Johannes Maliranta

LOCALI TURKU

Creating a multilingual local news service for the foreign population in the Turku region using the Lean Service Creation process

TURKU AMK

TURKU UNIVERSITY OF
APPLIED SCIENCES

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Local news in the Turku region is only available in Finnish or Swedish. This leaves a large number of foreign residents in the region in a news blackout, as many do not understand Finnish or Swedish well enough. This thesis focused on solving this issue by creating and validating a multilingual local news service. The project was carried out in collaboration with one of Finland's largest daily newspapers, which was a client of the thesis commissioner. The client aimed to explore how emerging technologies, such as artificial intelligence, can be used in digital news reporting.

The research questions this thesis aimed to answer were: How to develop and sustain a multilingual news service? Can the client discover technological innovations to enhance their business operations by developing this news service? What other business value can the client potentially gain from this project?

At the core of the theoretical framework of this thesis is the Lean Service Creation methodology, which was used to design and validate the service. Lean Service Creation was studied extensively throughout the work, and it is presented in the theory section, together with key factors such as usability, accessibility, and user experience in online news services. Various service design tools and research methods supported the service creation process, including workshops, surveys, benchmarking, service blueprinting, usability testing, and beta testing.

The research confirmed that the problem is real: non-Finnish-speaking foreigners in the region have no access to understandable local news, and the majority would like to have. Developing a multilingual news service to solve this problem was successful but with limitations. The automatically translated news content had too many errors for the client to be comfortable releasing the service to the public. It was also discovered that establishing viability for the service would be very difficult. Despite the translation errors, the target audience deemed the multilingual news service prototype desirable and valuable. During the project, the team also managed to develop new technology to help the client's news reporting business. While the client didn't achieve any other direct business value from this project, they reported that working with artificial intelligence brought valuable understanding.

Keywords:

Service design, design thinking, lean service creation, usability, user experience, news websites

Johannes Maliranta

LOCALI TURKU

Monikielisen paikallisuutispalvelun luominen Turun seudun ulkomaalaisväestölle Lean Service Creation -menetelmän avulla

Turun seudulla paikallisuutisia on tarjolla vain suomeksi tai ruotsiksi. Tästä johtuen suuri määrä seudulla asuvia ulkomaalaisia, jotka eivät osaa suomea tai ruotsia tarpeeksi hyvin, jäävät uutispimentoon. Tämä opinnäytetyö keskittyi ongelman korjaamiseen luomalla monikielisen paikallisuutispalvelun, sekä todentamalla sen elinkelpoisuutta. Projekti toteutettiin yhteistyössä yhden Suomen suurimman päivälehden kanssa, joka oli opinnäytetyön toimeksiantajan asiakas. Toimeksiantajan asiakkaan tavoitteena oli selvittää, miten uusia teknologioita, kuten tekoälyä, voidaan hyödyntää digitaalisessa uutisraportoinnissa.

Opinnäytetyö pyrki vastaamaan seuraaviin tutkimuskysymyksiin: Kuinka rakentaa monikielinen paikallisuutispalvelu? Voiko asiakasyritys löytää teknologisia innovaatioita liiketoimintansa tehostamiseksi rakentamalla tällaisen uutispalvelun? Mitä muuta liiketoiminta-arvoa asiakasyritys voisi mahdollisesti saada tästä projektista?

Opinnäytetyön teoreettisen viitekehyksen ytimenä oli Lean Service Creation -menetelmä, jota käytettiin palvelun suunnittelussa ja elinkelpoisuuden todentamisessa. Menetelmää tutkitiin perusteellisesti työn aikana, ja se esitellään teoriaosiossa yhdessä muiden avaintekijöiden, kuten käytettävyyden, saavutettavuuden ja verkkouutispalveluiden käyttäjäkokemuksen teorioiden kanssa. Palvelun luomisprosessia tukivat erilaiset palvelumuotoilun työkalut ja tutkimusmenetelmät, kuten työpajat, kyselyt, kilpailijakartoitus, palvelun tuotantokaavio, käytettävyystestaus ja betatestaus.

Tutkimustulokset vahvistivat, että ongelma on todellinen: alueen suomea ja ruotsia osaamattomille ulkomaalaisille ei ole saatavilla ymmärrettäviä paikallisuutisia, vaikka suurin osa heistä niitä haluaisi saada. Monikielisen uutispalvelun kehittäminen tämän ongelman ratkaisemiseksi onnistui, mutta rajoitetusti. Automaattisesti käännetyssä uutissisällössä oli liian paljon virheitä, jotta asiakasyritys olisi uskaltanut julkaista palvelun yleisölle. Lisäksi havaittiin, että palvelun taloudellisen kannattavuuden varmistaminen tulisi olemaan vaikeaa. Käännösvirheistä huolimatta kohdeyleisö piti monikielisen uutispalvelun prototyyppiä haluttavana ja arvokkaana. Projektin aikana tiimi onnistui myös kehittämään uutta teknologiaa tehostamaan asiakasyrityksen uutistoimitusta. Vaikka asiakasyritys ei saavuttanut muuta suoraa liiketoiminta-arvoa projektista, he kuitenkin raportoivat, että tekoälyn parissa työskenteleminen toi arvokasta ymmärrystä sitä kohtaan.

Asiasanat:

Palvelumuotoilu, muotoiluajattelu, lean service creation, käytettävyys, käyttäjäkokemus, uutisverkkosivustot

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1 INTRODUCTION

The Turku region in Southwest Finland is characterized by a diverse population, including a significant number of foreign residents. These individuals face challenges in accessing local news due to language barriers. While some news media outlets offer limited coverage in English, the information primarily focuses on national news, leaving foreign residents with limited access to local news and information. Consequently, many foreigners rely on social networks, such as workplaces, schools, and friends, to stay informed about local matters. However, those without such networks are particularly disadvantaged and struggle to stay connected with their local community.

This thesis aims to address this issue by designing a multilingual local news service specifically tailored for the foreign population in the Turku region. The work in this thesis is done in collaboration with the thesis commissioner's client, one of Finland's largest daily newspapers. In response to the lack of news services catering to the foreign population in Southwest Finland, the client seeks to explore the feasibility of developing and sustaining a multilingual local news service. The project was initiated by the client's funding from a technology partner to explore innovations in delivering digital news. The funding dictated that the project would explore how emerging technologies, such as artificial intelligence, could be utilized in news reporting.

The research questions this thesis answers are: How to develop and sustain a multilingual local news service to cater understandable local news to foreigners living in Southwest Finland? Can the client discover new technological innovations to enhance their business operations by developing a prototype for this service? What other business value can the client achieve by developing this prototype service?

The methodology employed in this thesis is rooted in the Lean Service Creation process, which guides the planning and execution of all the work and research carried out. The theories at the core of the Lean Service Creation method are studied and discussed, as well as theories in usability, accessibility, and user experience in online news services. Various service design and research methods are utilized in different stages of the service creation process.

1.1 Commissioner, Client, and the Project Team

The commissioner of this thesis is the marketing agency Nitro. The work is done for one of Nitro's clients, one of Finland's largest daily newspaper companies. The work is carried out in collaboration between the commissioner and their client's project team, which consists of their chief digital officer, digital product manager, two journalists, and the editor-in-chief. The thesis author and service designer leads the service creation process, and Nitro's team carries out the concrete work, such as planning, researching, and building the online service. The client's team participated in the workshops and helped gather the necessary information to develop and deliver the service.

The commissioner's project team:

- The thesis author and service designer, Johannes Maliranta, is Nitro's user experience and interface designer. He is leading the practical work in the project by facilitating the Lean Service Creation method for the team. He is also responsible for research, user interface design, and visual design of the service. He has a strong background in user experience design of digital services, web design, and graphic design.
- The Technology Team Lead is responsible for researching and developing artificial intelligence tools and leading the technical development of the service.
- A programmer for front-end development is responsible for building the website, which is the service's user interface.
- A programmer for back-end development is responsible for designing and building the service database structures and integrations between different pieces of technology, such as artificial intelligence and language translation tools.
- The project manager is mainly responsible for managing the project timeline and arranging client meetings and communications.

1.2 Stakeholder Map

A stakeholder map visually represents the key people and organizations involved in a particular experience or ecosystem. It helps identify customer groups, employees, partner organizations, and other stakeholders impacting the experience. Stakeholder

maps reveal relationships, networks, and potential frictions among these stakeholders while uncovering new business opportunities. They allow for the active redesign of systems by adding or removing stakeholders, adjusting relationships, and strengthening or weakening connections. Stakeholder maps are particularly useful in customer journeys, where customers interact with various stakeholders, often without realizing it. (Stickdorn et al., 2018, p. 58-59.)

The project stakeholders (Figure 1) were mapped by the service designer at the end of the project in December 2019. The map was created as a guide to help readers quickly grasp who is or should be involved in the project, the relationship between people, and the overall size and functions of the project team. As the whole service centers around its users, they are placed at the center of the stakeholder map. The people in the core project team are placed around it and categorized as essential stakeholders. These people all contributed to designing and building the service by attending workshops or programming the website. The next ring outward is important stakeholders: the commissioner's project manager, the client's Editor-in-Chief, and the external funder. These entities provided the project with vital resources, information, or managerial assistance. The outermost ring, other stakeholders, consists of people and organizations who were involved but were by no means vital to the project's success.

The relationships between the stakeholders are marked as lines and arrows. The unidirectional arrow means a one-way transfer of information, such as orders to carry out tasks, instructions, and progress reports. Only the client's reporting to the project funder was unidirectional, as the funder was not involved in the work. Bidirectional arrows mean that information was exchanged both ways. Co-working units, such as the commissioner's programmers, the client's journalists, and the digital product team, are grouped inside ellipses. These units primarily worked and reported as one.
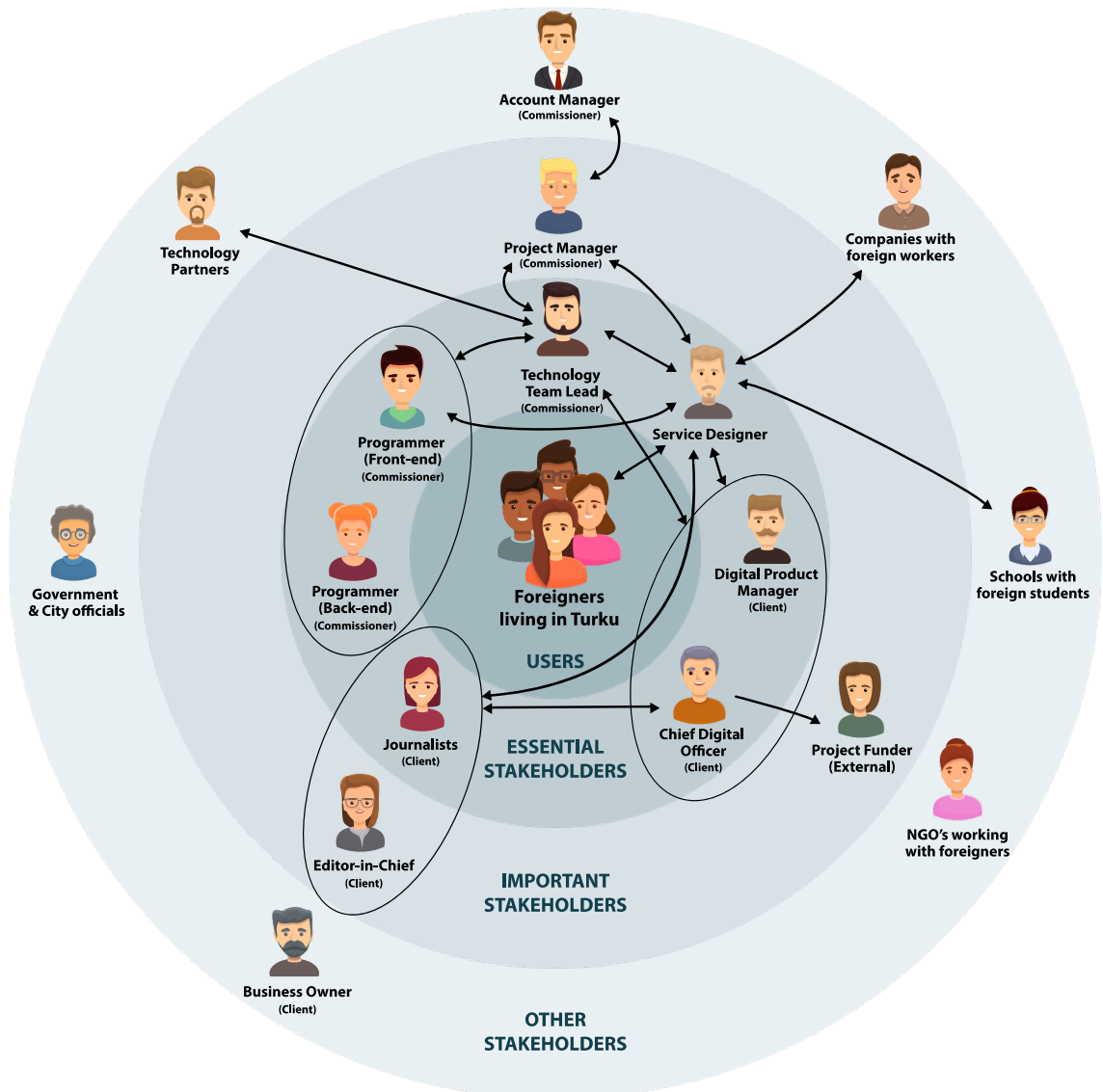
Figure 1. Stakeholder Map.

1.3 Foreign People Living in Southwest Finland

In 2018, there were 478,582 people living in Southwest Finland, of whom 34,181 had a foreign language as their native language. That makes up 7.1 % of the population in the region. In Southwest Finland, immigration is focused on Turku, the Turku region, and Salo. At the end of 2018, Turku had a population of 191 331, of which 21 894 were foreigners, 11,4% of the population. (Statistics Finland 2018.)

Over 120 languages are spoken in Southwest Finland. The largest foreign language groups in 2018 were:

- Russian (5 079)
- Estonian (4 052)
- Arabic (3 191)
- Kurdish (2 545)
- Albanian (2 131)
- Somali (1 692)
- English (1 383)
- Farsi (1 167)
- Vietnamese (921)
- Polish (899)

(Statistics Finland, 2018)

1.4 Project Timeline

In October 2018, the client hired the commissioner to build a prototype online news service to deliver multilingual local news to the foreign population in Southwest Finland. The work began at the end of October 2018 and was completed in December 2019. See the project timeline in Figure 2. The client created and managed the top-level project plan and timeline as guided by the externally provided funding. The initial plan was for the project to be completed in 16 months.
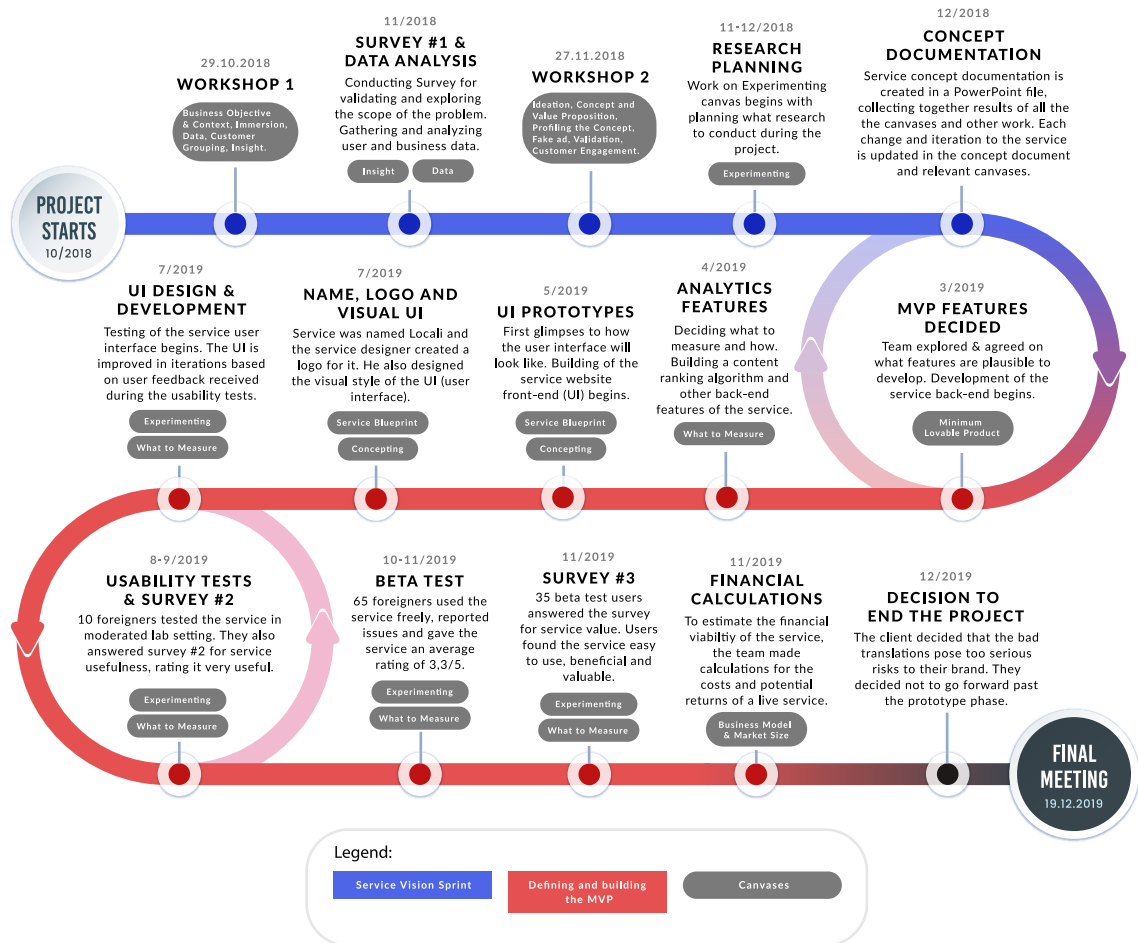
Figure 2. Project timeline with critical milestones and canvases used at different points of the project.

1.5 Research Questions

The research questions are based on the client's understanding that there are currently no news services available that provide local news from the Turku region in any other languages than Finnish and Swedish. This situation might leave most of the region's foreign population in a news blackout. The main goal of this project is to find out whether it is possible to develop and viably sustain a news service to solve this problem. The secondary goal is to find out what benefits the client can receive by creating the prototype service.

Research questions this thesis answers:

1. How to develop and sustain a multilingual local news service to cater understandable local news to foreigners living in Southwest Finland?
2. Can the client discover new technological innovations to enhance their business operations by developing a prototype for this service?
3. What other business value can the client achieve by developing this prototype service?

1.6 Frame of Reference

A frame of reference, or theoretical framework, is the structure that holds the theory of a research study. It sets the boundaries for the relevant topics, concepts, and their definitions, which will be covered in the work. It helps the researcher and readers understand how the topic will be approached and how to grasp it better. (USC Libraries, 2019.)

The client wants to find a viable way to serve the non-Finnish-speaking residents and immigrants in the region. They hope that by exploring the possibilities of emerging technologies, such as artificial intelligence in journalism, they will be able to do it. The client also wants to utilize service design in this exploration. The service designer chose Lean Service Creation as the method, and it forms the core of the theoretical framework (Figure 3). Other key topics at the core are the user experience in online news services, users in general, and business viability. These are supplemented by investigations into technological feasibility and user-related aspects, usability, and desirability, which study how users connect and feel about the online news service.
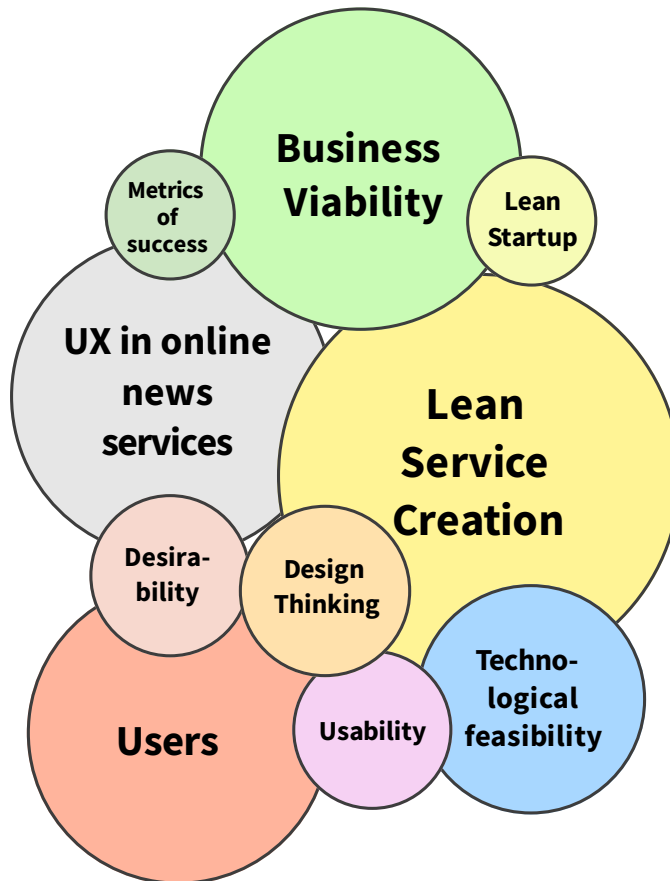
Figure 3. Frame of reference.

1.7 The Structure of the Thesis

The remainder of this thesis is organized as follows:

Chapter 2 provides a theoretical background for the methods used in this thesis and the critical aspects of a successful online news service. The chapter consists of the theory behind the Lean Service Creation and the methodologies it was built upon: design thinking, lean startup, and agile software development, followed by a discussion on usability, accessibility, and user experience in online news services.

Chapter 3 outlines the service design process employed in this thesis. The Lean Service Creation process is divided into two main project phases: The Service Vision Sprint followed by the defining and building of the Minimum Viable Product version of the service. All the canvases and stages of the Lean Service Creation process are presented and briefly explained collectively here.

Chapter 4 presents all the research methods used in the thesis and how each study is planned and carried out. The results of the research are presented in Chapter 5, along with the discussion on the canvas the research was prompted by.

Chapter 5 contains the empirical part of the thesis with additional theories. Each subchapter presents one of the Lean Service Creation canvases and begins with a theory involved in the canvas, the purposes it was made for, and how it should be used. How the team worked through the particular canvas is explained, followed by a discussion of the results.

In Chapter 6, the prototype service is evaluated using three dimensions: technological feasibility, user desirability, and economic viability for the owner. The chapter also includes discussions on areas of improvement and future recommendations concerning these three dimensions of evaluation. This chapter closes with the client's comments on the project.

Chapter 7 concludes the thesis by summarizing the whole project and the results, answering the research questions, and discussing implications for future research. The thesis author also reflects on the project here and discusses the knowledge and experience he gained while working on it.

2 THEORETICAL BACKGROUND

The prototype online news service will be designed using the Lean Service Creation service design method. Lean Service Creation was chosen as the methodology because it is an efficient tool for developing a new service or a product in a customer-centric way, and it is beneficial for exploring new business opportunities (Toiminen et al., 2018, p. 24). Lean Service Creation combines various service design methodologies and theories, including design thinking, lean startup, and agile software development, which will be studied and explained briefly. Theories involving user experience and usability of online news portals make up a large part of the research conducted during this thesis.

2.1 Service Design

Service design is an interdisciplinary approach that aims to create and improve services to meet the needs of both customers and service providers. It involves understanding the customer's journey, identifying pain points, and designing solutions to enhance the customer experience. This can include everything from physical spaces to digital services and involves collaboration between designers, business strategists, and other stakeholders. (Stickdorn & Schneider, 2013, p. 17.) Service design is all about making a service more useful, usable, efficient, effective, and desirable. (UK Design Council in Stickdorn & Schneider, 2013, p. 18)

Service design is based on design thinking, a problem-solving approach that helps teams imagine, test, and redesign solutions quickly until they fulfill the customers' needs. Service design combines analytical and imaginative thinking, starting from the assumption that there is a perfect solution, but it has not been invented yet. Both approaches emphasize empathy with customers and their experiences as a fundamental starting point in design. (Reason et al., 2016, pp. 7-8)

Key methods used in service design include qualitative customer research, visualization, and prototyping. Qualitative research helps teams combine a solid subjective understanding of the human experience with predictable patterns that apply to most customers. Visualization is a powerful tool for communicating complex ideas and making them more tangible. Prototyping allows teams to test and refine their ideas quickly before investing significant resources in implementation. (Reason et al., 2016, pp. 8-9)

2.2 Lean Service Creation

The Lean Service Creation is a service design methodology created by Futurice, a Finnish software company. Lean Service Creation was built with the experience of hundreds of real-world projects Futurice worked with together with a wide variety of organizations. (Futurice, 2019, p. 93.) It is defined by its authors as "a systematic and adjustable way for multidisciplinary teams to create new services." As a practical and comprehensive combination of three modern methodologies: Design thinking, Lean Startup, and Agile software development, Lean Service Creation was created to be more than just a service design process. It is a guide through every phase of the service creation process, from definition to research and ideation, reaching all the way to continuous development after the launch. (Toiminen et al., 2018, p. 35.)

Lean Service Creation breaks down the service creation process into a set of canvases, which can be thought of as phases of the design process. Each canvas includes its own set of questions that help ensure that the service creation team remembers to ask all the right questions during each step of the process. This helps multidisciplinary teams find a common language, and it ensures that the service creation process is done in a customer-centric way. By finding and validating the right problems in the beginning, the team can focus on doing the right things throughout the whole project. There is no set order in which the canvases or phases should be worked through, as the process is open for customization to the project at hand. (Toiminen et al., 2018, p. 35.)

The actual work with the canvases is done in co-creation workshops, for which the canvases should be printed out as posters on the wall to guide the workflow step-by-step. The canvases, combined with a fast pace of work, push participants to think divergently and create concrete results quickly. Facilitating the true spirit of co-creation, the process helps people talk, listen, and provide and receive quality feedback. To share their own ideas and build freely on top of other's ideas. Abstract concepts are quickly transformed into something tangible to experiment with so that things can be tried out to learn what works and what is not right from the beginning. (Toiminen et al., 2018, p. 111.)

With the Lean Service Creation focusing on customers and their hidden, unmet needs, it is possible to discover new business opportunities by identifying customer's problems that are worth solving (Toiminen et al., 2018, p. 24). The structure and order of the set of canvases is well suited for fast and cheap validation of service or product ideas. The

process starts with defining and exploring the whole business context and discovering customer needs, then proceeds to formulating business goals and creating a service concept to solve the customer's problem. The concepts are then built into cheap and fast prototypes, which can be tested on users to validate or invalidate the solution. (Toiminen et al. 2018, pp. 24-25.)

Methodologies at the core of Lean Service Creation

The authors of Lean Service Creation found that Lean, Design Thinking, and Agile all represent ways of thinking and doing that address the same issue: how to create successful services. Therefore, they wanted to synthesize all of them into a single integrated process. (Toiminen et al., 2018, p. 24.) Design thinking focuses on empathizing with the customers at every stage to uncover their hidden needs and the use of visualizing techniques, such as the service blueprint, to share information. The lean startup provides the mindset of constantly validating assumptions to ensure the right direction and failing fast to avoid pointless product investments. Finally, Agile software development directs how the work is designed to be done during a Lean Service Creation process: focused working in cross-functional teams. (Toiminen et al., 2018, p. 24.)

Design Thinking

The global design company IDEO is often credited for coining the term "design thinking." On their website dedicated to Design thinking, IDEO explains the origin of the term through their practice of human-centered design since the very beginning of the company in 1978. They started to use the term "design thinking" when describing key elements of their practice, such as empathy, optimism, iteration, creative confidence, and experimentation, topped off with embracing ambiguity and failure throughout the creative process. (IDEO Design Thinking History, 2020.) Teams that utilize design thinking make decisions based on what customers or users really want instead of their own assumptions, even if derived from historical data (IDEO Design Thinking, 2020). Tim Brown, the CEO of IDEO, described design thinking as:

> "A human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success." (IDEO Design Thinking, 2020)

Figure 4 depicts how three equally important aspects are examined in design thinking to ensure the success of service or product design projects. With design thinking, it is possible to validate whether the service is desirable to people, whether it is technologically feasible to develop it, and whether it is economically viable for the business. The future of a service or product is on firm grounds when all three aspects stand validated. (IDEO U, 2020.)

Figure 4. The three aspects of design thinking (IDEO U, 2020).

There seems to be no clear consensus on how design thinking should precisely be defined. It is used in different ways in different disciplines (Pressman 2019, p. 3). While the core idea remains the same, design thinking applied in service design is different than it is when used in architecture, for example. Architect Andrew Pressman defines design thinking as a mentality where ideas emerge from various, sometimes conflicting, sources and are continually enhanced to address challenges. In practice, it's a cyclical process involving problem definition, research, idea generation, critical feedback, and iterative refinement. (Pressman, 2019, pp. 3-4)

Designer Robert Curedale emphasizes the importance of empathy and a people-centric approach to Design Thinking. This methodology prioritizes understanding people's needs and encourages collaboration, iterative prototyping, divergent-convergent phases, and a fusion of analytical and creative thinking. It's a versatile toolkit suitable for various problems and individuals, making Design Thinking an inclusive and enjoyable process. (Curedale, 2013, p. 14.)

On their learning platform (IDEO U, 2020), IDEO teaches design thinking with six phases. They point out that while the phases can be seen as linear steps, in practice, the process does not need to be linear at all. The phases can be customized to form an iterative approach to specific challenges.

IDEO's (IDEO U, 2020) six design thinking phases are:

1. Framing the question: the team should think about the customers and their actual needs.
2. Gathering inspiration: observing people in the world to discover their real needs.
3. Generating ideas: use the gathered inspiration to generate ideas that transcend the obvious to come up with fresh solutions to the problem.
4. Making ideas tangible: build fast prototypes to find out which ideas work and which do not.
5. Testing to learn: test the prototypes, observe to gather feedback and iterate
6. Sharing the story: once a solution is validated by customers, introduce it to your colleagues, clients, and customers.

The creators of Lean Service Creation utilized design thinking in a more business-oriented way, creating a balance between empathizing with people's problems and keeping an eye on business objectives. They point out that designers can easily love the customer's problem so much that they end up forgetting the business problem – which is usually the reason the whole project exists. Or that they might go too far just with their gut feeling without validating it first. These are some of the issues Lean Service Creation was created to solve. (Toiminen et al., 2018, p. 63.)

Lean Startup

Silicon Valley software developer and entrepreneur Eric Ries created the Lean startup method as a business and product development tool to avoid costly failures. Ries explains that because of his technical background, he used to think that the reason for his many failed products was either poor technical architecture, bad engineering process, or a lack of focus or product vision. Following this kind of traditional thinking and applying technical solutions to these supposed problems only led to even more failures. (Ries, 2011, p. 17.)

Juha Pesonen, one of the authors of Lean Service Creation, highlighted the shared aspect of risk management between Lean Startup and the Lean Service Creation method. Unlike lean development and Lean Startup, however, the Lean Service Creation process, developed by Futurice, places a stronger emphasis on customer-centricity at every phase, preventing unnecessary investments in non-essential solutions. (Toiminen et al., 2018, p. 24.)

To deliver continuous innovation, the Lean startup was built on existing management and product development methodologies, such as Design Thinking, Agile development, Customer Development, and Lean manufacturing (Ries, 2011, p. 4). Being parts of the Lean Service Creation methodology, Design Thinking and Agile development are discussed more closely in their corresponding chapters. However, to establish a broader understanding of the roots of the Lean startup method, Customer Development and Lean Manufacturing will be discussed briefly next.

Customer Development

Customer development is a methodology developed by Silicon Valley entrepreneur Steve Blank, who also worked as an investor and advisor to Ries in 2004 (Ries, 2011, p. 5). Customer development aims to solve the issues that follow from businesses focusing too narrowly only on product development. Blank argues that companies should broaden their focus early in development and learn more about customers and their problems. (Blank 2007, p. 25.) The Customer Development method includes four steps, starting from customer discovery. There, the focus is to understand customer problems and needs and to test hypotheses about potential customer interest in products or solutions to uncover if there is any business viability. The next three steps include building a sales model and a road map, creating and driving user demand, and ultimately solidifying the business into a well-functioning company. (Blank, 2007, p. 28)

Lean Manufacturing

Lean manufacturing is a method to streamline the production processes of a manufacturing plant, originating from the Toyota Production System created in post-World War 2 Japan by Taiichi Ohno and Shigeo Shingo. Lean thinking in manufacturing promotes utilizing the knowledge and creativity of individual workers, small batch sizes, and little to no inventory, producing items just in time and accelerating of process cycle times. It differentiates value-creating activities from waste and aims at building quality into products from the inside out. (Ries, 2011, p. 18.) The Lean startup adapts these practices to entrepreneurship. Whereas high-quality physical goods are used as a measure of progress in manufacturing, the Lean startup uses *validated learning* as its primary measure of progress. Even in the software development business, productivity is traditionally measured in hours of uninterrupted programming and how many tangible features were built in a day. Ries argues that because startups often inevitably end up building things nobody wants, it does not matter how fast they do it. Instead, he points

out that the goal should be to figure out the right thing to build – something that the customers need and will pay for – as fast as possible. (Ries, 2011, pp. 18-20.)

Build-Measure-Learn loop

According to Ries, a good startup effectively turns ideas into product experiments, tests them with real customers, learns from the feedback data, and constantly iterates this cycle to find the solution with the best business viability. The information generated through this process is called validated learning, and it is more important than money, awards, or publicity simply because it can help the business evolve by influencing the next set of ideas. This cyclical and iterative process is called the *Build-Measure-Learn feedback loop* (Figure 5), and the goal is to minimize the total time through one cycle. (Ries, 2011, p. 84.)
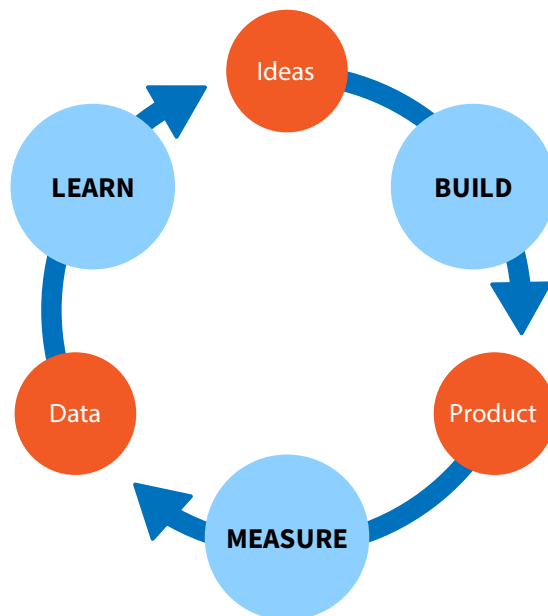
Figure 5. The Build-Measure-Learn feedback loop.

Minimum Viable Product

Minimum Viable Product (MVP) is a prototype product that has successfully gone through the Build-Measure-Learn cycle once, enabling the business to generate the maximum amount of validated learning about the customers with minimum effort and development time. It can lack many features that might have been planned for it on the development roadmap. The emphasis in working with MVPs is validated learning: the

business must test the product on actual customers, potentially even trying to sell it to them, while observing them and learning from the outcomes. (Ries, 2011, p. 77.) Depending on how the customers receive the MVP and whether it really is a *viable* product, the business might need to pull the plug on the whole idea. Killing off an unviable concept early on is more capital-efficient than going forward and wasting time and money on building a product that no one wants or is not viable enough for other reasons. (Ries, 2011, p. 78).

Agile Software Development

Agile Software Development, or just Agile, is primarily a set of practices to help software development teams quickly respond to change in the uncertain environment of software projects. It promotes placing individuals and interactions over processes and tools, working software over comprehensive documentation, collaborating with customers over contract negotiations, and responding to change over following a plan or a process. The Agile methodology was created in 2001 as an antidote to the quagmire of ever-growing rigid development processes that often led projects to fail or end up creating software that no one wanted to use. (Martin, 2003, pp. 3-4.)

The creators of Agile, the Agile Alliance, came up with 12 principles that they saw as the differentiating characteristics between the Agile method and traditional heavyweight processes. The principles were originally published in The Agile Manifesto. Robert Martin, one of the original authors of the method, listed the principles in his book Agile Software Development (2003, pp. 6-8):

1. Customer satisfaction is gained through early and continuous delivery of valuable software.
2. Changes in project requirements are welcomed and turned into customer advantages with agile processes, even in late development.
3. Working software is delivered frequently, in weeks rather than in months.
4. Businesspeople, developers, and other stakeholders working on the project must work closely together daily.
5. Projects are built around motivated individuals who are given the support and trust they need to succeed.
6. Face-to-face conversation is the best and preferred form of communication.

7. Working software meets the customer's needs and is the primary measure of success.
8. Working speed needs to be sustainable so that the team can maintain a constant pace.
9. Technical excellence and good design require constant attention.
10. Simplicity is essential; always try to maximize the amount of work *not done*.
11. Best architectures, requirements, and designs emerge from self-organizing teams.
12. Teams must reflect on their work regularly to find ways to become better.

Agile includes various sets of practices, which can be viewed as methodologies on their own. One of the most important and most famous sets of practice is Extreme Programming (XP). Considering how Agile has influenced the Lean Service Creation, XP includes practices such as having customers as closely cooperating team members during the development and short, iterative development cycles at the end of which stakeholders can provide feedback. (Martin, 2003, pp. 11-12):

The authors of Lean Service Creation point out that, like the agile process, Lean Service Creation operates in iterative steps and cycles. What distinguishes Lean Service Creation from the agile methodology is its integration of the business context, which agile methods lack. (Toiminen et al., 2018, p. 65.)

2.3 Usability and Accessibility

Usability is the practice of helping service users do what they want to do the way they expect to be able to do it without hesitation, hindrances, or asking for help. For a service to be usable, it should be useful, efficient, satisfying, learnable, and accessible. Usefulness is about whether the service helps users achieve their goals and measures their willingness to use the service. Efficiency is how fast users can achieve their goals in the service. Effectiveness is about the extent to which the service can be used the way users expect it to and the ease with which users can use it to achieve their goals. Satisfaction refers to users' perceptions, feelings, and opinions while using the service. Learnability measures how fast users can learn to use the service. Finally, accessibility means that even users with disabilities and limitations can access and use the service. Accessibility and usability go together hand in hand. (Rubin & Chisnell, 2008, pp. 4-5.) Website accessibility concerns different types of users enjoying a good user experience

and access to the same information (Interaction Design Foundation, 2017. Language has a high importance in in accessibility. Complex and hard-to-understand language can be an obstacle for all users, particularly impacting those with cognitive disabilities, limited reading skills, or individuals encountering unfamiliar topics or languages (Digital Accessibility Services of Harvard University, 2016).

2.4 User Experience in Online News Services

The reasons and ways users use online news services or news websites differ from other commercial websites. On news websites, users usually arrive only to consume the contents and leave without further interactions with the website owner. On commercial websites, on the other hand, the goal is often browsing, finding information on, and purchasing products or services. Users' interaction with news websites still involves elements and aspects similar to other websites, and the pleasantness of the users' experience affects whether they will return.

A key driver analysis conducted by Sauro (2018 with 564 participants identified the most critical aspects (Figure 6 of the service impacting the user experience (UX in news websites. The study results revealed that users' attitude toward the website owner's brand was the biggest driver of attitudes toward UX quality (BrandAtt. Clear formatting of articles and other content was the second most important factor (Format, followed by a good selection of news stories presented on the homepage (Selection as almost equally important. Helpfulness of the related and recommended articles (Recommended was the fourth most important factor. Website design is free of unnecessary distractions (Distractions, and the timeliness of the current events presented on the website (Current was deemed equally important. The final most crucial factor was clear news categories, which help users find what they are looking for (Categories.
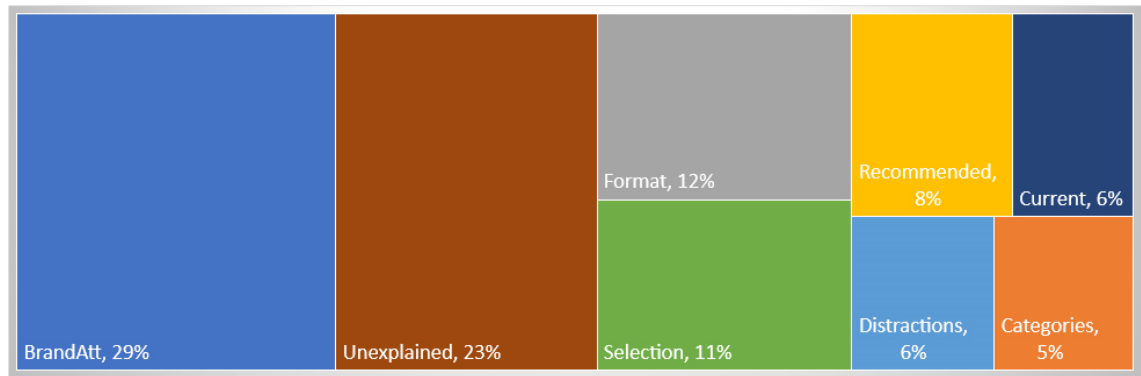
Figure 6. Key drivers of the news website user experience (Sauro 2018).

The results of the study by Sauro (2018) largely corresponded with the results of an earlier study conducted by Ali & Hassoun (2012) on the quality factors of news websites. By studying 132 news website users, Ali & Hassoun found that the most critical elements affecting the UX of news websites are timely, accurate, and useful news content, good usability, good organization of the website, and users' familiarity with the website.

3 SERVICE DESIGN PROCESS

This chapter introduces the service design process used to complete the project. The Lean Service Creation process, as presented in Figure 7, includes every step of creating and validating the service and growing it into a success. It starts by defining the business need and finding a problem worth solving, followed by envisioning a service to solve the problem. The service vision is then built into a Minimum Viable Product (MVP) to validate whether it solves the customer's problem. The process continues with finding a product market fit and ultimately growing it into a successful service. The service is periodically validated with users and examined for business viability and technological feasibility. If at any point it turns out that there is not enough evidence to support the potential success of the service in the aspects of desirability, viability, and feasibility, it should be dropped. The project team can then choose to go back to either defining new business needs and finding better problems or pick another idea from the previous Service Vision Sprint that could solve the same problem and build a prototype of it. (Nevanlinna, 2015, p. 15.) (Toiminen et al., 2018, p. 140; p. 166.)

This project focused on validating the prototype of the service idea, which originated from the business need of the commissioner's client. The main work done was in three parts: the Service Vision Sprint, building the service vision into an MVP, and testing it with users to validate the service idea. The scope of this project is highlighted in Figure 7. The work done in each phase of the service creation process is described in Chapter 5. The project team used version 1.82 of the Lean Service Creation canvases and handbook.
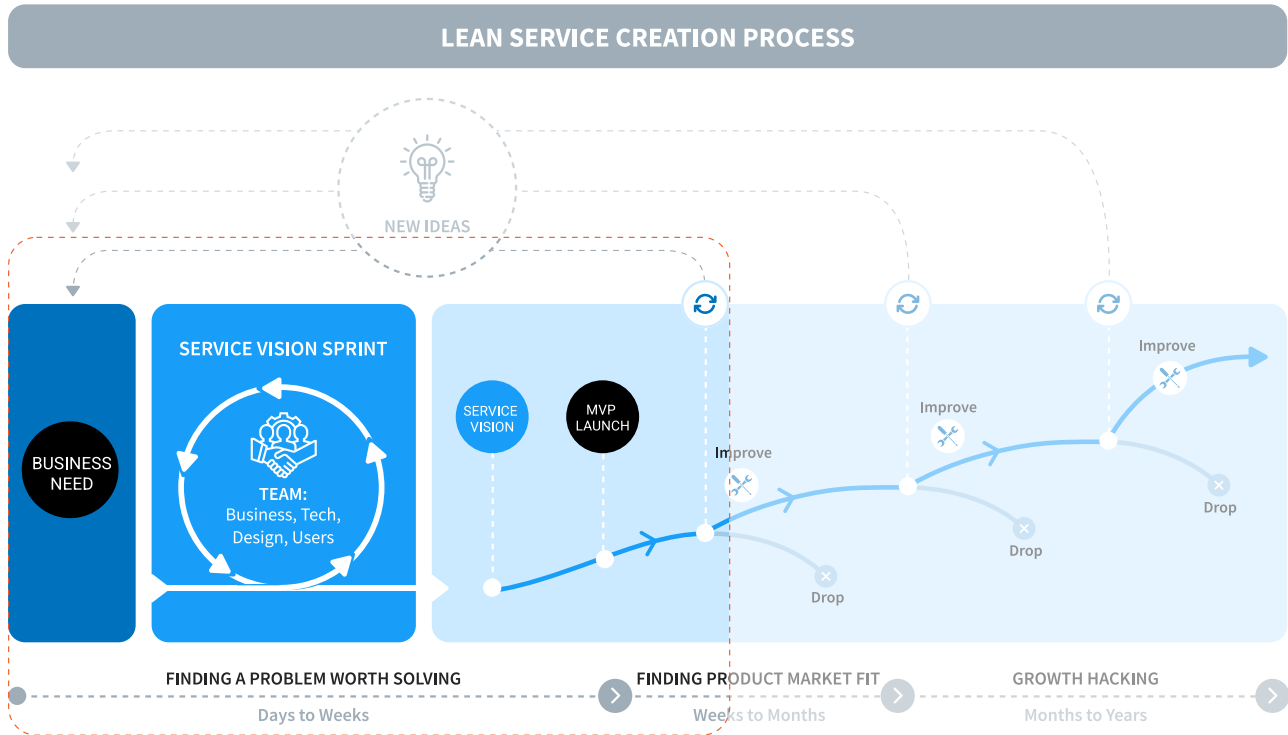
Figure 7. Lean Service Creation process with project scope highlighted (Adapted from Nevanlinna, 2015, p. 15)

3.1 Service Vision Sprint

The most important part of Lean Service Creation is the Service Vision Sprint. After finishing this phase, everyone in the team will know exactly what the service is about. This phase is important because the multidisciplinary team finds a shared language and a common understanding here. Team members gain ownership and a sense of meaning in the project by connecting with the end users and understanding their real needs. (Toiminen et al.. 2018, pp. 140-141.) The Service Vision Sprint, as presented in Figure 8, begins with clarifying the Business Objective and Context, continues to immerse in the topic, defines customer groups, and empathizes with people to discover their real problems and needs. Then, value propositions and concept ideas are created, validated, and tested for desirability. The phase ends in creating a business case for the service to explore viability. (Toiminen et al., 2018, pp. 140-141.)

SERVICE VISION SPRINT
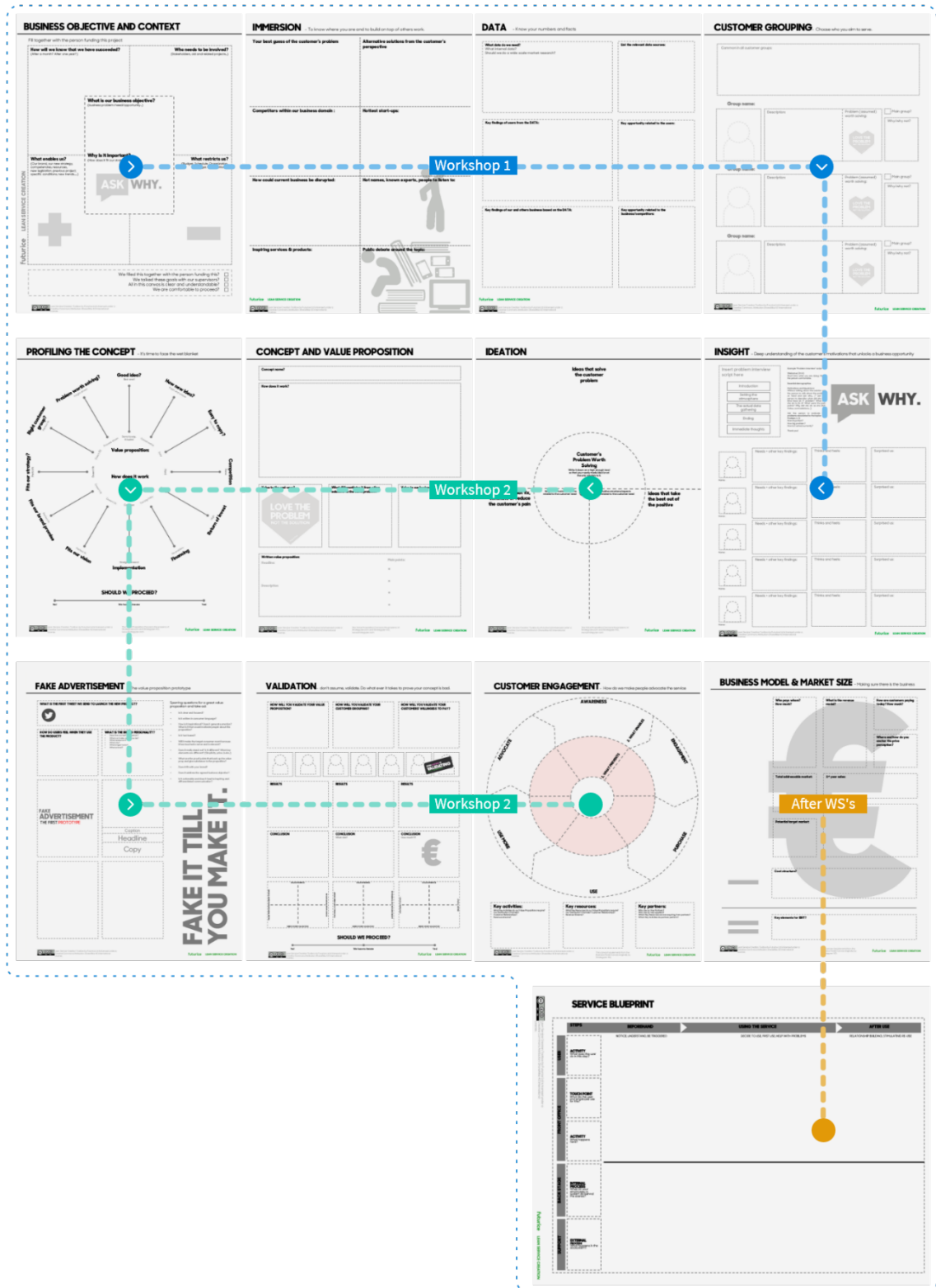
Figure 8. Service Vision Sprint canvases from the Lean Service Creation Handbook v. 1.82 divided between the two workshops. (Sarvas et al., 2017)

3.2 Defining and Building the Minimum Viable Product

After the Service Vision Sprint, it is time to start building the first version of the service. Before doing any building, however, it is important to define what the first version will be like, what kind of features it will have, and what metrics should be followed to measure its success. (Toiminen et al., 2018, p. 166.

The Defining and Building the Minimum Viable Product (MVP phase, as presented in Figure 9, starts with drawing the first wireframe versions of the service's user interface on the Concepting canvas. Then, the team lists and validates the main assumptions concerning the service with the Experimenting canvas. The results of the Experimenting canvas will be used in the Minimum Lovable Product canvas to define what features should be in the first MVP version of the service. The final canvas selected for this project is What to Measure, which helps the team decide what metrics will be used to measure the success of the prototype service. (Sarvas et al., 2017, pp. 31-39.

DEFINING AND BUILDING THE MVP
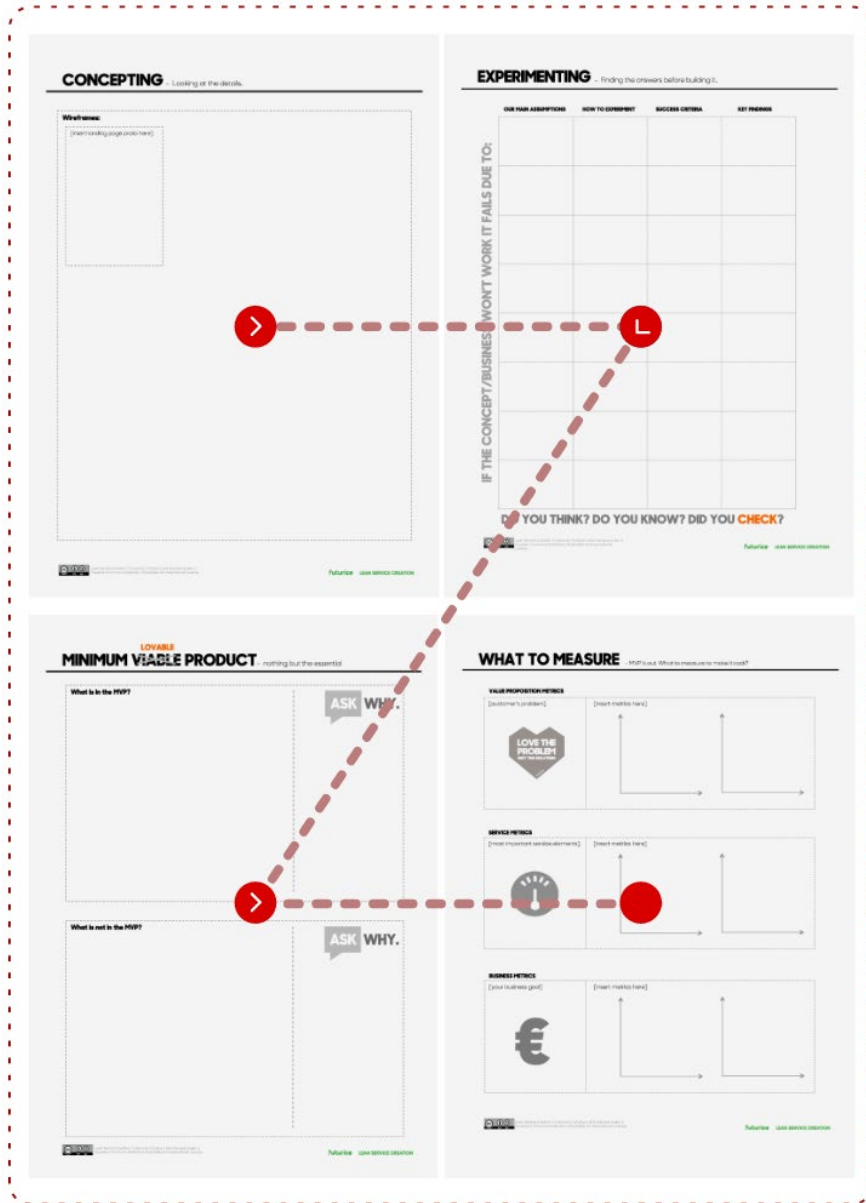
Figure 9. Defining and building the MVP canvases in the Lean Service Creation Handbook v. 1.82.

4 RESEARCH AND INSIGHT

This chapter introduces the research methods used in this thesis and how they were planned. All research was done in accordance with the Lean Service Creation process by planning and conducting the research when a canvas prompted it. The results of the research are presented in Chapter 5, in the subchapters of the corresponding canvases the research was prompted by.

4.1 Benchmarking

Benchmarking is a research method that involves assessing products, services, and strategies compared to industry-leading organizations. It can be used to enhance product design, user experience, and service quality by studying competitors and similar offerings on the market. In the benchmarking process, designers research competitors' approaches to service development to help inform them of the actions they should take during service design. (Aela, 2022.)

Working with the Immersion canvas leads the team to conduct the benchmarking carried out in this project. The Immersion canvas guides the benchmarking process by steering the team to start from the customer's problem and then think about existing solutions. These solutions can be competitors, which are then analyzed more closely. The results of the benchmarking are presented in Chapter 5.2, Immersion.

4.2 Surveys

In his book *Social Research Methods: Qualitative and Quantitative Approaches*, William Neuman (2014, p. 317 describes surveys as an appropriate way to learn about people's self-reported behaviors, beliefs, attitudes, opinions, and expectations. Neuman (2014, p. 320 provides an easy-to-use step-by-step guide for conducting a survey. Researchers start with a research problem, decide on the type of survey to use, and proceed to write the survey questions. Writing the questions requires multiple iterations, as they must be clear and complete. The final questions are then grouped and sequenced based on the research question, the type of survey, and the types of respondents. Because of the criticality of the questions and how they are presented, the survey instrument should

always be pilot-tested before proceeding with the research. A good pilot test group consists of respondents who resemble the actual respondents.

Three surveys will be conducted during this thesis. The respondents for each survey are selected based on the customer groups created while working with the Customer grouping canvas (Chapter 5.4). Suitable respondents for each survey are recruited through local universities, workplaces, and Facebook groups for non-Finnish people living in the Turku region. The project team will contact these organizations by e-mail and messages on the Facebook groups. As an attempt to increase the number of participants, a chance to win gift cards after participation will be offered as an incentive. Online surveys are among the cheapest and fastest types of surveys (Neuman, 2014, p. 346). Because of this project's emphasis on lean thinking, two of the three surveys will be conducted online. One survey will be conducted with pen and paper right after the usability tests with the same participants.

Survey #1: The Problem

The first survey, called the problem survey, will be conducted as an online survey at the beginning of the project to primarily answer the first research question: "How do foreign people living in the Turku region currently get informed on local news?" This survey is carried out with the Webropol online survey and reporting tool, which handles recording and organizing the data and provides helpful tools for managing the data for reporting. Webropol was chosen because the client was already using it. The survey has eight questions (Appendix 1) about news consumption interests and behaviors, what kind of issues the participants have faced while trying to follow the news, and their demography.

Survey #2: Service Usefulness

The second survey will be conducted with pen and paper with the ten usability test participants in two parts: the first before the usability tests and the second right after. This survey is primarily for finding out how useful the service is perceived among the users. The survey will have 12 questions, 8 in the first part (Appendix 2) and 4 in the second (Appendix 3). The first part focuses on collecting information on the participants' demography and about their news consumption interests and behaviors. 5 out of the 12 questions will be similar to the questions in the first survey to help further clarify its results

concerning the news consumption habits of foreign people in the region. The second part focuses on whether the participant thinks the service would be useful for foreigners and whether they would recommend it after testing it. Because this survey is part of the usability study, the last question is about whether the tester thinks there is anything they would like to change in the service they just used.

Survey #3: Service Value to Users

The third survey measures the perceived value, usability, and potential of the service for users. It has 11 questions (Appendix 4) and five open-ended questions aimed at gathering feedback on potential issues the users might have discovered during the beta test period. It will be conducted online at the end of the beta test phase with the website user research tool Hotjar. Each beta test user will be sent an email invitation to take the survey.

4.3 Usability Study

Usability testing is a process where people recruited from a target audience evaluate a product or a service to find out how it meets specific usability criteria (Rubin & Chisnell, 2008, p. 21). In his book Rocket Surgery Made Easy, Steve Krug puts it even more simply: usability testing is watching people use something you have created to make it easier for people to use or prove that it is easy to use. Quantitative usability tests can be used to prove something, such as whether product A is easier to use than product B, and measuring how long it takes, on average, to complete a certain task on a website. Quantitative tests are, by nature, more scientific and rigorous. There needs to be a well-defined protocol that must be followed consistently, and the sample size needs to be large enough to provide statistically significant results. (Krug ,2010, pp. 13-14).

In practice, usability testing combines at least two traditional service design methods: thinking aloud and observing. Participants are observed as they use a service, such as a website, and they're instructed to comment on everything they experience during the use – to think aloud. They can speak about problems they encounter or when something is unclear or difficult. They can also report positive things, like how easy a purchase process was or more general moments of delight. (Rubin & Chisnell, 2008, p. 204.) Such reactions can also be observed from their behavior during the session, which makes

usability testing a suitable tool for gathering behavioral data in user experience research (Rohrer, 2014).

The focus of the usability study in this project is to find out whether the designed service solves the target audience's problem, which is the lack of access to understandable local news in the Turku region. The study's secondary goal is to gather design insights to improve the service. The study consists of ten usability test sessions with ten foreign-born participants from different backgrounds, genders, and ages. The test participants represent the service's target audience and customer groups well. Five participants will test the digital service on smartphones and five on laptops. One of the world's foremost usability experts, Jakob Nielsen, found that optimal usability study results can be gained with just 5 participants (Nielsen, 2000). The division between smartphone and laptop testers is based on the share of mobile internet users, which has been just above 50% of all internet user traffic for the past three years (Statista, 2019).

The study is structured by a protocol (Appendix 5) in which each test session takes place in a lab setting and is moderated by the service designer. Each session starts with the service designer going through the test process (Appendix 6) with the tester. Their permission to record the session is asked, and they are prepared for it. Each tester is then administered a pre-test questionnaire of 8 questions (Appendix 2) about the participants' demography, news consumption behavior, and interests. After the questionnaire, the participant is guided into carrying out five tasks within the service. Participants carry out each task using the service on either a laptop or a smartphone. The screen of the device is recorded along with their voice as they talk about what they experience as they go through the service. After the tasks are completed, the participants are given a questionnaire with four questions (Appendix 3) asking about the potential usefulness of the service, whether they would recommend it, and if there is anything they would like to change in it. These two questionnaires together comprise Survey #2: Service Usefulness, described in the previous chapter.

Due to the qualitative nature of this usability study, it was decided that the study tasks could be altered mid-study. This means that if the first participants discover an issue in the service, it will be fixed immediately after the test session and removed from the service for the subsequent testers in the study. If tasks in the original plan were designed to find the already fixed issue, they would be modified or removed for the rest of the participants. This way, the service experience, and the test process could differ slightly between test participants. Also, if some task statements seem difficult for the participants

to understand, the phrasing will be revised. Altering the test process mid-study was deemed acceptable, as the primary purpose of this usability study is to find qualitative insights for improving the service, not conducting a rigorous quantitative study. (Rubin & Chisnell, 2008, p. 226.)

4.4 Beta test

Beta testing is a form of usability testing conducted on a software product or a digital service at the later stages of its design process before being released to the public. In beta testing, the design team lets target audience members use the nearly finished service for a set period while observing and collecting data on the use. The testers should use the service in their natural environment, with their own devices, carrying out real-world tasks typical to the nature of the service. The goal is to uncover any user experience issues within the service that the design team can address before publishing the service. (Babich, 2019.)

Beta testing of the service will be conducted after the results of the usability study are analyzed, the most common problems are discovered, and improvements implemented in the service. It will be a one-month-long, closed beta test, meaning only invited users can use the service. Like in the other studies, participants of the beta test will also be non-Finnish people living in the Turku region, recruited through the local universities and Facebook groups for immigrants and expats. To help the recruitment process, the team will arrange a gift card drawing among all active participants as an incentive. The team aims to recruit at least 50 users for the beta test while having at least 40 participants in quantitative usability studies is recommended (Budiu & Moran, 2021). During the test, the invited users will use the service on their own devices, such as computers and smartphones, in their own environments, in their own time, and in the way they want. No moderation, tasks, or guidance will be provided to guide the users.

User activity in the service during the beta test will be tracked and analyzed with three different methods. Primarily, user activity and feedback are gathered with an on-site user feedback tool, Hotjar, which is discussed in the next Chapter, 4.4. A custom-built tracking solution will be used to gather data on the performance of news articles. This tracking solution is not discussed in this thesis. It was developed by the client for tracking the performance of news articles and was not that focused on the behavior of users. Finally,

Google Analytics web analytics software will be used to observe the level of user activity in the service. The use of Google Analytics is discussed in Chapter 4.5.

4.5 Hotjar on-site User Feedback

An on-site survey is a research method used for asking questions and collecting direct feedback from website users. Such surveys are often simple and short; users can access them from a small widget button at the edge of the page. On-site surveys can be used to ask qualitative open-ended or close-ended questions or to ask users to rate their experiences of the website on a scale. (Dossetto, 2020. After clicking the widget button to access the feedback tool, users read the questions and either type an answer or select their answer from a list of options. In addition to sharing textual feedback, users can also rate their experience and capture and send screenshots of specific parts of the website. Rating is done on a scale of 1-5 by selecting an emoticon conveying the relevant feeling the user is experiencing, 1 being an angry face and 5 a face with hearts as eyes. (Hotjar, 2021.

Users are invited to give a rating by showing them the question and rating options on a pop-up element on top of the website as they are using it (Figure 10. After they click a rating emoticon, they can write more about their experience and possibly attach a screenshot of a problematic area on the website.
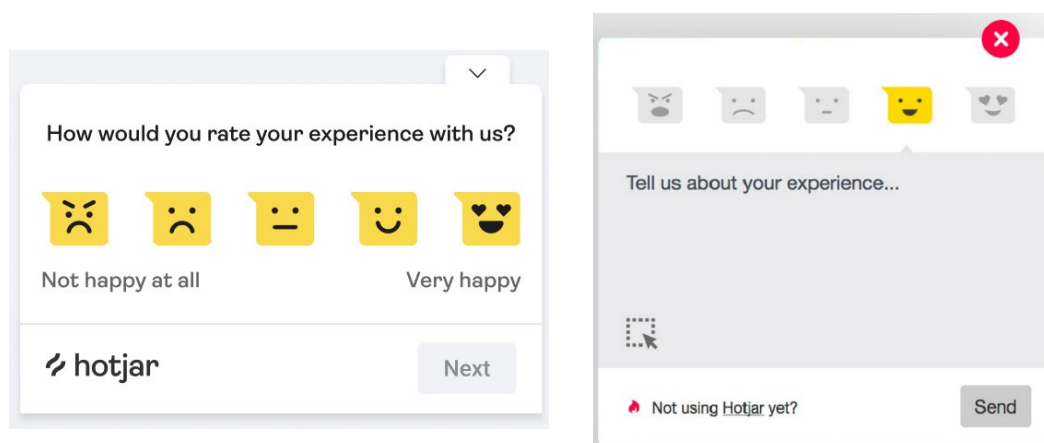
Figure 10. Screenshots of the user experience rating and feedback pop-up from Hotjar (2023).

Hotjar's on-site feedback tool will be used as the research method to collect user feedback during the beta testing of the Minimum Viable Product. This is due to the commissioner already having a paid subscription for it and because the tool can be used to easily gather the kind of qualitative textual feedback and customer satisfaction scores the team is looking for at this stage. Most importantly, however, this tool was chosen because it can be used to collect user feedback on what features or specific elements of the site are broken, missing, or could be improved during the beta test. Users can pinpoint errors in the service by quickly capturing and sending a screenshot of the broken element together with their textual feedback. This helps developers find the problems faster than just by reading the often too-vague descriptions written by users reporting errors.

4.6 Google Analytics

Google Analytics is a website analytics software that collects, stores, and analyzes data on how users use a website, or an app. Google Analytics works by embedding a small piece of tracking code connected to the Google Analytics cloud-based software onto the website. Every time someone visits the website, the tracking code inside the website collects anonymous information about how that user interacted with the website and sends the information to be stored, processed, and analyzed in Google Analytics. With Google Analytics, it is possible to track various kinds of information on how the visitor used the website, details about their web browser, general web browsing habits, and geographical information. Google Analytics has extensive tools to analyze this quantitative website data and build reports. Various default reports are available that help analyze and gather insights on the website's usage. (Google, 2020.) The version of Google Analytics used in this thesis is Google Universal Analytics, referred to only as Google Analytics from now on.

5 CREATING THE SERVICE PROTOTYPE

This chapter presents the Lean Service Creation canvases that were used in the work and all the results. The canvases are presented here in the same order they are listed in the LSC Handbook v. 1.82. However, the work deviated slightly from this default order, as the team customized the process to suit the project's top-level requirements. These requirements included the client's internal needs, guidelines from the external funder, and the two companies' holidays. The order in which the canvases were worked on, presented in Figure 2, is the same as the default order up to the Customer Engagement canvas.

Work on the project initiated with the Service Vision Sprint, which was carried out in two workshops. The first workshop was held on 29th of October and the second on 27th of November 2018. The project team consisted of 9 people overall: 4 people from the commissioner and 5 from the client company. The commissioner's team included the service designer, technology team lead, project manager, and account manager. The client's team comprised two journalists, the editor-in-chief, the chief digital officer, and a digital product manager. With this roster, each discipline vital to the design process was represented in the workshops: designers, businesspeople, developers, and the people closest to the end-user: journalists. Actual end-users were later involved in the design process through interviews, surveys, and questionnaires, observation during moderated usability testing, and user feedback and web analytics during beta testing of the service. The service designer facilitated the work in both workshops. The project team was divided into two multidisciplinary teams at the beginning of the first workshop. The service designer had designed the divisions before the workshop to ensure that both teams consisted of technical people, journalists, and managers. Both from the client and the commissioner. These teams remained the same during both workshops.

5.1 Business Objective and Context

The service creation process started by clarifying the foundations of the project for everyone in the team and linking the work to the larger business context. With this canvas, the team can come to understand why the company wants to start the project, what business objectives are being achieved by it, the success criteria, important

stakeholders in the project, and potential restrictions and advantages the company has. This stage must be worked through together with the business owners and executives. (Toiminen et al., 2018, p. 142.)

Both teams worked on their own A1-sized printed canvases, with each member writing their ideas on post-it notes and applying them on the canvas individually. The author acted as the facilitator guiding the process, projecting supporting material on the room wall and timing the work on each canvas. The total time to work on this canvas was 20 minutes, divided between 6 questions, leaving a little over 3 minutes per question. After the time to work on this canvas was up, the facilitator guided both teams to start working on the second canvas, Immersion, which is described in the next chapter.

Results

The project team found (Appendix 7) that there might be new business potential in reaching a new, underserved demography: the non-Finnish speaking population living in Southwest Finland. Reaching them could improve the client's reach, volume, and competitiveness and also benefit society by helping immigrants become more familiar with Finnish society and culture. It could help immigrant integration and reduce the risk of alienation. Utilizing AI technology in this project could also help develop the technological expertise of the client and potentially deliver new tools to be used in their primary newspaper business. Increasing immigration to the region was found to be one of the enabling factors for the project's success. The most significant restriction was understood to be the current level of automatic language translation technology and the project team's lack of knowledge in the native languages used by the largest immigrant groups. The project should involve key people from both the client, the commissioner, and third parties, such as the target audience and other stakeholders. Key people from the client include members of their editorial staff, management, and IT department. The commissioner would involve service designers and technological developers. Important third-party stakeholders would be various local immigrant organizations, schools, and workplaces with a large foreign student or worker body.

5.2 Immersion

The work in the first workshop continued with the Immersion canvas. In this stage, the project team is encouraged to take a broader look into the topic in question. The team is guided to start thinking about the potential customers, their problems, competitors already serving them, the hottest players in the industry, trends, and inspiring services and products. Carrying out and documenting this background work properly initially saves a lot of time in the project later. (Sarvas et al., 2017, p. 7.)

Both teams continued their work on the Immersion canvas during the workshop directly after the first canvas. The work on this canvas within the workshop was timed for 25 minutes, divided between 8 questions, again leaving just over 3 minutes to work with each question. This canvas helped the project team to empathize with and think deeper into the problems of the non-Finnish-speaking population in the Turku region. Both teams came up with several competing or alternative solutions to the problem of the target audience and a list of companies, services, or experts to learn from.

Work on this canvas was continued after the workshop by the service designer and the commissioner's technical development team between March and May 2019. They carried out separate benchmarking on the competing services discovered while working on the canvas during the workshop. The service designer benchmarked online news services to help design the service user interface. On the other hand, the development team benchmarked services utilizing artificial intelligence in news reporting. They aimed to discover tools to be used in developing the service.

Results

Filling the canvas (Appendix 8) began with the customer's problem. The team thought that not having understandable access to any public news sources meant that immigrants, for example, had no proper ways to find out about local news and events, which might hinder their ability to learn about the surrounding culture and customs properly. Not being able to read the news about what's going on in the region means not having the chance to participate in local events and public discourse. While mapping out competing solutions, the clients' experts shared that there is little commercial competition for their company in serving local news in the region. At least in Finnish, the main problem for the customers is the language barrier. Non-Finnish speakers can read public local

news using the Google Chrome web browser and translate the news content using Chrome's automatic translation feature.

On top of that, they depend on their networks and hear things "through the grapevine." This service will differentiate from these alternative solutions by serving translated local news from several local news sources. While ideating inspiring services and startups, the team discovered a Swedish technology company called United Robots. It was found to be an exciting example of a hot startup utilizing data science and AI to deliver automatic news content creation services.

Benchmarking competing online news services led the service designer to examine four industry-leading websites: HS.fi, YLE.fi, IS.fi, and TS.fi. The websites of HS, YLE, and IS were chosen based on their popularity among the project team, which the team considered to reflect the opinion of the larger public. TS.fi was examined because it is the largest newspaper media in Southwest Finland.
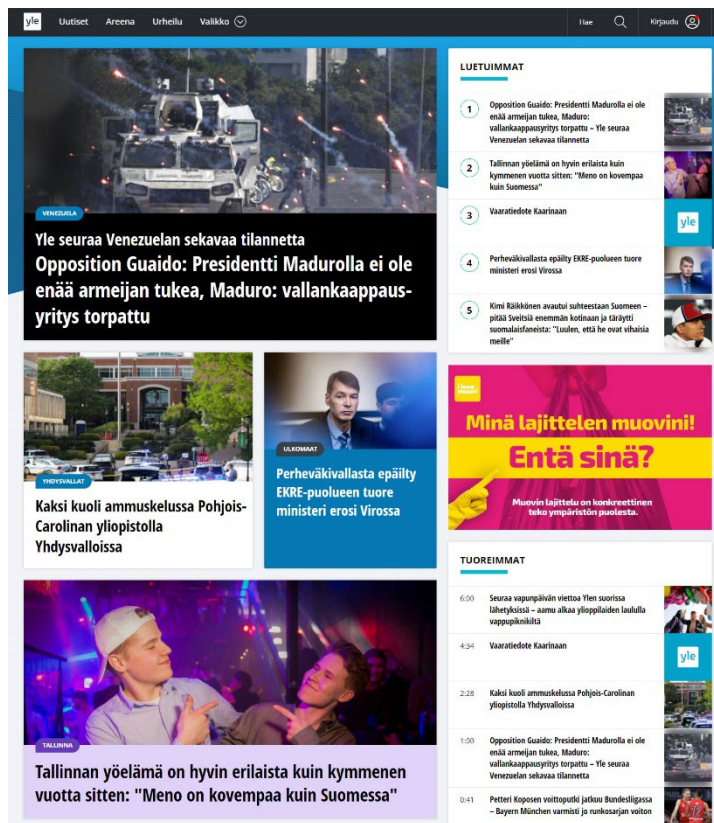
Figure 11. YLE.fi front page on desktop (YLE 2018).

YLE.fi, HS.fi, and IS.fi had similar layouts and features for navigating news articles. The typical front-page layout on desktop screen size seemed to be vertically divided in two (Figures 11-13). The left side consists of a mix of different-sized blocks of news highlights with an image and a headline. When clicked, these blocks take the user to the news article page. The top of the front page usually displayed larger blocks, while the size decreased the lower the user scrolled on the page. How and why these services organize the news highlights on their front-pages as they do was not figured out by the team. On the right side of the front-page on desktop screen size, every website had lists of links to the most read and

latest news (Figures 11-13). When viewing the page on a smartphone, the contents of the two columns were displayed in one column. The most read and latest news elements were displayed between the news highlight blocks after the user had scrolled below five or more blocks (Figures 14 and 15). The depth at which the most read and latest news elements were displayed varied between the news websites, as did the visual styles and phrasing used in the user interface elements.

Figure 13. IS.fi front page on desktop (Ilta-Sanomat 2018).
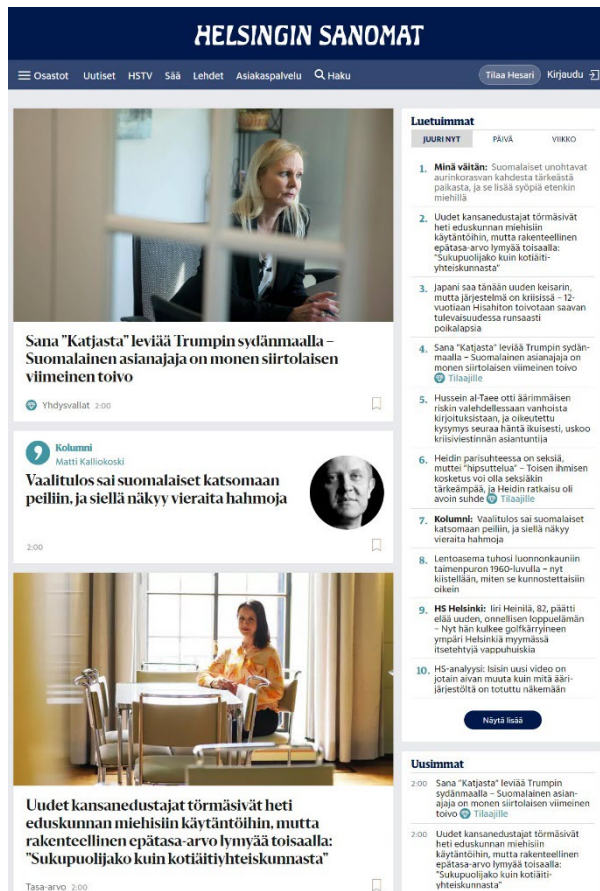
Figure 12. HS.fi front page on desktop (Helsingin Sanomat 2018).

Figure 14. HS.fi front page on smartphones (Helsingin Sanomat 2018).

Figure 15. IS.fi front page on smartphones (Ilta-Sanomat 2018).

Figure 16. TS.fi front page on desktop (Turun Sanomat 2018).

The front page of TS.fi stood out from the other benchmarked websites, as, in the eyes of the team members, it seemed to be most outdated visually and technically (Figure 16). In contrast with the other websites, the front page layout on TS.fi only had one narrow column, even on desktop screen size, and lacked navigation links for most read news. The list of the most read and latest news was on a dedicated page, which users could move to from the front page by clicking a link titled "24h" in the top navigation pane. The team members deemed this type of navigation more laborious to use than the navigation on other websites while browsing news.

Figure 17. TS.fi article page on desktop (Turun Sanomat 2018).

The news article pages on TS.fi (Figure 17) were structured in a two-column style and featured similar elements for the latest news, and most read the news as HS.fi (Figure 18) and the other websites. HS.fi and IS.fi had three levels for the most read news: right now, daily, and weekly (Figures 12-14). At the bottom of a news article page, every benchmarked website had some way of navigating to other relevant news articles. HS.fi had an element titled "Follow news on this topic" with links to relevant news categories and a section titled "Did you already read these?" with blocks consisting of images and headlines highlighting relevant articles (Figure 19). IS.fi had a similar element with the same title. TS.fi only had text links to relevant news categories. The team did not discover whether all the attached articles at the bottom of each article page were actually relevant to the article or just links to random articles.

Figure 18. Top part of the HS.fi article page (Helsingin Sanomat 2018).

Figure 19. The bottom part of the HS.fi article page (Helsingin Sanomat 2018).

The team agreed that out of all the benchmarked websites, HS.fi stood out as the overall best online news service. The user interface was deemed easy to use and had a clean and fresh look and feel to it. While the other websites had similar features, such as the most read news and latest news links on the front page and the article pages, the visual design of the HS.fi user interface made it feel much better in use. The service designer analyzed that this was due to factors such as the fonts used, font sizes and colors, background colors, size contrast between different elements, and empty space between elements, such as texts, images, and borders.

Some of the navigational features the team wanted to utilize in the new service were the latest news and most read news divided into three lengths of time: day, week, and month. News topic links at the bottom of the article page were also deemed important, as was a list of links to news relevant to the article.

5.3 Data

The Data canvas aims to guide the team to collaboratively work out what kind of internal and external data should be gathered so that the project team can build a better and more factual understanding of the business environment and the customers. Through a deeper understanding, work based on speculation and guessing is minimized while new business opportunities might be discovered. (Sarvas et al., 2017, p. 9.)

The work with data canvas was timed for 15 minutes in the first workshop and only focused on the two questions: what data is required, and where can it be gathered? The outcome should be a list of relevant data sources. The project is about building a new business around a new service targeted at an audience previously unknown to the client. Therefore, it was not deemed necessary to spend time analyzing existing internal business data relating to how their traditional news services for their primary target audience function. Instead, the focus was set on finding out the size and characteristics of the new target audience. Relevant data sources to be acquired and examined were decided to be the number of non-Finnish speaking people and languages spoken in Southwest Finland, demographic information of this audience, browser languages of visitors on the client's website, the news website of the client and the languages of Facebook users who like the client on Facebook.

Due to the data gathering and analysis required in this canvas, the work was divided into two parts. During the workshop, the two workshop teams ideated for data sources and decided which sources to go for. The data gathering and analysis work was divided between the project team to be done after the workshop. Client editors were assigned to dig up all the data they could on the target audience. The client's chief digital officer and product manager were assigned to collect data on how users use their existing news services. The project team eventually went through the collected data collaboratively at the beginning of the second workshop.

Results

While figuring out the size of the potential target audience of the service from the databases of Statistics Finland, the team decided that due to the nature of the service, looking at the number of foreign-language speakers among the population was a more fitting metric than persons with foreign backgrounds. According to Statistics Finland (2020) statistics, there are slightly more people with a foreign background in Finland than foreign language speakers. Statistics Finland (2020) defines a foreign language speaker as "persons whose native language is some other than Finnish, Swedish or Sami."

The data gathered (Appendix 9) shows that 34 416 out of the 477 677 (6,8 %) people living in Southwest Finland were foreign language speakers in 2017. In 2019, the percentage of foreign-language speakers in the population had risen to 35 809 (7,5 %). Of this foreign language-speaking population, 76,5 % were between the ages 15-64 in 2019, 27 394 people in total (Statistics Finland, 2020.) Kotouttaminen.fi states that the growth rate of foreign-language speakers in Southwest Finland is around 2000 people per year (Kotouttaminen, 2019). The city of Turku had a population of 192 962, of which 22 824 (11,8%) were foreign-language speakers in 2019 (Statistics Finland, 2020). In addition to the permanent residency numbers above, the City of Turku reports having "over 4000 international degree students or exchange students every year" (Turku.fi, 2020). The data sources were unclear whether the number of foreign language-speaking people in the region included the number of yearly exchange students. The calculations presented in Chapter 5.12 assumed that the exchange students had been included in the total number of foreign-speaking people, so they were deducted accordingly.

The most common foreign languages in Southwest Finland in 2017 were Russian, Estonian, Arabic, Kurdish, and Albanian (Kotouttaminen.fi 2019). Based on the web analytics data of the client's website, the most common browser languages their website

visitors had in 2018 were German, Russian, Estonian, Spanish, and French. The client reviewed their Facebook page analytics and reported that in 2018, the most common languages of the Facebook users who liked their page were English (US), English (UK), Swedish, Vietnamese, Arabic, Estonian, Spanish, and French.

5.4 Customer Grouping

The Customer grouping canvas is for exploring the target audience and forming customer groups to focus on. It is advised to start with one larger customer group, learn more about them and their problems, and, if justifiable, split the group into more specific, smaller groups. Customer groups should not be created simply by using basic demographics. It is better to delve deeper into the unique characteristics and problems of the different groups. (Sarvas et al., 2017, p. 11.)

This canvas was worked out in the first workshop, with both teams having 15 minutes to work on it. They started with a broad customer group consisting of all immigrants. They then worked to find distinct sub-groups inside it by exploring and describing different groups of immigrants and their problems.

Results

Eventually, three distinct groups were discovered (Appendix 10): foreign students, immigrant laborers, and other immigrants. The group "other immigrants" consists mainly of refugees, asylum seekers, and the relatives of these people. Commonalities between each group are little to no Finnish language skills, being relatively uninformed on local customs, news, or events, and that they might not see their future living in Finland. Another commonality shared by immigrant laborers and other immigrants was thought to be that they might live in a bubble made up of only people from their own nationalities and cultures, isolated from the surrounding culture. On the other hand, foreign students were thought to be immersed in a mix of different cultures and might usually be more informed on local customs and happenings through their schools. Due to their generally younger age and occupation, they were also deemed to be generally more interested in local news and events and, therefore, easier to convert into customers. For these reasons, the project team chose foreign students as the main group to focus on.

5.5 Insight

The Insight canvas helps the team prepare to know the actual customers and document the findings. The team can use this canvas to plan what to ask the customers and how to analyze what they say. Ultimately, the purpose is to generate insights about the customers and to find a real problem worth solving. This stage is for the first round of user interviews and focuses solely on clarifying the problem as much as possible – mentioning a solution or ideas for a potential service is strictly prohibited. (Sarvas et al., 2017, p. 13.)

The project team decided to deviate from the Lean Service Creation process at this stage by planning and conducting an online survey instead of interviews. The external funder of the project had set the goal of building a prototype online news service. For this reason, there was no need to explore the problem space more broadly to discover other possibilities, which is what interviews do better than surveys. The team believed that a quantitative survey could better clarify the alleged problem of non-Finnish-speaking people not having access to understandable local news. (Neha, 2021, p. 552.)

The time working on this canvas (Appendix 11) was spent on preparing the survey. The teams planned how to conduct it, where to recruit respondents, and formulated preliminary questions. Both workshop teams first took 15 minutes to ideate their questions based on the work and results of the previous canvases. Then, the teams got together, shared their ideas, filtered out unsuitable questions, formulated new ones, and further improved questions deemed important. The project team also considered suitable channels to recruit respondents based on the customer groups chosen in the previous canvas. Foreign students could be reached through the University of Turku, the University of Applied Sciences, and Novia University of Applied Sciences. Immigrant laborers could be recruited through the local shipyard, Meyer Turku, one of the region's largest employers of foreigners. Small local immigrant communities like the Daisy Ladies could help reach other immigrants.

The client had an in-house researcher who worked with the service designer to write the final questions, recruit respondents, conduct the survey, and finally compile the results. As an incentive to get more respondents, the client agreed to provide ten gift cards to Stockmann worth 20 € each to be drawn among all respondents.

Results

The survey (Appendix 1) was conducted in November 2018, and the invitation to participate was shared via email to four channels planned in the first workshop: two universities, one immigrant organization, and a workplace, the Turku shipyard. Even though there was potential for the invite to be seen by hundreds of suitable people, the survey received only 23 respondents. 70% of the respondents were male and 30% female between the ages of 20-40. The native languages of the respondents were mostly English, Arabic, Russian, and Nepali. The most common occupations were work (39%) and student (35%).

This survey was intended to determine whether the local immigrants are interested in following local news and what sources they currently use to get informed on local news and matters. According to the results, most respondents actively followed the news (65%) or followed the news sometimes (35%). When asked whether they were interested in following news and matters concerning the nearby area, a total of 96% answered either "very interested" or "rather interested."

Around half of the respondents said they currently get information on local news and happenings from social media or friends. When asked what kind of problems or obstacles they have faced when using existing news services, the most common answer was the language barrier. The most common answer for improving current local news sites was to have the news in English. In fact, 78% of respondents wanted to read the news in English, and no one responded that they would like to read the local news in their native language.

The respondents were asked to choose the most interesting topics to read in the local news from a list of options, and they were general local news, city development and changes, leisure and events, and culture and lifestyle. Sports as a topic did not receive any answers, which was deemed an interesting discovery. The team speculated that this could be due to the immigrant respondents not feeling connected with the local sports teams.

5.6 Ideation

The ideation canvas brings the team together to gather the findings and brainstorm ideas for solutions that both suit the business objective and solve the customer's problems

discovered in the earlier stages. The team starts by listing the insights from the first round of customer research into the inner circle of the canvas, then proceeds to brainstorm around them to find ideas for solutions. (Sarvas et al., 2017, p. 15.)

The second workshop started with a quick recap of the results of the first workshop and the survey conducted after it. The work continued with the Ideation canvas by the two workshop teams working on their own A1-sized printed canvases for 20 minutes. The project goal of building a prototype online news service set a framework for the ideation session, meaning that the potential solution space was not explored further. At the end of the ideation session, the results of both canvases were shared with the other team. This way, the individual results were refined by combining some, leaving out others, and evolving the best ones.

Results

In "Customer's problem worth solving" (Appendix 12), the team listed things like the language barrier, risk of alienation, boredom, and being unaware of local happenings. Exploring the customer's negative emotions linked to trying but often failing to fulfill their needs in the matter, the team listed fear of missing out, feelings of ignorance, apathy, cynicism, frustration and indifference towards society, powerlessness, and impotence as an individual, uncertainty, and feeling of isolation and not belonging. The customer's positive emotions linked to successfully fulfilling their needs included the sense of belonging, feeling at home, feeling positively towards society, feeling successful, feeling empowered, proud, dignified, free, and at ease. Moving on to generating ideas that solve the customer's problem, the team listed things like translated multi-lingual content, local news sources, language teaching through the news portal, the possibility for the audience to suggest new news topics and to comment and rate existing content, possibility to filter content by topic and helpful background information related to news articles. In ideas that fix, eliminate, or reduce the customer's negative emotions, the team listed increasing awareness of the existence of the coming service, simplicity of use, content suitable for different cultures, audience's possibility to report on problems, and an integrated community in which people can participate, socialize and belong to. Finally, in the list of ideas that take the best out of the positive emotions, things like sharing and recommendation features, empowering news articles of success related to one's nationality or group and communality, and having a strong societal entity taking an interest in the matters of foreign-speaking people.

5.7 Concept and Value Proposition

The Concept and Value Proposition canvas selects and uses the best ideas to form a service concept. It is possible to end up with multiple concepts to choose from. When building a concept, it is best to keep the customer's problem, business objective, potential, and feasibility in mind. (Sarvas et al., 2017, p. 17.)

Since the project goal was already set on building a prototype online news service, the project team only created a concept for such a service. The teams remained the same in the second workshop as in the first. Both teams worked on their canvases for 30 minutes. The facilitator then guided them into sharing, combining, and refining the results of both canvases into one at the end of the session. While writing the concept, the team thought it felt natural to keep building on top of ideas from the ideation canvas, still polishing and clarifying them into concrete aspects of the service. The concept canvas helped everyone think about the previously birthed ideas in a more realistic way and see which ones could be put together to form a concept for the service. The project team was excited to finally be able to take the abstract solution they had envisioned in their minds until now and start putting it together on paper. The group did not let technological feasibility become too big of an obstacle at this point. Instead, every even remotely feasible and potentially lovable feature was included in the concept. These features mostly had to do with emerging technologies, such as artificial intelligence and natural language processing, which were known to be potentially impossible to implement cost-effectively as parts of the service.

Results

The concept (Appendix 13) was given a working title, MLNB, which stands for Multi-lingual Local News Bot until the team came up with a proper name for the service. The title describes the concept, as the service will be a multilingual local news service website that delivers news from Turku and the neighboring area in different languages to non-Finnish-speaking people. The team described how it works by stating that the news content in the service will be automatically generated by combining, refining, and building upon data from different sources using an AI. These sources include language, traffic, weather, sports, statistics, event feeds, and databases. The team wanted the website's language to be automatically customized to match the visitor's browser's language, with

the option to change the language manually. Language translations will use Google Translate at the back-end of the service.

The team also envisioned that the quality of the content and the translations could be improved by teaching the AI to translate better with the help of foreign communities. The team thought they could potentially utilize the help of service users with different native languages to correct the translation errors they discovered during their use of the service. The translation improvement suggestions users send could then be used to teach the AI translator. The team would also design the service to encourage learning Finnish by using an integrated dictionary that lets users see the meaning of different words and phrases within the news articles. Some articles could also include related information on the history and culture of the Turku area or Finland in general.

Considering the service's value to users, the team thought it would increase knowledge of the nearby area and promote cultural understanding. It could help empower, enlighten, and build a feeling of belonging and togetherness among foreigners, which could help boost their integration into Finnish society and prevent social exclusion. Considering the value to the client's business, on the other hand, the service will open an entirely new line of business with a new target audience and new opportunities in advertising. The team figured that delivering news to this previously underserved target audience could boost the client's brand as a responsible news company.

Answering the question, "What differentiates it from other solutions to the same problem?" the team concluded that the news content will be local, and the client's expertise and brand in delivering news from the Turku area is strong. So, unlike many modern news websites, the news production in the service is at the hands of an experienced and reliable news media. With translated news, there will not be a language barrier for audiences that do not understand Finnish.

Finally, the team wrote down the service's value propositions. The headline came to be "Stay up to date on local news and events in your language!". It was described as a multilingual local news service that increases knowledge of the nearby area and promotes cultural understanding to help build a feeling of belonging and boost integration into Finnish society. The main points were decided to be staying up to date on local news and events, learning the Finnish language and culture, feeling of belonging to the local society, and better integration into overall Finnish society and culture.

5.8 Profiling the Concept

Before moving on to making the concept a reality, the team should stop and evaluate it for feasibility and how well, if at all, it fits the business objective. If the team ends up with several concepts, this canvas is perfect for pitting the concepts against each other to find the best one to proceed with. The Profiling of the concept canvas contains 12 dimensions to evaluate the concept. They range from the quality of the idea to competition, financing, and implementation to how well it fits the business strategy. The team starts by placing the concept value proposition and describing how it works in the middle. The profiling is done by letting every team member place their opinion on where the concept lands in each dimension as a note on the canvas. These opinions are then discussed and justified to generate a common understanding of the big picture. The team then votes or otherwise decides on whether to proceed with the concept or return to earlier phases to reiterate. (Sarvas et al., 2017, p. 19-20.)

As this project was already set on prototyping and validating a novel online news service, the team only evaluated and proceeded with one concept. The canvas was filled in the second workshop as a facilitated group discussion in which both teams went through the 12 canvas questions together and agreed on each answer. Each selection was made by placing a colored sticky note on the axis between the two opposites of good and bad. The team also wrote down arguments for their choices in the profiling questions.

Results

Out of the 12 questions (Appendix 14), 7 were found to be in favor of the service concept and were given green color. Two were found to both be in favor while still posing challenges and were given a yellow color. Three questions were thought to be more challenging and were colored either in red or orange. The results are summarized in Table 1.

How new idea? ●	Some examples in other countries show how AI and machine learning have been utilized in delivering news. There is none in Finland yet at this point.

Easy to copy? 🟢	As the client is the largest supplier of local news in the region, the source material for the news service cannot easily be copied without infringing the client's rights.
Competition 🟢	There is only little competition for the client in delivering local news in the Turku region.
Return of invest 🟠	The target audience is mainly low-income people, such as students, low-wage workers, and unemployed people. This causes difficulties in building a lucrative business model.
Financing 🟠	The client has secured funding for building and validating the service prototype. Viability is part of the validation process.
Implementation 🔴	Building a viable service with the planned functionalities is understood to be very challenging or potentially impossible.
Fits our vision, brand promise, and strategy 🟢	The service idea fits all these three business aspects.
Right customer group 🟡	The customer group is right, as foreigners are a very underserved audience. However, it is also a challenging audience to reach and build a viable service.
Problem worth solving 🟢	The problem is real. Foreigners in the region are in a local news blackout, and it is assumed to cause difficulties in their lives and in society in general.
Good idea? 🟡	There is a real need for this kind of service, which would improve the lives of its users and society. However, severe technological and financial challenges will decide whether this type of service can be built and maintained viably.

Table 1. Results of Profiling the Concept canvas.

5.9 Fake Advertisement

The first thing users experience about a service is usually an advertisement. The Fake Advertisement canvas is for designing that first impression into something wonderful, which makes people become users in the first place. The team starts by shaping the value proposition into the first tweet, which will be sent out when launching the service. Only the most essential points remain when the value proposition is polished and cut into a short paragraph, such as a tweet. The team also thinks about how the users feel when they first use the product and continue to use it. The creation of the brand personality is also started here, as the team is encouraged to think through the kind of relationship the brand will have with its users. This can be done, for example, by writing down what kind of person the service would be or what kind of car, restaurant, or some other familiar thing it would be. Ultimately, the team uses this canvas to create the first prototype of the service to test with users in the form of a fake advertisement. The format of this prototype, or the fake advertisement, is a print ad for a newspaper or a bus stop. It includes a picture, a caption, a headline, and copywriting aimed to sell the idea of the service to the viewer. (Sarvas et al., 2017, pp. 21-22.)

The two workshop teams filled this canvas, working on their canvases for 20 minutes. After the time was up, the results of both groups were discussed together, and the best ideas were selected through discussion to form the final results to be written down on the canvas (Appendix 15).

Results

The first tweet came to be "Regional news from Turku now available in your language!" which would be tweeted out in different major foreign languages spoken in the region. For "How users feel when they use the product," the team channeled into the feeling people get after the problem of not having understandable local news is solved. Users would feel accepted and catered to since there would finally be something for them, too. They would feel empowered and enlightened while continually using this news service. The brand personality was thought out through the nature of the service: cutting-edge technology that is still easy to use and improves the lives of its users. The team thought this would make the service like Japanese-made cars: trustworthy and not elitist. It would

be like a jolly, old golden retriever companion: empathic and considerate, someone always there to help you. The groups skipped the print ad creation step due to time restrictions and only wrote down the general idea of what it would be like. The ad would contain local imagery, diverse people from different cultures, human interaction, and events. The copywriting would be like in the first tweet.

5.10 Validation

Working with the validation canvas is the first time the newly created service concept gets tested with real users. Validating the concept idea at such an early phase, where nothing has yet been built, differentiates the Lean Service Creation method from the old way of proceeding directly into implementation. Through early testing, costly errors can be avoided by either iterating or killing the concept idea. The concept idea can be validated in different ways: with the fake ad, interviewing users, building a live website that promotes the service, building a fast prototype, or anything else that generates honest user feedback on the value proposition. The best way to be sure whether the service would eventually sell is to find out whether users would be willing to pay real money based on the prototype and how much. To ensure the service's profitability, the user base's size should also be estimated through interviews, polls, and other quantitative methods. (Sarvas et al., 2017, pp. 23-24.)

Due to the nature of this project being primarily a learning experiment with external funding, the team skipped the validation canvas at this point and moved on to the Customer Engagement canvas. Validation of the service concept is done in the Experimenting canvas (Chapter 5.15.) and the What to Measure canvas (Chapter 5.17.) The size of the user base is estimated in the Business Model & Market Size canvas in Chapter 5.12.

5.11 Customer Engagement

Building a successful service requires more than a great value proposition, a large, interested user base, and a user interface. The service becomes a lasting success when it continuously attracts new users, transforms them into happy returning users, and ultimately turns them into users who promote the service to others. The trick is to design the service in a way that helps users take the next step in the cycle. The Customer

Engagement canvas is dedicated to designing this cycle. In this canvas, the team defines the activities, resources, and partners required to keep this engagement cycle turning. (Sarvas et al., 2017, pp. 25-26.)

The canvas features a wheel divided into six segments, each representing a step in the user's journey from awareness to advocacy. Each step is subsequently divided into two parts: which factors help enable progress in this step and which factors prevent progress. After the sixth step, the cycle continues back to the first one. The last sections in the Customer Engagement canvas, Key activities, Key resources, and Key partners, have been borrowed from the Business Model Canvas by Alexander Osterwalder. In these sections, the team should define what they should be doing, what they need, and who should be involved in ensuring the customer engagement cycle keeps turning. (Sarvas et al., 2017, pp. 25-26.)

Results

The first step in the cycle (Appendix 16) is *Awareness: Where can we meet our customers? How can we catch their attention*? The team figured that the best ways to encounter potential users are expat and immigrant groups in social media, schools, workplaces, and government services for immigrants through immigrant influencers and religious groups. Preventing factors would be language and cultural barriers and the fact that some immigrants are so cut off from the general society that they might be nearly impossible to reach.

The second step is *Engagement: How do we help people understand that this service is perfect for them*? As the preliminary research showed, most people in the target audience want to read local news. So, the team believes that if these people were provided access to understandable news through this service, they would be easily engaged. To engage the people who do not currently care about local news, the team would need to find out about what they do care about and try to create news content to suit it. Some people did not care about reading the news no matter what was deemed a major preventing factor, as was the low findability of the news site.

The third step is *Purchase: How do you make engaged people buy the service*? As the service will be free to use, the team decided to skip this step. This step can be revisited if there are different kinds of paid subscriptions or extra features added to the service in the future.

The fourth step is *Use: How do you get people to use the service*? As first impressions are essential here, the team thought relevant and valuable content was the key. The user groups should be constantly observed and closely involved in the service delivery process. People can also be brought into the service by publishing interesting non-news content. For example, various kinds of personality tests and other vanity tests seem to always interest people on social media. The factors that could prevent the use of the service are non-interesting content and bad overall user experience, which include bad usability and slow loading speeds, among other things.

The fifth step is to *Use more: How do you turn first-time users into returning active users*? The team thought that digital marketing methods, such as search engines and social media remarketing to display ads to people who have visited the website, could be helpful here. Designing addictive features for the news website, such as showing thumbnail links to other relevant articles after each article, is important as well. This step in the cycle requires constant user research, testing, and optimization work within the service. The planned artificial intelligence features to personalize the news site content were also thought to be helpful in this step. Risks in this step include irrelevant, irregularly published, out-of-date content, and low content. Bad user experiences, such as visual outlook, usability, performance, and wrong translations, were also critical risk factors.

The sixth step is *Advocate*: *How do you turn returning and active users into advocates who talk positively about the service to others and bring in more users*? In addition to repeating the importance of relevant and valuable content here, the team thought involving immigrants in the service delivery and editorial process could be critical. Involvement could be utilizing immigrant volunteers in planning and creating content and having a dialogue with the users either inside the service or by different user research methods. Offering incentives to advocates was also thought potentially helpful. For example, these could be ad spaces within the service provided for organizations. The preventive factors here were considered to be the same as in the previous step.

In Key activities, the team included writing news articles and other content, moderating automatic translations, developing and maintaining the service platform, building and maintaining networks of volunteers, and involving immigrant stakeholders and other users.

Key resources were found to include the existing strong brand and editorial expertise and resources, including infrastructure and journalists of the client. In addition to

journalists, other human resources would be required. These would be translators, online service developers, service designers, and people building networks with the immigrant audience. Maintaining and developing the news platform brings costs, which include hosting, integrations, and any 3rd party service licenses. The financial resources would need to be secured by funding from public and private organizations and advertising on the platform.

Key partners recognized were mainly journalists and translators to produce quality content. Some technological partners could also be essential in helping to improve the AI tools and functions of the service, such as automatic translations and content creation. Volunteers who work with different immigrant and foreigner communities could be utilized to improve and market the service.

5.12 Business Model & Market Size

This canvas is for figuring out the potential financial viability of the service-to-be. It should be filled only after first gaining enough understanding of the customers and the actual service that is being designed for them. Answering some of the questions in this canvas might require a lot of work early in the design process, so the team must balance guesswork and accurate data. Starting with the best guess and digging deeper into only the most critical questions is advised. (Sarvas et al., 2017,pp. 27-28.)

The Business Model & Market Size canvas guides the team to think about the revenue model: who pays whom and how much, map out the sizes of the total addressable market and the potential target market, and plan and calculate estimates for the first-year sales. This canvas also encourages the team to consider the competing solutions regarding how much customers are currently paying to solve their problems. Some elements in the Business Model & Market Size canvas are borrowed from the Customer Engagement canvas, and some from the Business Model Canvas by Strategyzer AG. (Sarvas et al., 2017, pp. 27-28.)

The team worked with the Business Model & Market Size canvas last. It was filled at the end of the service development and testing phase between October and November 2019 (Appendix 17). The client wanted to find out whether the service would be viable after the external funding ceased, and it would have to start generating more income than costs. The service designer filled the canvas in collaboration with the technological

development team and the commissioner's project manager. They helped gather the necessary data to calculate the costs of running the service. At the later stages of the service development, after the beta test, it was easier to supply this canvas with more accurate information concerning user analytics.

Results

The team thought that the most suitable revenue model would be displaying ads on the website. Digital advertising has generally been found to be the key source of income for news websites, as 81% of news executives reported it to be the most important revenue focus, followed by subscriptions (Graves & Simon 2019, p. 1). However, as the team considered the predominantly low-income status of the target audience, the subscription model was deemed unviable. Extra development would also be required to implement the subscription model in the service. Supplementary revenue streams could be gathered via donations (Epilocal, 2020), company sponsorships, and government support.

The sizes of the total addressable market and the potential target market were derived from the data gathered while working with the Data canvas (Chapter 5.3). The total addressable market was calculated to be 31 360 people, comprising 15–64-year-old foreign language speakers living permanently in the region and 4000 yearly exchange students in Turku. The size of the potential target market was estimated to be 70% of the 4000 yearly exchange students in Turku and 40% of the total addressable market, excluding the exchange students, making 12 144 people in total. The percentages 70 and 40 assume that exchange students would be more likely to start using a new digital news service than a diverse group of 15–64-year-old foreign language speakers.

The revenue estimates (Appendix 18) were calculated after the service was developed and users were invited to test it. User analytics data gathered during the beta test phase was used in the calculations. This user data included how many sessions each user had and how many pages they viewed during the month-long test phase. Google AdSense revenue calculator on Adpushup.com (2020) was used to calculate the estimated monthly revenue. It uses three factors for the calculation: daily impressions (page views), ad click-through rate (CTR), and cost per ad click (CPC).

The number of impressions was first calculated from an estimated 1000 users, who would each visit the service 5 times per month and view 5 pages per visit on average, generating a total of 25 000 impressions per month for the first year. The number of users

was estimated to grow yearly after the service's launch. In the second year of business, there could be 3000 users, then 5000 in the third, 8000 in the fourth, and up to 10 000 users in the fifth year. Ten thousand users would already be more than the calculated potential target market. However, Finnish and Swedish speakers are not included in the market size calculations, and the team still believes that at least a part of these much larger groups of people could become users of a well-functioning local news service. Estimates of a 0,46% CTR and a 0,57€ CPC were used for every year (Irvine, 2020; Shewan, 2020).

The results are 66 € revenue from Google AdSense for the first month, making the total revenue for the first year 797 €. The second year's revenue was calculated at 4 536 €, rising to 9 444 € in the third year, 22 656 € in the fourth, and 37 757 € in the fifth year. These low estimates of total revenue for the service could be increased by including potential supplementing revenue sources in the calculations, but they were not explored in this thesis.

Cost structure calculations show that the service would not be viable for over 5 years with only Google AdSense revenue. The development costs of the service up to the end of the beta phase were roughly 50 000 € based on actual labor costs calculated by the commissioner. The estimated maintenance costs would be 50% of the development cost for the first year and 15% for the subsequent years (Chomko, 2012; Georgiou, 2021). Most of the technology services and licenses were free, but the costs of the Google Platform were 413 € / month, or roughly 5000 € / year. The client calculated the human resources costs to be roughly 25 000 € by the end of the development, consisting of two technical experts and three journalists. Additional HR costs would follow from hiring one employee to carry out marketing and networking for the new service. Hiring one person with a salary of 2500 € / month would add up to around 46 000 € / year (Keskuskauppakamari, 2020). Marketing costs were estimated at 1000 € / year.

5.13 Service Blueprint

With the Service Blueprint canvas, the team can more comprehensively map out the customer's step-by-step journey through the service than with a Customer Journey Map. This canvas lets the team explore what parts and processes are involved and how they interact in the service ecosystem at each step of the customer's journey. There are four levels of depth in the blueprint, represented as individual lanes on the canvas: User

activity, front stage touch points and activity, backstage internal processes, and supporting external processes. (Sarvas et al,. 2017, pp. 29-30.)

User actions throughout their journey are written down step-by-step on the User Activity -lane. From there, the team can read the process from the user's perspective. The front office, or front stage, maps out the touchpoints and general activity statements. Touchpoints are the channels or places the customers use to interact with the service, and activity describes what goes on within the visible front stage of the service during those steps. The activity on the front stage might trigger some backstage processes hidden from the users. In this case, it is primarily databases and various integrated IT systems and services. External processes are the farthermost parts of the service ecosystem. They are parts of the service delivered by external partners. (Sarvas et al., 2017, pp. 29-30.)

The canvas was filled in May 2019 by the service designer, as he started designing the service user interface and how users would use it. The plans made, and the understanding gained during the workshops helped the service designer fill out most of the canvas. He also worked with the technological development team, who provided information on the system's back-end processes.

The service blueprint in Figure 20 describes the general use of the service for each user group. The typical use case scenario is that the user learns about the service on social media and enters the service website through a link. They then use the service by browsing at least a few pages and carrying out activities such as rating an article and sharing content on social media. This use case scenario was selected as the team thought it to be the most common among news website users.
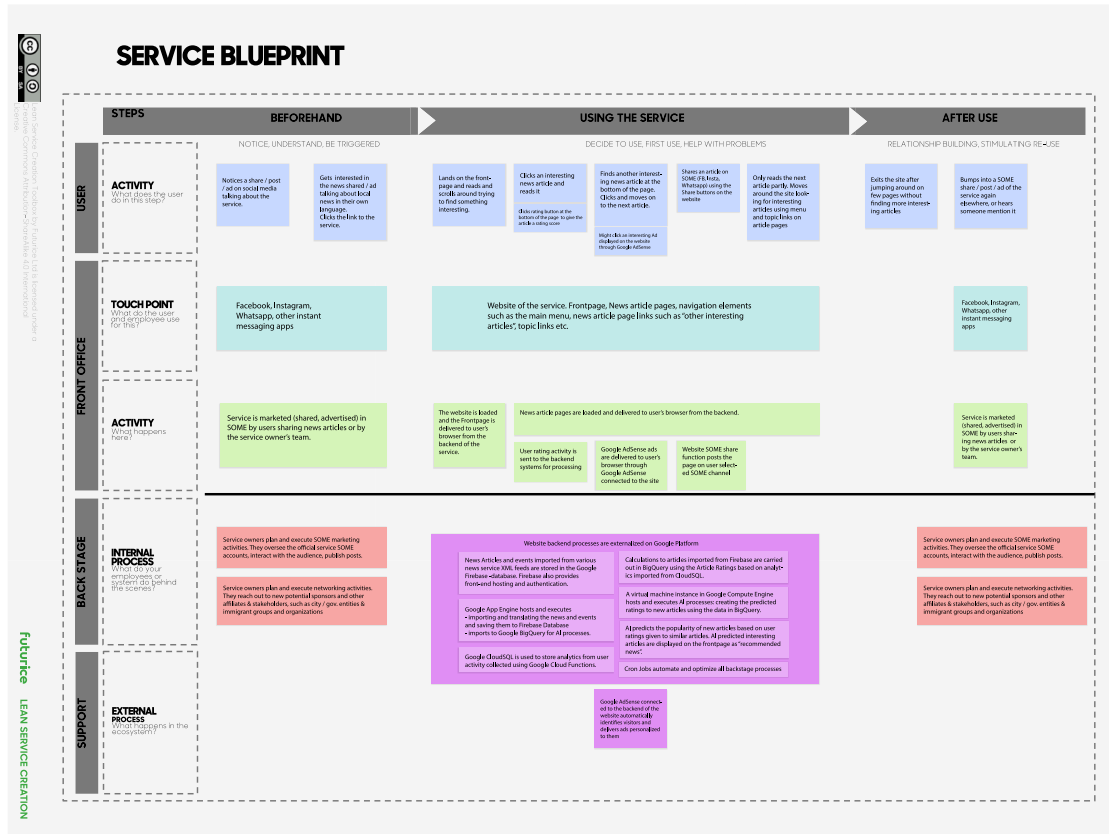
Figure 20. Service Blueprint canvas filled with the results. Full-sized version in Appendix 19.

5.14 Concepting

This canvas is for drawing the first wireframes for the service's user interface. Drawing wireframes means sketching out what the landing page looks like and everything else the users see when interacting with the service. Creating a visual map of the user's flow within the service from one view to another is advised. Analyzing the customer journey in the service blueprint helps the team decide which parts of the user interface are the most important and should be drawn as wireframes. (Sarvas et al., 2017, pp. 31-32.)

The Concepting canvas (Appendix 20) was filled by the service designer at the beginning of the defining and building of the MVP phase in May 2019. The service designer was responsible for designing how the service user interface looks and works. This work started by drawing wireframe versions of the website. These wireframes were the visual representations of the use logic planned during the Service Vision Sprint and the MVP features defined while working with the Minimum Lovable Product canvas. After the

wireframes were presented to the client, they were discussed and accepted. The work with the user interface proceeded to design the service's visual style. The service designer created the visual style between July and August 2019. The visual design work included giving the service a proper name, designing a logo, and defining the colors and fonts to use in the user interface.

User interface wireframes

A wireframe is a simplified, two-dimensional representation of a web page's layout, emphasizing functionality and content location without including design elements like color, font styles, or graphics. Wireframes help establish relationships between page templates and serve various purposes, such as connecting information architecture to visual design, ensuring consistent information display, defining functionality, and prioritizing content placement. (Usability.gov.)

Because of the relatively simple nature of the service user interface, meaning there are not that many different views or features accessible to the user, the visual concept started with the drawing of only four wireframes. These included the service website homepage, the article page, and the main navigation menu, each for desktop and smartphone screen sizes.
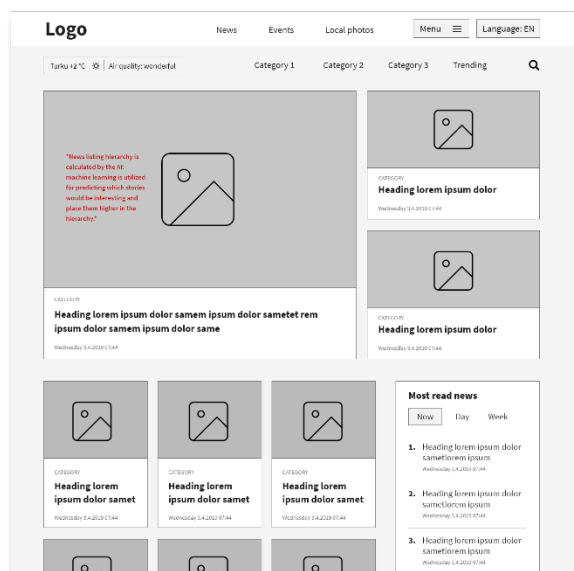
Figure 21. Wireframe of the service prototype front page for desktop screen size.

The team had ideated that the hierarchy of the article link blocks on the front page, consisting of an image and the headline, will be ordered with the help of AI (Figures 21 and 23). The AI will predict the popularity of new news articles based on an algorithm created by the technical development team and place the most popular articles on top of the page. The service designer drew larger article blocks in the wireframes (Figures 21 and 23).
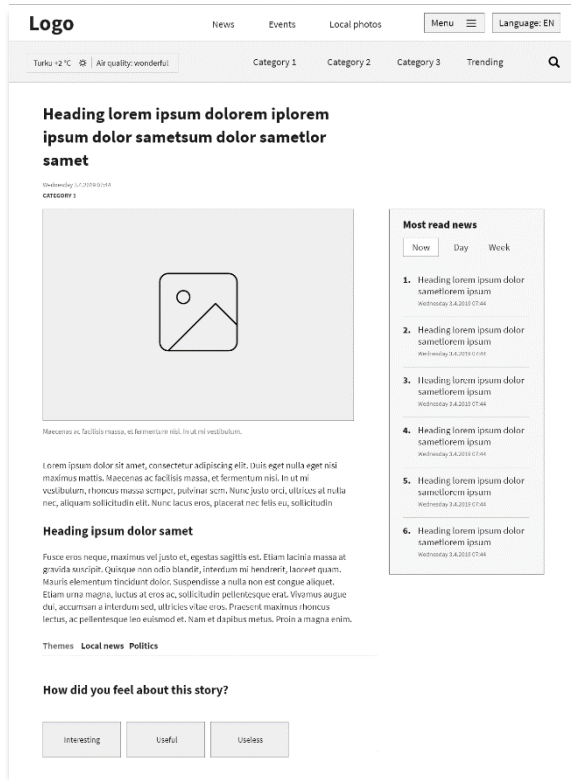
Figure 22. Wireframe of the service prototype news article page for desktop screen size.
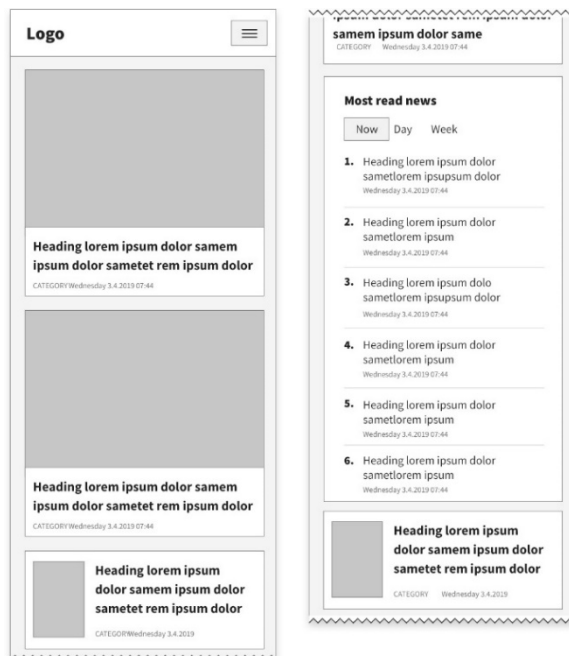
Figure 23. Wireframe of the service prototype front page for smartphone screen size.

The element displaying links to the most read news was placed at the right side of the page on desktop screen sizes, as was found to be the industry standard while benchmarking other services. Following the same practice, the most read news element on smartphone screen sizes was placed among the rest of the content after scrolling down for five news articles on the front page (Figure 23).

The team wanted to gather user feedback on the quality of the articles, so each page was designed to have a rating feature at the bottom (Figures 22 and 24). The rating element was titled "How did you feel about this story?" and had three options: Interesting, useful, and useless. The latter was later changed to "Irrelevant". This user rating was part of the algorithm used to teach the AI which new article the audience would deem popular.

Links to topics related to the article were also placed at the bottom of the article page (Figures 22 and 24). The user could find more news on the same topic by clicking these links.
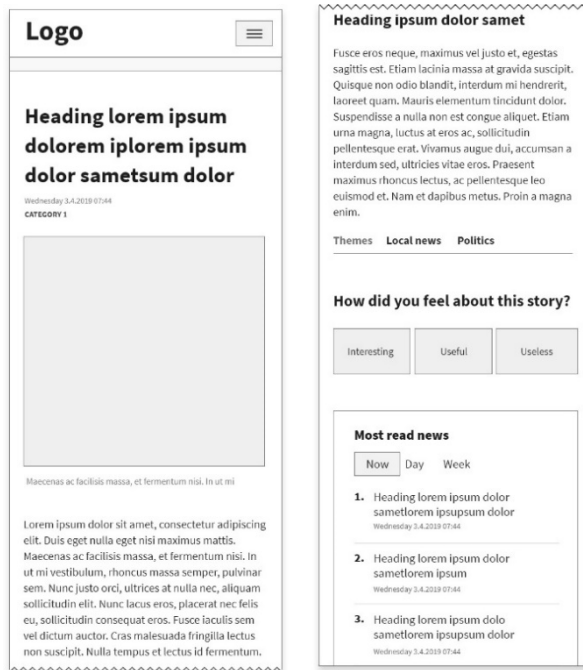
Figure 24. Wireframe of the service prototype news article page for smartphone screen size.

Prototype service logo

The visual design work started with giving the service a proper name. To come up with name ideas, the service designer used a process familiar to him from his work experience in similar tasks. He began by listing several keywords related to the service concept side by side to get a general view of the possibilities. These keywords included news, bot, events, trending, popular, multilingual, local, localized, and local. Twisting the word locally to Locali already seemed like a good candidate for a name to the service designer. The service designer thought that it seemed unique enough while still sounding like the word "locally" when spoken. The service designer included Turku in the name to emphasize that the service is about local news from the Turku region.

The service designer presented the name idea to the project team. Everyone liked it, and the team agreed to proceed with the work on the service under the name Locali. The work continued with designing a logo for the new name. First, the service designer searched for suitable fonts to type the name "Locali Turku." He used an online font library, dafontfree.io, to browse for fonts and ended up with a rounded font called Arciform, which

was licensed free for commercial use. The service designer also wanted to include a symbol in the logo to make it visually more memorable. To come up with a relevant symbol, he reflected on the keywords and the overall service concept to find the most important elements associated with the service. He created a symbol (Figure 25) combining a map location marker familiar from most online map services with a speech bubble. The service designer felt that the combination produced a symbol that communicates local community and that the shape of the symbol also fit together visually with the rounded style font used in the name. The symbol was colored yellow, as the service designer thought that a sunny yellow is traditionally associated with desirable positive aspects, such as energy, happiness, and optimism (Interaction Design Foundation, 2021).

Figure 25. Logo of the prototype service.

User interface visual style

The visual design work continued by drawing the user interface wireframes into fully detailed visual representations of the website elements (Figures 26-29). The various elements were given colors, shadows, and borders. Texts were stylized in different sizes using the font of choice, Source Sans Pro. The service designer selected this font because it is a highly legible Google Font, licensed free for commercial use.
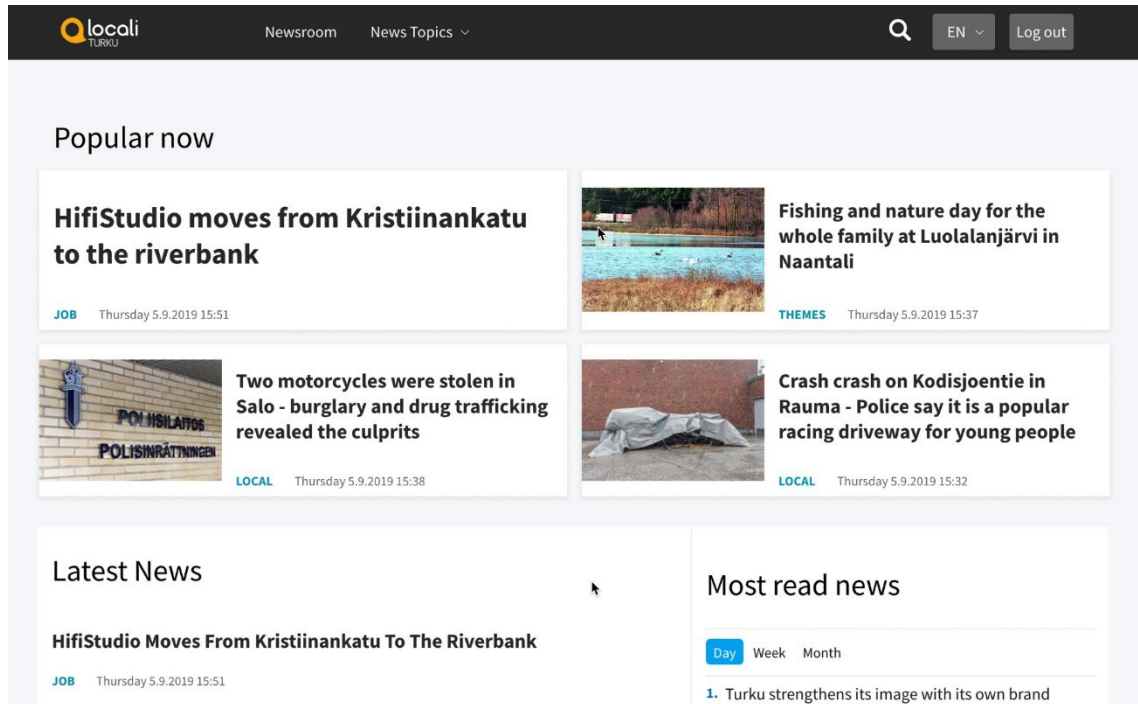
Figure 26. The front page of the service prototype viewed on a laptop.
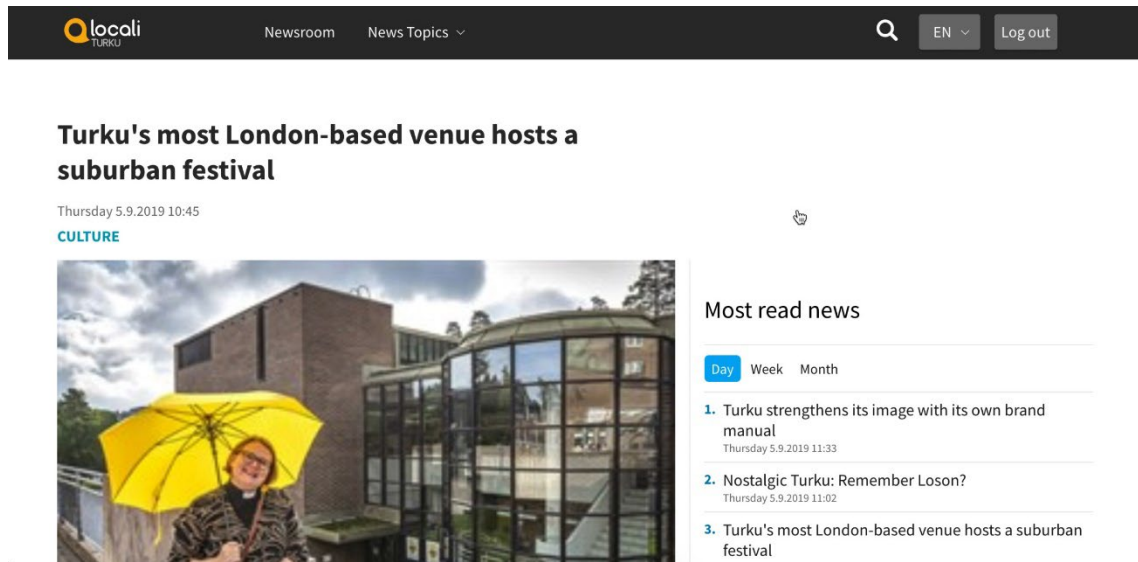
Figure 27. The news article page of the service prototype viewed on a laptop.
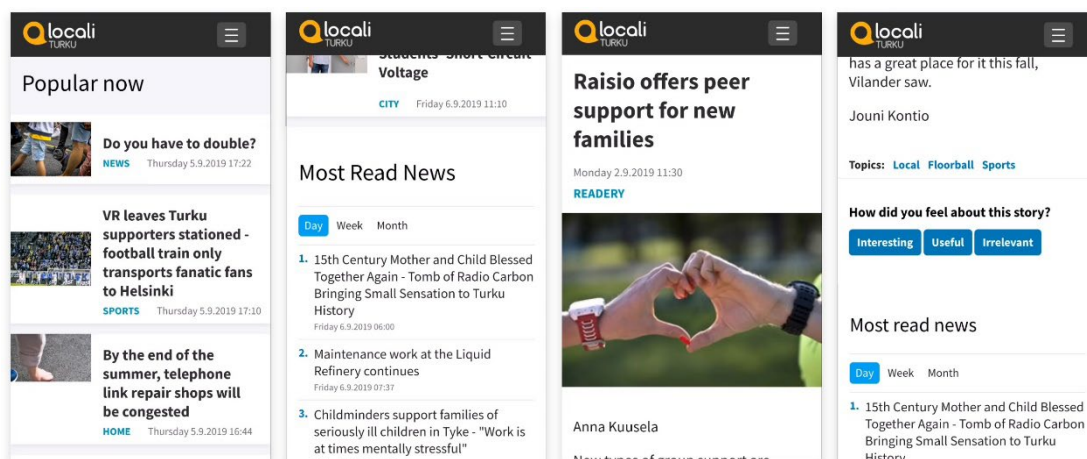
Figure 28. The Service prototype viewed on a smartphone. From left: top and bottom parts of the front page, and top and bottom of an article page.

As the team wanted to aim primarily at simplicity and legibility, the user interface's color palette was kept simple. The colors selected consisted mainly of shades of gray, accompanied by cyan, blue, and lighter blue as accent colors. Dark gray was used for the background of the main menu, and light gray as the background for the content area. News content was designed to be displayed on card-like boxes on white backgrounds, separating them from the light gray background of the content area. Subtle shadows were added to the content boxes to contrast the box and the background. Cyan was used to highlight the news topic links, which the user can click to view more news from that topic. Blue was used in the buttons of the "How did you feel about this story?" user feedback element. Lighter blue was used to indicate the currently open tab in the "Most read news" element. (Figures 26-29.)

The main menu functions designed included how the menu items open by clicking them, what content is displayed after it is clicked, and in what way (Figure 29).
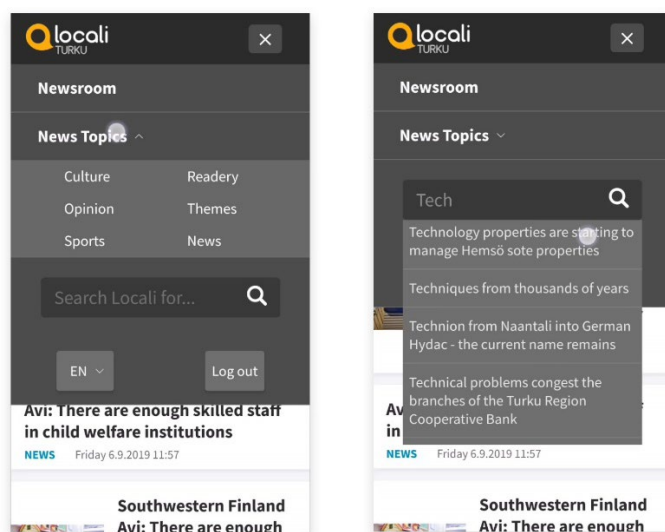
Figure 29. The Service prototype's main navigation menu is viewed on a smartphone.

5.15 Experimenting

Experimenting canvas is the critical step between idealistic design and practical hands-on work in building the service, and it all comes down to research. Research is called experiments on this canvas, and it helps the team decide the next steps in what to build and how to prioritize tasks related to building the service. With the Experimenting canvas, the team can find and focus on the service's most meaningful and business-critical aspects. Aspects or features that failed in experiments can be disregarded before wasting more resources on building them. (Sarvas et al., 2017, pp. 33-34.)

The canvas consists of a table with four columns: Main assumptions, how to experiment, success criteria, and key findings. The team fills the first column by listing every critical assumption they have made during the design process. Critical assumptions are those that potentially affect the whole future of the service. These can be related to technology, users, business, or anything related to the service. In the column How to experiment, the team writes down how they will test the assumptions, preferably in a simple, fast, inexpensive, and effective way. Creativity is needed here, as it is easy to fall into traditional methods, which are often heavy and costly. The Success Criteria column defines and writes down the criteria for a successful experiment. This means defining the quality, or level, of results the assumption must achieve in the experiment to be validated. Finally, in key findings, the team lists a summary of the results for each experiment. Here, the team learns whether the assumption was either validated or

invalidated in the experiment by the success criteria they had set beforehand. (Sarvas et al., 2017, pp. 33-34.)

The work on the Experimenting canvas started in late November 2018. It continued through the whole project, as it was the beginning point and foundation for all the research, meaning experiments, carried out during the project. As the project funding allowed the building of the service prototype anyway, the team deviated slightly from the intended purpose of the Experimenting canvas, summarized in its subtitle, "Finding the answers before building it." After the first survey, most experiments were designed to be validated by testing the service MVP with real users and gathering feedback. The user research planned and written down on the Experimenting canvas contained some of the same studies used to measure the service's success on the What to Measure canvas. These studies include the second and third surveys for service usefulness and value to users, respectively, and the usability study and the beta test. The results of these studies and all the other research conducted during this thesis are presented in more detail in the What to Measure canvas in Chapter 5.17.

The Experimenting canvas was filled by the service designer in collaboration with other team members, guided by the understanding gained during the two workshops in the Service Vision Sprint. The service designer was also responsible for designing, carrying out, analyzing, and reporting the experiments' results. The first survey was done in collaboration with the client's researcher in November 2018. The service MVP experiment was built together with the rest of the commissioner's team between January and December 2019. In August – September 2019, the service designer conducted the usability testing experiment jointly with the second survey. In October 2019, the service designer planned the beta testing experiment, which was carried out in collaboration with the commissioner's development team in November 2019. Reviewing the MVP was carried out by the client at the end of the project between November and December 2019.

Results

Five critical assumptions were found and listed on the canvas (Appendix 21). The first assumption was that the foreign population wanted to read local news in their language. This assumption was validated with the first survey after the first workshop. Later, two more surveys were carried out to further validate it, among other assumptions, during the service MVP development. The second survey was carried out during the usability

testing of the MVP, and the third after the user beta testing phase. The success criterion of the experiments was set to over 60% of users finding the service and its content valuable and desirable. The results of the first survey and the two subsequent user testing-related surveys were positive. Most users reported that the service is useful, and valuable and that they would recommend it to others.

The second assumption was about the quality of automatic translations being high enough, meaning that the translated content wouldn't have too many serious errors. The team knew that a suitable experiment to validate this is cheap and fast: translate Finnish news content into other languages using Google Translate. The results were discouraging but quite expected, as the team already had previous experience in translating content using Google Translate. The team found that even the translations from Finnish to English had many errors. Other languages could not even be tested, as no one from the project team was proficient enough in the most common languages spoken by the local foreign population. The success criterion of this experiment was set to be the client finding the level of translations acceptable. The result was that the client found the translation errors posed too big of a risk for their business and brand.

The third assumption was made at the beginning of the project as a natural continuation of the second one. From the start, the team suspected that the level of automatic translations would be too low. However, the team hoped that even with the low quality of the automatic translations, non-Finnish-speaking users could still find the service desirable enough to use. This assumption was validated with the same research as the first assumption: building the MVP and testing it with real users in the usability and beta tests. These user tests included usability testing with 10 users and a month-long beta test period with 65 users. User feedback was gathered by surveys at the end of each test. The success criterion of these experiments was also set at over 60% of users finding the service valuable and desirable. The results were positive, as the users gave the service a good rating after trying it for a month. News content in the service, albeit some of it poorly translated, was still deemed beneficial by the users.

The fourth assumption was that the team could build AI technology to predict new content popularity and organize content on the homepage based on these predictions. Validating this assumption required building the service MVP, and having this feature successfully implemented and working as intended. This was also the one success criterion for this experiment. The team successfully built this technology, and the assumption was validated. The AI prediction technology first learned which articles were good from web

analytics components tracking user engagement within existing article pages. It then utilized specially built AI components to compare articles previously deemed good to new, unpublished articles. New articles found to be similar to past good articles were predicted to be good articles, and they were placed in the "Recommended news" section on the homepage. This thesis did not validate whether these predicted articles were good in the opinions of the users.

The fifth and final critical assumption was that the service would be economically viable. Typically, this assumption would also include the design and development costs. Still, due to the project being externally funded from the start, this assumption only concerned costs related to the post-MVP life of the service. This assumption was researched throughout the design process. The experiments ranged from the first survey after the first workshop mapping out interest among the audience to building the MVP, testing it with users, and making financial calculations. Ultimately, the client would review the results of the whole project and make the final decision. The success criteria were threefold: 60% of users found the service and its content valuable and desirable, financial calculations looked positive enough, and the client found the level of translation acceptable. The outcomes were that while the users found the service desirable and valuable, the client did not deem the service worthwhile for further development. The quality of translations was deemed too low and posed serious liability and brand risks. The financial calculations made with just Google AdSense as the only source of income were not positive enough. Other sources of income were hypothesized in Chapter 5.12. Business Model & Market Size but were not explored further in this thesis.

5.16 Minimum Lovable Product

The name of the canvas, Minimum Lovable Product, differs from the industry standard term Minimum Viable Product (MVP) because of the debates it can raise concerning the level of the product necessary to be built. The creators of the Lean Service Creation method wanted to emphasize that this Minimum Lovable Product should focus on building the minimum version the users will love. This canvas helps define what features will be built into the MVP and which will be left out. The rationale behind including and excluding features should also be written down to help everyone in the project understand why the MVP will look and function as it does instead of the perfect product

someone might have pictured in their mind. (Sarvas et al., 2017, p. 35.) The term Minimum Viable Product (MVP) will describe the service prototype in this thesis.

The project team collaboratively discussed and defined the MVP features in a series of meetings between January and March 2019. The technical development team first had to investigate some of the initially ideated features to learn which are feasible to develop into the service within the project's scope. The results of the discussions were collected and summarized on the canvas (Appendix 22) by the service designer.

Minimum set of features

The bare-bones service will have Finnish local news automatically translated into English and Swedish using Google Translate's translation engine at the website back-end and AI-powered content personalization. The AI would be taught to predict new, still unpublished news article popularity by feeding it data from how users use the service and rating existing news articles. Based on the AI-predicted popularity, new articles could be displayed as "Recommended news" on the homepage, first showing the most popular news. This would make the homepage layout more personalized without manual editing. The site user interface would be made similar to other popular online news services. News can be navigated via a traditional main menu, news category links displayed along each article, and suggested news article links at the bottom of every article page. News articles are also listed on the homepage by popularity and recency and on the article pages by popularity.

The team deemed these features the bare necessities in a desirable and usable online news service. The team reached this conclusion by benchmarking other popular online news sites, such as HS.fi, Yle.fi, and TS.fi, and reflecting on their past use of other online news sites. The technological development team decided on the AI features selected for the MVP based on the time and human resources available in the project. As the original aim was to utilize AI in this news service, these features selected were plausible enough to be developed in time by the development team. The three languages, Finnish, Swedish, and English, were selected because the team had sufficient proficiency in each language to verify the level of translations. The team also thought three languages were the minimum number of languages to be included to allow the service to be called a multilingual news service.

Additional features

Throughout the design phase, the team came up with many other feature ideas for the service. Here, these ideas finally had to face a realistic evaluation regarding the feasibility of development. While these features could potentially make the service bigger and better, they were also deemed to involve so much more development and maintenance work and coordination with external parties that it would have blown up the scope, the budget, and the deadline.

Improving content translations through crowdsourcing with the help of foreigner communities was thought to be a potential solution for the bad automatic translations. Using verified foreign language speakers to help spot and fix translation errors could be used to teach the AI to improve its automatic translations.

The team also had ideas for making the service more educational. Users could be taught Finnish through an integrated dictionary displaying the meaning of words within the news content. Articles could also include relevant cultural, historical, economic, and political information.

Through benchmarking existing solutions, such as United Robots and Automated Insights, the team found that news content could also be automatically generated through data. Simple or mostly numerical sports, weather, or traffic data could be fed into an AI, which can be used to write relevant news articles.

From the beginning, the project was set on creating a multilingual news service, and this goal was deemed achievable by using three languages: Finnish, Swedish, and English. Initially, the team dreamed of a service that could automatically translate the news into any language the user would have in their browser. However, this turned out to be unfeasible due to a lack of language proficiency in the team and the content moderation resources available. The service owner could be held responsible for potentially dangerous incorrect translations.

5.17 What to Measure

The What to Measure canvas is for defining and collecting the results of the project's success metrics. Things to measure can be determined at the beginning of the project

or the end after the MVP has been released. This canvas aims to give clarity and focus by finding the most important service elements to conduct research on. (Sarvas et al., 2017, p. 39.)

The canvas consists of three rows defining three sets of metrics to research and measure: Value Proposition, Service, and Business Metrics. Each set starts with a slot for the definition on the left, followed by the research methods and metrics for measuring success on the right. The first category, Value Proposition Metrics, starts by writing down the definition of the customer's problem the service is solving, followed by a description of the service's value proposition. Relevant metrics and research methods to validate the success of the value proposition are listed next to them. The second category, Service Metrics, is for writing down the most important service elements and their metrics. The Customer Engagement and Most Lovable Product canvases defined these elements and features that make the service great for users. The last category, Business Metrics, starts with a summary of the business problem the service is solving, which was first defined in the Business Objective and Context canvas. The summary is accompanied by research methods for determining whether the service succeeds in reaching the business goals. (Sarvas et al., 2017, p. 39.)

The work on this canvas (Appendix 23) began in April 2019 and lasted till the end of the project in December 2019, after the last tests on the service had been completed. The service designer filled the canvas in stages as he planned, conducted, and analyzed the results of the different studies. Some of the research methods and metrics written down on this canvas had already been planned while working with the Experimenting canvas and are described in Chapter 5.15.

5.17.1 Value Proposition Metrics

The customer problem the service aims to solve is that non-Finnish-speaking foreigners living in Southwest Finland cannot access understandable public local news. The service's value proposition is to offer a multilingual local news website to deliver news from Turku and the neighboring area in different languages.

A combination of two methods was devised to measure the success of the value proposition. First, the team would use a set of quantitative web analytics metrics to find

out how many people use the service and how often. Secondly, to determine whether the users are happy with the service, qualitative user studies would be conducted to generate a user satisfaction score.

The work on this project ended after the closed beta test phase, which lasted for a month with 65 users. During the beta test, the commissioner's Google Analytics account was used to collect quantitative web analytics data on how the users interacted with the service. This data included the average pages a user viewed during their sessions and the number of weekly active users. The number of pages viewed by a user was used in calculations in Chapter 5.12, and the weekly active users metric was used to determine what percentage of the registered users became weekly active users. Because the service did not go live after the beta test, the quantitative web analytics part of measuring the success of the value proposition was only planned but not carried out. If the service is published in the future, the following web analytics metrics can be used to measure and continuously improve it.

The most important web analytics metrics for a news website

The list of web analytics metrics to measure the success of the value proposition and news websites in general was built by first studying the recommendations of Kononenko (2019), Ceric (2021), DAN (2021), and Edgar (2017). The recommendations were then compared to the metrics used by the publishing analytics tool Linkpulse, which the client had been using to measure the performance of their current online news website. The service designer reflected on the current business objective, service concept, and other results of the previous canvases, producing the final list of the most important web analytics metrics:

- Pageviews
- Active time on page
- Finishing the article
- Average pages per session
- Frequency
- Recency

Other default Google Universal Analytics metrics and reports exist that are not mentioned on the list but could still be helpful. Such metrics include the number of Users and Sessions, which report how many different people visited the website and how many times (DAN 2021). Also, the Average Session Duration and the number of Pages per Session show how long, on average, users' visits to the website lasted and how many pages they browsed during their stays on the site (Ceric 2021). On the other hand, there are some metrics that many authors, such as Kononenko (2019), recommend but which are not very helpful due to their lack of accuracy. One such metric is Average time on page, a default metric in Google Analytics. The problem with this metric is discussed below.

The first metric on the list, Pageviews, measures the number of times a page has been viewed by users by both Google Analytics and Linkpulse, the publishing analytics tool used by the client. Pageviews are the total number of users visiting a page during all their different sessions. Although it quickly tells the level of user activity on a page, it is a relatively vague metric if used just by itself. It becomes more critical when tracked alongside the others on this list. (Kononenko, 2019.)

Average time on page measures how long users spend on a page on average. Several problems concerning its accuracy should be understood before relying on what this metric can reveal about the website's performance. For one, it counts even the inactive time the page was open. For example, when a user kept the page open in another inactive browser window or tab. (Carlin, 2017.) Also, due to the way Google Analytics is built, it cannot record the time a user spent on the last page they viewed during their session (Carlin, 2017; Flaherty, 2018a). Instead of focusing on the Average time on page metric, people working with websites should put extra effort into measuring Active time on page. It is a more accurate way to measure user engagement.

Active time on page can be measured with Google Analytics only by building a custom tracking solution. One way to build such a solution is to use a plugin created by Rob Flaherty (2018a). It uses JavaScript code to listen to the user's mouse movements, clicks, scrolling, and keyboard activity. It also checks whether the page is open on a visible browser window. (Flaherty, 2018a). This data can be sent as event data to Google Analytics, where it can be analyzed and used in reports. Another custom-built plugin could be considered to gain even deeper insight into user engagement on the website. Flaherty (2018b) has created a JavaScript solution called Screentime, which can be used to measure the time specific page elements have been visible on the user's screen. Even

if this does not mean that the user has been actively viewing the content all that time, it could still be useful data to learn from. Linkpulse offers a similar solution for tracking active user time. According to the Linkpulse manual (2017), an active user is a user on the site who has either clicked, opened, or scrolled a page during the last 60 seconds.

Finishing the article is a metric used to track user engagement in Linkpulse. It is measured by the percentage of users who scroll down to the end of the article page (Linkpulse, 2017). Linkpulse documentation does not reveal if mechanisms are used other than scroll depth to deduce whether the user engaged with the content and not just scrolled to the bottom.

Average pages per session is a metric in Google Analytics that tells how many pages, on average, a user viewed during their session on the website (Kononenko, 2019). The more pages a user views during their session while staying longer, the better, as it could be a sign of the user finding the news articles interesting enough to go through multiple of them during one session. This would signal high user engagement with the content. However, if the number of average pages per session is low, it might mean that the content is not deemed interesting or that there is a usability issue in navigating between article pages (Kononenko, 2019).

Frequency is a report in Google Analytics that shows how often users visit the website repeatedly, meaning how often a user returns to the service. Frequency can be used to learn how many people visit the website only once, compared to people who visit it several times, and what the most common number of times users visit the website is. (Lewis, 2013.)

Recency is a report in Google Analytics that shows how many days have passed since a user last visited the website, meaning how soon returning visitors are returning to the website. Together with the frequency report, Recency helps discover patterns of visits and user engagement. (Lewis, 2013.)

User satisfaction score and feedback

User satisfaction with the service and its value proposition was studied extensively during the final stages of the project. Three studies were designed to measure user satisfaction, which were conducted with the MVP version of the service: a survey for service

usefulness, a survey for user experience during the beta test, and a survey for the value of the service to users.

In the survey for service usefulness conducted in September 2019, along with the usability test, 10 out of 10 participants answered that the service would be useful to them or other foreigners and that they would use this service. 9 out of 10 said they would recommend the service to their friends. On average, participants reported being very interested in following the news in general and moderately interested in following local news. Social desirability bias might have affected the survey's answers to be more positive, as the survey was conducted moderated with the usability test participants (Sauro, 2012).

The purpose of the beta test was primarily to discover errors in the service through user feedback. However, the team also wanted to take the chance to ask users to rate their experience with the service during the beta test. The rating was to be given on a scale of 1 to 5, with 1 being marked as an angry face and 5 with a face with hearts as eyes. 29 out of 65 registered beta users gave the service an average rating of 3,3 out of 5 (Figure 30). More positive ratings were given than negative ones, while most of the respondents gave a neutral rating of 3. Four users gave a 5 with a face with hearts as eyes, and eight users gave a 4 with a happy face. Six users gave a sad face, the second lowest rating, but no one gave the lowest score with an angry face.
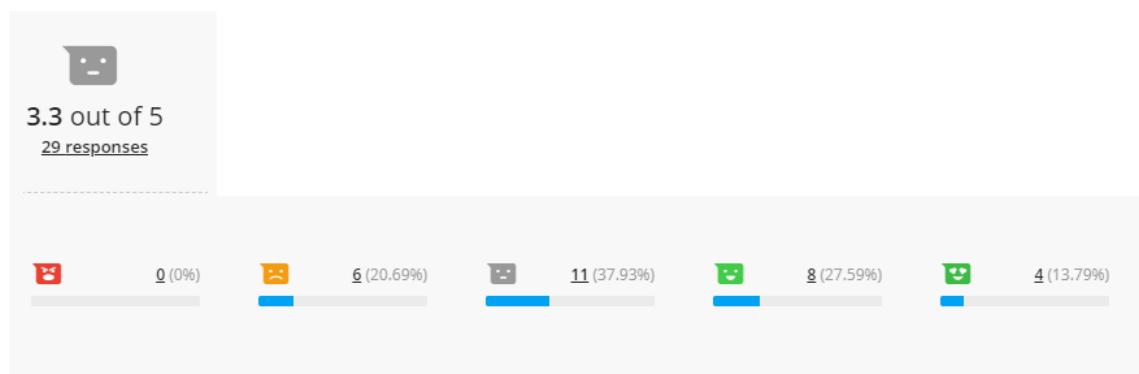
Figure 30. Screenshot from the commissioner's Hotjar account showing the user ratings given during the beta test.

The survey for service value to users (Appendix 4) was conducted online with the beta test users right after the beta test period had ended. All 65 beta testers were invited to

take the survey, and 35 responded. The survey had 11 questions designed to determine how the users felt about using the service during the month-long beta test. Participants were asked to rate the service's usability and content and give it an overall rating. They were also asked several open questions about whether they would change anything in it and whether they faced any problems while using it. 30 respondents rated the service's ease of use an average of 6 / 7, on a scale of 1 being very difficult and 7 very easy. The news content was rated a 5 / 7 by 30 respondents, 1 being worthless and 7 very beneficial. This question aimed to determine whether the users would still deem the bad automatic translations useful. 30 respondents gave the service an overall rating of 5,5 / 7, with 1 being useless and 7 being wonderful. 10 respondents wanted to change the quality of translations in the service, which was an expected result. 19 people answered they would recommend the service to their friends if it were public.

After analyzing the results of the three surveys, users were found to be generally quite satisfied with the service. The lowest overall rating of 3,3 / 5 was given through the user experience rating survey during the beta test period. However, it is important to know that the tool used to gather that rating was the same tool users used to send error reports. The author suspects this might have negatively affected the data gathered through the tool. Another difference is that the user experience rating survey would pop up on top of the website as users were using it. This way of inviting people to take a survey is quite intrusive, and the author suspects it might cause respondents to react more negatively to the survey.

5.17.2 Service Metrics

A news website's most important service elements were built by first studying the studies and recommendations of Sauro (2018) and Ali & Hassoun (2012). The findings of these two studies were compared, and the outcome was adjusted to suit the business objective and service concept. Results of other previous canvases, like the Customer Engagement canvas, were also reflected upon here.

Most important service elements for users

The two most important elements of news websites are content and usability. Both studies by Sauro (2018) and Ali & Hassoun (2012) and several others throughout the

history of web design clearly show this. 4 out of the 7 most important elements affecting the UX of a news website presented by Sauro (2018) had to do with content. Ali & Hassoun's (2012) findings placed content as the second most important element, almost as important as usability, which was found to be the most important. According to Sauro (2018) and Ali & Hassoun (2012), content on a news website should be relevant, timely, accurate, and in a clear format. This makes the news content useful and valuable for users. For the format of the news articles to be clear, they can also be expected to be written in good language, which is also an accessibility issue. Considering this service's nature and target audience, the language aspect of accessibility is critical.

On the list of most important elements affecting the UX of news websites, usability comes either right after or alongside content. Sharing some elements with content, 4 out of the 7 most important elements presented by Sauro (2018) have to do with usability. Ali & Hassoun (2012), on the other hand, found it to be the most important and virtually just as important as content. Aspects of usability, as defined by Ali & Hassoun (2012), were ease of use, navigation between pages on the site, interactivity between the site and user, and accessibility. Sauro's (2018) four usability elements were clear formatting and language of articles and other content, good selection of news on the home page, website design being free of distractions, and clear and helpful news categories for ease of navigation. As the use of clear and understandable language affects accessibility and accessibility is part of usability, there is a clear overlap between content and usability.

The quality of the content and service usability were researched in tandem in three studies: a usability study, a beta test, and a survey for service value to users. Because of the intertwined nature of content and usability, these studies were designed to gather data on both aspects.

Results of the usability study

The usability study was conducted with the first version of the MVP service in September 2019. The only major usability issue discovered was that some of the articles were not being automatically translated, which pointed the team to a programming error in the back-end of the service. Some minor problems were pointed out by the testers, including too long loading time when first opening the site, too large font size, and the first glimpse of the homepage not making it immediately evident enough that it is a news website. The testers also provided several improvement suggestions, including adding a link back to

the previous page and a related articles section at the bottom of each article to ease navigation. Three testers also wished that the content would be formatted better by adding subheadings in longer articles, shorter headings in some articles with apparently too long headings, and more images and visualized information in the news articles. These suggestions concerning the content format were valuable and communicated to the client, who was responsible for the format of the articles. The news content gets automatically delivered into the service through various online newspapers owned by the client in the format it is published in, and editing it would require development efforts that were not in this project's scope.

Some critical features were specifically tested for usability and found to be usable without issues. These features included the site search, the most read news section, and the "How did you feel about this" question element at the bottom of each article page. Interestingly, no tester noted anything about the news articles being automatically translated into questionable English. The service designer speculated two possible reasons for this: the nature of the test not allowing them to delve deep enough into the news content and the ones that noticed the errors might not have been bold enough to point them out in fear of offending the service designer. None of the testers had English as their first language either.

The test process also generated interesting learnings on conducting usability tests better. Two users seemed to assume the role of a good tester, as their behavior changed when they began using the service. They strived to behave and talk like a supposedly good tester would, extra diligently and sounding smart. This behavior contrasts with the natural behavior of a regular user who often goes through the service quite hastily and even lazily, just trying to accomplish their goals and nothing else. (Krug, 2010, pp. 20-21.) Two users praised the "How did you feel about this story?" question feature at the bottom of the article page, but at another turn, one of them commented that they would not answer such questions in their daily use of news websites. Two quite common usability test biases could have been affecting the behavior of these users. The observer effect, also called the Hawthorne effect, makes people act more vigilant and productive when they are observed while working on given tasks. On the other hand, social desirability is a bias that causes users to answer and talk about what they think the moderator wants to hear, being less likely to say negative things about the service. (Sauro, 2012.)

Because usability testing is always an artificial user scenario, no amount of preparation or correct conduct will make the results perfectly reflect reality (Sauro, 2012). However,

the team learned that some things could have been done better before and during the tests. The moderator should clarify that the tests are not for testing the user but the service. It should be emphasized that they should avoid acting like a tester and instead try to relax and use the service as they would at home, simply using the test statements as guidelines. Staying further away from the user during the test seemed like a good idea, as allowing them plenty of space might help them forget that they are being moderated.

Beta test

The beta test was used to gather data on several aspects of the service. It was used to measure user satisfaction for the value proposition metric, as described in the previous Chapter, 5.17.1 Value Proposition Metrics, and to collect user feedback on the content and usability of the service. Most of the errors reported by users (Figure 31) were about bad translations. This further validated the team's assumptions on the unacceptably low level of translation quality when using automatic Google translations.
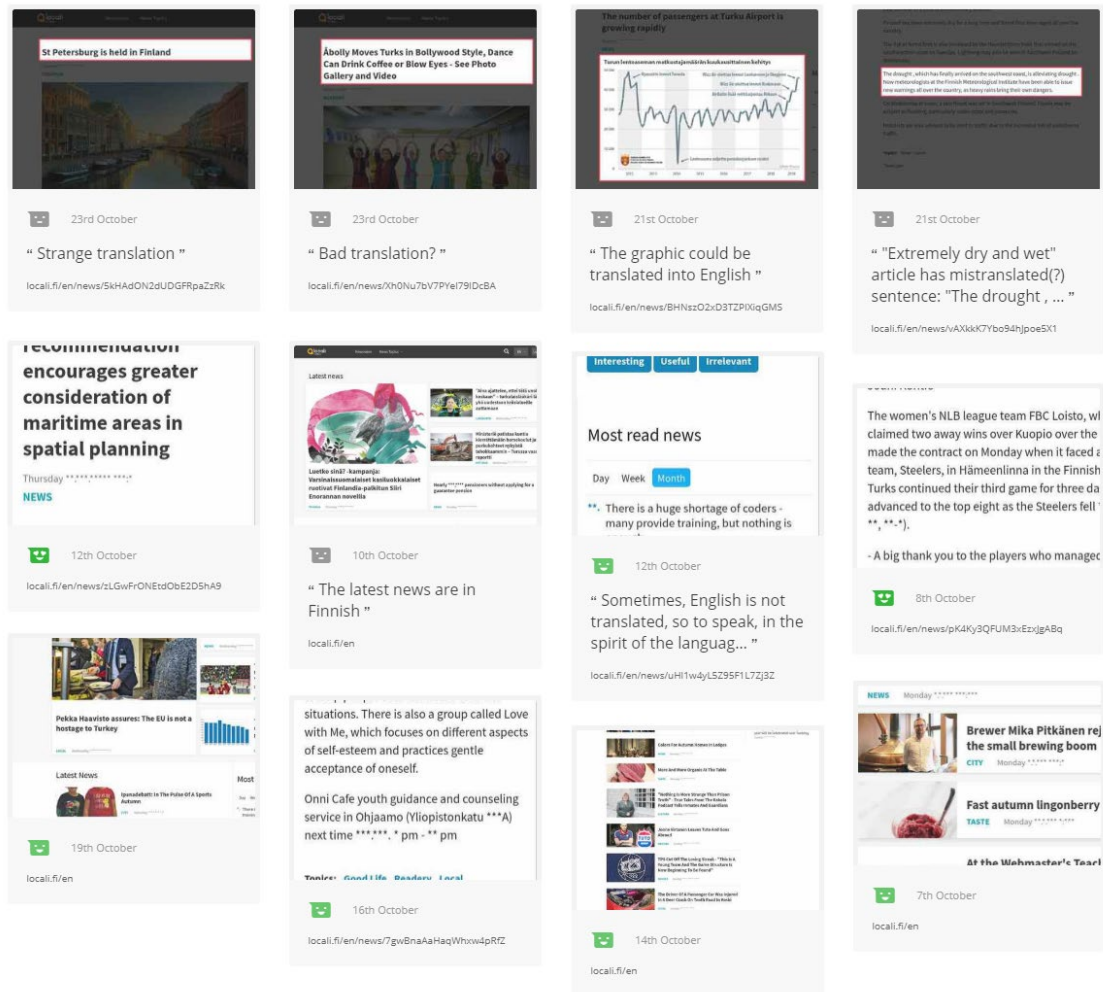
Figure 31. Screenshot from the commissioner's Hotjar account showing user feedback given during the beta test.

Survey #3: Service value to users

News content and usability are both at the core of the value proposition and this news service's most important service elements. Therefore, the survey for service value to users was used to measure the user satisfaction score for the value proposition metric, the usability, and the quality of the content. If the users deem the content or usability bad, the value proposition fails. The results of this survey are discussed in the previous Chapter, 5.17.1 Value Proposition Metrics.

5.17.3 Business Metrics

The business goals were defined in the Business Objective and Context canvas during the first workshop. They are in the order of importance: increased reach and new business potential through serving a new demography, new ad revenue, and new technology to enable competition with international news companies.

The first goal of increased reach and new business potential through new demography can be measured through a combination of web analytics metrics and user research. The web analytics metrics include:

- Number of unique users (reach)
- Number of new and returning users
- Active time spent on site
- Number of shares on social media

The user research metrics to measure the first goal include the user satisfaction score and user feedback gathered through the beta test and surveys #2 and #3. These are also used as Value Proposition and Service Metrics and are described in their corresponding Chapters 5.17.1. and 5.17.2.

The second goal of ad revenue could be measured easily with Google AdSense, the platform the ads would be run through. However, this metric is not planned or described any further as it falls out of the project scope. Calculations for revenue estimates are explained in Chapter 5.12, Business Model & Market Size.

The third goal of new technological advantages would be measured qualitatively through the client reviewing the technology for their purposes and providing feedback. This is done at the end of the project, and results are discussed in the next Chapter 6, Evaluating the Service.

6 EVALUATING THE SERVICE

Following design thinking, the service prototype was evaluated for technological feasibility, user desirability, and economic viability for the business. Finally, the client provided their review and comments on the whole project.

Technology and feasibility

The original goal was to develop a news website that matches the language of the content automatically with the language of the visitor's browser. This turned out to be unfeasible because of the current level of translation technology and knowledge available to the project team. The project goal was tweaked to use only English and Swedish translations next to the original Finnish, but the quality was found to be too low even with these languages. Even though the service was successfully developed and desirability validated, the client concluded that the brand risks involved in releasing news articles with such questionable translation quality would be too high.

One of the business objectives was to develop new technology for the client that would enable them to compete with international news companies. The development team succeeded in creating a system that predicts the popularity of new articles based on existing data on the popularity of past articles. This AI-powered system was first taught the characteristics of popular articles by feeding it highly rated old articles. Then, it was tasked to analyze the new articles fed into it and predict their popularity based on its understanding of the previously popular articles. This technology was ultimately used to create a tagging tool to help the clients' editors in their work. After finishing writing an online article, editors are supposed to add descriptive textual tags to categorize the article. These category tags help users navigate between the news topics they like. The machine learning tool developed analyzes the new article and suggests relevant tags to be added to it by the editor.

Desirability and value to users

The client's original assumption was that foreigners in Southwest Finland really need an understandable local news service. This assumption was validated by the first survey's

results and by the comments of several foreign-born people participating in the service design process. In four user studies, users reported the service to be useful and that most would use it and recommend it to other foreigners. Even the badly translated content was still mostly reported as beneficial by the users. This is understandable, as no other options are available for reading local news in English other than using Google Translate to translate the online news.

Based on Google Analytics data the commissioner's team gathered and analyzed during the beta test, 20 out of 65 registered users became weekly active users. This means a 30% conversion from all registered monthly users to weekly active users. 30-50% of monthly active users becoming weekly active users is generally considered a good ratio (Zubayrov, 2023).

Economic viability and the business case

The service's target audience is a minority segment, the foreign-born people living in the Turku region. Even though this population segment grows by 2000 people each year (Kotouttaminen.fi, 2019), it still consists largely of exchange students, migrant workers, unemployed persons, and other people in low-income life situations. The team fears that this makes using conventional revenue generation models, such as paid subscriptions and advertising, challenging. Advertisers might not consider the low-income user base a desirable audience to advertise to. The cost structure calculations (Chapter 5.12.) show that using only ads to support the service would not make it economically viable for over five years. The rough profit and loss statement calculations (Appendix 18) show a slight profit in the 7th year from the service launch.

The team considered that the service could become even more desirable by investing in translation and content moderation, and risks to the client's brand could be minimized. Cooperation with various foreigner groups and organizations, such as exchange students, language students, and immigrants, could also be helpful. These groups could help with translations, creating relevant content, and building service awareness at relatively low costs. However, further cost and work estimations should be made to determine what resources would be required to moderate and fix the translations to an acceptable level.

The business case could also be further clarified by investigating the potential extra functionalities ideated by the team during the service design process. These functionalities, which are first presented in Chapter 5.16.2, include:

- Crowd-sourced content improvements and teaching of the AI translator done by partnering foreigner communities.
- Finnish language learning through news content via an integrated dictionary enables users to see the meaning of selected words and phrases.
- Related information on news articles is displayed on the side of the articles for teaching purposes. This extra content could include cultural, historical, economic, and political information to teach foreigners more about Finland.
- Utilizing AI to write news articles from seed information automatically. This seed information can be weather, traffic, and sports results fed by third-party services.

Client's review of the service

The client performed a final review of the service at the end of the project, between 26.11. – 9.12.2019. The review was done with Hotjar, the user feedback tool used during the beta test. The client invited 7 internal stakeholders, news editors, and the development team working on the project to participate in reviewing the service from the eyes of news professionals. These users were instructed to use the service in their own time and devices the way they wanted to use it. The users were to use Hotjar to report any issues they encountered and any improvement suggestions if they had any. Commenting on the quality of the automatic translations was left out of the test, as the problem was already made perfectly clear during earlier tests.

The results of the client's review testing period were good, and the client was generally very happy with the service. This was expected, as the service had already been heavily tested during several user research rounds, and improvements were implemented based on the results. The only problem clients' users found in the service was with the website search feature.

Even considering how much the target audience members seemed to like the service, the client decided not to move past the prototype phase. The main reason was that the low translation quality posed too big of a risk to their brand. The target audience might

also be too small of a user base alone. Further investigating and testing the ideas for solving these critical issues would require new projects and dedicated resources.

Comments from the client

Before work on the project began, the client had found some resistance and fear concerning AI technology among their news editors. To the editors, the trend seemed to be that AI-powered news generators would make traditional editors jobless. While working together on this project, the client's team learned this does not need to be the case. Machine learning and AI technology can be used to make the daily work of editors easier, reducing manual labor while leaving more time for the more creative parts of the work. This was proven by the AI-powered tool to help tag the new articles produced by the commissioner's development team. The client commented that this collaboration removed a lot of the mysticism involved in and around AI and that it helped them better see the practical capabilities of AI. The client liked how the project was managed and led. The client's director of digital business commented in the project's final meeting in December 2019 that this was the leanest project he had ever been in (Personal communication, 19.12.2019).

7 SUMMARY AND CONCLUSIONS

The project background is the funding the commissioner's client received for carrying out an experimental project involving utilizing AI in online news services. The client asked the commissioner to help them create a multilingual local news service for non-Finnish-speaking people. The author worked for the commissioner and suggested using the Lean Service Creation method to clarify the problems and needs and eventually create and test such a service.

The work on the project began with two Lean Service Creation workshops to produce a vision and concept for the service. It was continued by the commissioner's team, which started to work on building the prototype service and tested it through 6 rounds of user research at different stages of building the prototype. The author guided the work using the Lean Service Creation canvases throughout the project. Originally, the client wanted to create a multilingual news service that automatically translates the news articles into the user's language. However, it was feared from the beginning that due to the translation technology available at the time, it would be unfeasible to build it with acceptable translation quality. Also, the team could not verify the translation quality of foreign languages spoken by the target audience, such as Russian, Arabic, and Kurdish. The goal of multilingualism was still accomplished by using three languages in the service: Finnish, Swedish, and English. English was the main language the service was used and tested in, as it was shared by everyone in the team and test participants from the target audience.

The online news service prototype was built to look and feel like the typical well-known online news services. It had all the similar most used features, such as popular news highlighted on the homepage, lists of latest and most read news, and navigation by news topics. The news articles on the service were fed into the system through the client's various local news feeds, which were used in their other Finnish local news services. This enabled the display of local news from different regional municipalities collectively in one place. The Finnish news articles were translated in the service's back-end using Google Translate. The main AI feature was using machine learning to deduce which previously unpublished articles would become popular and display them as popular news on the homepage.

The service was tested in a moderated usability study with 10 participants and a month-long beta test period with 65 users. User feedback was gathered during the beta test via an on-site survey. The service was improved after every test round based on user feedback if the improvement fit the project's scope. Most problems reported by the users had to do with the translation quality. Improving them, however, would have required a human moderator to go through the translated articles by hand, which was out of scope.

The various studies conducted during the project showed the service to be desirable among the target audience, as no alternative understandable local news services were available. More than half of the users reported that the service would be valuable even with the questionable translations. The client was also pleased with the project and the understanding they gained from it. However, the brand risks involved with the bad translations were the main reason the client decided not to continue the service past the prototype phase.

7.1 Answers to the Research Questions

Question 1. How to develop and sustain a multilingual local news service to cater understandable local news to foreigners living in Southwest Finland?

Developing a multilingual local news service for catering understandable local news to foreigners living in Southwest Finland was successful, but only after changing the original meaning and scope of multilingualism into just three languages: Finnish, Swedish, and English. From these languages, only English is understandable for many foreigners, but not all. The project team's experience was that while some foreign groups, such as exchange students, understand English well, many others do not, such as many immigrant workers and refugees. The original problem would remain unsolved for these people if English was the only foreign language available in the service.

Another major problem was found with the viability of the service. It was calculated that the service would be financially challenging to sustain with traditional revenue generation models, such as advertising or subscriptions, mainly due to the nature of the primary user base. The extra costs involved in hiring a human moderator to ensure the quality of the news article's language make it even more difficult. Ways to bring down costs and other revenue models, such as public or private funding and sponsorships, were not further explored in this thesis.

Question 2. Can the client discover new technological innovations to enhance their business operations by developing a prototype for this service?

The team discovered a new technological innovation to enhance the client's business operations. The commissioner's team developed new machine learning technology to help the client's editorial work. This technology is described in Chapter 6.

Question 3. What other business value can the client achieve by developing this prototype service?

While no other direct or concrete forms of business value were achieved for the client from this project, the client reported two other non-tangible benefits. Working with this previously unfamiliar target audience brought them closer and helped the client better understand the possibilities of reaching and serving this audience. The client also reported that their understanding and way of thinking concerning AI technologies evolved thanks to this project. Where there was previously some worry among the editors concerning AI, it was transformed into seeing more opportunities.

7.2 Proposals for Future Research

While working with the target audience during this project, it became clear that there is a great demand for this kind of news service. As this population segment gets larger yearly through immigration, the demand keeps growing. This growth would also improve the viability of the service. Time is also an ally in increasingly rapidly developing translation technology. During the coming years, automatic translations could improve noticeably, decreasing the risks involved with badly translated news. Reviewing these factors in the near future would be advisable, as this service has great potential for the client and the whole society.

Further research into building a viable financial strategy is also recommended. This could include exploring ways to bring down maintenance costs and utilizing nontraditional revenue generation models. Moderation costs could be cut by cooperation with different foreigner communities and organizations. Content creation costs could be cut by utilizing AI in creating news articles. Nontraditional revenue generation models could include public or private funding and corporate sponsorship programs.

Several additional features for the service, described in Chapter 5.16, were ideated during the project. Some of these additional features could help secure public funding for the service and should be investigated further. Designing and implementing features to help foreigners learn the Finnish language and culture could help boost social integration. This could transform the service into a welfare-building public service platform. Supporting the development and maintenance of such a service could interest the Finnish education and immigration services.

7.3 Validity and Reliability of Research

The research results can be considered valid for the purpose of building the service prototype and validating it for feasibility. However, the fast evolution of technologies such as AI and translation engines might affect the long-term accuracy of these results. The methods used and presented in this thesis to validate the feasibility are reliable industry standards.

While the validity of the research concerning service desirability is subject to more uncertainty, it can still be regarded as valid. The research studying the desirability of the service included three surveys: the usability study, the beta test, and the usability study. While the author thought that the respondents of the first survey represented the target population well enough to produce a decent sampling, the number of respondents was low. Even still, the author feels confident that the first survey's results are valid and sufficient to prove that the foundational problem assumed at the beginning of the project is confirmed. The other research results with the target audience helped further validate this problem. Some might argue that an online survey was not the proper method to use in that stage of the Lean Service Creation process. The decision to use a survey instead of interviews was made due to the nature of the project being already set on developing a particular type of service. The author feels that an online survey was a reliable method to use for its chosen purpose at that stage.

The sampling of the first survey and other studies was affected by an overrepresentation of foreign students in the respondents. While foreign students were chosen as the primary target audience, the team also wanted to include more members of the other groups. However, they were much more challenging to find and recruit as participants. Certain biases might have also skewed the results of the second survey concerning the service desirability, as was discussed in Chapter 5.17. This skewing was mitigated in the

overall data by the results of the subsequent beta test and final survey, which were by design different and conducted with a different sample.

In addition to bringing light into the service's desirability, the usability study's main purpose was to discover usability issues in earlier stages of service development. It is a reliable method for this purpose, and its results in this thesis can be considered valid. The usability study was planned and carried out well, considering available resources. With the help of relevant theories, the author paid attention to writing and piloting the study tasks and moderating the test sessions in person. This careful preparation helped mitigate potential biases and skewing of data.

Beta testing is also a reliable method to study a digital service's usability and gather its users' behavioral data, but it is used in the latter stages of development. While the usability study was conducted in a moderated lab setting with predesigned tasks and structure, the beta testing was without any tasks, structure, or moderation. This difference helped ensure that the combined usability data represented real-world situations more accurately.

The least researched dimension for validating the service was its financial viability. The viability of the service was only explored through profit and loss calculations to estimate revenue and how many years after running the service would start generating profit. While user behavioral data was gathered during this thesis, relevant theories and industry averages steered these calculations, but they were still primarily based on hypothetical estimates. For this reason, the results concerning the service's viability should not be considered very valid. The methods used to estimate the viability to the extent that they were done can be considered reliable for their intended purpose.

7.4 Knowledge and Experience Gained

This thesis was a dream project for the author. Since the project was an externally funded learning exercise, the author did not have to struggle to convince the project owners of the necessity of each type of user research required. In typical digital service design projects, the project owners often want every bit of cost to bring clear and immediate returns on investment, which can sometimes be challenging to point out with user research. Naturally, this depends on the project stakeholders and their attitudes. The author considered everyone working on this project to have an open mind, and they were

all pleasant, reasonable, and easy to work with. This allowed the author to focus on planning, conducting, analyzing, and presenting the results of the various research methods used in the work.

All the service design and research methods used were already familiar to the author, but this was the first time he could focus on each of them so thoroughly. This goes especially for the Lean Service Creation method, which the author had used only once earlier but became very familiar with during this thesis. This project was also the most comprehensive service design work the author had done, as it included so many different methods.

The author was able to learn a lot, from little details in specific research methods to the big picture of using different methods together. For example, he learned how to write better survey questions and usability tasks and how the moderator's behavior and speech can affect the usability tester's behavior. In the big picture, he learned more about how different research methods can be used together to validate the previous findings. The part setup, setting, and natural human biases played during different user research methods were interesting to observe and learn from. For example, the beta test users gave the service a general score of 3,3 / 5 during the beta test, while respondents from the same group gave a higher score of 5,5 / 7 in a survey after the beta test. The author suspects that the way these studies were conducted affected the results. After the beta test, the survey had a reward as an incentive, and users could respond to it at their leisure. In contrast, the beta test score was given by people whose use of the service was interrupted by a sudden invitation to respond to the scoring survey or people who reported an issue with the service.

Even though the project had an assigned project manager at the commissioner's end, leading the practical work on the project was left to the author as the service designer. This fitted well with lean thinking at the core of the Lean Service Creation method, as there was no need for that extra person to be in the middle of the workflow only to pass on messages between different parties. It also gave the author great experience in leading the work on a digital service in a lean way. For example, after a usability test provided actionable insights that fit the project scope, the author could directly instruct the developers in fixing the discovered issue on the service website.

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Appendix 1: Survey #1 Questions

1) Are you generally interested in following the news and current matters?

- Yes, I follow the news actively (=> from which sources?)
- I follow news sometimes
- I don't usually follow the news
- I don't follow the news at all

2) Are you interested in following the local news and other current matters from the nearby area?

- Very interested
- Rather interested
- Not so interested
- Not at all interested => (Why are you not interested in local news?)
- Can't tell

3) From which sources (if any) do you currently get information about the local news and happenings? (open question)

4) Do you follow local news from any news sites/services?

- Yes, daily
- Yes, weekly / couple of times a week
- Less frequently
- Not at all

5) How would you improve the current local news sites so that you would start using them regularly? (open question)

6) What kind of local topics or issues do you consider interesting? What topics would you like to follow on a regular basis?

- General local news
- Issues considering the city's development/changes (constructions etc.)
- Open job positions in the area
- Leisure events

- Hobbies & activities
- Sports
- Crimes and accidents in the area
- Culture and lifestyle
- The economic matters of Turku city
- Some other topic, for example_____
- Nothing

7) What kind of problems or obstacles have you faced when using different news sites/services? (open question)

8) Which language would you prefer, when following the local news and current matters?

- Finnish
- English
- Other, which?

Lastly, we would like to know some basic information about you:

- Female
- Male

Your age group:

- Under 20 years
- 20-30 years
- 30-40 years
- 40-50 years
- 50-60 years
- Over 60 years

Your mother tongue? _____

Main activity:

- Working
- Unemployed
- Student
- Pensioner
- Housewife

- Other

The city you are living in:

- Turku
- Kaarina
- Raisio
- Naantali
- Lieto
- other, which?

Appendix 2: Survey #2 Pre-test Questions

1. Name and age

2. Select current status:
   a. student
   b. working
   c. unemployed
   d. other

3. How long have you lived in Finland?

4. Are you generally interested in following the news and current matters?

   Not at all interested 0   1   2   3   4 Very interested

5. Are you interested in following the local news from the Turku area?

   Not at all interested 0   1   2   3   4 Very interested

6. Where do you currently get information on the local news and happenings?

7. Do you follow local news from any news sites or digital services?

   If yes, which?

8. What kind of local topics or issues do you consider interesting?

   (e.g. sports, events, politics, economy)

Appendix 3: Survey #2 After-test Questions

1. Do you think a website like this would be useful to you or other foreigners in Finland?

2. Would you use this kind of website?

3. Would you recommend this website to your friends?

4. What would you change or improve in this website?

Appendix 4: Survey #3 Questions

How often have you used Locali during this test phase?

- Once a week or less
- Few times a week
- Every day
- Several times a day

How often do you think you would you use Locali if it was opened for public?

- Once a week or less
- Few times a week
- Every day
- Several times a day

How easy is Locali to use?

(1) Very difficult – (7) Very easy

How would you rate the content in Locali?

(1) Worthless – (7) Very beneficial

How would you rate Locali overall?

(1) Useless – (7) Wonderful

Is there anything you would like to change in it?

[Free text]

Is there anything you would like to add to it? (Content, features, anything else)

[Free text]

Have you faced any problems or errors on Locali while you were using it?

[Free text]

Would you recommend Locali to your friends if it was open for public?

- Yes
- No
- Maybe

Have you used Locali on your smartphone? If you have, how was the experience?

[Free text]

Any other comments or feedback you would like to give us:

[Free text]

Appendix 5: Usability Study Plan

Goal

The goal of this first closed beta test for Locali is to gather user feedback on following aspects:

- Is the purpose of the service clear?
- General usability of the user interface (menu, linking and navigation, information hierarchies etc.)
- Does the service fill the needs of the target group well enough?

Lab setting

- A peaceful room in Logomo which is big enough to comfortably fit the tester and the moderator(s), leaving enough room for the tester to carry out the test in private
- Macbook Pro with a mouse.
- Screen recording software
- Audio recording software
- Audio will be recorded the whole time, including the pre-test questionnaire, so that the moderator can focus on creating a rapport with the testers.

1) Introductions and warm-up

Make the testers feel welcome and comfortable. Introduce them to the lab setting, the moderator(s) and fill them in on how the test session is going to proceed. Answer any questions they might ask.

Adjust the lab setup (table, chair, computer etc.) so that the tester finds it comfortable.

Let them know that the screen of the computer will be recorded along with their speech via the microphone.

Pre-test questionnaire: Survey 2# a is conducted here (Appendix 2)

3) Test session & Tasks

- Tasks aim to study the following things:
- First impression and understanding of the nature of the service
- Structure and use of navigation
- Can the news be found in any of the sub-categories
- Are the news understandable?
- How do you understand the user voting feature

Tasks:

1. After opening the website:
   What kind of website do you think this is? What is your first impression?
2. Read 3 articles from different topics of your choosing. If the articles are very long, you don't have to read everything.
3. There's a question with three options at the bottom of every article. How do you understand the question? What does it mean to you?
4. What is the 5th most read news article of the month on this website?
5. Find and read an article about Raisio. Any article concerning Raisio will do.

4) Wrap-up: Final Thoughts Questionnaire

Survey #2 b is conducted here (Appendix 3)

Appendix 6. Usability Test Process

This process is carefully walked through and explained to each tester

1. Approval form for the recording of your information
2. Answer a list of general questions, while I prepare the test laptop.
3. Sit down by the laptop and make yourself comfortable. Don't open the website until I give you the first task.

Remember: this test is not for testing you and you can't fail in any way.

Be prepared to talk out loud everything that goes through your mind as you use the website: first impressions, what you are currently doing, likes, dislikes, difficulties, surprises, delights. Everything.

4. Open the website and start the first task. When you think you're finished with it, signal me that you're done. Don't close the website yet.
5. Receive the second task and continue using the website. Signal me when you're done with the second task. Don't close the website yet.
6. Carry out all the tasks and signal when you are ready.
7. Answer some final questions about the website.
8. Receive your gift card worth 20€.

I will also ask you to participate in the next test phase, which doesn't require you to come here, but you can keep using the website on your own device wherever. Every participant has a chance to win gift cards worth 50-100€.

Appendix 7: Business Objective and Context canvas

BUSINESS OBJECTIVE AND CONTEXT

Fill together with the person funding this project

How will we know that we have succeeded?
(After a month? After one year?)

Number of visitors to the service (Regular, New)
Time spent in service
We want more from the service
The service has users and generates income
The service receives feedback from users
The service is recommended to friends
Journalists have time for "real work"

Ad views
Commitment to the project continues
Immigrants' situations in Turku are improving due to increased awareness
New readers
Create new conversations around our news

Who needs to be involved?
(Stakeholders, old and related projects...)

Target groups, i.e. their representatives
Delivery and its management
owners
IT
AI experts
City of Turku?
"Producer" of local information sources
Shipyard & car factory
Daisy Ladies and other immigrant associations

Users
Authorities/responsible for integration
Members of the customer group and their stakeholders
Reader Marketing
Sales
The audience is very broad
Representatives of information sources
Authorities
Heart medicine
Users, new and old
Companies

What is our business objective?
(business problem/need/opportunity...)

Enables reporting of "smaller" stories -> bigger volume
New business area
Information/news for non-Finnish speakers
Reach out to non-Finnish speaking readers living in the Turku region with the (paid) service
Expanding the readership

Reaching new demographics
Increase in the number of visitors -> increase in media sales
Serving the public by conveying information
Sell news
New target groups as part of our services

What enables us?
(Our brand, our new strategy, competencies, resources, new legislation, previous project, specific conditions, new trends......)

The development of artificial intelligence
The everydayization of the AI industry
Local news expertise
Use of mobile devices and internet
Economic growth - more foreign labor
Increasing immigration

A similar service does not yet exist
Know-how and resources for news production
Everyone needs news
Desire to learn new things, we do something new together
Google funding
IBM Watson AI
Google Translate (Development of language/translation programs)
Growing immigration
Shortage of manpower
Labor coming from elsewhere (trend)
Fragmentation of media/information , information from one place

Why is it important?
(How does it fit our strategy?)

Learning about artificial intelligence and how to use it
The tool helps immigrants adapt to Turku and the surrounding area
Opens up new opportunities to develop business
(Hyper) local news is of interest to settled people, not short-term visitors
Turku is becoming international, let's grab kv. readers before others can
Stay involved in the competition for readers' time

Keeping it relevant
Digital news saves nature
People need information about news and events
New customers, a wider audience, more turnover
New/separate advertising spots
We are the largest news media in the region, but not everyone receives news in their own language if we dont not provide it
Get to know new audiences

What restricts us?
(Budget, Schedule, Organization, Legal, Competition,...)

Knowledge of languages
Availability of local data
Image as an overly conservative media
The difficulty of the Finnish language
Limitation and reliability of data
Attitudes
Budget
Reduction of people in delivery
Financial resources
Data protection (GDPR)
DM scope of the project

Copyrights
Responsibility for content
The quality of Google Translate's Finnish and minority language translations
The level of AI technologies available
Large number of nationalities/languages
The audience's different backgrounds/interests
Escape of focus   blurring
Committing when other projects get busy
Bureaucracy

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We filled this together with the person funding this? [X]
We talked these goals with our supervisors? [X]
All in this canvas is clear and understandable? [X]
We are comfortable to proceed? [X]

Appendix 8: Immersion canvas

IMMERSION — To know where you are and to build on top of others work.

Your best guess of the customer's problem

No local news in your own language
No relevant news in your language
News quality
Does not understand the Finnish language
Knowledge & understanding of own environment is weak
Don't trust the news media
No fixed points in Turku and the living environment
Can't find the information he needs on the ¬service - is the service difficult to use?
No information about the existence of the service or does not feel the need for it

The news is written for the local population and may contain material with a high language barrier
Cultural context: cultural behavior patterns and obstacles (only women's own stories, Islam)
What to do tonight?
What language is it in/works in?
What issues/laws/practices affect me?
Cultural differences
Not interested in available stuff
Lack of understanding of local customs and rules
Where can I meet members of my own group?

Alternative solutions from the customer's perspective

Ampparit and other news indexes
Facebook and other social media
Google search
Your social circle tells you what is needed (market meetings and discussion circles)
Google News

News in plain language
Other news services + magazines
Netflix + streaming services
Discussion boards
Your own stories in your own mother tongue (online TV, etc.)
Ampparit.fi / Varsinais-Suomi + Chrome Google auto-translate
Foreign media
Discussion openers/agitators

Competitors within our business domain :

Media of own culture
Yle, ÅU, from Turku
Big left in the media industry
Some, Google News
Local newspapers

HS.fi / Hesari
Iltalehti, Iltasanomat etc.
All English language media
Other local media
Other media
 (Free) magazines + pages

Hottest start-ups:

Yle's winning project
Wordsmith (NLP)
United Robots (SWE)
STT, Yle
Big international media houses

Amazon
Googlen AI
Facebook AI
Netflix
Apple
Uutisbot
Erilaiset uutisbotit
Alustatalous lafkat
Metro
hs.fi/kaupunki
Reddit
Yle Uutisvahti
IBM WEX
Lingsoft

How could current business be disrupted:

With hyperlocality
Abandoning the print magazine
Continuous real-time communication
Transfer of contents to artificial waste
Merger of media houses
Changing political system
New formats drive over reading
Interest in the media decreases "Not interested"

The takeover of Finland by big media
Loss of trust
People don't agree to pay for news/content
Content fragmentation   reliability problems
Legal changes
The withering of the industry into a playground for big international players
Fake news
Changes in people's time use
Massifying news delivery to ordinary people, out of the hands of the big mainstream media/journalists
Print will decrease even more   you don't want to pay for online news

Hot names, known experts, people to listen to:

Maria Ritola iris.ai
Elon Musk + other propeller heads
The ghost of Steve Jobs
HS

Inspiring services & products:

Victory robot
HS app
Facebook
Google Maps
Föli, Sirpa Korte
Mobile Pay
Live timing
Wolt/Foodora
LastPass/One Password

Apple
Sleep cycle
WODconnect
Shazam
Netflix

Public debate around the topic:

Artificial intelligence
Fake news
Big Data
Integration
VAT -> 24% -> 10%
GDPR

Will AI take away jobs?
Can you trust the news?
Artificial intelligence kills
"Experts" tell "truths"
Reliability of translation problems
Media bias

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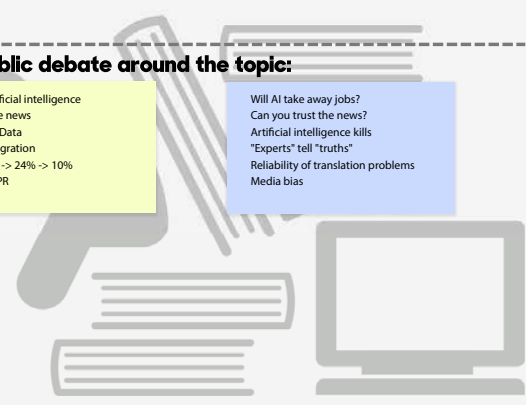
Appendix 9: Data canvas

DATA — Know your numbers and facts

What data do we need?
What internal data?
Should we do a wide scale market research?

Language skills and
language groups
Interests of future users

List the relevant data sources:

Immigrants (= target group)
Age, gender and nationality distribution of
foreigners

Let's find out the languages of visitors to TS's
website and SOME from analytics

Foreign languages of actual Finland / language
groups, statistics

Key findings of users from the DATA:

Non-Finnish speaking people in Finland Proper (2017, StatFin):

Language	Amount
Venäjä	4999
Viro, Eesti	4024
Arabia	2903
Kurdi	2458
Albania	2043
Somali	1613
Englanti	1318
Persia, farsi	1103
Vietnam	885

Browser language of the visitors at client's website (2018)

Kieli	Käyttäjät	Istunnot
Saksa	13848	48093
Venäjä	11483	30696
Viro	6064	14964
Espanja	5604	13843
Ranska	4467	14643
Norja	2967	11320
Italia	2925	7749
Puola	1969	7621
Arabia	1899	2725
Tanska	1870	4525

34 181 out of the 478 582 (7,1%) people living in Finland Proper are foreigners.

The city of Turku has a population of 191 331 from which 21 894 (11,4%) are foreigners.

Growth rate is around +2000 foreign people per year

Key opportunity related to the users:

There are a lot of foreigners living in the region and the growth rate of foreign people in the region is quite fast, meaning the customer base would be expanding all the time

Key findings of our and others business based on the DATA:

Key opportunity related to the business/competitors:

Appendix 10: Customer grouping canvas

CUSTOMER GROUPING – Choose who you aim to serve.

Common in all customer groups:

No Finnish language skills
Not informed on local customs, news or events
Might not see their future in Finland

Group name: **Immigrant laborer**

Description:

30-40 year old man, Low language skills
Seasonally works at the shipyard or elsewhere
Doesn't necessarily see his future in Finland
During free time, he mostly sticks to his group and on holidays visits his family abroad.
Doesn't know much about what's going on around him. Gets information on local things from his workplace, SOME and friends

Problem (assumed) worth solving:

Might not have any information on local customs, culture, news or events

Main group? ☐

Why/why not?

Might not even be very interested in getting information on local news, events and happenings. Misses his home country

---

Group name: **Immigrant student**

Description:

18-30 year old woman or man. Good understanding of English. Studies at a University or polytechnic
Is interested in the local news and happenings, especially leisure and events. Also interested in the Finnish culture and Finland in general.
Gets their information from the school, SOME and friends. Would want to follow local news in English.

Problem (assumed) worth solving:

Might have some information on local customs, culture, news or events through his/her school

Main group? ☒

Why/why not?

Is interested in getting information on local news, events and happenings

---

Group name: **Other immigrants**

Description:

18-65 year old man or woman.
Refugee, asylum seeker or other, such as a relative. Language skills differ. Studies finnish language and culture in the basic courses meant for immigrants
Is interested in the local news and happenings and would want to follow them in english or in his/her native language
Gets some information from school, SOME or friends

Problem (assumed) worth solving:

Is frustrated because there are no trustworthy news sources that deliver understandable local news. Doesn't necessarily feel like he/she belongs to the Finnish society, because can't keep up with daily news and events. Is in risk of social exclusion

Main group? ☐

Why/why not?

Lives in a bubble made up of his/her own nationality and culture. Might not be interested in local news or culture.

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Appendix 11: Insight canvas

INSIGHT – Deep understanding of the customer's motivations that unlocks a business opportunity

Insert problem interview script here

- Introduction
- Setting the atmosphere
- The actual data gathering
- Ending
- Immediate thoughts

Example "Problem interview" script

Welcome (2min)
Short intro what you are doing. Make the person comfortable.

Essential demographics

Motivations and big picture
Without talking about the solution get the person to talk about the problem on hand and ask why... (" ask the person to describe when did she last time have an IT problem? What did she do to fix it? What were the pain points? Why did she do as she did? Follow contradictions...")

Ask the person to evaluate the problems associated to the topics:
Problem 1–3:
How important?
How big problem?
How is it solved currently?

Thank you!

ASK WHY.

Name: Immigrant student

Needs + other key findings:	Thinks and feels:	Surprised us:
Would like to read about local news and events	Feels frustrated from not having access to understandable local news and happenings	Local sports news wasn't considered very interesting by anyone

Name:

Needs + other key findings:	Thinks and feels:	Surprised us:

Name:

Needs + other key findings:	Thinks and feels:	Surprised us:

Name:

Needs + other key findings:	Thinks and feels:	Surprised us:

Name:

Needs + other key findings:	Thinks and feels:	Surprised us:

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Appendix 12: Ideation canvas

IDEATION

**Ideas that solve
the customer
problem**

Local news sources
Teaching the language through an online service
Receive news about the topics you want (possibility of
suggestions)
Central platform (community) in your own language
Giving feedback on content: teaching the system + and –
Suitable newscasts curated for target groups

Content filtering by subject area
"Background information" additional
information in connection with the news
(place, people, weather, traffic)
In connection with the story, "other
interesting / related stories"
sports data
Eliminate the language barrier with
translation
Combining useful information

Language barrier (translation)
Risk of exclusion

Boredom

**Customer's
Problem Worth
Solving**

Write it down on a high enough level
so that your ready made idea is not
the only solution to it.

Content filtering
Emphasis on interactivity
Useful information

Not aware of local issues

**Ideas that fix,
eliminate or reduce
the customer's pain**

Negative emotions/aspects
related to the customer need

Positive emotions/aspects
related to the customer need

**Ideas that take
the best out of
the positive**

Fear of missing out
Misunderstanding: language,
context, where, who
Apathy, cynicism, frustration
Powerlessness, unawareness,
ignorance, incoherence

Integration
Turku will become more familiar and homely
A more positive attitude towards society
"Life carries"
The feeling of success
Feeling of togetherness
Empowerment, success, pride, self-worth,
freedom, awareness, relief

Increasing awareness of the existence of the
service
Simplicity
Content suitable for different cultures
The possibility to tell about problems
A community to discuss and belong to

Recommendation
Someone shows an open interest in foreign
languages
Empowering news from your reference group:
"successes"
Community spirit

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Appendix 13: Concept and Value Proposition canvas

CONCEPT AND VALUE PROPOSITION

Concept name?

Multi-lingual local news service

How does it work?

What
A multilingual local news service website which delivers news from Turku and the neighbouring area in different languages.

For who
Target audience will be the non-Finnish speaking population in Finland.

How
The content will be automatically generated by combining, refining and building upon data from different sources (incl. language, traffic, weather, sports, statistics and event feeds) using an AI. The language of the website will be automatically customized to match the language of the visitors browser. You will also have the option to change the language manually. Language translations will use Google Translate at the back-end of the service.

In the future, the quality of the content and the translations will be improved by crowd sourced teaching of the AI, carried out by different language communities around the service. The service will also be designed to encourage learning of the Finnish language by an integrated dictionary which enables users to see the meaning of different words and phrases. Some articles can also include related information on the history and culture of the Turku area or Finland in general.

Value to the end–user?

Increases knowledge of the nearby area and promotes cultural understanding, which builds a feeling of belonging and boosts integration to Finnish society. Empowers and enlightens individuals and prevents social exclusion.

What differentiates it from other solutions to the same problem?

Content is local and the client's knowledge in delivering news from the Turku area is strong. There's no language barrier for audiences that don't understand Finnish. Production of news is at the hands of an experienced and reliable news media. The service also promotes learning Finnish language.

Value to our business?

This is a totally new line of business with a new target audience and new possibilities in advertising. Being able to deliver news to this previously forgotten target audience boosts client's brand as a responsible news media.

Written value proposition:

Headline:

Stay up to date on current local news and events in your own language!

Description

Multilingual local news service that increases knowledge of the nearby area and promotes cultural understanding, which builds a feeling of belonging and boosts integration to Finnish society. Empowers and enlightens individuals and prevents social exclusion.

Main points:

- Stay up to date on current local news and events

- Learn Finnish customs, culture and language

- Feeling of belonging to Finnish society and local area

- Better integration to the Finnish society and culture

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Appendix 14: Profiling the Concept canvas

PROFILING THE CONCEPT – It's time to face the wet blanket

Good idea?
Best ever!

Problem worth solving?
Insight driven

How new idea?
Fresh and unique

Right customer group?
Perfect fit

Easy to copy?
Very hard

Process driven

Sorry to say, it sucks!

Conservative

Easy

Value proposition:
Multilingual local news service for non-Finnish speakers to increase knowledge and promote cultural understanding. Builds a feeling of belonging and boosts integration to Finnish society. Empowers and enlightens individuals and prevents social exclusion.

How does it work
News website where local news from the Turku region are delivered in several languages, automatically translated and moderated.

Fits our strategy?
Perfect fit

Doesn't fit

Doesn't fit

Competition
None

Hard

Fits our brand promise
Perfect fit

Doesn't fit

Doesn't fit

Low

Return of invest
High

Too big/risky

Complex

Fits our vision
Perfect fit

Straight forward

Implementation

No problem

Financing

SHOULD WE PROCEED?

No! — We have to iterate — Yes!

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Appendix 15: Fake Advertisement canvas

FAKE ADVERTISEMENT – The value proposition prototype

WHAT IS THE FIRST TWEET WE SEND TO LAUNCH THE NEW PRODUCT?

"Regional news from Turku now available in your language!" [in different languages]

HOW DO USERS FEEL WHEN THEY USE THE PRODUCT?

It feels like home. They feel accepted and catered to. They feel that finally there's something for them. They feel empowered and enlightened.

WHAT IS THE BRAND PERSONALITY?

Modern, easy to use cutting-edge technology that makes your life easier. Trustworthy and not elitist in any way – just like Japanese made cars. Empathic and considerate, something that's always there for you. A jolly, old golden retriever that helps those in need.

FAKE ADVERTISEMENT
THE FIRST PROTOTYPE

Local photo or video, lots of different people, from different cultures, interactions, events.

Picture

Caption

Headline

Copy

Sparring questions for a great value proposition and fake ad:

- Is it clear and focused?

- Is it written in consumer language?

- How is it inspirational? Does it generate emotion? What is it that would motivate people about this proposition?

- Is it fact based?

- Will it make the target consumer react because it has touched a nerve and is relevant?

- Does it really stand out? Is it different? What key elements are different? (Simplicity, price, looks…)

- What are the proof points that back up the value prop and give substance to the proposition?

- Does it fit with your brand?

- Does it address the agreed business objective?

- Is it actionable and does it lead to inspiring and differentiated communication?

FAKE IT TILL YOU MAKE IT.

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Appendix 16: Customer Engagement canvas

CUSTOMER ENGAGEMENT – How do we make people advocate the service

AWARENESS

Prelaunch-marketing in SOME (expat & immigrant support groups), schools, workplaces, sports teams, immigrant influencers, religious groups, Gvt. / city officials (immigration), news medias, Google

2. WHAT ENABLES

ADVOCATE

Content is easy to share (SOME, chat apps, email & other modern channels). Relevant & interesting content.

Users (immigrants) are involved in service creation and they want to advocate it.

Engaging headlines and news articles that people will share. Incentives for advocating the service (ad space for companies etc.)

Remarketing via Google Ads & SOME, newsletter, interesting & relevant and personalized content that is beneficial to the life of the user (research backed)

USE MORE

UX designed to make users stay (guiding to read other articles). User research, usability testing, analytics.

Interesting offers (surveys, tests, free stuff), testimonials of influencers. Valuable and highly relevant content: involve users and listen to what they want

USE

1. WHAT PREVENTS

Language barrier and cultural differences. Some immigrants being cut off from society and therefore unreachable.

Irrelevant, irregular and low amount of interesting content, bad UX (style, usability, performance). Bad functionality, bad translations

Irrelevant, irregular and low amount of interesting content, bad UX (style, usability, performance). Bad functionality, bad translations

Content / offering is not enticing and engaging enough. Bad functionality of the service. Slow loading speeds.

Low findability of the news site or People don't care about news.

ENGAGEMENT

Networking and marketing in channels the target audience use often as listed in Awareness

People who want to read news are easily engaged just by providing an linguistically accessible news servie for them

People who don't care about news: try to find things they care about and write news about them

PURCHASE

Key activities:
What Key Activities do our Value Propositions require?
Our Distribution Channels?
Customer Relationships?
Revenue streams?

Writing news articles and moderating content translations. Developing and upkeep of the service platform. Dialogue with users. Building and maintaining networks of volunteers & other immigrant stakeholders. Customer service for answering questions and helping users with premium features.

Key resources:
What Key Resources do our Value Propositions require?
Our Distribution Channels? Customer Relationships?
Revenue Streams?

Strong brand and editorial expertise and resources, including journalists and infrastructure. HR: Journalists, translators, developers, designers and customer service specialists.
Funding and/or enough revenue sources from ads. Upkeep costs of the platform (hosting, integrations, 3rd party services etc.).

Key partners:
Who are our Key Partners?
Who are our key suppliers?
Which Key Resources are we acquiring from partners?
Which Key Activities do partners perform?

Journalists, translators to help with the content. Technological partners helping improve the AI tools and functions.
Volunteers who work with immigrant and foreigner communities to improve and market the service. Immigrant communities. Schools, workplaces that have immigrants. Municipalities and immigration officials.

This canvas has elements from the Business Model Canvas (originally by Strategyzer AG).

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Appendix 17: Business Model & Market Size canvas

BUSINESS MODEL & MARKET SIZE – Making sure there is the business

REVENUE ESTIMATES FOR Google Adsense

- Users: 1 000 (estimate)
- Sessions / user: 5 (analytics)
=> Visits: 5 000 (calc)
- Page views / user 5 (analytics, lowered estimate)
=> 25 000 views / month (calc)
- Click-through rate (CTR): 0.46 %
- Cost per click (CPC): 0.57 €
Monthly AdSense revenue: 66 € (792 /y)

2ND YEAR
- Users: 3 000 (estimate)
- Sessions / user: 8 (estimate)
=> Visits: 24 000 (calc)
- Page views / user 6 (analytics)
=> 144 000 views / month (calc)
- Click-through rate (CTR): 0.46 %
- Cost per click (CPC): 0.57 €
Monthly AdSense revenue €: 378 € (4 536 /y)

3RD YEAR
- Users: 5 000 (estimate)
- Sessions / user: 10 (estimate)
=> Visits: 50 000 (calc)
- Page views / user 6 (analytics)
=> 300 000 views / month (calc)
- Click-through rate (CTR): 0.46 %
- Cost per click (CPC): 0.57 €
Monthly AdSense revenue €: 787 (9 444/y)

4TH YEAR
- Users: 8 000 (estimate)
- Sessions / user: 15 (estimate)
=> Visits: 120 000 (calc)
- Page views / user 6 (analytics)
=> 720 000 views / month (calc)
- Click-through rate (CTR): 0.46 %
- Cost per click (CPC): 0.57 €
Monthly AdSense revenue €: 1 888 (22 656/y)

5TH YEAR
- Users: 10 000 (estimate)
- Sessions / user: 20 (estimate)
=> Visits: 200 000 (calc)
- Page views / user 6 (analytics)
=> 1 200 000 views / month (calc)
- Click-through rate (CTR): 0.46 %
- Cost per click (CPC): 0.57 €
Monthly AdSense revenue €: 3146 (37 757/y)

Who pays whom? How much?

1. Google Adsense: Pays us from ad placements on the platform.
2. Donations from users
3. Sponsorships from companies Pays us for tailored, sponsored content on the platform.
4. Support from the gov / city Pays us to aid integration of foreign population

Users could pay:
Subscription fee (small fee)
Memberships for premium features (would need to be developed and maintained, bringing extra costs)

Total addressable market:

Foreign language speakers in Finland Proper: 35 809 of which 76,5% are 15-64yrs old = 27 394 people in total
Growth rate ~2 000 (1 520 15-64yr old) people / year
(see Chapter 5.3. Data)

(Number of Finnish and Swedish speakers could be included here too)

Potential target market:

70% of the 4000 exchange students in Turku = 2800 and 40% of the 27 394 foreign language speakers aged 15-64yrs in the region (excl. the 4000 exchange students) = 9 358

Estimated potential: 12 158 people
(see Chapter 5.3. Data)

What is the revenue model?

Primary:
1. Google Adsense

Optional / supplementing:
2. Donations from users
3. Sponsorships from companies
4. Support from the gov / city to aid integration etc.

6. Optional: Memberships for premium features, such as language learning etc (features would need to be developed and maintained, bringing extra costs)

1st year sales:

See left hand side of canvas

Plan for 1st month sales:
How much? How? To whom? Who?

Google Adsense
- Users: 1 000 (estimate)
- Sessions / user: 5 (analytics)
=> Visits: 5 000 (calc)
- Page views / user 5 (analytics, lower estimate)
=> 25 000 views / month (calc)

- Click-through rate (CTR): 0.46 %
- Cost per click (CPC): 0.57 €
Monthly AdSense revenue: 66 €

How are customers paying today? How much?

Using Google Translate to manually translate new from YLE and smaller regional news companies is the only way to access local news from Turku region in other languages than Finnish. It's free, but laborious due to separate news sources and manually using Google Translate for the news pages.

Where and how do you anchor the price perception?

The service is free, like the old, more laborious way of manually translating from different sites, but it's much more convenient as the service provides a comprehensive source of automatically translated local news on the same website.

Cost structure?

Development: 50 000 € (roughly actual costs)
Maintenance & dev 1st year: 50% of 40 000 € = 20 000 €/y (*)
Maintenance & dev past 1st year: 15% of 40 000 € = 6 000 €/y
AI licenses: free MIT, Creative Commons 3.0 & Apache 2.0
Google Platform: 413 €/mo = 4 956 €/y (actual)

Client HR (tech, editorial) costs during development: 25 000 € (client estimate based on actual costs)
HR costs for 1 employee for marketing and networking: 46 000 €/y (estimate)
Marketing: 1 000 €/y (estimate)

*www.fiercewireless.com/developer/maintaining-app-critical-to-its-overall-success

Key elements for EBIT?

Google Adsense is the most viable revenue stream, as it's a sure thing with enough visitors, and it's easiest to set up and maintain (compared to funding from partners or government, which need networking, applications filed, reports and other bureaucracy).
The downside is that the target audience consists largely of low-income individuals and therefore might not be very appealing to marketers.

The canvas has elements from the Business Model Canvas (originally by Strategyzer AG).

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Appendix 18: Profit and loss calculations

Locali Turku Profit and Loss (P&L) Statement (Eur €)						
	2020	**2021**	**2022**	**2023**	**2024**	**2025**
Google Adsense revenue		792,0	4 536,0	9 444,0	22 656,0	37 757,0
Potential revenue stream 2						
Total Net Revenue	**-**	**792,0**	**4 536,0**	**9 444,0**	**22 656,0**	**37 757,0**
Gross Profit	**-**	**792,0**	**4 536,0**	**9 444,0**	**22 656,0**	**37 757,0**
Expenses						
Marketing & Advertising	1 000,0	1 000,0	500,0	500,0	500,0	500,0
Software maintenance		20 000,0	6 000,0	6 000,0	6 000,0	6 000,0
Amortization	10 000,0	10 000,0	10 000,0	10 000,0	10 000,0	10 000,0
Salaries, Benefits & Wages	25 000,0	46 000,0	46 000,0	46 000,0	46 000,0	46 000,0
Telecomm. (Google Platform)	450,0	450,0	450,0	450,0	450,0	450,0
Total Expenses	36 450,0	77 450,0	62 950,0	62 950,0	62 950,0	62 950,0
Earnings Before Interest & Taxes	**(36 450,0)**	**(76 658,0)**	**(58 414,0)**	**(53 506,0)**	**(40 294,0)**	**(25 193,0)**
Earnings Before Taxes	**(36 450,0)**	**(76 658,0)**	**(58 414,0)**	**(53 506,0)**	**(40 294,0)**	**(25 193,0)**
Income Taxes	(7 290,0)	(15 331,6)	(11 682,8)	(10 701,2)	(8 058,8)	(5 038,6)
Net Earnings (loss)	**(29 160,0)**	**(61 326,4)**	**(46 731,2)**	**(42 804,8)**	**(32 235,2)**	**(20 154,4)**

Appendix 19: Service Blueprint canvas

SERVICE BLUEPRINT

STEPS	BEFOREHAND	USING THE SERVICE	AFTER USE
	NOTICE, UNDERSTAND, BE TRIGGERED	DECIDE TO USE, FIRST USE, HELP WITH PROBLEMS	RELATIONSHIP BUILDING, STIMULATING RE-USE

USER

ACTIVITY — What does the user do in this step?

- Notices a share / post / ad on social media talking about the service.
- Gets interested in the news shared / ad talking about local news in their own language. Clicks the link to the service.
- Lands on the front-page and reads and scrolls around trying to find something interesting.
- Clicks an interesting news article and reads it
- Clicks rating button at the bottom of the page to give the article a rating score
- Finds another interesting news article at the bottom of the page. Clicks and moves on to the next article.
- Might click an interesting Ad displayed on the website through Google AdSense
- Shares an article on SOME (FB, Insta, Whatsapp) using the Share buttons on the website
- Only reads the next article partly. Moves around the site looking for interesting articles using menu and topic links on article pages
- Exits the site after jumping around on few pages without finding more interesting articles
- Bumps into a SOME share / post / ad of the service again elsewhere, or hears someone mention it

FRONT OFFICE

TOUCH POINT — What do the user and employee use for this?

- Facebook, Instagram, Whatsapp, other instant messaging apps
- Website of the service. Frontpage, News article pages, navigation elements such as the main menu, news article page links such as "other interesting articles", topic links etc.
- Facebook, Instagram, Whatsapp, other instant messaging apps

ACTIVITY — What happens here?

- Service is marketed (shared, advertised) in SOME by users sharing news articles or by the service owner's team.
- The website is loaded and the Frontpage is delivered to user's browser from the backend of the service.
- News article pages are loaded and delivered to user's browser from the backend.
- User rating activity is sent to the backend systems for processing
- Google AdSense ads are delivered to user's browser through Google AdSense connected to the site
- Website SOME share function posts the page on user selected SOME channel
- Service is marketed (shared, advertised) in SOME by users sharing news articles or by the service owner's team.

BACK STAGE

INTERNAL PROCESS — What do your employees or system do behind the scenes?

- Service owners plan and execute SOME marketing activities. They oversee the official service SOME accounts, interact with the audience, publish posts.
- Service owners plan and execute networking activities. They reach out to new potential sponsors and other affiliates & stakeholders, such as city / gov. entities & immigrant groups and organizations

Website backend processes are externalized on Google Platform

- News Articles and events imported from various news service XML feeds are stored in the Google Firebase -database. Firebase also provides front-end hosting and authentication.
- Google App Engine hosts and executes
  - importing and translating the news and events and saving them to Firebase Database
  - imports to Google BigQuery for AI processes.
- Google CloudSQL is used to store analytics from user activity collected using Google Cloud Functions.
- Calculations to articles imported from Firebase are carried out in BigQuery using the Article Ratings based on analytics imported from CloudSQL.
- A virtual machine instance in Google Compute Engine hosts and executes AI processes: creating the predicted ratings to new articles using the data in BigQuery.
- AI predicts the popularity of new articles based on user ratings given to similar articles. AI predicted interesting articles are displayed on the frontpage as "recommended news".
- Cron Jobs automate and optimize all backstage processes

- Service owners plan and execute SOME marketing activities. They oversee the official service SOME accounts, interact with the audience, publish posts.
- Service owners plan and execute networking activities. They reach out to new potential sponsors and other affiliates & stakeholders, such as city / gov. entities & immigrant groups and organizations

SUPPORT

EXTERNAL PROCESS — What happens in the ecosystem?

- Google AdSense connected to the backend of the website automatically identifies visitors and delivers ads personalized to them

Appendix 20: Concepting canvas

Appendix 21: Experimenting canvas

EXPERIMENTING – Finding the answers before building it..

IF THE CONCEPT/BUSINESS WON'T WORK IT FAILS DUE TO:

OUR MAIN ASSUMPTIONS	HOW TO EXPERIMENT	SUCCESS CRITERIA	KEY FINDINGS	
1. Foreign population in the region wants to use a news service which delivers news to them in their own language / in English.	Surveys carried out in different phases of service development. 1) Survey for potential users before development 2) Survey during Usability testing 3) Survey during Beta testing	More than 60% of users deem the service and its translated content desirable and valuable.	1st Survey: Foreign people want to follow local news in English. 23 respondents: Very interested 48%, Rather interested 48%. Usability test: 10/10 users would use and recommend this service. (100%)	Survey during beta test via Hotjar: - Service rated 3,4/5 by 27 users (68%) Online Survey after beta test: - 19/30 would recommend it (63,3%) - Content rated beneficial 5 by 35 users on scale 1-7 (worthless - very beneficial) (71%) - Service overall rated good 5,5 on scale 1-7 (useless - wonderful) (35 users) (79%)
2. The quality of Google translation technology is high enough to automatically translate Finnish news into other languages (or at least English) at a linguistically acceptable level (not having too many serious errors)	Fast & cheap: translate bunch of news content manually using Google Translate	Client's team decides whether the quality of translations is high enough, and whether bad translations pose brand & liability risks	Quality of translations deemed too low from Fin to all other languages, incl. Eng. Translations to other languages than Eng would require translators to review the quality. Translation errors published without manual moderation pose too big brand & liability risks for client	
3. In spite of badly translated news content, users (foreign population) will still deem the service desirable / valuable and want to use it.	Service MVP translating news with Google Translate engine is tested with users and feedback is gathered. Tests: - Usability testing - Beta test period for 1 month - Feedback via interiews & surveys	More than 60% of users deem the service and its translated content still desirable and valuable.	Survey during beta test via Hotjar: - Service rated 3,4/5 by 27 users (68%) Online Survey after beta test: - 19/30 would recommend it (63,3%) - Content rated beneficial 5 by 35 users on scale 1-7 (worthless - very beneficial) (71%) - Service overall rated good 5,5 on scale 1-7 (useless - wonderful) (35 users) (79%)	
4. New news content can be listed on the front page of the website based on AI predicted popularity, making the homepage more personalized.	Service MVP with this feature is built and tested	MVP which lists new news content based on AI predicted popularity is successfully built.	Feature succesfully built: - Recognize and recommend news articles like those that are deemed most interesting based on user interaction - The articles predicted most popular are shown as "Recommended News" in the front page of the service (from the past 72 hours)	
5. Service is economically viable to maintain	1) Map out interest among target audience with a survey 2) Build an MVP 3) Test it with users to gather insight on desirability 4) Make calculations / estimates for potential viability 5) Client will review the service, all understanding generated and decide	More than 60% of users deem the service and its translated content desirable and valuable. Financial calculations look positive. No considerable brand & liability risk involved because of bad translations.	Service was deemend desirable and valuable in user research by most users. Financial calculations didn't look positive with only 1 source of income (Google Adsense). Securing more sources of income wasn't explored.	Translation errors posed too big brand & liability risks for client.

DO YOU THINK? DO YOU KNOW? DID YOU CHECK?

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Appendix 22: Minimum Lovable Product canvas

MINIMUM ~~VIABLE~~ LOVABLE PRODUCT – nothing but the essential

What is in the MVP?

ASK WHY.

1) Service functionality:
Local news content from various Finnish news feeds translated into English using Google Translate at the back-end of the service.

Site user interface and use is similar to other online news services:
E.g. News can be navigated via menu, traditional links and news category (topic) tag links along the news article pages, as well as Recommended articles links at the bottom of each news article page. News are listed on the homepage by popularity and recency.

1) Why the service functionalities:
These were deemed the most basic functions an online news service should have to be worth using. The team benchmarked other news sites and reflected on how they have used news sites in the past and found that these functionalities were the ones they recognized they were using the most, while many other functionalities might have not been used at all or not enough to be worth developing.

2) AI-powered personalized news listings:

- **Crowdsourcing**: users can vote how they feel about articles by clicking one of 3 choices: irrelevant, useful, interesting
- **Data-driven**: custom web analytics tracking gathers data of how users interact with the news content (active time spent on article page)
- **AI-powered**: AI learns news article popularity from user votes and web analytics data and predicts popularity of new, still unpublished, news content. AI predicted popular news are listed in "Recommended news" section.

2) Why these AI features:

The original aim was to utilize AI in the news service. This set of features and technologies was deemed by the technological development team to be plausible enough to be successfully built in time.

3) Multilinguality (FI/EN/SE):
The language of the website content and user interface can be automatically translated from Finnish into English and Swedish

3) Why the languages:
The original aim was to create a multilingual news service to cater to the needs of the local multilingual foreigner community. There were no foreign language speakers in the team or available for use, so the team had to proceed with just by using English and Swedish, for which the team had good enough proficiency to validate translation quality.

What is not in the MVP?

ASK WHY.

1) Improving content translations through crowdsourcing with the help of various foreigner communities. Active users who are verified language speakers can provide error correction suggestions directly on the page content and teach the AI to improve its automatic translations.

2) Finnish language learning through news content via an integrated dictionary, which enables users to read about the meaning of different words and phrases

3) Multilinguality:
The language of the website content and user interface will be automatically customized to match the language of the visitor's browser.

1, 2, 4, 5) Why not:
Building features like allowing user interaction with the content, a system to verify different language speakers, an integrated dictionary, database of related information was deemed too cumbersome and costly.

4) AI automated writing & publishing of news content: weather, traffic information & sports news articles can be automatically written (generated) by AI by feeding it equivalent data, such as sports results or weather data.

5) Related information on news articles (cultural, historical, economic, political etc.) for teaching purposes.

3) Why not:
The team only had proficiency in English and Swedish, and using external people proficient in other languages would've been too costly and difficult.
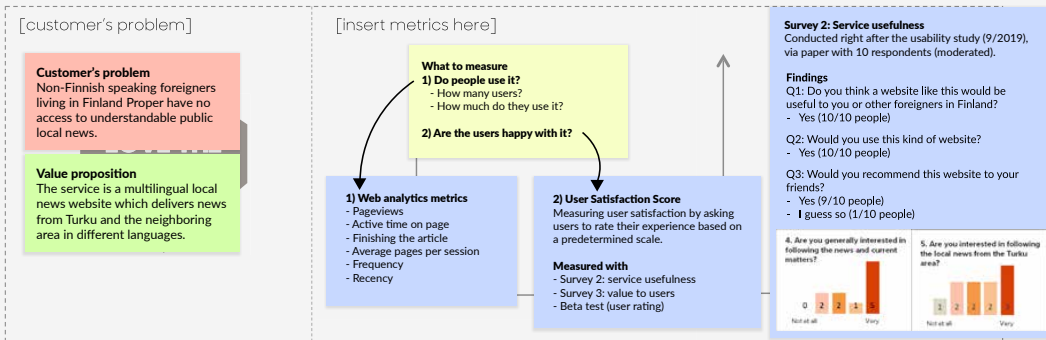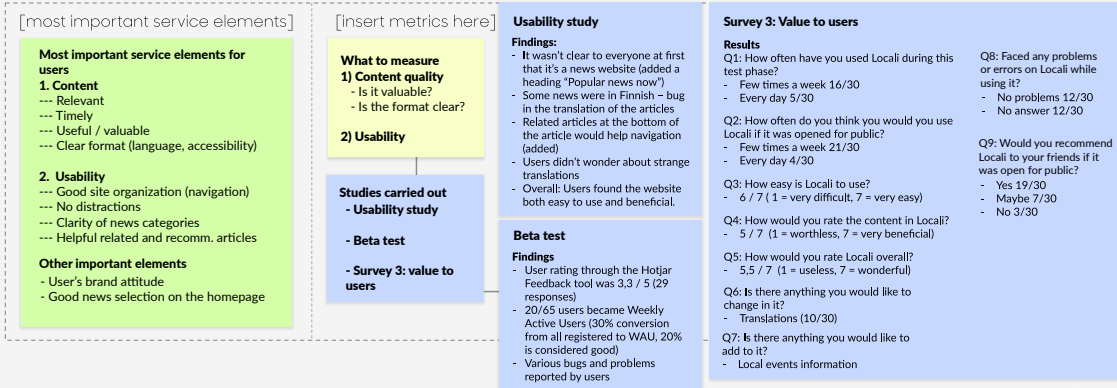
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Appendix 23: What to Measure canvas

WHAT TO MEASURE – MVP is out. What to measure to make it rock?

VALUE PROPOSITION METRICS

[customer's problem]

Customer's problem
Non-Finnish speaking foreigners living in Finland Proper have no access to understandable public local news.

Value proposition
The service is a multilingual local news website which delivers news from Turku and the neighboring area in different languages.

[insert metrics here]

What to measure
1) Do people use it?
 - How many users?
 - How much do they use it?

2) Are the users happy with it?

1) Web analytics metrics
 - Pageviews
 - Active time on page
 - Finishing the article
 - Average pages per session
 - Frequency
 - Recency

2) User Satisfaction Score
Measuring user satisfaction by asking users to rate their experience based on a predetermined scale.

Measured with
 - Survey 2: service usefulness
 - Survey 3: value to users
 - Beta test (user rating)

Survey 2: Service usefulness
Conducted right after the usability study (9/2019), via paper with 10 respondents (moderated).

Findings
Q1: Do you think a website like this would be useful to you or other foreigners in Finland?
 - Yes (10/10 people)

Q2: Would you use this kind of website?
 - Yes (10/10 people)

Q3: Would you recommend this website to your friends?
 - Yes (9/10 people)
 - I guess so (1/10 people)

4. Are you generally interested in following the news and current matters?

0   2   2   1
Not at all   Very

5. Are you interested in following the local news from the Turku area?

1   2   2   2
Not at all   Very

SERVICE METRICS

[most important service elements]

Most important service elements for users
1. Content
--- Relevant
--- Timely
--- Useful / valuable
--- Clear format (language, accessibility)

2. Usability
--- Good site organization (navigation)
--- No distractions
--- Clarity of news categories
--- Helpful related and recomm. articles

Other important elements
 - User's brand attitude
 - Good news selection on the homepage

[insert metrics here]

What to measure
1) Content quality
 - Is it valuable?
 - Is the format clear?

2) Usability

Studies carried out
 - Usability study

 - Beta test

 - Survey 3: value to users

Usability study
Findings:
- It wasn't clear to everyone at first that it's a news website (added a heading "Popular news now")
- Some news were in Finnish – bug in the translation of the articles
- Related articles at the bottom of the article would help navigation (added)
- Users didn't wonder about strange translations
- Overall: Users found the website both easy to use and beneficial.

Beta test
Findings
- User rating through the Hotjar Feedback tool was 3,3 / 5 (29 responses)
- 20/65 users became Weekly Active Users (30% conversion from all registered to WAU, 20% is considered good)
- Various bugs and problems reported by users

Survey 3: Value to users
Results
Q1: How often have you used Locali during this test phase?
 - Few times a week 16/30
 - Every day 5/30

Q2: How often do you think you would use Locali if it was opened for public?
 - Few times a week 21/30
 - Every day 4/30

Q3: How easy is Locali to use?
 - 6 / 7 (1 = very difficult, 7 = very easy)

Q4: How would you rate the content in Locali?
 - 5 / 7 (1 = worthless, 7 = very beneficial)

Q5: How would you rate Locali overall?
 - 5,5 / 7 (1 = useless, 7 = wonderful)

Q6: Is there anything you would like to change in it?
 - Translations (10/30)

Q7: Is there anything you would like to add to it?
 - Local events information

Q8: Faced any problems or errors on Locali while using it?
 - No problems 12/30
 - No answer 12/30

Q9: Would you recommend Locali to your friends if it was open for public?
 - Yes 19/30
 - Maybe 7/30
 - No 3/30

BUSINESS METRICS

[your business goal]

Business goals
1) Increased reach, new business segment & new opportunities with a new demography.

2) New potential for ad revenue.

3) New Technology to enable the client to compete with international news companies.

[insert metrics here]

What to measure
1) How many people read the news? How actively? Do they spread them? Are they happy users?

2) Ad sales revenue on Google AdSense

3) Client review & happiness of the technology suitability for their purposes

Other metrics:
 - Ad sales revenue (Google AdSense)
 - Service awareness & public discourse
 - Client happiness

Web analytics metrics
 - Number of unique users (reach)
 - Number of new and returning (active) users
 - Active time spent on site
 - Number of shares on SOME

Other metrics:
 - User satisfaction & feedback (surveys 2&3)

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