteerejä / toiveita + ehdotuksia?

## LOPETUS

- Kiitos - arvokasta tietoa, auttaa kehittämään
- Mikä fiilis? Palautetta, kysymyksiä? Voit palata myös meilitse
- Nauhoite vain omaan käyttöön, poistetaan kuukauden päästä
- Eteneminen
  - Loput haastateltavat, kootaan (anynyymiä), keskustellaan työryhmän kanssa
    - + Asiakashaastattelut
    - + Proton laatiminen, asiakastestaukset
  - Voinko tarvittaessa olla yhteydessä uusiksi?

### Appendix 3: Plan for the staff workshops

The goal of the three workshops: to validate and complement the understanding gathered during the round of internal interviews.

#### Basic details of the workshops

##### WORKSHOP 1 - 18.8.2022

- Duration: 3h 10min
- Participants: 4
- Preliminary assignment: read a preliminary report (a summary/analysis of the interviews)

##### WORKSHOP 2 - 25.8.2022

- Duration: 3h 15min
- Participants: 4
- Preliminary assignment: -

##### WORKSHOP 3 - 12.9.2022

- Duration: 3h
- Participants: 4
- Preliminary assignment: comment on three materials (made in the previous two workshops)

#### General structure of the three workshops

- Intro
  - Welcome, introduction
  - Schedule of the day, the timing of the coffee break
  - Practicalities (remote workshop): e.g., the use of a microphone, chat, video cameras, recording + questions, comments
  - Working mode and methods, number of tasks
  - Background & context: introduction on the project, selection of participants...
  - Summary/update: outputs of the previous workshop, new after that?
  - Goal of this workshop (+ series of workshops)
- **\*Topic of the day**
- Closure
  - Summary: goals and outputs of this workshop
  - Feedback: were the goals met, can we proceed

- Next steps: topic and timing of the next workshop
- Task division: list of preparations for the next workshop

\* Varying topics of the day:

WORKSHOP 1: focus on A) Features for the self-service machines + B) Target customer group

- Introduction round and warm-up exercise:
  - office location, main duties
  - how appointed to participate in this project
  - optional: choose a picture that describes your remote work persona / hobbies during the covid-19 lockdown
  - expectations for the workshop
- Preliminary assignment, parts A + B:
  1. comments on the summary/analysis of the interviews,
  2. possible changes: something to add/remove/edit?
  3. something to ask or clarify further?
- Created outputs: 1) revised list of basic features, 2) revised six suggestions for the target group

WORKSHOP 2: focus on B) Target customer group + C) Customer's journey

- Thoughts on previous workshop and its outputs?
- Target customer group: evaluation on each of the revised six suggested groups.
  1. individual ideation on pros + cons for each potential group (arguments why suitable or less ideal for the experiment)
  2. sharing and grouping arguments on Flinga whiteboard -> discussion of each potential target group, adding new arguments
  3. vote on three favorite groups (with priority labels 1-3)
- ~~Service blueprint~~ / Customer's journey:
  1. individual thoughts on the steps and actions of a customer (on top level), just before/during/right after the use of the self-service machine, including the channel of the contact point
  2. sharing and grouping steps together on the Flinga whiteboard -> discussion of steps, editing
- Created outputs: 1) pros&cons of the six suggestions for the target group, 2) a quick draft of the customer's journey in the identification phase

WORKSHOP 3: focus on B) Target customer group + C) Customer's journey

- Thoughts on the previous session and its outputs (summarised in the preliminary assignment)?
- Target customer group: introduction of a new output/format created based on the previous workshop - a table with evaluation criteria for selection
  1. comments on the selected arguments (x-axis of the table): something to add/remove/edit?
  2. new round of votes with the potential target groups (y-axis of the table)
  3. expanding the arguments written for the favorite three groups (x-axis)
- Customer's journey:
  1. Discussion on the need to book an appointment beforehand: listing pros + cons
  2. A new output/format created based on the previous workshop - a linear customer's journey: something to add/remove/edit?
- Created outputs: 1) three favorites for the target group, 2) iterated draft of the customer's journey in the identification phase

