Technology-based service experience:

Creation and evaluation of emergency ambulance services

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Abstract

With the rapid development of communication technology and the spreading of mobile devices, mobile applications are involved in people's everyday life. Technology provides designers with both challenges and possibilities. Service designers also embrace technology to create service systems for better experiences. This study investigates how to improve the emergency ambulance service experience in Rovaniemi with a technology-based service system. A mobile application was designed and tested. The cyclical action research process includes an online questionnaire survey (N=23), semi-structured interviews (N=6) as generative research, and a service prototyping workshop (N=4) as evaluative research. The results from generative research indicate the need for information communication during emergencies, while the results from evaluative research provided more insights for future iteration design. Based on the research data and design outcomes, the study concludes a framework of how to design a technology-based service system by combining service design and UX design.

Keywords

Service design, user experience, emergency ambulance service, mobile application, service prototyping, action research

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1. Introduction

1.1 Purpose of the study and research objectives

Lapland is the least densely populated area of Finland and Rovaniemi is one of the largest towns in this area. As part of the arctic area, the winter here can last as long as seven months in a year. Polar days and polar nights happen in this land.

The language system in Lapland is complex. People speak Finnish, Swedish, and a variety of indigenous Sami languages. Besides, Rovaniemi is a popular tourism city for its unique natural features and the culture of Santa Clause. It welcomes tourists from all over the world who speak different languages.

The emergency rescue and ambulance service in Rovaniemi face challenges from the arctic context, extreme weather, darkness, long-distance, isolation, and multiple language environment. Foreign residents and visitors need to learn about the special emergency frameworks in case of severe situations. For example, the only emergency reporting number 112 deals with the fire department, the police, and ambulances. There are also special regulations such as pedestrians must wear reflectors at night.

Technology is used in the healthcare sectors in Finland. The Finnish Electronic Patient Record System (KanTa) collects citizens' medical records and prescriptions and send the information to entities within the healthcare system (Kanta, 2019). Although privacy laws ensure citizens' rights to dominate their personal data, the information delivery in special occasions as emergencies is under development.

Service design is a multi-disciplinary field that aims to create or improve experiences for both customers and organizations (Moritz, 2005; Mager, 2007). It is human-centered and co-creative with an iterative design process (Stickdorn et al. , 2017). Service designers work with a rich toolkit for ideation, visualization, and prototyping. This design area not only deals with business cases but also serve for public services (Polaine, Lovlie, and Reason, 2013).

User experience (UX), a term of the Human-Computer Interaction (HCI) field, refers to the experiences when users interacting with interfaces (Law et al. , 2009). The measurement of UX contains both pragmatic and experiential dimensions (Kotola & Roto, 2008). Emotional values play an important role in the design of UX.

In the age of technology booming and mobile devices spreading, service design occupies technology for more possibilities of touchpoints and offerings. Technology-based services refer to services used with software or hardware. It focused on machine-machine interaction and human-machine interaction. Human-human interaction is always absent (Sandström et al. , 2008). Thus user interfaces become the main touchpoints.

In a technology-based service system, the service experience includes user experience. Service experience includes all stakeholders' experiences at both frontstage and backstage. The experience starts from when users getting in touch with the experiences and extend after the end of the services (Stickdorn, 2011).

Service prototyping simulates service experiences to create opportunities for co-creation and iteration. The prototyping methods are demanded. UX design and especially mobile applications also have its testing methods and measurements. In order to test a technology-based service system, the two approaches should be combined.

This research studies the experiences of emergency ambulance services in Rovaniemi from the customer's perspective and aims to improve the service experience with technology approaches. The value creation and the prototyping workshop are the centers of the research. The study also seeks to develop a framework to create and test technology-based service experience.

1.2 Research questions and research approaches

In this research, the emphasis is put on emergency ambulance service experiences in Rovaniemi. The design approaches are both service design and UX design. Thus, the research questions are:

1. What are the needs of the emergency ambulance service in Rovaniemi and how can technology play a role in addressing these needs? What kind of functions should be designed for a digital application within an emergency service context
2. What kind of service design and prototyping tools can help visualizing and testing the technology-based service system?
3. How can technology-based service systems for health-based emergency sectors be created and evaluated?

This research used mixed methods approaches, and collected both qualitative and quantitative methods. The strategy of this study is action research, which includes participants into a cyclical research process addressing a particularly problematic situation (Herr & Anderson, 2004). There are three action cycles (Kemmis, 1982) in this research: questionnaire cycle, interview cycle, and workshop and interview cycle, and each of them includes different participants. The results of each phase influenced the next plan and informed follow-up research actions.

In this research, data were collected from an online questionnaire survey, semi-structured interviews, mapping, a role play workshop, a focus group discussion with paper questionnaire. The quantitative data, texts, notes, audio recordings and sketches are analyzed with content analysis and a statistical approach. The process of content analysis includes open coding, categorizing and making abstraction (Elo & Kyngäs, 2007). Statistical analysis determines the relationships between two variables (Patten, 2016).

1.3 Limitations of the study

The research studies emergency ambulance services based on participants' real-life experiences. The insights and feedbacks are analyzed from customers' perspective. The other

stakeholders' experiences are not included. Also, the study is based on Rovaniemi and its arctic context. Whether the findings can be applied into wider context is to be studied in the future.

1.4 The research team and roles of researchers

The research team includes three researchers who were all master's degree students of service design. Yuanyuan Zhang (the author) and Si Shi co-worked for the whole project of generation and evaluation phases, while Hossein Tabandehpour participated in the generation process. The cooperation brought both graphic design skills and service design knowledge to the research.

Team working made data collection more efficient and provided more insights. For example, in the semi-structured interviews, the sampling, interviewing, and transcribing were assigned to each researcher. In the prototyping workshop, the collaborative work allowed researchers to facilitate and document the workshop at the same time. Team meetings and several times of brainstorming generated new ideas for the study. Although working as a team sometimes leaded to conflict opinions, it also provided opportunities for achieving more holistic results.

While working on the same project, this thesis lays emphasis on the technical approaches and aims to improve information communication in emergencies. The thesis illustrates the creation and evaluation of a technology-based service system.

2. Literature Review

Introduction

This chapter of literature review is presented in two sections of each theme that is relevant to this research. The first section reviews the definition of related terms to user experience (UX). Then, it discusses the measurability of a product and how the assessment evolves from usability to UX. Last, different usability testing approaches of mobile applications are discussed and compared. The second section is about service design. It starts with the origin and definition of service design, followed by a discussion of how service design can improve different kinds of experiences. The end of this section reviews the benefits and methods of service prototyping.

2.1 User experience

2.1.1 Definition of user experience

With the developing of the field Human-Computer Interaction (HCI), the notion of user experience (UX) is frequently brought up. HCI researchers and practitioners are paying more and more attention to UX. However, before any approach or principle to "good" user experience, the definition of UX itself has not reached a common agreement. The complexity of its connecting concepts, unit of analysis and landscape (Law, Roto, Hassenzahl, Vermeeren, and Kort, 2009) restricts the experts to give a universal definition.

The IOS 9241-210 (2010) standards give a quite broad description on UX, "a person's perceptions and responses resulting from the use and/or anticipated use of a product, system or service". It comes with three notes as further explanation. Nilson and Norman's (2016) definition is in line with the view of IOS except that they replace "system" with "company" as one of the object. Law, Roto, Hassenzahl, Vermeeren, and Kort (2009) are in agree with the ISO definition but argue for more explanation. Hassenzahl and Tractinsky (2006) define UX as UX is

> a consequence of a user's internal state (predispositions, expectations, needs, motivation, mood, etc.), the characteristics of the designed system (e.g. complexity, purpose, usability, functionality, etc.) and the context (or the environment) within which the

interaction occurs (e.g. organizational/social setting, meaningfulness of the activity, voluntariness of use, etc.).(p.95)

All the four definitions agree that the subject of user experience is an individual person instead of an organization or a group of users. A group of people can experience together, but only each individual of the group can have the emotions, expectations and experiences (Law et al., 2009). However, Law et al. (2009), Hassenzahl and Tractinsky (2006) suggest that context and environment influence user experience, thus when sharing the same experience, a group or a community, as a contextual factor, sometimes affects the individuals' experience.

On the other hand, the notion of co-experience is emphasized by some researchers. Battarbee (2003) defines co-experience as the user experiences created in social interaction. The process fulfills participants' social needs of communication and creation. It also helps maintain relationships. Battarbee and Koskinen (2005) argue that the existing approaches to user experience neglect the social perspective of experiences. They show the possibility of people creating experience together via mobile multimedia technology. However, this research is not going to investigate the social interaction of the users. The individual experience and the contextual influences are the main focus.

ISO (2010) believes that UX should cover the phases before, during and after users' interaction. The definition emphasizes "anticipated use" which is related to the pre-interaction phase. Hassenzahl and Tractinsky's definition (2006) also includes users' expectations before interaction. In this period, users begin to know about the brand, the company, the product or the service from advertisement, media, or from other people. With or without the expectations, users come into the actual interaction period. They experience the product, service or system, and have various internal state or emotions. Law et al. (2009) suggest that it is worth investigating the long-term user experience after, even longer after the interaction. The post-interaction period prolongs the user experience. Users evaluate the produce, service or system by an overall user experience which covers the three periods.

As for the objects of UX, service, product, system and company are mentioned in different definitions. Law et al. (2009) argue the accuracy of the description and suggest to distinguish user experience from brand experience, product experience and service experience. They believe that brand experience is a broader concept than user experience. It influences users' expectation and attitude when interacting with a product of a certain brand. However, the influence is bidirectional. The user experience also changes a user's brand experience after interaction with its product. Product experience, on the other hand, is a narrower concept than user experience (Law et al., 2009). They define all products as commercial artifacts which can not cover either the non-commercial objects or intangible external systems.

Service is a quite wide concept which includes the interaction of human-human, human-machine, and even machine-machine. Both ISO (2010), Nilson and Norman (2016) do include the term service in UX definition. However Law et al. (2009) argue that only when user interact with a user interface in a service, can service experience be scoped to user experience. Thus, the service experience with only human-human or machine-machine interaction are not considered in the definition of UX. In conclusion, Law et al. (2009) narrows the definition of UX by only admitting the interaction between user and product, system, service or other objects via user interface (see Figure 2.1.1).

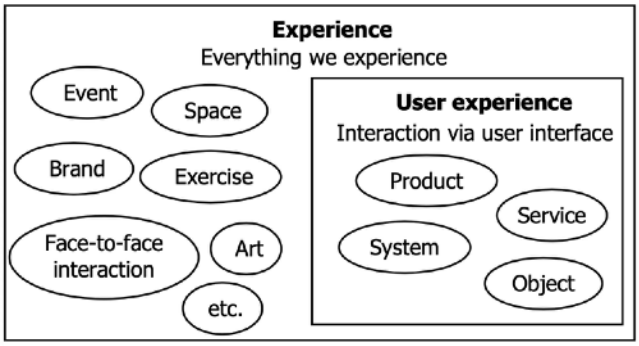


Figure. 2.1.1 UX in relation to other experiences that we can study
Adapted from "Understanding, Scoping and Defining User Experience: A Survey Approach " (p. 727) by Law, Roto, Hassenzahl, Vermeeren, and Kort (2009)

In this research, I agree with Law et al.'s definition of UX (2009), which is "dynamic, context-dependent and subjective, which stems from a broad range of potential benefits users may derive from a product" (p.727) to investigate user users' ongoing internal states and the

contextual influences before, during and after interaction with a service. The possibility of taking social as the subject of user experience is still worth discussion. Furthermore, the difference and connection of service, product and system need more definition

2.1.2 Usability and UX measures

Before the investigation of UX, HCD researchers practitioners measure a product mainly by its usability. However researchers do realize the importance of experiences, without specific definition, the design and research focus is still on usability. Gould (1988) describe good computer systems as systems that are "easy to learn, easy to use, contain the right functions, and are liked" (p. 300) and provides a practical four-step design process for usability. The description combines utility (or functionality) and usability, and emphasizes satisfaction.

Table 2.1.2

Measures of usability attributes

Appropriateness recognizability	Learnability	Operability	User error protection	User interface aesthetics	Accessibility
Description completeness	User guidance completeness	Operational consistency	Avoidance of user operation error	Appearance aesthetics of user interfaces	Accessibility for users with disability
Demonstration coverage	Entry fields defaults	Message clarity	User entry error correction		Supported languages adequacy
Entry point self-descriptiveness	Error message understandability	Functional customizability	User error recoverability		
	Self-explanatory user interface	User interface customizability			
		Monitoring capability			
		Undo capability			
		Understandable categorization of information			
		Appearance consistency			
		Input device support			

Note. **. adapted from "New ISO Standards for Usability, Usability Reports and Usability Measures" (p. 9) by Carter, Earthy and Geis (2016)

ISO (2010) defines usability as “the extent to which a system, product or service can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use”. ISO (2020) provides measures of usability: appropriateness recognizability, learnability, satisfaction, operability, User error protection, user interface atheistic and accessibility (see table 2.1.2).

Nilson and Norman (2012) claim that usability is a narrower concept than UX and define usability as a quality attribute to user interface. It assesses whether a user interface is “easy to learn, efficient to use, pleasant, and so forth” (Nilson and Norman, 2016). Usability consists of learnability, efficiency, memorability, errors and satisfaction (Nilson and Norman, 2012).

However, with the increasing concentration on user experience, the measures are broaden from pragmatic (easy and efficient) to experiential (delighting) (Kotola & Roto, 2008). Kotola and Roto’s empirical study (2008) seeks for useful measurements for UX. The results show that besides the design details, the measurements should focus on “how the different touch points between user and company are experienced along the product experience lifecycle” (p. 23). Compared to the measures of usability, it utilized the terms of touch point and product experience lifecycle to illustrate a holistic perspective of experiences. “Different touch points” emphasizes the variety of interactions between user and a company. “Product experience lifecycle” means the measures include the pre-using period, actual-using period, and post-using period.

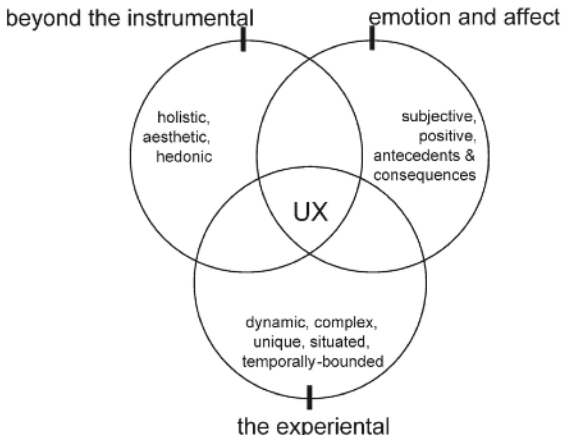


Figure 2.1.2.1 Facets of UX.

Adapted from “User experience - a research agenda” (p. 95) by Hassenzahl and Tractinsky (2006)

Hassenzahl and Tractinsky (2006) suggest that rather than solving problems, HCI should design for pleasure and create for users a quality life. Figure 2.1.2.1 shows users' interactions with technology from three perspectives. Hassenzahl (2008) assumes that the two dimension of human awareness of interactive products: pragmatic quality and hedonic quality. Pragmatic quality relates to the product's utility and usability, while hedonic quality focuses on the self needs such as personal growth, self expression and so forth.

Jordan (2002) argues that with the development of interactive products, users have expectation that products are easy to use. Hence a usable product can no longer surprise users. Instead, difficulties in using a product will disappoint users. Jordan (2002) points the limit of usability-based approaches and introduces pleasure-based approaches. Jordan (2002) illustrates a hierarchy of consumer needs (see Figure 2.1.2.2) based on Maslow's hierarchy of needs (see Figure 2.1.2.3).

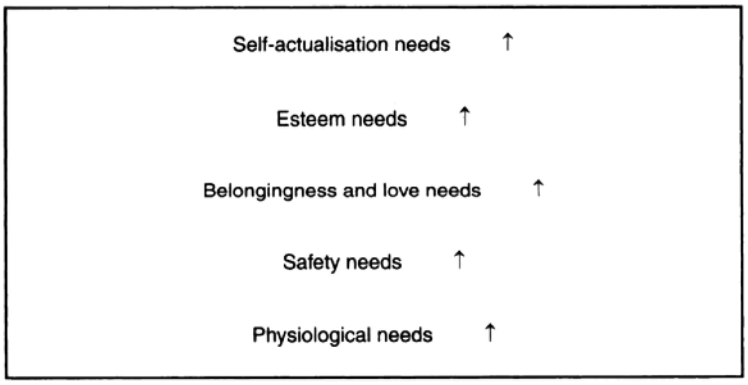


Figure 2.1.2.2 Maslow's hierarchy of needs

Adapted from "Designing Pleasurable Products: An Introduction to the New Human Factors" (p. 5) by Jordan (2002)

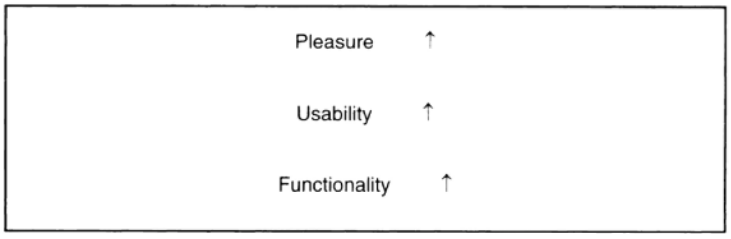


Figure 2.1.2.3 A hierarchy of consumer needs

Adapted from "Designing Pleasurable Products: An Introduction to the New Human Factors" (p. 6)) by Jordan (2002)

According to Jordan (2002), the fundamental level of consumer needs is functionality. Hence, in order to meet consumers' needs, a product should firstly have appropriate functions that can execute the task. The second level of consumer needs is usability. According to Nilson and Norman (2012), utility or functionality represents the feature users need, while usability means how easy and pleasant it is to use. A useful product, service or system combines usability and utility. After usability, users want to receive emotional benefits from the product, which is the level of pleasant (Jordan, 2002).

In conclusion, as usability evolving to user experience (Kotola & Roto, 2008), the assessment of a product, service or system should be broaden. As discussed in the definition of UX, the evaluation of it also can prolong into post-interaction period. Also, emotional perspective plays an essential role in the design for UX.

2.1.3 Usability testing of mobile applications

The rapid spreading of mobile devices leads to the advances and needs of mobile applications as well the methodologies to test their usability. Mobile applications are the software operating on mobile devices. They show benefits of rapid evolvement and can access to ubiquitous information in spite of time and location (Zhang & Adipat, 2009). Nayebi, Desharnais and Abran (2012) claim that the applications provide users with "portability, location awareness, and accessibility" (p. 1).

Usability testing evaluates the usability of a mobile application (Kaikkonen, Kallio, Kekäläinen, Kankainen & Cankar, 2005). Since mobile devices and their applications are involved in people's everyday life, the designing and developing methods of the products are changing from technology-oriented to user-oriented. To investigate the interaction between user and products helps understanding both of them (Nayebi, Desharnais & Abran, 2012). There are various HCI usability measures, as well as testing methods. However, besides the usability measures that are mentioned above, the features of mobile devices and the complexity using context require more consideration. For example, when designing usability testing of mobile applications, the researchers and practitioners should give thought to the "multi-touch gestures, device orientation changes, and location awareness" (Nayebi et al. , 2012), "mobile context, multimodality, connectivity, small screen size, different display

resolutions, limited processing capability and power, and restrictive data entry methods" (Zhang & Adipat, 2009, p. 3).

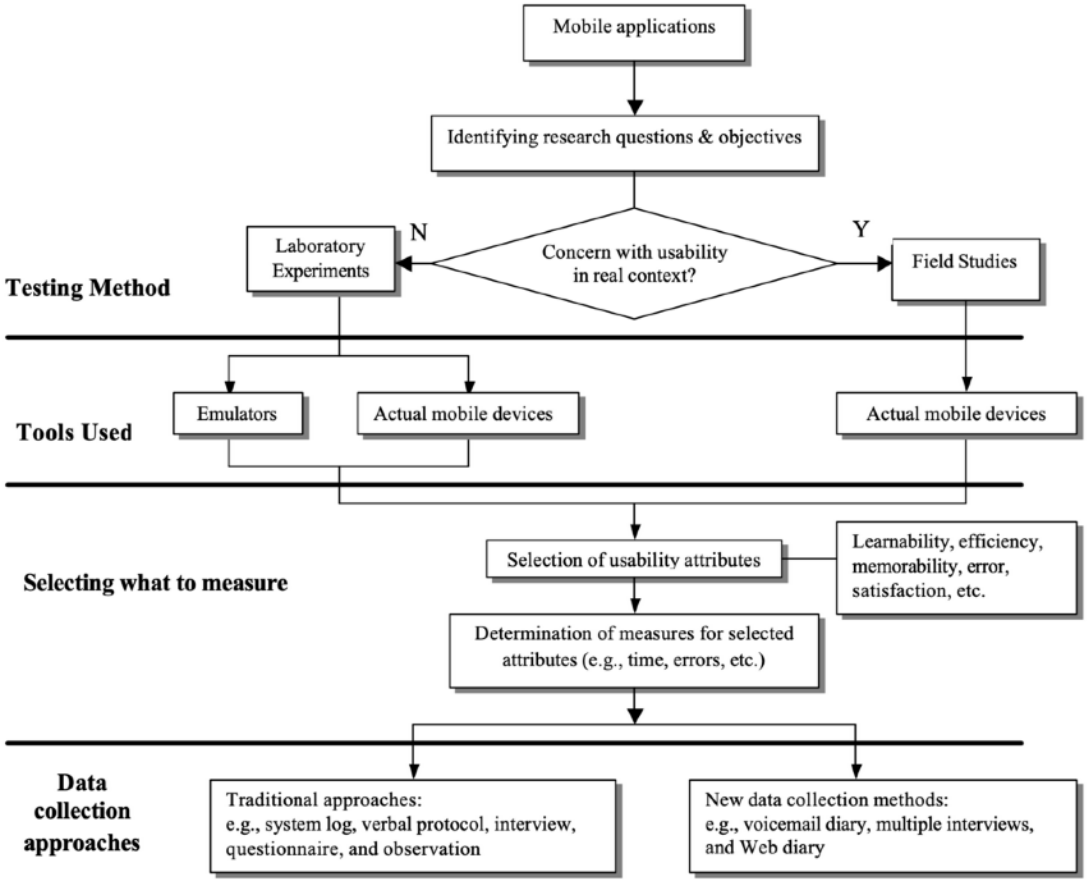


Figure 2.1.3 A Framework for the Design and Implementation of Usability Testing of Mobile Applications

Adapted from "Challenges, Methodologies, and Issues in the Usability Testing of Mobile Applications" (p. 28) by Zhang & Adipat (2009)

There are two major usability testing methodologies: laboratory experiments and field studies. Both methods have pros and cons. Laboratory experiments take place in the labs where users can interact with a mobile application following given tasks. The controllable environment ensures that the testing can cover all aspects of usability. Besides, it is more convenient for documentation. However, the laboratory environment differs from the real context and may reduce environmental influences in user experiences. It may also increase the cost (Nayebi et al. , 2012). On the other hand, field studies provide user with devices and

ask them to use it in the real environment. Researchers observe, take notes, and ask questions during the test (Nayebi et al. , 2012). This method studies users' interaction with an application under real context, but it cause difficulties in data collection (Kaikkonen et al. , 2005). Zhang & Adipat (2009) discuss the two approaches from their tools used, measures and data collection approaches (see figure. 2.1.3). Nayebi et al. (2012) refer to hands-on measurements, which quantitatively measure the usability of a mobile application, as a third guideline.

Kaikkonen, Kallio, Kekäläinen, Kankainen and Cankar (2005) comparative study compares laboratory experiments and field studies in usability testing of a mobile application. The results show no difference between the number and severity of problems found in both environments. However, the participants had more problems related to the application's logic in the field. Besides, the communication after the test between the moderator and the participants went more casual and participants were more willing to tell their feelings. The drawback of field studies is time consuming. Testing in the field cost twice the time in the lab. Hence Kaikkonen et al. (2005) suggest that testing user interfaces in the field is unnecessary. As for the environmental influences, the real environment, Helsinki metro and shopping center, did not affect the performance much. In this comparative study, field studies show little advantage of casual communication and action, but also cost more time than testing in labs. The restriction of location in the field testing leads to limitation.

Usability testing is necessary when design and iterate a mobile application. HCI measures, guidelines, and methods need to be adapted to meet the feature of mobile device, the diversity of operating environment, and the rapid advances of wireless technologies. Laboratory experiments and field studies both have advantages and disadvantages. According to my view, whether the tests taking place in the lab or the field, the two main factors for user testing are how close it can simulate the real condition and how specific the interaction can be documented. In complex situations, such as users encountering different touch points while using a mobile application, testing in a lab might be more applicable and economic.

2.2 Service design for experiences

2.2.1 What is service design?

Today, we are welcoming a booming service economy. Moritz (2005) claims that in most developed countries, service economy dominates the whole economy. The market is saturated with products, which need service design to create new value and competitiveness. Technology also creates new possibilities for services. Besides, individual human needs call for service design approaches (Moritz, 2005). Stickdorn, Lawrence, Hormess and Schneider (2017) emphasize the need for innovation in business leads to focusing on services.

Manzini (2009) defines services as “interactions that generate value. More precisely, they are interactions between people who cooperate to produce a commonly recognized value” (p. 45). Changing from product-oriented thinking to service-oriented thinking is the solution to the unsustainable environment and economic problems due to the continuous growing consumption. Manzini (2009) argues that products are no longer the hero, but act as “service evidence”. Product-service system (PSS) is a business model which combines intangible service, tangible products, supporting networks and infrastructure in order to be “competitive, satisfy customer needs and have a lower environmental impact than traditional business models” (Mont, 2002). Tukker (2004) proposes eight types of PSS according to the proportion of service content to product content.

Although service design attracts attention from researchers and practitioners, it is not easy to define this young field. Stickdorn (2011) says that if you ask ten people to define service design, you will get at least eleven different answers. It is not just a joke. Service design has complex origins and purposes, thus the concept is difficult to reach a consensus.

Moritz (2005) has a short but precise definition “service design helps to innovate (create new) or improve (existing) services to make them more useful, usable, desirable for clients and efficient as well as effective for organizations. It is a new holistic, multi-disciplinary, integrative field” (p. 6). This sentences clarify service design’s job, purpose, design objects

and characteristics. Different perspectives from clients and organizations are emphasized (see Figure 2.2.1).

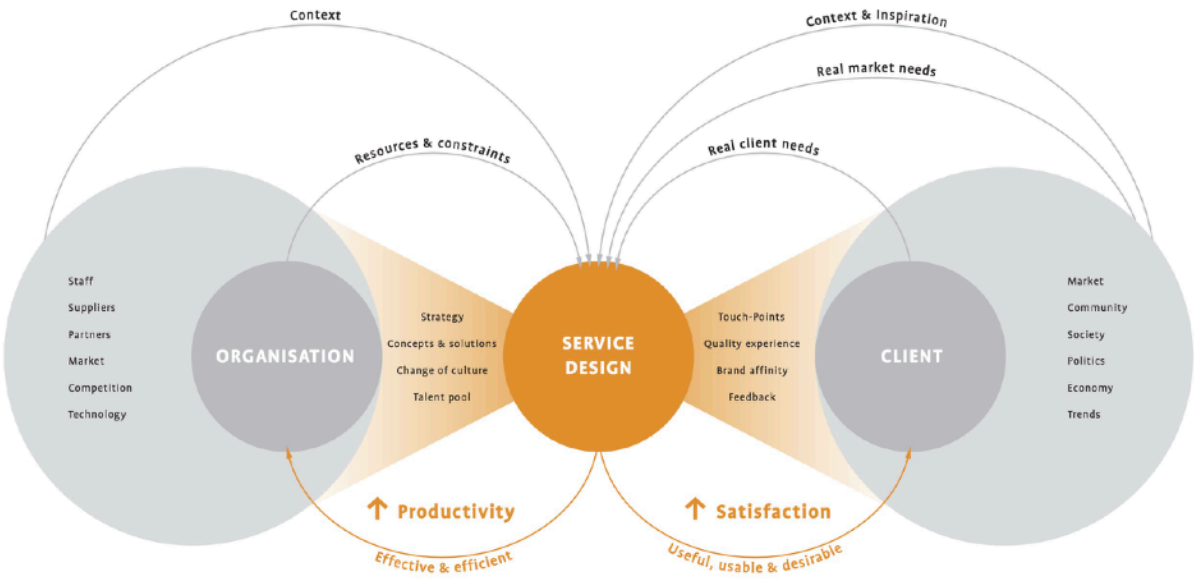


Figure 2.2.1 Service Design overview model

Adapted from "Service Design practical access to an evolving field " (p. 152) by Moritz (2005)

Mager (2007) also describes the aims of service design from both client's point of view ("useful, usable and desirable (p. 355)") and supplier's points of view ("effective, efficient, and distinctive (p. 355)"). It emphasizes the importance of addressing client's needs and the futuristic meaning. Besides, it also claims that service design, standing in the tradition of product and interface design, helps restructure existing services by "enabling the transfer of proven analytical and creative design methods to the world of service provision (p. 355)".

Stickdorn et al. (2017) provide an up-to-date and practical definition which explains service design's principles, approaches and purpose.

> Service design is a practical approach to the creation and improvement of the offerings made by organizations. It has much in common with several other approaches like design thinking, experience design, and user experience design, has its origins in the design

> studio, and harmonizes well with service-dominant logic. It is a human-centered, collaborative, interdisciplinary, iterative approach which uses research, prototyping, and a set of easily understood activities and visualization tools to create and orchestrate experiences that meet the needs of the business, the user, and other stakeholders. (p. 27)

Service design might no longer be seen as an emerging field in these years. Its inter-disciplinary feature provides enormous possibility for service design to develop and extend itself. While the definition becoming more and more broaden, the design objects and related areas keep evolving through time. Mager (as cited in Service Design Network, 2019) suggests "service designers be defined by outcomes rather than deliverables as we learn to speak languages of all kinds" (para. 3). The definition of what service design is supposed to design might be less important than what kind of results service design can lead to. This research focuses on the situation when service design encounters technology. The outcome is service experience, and the deliverable is a service system.

2.2.2 User experience, customer experience, and service experience

The connection between service design and experiences seems inevitable. Moritz (2005) says "service design is the design of the overall experience of a service, as well as the design of the process and strategy to provide that service" (p. 39). Polaine, Lovlie and Reason (2013) compare service design and experiences to communications and graphic design. Service design's job is to create or improve experiences. However, experience is a quite general concept. For example, user experience, customer experience, service experience all belongs experience. How does each of them encounter service design?

User experience, as mentioned before, is under the field of HCI and refers to the experiences between user and interface. Sandström, Edvardsson, Kristensson and Magnusson (2008) introduce technology-based services as a type of services which are used with hardwares and softwares. This kind of service emerges with technology. It differs from other services by excluding human-human interactions. Polaine et al. (2013) suggest to UX in service design in the context of "a task-based activity" (p. 133). Services are experienced with tangible

touchpoints such as user interface. Whether a user can complete a task within a service through the interfaces influences the whole service (Polaine, Lovlie & Reason, 2013). In the age of technology blooming, lots of services deal with interfaces, so it is hard to separate UX from service design.

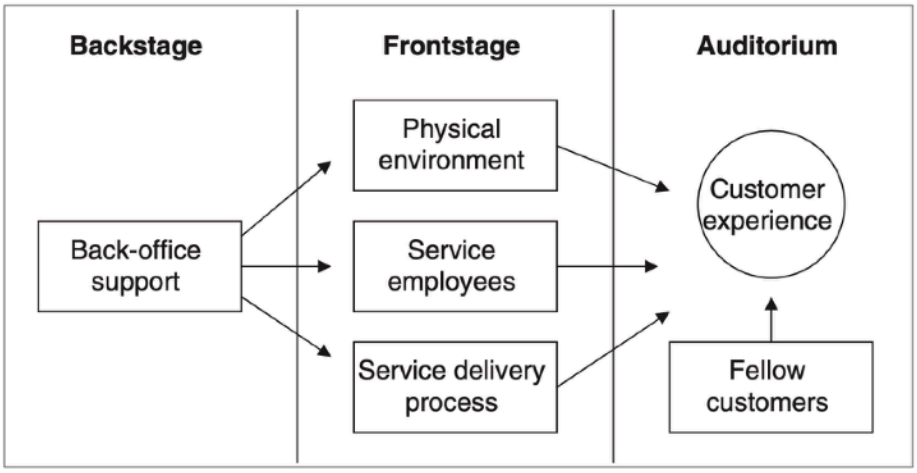


Figure 2.2.2.1 Five Experiential Design Areas

Adapted from "Service Design for Experience-Centric Services" (p. 79) by Zomerdijk and Voss (2010)

Customer experience is the term that shows up in service design all the time. Service designers always try to understand customer's needs from customer's perspectives, only then can they design service offerings. The term customer experience origins from marketing and managing. Meyer and Schwager (2007) define it as "the internal and subjective response customers have to any direct or indirect contact with a company" (p. 2). Direct contact refers to interactions initiated from customers, such as purchase and use, while indirect contact often acted from the organizations, such as advertisement. In service design, it is sometimes named customer service experience, which refers to the sum of interactions with a service (Polaine et al. , 2013). Dimanche, Keup, and Prayag (2012) argue that service experience should include individual experiences but also social experience, for example family trip. Zomerdijk and Voss (2010) introduce a concept named experience-centric services, which regard customer experience as the core of the service offering. Figure 2.2.2.1 shows the area that might influence a customer experience. When designing customer experience, it is important to take consideration of customer emotion (Zomerdijk and Voss, 2010; Dimanche,

Keup, & Prayag, 2012), as well as different process such as pre-service, actual service and post-service period (Stickdorn, 2011) or “pre- and post purchase experiences” (Zomerdijk & Voss, 2010, p. 79). Customer journey map is a service design tool for visualizing, as well as understanding customer experience. This tool is discussed in the Methodology chapter. Compared to UX, customer experience is broader and includes UX when technology exists in a service system. However, it is not able to display an entire service.

Service experience, as explained before, sometimes equals to customer experience or customer service experience, which means to experience services from the customer’s perspective. However, service is complex with a dynamic process, different stages and stakeholders. To specify, “Frontstage” refers to people and processes that customer can see and interact, while “Backstage” means people and processes that are invisible to the customer but necessary to perform a service (Morelli, 2002; Stickdorn et al. , 2017). In a service system, except for customer experience, there are other stakeholders’ experiences and backstage actions. Stickdorn et al. (2017) modify one of the service design principles from user-centered to human-centered, which takes all stakeholders’ experiences into consideration. In conclusion, service experience is the most broad concept among the three kinds of experiences. It includes all stakeholders’ experiences and touchpoints in both frontstage and backstage during pre-service, actual service and post-service period.

In order to improve service experience, value creation and interaction processes are core to service design (Miettinen. 2009). It means to co-create values with the stakeholders. Meanwhile, an iterative process is necessary (Miettinen. 2009; Stickdorn et al. , 2017). Patrício, Fisk, Cunha, and Constantine (2011) claim that service design is facing challenges of “the growing complexity of service systems, the emergence of multichannel services, customer co-creation of service experiences, and the need for interdisciplinary methods” (p. 1). They argue that service experience itself is not able to be designed, but service systems can be designed for service experience. In this study, the service experience is improved by designing a technology-based service system. The design process involves user participation and iteration.

2.2.3 Co-prototyping service experience

Prototyping, as a method of mocking up, testing, evaluating, and improving a product or a design concept, is widely used in different design areas, such as industrial design, user interface and experience design, game design and so forth. Before implementation of a design idea, quick and low-cost prototyping is essential to prove the usability and make improvement. However, the specific methods and values of prototyping differ from situations, thus it need to be adjusted to meet new areas of design. Service design is exactly an emerging design field that focuses on human-centered design and user involvement. Service designers give prototyping new methods and values.

Blomkvist and Holmlid (2010) define service prototyping as a tool for learning and a tool for communicating. The learning tool consists of exploration and evaluation. The communication tool allows designers and stakeholders to communicate more effectively. Miettinen, Rontti, Kuure, & Lindström (2011) explains the importance of service prototyping from introducing the two feature of service design: iterative process and co-creation. Service prototyping benefits service design process since it provides approaches for both features. Polaine et al. (2013) argue that people will have different reaction and focusing when they imagine or experience a service. To sum up, the two main functions of service prototyping are experience and co-creation.

First, prototyping is not to complete a design, but an effective method to experience it in advance, and even before it is produced or scaled. Service design should take care of both details and the whole concept. Polaine et al. (2013) say that devil is in the details. Sometimes small problems result in unintended problems and may cause failure to a service. In service design, the details like service concepts, service paths, touch points and service moments can be visualized and tangible to help designers gather users' opinions, gain insights, and develop ideas. Consequently, designers can focus on the problems and fulfill stakeholders' needs accurately.

On the other hand, prototyping allows designers to have a holistic view of service. Polaine et al. (2013) claim that when people are asked to imagine a new service, they will focus on the

abstract concept and become analytical and problem-oriented. However, when they can experience the service and touchpoints via tangible and visualized prototyping, the results are based on the performance. Blomkvist and Holmlid (2010) also mention service prototyping reduces the difficulty in understanding abstract concepts.

Besides, Miettinen et al. (2011) claim that there is "a cycle of design, test and measure, and redesign" (p. 1) in the process of designing a service. The evaluation and redesigning can be repeated until the final results can meet the needs. Prototyping helps designers to test the service rapidly and economically. The insights gathered from experience prototyping is both holistic and detailed. Hence, service prototyping helps realize the cyclic process of service design.

Second, prototyping can engage all different stakeholders to one table and provide with the opportunity of co-design, which is an essential part of service design. Miettinen et al. (2011) emphasize that human-centered design differs user-centered design because of human-centered design co-creates values with different stakeholders instead of merely focusing on them. While prototyping, designers can design with the users, employees, and service providers face to face to create an environment that is close to reality to ensure the solutions can meet their needs. When the stakeholders participate into design, it can more precisely reflect what they want. Meanwhile, the stakeholders sometimes can have unexpected insights and provide innovation solutions which can inspire designers to make the design go deeper and further. Prototyping can provide both designers and stakeholders the contexts for understanding the situation, and based on the understanding, the collaboration will be more smooth.

The demands of service design challenge prototyping to innovate. A successful implementation of service prototyping should consider of both the experience simulation and user participation. The two concerns respectively correspond to the functions of service prototyping that mentioned before.

In order to better simulate a real service environment and interaction in the prototyping, service stage and physical touchpoints should be prepared. However, depending on the time

limitation, budget, scale of the design and so forth, designers choose from quick and dirty mock-up to high-fidelity prototyping. Holmlid and Evenson (2007) suggest the selection of service prototyping methods should base on the specific stage of a design process. Buchenau and Suri (2000) put up with a method named Experience Prototyping, which is valuable in three design phases: "understanding existing experiences, exploring design ideas and in communicating design concepts" (p. 424). They also argue that the audience influence the level of presentation in the Experience Prototyping. Polaine et al. (2013) divide Experience Prototyping into four levels: an inexpensive, semistructured discussion; a walkthrough participation; a more elaborate simulation; and a full-scale pilot (see Figure 2.2.3.1). The three theory all emphasize that in different design cases, the goals and consequently selection of methods are different. Service prototyping should be context-based and agile.

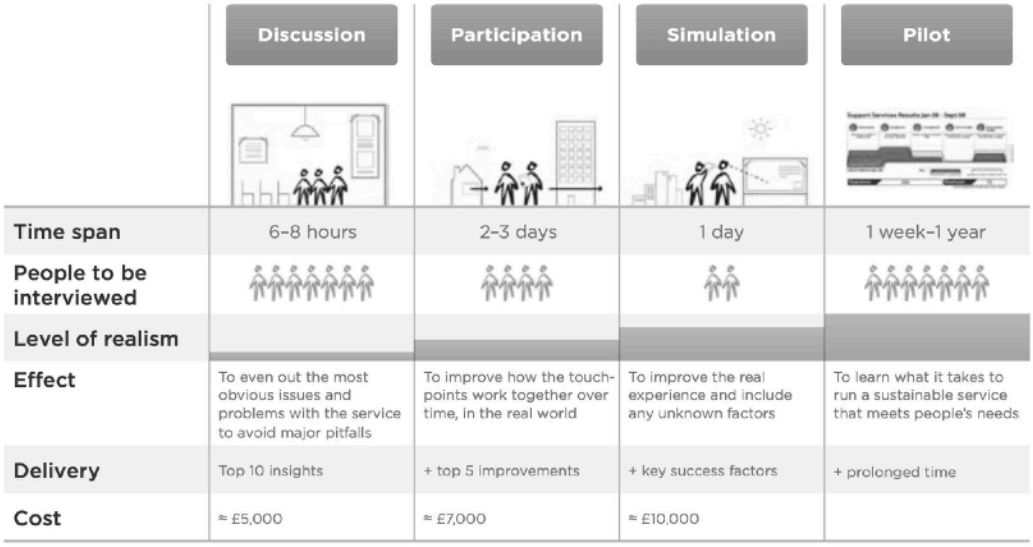


Figure 2.2.3.1 The four levels of experience prototyping

Adapted from "SERVICE DESIGN From Insight to Implementation" (p. 141) by Polaine et al. (2013)

Since a service always contains multiple stakeholders, role play is a frequently used tool in service prototyping, which modifies the interaction between participants, facilitators and touchpoints. Their reaction to the service experience can be documented and analyzed. Holmlid and Evenson (2007) agree that "role playing and other dramaturgic methods are effective to suggest solutions, provide inspiration and test alternatives, etc" (p. 5).

Miettinen et al. (2011) introduce Service Innovation Corner (SINCO) as the laboratory for service prototyping (see figure 2.2.3.2), which consists of Servicescape Simulation; Service Stage; Digital Touchpoint Toolkit; Rough Mock-up Crafting; and Teamwork & Documentation Tools. In this research, we prototyped and tested a service system with a mobile application at SINCO. Figure 2.2.3.3 displays how SINCO functions in each design stages.

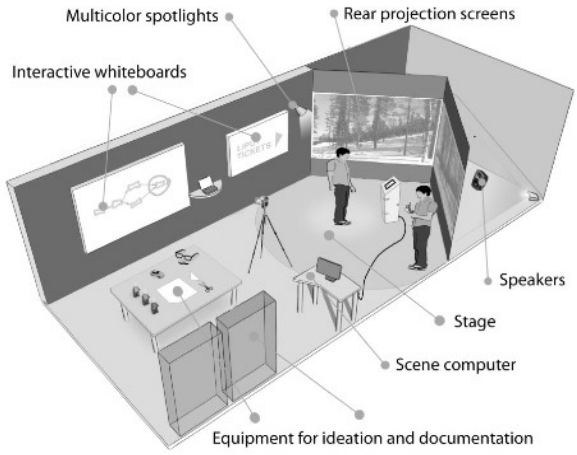


Figure 2.2.3.2 Overview of SINCO service prototyping laboratory

Adapted from "Realizing design thinking through a service design process and an innovative prototyping laboratory – Introducing Service Innovation Corner (SINCO)" (p. 5) by Miettinen et al. (2011)

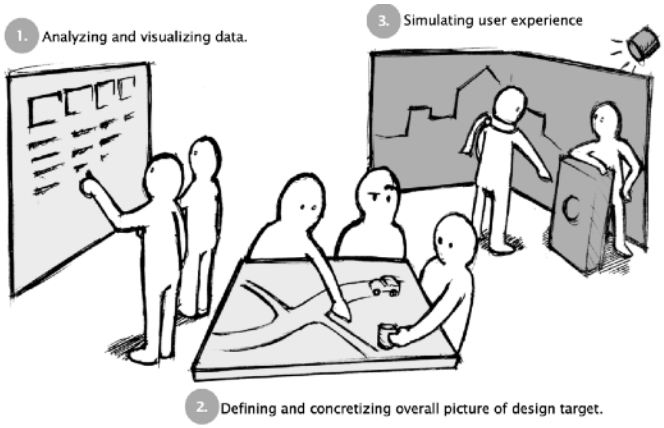


Figure 2.2.3.3 Most Essential Use Cases of SINCO in Service Design

Adapted from "Tools and Methods for Technology-Aided Prototyping of User Experience SINCO Environment as a Pilot " (p. 7) by Rontti and Lindström (2014)

Service prototyping is useful to generate, develop and evaluate a service concept. It is also a communication tool that links the designers and different stakeholders. However, the gap between service design tool and service prototyping exits. Service is complicated and intangible. Prototyping tend to model the service, which can be large-scaled in some cases, in a lab, and visualize the intangible services to let participants understand. Results from the lack of examples and theories, the details in this process, such as the simulation methods, communication with stakeholders, and documentation can cause problems. Besides, with the spreading of mobile devices, more and more services are attached to mobile applications. It is worth investigating that how to incorporate usability testing of mobile applications and document the results in service prototyping.

Conclusion

The purpose of this literature review is to find the approaches to design a technology-based service system by reviewing the connections between UX and service design. The definition, assessments, design process and prototyping methods are discussed. The first section of this chapter shows that in the design of an interactive product, it is important to consider both pragmatic and experiential aspects. However, because user experience only exists in the interaction of individuals with products, UX is too limited to show a holistic experience that happens in different stages and time period with all stakeholders. Service design and its tools are the approaches to fill this gap. By putting UX into service experience, service designers are able to design and test a product from the perspectives of both usability and effects on emotions. On the other hand, from service design's point of view, UX contributes to value proposition and usability measurements. Based on this knowledge, this research investigates the process to design and test a technology-based service system in order to improve the emergency healthcare service in Rovaniemi.

3. Methodology

3.1 The Research Layers

To begin with the methodology chapter, I would like to organize my research design into a research onion diagram (Saunders & Tosey, 2013) to give a holistic view as well as showing the relations between research steps (see figure. 3.1.1). Saunders and Tosey (2013) used the metaphor of the "onion layer" to describe how other research elements can influence the final choices of research methods and analysis procedures. In this chapter, I will introduce my research design from the outer layers of the research onion into the core layers.

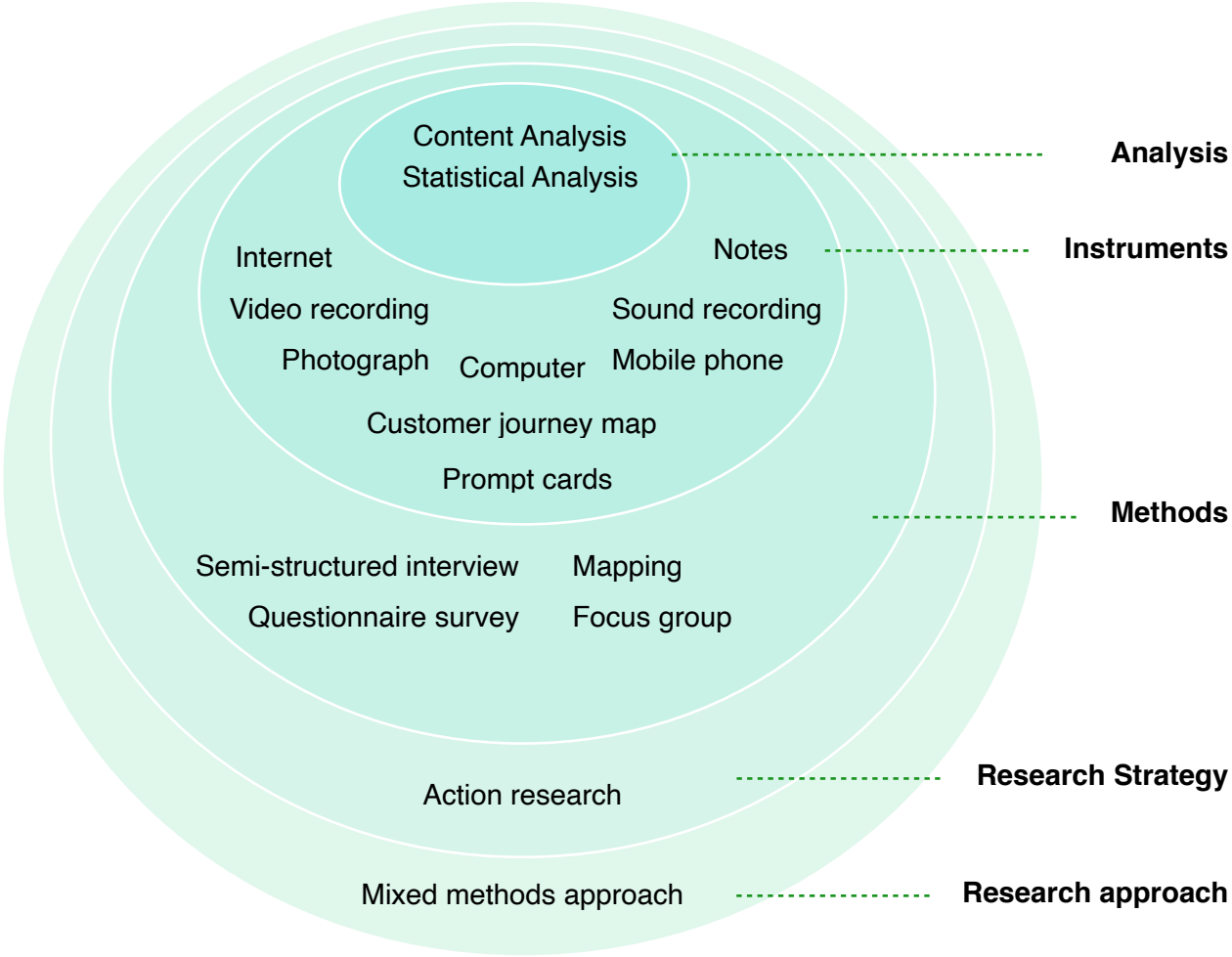


Figure 3.1.1 The research onion

Adapted from "The Layers of Research Design" by Saunders and Tosey (2013, p. 59)

3.2 Research Approach

The very outside layer of the research onion is a research approach. In order to have a holistic understanding of the emergency ambulance service in Rovaniemi, I needed to use multiple research methods and thus, have chosen mixed methods research as the research approach.

A research approach includes research plans "from broad assumptions to detailed methods of data collection, analysis, and interpretation" (Creswell, 2014, p. 3). Qualitative research, quantitative research, and mixed methods research are three main research approaches. Quantitative research uses experiments and numbers to examine objective theories, while Qualitative research exploring social problems by focusing on individuals' meaning (Creswell, 2014). However, the two research approaches are not opposed to each other. Mixed methods approach collects both quantitative and qualitative data as well as analyzing them. It provides a fuller understanding of a research problem than either approach alone (Creswell, 2014).

The research question drives research approaches (Leech, Dellinger, Brannagan, & Tanaka, 2003). The background of researchers is another deciding factor (Creswell, 2014). My research questions are about the problems inside emergency ambulance service in Rovaniemi and how to solve them through service design. The extreme weather in north Finland and the emotional feeling of users are taken into consideration. The mobile application, as the main body of our solution, is another keyword in the research. The research questions and my background of service design led me to research with iterative process and co-design with participants. Mixed methods research fits the complexity of the project.

To specify why and how I used both qualitative and quantitative methods in the research, I would like to explain with Hanington's process. Hanington (2013) claims that research in a design project can be divided into generative research and evaluative research. Generative research is often in the early stages of a design project, while evaluative research positions as an end-stage component. User participation functions in both phases for understanding users as well as developing products. In the CRICS project, the generative research phase represents the user research we did for understanding the current situation of emergency

ambulance service in Rovaniemi. The evaluative research phase represents how we tested and redesigned the service and product together with participants.

In the early phases of generative research, we used both quantitative and qualitative research methods for collecting data from participants and forming research questions. The mixed methods approach is helpful when we wanted to firstly survey a larger number of participants with closed-end questions and then interview some of them for details. With this baseline information, the product was created for speculative scenarios. Together with the participants, we tested the product for evaluative research. In this phase, Qualitative methods, such as focus groups, workshops, were mainly utilized. Collecting and analyzing data from mixed methods led me to finish the research with valid results.

According to the use of quantitative and qualitative methods in the research, Creswell (2014) divides mixed method research into three main forms: convergent parallel mixed methods, explanatory sequential mixed methods, and exploratory sequential mixed methods. In this research, I used convergent parallel mixed methods, which means I collected data of both forms at the same time, analyzed and interpreted them together.

3.3 Action Research

The second layer of the onion, research strategy(ies), leads researchers to plan how to answer a research question (Saunders & Tosey, 2013). Here I adopt an action research strategy, which means I work with participants to bring interventions in the project.

So, what is action research? How does it differ from traditional research? The most significant feature is that action research emphasizes the participation of those who have been traditionally called subjects of the research. Instead of researchers, they become the locus of control. The research is done by or with participants rather than to or on them (Herr & Anderson, 2004).

Herr and Anderson (2004) defines action research as some action or cycle of actions that organizational or community members have taken, are taking, or wish to take to address a

particularly problematic situation. The idea is that changes occur either within the setting and/ or within the researchers themselves.

Kemmis (1982) defines the process of action research as a spiral of action cycles:

1. to develop a plan of action to improve what is already happening;
2. to act to implement the plan;
3. to observe the effect so faction in the context in which it occurs;
4. to reflect on these effects as a basis for further planning, subsequent action and on, through a succession of cycles.

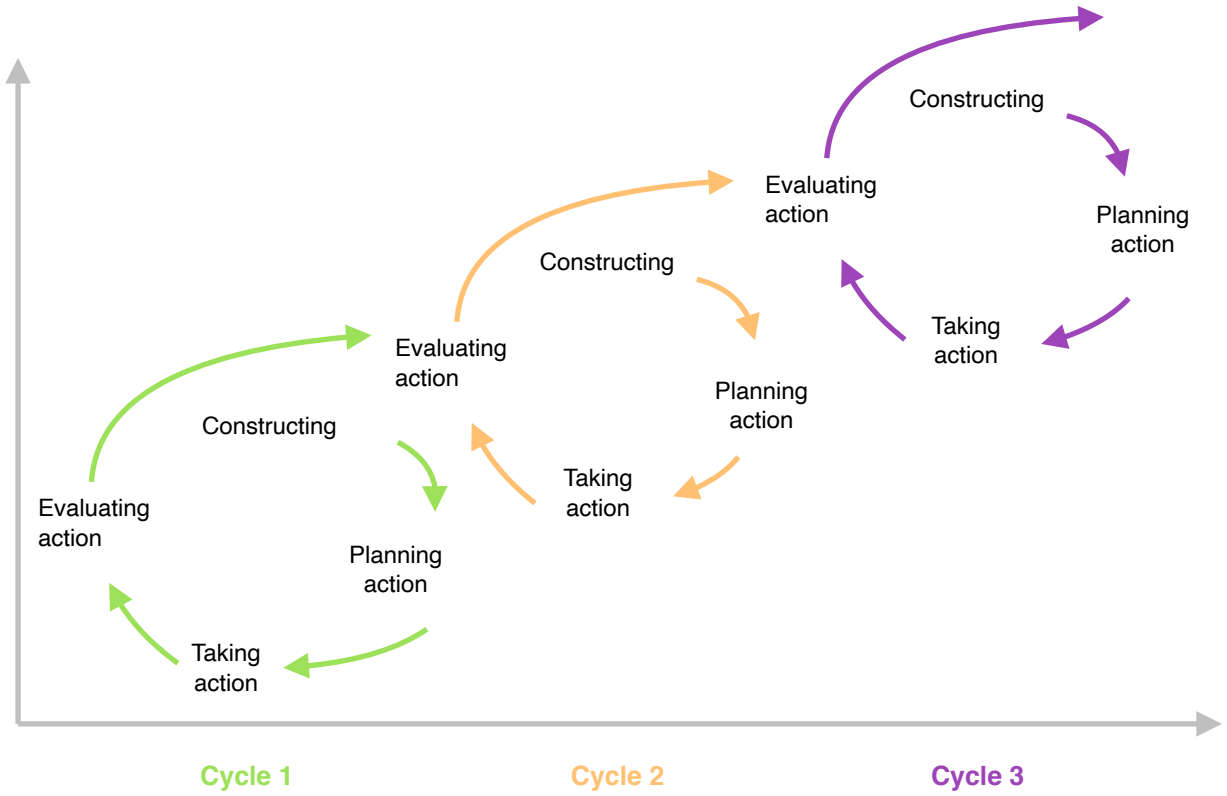


Figure 3.3.1 Spiral of action research cycles

Adapted from " Doing action research in your own organization " by Coghlan and Brannick (2010, p. 10)

Action researchers are interested not only in the validation of knowledge but also in the outcomes. In each cycle of the action research spiral, researchers get a better understanding of the problems, which leads them to new insights.

To explain how I utilized action research strategy, as well as the action cycles existed in my research, I used an action research spiral diagram (see figure.3.3.1) adapted from Coghlan and Brannick (2010). My research process consists of three main action cycles, and each of them is composed of four steps: constructing, planning action, taking action, and evaluating action. The first and second cycles (questionnaire and interview) can be seen as the cycle of generative research, followed by a cycle of evaluative research. For time limitation, the CRICS project ended up with the results from the third cycle.

3.4 Methods and Instruments

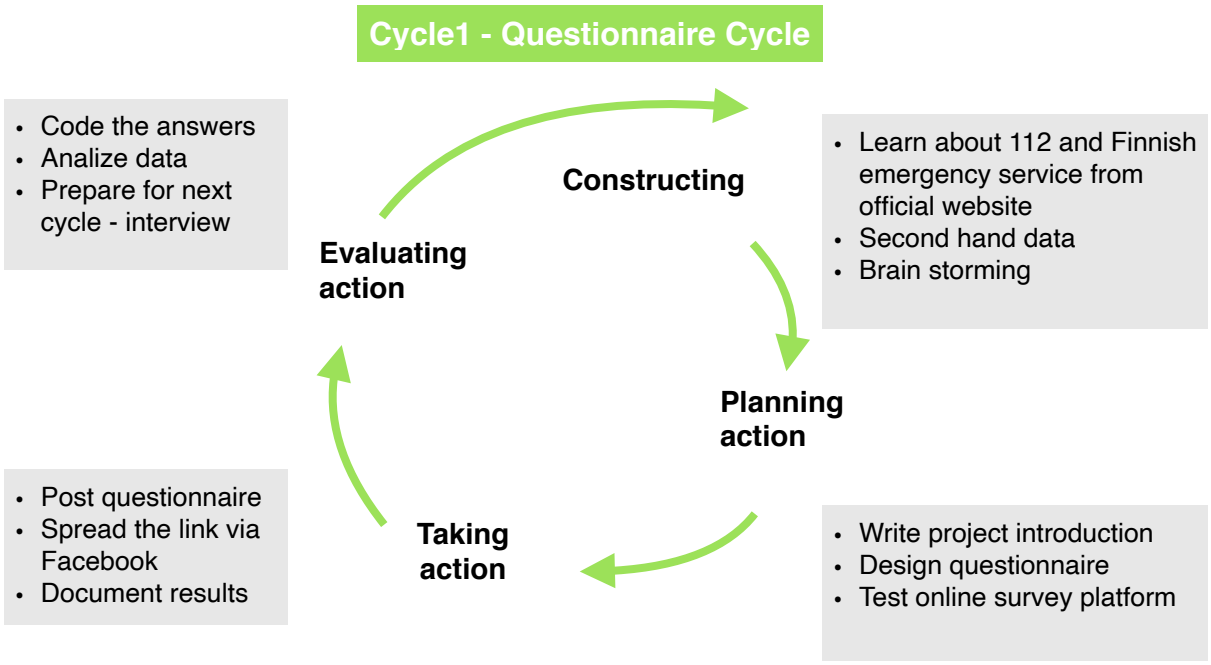


Figure 3.4.1 Questionnaire Cycle

Research methods for human-centered design can be divided into three fields: traditional methods such as market research and interviews, adapted methods from observational research, ethnography research, and Human-computer interaction (HCI), and innovative methods such as design workshops (Hanington, 2003). Among the numerous methods, we

selected from each field and used a structured questionnaire, semi-structured interview, persona, workshop and focus group for this research. Data are mainly documented by photograph, video recording, sound recording, and notes (see figure. 3.1.1).

3.4.1 Structured questionnaire

To generate the research, we need to quickly but thoroughly measure people's knowledge and experience of the Rovaniemi emergency service. Thus, we undertook an online survey with a structured questionnaire, which used fixed questions with mainly pre-coded answer selections. The strength of structured questionnaires is the ability to collect clear and easy-to-count answers (Bowling, 2014).

The survey was totally self-administered, which can minimize interviewer bias. On the other hand, in order to reduce participants' misunderstanding of questions, we modified the questionnaire several times to make the language as accurate as possible. The questionnaire contains seventeen questions. Most of the questions were closed-ended. However, we also allowed participants to give their own opinion as supplements to the given answer selections in several questions.

As the start of generative research and the first cycle of the action research process (see figure. 3.4.1), the main content of this questionnaire was based on the existing emergency service in Rovaniemi. Our goal was to understand how different users are aware of and familiar with the service, and at the same time discover their needs. In order to facilitate the transmission and get enough results for analyzing, we chose the online questionnaire platform and shared the link to social media to get more participants. The questionnaire was posted on the online survey platform Survey Planet on 04. 2017, and the validity of the questionnaire was 3 days. A total of 23 participants were engaged in the research. After coding and analyzing the data, we started to prepare for a semi-structured interview (the second cycle of the spiral of action research) based on the results.

3.4.2 Semi-structured interview

The qualitative research interview seeks to describe and the meanings of central themes in the life world of the subjects. The main task in interviewing is to understand the meaning of what the interviewees say (Kvale, 1996). After the questionnaire survey, we hope to probe more detailed feelings and opinions from participants' actual emergency experiences. So we decided to take semi-structured interviews as the second round of research, which also follows the four steps of action research (see figure. 3.4.2).

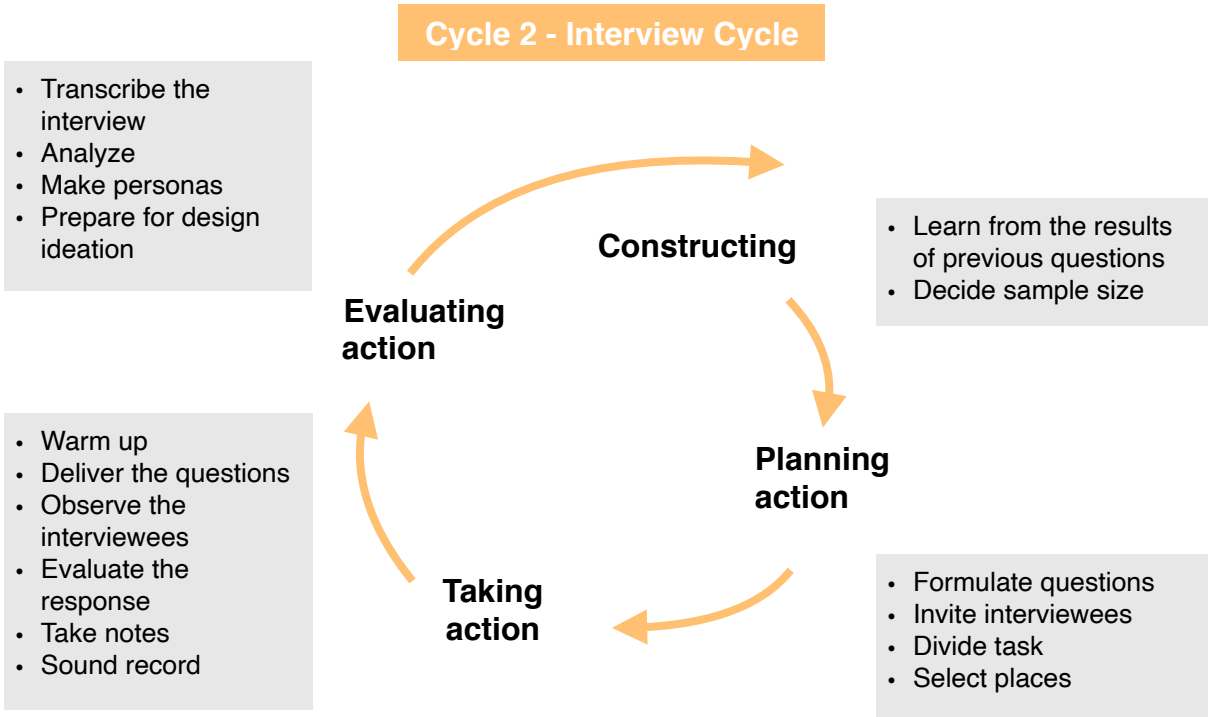


Figure 3.4.2 Interview Cycle

Bowling (2014) indicates that semi-structured interviews include mainly fixed questions but the responses are seldom coded in advance. In a semi-structured interview, the questions are used flexibly so that the interviewer has the possibility to probe relevant issues that are not covered by the interview schedule. Open-ended questions help to uncover unusual but valuable opinions of which the researcher was unaware. We prepared such an "interview guide" (Cohen & Crabtree, 2006), listed with several questions and topics that we want to cover during the interviews. The guide helped us to be well prepared in the interview, but also gives interviewees the freedom to give their own opinion, which leads to "reliable, comparable qualitative data" (Cohen & Crabtree, 2006, para. 3).

As for sampling, we hope to include both experienced local people and foreigners who are unfamiliar with the Rovaniemi emergency service. The sampling method we chose is purposive sampling. This is a non-random method of sampling usually used in qualitative research designs. The aim of purposive sampling is to sample a group of people with a particular characteristic. Thus interviewees have knowledge that is valuable to the research process (Bowling, 2014). We invited 6 interviewees in total. They can be divided into two groups: Finnish (4 people) and foreigners (2 people). All the participants are students from different universities in Rovaniemi so that we can have face-to-face interviews easily and possibly invite them for the following research process to get feedback. Each participant provided us with their own views from their knowledge and experience, which broadened our understanding.

A face-to-face interview is probably the least burdensome method since this only requires interviewers and interviewees to speak the same language (Bowling, 2014). The interviews were successively undertaken in April 2017. Most of them were arranged at the University of Lapland classrooms.

Since semi-structured interviews contain mostly open-ended questions, the usual and better way is to tape-record interviews and later transcript these tapes for analysis (Cohen & Crabtree, 2006). During interviews, data were documented mainly by mobile phone recordings but also jotting down notes on paper.

3.4.3 Mapping

Mapping is commonly used in service design to document and describe users' experiences. Mager (2009) defines consuming a service as a process of consuming an experience that extends over time. A customer journey map illustrates how the customer feels and experiences the service before, during and after the actual interaction with the service (Mager, 2009). The ecosystem map includes both stakeholders and "actors beyond people and organizations" (Stickdorn et al. , 2017, p. 60), such as interfaces and systems. Thus, a ecosystem map illustrate the interactions and value flows between human to human, human

to machine, and machine to machine. In this project, mapping is occupied as an instrument for the workshop and focus group. The main function is to document and visualize. We created a customer journey map and a ecosystem map during the research. The first one shows the existed processes of emergency service in Rovaniemi, which includes seven steps and advantages and disadvantages in each step. The second one is to display the experience after our design.

On the one hand, the customer journey map documented and analyzed our research results. It helped us to communicate both in our group and provides us with proves for design. On the other hand, the visualization of customer and service experiences benefits the communication between our team and the participants. They got a quick and clear understanding of this project right after comparing the two maps before taking part in the workshop and focus group interview. Thus, our participants can be better involved, which also meets one of the service design principles: co-creation.

3.4.4 Workshop

Workshop and focus group interviews were taken on the same day at SINCO with the same participants and preparation, thus I would reduce them into one cycle (see figure 3.4.4.1). The two methods constitute the phase of evaluative research.

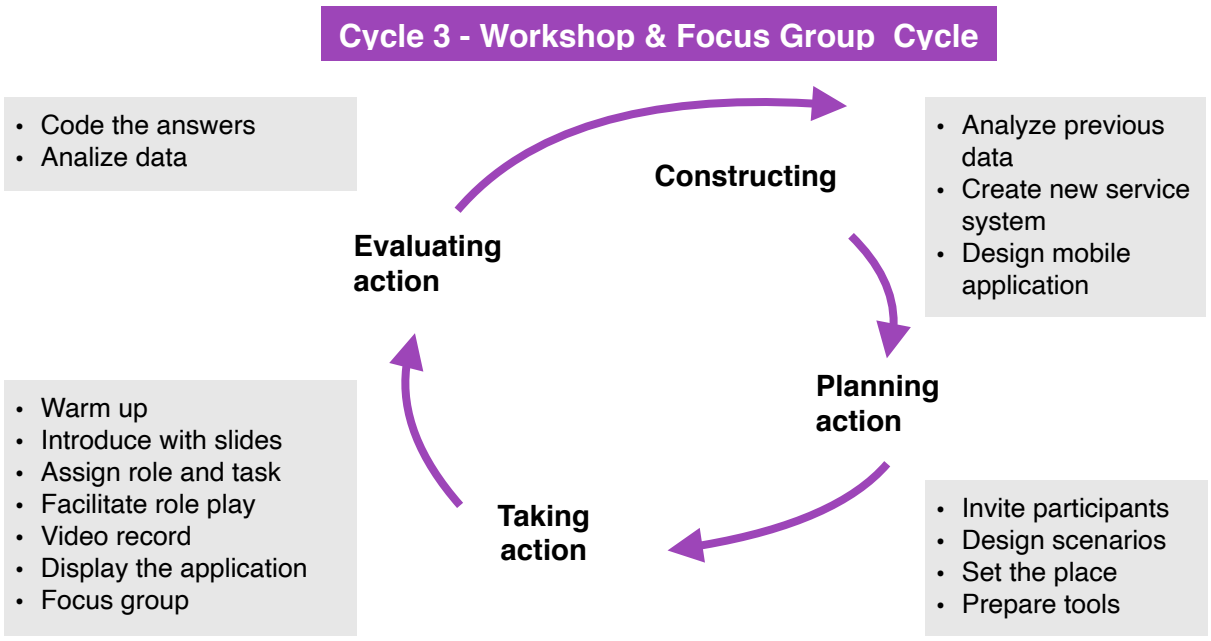


Figure 3.4.4.1 Workshop & Focus Group Cycle

As Hanington's (2003) sorting of research method for design, the workshop is one of the innovative research methods. Since designers basically pursue innovation and visualization in their projects, the research methods they select should cover these needs (Hanington, 2003). Thus creative methods such as a workshop, collage, card sorting, cognitive map, and so forth are not rare to see in design projects. Another advantage of an innovative research method is that compared to traditional research methods such as surveys and interviews, participants are more willing to join a creative activity (Hanington, 2003). Besides, Hanington (2003) believes that creative methods uncover needs and desires that even the user is not aware of, and that is difficult to articulate when using traditional research methods.

SINCO

The service prototyping workshop is part of the evaluative research phase for testing our design and getting feedback from users. The method we chose is role play. Role play is a service design tool that invites users to perform a service experience while thinking it really exists. To simulate the real environment as far as possible, the workshop was set in SINCO(service innovation corner), which is a service design prototyping environment. SINCO consists of a prototyping and learning environment as well as a set of tools. It is "a mixture of a theatre, studio, playroom, meeting room and mock-up workshop" (Kuure, Miettinen and Alhonsuo, 2014, p. 2). We mainly used two projection back screens and the stage for the simulation. Photos are prepared for projection to create a background of scenarios, while role-plays happening in the stage.

Scenarios

Before the workshop, we created two scenarios based on research results. They simulate different situations that may happen in medical emergency services in Rovaniemi. One illustrates the situation of a foreigner falling down and getting injured while biking in Ounasvaara (a mountain area in Rovaniemi). The other one simulates the situation when a Finnish suddenly faints in the city center of Rovaniemi. To make participants understand the roles better, we prepared name tags and character cards with introductions for them. However, the introductions are not so detailed as a screenplay in order to avoid bias and make sure that participants make the role play continue reasonably according to their own

understanding. In both scenarios, we researchers acted as an emergency center operator and a facilitator.

Table 3.4.4.1 character card for scenario 1

Patient for scenario 1: (foreigner)	**Ambulance car driver:**
You were biking in Ounasvaara alone. Suddenly you fell down from your bike because of the slippery ice. Unluckily you felt intolerant pain of your left leg and were not able to move it. It is now -10°C outside.	You are one of the ambulance team. Your responsibility is to reach to the patient and help him/her to get on the ambulance car and drive them to the hospital.
Doctor for scenario 1:	**Nurse:**
You received a patient with a broken leg. You will give him a surgery. After you let hime leave the hospital, told the patient to come back to you again for further consultation.	Your responsibility is to help the patient to wear the bracelet when the ambulance car reach to the patient. And you also need to take care of the patient during his/ her stay at hospital.

Table 3.4.4.2 character card for scenario 2

Patient for scenario 2:	**Passerby:**
You suddenly fainted at city center of Rovaniemi. You were totally unconscious before you received a surgery. Your condition is not stable that you may need a second surgery.	You saw a stranger fainted right in front of you on the street. It seemed like he/ she was totally unconscious. You were the only person nearby.
Family member for scenario 2:	**Ambulance car driver:**
You were watching tv at home when you received a SMS message.	You are one of the ambulance team. Your responsibility is to reach to the patient and help him/her to get on the ambulance car and drive them to the hospital.
Doctor for scenario 2:	**Nurse:**
You received a patient with a stroke. You will give him/ her a surgery. Your responsibility is to take care of him/ her during her staying in the ICU.	Your responsibility is to help the patient to wear the bracelet when the ambulance car reach to the patient. And you also need to take care of the patient during his/ her stay at hospital.

Mobile application Prototyping

The mobile app is a crucial part of our design for improving the emergency ambulance service in Rovaniemi. The basic functions of the application are log in and register, profile, track, emergency call, first-aid knowledge, links, and alerts (see figure 4.2.1.2).

To test it in the workshop, we created wireframes and low-fidelity mockups with Marvel, a mobile application prototyping tool. Low-fidelity prototyping, differing from high-fidelity prototyping, is less visualized and has limited interaction. It is always used in the early phase of designing and can test the most basic functionality. Low-fi prototyping has the advantage of costing less time and money. The mock-up we created with Marvel can be displayed and interacted on both web and mobile phones. During role-play, we gave participants mobile phones with the prototype and observe how they used it.

Execution

On Sept.6, 2017, We invited 4 participants to SINCO lab for the workshop. All of them had done the questionnaire before, and one of them also took part in the unstructured interview. Since all the participants were already familiar with the CRICS project, we only presented the two customer journey maps. From the contrast between them, participants got basic knowledge of how the system works.

After several warm-up games, we gave them role-play cards randomly and ask them to act according to the situation by following their own decision. Before the workshop began, one of the concerns we had is that the participants might be too shy to act. However, their acting was more than expected. All participants understood their characters after reading character cards and fully utilized functions in the customer journey map. The main problem happened when participants using the application during acting (see Figure 3.4.4.3). Since the limited interaction of app prototyping, they could not interact with it well. The facilitator sometimes needed to help them with using the app. To avoid bias, the facilitator only followed the participants' instruction of using the app, without giving any advice.

Figure 3.4.4.3 Participant Using CRICS APP During Role Play (photo by Mira Alhonsuo)

In the second scenario, the stage was separated into two parts at the beginning to simulate the real situation that family member is not aware of what is happening until getting notification from SMS (see Figure 3.4.4.4). Backgrounds on the projection screen also showed different scenes. On the left side, we could follow the patient's view to go through the service while the family member experienced it on the right side. When the family member visited the patient at the hospital, the block was removed and the background picture was connected.

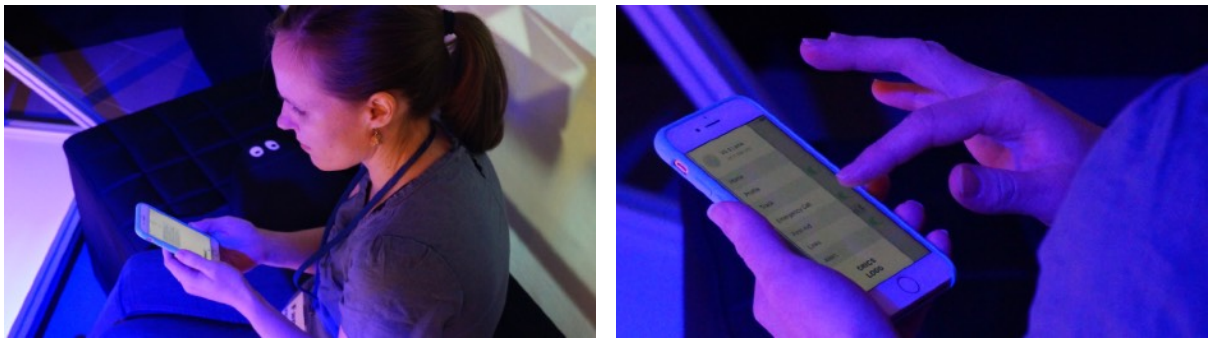


Figure 3.4.4.4 Separated and Connected Stage (photo by Mira Alhonsuo)

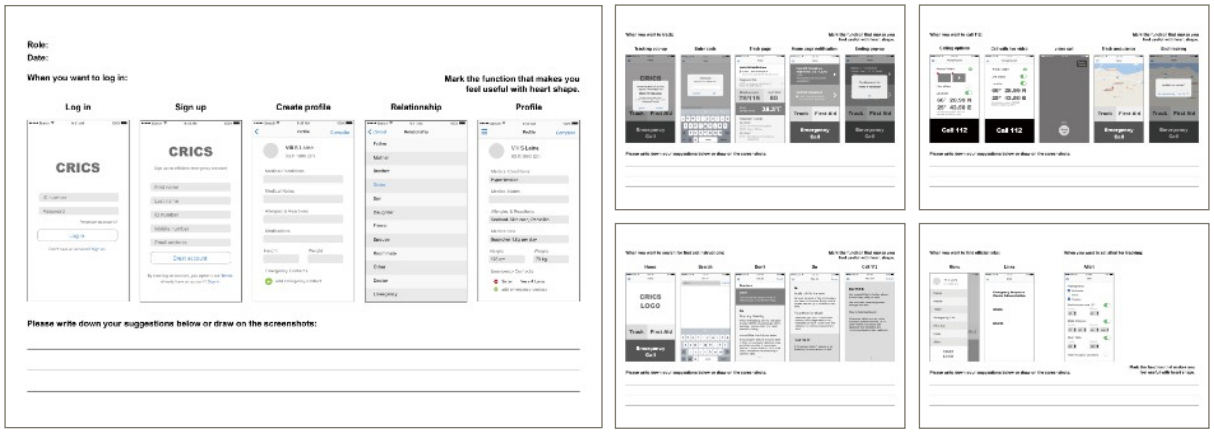
3.4.5 Focus group

In order to collect participants' feedback, a focus group interview was held immediately after the role-play workshop. Focus group interviews are held with small groups of people in the target group. During a focus group interview, the group leader generates a discussion that focuses on the issues of interest and encourages participants to talk with each other as well as the group leader. Group discussions allow participants to dig deep to find their insights which helps generate ideas and lead a topic into greater depth (Bowling, 2014). During the focus group interview, participants talked about a) how they felt when acting in the role-play; b)

their experience and thoughts of emergency service c) their opinion to our design of service and application.

Questionnaire

Besides the interactive prototyping of the mobile application, we also prepared questionnaires with low-fidelity prototyping (see figure 3.4.5.1). They are used in the focus group interview for both explanation, documentation, and a tool for co-design. While discussing, participants can check the application functions with the sheets. On the other hand, both we group leaders and they can take notes on the questionnaire. After the interview, each of the questionnaires should show: a) the role she/he acted in the workshop; b) heart marks on the pages she/he think are useful; c) sketches or notes.



Execution

After role plays, we made a further presentation of the application functions and prepared two devices for all participants to try the application themselves. Participants were arranged to sit in a circle. They received questionnaires. We raised topics and encouraged every participant to give their own thoughts and communicate with others. The data were documented by both video recording and note-taking. After the first round of discussion, we summarized and repeated the discussion results in order to check whether we understood correctly as well as lead the group to a new round of deeper discussion.

3.5 Data Analysis Procedures

As mentioned before, the strategy of this research is action research, which leads to the cyclic approaches. Thus, when it comes to data analysis, cycles also present in the process. Figure.3.5 shows how data from one cycle flows and contributes to another cycle. The analyzing results of each stage decides the following research plans, and all the results form the findings of the research.

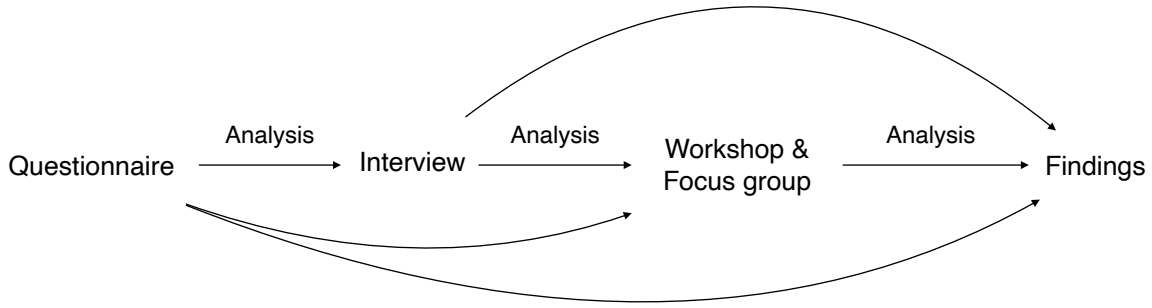


Figure 3.5 The cycle of data analysis

In this project, we used both quantitative and qualitative methods, thus have gathered both kinds of data. The quantitative data were analyzed with a statistical approach. SPSS software was also used to test and describe the relationships between two variables. Content analysis is used for analyzing the qualitative data (see table 3.5).

Table 3.5 Data analysis procedures

Method	Data	Analysis Procedure
Questionnaire	Quantitative data	Statistical analysis, SPSS analysis
	Text	Content analysis
Interview	Notes	Content analysis
	Audio recording	Transcribe, content analysis
Workshop **Focus group**	Notes, texts, sketches	Content analysis

Note. This table lists all the data gathered from each method, and in which way they are analyzed.

3.5.1 Content analysis

Content analysis is generally used for analyzing qualitative data. By using this method, researchers can test theoretical issues and deeply understand the data (Cavanagh, 1997). It analyses written, verbal, and visual data. Thus I used it to analyze the qualitative data collected in this research. Content analysis is represented as three phases: Preparation, organization, and reporting (Elo & Kyngäs, 2007). Preparation requires the researcher to become very familiar with the data and choose the unit of analysis. The organization phase is to create meanings from the raw materials through coding, grouping, and categorization. The last step is to explain the analysis process and to validate the results with models, conceptual systems, conceptual maps or conceptual categories (Elo & Kyngäs, 2007).

3.5.1.1 Preparation

The first step of preparation phase is to select the unit of analysis. In this study, all the data were analyzed in the unit of individuals. Then, since the qualitative data is documented in different formats, we need to transcribe them before analyzing. The audio recordings of the interview were transcribed into texts. When transcribing the recordings, we only wrote done the manifest content of what people said. The latent information like silence, sighs, or laughters were not necessary in this research. Each of the recordings was played several times in this process to ensure the accuracy of the transcripts. In order to be immersed into the data, all the written materials were read through repeatedly.

3.5.1.2 Coding and categorizing

In this research, the content analysis follows an inductive approach, which means there was not enough knowledge about this phenomenon. The research seeks a conclusion instead of testing one. Thus, in inductive content analysis, the categories are obtained from the data. Inductive approach are relatively more flexible. It allows researchers to create a rich display of codes and provides opportunity to develop new categories that be missed (Bowling, 2014). The process of an inductive content analysis includes open coding, categorizing and making abstraction (Elo & Kyngäs, 2007). Open coding means that while reading the materials, notes are written in the text. Then, categories are generated from those notes. The process of coding

and categorizing is iterative in order to make a reasonable abstraction. I used an abstraction of themes, categories, and subcategories to structure the qualitative data.

The interviews were documented with paper notes (see Appendix B) and sound recording (see Appendix C for transcripts). The interview questions were designed based on the results of the questionnaire. We had a design concept of a wearable device with a mobile application and decided to learn more about experiences during the emergency ambulance service. Four of the six participants had encountered at least one emergency situation in Finland. Except for their knowledge for emergency reporting, first-aid, their expectation for emergency service, we also recorded their narratives about the emergency experiences.

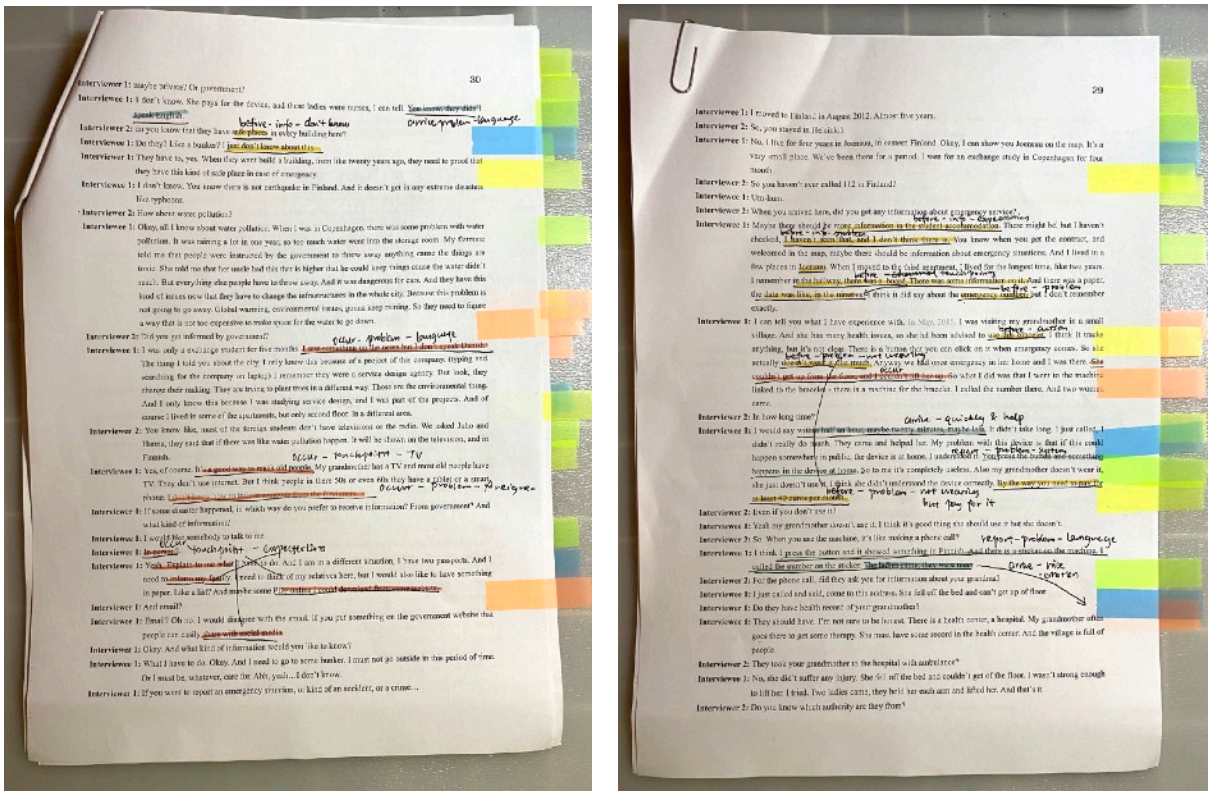


Figure 3.5.1.1 Examples of interview open coding

The The results of the service prototyping workshop were analyzed with questionnaires, at which participants gave opinions to the mobile application in a focus group discussion after they had operated it. Participants were asked to write down their characters, mark their favorite functions, sketch and write down notes on the low-fidelity prototypes (see figure

3.5.1.2 for examples, see Appendix D for complete proofs). The role that the participant played, their favorite pages and the suggestions for each page were analyzed.

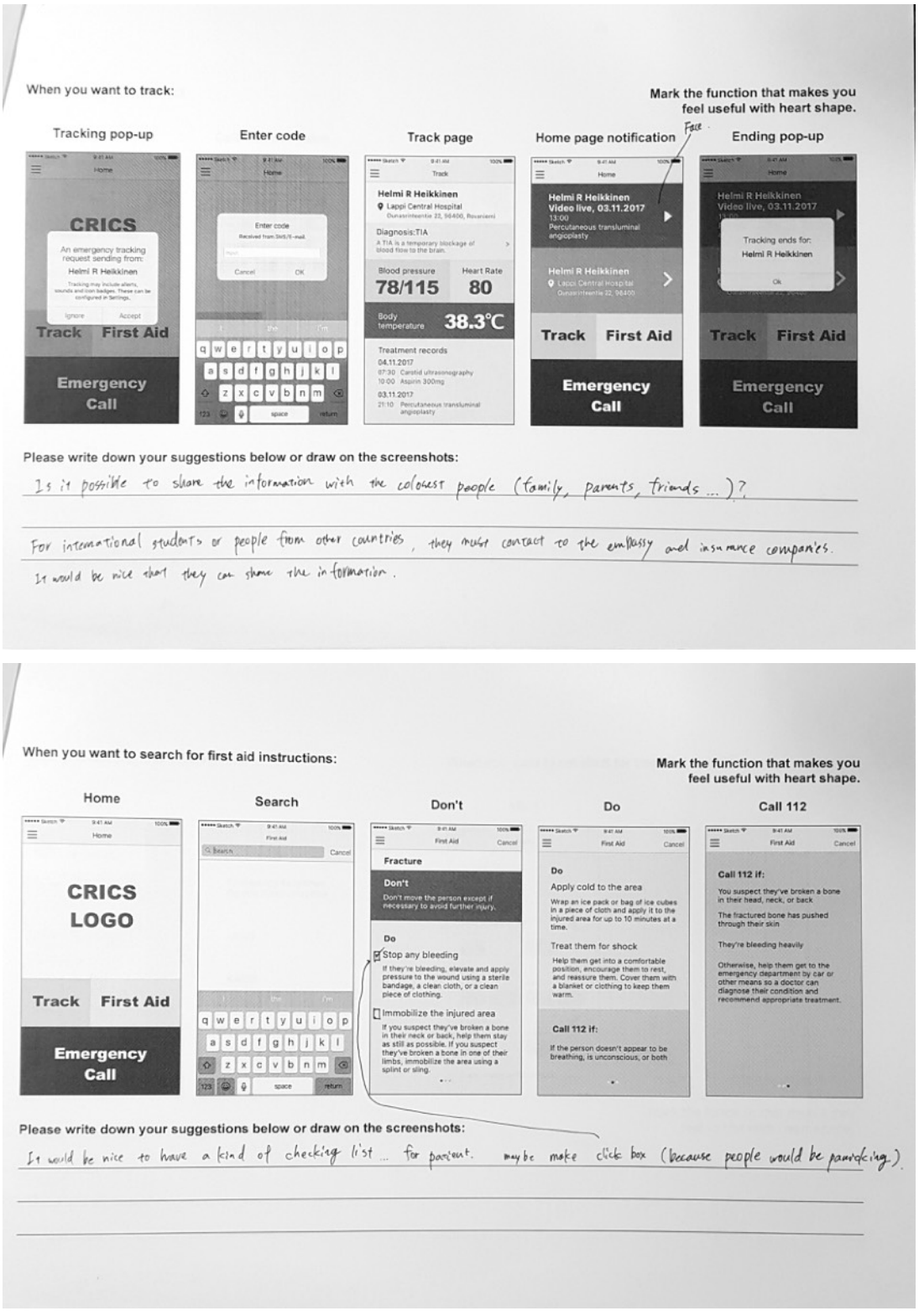


Figure 3.5.1.2 Examples of workshop data

3.5.2 Statistical analysis

The only quantitative data in this research is from the close-ended questions in the questionnaire survey. They were analyzed with statistical tables and figures. A statistical analysis starts with preparing a table of frequencies that counts the number of respondents marking each choice (Patten, 2016). With the tables, percentages of each choices can be calculated and made into bar graphs, histograms or polygons as needed. Furthermore, statistical methods helps determine the relationships between two variables (Patten, 2016). For example, one of the main purpose of this survey is to find out the relationship between respondents' nationality and their knowledge of Finnish emergency system. I used SPSS software to analyze the correlation between two nominal variables.

4. Results and Discussion

This chapter shows the results of this research and then discusses the findings. The research followed a cyclical process, which can be divided into two stages: generative research and evaluative research. The results and discussion are displayed under the same frame.

The generative research aimed to understand the current situation of emergency ambulance service in Rovaniemi. The results in this phase included a questionnaire survey, semi-structured interviews, the visualization of a customer journey map. Based on the results, customer needs and service offerings in an emergency were discussed. The generative research provided the basis for service system design.

The evaluative research tested the service system which our group created. In this section, firstly, a mobile application user flow of the emergency ambulance service system is displayed. Then, the data from the user test (a role-play workshop and a focus group discussion) is analyzed. After analysis, the discussion from generative research is evaluated. The final discussion answers the research questions.

4.1 Generative research

4.1.1 Questionnaire survey analysis

The questionnaire included 15 questions in total, 2 of which were personal information questions about participants' nationality and age. The others were emergency questions about their knowledge, experience, needs, satisfaction, and problems. The emergency questions covered the timeline from pre-emergency, emergency, to post-emergency. Since there were both closed-ended and open-ended questions, quantitative and qualitative analyses were conducted.

From the results (see Appendix A for complete proofs) we can see that among the 23 participants, there were 5 Finnish and 18 foreigners. The foreigners were mainly from Europe and Asia countries. Eleven participants were under 18 years old, 10 of them were from 18 to

24, while 2 of them were from 25 to 34. Luckily, we got 4 participants who had experienced emergency service in Rovaniemi.

First, the data shows the weakness of emergency knowledge in the participants: only 26% of them had received emergency preparedness training in Finland, and only 31% of participants knew how to report an emergency situation in Finland (see table 4.1.1.1). The result of the emergency reporting method shows the same shortcomings in knowledge flow. Thirty-nine percent of them answered correctly that the first person of an emergency should call 112 to report.

Table 4.1.1.1

Option	Text	Number	Percentage
Yes	First-aid at Lapland UAS	6	26%
	Safety pass on tourism course, first aid pass		
	CPR and first-extinguishing		
	First aid training in army		
	EA1		
	First aid		
No	-	17	74%

Training in emergency preparedness

Note. The description of this question is "Did you receive any training in emergency preparedness in Finland?", which is a compulsory multi-choice question. All 23 participants made answers.

It is worth mentioning that the international residents were even less aware of emergency knowledge. Among the 18 foreign residents, only 2 of them were trained in first aid, while 4 of the 5 Finnish were trained. The same problem existed in the emergency reporting number. Most of the foreigners did not know about the Finnish emergency number 112. However, the answers showed that people who had got emergency preparedness training were more likely to answer the number correctly. Table 4.1.1.2 displays the correlations between nationality, training experience, and the awareness of the emergency number. Also, nearly half the

participants found it more problematic to face an emergency in a foreign country. The Language barrier and culture difference were the main reasons.

Table 4.1.1.2

Correlations between nationality, emergency training and emergency number

		nationality	training	number
Nationality	Pearson Correlation	1	.647**	.441*
	Sig. (2-tailed)		.001	.035
	N	23	23	23
Training	Pearson Correlation	.647**	1	.741**
	Sig. (2-tailed)	.001		.000
	N	23	23	23

Note. **. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

For improving existing emergency service, our group set questions to check people's acceptance of mobile applications and wearable devices. The results show that most participants usually got emergency news from social media, followed by television and news websites. As for the expected emergency reporting method, 74% of the participants preferred phone calls than using a mobile application. To suppose there is a device that can record users' physical information (location, heart rate, blood pressure,...) and send the information to the emergency authorities, 70% preferred it to automatically send information to the authorities when an emergency occurs (see Appendix A).

Before analyzing the text of open-ended questions, I read them several times to have a basic understanding. Most of the participants did not have the emergency experience, the results were mainly about expectation and knowledge. I set four themes for content analysis: emergency knowledge, emergency information, emergency experience, and arctic context. The results are listed in Table 4.1.1.3.

Table 4.1.1.3

Content analysis of questionnaire

Categories	Codes	Meaning units	Theme
First aid training	Limited training	The first aid course for the tourism sector is a joke	Emergency knowledge
	Well trained	I have specific formations in first help and crisis situation to rescue people, like determine priorities of harmed people	
Emergency reporting	Emergency number	Due to pop culture, I am more aware about the emergency number in Usa than other countries in Europe or outside eu etc	
Information Content	Exit/ Shelter	The number of emergency, safe way out, place with medicines	Emergency information
	Exit/ Shelter	the safe way out or the safe points to hide info about embassy	
	Exit/ Shelter	location of safe exists	
	Exit/ Shelter	The location is the most important	
	Exit/ Shelter	Specific places to go	
	Exit/ Shelter	The safe way out	
	Situation	The process of the event	
	Situation	The location and current situation	
	Situation	Current situation and casualties	
	Situation	current situation	
	Situation	information about current situation, casualties, hospital, refuge center	
	Situation	I follow news in order to be updated about the situation, it's important to be aware of what's happening and be ready to react according to the situation.	
	Situation	To know what happened, in which condition, where, if or is allowed to go outside...	
	Situation	and of course information about current situation	
	First-aid	first aid gestures	
	First-aid	first aid gestures	
	First-aid	first aid, instructions on how to treat a person in specific circumstances	
	First-aid	it’s important to know the basic, first actions in emergency situations	
	family/friends	let my family know etc	
	family/friends	updates on close one’s situation	
	family/friends	Depends how close to the emergency that took place is to me or someone i love/care about e.g family or friends	
	Staff	Who are responsible for such issue and whom I can get help from	

Categories	Codes	Meaning units	Theme
	Staff	The location of rescue staffs	
	Staff	Location of the rescuer	
	Staff	then if the rescue staff is one their way to the place	
	Staff	Location of rescue, is anyone going to help	
	Staff	how to contact the rescue staffs	
	Equipment	Availability of safety equipment	
	Mental help	Phone, online and physical services for psychological and medical help	
Information source	friends	I get messages from my friends	
	social media	or I see posts on my social media platform	
	social media	and social Media accordingly	
	news websites	sometimes from local news websites	
For foreigner	international residents	There is a big need for providing emergency information to all international residents and visitors	
Calling 112	Description	Hard to describe the location	Emergency experience
	Language	Languages, numbers	
	Language	Language wall, not understanding	
	Language	Language	
	Language	None of the staff speaks english, even though Rovaniemi is a tourist town	
Emotional responses	confused	A person might be confused and react wrong in an emergency situation	
Problem in northern Finland	Distance	Rovaniemi is good but in northern Lapland it might take hours to get help	Arctic context
	Price	Reduce prices	

Note. This table shows the results of questionnaire content analysis. Problems exist in language barrier, limited emergency knowledge, emotional influence, distance and high medical price.

From Figure 4.1.1.1 we can see that under the category of emergency information, the most frequently mentioned code is the situation, which represents all the environmental situations and the responses to it. It shows that people in an emergency situation are eager to know about how the incident is going on and how it is dealt with. It is followed by the codes “exit/ shelter” and “staff”, which offer help to people during an emergency. The ranking of the

codes shows that the most needed information in an emergency is the information that can help people survive the incident.

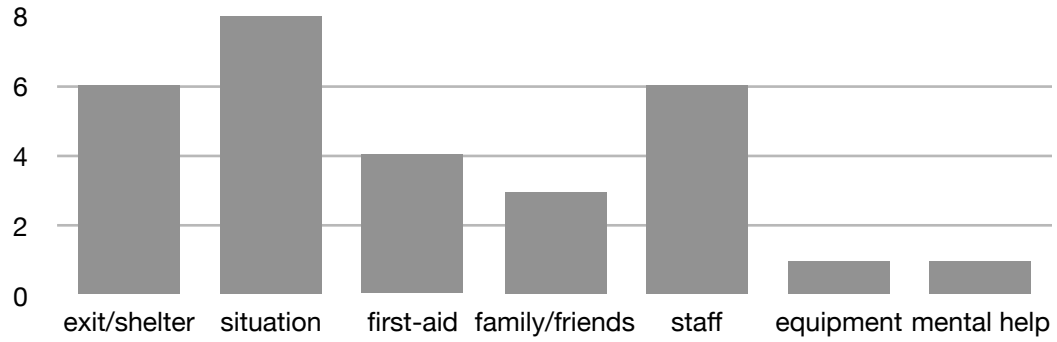


Figure 4.1.1.1 Codes in the category "emergency information content"

4.1.2 Semi-structured interview analysis

The coding and analysis followed the timeline of the emergency situation. The actions, touchpoints, problems, emotional responses, and expectations were analyzed. Table 4.1.2.1 shows the analysis results of individual interviews, while a customer journey map (see figure 4.1.3.1) displays the general experience.

Table 4.1.2.1

Content analysis of semi-structured interview

	Interviewee 1	**Interviewee 2**	**Interviewee 3**	**Interviewee 4**
Personal information	Cypriot, female, 20s	Finnish, female, 30s	Finnish, male, 32 years old	Finnish, female, 26 years old
Before emergency	- Searched for information online - limited information from university orientation week - Hope to receive more knowledge from orientation week - Via brochure, pdf on government website, social media	- Took first-aid course on her own expense - Suggested everyone should take first-aid training free	- Had first-aid training in army - Several days before his wife giving birth, the doctor told the baby was not in right position. It means when the water comes, the mother need to lie down. - Applied for family room but didn't get one	- Received free first-aid training at middle school - Didn't remember the knowledge well since it was many year ago - If emergency occurs, wouldn't remember what to do

	Interviewee 1	Interviewee 2	Interviewee 3	Interviewee 4
Emergency occurring	- Experience 1: Grandmother couldn't get up from floor. Grandmother had a bracelet attached to a device, but she didn't wear it. - Experience 2: water pollution in Copenhagen. Saw news on tv but only in Danish	- Experience 1: saw a drunk man hit a light pole. All the electricity cables came out. Worried about kids. - Experience 2: Mother was in bad condition - Experience 3: a friend fell from window and bumped his head. Seemed like having epilepsy - Experience 4: self had a stomachache, "I just felt I'm gonna die". Was afraid she could faint and frighten the young daughter	The water comes at night. The baby was not settled in the right position	- Experience 1: someone had seizure in her dance class, like epileptic attack - Experience 2: she had a brain stroke
Reporting emergency	- Experience 1: pressed the button on the device but it only showed something in Finnish. Called the number on a sticker on the device. - Prefer to report an emergency with a friend	- Experience 1: called 112 and told the location and situation. Then left. Did not tell personal information - Experience 2: called 112 and told the location and situation. Was asked if her mother was conscious. Could not tell what happened, only described what she saw. - Experience 3: called 112 and told about the situation - Experience 4: called 112 but the staff refused to send an ambulance. Told her to call again if she still feel bad tomorrow.	- Called to hospital so that the doctors can have enough time to prepare - The hospital told him to call 112 for ambulance - Called 112 - Suggested if the hospital can send ambulance directly, they did not need to call twice	- Experience 1: called 112 and followed the instruction, "very simple" - Experience 2: other people called 112 for her
Waiting for ambulance / staff	Waited for twenty minutes, maybe less	- Experience 2: ten to fifteen minutes - Experience 3: tried to helped her friend but could not do anything. Waited for ten minutes	Waited for less than ten minutes	- Experience 1& 2: waited for ten to fifteen minutes. Meanwhile 112 gave instructions - Mentioned long distance in lapland might cause problems

	Interviewee 1	Interviewee 2	Interviewee 3	Interviewee 4
Ambulance / staff arriving	- Nurses were very nice. They lifted her grandmother and then left. - Nurses didn't speak English	- Experience 2: took her mother and told which hospital they were going - Experience 3: took her friend to hospital	- Staff used stretcher to lift his wife to the ambulance and told him to come afterwards - Didn't tell about the entrances and the floor	Experience 1: ambulance took the patient. She didn't follow to hospital
Going to hospital and finding the patient		Experience 2: Went to hospital by herself. Found her mother laying on a bed in the hallway, alone	- He drove their dog to his mother-in-law, then drove to hospital - There were two entrances to hospital. The main entrance opens at day, the other one opens at night - Went to the main entrance but it was closed - Entered through the other entrance - Some random doctor told the floor and elevator	
During treatment		Did not get any information about the situation. Then after three to four hours, her mother was transferred to another hospital, "that was weird"	- Doctors gave information and they stayed at hospital for several days - He lived at home while his wife lived in hospital - Met a couple from a village nearby who didn't get family room and the husband had to live in the most expensive hotel in Rovaniemi	
After emergency		Experience 1: read about it on newspaper		
Wearable device and mobile application	- Suggested APP can help deal with insurance. - Suggested APP can help the people who cannot speak	- agree with using wearable devices and app to track vital signs and report emergency situation - Worried about the safety of private information	- Suggested to set ICE numbers. When emergency occurs, repot to hospitals, but also family - Concerned about privacy laws in Finland	- The device and app should ask for permission before sending health information - Elderly people might not be willing to use new technology

Note. This research includes six interviews, while four of them had emergency experiences in Finland. This table only displayed the results of these four interviews.

From the interview transcripts, some specific problems showed several times (see table 4.1.2.2). Interestingly, out of the four Finnish participants, three made the same mistake when referring to the emergency number in Finland. They said 911 instead of 112. Although all of them corrected it rapidly, this mistake continuously appeared. Under the arctic context, long distance between villages and hospitals is another frequently mentioned problem. Patients in bad conditions might be dangerous during the trip to the hospital. One of the interviewees mentioned the coldness in Lapland might be problematic during an emergency. The language barrier was approved by both Finnish and foreigners. It is difficult for foreigners to be alarmed by emergency situations. Besides, although five of the interviewees received different kinds of first-aid training, four said they would not use the knowledge when an emergency occurs since they could not remember or be afraid to do it. None of them used knowledge from first-aid training in a real situation. However, one interviewee followed instructions from the 112 operators. The results suggest the need for instant first-aid instruction during emergency situations. When discussing the wearable device and mobile application, privacy is a common concern. The reporting services should be prudent when dealing with personal healthcare data or vital signs.

Table 4.1.2.2

Frequent problems identified through the interviews

Codes	Number	Finnish	Foreigner
911	4	4	0
Long distance in Lapland	2	2	0
Language barrier	3	1	2
Couldn't apply first-aid knowledge during emergency	4	3	1
Privacy	4	4	0

Note. N=6, Finnish (n=4), Foreinger (n=2)

4.1.3 Customer journey map

With the data from the questionnaire and interview, we created a customer journey map to illustrate the general experience during emergency healthcare service. We divided the whole

journey into seven steps: before an emergency, emergency occurring, reporting an emergency, waiting for an ambulance, ambulance arriving, visiting the patient, and during treatment. The positive and negative experiences of each step are displayed on the customer journey map. An empathy map lists the customer's thoughts, feelings, behaviors, and words during the experience.

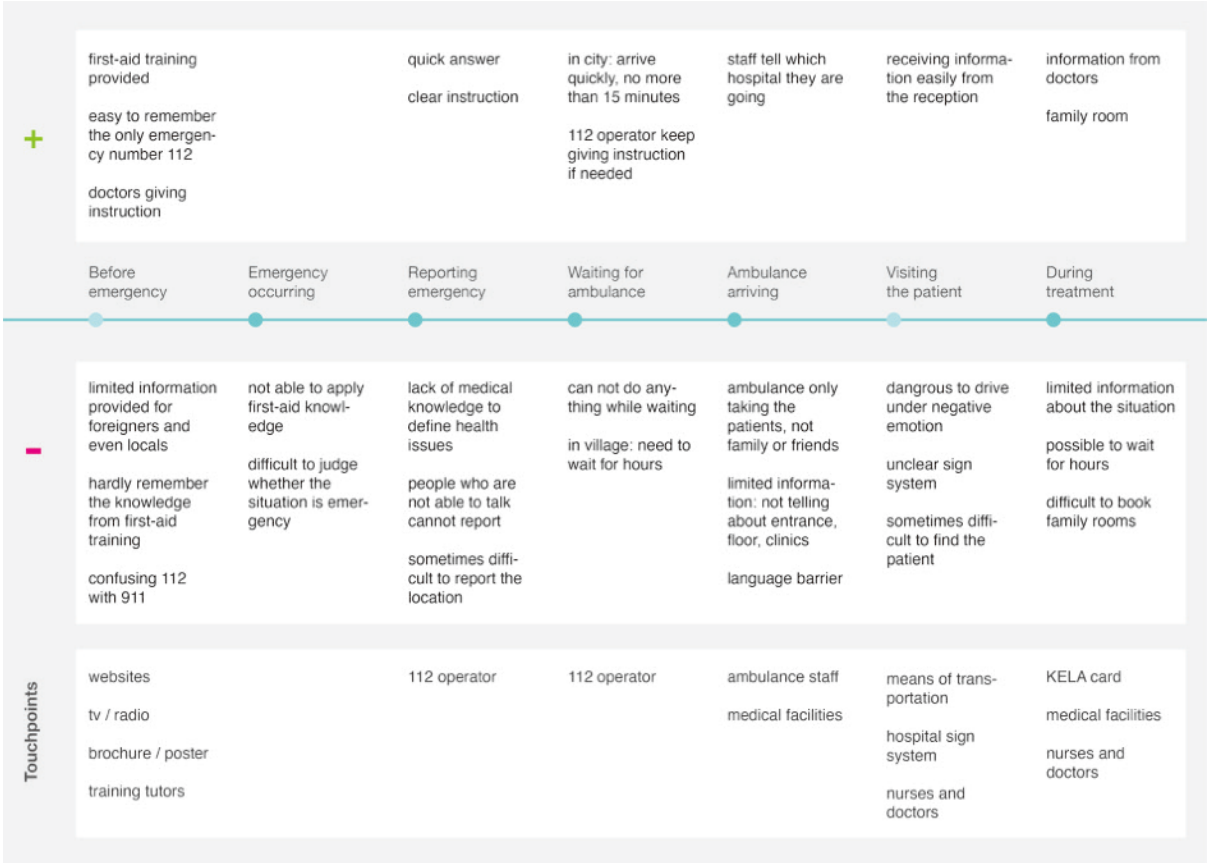


Figure 4.1.3.1 Customer journey map

Note. "+" means positive experience and satisfying services, while "-" represents negative experience and problems

There are various stakeholders in an emergency ambulance service according to different situations. The main actor in this customer journey map refers to the person who reports the emergency. The person can be: a) the patient; b) people who know the patient (friend, family member, workmate, and so forth); c) stranger.

Among the seven steps, the process from "emergency occurring" to "during treatment" is the actual-service period. This period mainly relates to the direct interaction between emergency

ambulance services and the customer. The experiences before “emergency occurring” is the pre-service period, which, in this case, refers to obtaining medical and emergency knowledge. The steps “before emergency” and “going to hospital” are optional. They do not exist in every emergency case. Also, the step “visiting the patient” is also able to happen during or after treatment. The customer journey map describes a general experience of emergency ambulance service without technology involved.

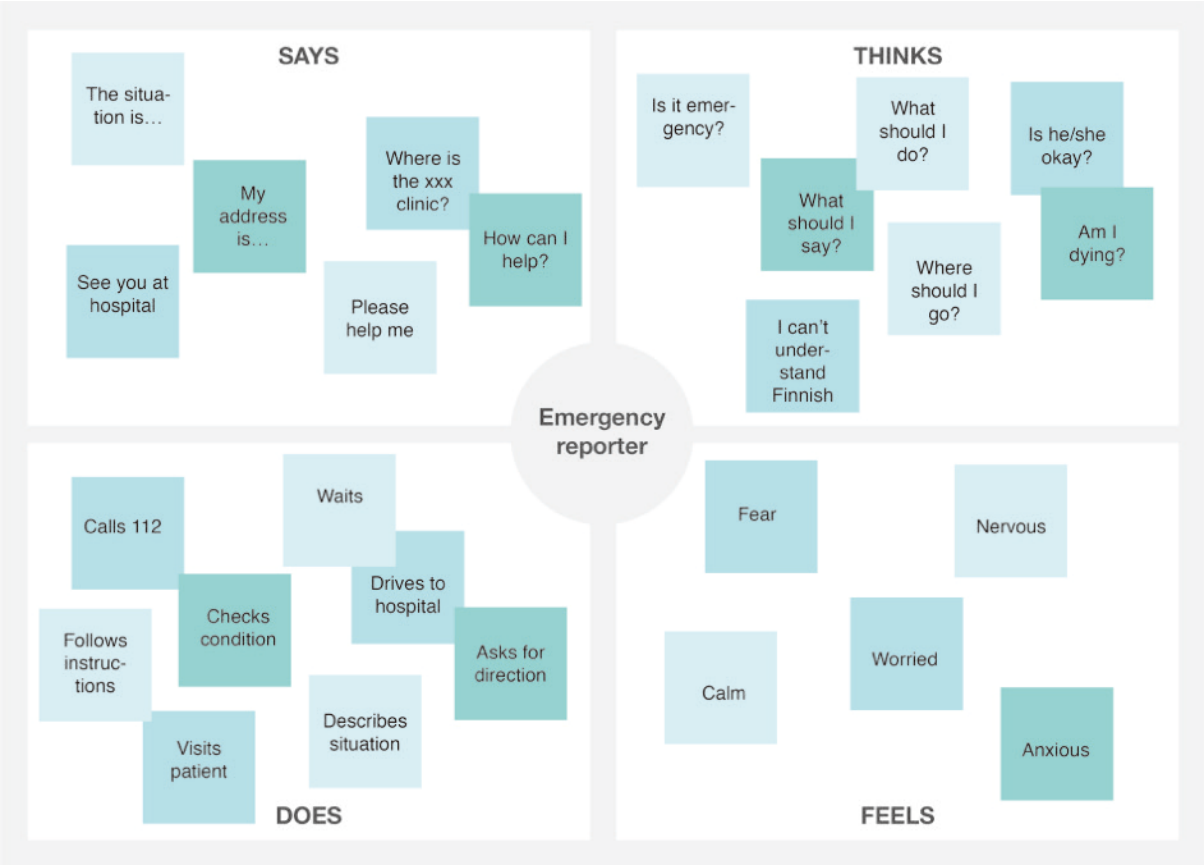


Figure 4.1.3.2 Empathy map

4.1.4 Discussion for generative research

The results above illustrate a customer experience and expose several problems relating to emergency ambulance services in Rovaniemi from the customers’ perspective. In order to improve the service, the needs of the customers were analyzed from the problems. Then, what the service should offer was decided.

The results show that most of the participants are satisfied with the medical service such as quick answers of 112, instructions from the operator, and a rapid arrival of an ambulance

within the city. Besides, no one complains about the treatment or medical facilities. From the emergency reporter's point of view, the limitation of information and communication are truly problematic. Thus, what they need is to receive the desired information at service proper moments. What we offer in the service system are the touchpoints and interfaces which provide the information. Table 4.1.4 shows the needs in different phases.

Table 4.1.4

Analysis of customer needs

Period	**Needs**
Before emergency - Receive general emergency knowledge - Pre diagnose and observation - Set emergency contact person	**Emergency knowledge** - First-aid training - Emergency reporting - Laws and regulations - ICE contact number - Introduction of emergency ambulance service - Government websites **Information of physical conditions** - Pre-diagnose results - Doctor advice - Vital signs tracking
During emergency - First-aid - Call 112 - Wait for ambulance - Meet healthcare provider of ambulance	**First-aid knowledge** - Judging and operation - Attentions under different symptom - Live instruction from 112 operator **Emergency reporting** - Number - Medical knowledge for description - Locationning - Video reporting **Information of the ambulance** - Location - Arriving time **Information of the patients** - Alarms and notifications - Location - Physical condition and vital signs - Privacy
After emergency - Track patients conditions - Make postoperative observation - Deal with insurance	**Information of the hospital** - Address - Entrance and sign system - Floor and clinic

Period	Needs
- Deal with legal issues	**Information of insurance and law** - Insurance policy - Legal assistance **Information of the patients** - Location - Physical condition and vital signs - Remote tracking

Note. The table specifies the possible situations and actions in each period and lists the needs of the customer. The period and needs covers different situations.

According to the needs of the customers, we decided to design a system consisted of a mobile application and a wearable device. The wearable device is given to the patients depending on the time they get on the ambulance and will be given back to the hospital at the time leaving the hospital. In special conditions, doctors can give patients, especially those who live far away from the hospital, the device to observe their conditions at pre-diagnose or post-operative recovery. The device documents the patient's vital signs, while the mobile application provides functions of video reporting, first-aid instruction, patient condition tracking, and notification. The system improves emergency medical service by building an information network. The service ecosystem map (see figure 4.1.4) explains the value flows between each stakeholder and the service system.

Overall, the generative research investigated the existing emergency ambulance service from the customers' perspective. It analyzed the experiences, problems, and needs during the service experience. The results led to the ideation of a new service system which focuses on information and communication in emergency ambulance service. We also The following section introduces the mobile application in detail and tested the service experience.

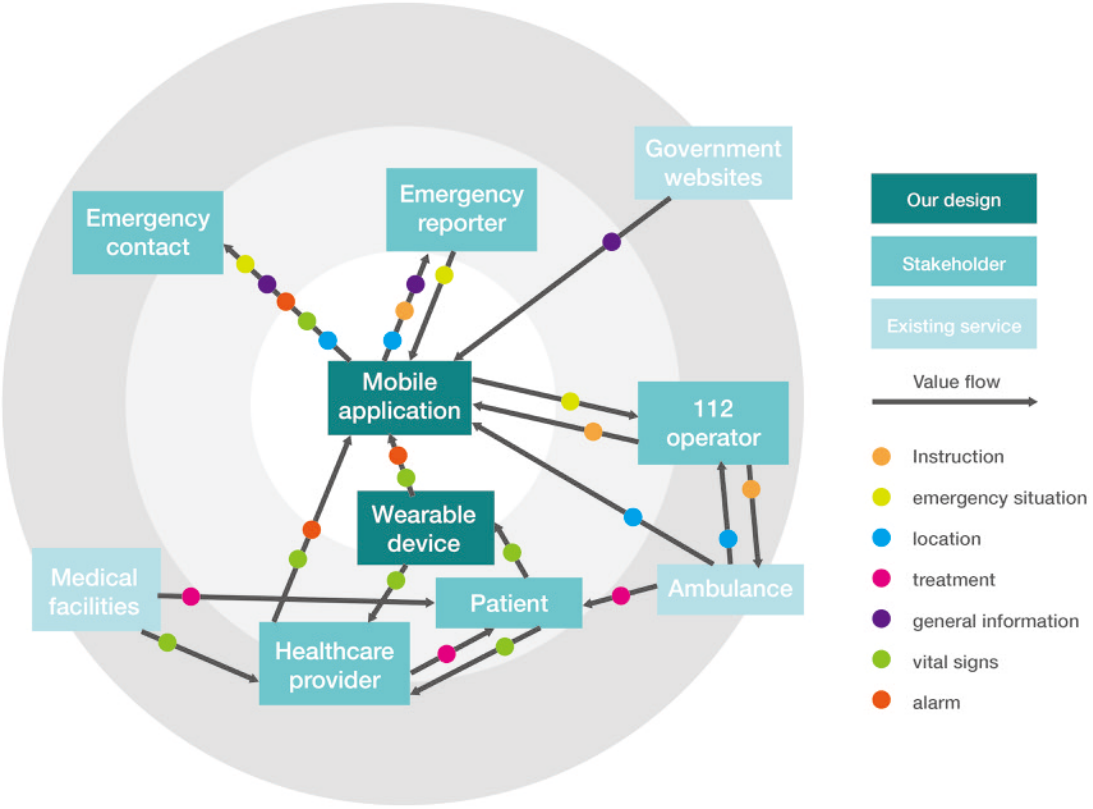


Figure 4.1.4 Service ecosystem map

Adapted from "This is service design doing" (p. 60) by Stickdorn et al. (2017)

4.2 Evaluative research

4.2.1 Mobile application

The mobile application is the center of this service system. The main pages and functions of this application are: registering, creating a profile, tracking, emergency reporting, first-aid knowledge, links, and alerts (see table 4.2.1).

Table 4.1.4

Explanation of mobile application functions

Registering	When users logging in the application for the first time, they need to register an account with identification number and fill in personal information. The personal information will not be exposed. At the bottom of this page, terms can be checked.

Creating a profile	Profile refers to an emergency medical card. Users need to fill their medical information, and set emergency contact numbers. When emergency occurs, the system will send notification to the emergency contact numbers automatically.
Emergency reporting	This function is for a better experience of giving an emergency call. On this page, users can choose whether call with or without photos, videos and location. Live video call is also available for users who are not able to describe the situation clearly.
Tracking	After emergency contact persons receiving notification of someone being in an emergency, they can track this person's medical condition and location after entering a verification code given by SMS or email.
First-aid knowledge	In this page, users can search for first-aid knowledge by entering a exact name of disease or only keywords. What should and should not be done are listed. Since users might not know how to decide whether the situation is an emergency, "call 112 if" tells the criterion.
Links	Information related to emergency can be found through links to government websites, such as Emergency Response Center Administration and KanTa.
Alerts	While tracking function is working, users can set up alert lines to receive notification when any vital sign of a patient gets too high or too low.

Under the context of an emergency, this application only provides necessary functions, so that it will not cost too much storage of mobile phone. Also, all functions can be easily reached from the home page in order to save time in emergency situations. Figure 4.2.1.1 and Figure 4.2.1.2 shows the low-fidelity prototyping of the application and its user flow.

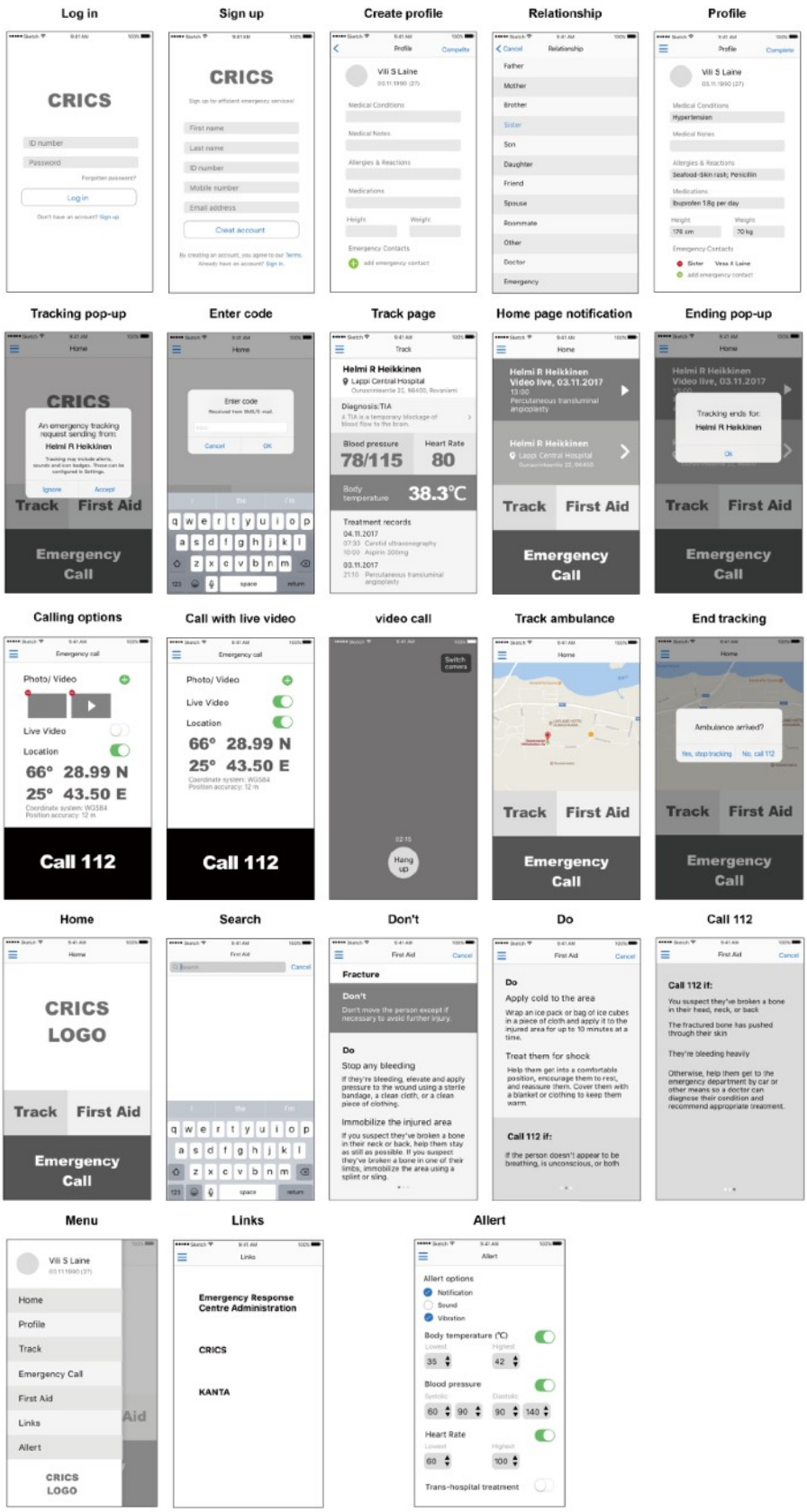


Figure 4.2.1.1 Low-fidelity prototyping

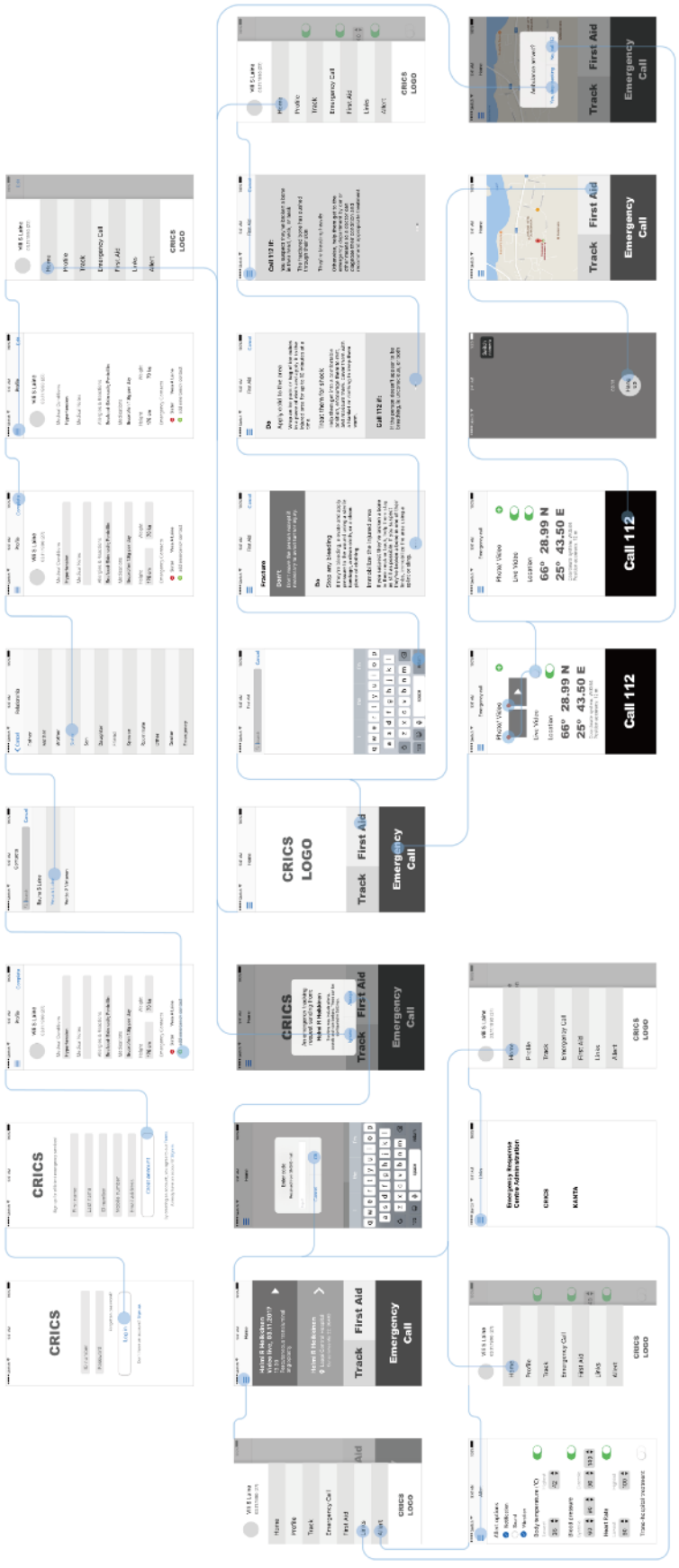


Figure 4.2.1.2 User flow

4.2.2 Service prototyping analysis

In the role plays of service prototyping, there were two researchers working as facilitators, one teacher working as a technical assistant. Four participants played roles in two scenarios (see table 4.2.4.1).

Table 4.2.4.1

The role of participants in each scenario

Participant	Role in scenario 1	Role in scenario 2
Participant 1	Technical assistant	Technical assistant
Participant 2	Patient	Passerby
Participant 3	Nurse	Patient
Participant 4	Ambulance driver	Family member
Participant 5	Ambulance driver	Nurse

The analysis of workshop questionnaire (see table 4.2.4.2) showed participants' feedback, concerns, and insights that we did not even consider. Also, their understanding of emergency services and the application approved that role play with an interactive application prototype was an efficient service prototyping tool.

Table 4.2.4.2

Workshop questionnaire analysis

Function	Page	Heart mark	Participant	Notes and sketches
Log in	Log in	1	Participant 1	Participant 4's biggest worry is the safety of information
	Sign up	1	Participant 2	Profile: Adds history to medical notes (sketch)
	Create profile	0	Participant 3	Finger print log-in
	Relationship	1	Participant 4	These are quite clear and easy to follow
	Profile	1	Participant 5	Maybe better to have different languages: Finnish, Russian, Swedish, Saami
Track	Tracking pop-up	1	Participant 1	Track page: These numbers don't tell me much. How to show these also visually or more understandable? (usually if I see my blood pressure, I go to google the numbers)
	Enter code	1	Participant 3	Think about the case when the patient dies…(screen, sentence)

Function	Page	Heart mark	Participant	Notes and sketches
	Track page	2	Participant 4	I think this is very well thought through. My only worry is the chock. When the first notice comes, is it personal enough. People might want a phone number for more information.
	Home page notification	1		
	Ending pop-up	1	Participant 5	Is it possible to share the information with the closest people (family, parents, friends…)? For international students or people from other countries, they must contact to the embassy and insurance companies. It would be nice that they can share the information. Home page notification: adds face to the patient's information (sketch)
Report	Calling options	1	Participant 1	Calling options: This is a bit unclear…Maybe because so small + and - buttons. Should it go straight to the video or film mode while pressing the icon? End tracking: can ambulance stop tracking when they arrive?
	Call with live video	1		
	Video call	2		
	Track ambulance	2		
	End tracking	1		
First-aid	Home	1	Participant 1	Would be really interesting to know which on "don't" or "do" should be at first? (you give faster first-aid if the "do" is first, right?) After discussion: depending on the case Add voice control that you can hear advices if you need your both hands
	Search	1		
	Don't	4	Participant 3	Search voice, because you might not be able to write. You're helping the patient or it's hard to write…Voice instructions! Search: can be problematic, because you can't always say what happens exactly - and if you wrote something wrong - you might act wrongly…
	Do	2	Participant 4	Search: maybe some sample show up here. Key words for finding easier Don't: good! "Don't" comes first This looks like a very helpful tool
	Call 112 if	2	Participant 5	It would be nice to have a kind of checklist… for patient. Maybe make click box (because people would be panicking)
Links	Menu	0		
	Links	0		
Set allert	Allert	1	Participant 1	This is good for parents who need to track for example their kids with diabetes or other diseases

Note. N=5. Drawing heart mark represents the participant likes this page. Sketches were transcribed into sentences.

4.2.2 Discussion

The evaluative research phase focused on improving our designed system. Meanwhile, the research dug deeper into customers' needs which proved some of our hypotheses during the previous research, as well as providing new insights.

The results in the workshop proved the needs of information and communication, the special needs for foreign residents, the employment of a mobile application, the importance of privacy, and the emotional influences during an emergency situation. However, it was difficult to simulate the real condition of coldness and remote distances in the arctic area. Thus the influence of the arctic environment was not tested.

The workshop focused on the test of the mobile application. Firstly, in the discussion and the questionnaire, the most discussed and approved page was the "Do" and "Don't" in first-aid. The lack of medical knowledge, which may contribute to experiences of panic during emergency, leads to the need for clear instructions. When designing, we put what should not be done in front of what should be done. After discussion, the participants and we were in agreement with that the order of these two lists should change according to which one is more urgent in certain cases.

Secondly, the results suggested adding audio announcements and voice control functions to the application in case of the situation that people are not able to use hands. Also, participants asked for more visualized information to show the vital signs of the patients. These suggestions showed the needs of multiple media during an emergency situation. To use graphics, voices, gestures, and other means of displaying and controlling is worth investigating in future design.

Thirdly, although we had considered the importance of personal information privacy, there still was concerning from participants about this issue. It showed that to protect personal information and to show the protection are equally important. The latter is another challenge for us.

Besides, what we missed in the research is the complicated language system in the Lapland area. We only thought about foreign residents but forgot those natives who speak Swedish or Sami language. Multiple languages should be included in the application.

In summary, a mobile application-centered service system is a satisfying answer to the demand for information and communication during an emergency situation. This service system should consider information safety, evidencing of service, multi-media display and control, multiple languages, and emotional influences. In order to investigate the influence of the arctic environment, further research and proper prototyping tools are required.

5. Conclusion

5.1 Conclusion

This research aimed to improve the emergency ambulance service in Rovaniemi with service design approaches and technology. Based on qualitative and quantitative analyses and a co-prototyping workshop, the customers' experiences and their needs are concluded. The research indicates that the problem of information communication exists in emergency situations. A technology-based service system is the answer to improve the experiences by building an information network. Figure 5.1 displays how to create and evaluate a technology-based service system for better service experience.

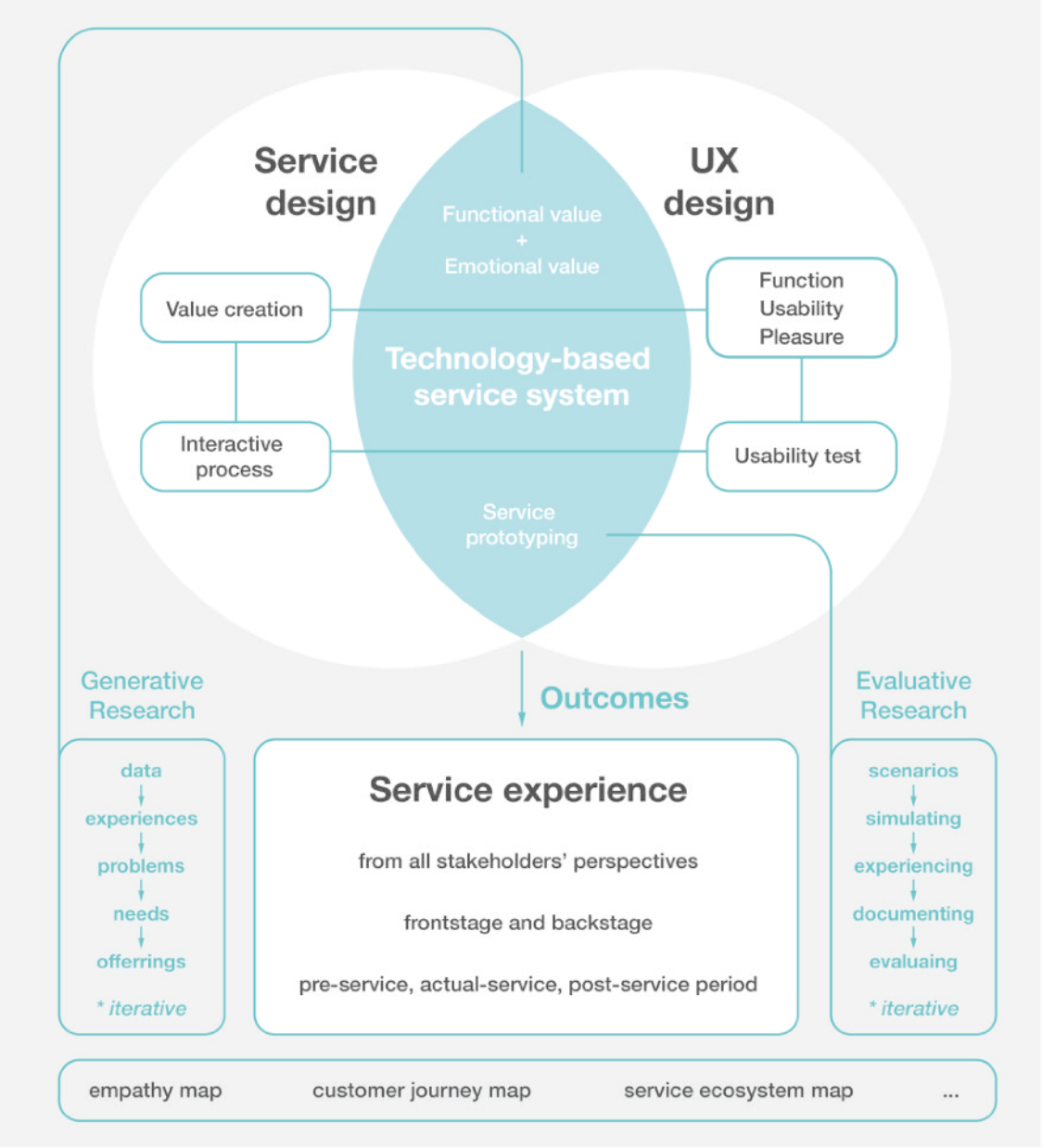


Figure 5.1 Framework of create and evaluate a technology-based service system

The outcome of service experience from technology-based service design combines service' s design and user experience design. Value creation and interaction processes are core to service design (Miettinen. 2009). In this combination, value refers to both functional value and emotional value. The interactive process demands for co-creating with stakeholders. The results in this research shows possibility to involve usability test of mobile application in service prototyping through customer participation.

The generative research in this study investigated both functional needs and emotional needs during an emergency situation. Data from questionnaires and interviews were analyzed into experience, from which the problems and design possibilities were defined. In an emergency situation, the limited information leads to negative experiences. The information includes personal knowledge such as the emergency reporting number, first-aid knowledge, as well as the information sharing such as the conditions and location of patients, the communication during reporting. Thus, this research indicated an information network that connects all stakeholders should be the designed to improve the experience of emergency situations.

The evaluative research in this study prototyped both service experience and the usability of the application in an laboratory test at SINCO. Scenario role-plays, interactive prototyping, and paper prototyping were combined in the test. Using paper prototyping as questionnaires was an effective method. The results demanded for multi-media in the emergency information communication system.

Mapping was utilized in this research for multiple times and purposes. Thesis tools benefits the design for service experience since it can visualize the holistic experiences. Service experiences should consider from frontstage and backstage stakeholders' perspectives at pre-service period, actual-service period, and post service period. The empathy map and the customer experience map concluded and visualized the results from generative research. They illustrated both actions and emotions, which helped the value creation. The service ecosystem map effectively displayed the value flows between each stakeholders and the service system. Compared to other service systems, the technology-based service systems focus on human-machine and machine-machine interactions more than human-human

interactions. The service ecosystem map fulfilled the needs for visualizing the interactions in an technology-based service design project.

5.2 Limitations and further studies

This research clearly illustrates the needs, the design offerings, and the applicable design methods for improving the experience in emergency situations in Rovaniemi. However, it also raises questions for how to continue and implement the design.

Firstly, this research lacks participation of stakeholders from authorities such as doctors, nurses, 112 operators, and healthcare department. The current situations and experiences were only studied from government websites, our technical assistants and customers. The absence of stakeholders restricted co-creation in service design process. Secondly, in the service prototyping workshop, we could not modify the coldness and distance as real environment. Consequently, the analysis of the arctic context influence on experiences is limited. Besides, mobile application's user interface was not designed, so the usability test did not cover all the measures, especially user interface atheistic and Appropriateness recognizability.

To better improving the emergency ambulance experiences, more iterations are needed to complete the cyclic process of action research. Further researches may involve stakeholders from the emergency authorities, improve the mobile application with user interfaces and multiple medias, and test the service experience in a better simulated laboratory or in real context.

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Appendices

Appendix A Online questionnaire results

Q1: What is your nationality?

Nationality	Number	Percentage
Finnish	5	22%
Chinese	11	48%
French	2	9%
Russian	1	4%
Japanese	1	4%
Isarel	1	4%
Cyprus	1	4%
Spanish	1	4%

Nationality	Number	Percentage
European countries	10	43%
Asian countries	13	57%

Q2: What is your age?

Age	Number	Percentage
Under 18	11	48%
18 to 24	10	43%
25 to 34	2	9%

Q3: Did you receive any training in emergency preparedness in

Option	Text	Number	Percentage
Yes	First-aid at Lapland UAS	6	26%
	Safety pass on tourism course, first aid pass		
	CPR and first-extinguishing		
	First aid training in army		
	EA1		
	First aid		
No	-	17	74%

Q4: Do you know how to report when you see an emergency situation as a first person in Finland?

Option	Text	Number	Percentage
Yes	Call 112	9	39%
	Call 112		
	Call 112		
	Calmly state the situation, location and your name. Follow instructions given on the phone.		
	Call 112, follow instructions		
	Call 112		
	Call 112		
	Call 112		
	112		
No	-	14	61%

Q5: How do you prefer to get knowledge about emergency services when you arrive at a foreign country? (multiple choice)

Option	Number	Percentage
Website	18	78%
Brochure	10	43%
Authorities	7	30%
Text message	6	26%
Local residents	5	22%
Email	1	4%

Q6: Do you think that the differences of emergency rescue process between your country and foreign countries may cause problems

Option	Text	Number	Percentage
Yes	-	11	50%
	Languages, numbers		
	Due to pop culture, I am more aware about the emergency number in Usa than other countries in Europe or outside eu etc		

Option	Text	Number	Percentage
Yes	I follow news in order to be updated about the situation, it's important to be aware of what's happening and be ready to react according to the situation.	13	57%
	-		
	Facebook		
	sometimes from local news websites and social Media accordingly		
	To know what happened, in which condition, where, if or is allowed to go outside...		
No	-	10	43%

Q7: In which way do you prefer to report

Option	Number	Percentage
Making a phone call	17	74%
Using mobile APPs	6	26%

Q8: Have you ever used emergency services in Rovaniemi by calling 112?

Option	Number	Percentage
Yes	3	13%
No	20	87%

Q9: Did you face any difficulties when you called 112?

Option	Text	Number	Percentage
Yes	Hard to describe the location	2	9%
	Language		
No	-	21	91%

Q10: Considering a device which can record your physical informations (location, heart rate, blood pressure,...) and send the information to the emergency authorities, which option is more acceptable for you?

Option	Number	Percentage
The emergency authorities can always access to your device	3	13%
When emergency occurs to you, the device will automatically send your information to the authorities	16	70%
The information can never be sent without your own permission	4	17%

Q11: How do you usually be informed about emergency events? (multiple choices)

Option	Number	Percentage
Social media	20	87%
Television	11	48%
News websites and services	11	48%
Radio	4	17%
Newspaper	3	13%
Authority websites	1	4%

Q12: Do you usually follow the news and reports when an emergency situation

Option	Text	Number	Percentage
Yes	reasons, by whom, location, number of victims	13	57%
	Depends how close to the emergency that took place is to me or someone i love/care about e.g family or friends		
	I get messages from my friends or I see posts on my social media platform		
	television and radio news		
	-		
	If it's local		
	-		
	-		

Option	Text	Number	Percentage
Yes	Language wall, not understanding	11	50%
	A person might be confused and react wrong in an emergency situation		
	-		
	Of course		
	I think it is almost the same as there is always same basic rules to follow. Bit due to different cultures there might be some difference		
	-		
	-		
	Specific places to go, first aid gestures		
No	-	12	50%

Q13: If you find yourself in an emergency situation, what kind of information do you want to know? (e.g. the location of rescue staffs/ the safe way out or safe points to hide / information about current situation, casualties,...)

Text
The number of emergency, safe way out, place with medicines
Receiving the instruction from official people
The location of rescue staffs/ the safe way out or the safe points to hide/ information about current situation, casualties, hospital, refuge center, info about embassy, let my family know etc
Availability of safety equipment/ first aid, location of safe exists, instructions on how to treat a person in specific circumstances, updates on close one's situation
Current situation and casualties
Location of rescue, is anyone going to help
It's very general question…depends on the situation, it's important to know the basic, first actions in emergency situations, them if the rescue staff is one their way to the place, and of course information about current situation
The location and current situation
How to save myself
The safe way out/ how to contact the rescue staffs
The location is the most important
Where to get the emergency service
Who are responsible for such issue and whom I can get help from
Examples were fine

Text
Location of the rescuer, first aid gestures, current situation, if I can help (i have specific formations in first help and crisis situation to rescue people, like determine priorities of harmed people)
“Emergency situation” is not precise enough

Q14: What kind of service do you think should be provided after an emergency condition? (Multiple choice)

Option	Text	Number	Percentage
Resettlement of the affected people	-	16	70%
Post-disaster psychotherapy	-	16	70%
Other	The process of the event	2	9%
	Phone, online and physical services for psychological and medical help		

Q15: Do you have any advice to improve emergency services in Rovaniemi based on your experience?

Text
The first aid course for the tourism sector is a joke
None of the staff speaks english, even though Rovaniemi is a tourist town
Let more people know
Rovaniemi is good but in northern Lapland it might take hours to get help
Information about shelters and available therapy/medical personnel
Reduce prices

Q16: Do you have any other comments related to this research or survey? Free word.

Text
There is a big need for providing emergency information to all international residents and visitors
Would like to have more knowledge about this (public propaganda)

Appendix B Interview notes

Interviewee 1

Cyprus
Stay in eastern Finland for 4 years
mentions that you can mark yourself as safe in Facebook when emergency occurs
Experience of emergency : With an device connected to bracelet (May 2016) Description
Her grandma fell to the ground and she can not lift her up.
during

1. she pressed the button on the bracelet
2. something in Finnish showed on the machine
3. called a number written on the sticker on the machine and asked for help
4. two women came in around 20 mins and helps

Her grandma had this bracelet device for she had many health issues. Not clear if the bracelet is tracing any physical conditions but there is one bottom on it. If you press the button then something happens on the machine so there is place-limited that the machine only works at home. Another problem is that her grandma seldom wears this bracelet. And the two women how came to help might not be the emergency staff but maybe private nurse of the bracelet company. Any it charges 40 euros per month.
problems

1. There might be some emergency information provided in orientation week but she did check. The police officer came to university in oriental week just tell things about drugs, alcohol and crime like what's illegal.
2. Do not know about safe place in each building in Rovaniemi
3. Once in Copenhagen, no special authority are taking responsibility to inform foreigners of a water pollution.

Suggestion

1. would like to talk with a friend when something emergent happens (cause you may be too frightened if something bad happen)
2. would like to inform her family
3. information on government website that people can easily shared on social media
4. would ask friend to go with her directly to the police station and fill in a form if she needs to report an emergency, but not willing to spend a long time to queue.
5. solutions to report when you can not speak or for deaf people
6. foreigners should know their rights here in Finland like you can ask for free lawyer if you are involved in police things.

Interviewee 2

local
Experience of emergency (call 112): For an traffic accident as a witness
Description
A man crashed into an electric pole/ street lamp to cause the street lights to go out. The suspect drove away after a short dizzy. Hanna past by and called the 112 for that the scene of the incident was quite near a school and the darkness may cause dangers to children.
during
1. simply just called 112 to describe the situation she saw.
after
1. Did not get any feedback from the authority, but get to know about follow-up development from newspaper that this was a drunken accident.
For this experience, there was no inconvenience for Hanna as she just want to report the accident and did not really want to know more informations.
Experience of emergency (call 112): For her mother
during
called 112 to ask for ambulance

the staff ask about the condition of her mom, but Hanna did not know what was the problem

112 arrived in 10 to 15 minutes
the ambulance staff took her mom to hospital with only informing her which hospital they were going
Hanna managed to go to hospital by her own
no detail information like the exact location of her mom was told so that Hanna had to search everywhere to find her mom
after finding her mom unconscious placed in the hallway of the hallway, they waited for another 3 or 4 hours to transfer her mother to another hospital for treatment
B
(The process marked in red color, the way the family member of the patient is treated exacerbated her anxiety)
For this experience, the biggest problem is that the ambulance staffs won't take the initiative to provide information. Hanna worried a lot about her mom after the ambulance left. She tried several times to call again in order to get more information, but still not enough information she got.
Experience of emergency (call 112): Her friend fell down from window
Description
Her friend fell down from window, still conscious but may had his head hit. So they just left him lying on the ground and wait for ambulance

during
1. called 112 and described the situation
2. the ambulance came and took her friend

after
1. She did not chase to the hospital and did not know any further information of her friends
For this experience, Hanna did not follow up the incident and did not worried a lot about the treatment of her friend as she knew there was no big problem with her friend's health.
Experience of emergency (call 112): For her own health condition
description
Hanna has a very serious stomachache and she describe it as 'i just feel i am gonna die.' She was with her young daughter and she did not want to frighten her child if she faint.
during
1. called 112 and describe her situation
2. the staff refused her asking for ambulance and told her to call again if she still feel bad tomorrow

other problems
1. as she knows, many of her friends does not receive first-aid training as it charges for money. Hanna had one section of first-aid training of a two-section course at her own expense.
Suggestion
An optional setting as 'send me an alarm when...happens'

Interviewee 3

Male, 32years old
local
had first-aid training in army

Experience of emergency (call 112): wife birth-giving
before:
1. doctor told about when to call hospital (water comes)

during:
1. called hospital number and told about the baby's situation
2. hospital suggested to call 112 for an ambulance
3. called 112
4. 112 arrived in 10 minutes and took wife to hospital
5. Juho sent their dog to his mother-in-law
6. Juho drove to hospital

7. there are two entrance at hospital, main door opens at day, side door opens at night but hard to find (doctor did not tell)
8. guided by doctor to fourth floor to his wife

after
1. registered for a family room but had to wait for it
2. lived at home and drove to hospital everyday

other problems - for villagers from outside Rovaniemi
1. took many hours to drive to Rovaniemi's hospital, may give birth on half way
2. husbands need to live in hotel if they cannot get a family room and it might cost a lot

Interviewee 4

Female, 26 years old
local
CPR and fire extinguisher training in middle school. She can not remember since they were in the past. She is ready to renew the training courses.
She prefers to receive a brochure from a hotel or other places at first time of check in.

Experience of emergency (call 112): Swoon

Before
1. She was at dance class when somebody had problem and she called 112

During
1. Calling 112
2. Receiving advices and instructions from people while she was waiting for the ambulance
3. It took 10 to 15 minutes for the ambulance to reach the place
4. She could not go with ambulance to the hospital
5. No difficulties for calling 112

Main problems in Finland in term of emergency
1. Long distances especially in Lapland
2. Police do not come for every reports such as stolen bicycle and she thinks it is problem

Additional information
- When you call 112 for reporting a crime they will give you another number which belongs to the police since it is not emergency except for really serious crimes.
- You have to fill out online report for the crime which you can do it in police station as well.
- If you be able 112, they will locate you even if you can not tell the address.
- There is a device right now which they use for elderly people which can report a health issue automatically.
- When you have a health problems it is ok that people who are dealing with health problems know about your information and background.
- There is an emergency alarm in TV and radio.

Suggestion
No suggestion

Interviewee 5

Female, 22 years old
from Oulu
tourism student
familiar with emergencies in tourism in Rovaniemi
never called 112

Emergency & first-aid knowledge

when see people on the road - from university
1. check the person's condition (unconscious or not, broken bones, heart beat)
2. give first-aid (e.g. CPR) if needed
3. call 112 and tell about condition

when hold an activity at uni - from university
safety plan, safety number of person, contact people, doors that can be shut down

when meet a school shooting - from high school rehearsal
stay low and quite, hide, teacher call the police, meeting place, how to escape from window when firemen arrive

Problems
1. she dose not know about safety place or safety exit at university or student apartment
2. consider of the weather of Lapland and people's habit, when emergency occurs, people do not have time to get their clothes and will wait in the cold air
3. the fire alarm is too sensitive when cooking, so people get used to ignore it, it can be dangerous when there is real fire
4. first-aid, especially CPR, might cause danger to people (e.g. hurt bones)

Suggestion
1. hope to know about the fire's condition in the building to decide how to escape
2. can accept device or application sending personal information to authorities only in emergency situation

Appendix C Interview transcripts

Interviewee 1

Interviewee 1: I moved to Finland in August 2012. Almost five years.

Interviewer 2: So, you stayed in Helsinki?

Interviewee 1: No, I live for four years in Joensuu, in eastern Finland. Okay, I can show you Joensuu on the map. It's a very small place. We've been there for a period. I wen for an exchange study in Copenhagen for four month.

Interviewer 2: So you haven't ever called 112 in Finland?

Interviewee 1: Um-hum.

Interviewer 2: When you arrived here, did you get any information about emergency service?

Interviewee 1: Maybe there should be more information in the student accommodation. There might be, but I haven't checked, I haven't seen that, and I don't think there is. You know when you get the contract, and welcomed in the map, maybe there should be information about emergency situations. And I lived in a few places in Joensuu. When I moved to the third apartment, I lived for the longest time, like two years. I remember in the hallway, there was a board. There was some information on it. And there was a paper, the date was like, in the nineties. I think it did say about the emergency number, but I don't remember exactly.

Interviewee 1: I can tell you what I have experience with. In May, 2016. I was visiting my grandmother in a small village. And she has many health issues, so she hd been advised to use this bracelet. I think It tracks anything, but it's not clear. There is a button that you can click on it when emergency comes. So she actually doesn't wear it that much. Anyway we had once emergency in her home and I was there. She couldn't get up from the floor, and I couldn't lift her up. So what I did was that I went to the machine linked to the bracelet - there is a machine for the bracelet. I called the number there. And two women came.

Interviewer 2: In how long time?

Interviewee 1: I would say within half an hour, maybe twenty minutes, maybe less. It didn't take long. I just called, I didn't really do much. They came and helped her. My problem with this device is that if this could happen somewhere in public, the device is at home. I understood it. You press the button and something happens in the device at home. So to me it's completely useless. Also my grandmother doesn't wear it, she just doesn't use it. I think she didn't understand the device correctly. By the way you need to pay for at least 40 euros per month.

Interviewer 2: Even if you don't use it?

Interviewee 1: Yeah my grandmother doesn't use it. I think it's good thing she should use it but she doesn't.

Interviewer 2: So. When you use the machine, it's like making a phone call?

Interviewee 1: I think I press the button and it showed something in Finnish. And there is a sticker on the machine, I called the number on the sticker. The ladies came, they were nice.

Interviewer 2: For the phone call, did they ask you for information about your grandma?

Interviewee 1: I just called and said, come to this address. She fell off the bed and can't get up of floor.

Interviewer 1: Do they have health record of your grandmother?

Interviewee 1: They should have. I'm not sure to be honest. There is a health center, a hospital. My grandmother often goes there to get some therapy. She must have some record in the health center. And the village is full of people.

Interviewer 2: They took your grandmother to the hospital with ambulance?

Interviewee 1: No, she did't suffer any injury. She fell off the bed and couldn't get of the floor. I wasn't strong enough to lift her. I tried. Two ladies came, they hold her each arm and lifted her. And that's it.

Interviewer 2: Do you know which authority are they from?

Interviewer 1: maybe private? Or government?

Interviewee 1: I don't know. She pays for the device, and these ladies were nurses, I can tell. You know, they didn't speak English.

Interviewer 2: do you know that they have safe places in every building here?

Interviewee 1: Do they? Like a bunker? I just don't know about this.

Interviewer 1: They have to, yes. When they want build a building, from like twenty years ago, they need to proof that they have this kind of safe place in case of emergency.

Interviewee 1: I don't know. You know there is not earthquake in Finland. And it doesn't get in any extreme disasters like typhoons.

Interviewer 2: How about water pollution?

Interviewee 1: Okay, all I know about water pollution. When I was in Copenhagen, there was some problem with water pollution. It was raining a lot in one year, so too much water went into the storage room. My flatmate told me that people were instructed by the government to throw away anything cause the things are toxic. She told me that her uncle had this that is higher that he could keep things cause the water didn't reach. But everything else people have to throw away. And it was dangerous for cars. And they have this kind of issues now that they have to change the infrastructures in the whole city. Because this problem is not going to go away. Global warming, environmental issues, gonna keep raining. So they need to figure a way that is not too expensive to make space for the water to go down.

Interviewer 2: Did you get informed by government?

Interviewee 1: I was only a exchange student for five months. I saw something on the news but I don't speak Danish. The thing I told you about the city, I only know this because of a project of this company. (typing and searching for the company on laptop) I remember they were a service design agency. But look, they change their making. They are trying to plant trees in a different way. Those are the environmental thing. And I only know this because I was studying service design, and I was part of the projects. And of course I lived in some of the apartments, but only second floor. In a different area.

Interviewer 2: You know like, most of the foreign students don't have televisions or the radio. We asked Juho and Hanna, they said that if there was like water pollution happen. It will be shown on the television, and in Finnish.

Interviewee 1: Yes, of course. It's a good way to reach old people. My grandmother has a TV and most old people have TV. They don't use internet. But I think people in there 50s or even 60s they have a tablet or a smart phone. I don't know how to inform someone from the foreigners.

Interviewer 1: If some disaster happened, in which way do you prefer to receive information? From government? And what kind of information?

Interviewee 1: I would like somebody to talk to me.

Interviewer 1: In person?

Interviewee 1: Yeah. Explain to me what I have to do. And I am in a different situation, I have two passports. And I need to inform my family. I need to think of my relatives here, but I would also like to have something in paper. Like a list? And maybe some PDF online I could download from some website.

Interviewer 1: And email?

Interviewee 1: Email? Oh no. I would disagree with the email. If you put something on the government website that people can easily share with social media.

Interviewer 1: Okay. And what kind of information would you like to know?

Interviewee 1: What I have to do. Okay. And I need to go to some bunker. I must not go outside in this period of time. Or I must be, whatever, care for. Ahh, yeah…I don't know.

Interviewer 1: If you want to report an emergency situation, or kind of an accident, or a crime…

Interviewee 1: (interrupt) I would ask for help.

Interviewer 1: Do you prefer to call? Or use an application or something can realize your situation, GPS and everything?

Interviewee 1: If something happened to me, like I am attacked. I think I will go to the police directly with someone. So I can talk. Not using some application.

Interviewer 2: How about a car accident? Or fire?

Interviewee 1: If it is a car accident, I can imagine there is an ambulance coming for me, or somebody calls. And I will be in the hospital. Application? I don't know. Maybe help me with the insurance, and health issues? I have a friend who has quite a few health issues. And sometimes she has many serious allergies. Recently she's allergic to

coconuts. And her throats swells up. I realized that you might not be able to speak when your throat is like swell up. So…I don't know. I avoid hospitals and have never reported. Please there be someone for my passport. If something serious happens, I would like to talk to someone.

Interviewer 1: For example, If it is in the middle of night, you will go to the police?

Interviewee 1: You know, the hospital and police station are always open.

Interviewer 1: And you don't call the police to report. You go to the police?

Interviewee 1: I have never been into this kind of situation. And maybe if I got personally attacked, I might be too afraid. Because you know this sometimes happens to the victims. They know there's kill but they stay home. I imagine what I would do is to call a friend, and we would go together.

Interviewer 1: To report in person?

Interviewee 1: Yes. I'm sure that Finland has some form to fill in if you have been assaulted. But I would just go there and I don't know, maybe I can ask like, "Hey, do I need a lawyer?" But I have never been in this situation, so…

Interviewer 1: So if you want to go to another country, or imagine when you came to Finland for the first time, and you need to receive some very basic information about the emergency, such as the numbers.

Interviewee 1: I'll go online.

Interviewer 1: You prefer to check everything online before coming here?

Interviewee 1: Yeah, before I moved here. My flatmate is familiar with the social services. Cause she moved so long ago. And when I moved here, I got a lot of help. I went with my grandmother and we went to my aunt and we talked. Cause I didn't know what I was allowed to do. I mean I did check the stuff like benefits online, I went to the website and Kela website. I don't go there often. I would rather go to the Kela I am close and talk to them. They can help you fill the forms. But now I know that Kela has too much work. So maybe then I would go online and if I need help, I would ask a friend, or my flatmate who is familiar with these things. I am not going the way for a long time.

Interviewer 2: And maybe with Finnish friend?

Interviewee 1: Yeah. Probably. In an emergency…There is not enough attention. I have to google, I am not so sure. I remember in some times, very very few times, they show it on TV like, "hey, this is the number you have to call". In school, they never told us. But again, if anything happens, I would imagine to go with my parents. Every thing is so close. You will go to the police, or the hospital. Few year ago, when my brother had an accident like - what has happened - he broke his leg, I remember. They went to the hospital which is far away. They went by the high way within forty minutes for everything. He was a child, so he was given priority. I don't know like if things happen, people call, or face to face. I recently heard of an application about emergency for people who are deaf. When I saw the interview, I wonder who was making it. She said all these difficulties. She contacted some people, like in the police, and I think some organization of deaf people was backing her up. But other people were just like, "okay that sounds good. Let's meet in one year" and nothing happened. But there is no enough tension for emergency maybe in the orientation week? Like if you know we have the police officer. And the previous time was in 2012 for me. I've already forgotten what it was about. I think it is mostly about the residence permit. But if you remember when this policeman came, he told a lot about crimes like drugs, alcohol and rape. Did he mention that there is no difference between the number of police and hospital?

Interviewer 1: No. I think he just said what is legal, and what is illegal.

Interviewee 1: I mentioned that when I'm gonna call the emergency and then they connected me to the police or the…That's the way they work.

Interviewer 2: When I was taking Finnish course, there was a girl from Croatia. She had a bicycle crush with a Finnish people. It's like this way, and the Finnish people just coming down and crush.

Interviewer 1: Two bicycle?

Interviewer 2: Yes, two bicycle. And nothing happened to the Finnish people, but the Croatia girl broke her finger. They went to police station. And it's like because she doesn't speak Finnish, so the Finnish people just told the police it was all her fault. So she paid fine.

Interviewee 1: She could have a lawyer for that.

Interviewer 1: The Finnish people was riding or walking?

Interviewer 2: They are both riding.

Interviewee 1: Okay, I have two things to say. This is a different issue like fines. This is a different topic. When I came here I didn't know that you're supposed to cycle on the specific side of road.

Interviewer 2: Yeah, nobody knows.

Interviewer 1: On the right.

Interviewee 1: Nobody told me.

Interviewer 2: Me too. I don't know.

Interviewee 1: Maybe it's like basic things that everybody thinks "*she should know*" but *you don't know*.

Interviewer 2: But you know what the Croatia girl said? She's on the right way.

Interviewee 1: I believe that she could have a lawyer for free from this university.

Interviewer 2: But you know we foreign students come here and know nothing. And she was so afraid. She broke her finger.

Interviewee 1: But this is complete different kind of issue. I know a girl I used to study with. This other girl attacked her in the public. She hit her head. She fell back. She had to go to the police station with her father and apologize to this girl. This girl reported her. This is a situation in Finland like I could attack you, you couldn't defend yourself. You can scratch me and I can say I'm the victim. You know. This is a situation in Finland. This is a completely different topic. It's about legal issues. It is completely different. But this girl - I don't know how long ago this happened - but tell her she just have the right to have a lawyer for free. I don't know if she can do anything anymore. But she should go to the hospital first. Like if you break your finger, first thing you do is to go to the hospital. You don't think of insurance or the police. You just ask for help. But if I was her, I have some tutor I would call, and, I don't know. But this is very unfortunate.

Interviewer 2: Yes. She was just so scared. She said the police and the Finnish people kept talking and she cannot say anything. And the police just told her what the Finnish people said. It's your fault and you need to pay.

Interviewee 1: She should have said that I need a lawyer. But at that moment you were scared and hurting, and you don't know your rights.

Interviewer 2: It's a problem you don't know the rights.

Interviewee 1: I've had a lawyer for free. You know, when I had a small legal issue. And I communicated in English. People don't know this so…

Interviewer 1: So do you have any advice to improve emergency services. Not advice on everything just emergency services.

Interviewee 1: Okay. The emergency (authority) should come here and explain to students. There should be brochures.

Interviewer 1: What kind of human from emergency, for example healthcare should come here?

Interviewee 1: Yes. On the orientation week. And I don't what happens on the beginning of the spring semester because there must be two orientation weeks, I guess for exchange students, I don't know. Otherwise I think the ambulance arrives fast. I assume people do their job well. I have no experiences.

Interviewee 2

Interviewer 2: Do you have any experience calling 112?

Interviewee 2: Oh yeah.

Interviewer 2: like..?

Interviewee 2: I have been calling that for emergency.

Interviewer 2: Can you specific it as ambulance or fire or…?

Interviewee 2: One time i saw one car hitting a… like a, light pole, and i called 91…what is that, 112, and they got the guy and he was drunk. Another time my mother was having an accident, so i called.

Interviewer 2: Also traffic…?

Interviewee 2: Oh no, she was home.

Interviewer 2: Ah. So it's like ambulance.

Interviewee 2: Yeah. But i called 9…ah 112， and ambulance guys came and checked…(interrupted)

Interviewer 2: So, you know, can you describe these two experience in detail. Like, um, When you called, what you spoke to the staffs? And during the time you waited, what happened? And after they sent somebody , what happened? Can you describe it?

Interviewee 2: Well, traffic accident, i just got them. because he was hitting the pole…

Interviewer 2: And unconscious ?

Interviewee 2: No, i did't check the guy, he was at the other side of the road.

Interviewer 2: Hum.

Interviewee 2: But the pole went down and all these electricity cables came out. So i thought that maybe if some kid goes there and get electric shocked. So it's not a good thing. But they just thanked me and said that they will check the situation. Then i saw the guy who hit the pole, he was like being there, like, for one minute. And then he was just keep on driving. So…but they got him.

Interviewer 2: So when you called, what did you say to them? Like the location and …?

Interviewee 2: Yeah, and what happened.

Interviewer 2: Location and what happened.(taking notes)

Interviewee 2: And they didn't even ask my name or anything. Cause i was just reporting.

Interviewer 2: Ok, so then the car just ran away?

Interviewee 2: Yeah, it did.

Interviewer 2: Ok, and then you just left?

Interviewee 2: I just left, yeah.

Interviewer 2: So you didn't need to wait there. OK. And did they tell…you know, gave feedback to you like " We caught the …"?

Interviewee 2: No, but i have read it from the newspaper next day.

Interviewer 2: Oh.

Interviewee 2: I did't left them any information about me. I just…

Interviewer 2: Ok. And about the ambulance one..about your mom…

Interviewee 2: Yeh, well I got them and then i of course had told them where am i - the location and what happened. And they were asking if she is conscious. The staffs. And they sent ambulance guys over there.

Interviewer 2: So they had some questions for you, like "Is she conscious?".

Interviewee 2: Yeh.

Interviewer 2: Did they ask about something that you don't know? Something…very medical things i mean.

Interviewee 2: I think they asked what had happened. But i didn't know so i was just telling what i gonna see.

Interviewer 2: Ok, So how long did you wait for the ambulance to come?

Interviewee 2: I think ten to fifteen minutes. Cause it was not like an accident, it was more like she was in a bad condition

Interviewer 2: So you went with the ambulance or…?

Interviewee 2: No, they took my mother and i followed them to the hospital with another car.

Interviewee 2: So did they give you any information before they left?

Interviewee 2: Not so much.

Interviewer 2: So how can you find your mom in the hospital.

Interviewee 2: Well, /they just told me which hospital they were going. So i went there and i was looking for my mother and i found my mother.

Interviewer 2: (laugh) So was it difficult?

Interviewee 2: (laugh) I don't know. I haven't had so many situations like that. Oh, and then once my friend fell from the window, so i called 112 also. That time, well it was time before we have like a cell phone. (both laughing)

Interviewer 2: But, i mean, so you didn't know any information about your mom when the ambulance left and you needed to find a way to find your mom in the hospital.

Interviewee 2: Yeh. And then they were transferring her from one hospital to another hospital to get the treatment. And..well..

Interviewer 2: So you mean they just decided directly if they need to transfer…you know.. they don't need to ask anybody? I mean if they asked your mom or asked you?

Interviewee 2: I think she wasn't in that condition that they could ask anything.

Interviewer 2: So they just decided by themselves.

Interviewee 2: Yeh.

Interviewer 2: So they can do the treatment directly without asking for permission?

Interviewee 2: Yes, it was some brain thing. There was some blood bleeding in brain or something. So it was quite obvious that they needed to do.

Interviewer 2: Ok, so it is totally different from China.

Interviewee 2: Yeh, i didn't know what's going to happen. So i have to ask..what's going to happen.

Interviewer 2: So do you think it would be better if you can get information during these process?

Interviewee 2: Yes, of course. But them didn't. I think if would be somebody else who found her, then they will be calling me or someone to inform. But i was me calling them, i don't know.

Interviewer 2: So they didn't ask you for the…phone number or something?

Interviewee 2: I think they are having my phone number in the hospital.

Interviewer 2: Ah, because you called them?

Interviewee 2: Not because of that. I think everybody have to fill some sort of….

Interviewer 2 : Ah, i understand. They already have everybody's phone number.

Interviewee 2: Yeh, i can't remember. It has been years ago.

Interviewer 2: I don't quite understand. So was it like when you called them you told them your name?

Interviewee 2: Yes, i told them. But i don't know if it is relevant. Or they want to know the name of the patient.

Interviewer 2: Yeh, it seems like something about privacy. Like how can they directly tell you something about your mother, you know, private information. But they just did.

Interviewee 2: Well, i don't know. If anybody just asked about my ID or anything, No.

Interviewer 2: So then it is about the treatment. Can you try to figure out what kind of information you want to know in this process - after they took your mother with ambulance car.

Interviewee 2: Well. Once she was taken to the hospital, i think somebody checked her, of course. And after that i will be nice if they tell me what is going on, what is the problem.

Interviewer 2: Yes, maybe which hospital?

Interviewee 2: It was at (hospital name)

Interviewer 2: Did they tell you where they transport your mother?

Interviewee 2: Yes.

Interviewer 2: So they called you.

Interviewee 2: No. The ambulance guy, when they left, they told me that they were going to that hospital.

Interviewer 2: But they transferred her to other hospital, right?

Interviewee 2: Yes, she was in there. Actually she wasn't in any room. She was just laying on the hallway, on a bed, alone…

Interviewer 2: And without any treatment?

Interviewee 2: Yes. She was just there. Then i tried to find somebody to ask what is going on and what's the …

Interviewer 2: And then they told you that they need to transfer to other hospital to..

Interviewee 2: Yes. But it took like three or four hours, she was just laying there until they transferred her. And that was weird.

Interviewer 2: Ok, it was really bad.

Interviewee 2: Yeh. Maybe it is for that they couldn't do anything at that hospital so they had to wait until she was transferred. But still, that was weird.

Interviewer 2: So it happened many years ago, at the time do you usually communicate with mobile phone or…?

Interviewee 2: Yeh, i got them, the mobile phone. I think they never called me, so i need to ask all of these questions myself.

Interviewer 2: So these are the only two experience…

Interviewee 2: Well, then there was this one that i had been with my friend fell from the window.

Interviewer 2: Ok, so also ambulance?

Interviewee 2: Yeh. And then i called the 112 to tell that he fell down from the window. It was some ten minutes they came. I sort of trying to… well, he fell, so you couldn't really move him, cause you don't know what was broken.

Interviewer 2: Was he unconscious?

Interviewee 2: Yes, he was conscious.

Interviewer 2: Maybe broke some…

Interviewee 2: Yeh, but nothing was broken. I think he got this…what's this in English..um..(asking the other Finnish interviewee about the vocabulary in Finnish). Ok, i think he got this epilepsy. Well he fell down and sort of bump his head. And after that he got all these symptoms of epilepsy. He was taken to the hospital and they did't again ask my name or anything, just took him to the hospital.

Interviewer 2: And you followed them to the hospital again…?

Interviewee 2: No, i didn't.

Interviewer 2: So you didn't go. But you need to try to…you know…I mean contact his friend or his parents or something?

Interviewee 2: Well…I…no, I didn't do that.

Interviewer 2: Oh..So I need to ask first. So for Finish, when you go to hospital, they don't ask you for money first?

Interviewee 2: No. No, they didn't.

Interviewer 2: Ah, Ok. That's why. Okay, I see. Because in China you need to pay first and then you get treatment.

Interviewee 2: Ah, really?

Interviewer 2: So, it's like you need to have..you know…a conscious one as company always…

Interviewee 2: Ok.

Interviewer 2:…or if they send you to the hospital, they won't give you treatment.

Interviewee 2: Oh, if you are not able to pay.

Interviewer 2: Yeah. Because they need to wait for somebody who can decide if you want a surgery or something.

Interviewee 2: Ok.

Interviewer 2: So it's totally different. So, It's like…and then you just didn't get any information about your friend.

Interviewee 2: Yeah, Nope. I think they wouldn't give me any Information because I'm not family or something.

Interviewer 2: Okay.

Interviewee 2: And I think well he was kind of conscious. So I think they were asking his name and stuff. They will find his file in the hospital and who to call.

Interviewer 2: Ok.

Interviewee 2: I think they were calling someone. Of course they must. But I don't know if they must.

Interviewer 2: Okay, so it's like the 112 is deciding everything by themselves.

Interviewee 2: Yeah.

Interviewer 2: Okay.

Interviewee 2: Well, (It depends on) what kind of accidents. (If it is a) fire, so they will call fire department.

Interviewer 2: Okay, then I want to ask about the emergency training. What kind of training have you received?

Interviewee 2: Ah, well I attended this..um..first help.

Interviewer 2: Uh, First Aid?

Interviewee 2: First Aid I & II. I only did the I.

Interviewer 2: So there are special lessons for them.

Interviewee 2: Yes.

Interviewer 2: But you can choose if you want to attend or not.

Interviewee 2: Yeah. And you have to pay a bit then that…

Interviewer 2: Oh, so you don't have this kind of training in…i mean…in school.

Interviewee 2: I think no.

Interviewer 2: Okay. So does your friend or your family usually take this kind of training,

Interviewee 2: I think no. Because it's not…you don't have to do.

Interviewer 2: Is it useful?

Interviewee 2: Um, I don't know if it's useful. Of course it's useful to know the days except somebody…something happens.

Interviewer 2: Uh. What do they talk to you?

Interviewee 2: Well, how to (do) if somebody's bleeding, how to stop the bleeding. And if somebody's going to suffocate this vomit, so just turn the head and…

Interviewer 2: Understand. Okay, so do you think it's necessary that everybody receive this kind of education?

Interviewee 2: I think yes. It shouldn't cost anything. And I think men or women who went to the army, they will also learn these things. And schools of course, if you are studying to be a nurse and you will do this information. And there's some safety guards, if you're working with like a really dangerous places, you will get all this training to that to avoid to get this situations.

Interviewer 2: And last time we asked there should be some…what was that…safe place in Rovaniemi. Like if there is an earthquake, you can hide there. Do you know where…?

Interviewee 2: Nope. But I think it's almost in every building. So I think in the schools also.

Interviewer 2: But you don't know where it is.

Interviewee 2: No. But I think the Information is on the hallways, so you can see the escape routes.

Interviewer 2: Ok. And now I'm going to tell you something about our plan for this. Well I think if we can design kind of wearing device that can record your…some physical things like your heart rate or blood pressure, something

like that. So when something happened, like if you don't feel well suddenly, it can directly…maybe you press a button, it just called the ambulance and directly give your figures to them.

Interviewee 2: Ok, I think they're having now that kind of bracelet about them. And elder people are having those. And I think it looks like if you are having falling or something, then you can press it and it alarms somewhere, maybe relative or nurse or something. And they're calling you. But of course it's difficult if you are falling here and it's calling there. So you have phone ringing there but you can not reach. But I think if you can't reach then but you're pressing, the team, they will understand that you are in a situation that you can't reach the phone. But it doesn't give any such information that you were talking about here,

Interviewer 2: We are studying about the printing electronics. So there is possibility that thin and light, maybe just something like Apple Watch, but much lighter that. It can record all the physical conditions and report to the authorities. Do you think people will accept this?

Interviewee 2: Well, they are having all these apps in the phone that takes the distances and steps and stuffs. So I think that they would be interested. Because now it's that you have to wear these straps and stuffs. So think about for the athletes or somehow, they don't need to anymore wear the speakers because they can( ).

Interviewer 2: Yeah. We're thinking maybe it can have your location with GPS. And so when you're involved in a fire, then the fire fighters can get your location. If you press some buttons and it will directly give the authority your location that it will be easier for the firefighters. Many people here i don't think they like apple watch. So I don't know if they will accept this kind of wearing device. Or maybe you think it will be better just with app.

Interviewee 2: Yeah, well I think people are carrying the phones everywhere anyway, but of course it's not with you if there's an accident or something.

Interviewer 2: And what else? Let me think. Do you have any question?

Interviewer 1: Do you want to add something that we didn't ask you about based on your experience? And for example, you see something in other countries that you think that is very good if they use here.

Interviewee 2: I don't know…the only thing that come to my mind is that are people willing to give all this information? Where is it used? Because Google knows everything about you already. So now it would know your health condition and everything else.

Interviewer 2: That's why we ask. If there is this kind of device…

Interviewee 2: And if (it) doesn't maybe apply here in Finland, but it could be used against you. So they will know that you are having problems. So if they want to eliminate people (laugh), they would start with you because they know what is your condition.

Interviewer 2: How about you don't take this device by yourself. If it's like… maybe in the building or just beside the road, there are some places they are putting some devices there. And if emergency happens, you can take it from there directly. And at that time, the authority will have your Information. Do you think it's better?

Interviewee 2: And how can you take it? Should there just be the buttons, emergency buttons? But of course if if somebody is like sick or and sort of condition than they would like to have this sort of bracelet or something.

Interviewer 2: I think especially in Rovaniemi, there is not so big population. It will happen that maybe you have a traffic accident, but nobody saw it.

Interviewee 2: Yeah.

Interviewer 2: So we are thinking maybe we should have some devices that will automatically report to the authorities. Especially as for foreigners, maybe we have language problems. So maybe something avoid speaking will be better.

Interviewee 2: Yes, the foreigners would be one like a customer group for that.

Interviewer 1: (to Interviewer 2) Can you talk about if in case of a disaster or for example, kind of earthquake or something happening, she wants to receive what kind of information or something like that change to a general disaster not a specific one. Ask questions about that.

Interviewer 2: So how do you get informed about an emergency? TV or ….

Interviewee 2: Social medias maybe nowadays. And of course I know the instructions, what to do. And actually if there's, it's like, a huge thing, they're having this alarm going on and…

Interviewer 2: But I never heard it.

Interviewee 2: Yeah, me neither. When I was younger, they used to, every Wednesday, they were making this like a test. So you can have here (simulating the humming sound). But not anymore or here.

Interviewer 2: Last week or or two weeks ago, a professor said they had the alarm, maybe recently but I never heard.

Interviewee 2: Yeah, (laugh)me neither. So I don't know. But if you hear this sound, then you should close your windows and open the radio.Yeah, but I don't know how many (people) are having radio.

Interviewer 2: Yeah. It's usually on TV or on radio, but you know for foreigners, we don't have those things.

Interviewee 2: Yah, I don't know how they inform people.

Interviewer 2: Usually if something happened, like explosion or earthquake, do you follow the news always? If there is a fire happened, will you follow the news (to know) how many people are injured?

Interviewee 2: No, if it's not involving me. So I don't care. Well, I care, but I'm not following thing.

Interviewer 2: So after the emergency, like the ambulance, what feedback you think they should give? I mean if you call an ambulance, do you think that they should give you some feedback? Like if you are the one who report this, they should at least tell you that they are now in our hospital and he's having treatment now or something. Or do you think only when you call them, they should tell you this?

Interviewee 2: Yeah, at least when they're leaving with the patient, they should tell where they're going. And is it like a critical? Should I be really worried? Should i call all the people or are they calling the family? Do you know what to do?

Interviewer 2: Okay, just imagine if you are involved in a fire or maybe your friends are involved, what kind of information you want to get from the authorities? I mean during the process or after the process.

Interviewee 2: I don't know.

Interviewee 3

Interviewer 3: So the first thing you do is calling 112?

Interviewee 3: Yes. My wife has the water out, so she called ambulance. But before that, we called to the hospital asked if we can come by our own car. They said that you can call the ambulance. And we called ambulance. The ambulance came, it took like less than ten minutes. They came with bars - is it bars? The thing you can push, you can lie down. They took my wife to the ambulance and drove to the hospital, and said I can come afterwards.

Interviewer 3: So you are not on the ambulance?

Interviewee 3: I am not in the ambulance because I have to take our dog to my mother-in-law. Because I didn't know how much time we will spend in the hospital before coming back. So I took the dog to the mother-in-law. And after that I drove to hospital. I was also not sure where to go, because there are two entrance.And when I walked to the first entrance, it was locked. So I went the other.

Interviewer 3: There is no sign in the entrance?

Interviewee 3: There is this main entrance which is open at day. But I think the second entrance which is more hidden is open by night.

Interviewer 3: Okay.

Interviewee 3: And I went there. And if I remembered right there was some random doctors told me that and they send the mothers to the fourth floor, or a specific floor. I went there and they guided me where is the lift. I went by the lift and that way I found the right place, where my wife was. And do you want to know further?

Interviewer 3: Let me check...So when you went to the hospital it's like at night?

Interviewee 3: Yeah it was night.

Interviewer 3: Is there emergency clinic?

Interviewee 3: Mothers who are giving birth is not at the same place as other patients. The ambulance will take them to a specific floor of the hospital.

Interviewer 3: So no matter it's day or night it's the same floor?

Interviewee 3: Yes I think so. I think the only problem is the entrance that where should I go. Yes that's a problem.But it's not that difficult to find because I know the place already about the two entrances. But maybe there are someone who doesn't know where to go.

Interviewer 3: From where do you know It?

Interviewee 3: From experience.

Interviewer 3: So the ambulance the doctors and nurses didn't tell you?

Interviewee 3: No.

Interviewer 3: Maybe it will be better if they tell you when they took your wife to the ambulance ?

Interviewee 3: Yes maybe.

Interviewer 3: I think that's the main part of emergency then it's the same as the normal birth giving.

Interviewee 3: But if you come from somewhere smaller like a village in Lapland. They have to drive the whole way and if the driving lasts for couple hours then these are problematic. I know there are people who gave birth in a car. or like somewhere. they didn't make it to the hospital.

Interviewer 3: I heard there is like helicopter to take the patients.

Interviewee 3: Oh really?

Interviewer 3: But maybe not for the birth giving. Are there many patients from other village travel here to the hospital in Rovaniemi?

Interviewee 3: Yes because we have this kind of birth giving department. i'm not sure if there are many of these in Lapland.

Interviewer 3: Is there any other things maybe afterwords?

Interviewee 3: Everything went well after this. They gave us information and we stayed in the hospital for a couple of days. I stayed at home because the visitors cannot stay there. We applied for family room but it was crowded. So we didn't get that family room.

Interviewer 3: If people from at the village come here they don't have places to stay? They need to go to hotel?

Interviewee 3: Yes that was what happened when we were there another mother came there with her man. The man said that they have to book a hotel room in the Ounasvara. It is one of the most expensive hotels in Rovaniemi. and there was only this fit. The most expensive one.

Interviewer 3: This family room in the hospital, if you want to book one, you need to make a reservation long ago?

Interviewee 3: No no, like when you go there (hospital) if you want to go there (family room) then you have to make the reservation.And they make these line like who is next.

Interviewer 3: Is the family like you and your wife live in on room?

Interviewee 3: Yes the husband can stay there as well. The villagers from outside, if they don't get the room, they need to live in the hotel.

Interviewer 3: So you know when you need to call the hospital, because the doctor told you before?

Interviewee 3: Yes the doctor told to call when the water comes. Call the ambulance - oh no, call the hospital, so the doctors have enough time to prepare for there's a mother coming.

Interviewer 3: Which number did you call, 112 or directly to the hospital?

Interviewee 3: Hospital, yeah we have the direct number.

Interviewer 3: Okay. So the same number send you the ambulance?

Interviewee 3: No we have to call again, call the 112.

Interviewer 3: Okay. So it's like firstly call to the hospital then be told to call the ambulance.

Interviewee 3: Yeah. Maybe that's what they can improve maybe they can send the ambulance.

Interviewer 3: Yeah... maybe they should. Because in Finland they use the same number for the ambulance the fire and the police.

Interviewee 3: Yes. If I may add, we called to the hospital and asked if we need to call the ambulance. Because at that time the the baby was not settled in the right position. And if the baby is not settled and the water goes off then the mother need to lie down. We checked it couple days ago and they towed the baby has not settled. that's why we called. But if the babies settled and the water come, then I think it's OK to drive by your own car.

Interviewer 3: Okay.

Interviewee 3: We had the car ready but when I wanted to make sure that the baby is OK.

Interviewer 3: Is it the only time you called 112?

Interviewee 3: Yes. I called 911 - no 112...

Interviewer 3: (Laugh) Are you Finnish or not?

Interviewee 3: Yes it comes in my mind is the 911.

Interviewer 3: Oh because you don't call it 112.

Interviewee 3: Yes, yksi yksi kaksi. But anyway, one time I broke my knee. Then I had to call but there was not anything problem I think. I broke my knee and I called 112, then they came, no problem. I know the number and I know what to do.

Interviewer 3: So this time you were at home?

Interviewee 3: Yeah I was at home. Sport event.

Interviewer 3: OK thank you!

Interviewee 3: Do you know that the Finland is making this kind of? What do you call it? Like database for every kind of Information, your health, your insurances. And if you made some crime, you can find everything in this same place. So they are making this kind of database right now. And it's because now they have to have every Information with the different buildings or databases, but they are making this kind of highway to the knowledge. Right now. but it faced some problems because we have this privacy law in Finland and I don't know what status right now. How is it going. But the same highway or I don't know what is called, but it's used in Estonia. It really helps to get the Information. Also, I heard that this kind of application has been under development in Finland. That, for example, if you face emergency, you just press some button and it will track you and the ambulance to track you.

Interviewer 3: Yeah, it's the same thing we want to do.

Interviewee 3: I can find the it - did teachers or anyone told you about this before? Because I can try to find the projects, if you want. Yeah, and I hope it's in English.

Interviewer 3: Yeah, I hope so.

Interviewee 3: So the this kind of system has probably…

Interviewer 3: We are thinking like maybe application or maybe some device or maybe like digital tattoo. I can stick to your skin. It's like when you are in emergency, then it will record your heart beating your something else, everything. Then it can call the ambulance and send your Information to them. And especially if it's a large emergency like the whole building is on fire. Then the doctor, the ambulance can decide which one first which one first. Maybe you are more safety. You can be later. Then it can also be in a car. Not on the people, but in the car. It's like if the car is damaged to some level, then it can call the 112.

Interviewee 3: Yeah.

Interviewer 3: Also we're thinking if you are in emergency, like a these things happens to my friend's father. He was fainted on the road when he were going out for a walk. And it's because heart disease. But it was a very quiet place. No one knows. And like after few minutes, he was found by people then called ambulance to hospital. But it's very dangerous cause his heart stopped beating for few minutes and he stayed in the ICU for many days.

Then. One more problem is that my friend's mother didn't know it. And just look for all the city to find him. So many hospitals. And at last she found him. And we think if this device can maybe when you're in danger, then it can send your Information to your family.

Interviewee 3: Yeah, as well. To the hospital, but also to the family.

Interviewer 3: Yeah. And maybe in this kind of situation, it can send alarm to the people nearby. But I don't know if it will be against the privacy law or something.

Interviewee 3: Maybe. Do you have this kind of ICE system? Like for example, if the doctors are looking my phone, they can see ICE. ICE means call this person when something happens to me.

Interviewer 3: So it's like an emergency number.

Interviewee 3: Yeah, yeah. And my father, because he has a car he can call her to his car. We just put ICE before the name. And the doctors can…

Interviewer 1: When your mobile phone is locked, that's a problem.

Interviewee 3: So I I have to tell the…

Interviewer 3: So they just used your finger to unlock?

Interviewee 3: Haha. Yeah yeah.

Interviewer 1: So did you talk about in case of a kind of general disaster? How he prefer, for example, to communicate, to receive news. What he needs during a disaster.

Interviewee 3: Maybe from government.

Interviewer 1: Did you talk about this kind of thing?

Interviewee 3: No. We only went through this my case.

Interviewer 1: Not general. Now, for example, just imagine that something happening in a very big size. Kind of earthquake, for example. So just think about this kind of conditions. You don't know. For example, you're here, you don't know about your family or something like that. So what kind of Information and in which way do you want to receive Information from government?

Interviewee 3: Maybe several ways. Such as like if there is a fire, I'm looking, for example, where is the escape, where can I escape. I have to I follow the signs here. But for example, if there is a school shooter, I don't do anything with the sign system. Maybe I have to hide, for example, or if I'm hiding, I have to have the Information. Otherwise.

Interviewer 1: What about the kind of, for example, war situation?

Interviewee 3: Should we have a general discussion?

Interviewer 1: There is someone dropping the bombs. The first question is what kind of information do you need to receive from government. For example, if something happened and you don't have any Information, you maybe start calling police.

Interviewee 2: Yeah we've just have these kind of discussion like how we even know nowadays. There used to be this alarm.

Interviewee 3: Alarm, yeah. There are, I think.

Interviewee 3: I never heard it.

Interviewer 2: There is, but we cannot hear.

Interviewee 3: Yeah, in Kontutie there is not.

Interviewee 3: I can remember when I was a kid, there was a big sound in Wednesday twelve o'clock.

Interviewee 3: Yeah, It was like a testing.

Interviewer 2: Every week?

Interviewee 3: Yeah, one time I was next to it.

Interviewee 3: And then there was instructions to go to home and shut the windows and open the radio.

Interviewer 1: Radio?

Interviewee 3: I don't have a radio anymore.

Interviewee 3: Yeah…

Interviewer 2: Nobody have.

Interviewee 3: So I don't know what to do with this. I wouldn't even know.

Interviewer 1: Do you know, for example, there's something happening? Where is the safe place in the Rovaniemi to go underground? Is there anything like this?

Interviewee 3: Yeah yeah. Every building, even here, for example.

Interviewer 3: Every building?

Interviewer 2: But we don't know it.

Interviewer 1: DAS doesn't have.

Interviewee 3: You have. It's a law in Finland that when you are building…

Interviewer 2: It's funny that they don't tell us.

Interviewee 3: Yeah…

Interviewer 1: So is there any place under my building as well? Are you sure?

Interviewee 3: Maybe because they today they can combine this storage and safe place. But the storage units has to be go off in one hour. Like they have to be build it this way, that they can take all the stuff out in one hour, and then they can use it as a shelter.

Interviewer 2: But one hour…If there is an earthquake.

Interviewee 3: Maybe you can run to the university.

Interviewer 2: No, earthquake. I don't think so.

Interviewer 3: I think there was a fire in the city centre in the car renting company. During February. But we all don't know it. Maybe it's not a big fire.

Interviewer 2: Because we asked one of our teacher in our group, she worked in the fire department and she told us that there is no device that can detect, maybe like fire or something. So if there is a fire in the forest and nobody pass by, then they will just let it burn. And nobody knows.

Interviewee 3: Yeah.

Interviewer 2: Is it only in Rovaniemi or the whole Finland?

Interviewee 3: Maybe the whole Finland. Because we have so much forest.

Interviewer 1: What about, for example, Russia come and attack you during the night? Is there anybody to see?

Interviewee 3: Well we have the army in the border with air violations.

Interviewer 1: Like they going and check?

Interviewee 2: Yeah. And checking all the time. But they're not waking us up.

Interviewer 1: They don't. Because there is a problem here. For example, if something happened, how people can be informed about this situation and stop calling, for example, police. And stop going out and see what happened. Because it makes a kind of we have, I don't know, panic or something like that for people. If they hear a very bad sound as the sound of the shooting or something like that.

Interviewee 2: All the people they know these things, because when they wake up in the morning. They will have newspaper - like paper newspaper - telling that Russia is attacking. And they will know Ok I will close the windows and open the radio and I'm not using lift.

Interviewer 2: So you mean real newspaper, the paper one.

Interviewee 2: Yeah.

Interviewer 2: But there is one day delayed, no?

Interviewer 3: Maybe the government may be use television to alarm people like *beep beep beep earthquake beep beep beep.* No earthquake. Not here. But actually for me, I even do not have a television.

Interviewee 2: Me neither.

Interviewer 1: There are some private company for example, in the united states, and they send you message. For example, in case of emergency, It's very fast. You know, they receive Information from government, and send the message immediately about the news about the safe places. For example, in this city, if the war happened, they come from one way and that way, for example, is safe. And that way is something like that. And they try to design this kind of softwares to send automatically some messages to people in order to make people calm and give some Information, and stop people to calling around to the police. I don't know, something like this.

Interviewee 3: Okay, but I think using a war, for example, is not very… because you get more better results if you, for example, there is a water but which is polluted. And these kind of messages we got from television. For example in Nokia, was it? And there was some polluted water. And everyone in Finland was aware of this.

Interviewer 2: I think maybe the Finnish government, they don't care about foreigners.

Interviewer 3: But the embassy sometimes will send this kind of messages.

Interviewer 2: Ah, yes.

Interviewer 3: but not to me. I think our number not resisted as like Chinese number that they will send us message.

Interviewer 2: I don't even know that you only have one number 112 before I have this project.

Interviewee 2: Now, you know.

Interviewee 3: Okay, so maybe can you focus on how to develop this system for exchange students?

Interviewer 2: Yes.

Interviewer 1: The foreign people come here, for example from India to ski, for example.

Interviewee 3: Because I think Finnish knows that there are different kinds of emergencies. Sometimes you have to go to this kind of safe place? We never did. But we know that there are these places. If you are getting dirt, you will call 911 - no I mean 112. If, for example, because there are differences. If there's a fire, you follow the signs in the architecture in the building. There is no one solution for everything. There are difference.

Interviewer 3: But you mentioned about the television report about the polluted water, only in Finnish?

Interviewee 3: Yeah, maybe Swedish.

Interviewer 1: For example, they say something like don't drink the water from tap anymore. But because you don't know Finnish, you may be drinking the water and after that, you die.

Interviewer 2: I think it happens everywhere. I think in China, if there something happen they have to the rolling news. It's also in Chinese.

Interviewer 3: I think maybe the like if the water cannot be drink, then DAS will send us maybe some emails or messages. I think maybe.

Interviewee 3: I wouldn't count on.

Interviewer 1: I don’t know maybe immigration service and police for these immigration cities already knows about where we live and they have a kind of database about our address and everything. So maybe for example, they can provide the kind of service to announce emergency.

Interviewee 4

Interviewer 1: Ok, so first question, you told me that you received some training in CPR and first-extinguishing, i want to know where did you receive this kind of training? and they were free?

Interviewee 4: Yes, it was free. And it was in the middle school. So it's been awhile after.

Interviewer 1: So it was a kind of training for or the students or you choose to receive that kind of training?

Interviewee 4: Yes, all the students.

Interviewer 1: All the students should receive this kind of… in the high school? in middle school?

Interviewee 4: In middle school. like From 13 to 16.

Interviewer 1: Um hum. So, for example, talking about your CPR, do you think they are enough practical and informative for you if you face a kind of real situation? Can you use that kind of training materials and knowledge?

Interviewee 4: I could if i remember anything. But it has been a while ago, so i don't think i…that if the emergency situation will occur now, i wouldn't remember what to do.

Interviewer 1: OK. So for example, are you ready to receive a kind of training for example every five years to renew your knowledge.

Interviewee 4: Yeah, that might be good .

Interviewer 1: Ok, good for that kind of training for every two or every five years or something like that. Um hum? So you told me you prefer to receive kind of information when you travel to new place, well, kind of brochure maybe at hotel…

Interviewee 4: Um hum.

Interviewer 1: something like that, and it should be consisted of illustrator maps and visual information, so what kind of information do you think you prefer that hotel or authority to put in the brochure, what kind of information?

Interviewee 4: Oh, they usually have already quite good (ones). Like, they have a map (to tell) where to go if there is a fire, for example. Usually hotels are very high buildings or stuff like that. So you should know where to go and how to get there if there is a fire.

Interviewer 1: So this is one of them. Anything else? Because we are considering the whole picture of an emergency situation, not about, for example, hotel room and hotel building. We are considering for example any kind of ambulance, and if something bad happened, you have to go this place in the city and….(interrupted)

Interviewee 4: But in Finland, I don't think that we need to go anywhere. We can call…dial the 112 and they will come to you. Yeah, so I cannot imagine any other situation where would I need something…

Interviewer 1: to go somewhere…

Interviewee 4: Yeah, beside hotels or this kind of cabins or something where I go for holiday for example. Because if something would happen right now, I would just dial 112.

Interviewer 1: Um, up to you. So did you use any kind of emergency (service) in Finland? Not in Rovaniemi. Because you told me you didn't use any kind of emergency services here. So based on your experience, I want to know, first of all, you just told me what was the situation that you forced to call them? What was this story? A kind of brief about this story and what happened? And about the service path—What happened after that; What happened; When did you go; How was the service? And after that, I want to know if you can give some advices to improve that service. So let's start with this question. What was the reason that you called emergency last time? Or maybe the most important case to talk about…

Interviewee 4: Something like, I personally, when I last time called, it was about someone having seizure in my dance lesson maybe, like epileptic attack or something like that. And I just called and followed the instructions. Very simple.

Interviewer 1: They said the instruction by phone and you follow. So they didn't send any ambulance.

Interviewee 4: Yes, they did. But meanwhile, like when you are waiting for the ambulance to come, they tell you what to do.

Interviewer 1: So how much time did it take for that one to reach the place?

Interviewee 4: In that case, not that long. Like maybe 10 minutes, 15 minutes.

Interviewer 1: 10 to 15 minutes. After that, did you went to the hospital as well? Are you just stay…

Interviewee 4: No. And they won't take any one else in the ambulance? Just the person.

Interviewer 1: And if somebody wants to go to the hospital, is it clear enough for them to reach which part of hospital they should go or something like that.

Interviewee 4: I think there is this information till—some place in the hospital like when you go in and then you can tell them that right now an ambulance has brought someone and tell the name, and they will give you the place where this person is in hospital.

Interviewer 1: So you didn't have any difficulties while you try to call the ambulance.

Interviewee 4: No.

Interviewer 1: Ok, so any other cases?

Interviewee 4: I don't know. When I got the stroke, but I didn't call myself.

Interviewer 1: You got the stroke? Really?

Interviewee 4: Yes…

Interviewer 1: Heart stroke?

Interviewee 4: No, in brain.

Interviewer 1: Oh, brain stroke.

Interviewee 4: But I didn't call myself. But the similar case that they gave instructions in the phone—what to do and we have to wait for the ambulance and stuff like that. But I think that the biggest problem is that, in Finland, um like the, what is the word, there can be long distances between the station for the ambulance and the place you are, like if you are living somewhere really remote or something, it can take very, very long time. And if you have something serious going on like heart attack…

Interviewer 1: You die?

Interviewee 4: Yeah. Or if you don't die, you will have like serious consequences because of the delay.

Interviewer 1: So this is…maybe could be one of the problem, at least for the health department.

Interviewee 4: Definitely. Yeah. Not maybe in Rovaniemi because this is quite a large town in Lapland scale. But especially there are very remote areas in Lapland and small villages and stuff like that. And it can be usually long time and long distances between them.

Interviewer 1: So for any other reason, except for example ambulance, did you called 112 to report the crime?

Interviewee 4: Yes. But when you call 112, if you don't remember the direct line to the police, the direct number, they will just keep the number because it's the emergency number.

Interviewer 1: It's not police number.

Interviewee 4: And if it's not like very…like "Oh my god, someone is being stabbed to death right now", then they will give you…re-direct your call to the police. So I called 9…112 and they gave me the number to the police.

Interviewer 1: And you called them again or were they redirecting you by themselves?

Interviewee 4: Actually, I don't remember which was it. Like…did they automatically redirect me or something.

Interviewer 1: And after that you connected to the police station…maybe for example in Rovaniemi and start to explain the problem?

Interviewee 4: I actually think that there was these instructions that I have to make the the crime report in…like online. Like you go to the police departments and you do it there. So it went quite fast.

Interviewer 1: If for example, they want to come to you, the police. How much time does it take for police to come to your place?

Interviewee 4: It depends where you live. But even there where I called when I was, then it would have taken like maybe… if they would have come from (a location in Finnish), then maybe an hour, even like very long time. But it depends on…I think that they have like some small police departments closer, maybe in the (a location in Finnish)…I don't know. But I think this very long distances are quite common problem.

Interviewer 1: Generally about…it could be about reporting the crime and they want to come when you have a health issues. Generally long distances are one…(interrupted)

Interviewee 4: But like if you have health issues, they will come.

Interviewer 1: Very fast?

Interviewee 4: They will come. But it could take too long. If you are somewhere very far away, like some remote place. But if you call police, if there has been a crime, depending on the crime, if it's like very severe, like violate…

Interviewer 1:…somebody for example.

Interviewee 4: Yes.

Interviewer 1: Like people are wearing guns?

Interviewee 4: Yeah. but then they come. But if it's something like my bike has been stolen, it might be that they don't even come there because they cannot do anything about it. But that might be another problem.

Interviewer 1: Then so for that case, for example, somebody stole your bike. But you want to make your report at least. You have to go in person or call in person to the police station to make your report. Maybe there is no need to come there, but we want to report…

Interviewee 4: You can do it online. Yeah.

Interviewer 1: And do they check the reports? For example, one van car has been stolen from that street, something like that.

Interviewee 4: They do check, but it depends on what you…because you can decide yourself. Do you like…for example, do you want the criminal to be punished for the crime or something? Do you crave some kind of income…like do you want to have money from the criminal? Like did you suffer some kind of loss economically that you need something. It depends on what you put in the report.

Interviewer 1: Ok, let's forget about this kind of things. And going to the next topic, that is the main topic. We were thinking about some methods and devices that can report a kind of emergency situation just working like phone call. But we want to use new methods and new devices. Because we think that this kind of if you call/somebody call 112, it's kind of maybe old fashion way. Because you have to provide a lot of information—"Okay, I'm living over there. Something like this happen.", you know. And it takes a lot of time for the people to say what's happening / where are they? In some cases, maybe they don't have ability to call. They have a heart attack. So when you have a heart attack, you don't have this ability to explain how is your situation.

Interviewee 4: But they will locate you. If you are able to dial 112, if you're not able to say anything, they will…

Interviewer 1: Are you sure? They will come?

Interviewee 4: Yes. They will first locate the place where you call from, like locate your phone and then…

Interviewer 1: Even my mobile phone?

Interviewee 4: I think so if you call and they will go back and if you don't answer, I think that then some someone will come, knock the door, like "What was the emergency?". But I think that also is somehow punished if you do it like for fun or something. Because obviously it has happened. So there might be something. But I at least I think so. They will locate the phone call.

Interviewer 1: So imagine for example, that we design a kind of application for mobile phone. Are a kind of devices that, for example, like a watch that it can monitor your health somehow. Something like that. For example, the watch can monitor the temperature and everything. And if something bad happens to you, it can make a report to 112 automatically. I give your place based on the GPS and everything.

Interviewee 4: Yeah. But they have this kind of devices already, at least in elderly people. Like i've had relatives…like if they don't want to live in care homes or something, but they're not in very good condition or something and they have health problems and stuff. They have this wristband and there is a button like emergency button. If you fall at home or something and you…

Interviewer 1: …can push and make a report.

Interviewee 4: Yeah, I think that even like you can call that respond somehow. Or then it might be just that there is a button that makes the alarm go somewhere and there will be…

Interviewer 1: So my question is if government provide that kind of information, kind of the device for you. Do you think it's ok? Or it's against your personal life because they know where are you and something like that? They know about your…

Interviewee 4: Yeah.

Interviewer 1:…like health problems, for example. I didn't know that you had a kind of stroke,

Interviewee 4: But of course when you have like health problems, the people dealing with the health problem should know about it. Because it may affect the treatment they give you. But like I answered in the survey, that it has to always have my permission to give the information. I don't know if all people know about it, but of course like i've been assigned these like every time…like I moved here from (a location in Finnish) and I had to sign a a form about that—Do I accept that they transfer my information from (a location in Finnish) to here? And of course I signed it because that's important if something happens here. But that's the thing that I don't want anything like this. Any Information of mine to just transfer without me knowing. I want to like I have to give the permission every time.

Interviewer 1: So you had a kind of database at last hospital or something, and they transfer your database here in Rovaniemi. So to where?

Interviewee 4: I think it's somehow internet based…like some database for hospitals.

Interviewer 1: And so for example when they type your name and your personal information, all the materials will be shown.

Interviewee 4: I think so. Yeah. At least for…I gave them a year. And then they ask them in (a location in Finnish) to send them other information after this year or something. I can do that. They don't have to read everything. Like "Oh ho, she was born in this and this and…", like they don't have to read everything from 1991.

Interviewer 1: Just information about your health. Not other things. Ok, so let's talk about something else. Imagine that something happen in the centre, and you're sitting at your house here. And we want to know, is it okay…for example…if we use some devices to send you message about something happening. It's a fire…I don't know…something very serious and send the message to you. For example, a kind of application and let you know about that.

Interviewee 4: Yeah, maybe.

Interviewer 1: Instead of watching…for example…television. Because you told me that you receive information by watching television and listening to radio.

Interviewee 4: Yes. And they have this emergency…alarms in television and radio. Like…if you have some program going on in the television, there have this alarm sound and a red…

Interviewer 1: They cut the…

Interviewee 4: Yeah. Or they…it appears kind of on top of the program. The program is on the background, but they have this slide going the up corner of the television or something similar in radio that they can block everything else and say that how this happened there and there, that kind of things.

Interviewer 1: So you agree to receive a kind of messages.

Interviewee 4: Oh. It might be a good thing for these kind of people don't listen to radio or…

Interviewer 1: Like me. For example, I don't have any radio and any television here. Because the language is…for example…Finish. But if I can…for example…to have a kind of application while I'm moving at the first day and choose the language…for example…

Interviewee 4: Yeah, it might be good.

Interviewer 1: I can receive information as well as sending information about my health, saying…for example…make a report with applications…something like that. And is it practical?

Interviewee 4: Maybe for young people. But I don't think that…

Interviewer 1: Elder people know how to use.

Interviewee 4: Yeah. They don't know how to use and that they are not interested in learning. They wouldn't be very interesting, I think.

Interviewer 1: Um hum. So do you have any idea for improving generally emergency services. When I'm talking about emergency services, it consists of everything that…just not…it's not talking about just ambulance.

Interviewee 4: Well, I don't have. Because I have never got any problems with it. Like…I've always…if I'm in an emergency situation, and I call 2…112, and then it's like everything has always gone…like…smoothly. They…

Interviewer 1: Without any problem.

Interviewee 4: Yeah. Like…they give very good instructions and they tell you that "Oh yes. Ambulance is coming, but do this and this." And that they will give you permission when…you can…like…end the call. And usually they have you…if there is an emergency, for example, like some seizure for example, like I told you. Like they will keep the line open until the medics are there. But until the ambulance is (arrived) and they are…in the same time, I think that this person from the emergency center, which you call when you dial 112, and the person is in contact to all the ambulances or police or everything. And they can just communicate with each other and they have the line open with themselves. And then the person from the emergency center has the line open with you and they will give you like instructions and tell you like "Yes, the ambulance is like…five minutes from where you stand.". Like…they are coming and stuff like that. But I don't know…I don't have any improvements because I've never needed any. Everything has always worked.

Interviewer 1: You didn't face any kind of difficulties during the emergency services. Any kind of difficulties?

Interviewee 4: No.

Interviewer 1: That you talk to yourself "Okay, It should be like that>"?

Interviewee 4: No.

Interviewer 1: We're ok.

Interviewee 4: Yeah. But again, I've never been in very big emergencies…like very big accidents, for example. But I've never had it…

Interviewer 1: In terms of size, maybe. For example, very big. For example, 100 people in the danger.

Interviewee 4: Yeah.

Interviewer 1: So because that's completely different.

Interviewee 4: Yeah, but I've never had that kind of situation. So I don't know.

Interviewer 1: Um hum, so do you want to add anything to this.

Interviewee 4: No. I'am good.

Interviewer 1: Any think, any idea and any kind of usage of new technology?

Interviewee 4: Nope.

Interviewer 1: Okay, thank you very much. We talk about these kind of issues about 25 minutes. I think that's enough. So I hope you won't call 112 in the future for any reason and have a very calm and relaxing life. Thank you very much.

Interviewee 4: Thank to you.

Interviewer 1: Thank you.

Interviewee 5

Interviewer 2: So first, where should I start? Because you don't have any experience here.

Interviewee 5: No

Interviewer 2: Also not in Helsinki.

Interviewee 5: No.

Interviewer 1: We can ask about her experience from emergency services in Japan. And after that continue with giving some advice and understanding her preference in using devices and the methods of reporting the crime and emergency. So the first part—completely talking about Japan emergency situation over there and the service path and steps of the emergency in Japan. And after that continue with what do you prefer? Do you prefer… you know… what kind of software or something like that.

Interviewee 5: Ok.

Interviewer 1: Imagine that you're in a kind of emergency situation in Japan.

Interviewee 5: Ah. When I was small, earthquake attacked my hometown. Yeah.

Interviewer 1: So explain what happened. And what is the way that people…

Interviewer 2: I think earthquake is quite special because you don't need to get informed.

Interviewee 5: NO.

Interviewer 2: Because they come really directly.

Interviewee 5: Because nobody knows. And we were very surprised. And we don't know what happened because it's dark and just hear sometimes big noise.

Interviewer 2: When earthquake happens, usually you just find some safe place to hide. And I think you also open TV or something because you need to hear from official…

Interviewee 5: Um, but when it hit the place, usually everything is destroyed.

Interviewer 1: So what did you do? For example, earthquake has been finished five minutes ago. And you understand that maybe you don't have internet connection, or maybe you have. So what is the reaction of government? What they do? They're coming out searching the room? We want to know that kind of things-what happening after this kind of disasters? And what people do as well to receive information. There is no need to explain anything, just relate to the Information and emergency helps.

Interviewee 5: Okay. But I think nowadays many local government, they try to… (Because) People understand how we escape and how we protect (ourselves) from the natural disasters. So local government, they decided (to build) some kind of shelter? Not shelter but if something happens, everyone can go and…

Interviewer 1: Safe place.

Interviewee 5: Yeah. And they provide some kind of brochures (that) if earthquake happened, you should escape this areas…

Interviewer 1: This place, based on your geographical situations.

Interviewee 5: Um hum. Yes. Depend on the local government

Interviewer 2: By message or by email?

Interviewee 5: They have brochure. So every family can get it from the government. It's really depending on the area.

Interviewer 1: Do they bring the brochure to your place?

Interviewee 5: The post…you know…in daily life. So now it's happening many times in my country. So nowadays…

Interviewer 2: Because I think it's very special condition for Japan. Because they have so many earthquakes.

Interviewer 1: Just not only for earthquake, you can use that same place for anything.

Interviewee 5: Yeah.

(04:12-04:30 irrelevant gossip about nuclear weapons)

Interviewer 1: So you receive information from government (through) just like brochures and other things from your place. And they explain their safe places.

Interviewee 5: Safe places and also some kind of needed things. Like…you should prepare 2 liters of bottled water or something or some kind of food.

Interviewer 1: So you have to always keep that kind of things.

Interviewee 5: Yeah. Something like that.

Interviewer 2: Okay. How about (talking about) this government giving information? If there is an earthquake and some of the road are damaged, do they give information that if you are driving a car, you should change another way or don't go?

Interviewee 5: I think at first they will give information by broadcast…like TV and radio. If some people could go there, they put some sign in front of the road—" This road is closed because of blah, blah…".

Interviewer 1: Did you receive any kind of training at the school? What kind of training did you receive?

Interviewee 5: Earthquake and fire things.

Interviewer 1: And when?

Interviewee 5: Every year.

Interviewer 1: Every year?!

Interviewee 5: Yeah.

Interviewer 2: It's the same in China.

Interviewer 1: Because I ask XXX (Interviewee 4), she said that "When I was in the middle school, I received some CPR and some fire fighters' training. But I can't remember anything because they didn't…(interrupted)

Interviewer 2: Even we did every year, we can not remember. (laughing)

Interviewer 1: …teach us afterwards.". So maybe it means that you have to learn this every for example…

Interviewer 2: XXX (Interviewee 2) said that they charge for money for this kind of first aid education.

Interviewer 1: But when you were students, you received that kind of things every year, but not anymore.

Interviewee 5: Ahh…not like first aid, just escaping from the to there.

Interviewer 1: Every year? You had that kind of …

Interviewee 5: Yeah.

Interviewer 2: Rehearsal.

Interviewee 5: Yeah. Yeah.

Interviewer 2: We have also (this kind of rehearsal). And it's funny that when I was doing my internship, our office was on the 22nd floor. And every year they have a rehearsal for fire that they have something made in cotton or cloth. It's like a slide. You can directly get to the down floor with this slide. But every year somebody get injured in the rehearsal. Because you need to relax and just slide down. But it's 22nd floor so it's very scary. Sometimes people cannot relax, they just push the tube and they just get hurt. But it's like…it never happens — the fire, and people get injured for the rehearsal.

Interviewer 1: And in the fire, because it's the real (situation), I think they will lose their temper and everything.

Interviewee 5: I think so.

Interviewer 1: More dramatically. And more injury. But it's better than burning. So is there any kind of method to send information about emergencies before a kind of emergency happening to the people? For example, because earthquake is predictable somehow, some hours before that. And tsunami is predictable. So is there any kind of method or device or something that government are using in Japan to let people know that there is an earthquake in for example two hours or something like that?

Interviewee 5: We have similar system. When we watch TV program, sometime alarms like through….or something and then earthquake is maybe happening to this area. So they show some areas.

Interviewer 1: So, TV?

Interviewee 5: Yes. TV.

Interviewer 2: It's very funny that sometimes when we watch Japanese cartoon. Sometimes there is a rolling information — "There is the earthquake and in which place.".

Interviewee 5: (laughing) Yeh. Yeh. So people in this area you should…don't move and protect yourself. Right.

Interviewer 1: So any other new methods they use in Japan?

Interviewee 5: But that one is quite new, I think. And also usually it's correct. After…I don't know…five seconds, usually it happened. Always.

Interviewer 1: 5 seconds? The TV shows and after that five seconds?

Interviewee 5: Yeah, yeah.

Interviewer 1: So it is that you don't have time to escape.

Interviewee 5: Because it's impossible to predict. Earthquake is very hard to (predict). But nowadays it is better because many people predict about tsunami. So after earthquake happened, they always said tsunami is coming or not. So now it's better because we didn't care before and many people suffered.

Interviewer 1: A lot of people died.

Interviewee 5: Yeah, So we learn something from it.

Interviewer 2: Maybe if a earthquake happened, how do you know the situation about your family members and friends? Through social media or something?

Interviewee 5: I think many mobile phone company, they provide some kind of Apps or some kind of contact system. So it's kind of … open for emergency situation. And we can leave message there. And sometimes people can receive the message, but they cannot reply because they don't have enough internet connection. So that's why they created it. Like…if they open or read it, they can recognize—"Okay, this person still survive."

Interviewer 1: Just like seeing their messages means they are still alive.

Interviewee 5: Yeh, yeh.

Interviewer 2: I think earthquake is like really special condition. I don't think in Finland they have (earthquake).

Interviewer 1: They don't have. I think they won't have. Because of geographical situation.

Interviewee 5: Yeh.

Interviewer 2: Maybe we can talk about smaller things like ambulance or police.

Interviewer 1: So for example, if one of your family members has a kind of of heart attack, what is the process of emergency in Japan. You made the call?

Interviewee 5: Yes, we have to make call and to get the ambulance.

Interviewer 1: How much time does it take for the ambulance to reach you?

Interviewer 1: Depend on the location, of course. And I learned that we have to do the first aid while we are waiting for the ambulance. That's all, I think.

Interviewer 2: In Japan, if you call an ambulance, can you go with the ambulance? I mean inside…with the ambulance car.

Interviewee 5: If I'm the person's family or friends, maybe I can go with it.

Interviewer 1: One person can go?

Interviewee 5: Yeah, like family, maybe. But if I don't know (this person)…

Interviewer 2: You know, in Finland, they can not (go with the ambulance car).

Interviewee 5: Really? That's hard.

Interviewer 2: Yeah. They just tell you—"I'm going to send her to blah blah hospital.". And then you got nothing. You just need to go to the hospital and find your friend. But sometimes…XXX(Interviewee 2) told me that they found that they cannot get the right treatment in that hospital. They need to transfer to other place. They don't need to tell you (before decision making) even that's your mother. They just somehow say "We're going to transfer." and you are looking for your mother.

Interviewee 5: It's crazy.

Interviewer 2: And XXX(Interviewee 2) said she just needed to make phone calls again and again to ask "Where is my mother and what is the condition?". Because they won't tell you any information.

Interviewee 5: In purpose or they are just busy?

Interviewer 1: This is the process.

Interviewer 2: Yeah, they don't tell you. And she said her mom just wait in the hall for three or four hours.

Interviewer 1: You have to consider that their culture is different.

Interviewer 2: I think it's really bad if you have something like heart disease. And I think I remember XXX told us that if they cannot treat you, they will send a helicopter and send you to Oulu.

Interviewee 5: Oulu? Really? A heart disease. How can you survive?

Interviewer 2:(feel incredible and laugh) Will it already be too late?

Interviewer 1: If you have a heart disease, even if your heart doesn't beat, they can attach some pacemaker. It doesn't mean that you will die easily. Because my father had a heart attack. And when the ambulance came, even in the ambulance, they have a kind of things that attach to your body. And it makes the…

Interviewer 2:I understand. They are already giving you some treatment (on the way),

Interviewer 1: So it's safe. It's not like that. But actually it takes time. For example, especially when you have a brain stroke, you can easily lose half of your body because of the time. When they come and understand everything, they inject something and it helps your brain to survive. And it's not even that emergency. So the emergency is the time that ambulance came. This is the most important part. Because you're a little stable when they put you in the…for example…helicopter, everything is stable. Its not that dangerous. But the time you waiting for the ambulance, this is the golden time.

Interviewer 2: And for how long does somebody find out that you (need an ambulance).

Interviewee 5: So scared. Living here is very scared.

Interviewer 2: And XXX(Interviewee 2) said her friend fell down from the window and maybe he (hit) head. And then XXX just called the hospital and the ambulance came and took her friend and then XXX just went home.

Interviewee 5: Eh??!!!(mood for surprise)

(16:47)

Interviewer 1: They don't give a shit.

Interviewer 2: If your friend die, you don't know this.

Interviewee 5: (cursing) It's really strange for me.

Interviewer 2: Yeah. If my friend is involved in this kind of situation, if I call the ambulance and I find they are not taking me, I would be so scared. Because I don't even know where to find them. It's strange. And even there is language problem.

Interviewee 5: Yeah…

Interviewer 2: And, because you're not involved in this kind of… Just imagine if you're hit by somebody.

Interviewer 1: By car, or truck.

Interviewer 2: And you need to call the police, which way do you prefer? Like directly go to the police station, or you make a phone call, or you find somebody else to help you?

Interviewee 5: Of course someone to help me.

Interviewer 1: For example, you broke, I don't know, something very serious. You can type something, everything, but you want to report what happened to you. And in addition, you have to receive some health care. So for reporting and receiving healthcare. Because you have to call the police or call the ambulance when you no broke some leg or something like that. Because nobody can, they don't have car event to take care of you.

Interviewee 5: Sure.

Interviewer 1: So what imagine that something like that happen. I think she doesn't have any options. She has to call.

Interviewee 5: Yeah…no option.

Interviewer 1: But what for example, you think that you have a a lot of options. What is the most I don't know, easy way to report that kind of things for you?

Interviewer 2: I think we need to explain a little about that. Maybe we're making an application.

Interviewee 5: Okay?

Interviewer 2: You know there is already some Information of you, maybe your location, your something…

Interviewer 1: Your health, for example, your blood pressure and everything can report.

Interviewer 2: If you are involved in a car accident, then you just press car accident and it can report to the authority and give you a location that you don't need to explain in phone calling, something like that.

Interviewer 1: Your location and your vital health.

Interviewer 2: Or maybe something like wearing device.

Interviewee 5: That's really nice idea.

Interviewer 2: I think because we're thinking about for foreigners. Because I think for Finnish people they can always talk. It's not problem for foreigners to report.

Interviewee 5: And I think also for young people, it's good. Because they don't have knowledge about it. I remember when I was a high school student, I went back to my home by bike and a truck hit me, a little bit. Not seriously. But I have something here injured my knees. And at that moment I was very surprised and I didn't know how to do. And my friend called to the police. She did everything for me. So in that situation, young people, maybe they don't know how to manage. And so it's maybe good for them.

Interviewer 1: Because it can report automatically.

Interviewee 5: It's good.

Interviewer 1: And even, for example, we can use this kind of things for people that already have a disease. For example, somebody have a first time heart attack, and for preventing a second.

Interviewee 5: Yeah, it's very good.

Interviewer 1: And maybe it can send, for example, a kind of summary to a close friend of him, for example, or even two his doctor.

Interviewee 5: yeah.

Interviewer 1: For example, he understand he didn't take the tablet last night for blood pressure. Then the doctor can see why you didn't. I can see that you have a problem.

Interviewer 2: That’s a little bit far away.

Interviewer 1: It's too futuristic.

Interviewee 5: But very nice.

Interviewer 2: We can consider that if something happened, there was an Information to your family members. It's like, somebody is sent to the hospital.

Interviewer 1: And because of this.

Interviewer 2: Because I think you're meeting some Japanese tourists. Do you think there should be some education about emergency, I mean simple information that you can give them.

Interviewee 5: About finish emergency numbers.

Interviewer 2: Yeah like if they are stolen.

Interviewee 5: Ok, I think they don't know about it.

Interviewer 2: Yeah. Do you think it's better that if they meet this kind of situation, then they call you or you can give them something like a link?

Interviewee 5: I think usually tour company, they probably give some kind of general Information, but usually is about…

Interviewer 2: (interrupt) But if you know people read it or not.

Interviewee 5: haha. If something happens, maybe they will ask - absolutely - for help from tour conduct. Not me. They always move together. So much easier to explain.

Interviewer 1: They are in the group?

Interviewee 5: Yes, one or two of them. I’m sure they know about the emergency number in Finland. Maybe next time I should ask them. Do you know this number?

Interviewer 1: They really need to provide something and give one by one to them.

Interviewee 5: I think in the airport or somewhere? They should give advice, or put some signs…

Interviewer 1: They should do but they didn't give anything on it.

Interviewee 5: But they can put the sign on the wall or somewhere. If something happened in Rovaniemi, you should call 112. It is for police and the ambience and everything.

Interviewer 1: kind of poster or maybe stickers. Something like that. It may be English and other languages.

Interviewee 5: true.

Interviewer 1: Based on how many people from which country. For example, I don't know, Mexican, maybe language, but nobody come from Mexico to here.

Interviewer 2: I'm really confused. If there is a dramatically temperature drop, like minus 30. I think people should be informed because they're not - for me, I don't really usually check whether forecast.

Interviewee 5: Okay, you don't check.

Interviewer 1: Because this kind of tolerance of weather here is maybe normal or natural. It is not normal for you.

Interviewer 2: It's really dangerous. If I don't wear a head when it's minus 30.

Interviewer 1: You could kill yourself.

Interviewer 2: Really. When I came back from Spain, I forgot to wear a hat. It's maybe minus 20. I really feel like headache.

Interviewee 5: Yeah, you really have to.

Interviewer 2: because like in my hometown, if there is a storm or typhoon, the tv will be always saying that for which time you should not go outside. It's like the news are reporting this the whole day. In every social media, they will put it on the headline.

Interviewee 5: So that's where you can check.

Interviewer 2: But here I don't know from where I would be informed if there is a typhoon.

Interviewer 1: because you don't use tv.

Interviewer 2: yes, I don't use tv.

Interviewer 1: just consider this one. If I travel to your country and there is a kind of typhoon in your country, and you put everything on the tv. Because I'm in my hotel room and I don't know Chinese, it doesn't make any sense to me. So imagine that we are foreigners here and we don't know Finnish.

Interviewer 2: do know there is a news channel for foreigners.

Interviewer 1: Wait a minute,

Interviewer 2: they always speak English.

Interviewer 1: I ask you something. Imagine I'm coming to your city. Do you think that I'm staying hotel? I'm watching news? No I go out.

Interviewee 5: That's true.

Interviewer 1: So I need some Information that received from my mobile.

Interviewer 2: What do you mean? Because if there is typhoon, there is forecast. If you're going out, if you are in a hotel, I'm sure the staff there, they will tell you not to go out. But I understand the language is always the problem, because on tv they don't…

Interviewee 5: yeah, sometimes they don't speak English.

Interviewer 2: Ha television is so important.

Interviewer 1: Anyway. So anything else?

Interviewer 2: I don't think so, because

Interviewee 5 haven't experienced. I saw many, I don't know, fire things in front of my apartments.

Interviewer 2: Where?

Interviewee 5: in Japan. And other time when I was in Australia, my apartment was also burn.

Interviewer 1: collapse completely.

Interviewee 5: They're not completely collapse. But I don't know some floor. I'm living in second floor and something happened in 5th floor.

Interviewer 2: Usually when there is a fire, if the firefighters come?

Interviewee 5: yeah.

Interviewer 2: how people get know this?

Interviewee 5: I think in Australia they have fire alarm.

Interviewer 1: is it automatically?

Interviewee 5: Yeah it is. I think nobody call it. They catch the smoke and…

Interviewer 2: The sound of the smoke alarm.

Interviewer 1: it's very fast.

Interviewer 2: but it sometimes cost problem that you are just cooking.

Interviewee 5: Yes that happened many times.

Interviewer 1: So they charge people if you do something.

Interviewee 5: I don't know, two thousand.

Interviewer 1: two thousand?!

Interviewee 5: yeah, more than 2000.

Interviewer 1: but you're cooking, you didn't want to do that.

Interviewee 5: So that's why we have to take care of the smoke, every time.

Interviewer 2: There's one time my neighbor downstair, their apartment got fire in midnight.

Interviewee 5: Midnight! it's impossible to know.

Interviewer 2: And the firefighters come. But there are a a lot of people still sleeping.

Interviewee 5: but how they manage.

Interviewer 2: Yeah, we just knock at the door for our neighbors and say, *it's a fire! Let's escape from building.* We just go and I think you know they have the alarm on the truck of fire fighters, but it cannot wake up everybody.

Interviewer 1: They are not strong enough to wake everyone.

Interviewee 5: They just ignore.Yeah, they're not taking seriously.

Interviewer 2: If your neighbor house burns, and you are not at home. I think you won't know anything about it.

Interviewee 5: No.

Interviewer 2: Before your comeback, right?

Interviewer 1: And you come back and you want to put your key in the door but there is no door. *Am I at the right place? There should be a door.*

Interviewee 5: Yeah. What kind of a experience. Haha.

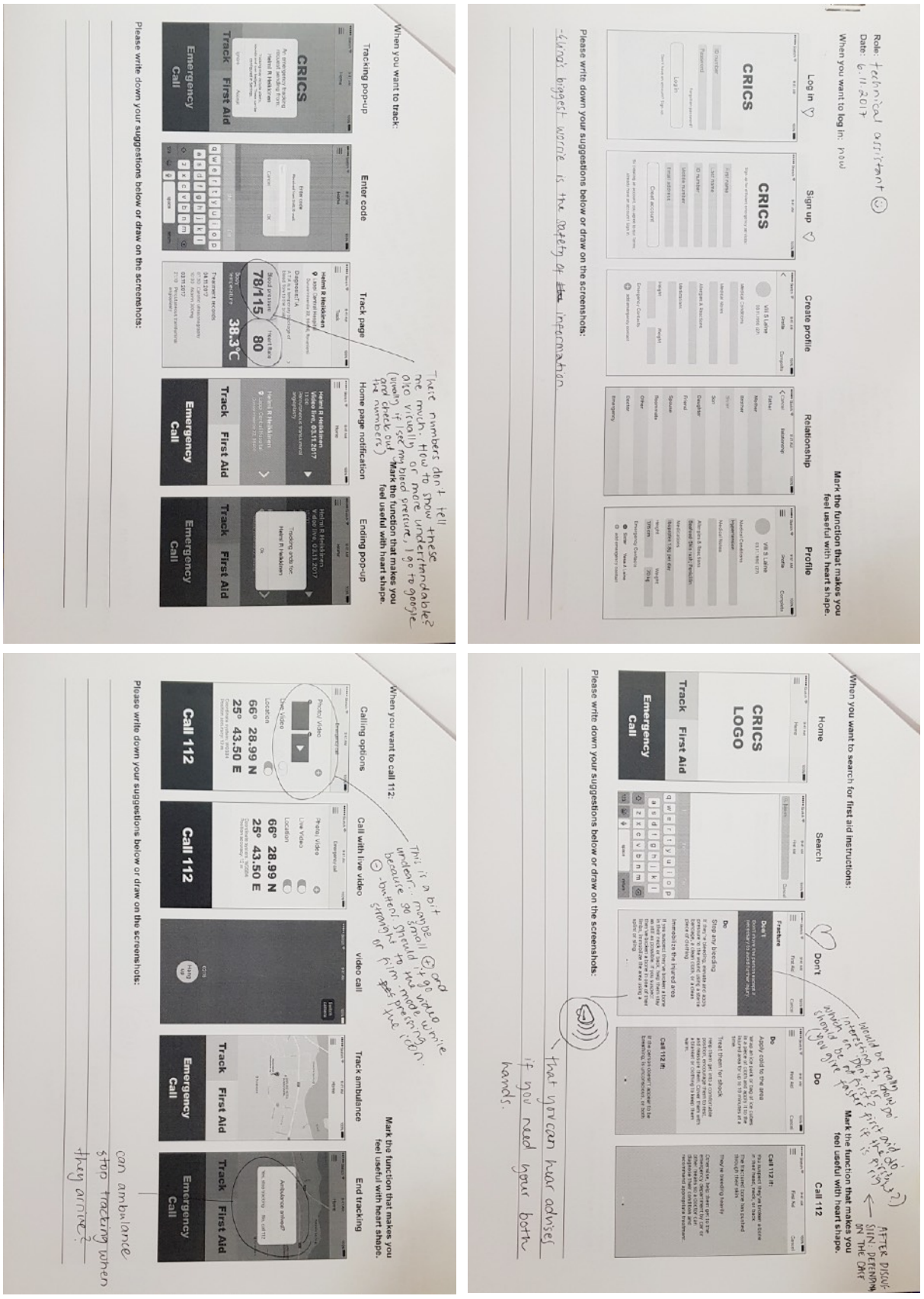
Interviewer 2: I think one thing is good. There is not so many people here. So you have very little chance getting involved in this situation.

Interviewer 1: I think 95% of emergency situation related to the health. No fire and no crime, not too much crime.

Interviewer 2: Yeah, there is even no thief.

Interviewer 1: Just ambulance and everything here. And I think everywhere, even in my country. So I think health. Because people have a lot of health issues.

Appendix D Workshop questionnaire results



Role: ~~Passerby~~ parent.

Date: 6. 11. 2017

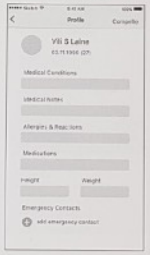
When you want to log in:

Mark the function that makes you feel useful with heart shape.

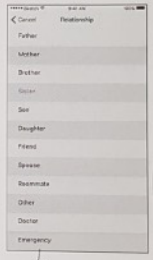
Log in

Sign up

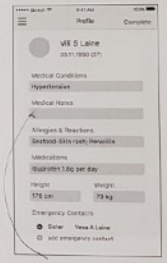
Create profile



Relationship



Profile



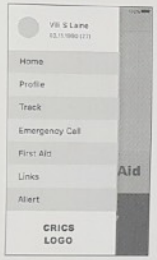
Please write down your suggestions below or draw on the screenshots:

receive one text from the ICU centerm

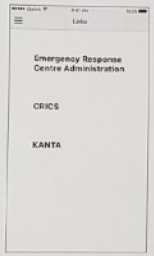
history

When you want to find official links:

Menu



Links



When you want to set allert for tracking:

Allert

This is good for parents who needs to track for example their kids with diabetes or other diseases.

Please write down your suggestions below or draw on the screenshots:

Mark the function that makes you feel useful with heart shape.

When you want to call 112:

Mark the function that makes you feel useful with heart shape.

Calling options

Call with live video

video call

Track ambulance

End tracking

Please write down your suggestions below or draw on the screenshots:

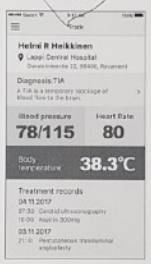
When you want to track:

Mark the function that makes you feel useful with heart shape.

Tracking pop-up

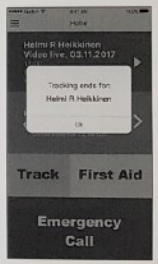
Enter code

Track page



Home page notification

Ending pop-up

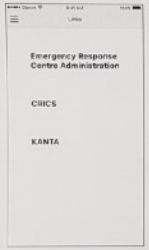


Please write down your suggestions below or draw on the screenshots:

When you want to find official links:

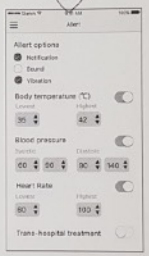
Menu

Links



When you want to set allert for tracking:

Allert



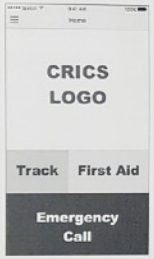
Please write down your suggestions below or draw on the screenshots:

Mark the function that makes you feel useful with heart shape.

When you want to search for first aid instructions:

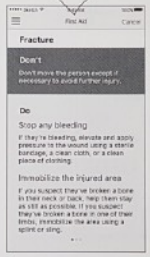
Mark the function that makes you feel useful with heart shape.

Home

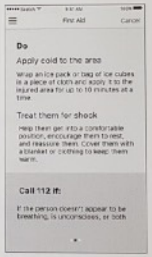


Search

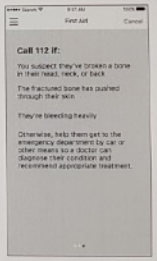
Don't



Do



Call 112



Please write down your suggestions below or draw on the screenshots:

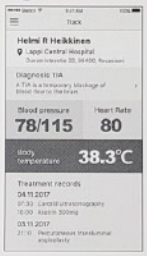
When you want to track:

Mark the function that makes you feel useful with heart shape.

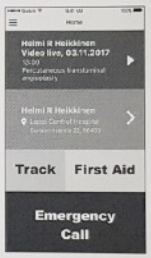
Tracking pop-up

Enter code

Track page



Home page notification



Ending pop-up

Please write down your suggestions below or draw on the screenshots:

* Think about the case when the patient dies.. (screen, sentence)

Role: Nurse / Patient

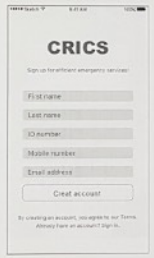
Date: 6.11.17

When you want to log in:

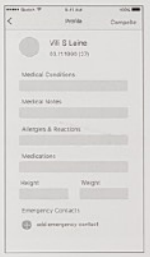
Mark the function that makes you feel useful with heart shape.

Log in

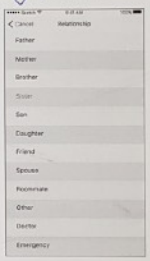
Sign up



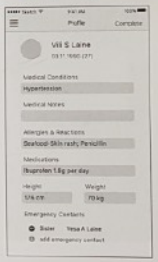
Create profile



Relationship



Profile



Please write down your suggestions below or draw on the screenshots:

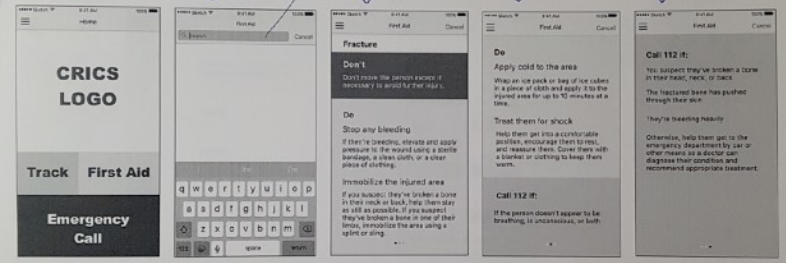
. finger print log-in .

(Can be problematic, because you can't always say what happens exactly - and if you wrote something wrong - you might act wrongly...)

When you want to search for first aid instructions:

Mark the function that makes you feel useful with heart shape.

Home | Search | Don't | Do | Call 112



Please write down your suggestions below or draw on the screenshots:

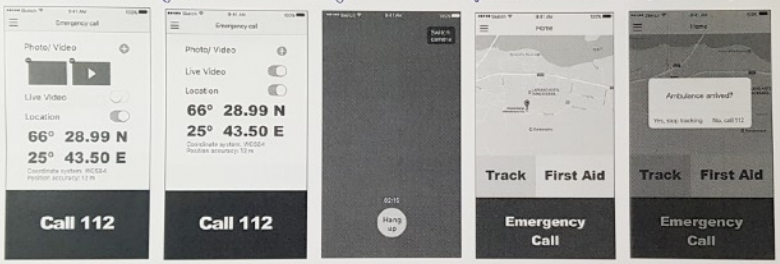
Search: (voice), because you might not be able to write., you're helping the patient, or it's hard to write...

Voice instructions!

When you want to call 112:

Mark the function that makes you feel useful with heart shape.

Calling options | Call with live video | video call | Track ambulance | End tracking



Please write down your suggestions below or draw on the screenshots:

When you want to track:

Mark the function that makes you feel useful with heart shape.

Tracking pop-up | Enter code | Track page | Home page notification | Ending pop-up

Please write down your suggestions below or draw on the screenshots:

I think this is very well thought through.

My only worry is the check, when the first notice comes, is this personal enough. People might want a phone number for more information.

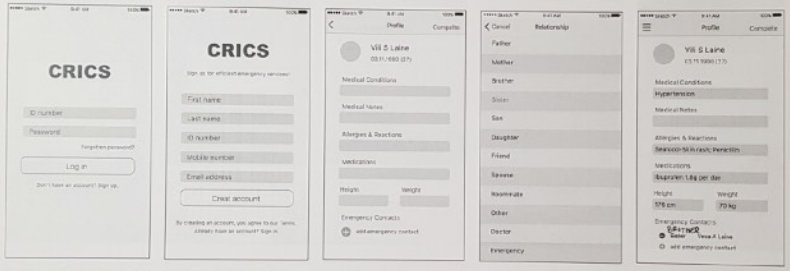
Role: AMBULANCE DRIVER / FAMILY MEMBER

Date: 6.11.2017

When you want to log in:

Mark the function that makes you feel useful with heart shape.

Log in | Sign up | Create profile | Relationship | Profile



Please write down your suggestions below or draw on the screenshots:

These are quite clear and easy to follow!

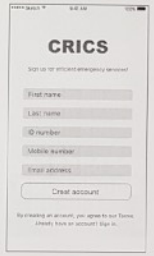
Role: Ambulance driver, Nurse.
Date: 2019/11/06.

When you want to log in:

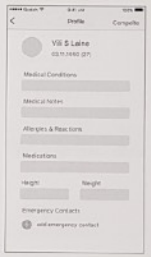
Mark the function that makes you feel useful with heart shape.

Log in

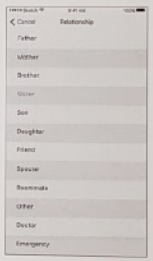
Sign up



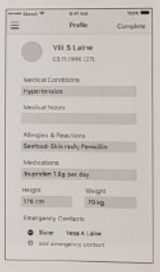
Create profile



Relationship



Profile



Please write down your suggestions below or draw on the screenshots:

Maybe better to have different language. Finnish, Russian, Swedish, Sami.

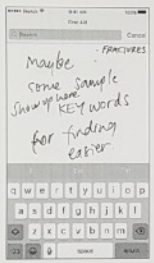
When you want to search for first aid instructions:

Mark the function that makes you feel useful with heart shape.

Home

Do you like colours?

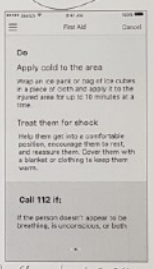
Search



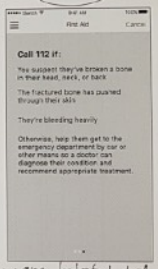
Good

Don't

Do



Call 112



This looks like a very helpful tool

Please write down your suggestions below or draw on the screenshots:

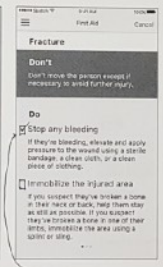
When you want to search for first aid instructions:

Mark the function that makes you feel useful with heart shape.

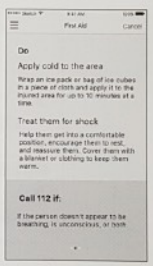
Home

Search

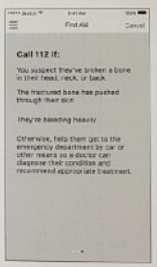
Don't



Do



Call 112



Please write down your suggestions below or draw on the screenshots:

It would be nice to have a kind of checking list for parent. maybe make click box (because people would be panicking).

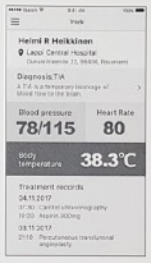
When you want to track:

Mark the function that makes you feel useful with heart shape.

Tracking pop-up

Enter code

Track page



Fast

Home page notification

Ending pop-up

Please write down your suggestions below or draw on the screenshots:

Is it possible to share the information with the closest people (family, parents, friends ...)?

For international students or people from other countries, they must contact to the embassy and insurance companies. It would be nice that they can share the information.