



Creating Evacuation Guidelines for Seniors Travelling to Urban Areas

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This thesis is part of the Safe-project, co-funded by the Erasmus + Programme of the European Union. The project aims to promote safe accessibility of urban areas. The goal of this development work is to create Evacuation Guidelines for seniors travelling to urban areas. The purpose of this work is to enhance the safe feeling of travelling seniors and to create value for the commissioner, the Safe-project.

The knowledge base covers the subjects of safe travel for seniors, urban area as a temporary destination and evacuation. Elderly population is increasing worldwide. Senior travelers make longer trips and look for safe, tailored travel options that fulfill their needs. Due to their age, seniors often have some limitations that affect their desire to travel. Insecurity of seniors is related to personal limitations, digitalization, language barriers and physical surroundings. Seniors are more vulnerable against criminal acts. Urban areas are appealing destinations due to event and shopping possibilities as well as famous sights. Cities are complex travel destinations to seniors, due to high and underground building and busy traffic. The complexity together with the physical limitations of seniors affect the evacuation dynamics in the urban area. Evacuation means movement of people away from danger to a safe place with a limited time. Preparedness of the society and awareness of the citizens affect the success of evacuation. Seniors' reactivity is slower due to their age and escaping danger requires extra effort. The importance of awareness is in a key role in survival. Situational awareness can be learned. An aware person is a less potential target to crime. Increasing self-preparedness leads to better success in evacuation.

The methods for this development work were chosen to form in depth understanding of the need and preferences of seniors in relation to the content and layout of the Evacuation guidelines. It was important to understand the end user of the guidelines. It was also essential to find out what the end user wants, so that the guidelines would promote user-friendliness and safety en route. User personas were created to represent the end-users of the Evacuation guidelines. A brainstorming session with seniors generated data for the layout of the guidelines.

The results of this development work reveal the most important themes for promoting the successful evacuation of seniors. The themes are increasing self-preparedness, increasing awareness en route and knowledge of how to act in danger. The Evacuation Guidelines were built around these themes. The guidelines were generated in two different formats. One of the formats is especially designed to seniors' use when they travel to urban destinations. The other one includes text content and is suitable for developing. Further studies could include testing of the Evacuation guidelines with seniors in the form of evacuation simulation.

Keywords: Evacuation, Guidelines, Seniors, Urban areas

Susanna Saarinen

Evakuoitusohjeen laatiminen urbaaneihin kohteisiin matkustaville senioreille

Vuosi

2023

Sivumäärä

54

Tämä opinnäytetyö on tehty osana Safe-hanketta, joka on osittain Euroopan Unionin Erasmus + ohjelman rahoittama. Hankkeen päämääränä on edistää urbaaneiden alueiden turvallista saavutettavuutta. Tämän kehitystyön tavoitteena on laatia evakuoitusohjeet urbaaneihin kohteisiin matkustaville senioreille. Tämän työn tarkoituksena on tehostaa matkustavien senioreiden turvallisuuden tunnetta ja tuoda lisäarvoa toimeksiantajalle, Safe-hankkeelle.

Työn tietämyskanta sisältää tutkimusta liittyen senioreiden turvalliseen matkustamiseen, urbaaniin alueeseen matkakohteena sekä evakuointiin. Väestön vanheneminen on nähtävissä maailmanlaajuisesti. Seniorit tekevät pidempiä matkoja ja haluavat matkojen vastaavan tarpeisiinsa. Senioreilla on ikään liittyviä rajoitteita, jotka vaikuttavat heidän haluunsa matkustaa. Epävarmuus on yhteydessä henkilökohtaisiin rajoitteisiin, digitalisaatioon, kielimuuriin ja ympäristötekijöihin. Seniorit joutuvat nuorempaa väestöä alttiimmin rikoksen kohteeksi. Urbanit alueet ovat houkuttelevia kohteita muun muassa tapahtumatarjonnan, ostosmahdollisuuksien sekä nähtävyyksien vuoksi. Kaupunkikohteet ovat monimutkaisia matkakohteita senioreille korkeiden rakennusten, maanalaisen rakentamisen sekä vilkkaan liikenteen vuoksi. Monimutkaisuus yhdistettynä senioreiden fyysisiin rajoitteisiin vaikuttaa evakuointidynamiikkaan urbaaneilla alueilla. Evakuointi tarkoittaa ihmisten siirtymistä vaaralliselta alueelta turvaan rajoitetun ajan puitteissa. Evakuoinnin onnistumiseen vaikuttavia tekijöitä ovat muun muassa yhteiskunnan valmius sekä kansalaisten tietoisuus. Senioreiden reaktiokyky on iän myötä hidastunut asteittain ja evakuoituminen haastaa heitä. Tietoisuus on avainasemassa, kun puhutaan selviytymisestä. Tilannetietoisuutta voi oppia. Valpas ihminen joutuu epätodennäköisemmin rikoksen kohteeksi. Oman valmiuden lisääminen johtaa onnistuneempaan evakuoitumiseen.

Tämän kehitystyön menetelmät valittiin sillä ajatuksella, että niiden avulla tulisi muodostua selkeä ymmärrys senioreiden tarpeista ja mieltymyksistä liittyen siihen, minkälainen ulkoasu Evakuoitusohjeella tulisi olla. Oli myös olennaista saada tietoa loppukäyttäjien toiveista, jotta ohjeista tulisi mahdollisimman käyttäjäystävälliset ja ne myös edistäisivät turvallisuutta matkalla. Käyttäjäpersoonat edustavat Evakuoitusohjeiden loppukäyttäjiä. Aivoriihi, joka järjestettiin senioreiden kanssa, tuotti dataa Evakuoitusohjeiden ulkoasua varten.

Tämän kehitystyön tulokset tuovat esiin tärkeimmät teemat, jotka edistävät senioreiden onnistunutta evakuoitumista. Teemat ovat oman varautumisen lisääminen, tietoisuuden lisääminen matkalla ja tietämyksen lisääminen siitä, kuinka vaaratilanteessa tulee toimia. Evakuoitusohjeet rakentuivat näiden teemojen ympärille. Ohjeet luotiin kahdessa formaatissa. Yksi formaateista on suunniteltu erityisesti urbaaneihin kohteisiin matkustavien senioreiden käyttöön. Toinen sisältää ohjeiden tekstin ja on sopiva, mikäli ohjeita edelleen kehitetään. Tämän työn lisätutkimus voisi sisältää Evakuoitusohjeiden testaamista senioreilla evakuointisimulaatiossa.

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1 Introduction

Elderly population is increasing worldwide and by the year 2030, every sixth person in the world will be aged over 60. Many seniors enjoy travelling, but due to their age, seniors often have some limitations that might affect their desire to travel. They might worry about how to get along with their physical limitations en route, especially in abnormal circumstances, such as a suddenly occurring crisis. Seniors might feel that they do not know how to reach the important information as the modern digitalized ways to communicate feel challenging. Physical and mental limitations place seniors in a more vulnerable position against criminals and fear of crime might affect the desire to move around. Senior travelers seek for safe travel options that fulfill their needs.

Seniors travel in urban surroundings, and occasionally they must escape from a threatening situation, such as violence, fire, terror attack, war or natural disaster. Escaping danger afflicts the person's physical and mental resources. The limitations that seniors have, might negatively affect the success of evacuation. Their situational awareness is more limited and reaction time is also slower than younger population's. Seniors sometimes have uncertainties that affect the sense of safety in relation to traveling. These together might lead to decision of not to travel, or insecurity en route. Increasing the tools for self-preparedness of traveling seniors, could lead to better success in evacuation and enhance the safe feeling among them.

My thesis is a development work. The goal is to create evacuation guidelines for seniors traveling to urban areas. Ageing affects the physical and cognitive performance. City environment is a complexity of high buildings and underground features. In this Thesis I study the barriers of fluent evacuation of seniors. With the use of different methods, I seek solutions that help in the process of developing the Evacuation guidelines aiming to better their chances of escaping the danger in the future.

The purpose of this Thesis is to enhance the safe feeling of travelling seniors and to create value for the commissioner. In this research the seniors are defined as people over 65 years of age, because most of the literature consider seniors as 65-year-old and older. The commissioner of this development work is Safe - project.

Safe - project is co-funded by the Erasmus + Programme of the European Union. The acronym SAFE stands for Sustainable Accessible Future Environments. The project concerns promoting safe accessibility of urban areas and is targeted to five urban areas in Europe: Vantaa (Finland), Kiel (Germany), Bydgoszcz (Poland), Kranj (Slovenia) and Granada (Spain). The main objective is to increase the awareness of safe accessibility, diversity and inclusion in these urban surroundings. The project also aims to promoting right to safe feeling in cities for

also people with less opportunities, disabilities, or different cultural and socio-economic backgrounds. Students across the Europe in many Universities participate the project and different development tasks. The project cooperates with target groups aiming to create the learning materials and tools. The work started in SAFE will continue developing after the project with new students and new solutions aiming to safer, more accessible urban areas. (SAFE n.d.)

2 Evacuation of seniors travelling to urban areas

People are living longer worldwide. According to Ministry of Justice (2011, 10) most of the literature consider seniors being 65 years and over. The World Health Organization delineate age group as 60 years and over in their research of ageing. According to WHO (2022) the number and proportion of population of seniors is increasing in every country. By 2030 1 in 6 will be aged over 60, and the number will double from 2020 1 billion to 2050 2,1 billion (WHO 2022). Changes of life expectancy have affected the increase in elderly population (Poon, Chodzko-Zajko & Tomporowski 2006, 118). In my Thesis I use concept 65-year-old and older of the seniors, because I want it to be in line with most of the existing literature and statistics that I refer in my work.

The number of seniors is increasing, and this can also be seen in tourism. Many seniors like to travel frequently. Statistics on trips of EU residents (EUROSTAT 2021) show that in 2019 people aged 65 or over traveled mainly for holiday, leisure and recreation (52%). The percentage of business trips in that age group was only 3 %. 37% of the trips were targeted to visit friends and families, while 8 % for other personal needs, such as health treatment or shopping. The statistics also show that in 2019 EU residents 65 years and older made longer trips than other age groups, and their share of tourism nights of private purposes spent by EU residents was 23 %. They also made more domestic trips and trips where the accommodation was non-rented. When comparing the EU population participating tourism in 2019, 51% of people aged 65 and over did not make any trips. Main reasons for people over 65 years for non-travelling were health related (47%), while financial reasons covered 33%. Seasonal statistics show that aged 65 and over traveled mainly from March to June and September to November (57%), while summer season covered 28% and winter season 15% of the nights they spent. (EUROSTAT 2021.)

2.1 Safe travel for seniors

Senior travelers look for safe, tailored travel options that meet their needs. According to the research by Maria & Panchapakesan (2016) senior travelers' motivation can be explained with push and pull factors. Push factors refer to the needs and preferences, such as chance to

escape the routines, adventure, or social interaction and this way affect the reason to travel. Pull factors relate to characteristics such as natural beauty, image, or safety of the destination and explain the choice of the destination. The research also states that most valued destination attributes for seniors are safety, cleanliness, tourist attractions, reasonable prices, tourist information and kindness towards visitors. Senior tourists want value for their money, prefer package tours, easy travel without hustle and unpleasant surprises and they also prefer a destination where communication is possible in English. (Maria & Panchapakesan 2016.)

2.1.1 Sense of safety and factors that cause insecurity for seniors

According to the research done by Ministry of Justice Finland (2011, 26-27) seniors are afraid of theft caused injury, beggars, fundraising, being deceived in relation to unfamiliar modern systems, accidents, among others. Insecurity research poll done in Tampere, Finland reveals that vandalism, neglect of environment and cyclists cause sense of insecurity (Ministry of Justice Finland 2011, 27). Results from research of safety of citizens (Kansalaisturvallisuuden tila Suomessa 2016), state that the most important factors affecting to sense of insecurity of seniors are loneliness, lack of exterior help and memory related diseases (Ministry of Interior Finland 2018, 32). Sense of insecurity may increase due to ageing. How people perceive different phenomenon is nowadays considered as part of safety. This means that objective safety and experienced safety levels might not correlate. Seniors experience insecurity due to complexity of systems, changes in care home personnel or health issues. Positive factors that enhance the sense of safety are related to how well seniors feel that they can control their life, experience meaningfulness of living, ability to influence and communality. (Ministry of Interior Finland 2018, 31.) Accessibility and prevention of social exclusion are key factors in enhancing the safety of seniors (Ministry of Justice Finland 2011, 26). The safety program of city of Tampere, Finland from year 2004 points out some attributes that affect the sense of safety of seniors in a city environment. The findings pointed out that lightning and good physical conditions increase sense of safety. Familiar neighbors and house locking systems are in emphasis. Locking systems and having only small amounts of money affect the perceived safe feeling. Ability to move around safely is one of the key factors that affect the safety of seniors. Vandalism is seen as a problem that makes the environment unreliable. (Ministry of Justice Finland 2011, 43-44.) Technology is one factor that increases safety, but training is required to provide sufficient information about modern technology to senior citizens. According to Ministry of Interior publication (2018) one action point to enhance the safety of seniors in Finland is to increase the awareness of technology and safety technics among seniors, as well as the awareness of cyber threats.

2.1.2 Risk factors that increase seniors' exposure to crime and complexity to escape danger

Ageing affect people in different ways. It changes person's physiology and affects also cognitive skills. The ability to cope with the changes and to live independently depends on the balance and reserve in cognitive and physical abilities. (Poon et al. 2006, 113.) Dementia is estimated to be affecting 131,5 million people worldwide in 2050 (Loughrey, Kelly, Kelley, Brennan & Lawlor 2018). 30 percent of seniors over 65 years have three or more chronic conditions (Poon et al. 2006, 114). Nearly half of people over 65 years of age in EU have reported to have long-term restrictions that affect their daily activities and over two thirds suffer from physical or sensory functional limitations (Red Cross EU 2022). Age-related hearing loss is a possible risk factor for cognitive decline, impairment and dementia. One third of adults over 65 years suffer from a disabling hearing loss. (Loughrey et al. 2018.) Age-related hearing loss is one of the most common symptoms of older adults. Hearing troubles might affect the person's ability to respond to warnings, hear phone or doorbell ringing or even the fire alarm (NIDCD 2023). Another symptom that is related to ageing, is vision loss. Its association with the cognitive decline of elderly people has been studied. Dual sensory impairment in vision and hearing has been associated with poor cognition of seniors (Chen, Bhattacharya & Pershing 2017). The most common causes for age-related vision loss are glaucoma, cataracts and age-related macular degeneration (Trujillo Tanner, Caserta, Kleinschmidt, Clayton, Bernstein & Guo 2018). Vision impairment highly affects the quality of life. For seniors it can increase social isolation, cause difficulty in walking, increased risk of falls and injuries (WHO 2019). In Finland falling is the most common reason for accident caused deaths among people over 65 years (Ministry of Interior 2018, 35). People with severe vision impairments are exposed more to violence and abuse, accidents with a motor vehicle and experience difficulties with other health conditions, such as reading the instructions on medications (WHO 2019).

Finland's Ministry of Justice has done research about crime against seniors and crime prevention and states in their publication that older person may be considered as defenseless and an easy target due to slower movement abilities or vulnerability in protecting own belongings. Physical and mental limitations make seniors more vulnerable against criminal acts. However high cognitive functioning may soften the impact of physical disability (Poon et al. 2006, 115). Despite of possible disabilities, the risk of seniors to be exposed to crime is relatively low (Ministry of the Interior Finland 2018, 31). Geriatric syndrome means the combination of many systems' declines that lead to limitations in functions and disability. If the deviation is cognitive, impairments can be memory, speed processing or slow reaction time. If the issue is physical such as sarcopenia, the impairments can be weak muscles, low muscle power or slow reaction time. Functional limitations caused by these types of impairments can be inability to plan or forgetting to take medicines, driving failures, failures to move quickly, inability to carry large suitcases or lowered function. The causes are then

that trip might be delayed, because medication is ordered, everything in daily living takes longer, accidents, use of smaller suitcase, falling because of inability to move quickly enough. (Poon et al. 2006, 114.) Reaction time decreases 5 percent per decade starting from age 30 (Poon et al. 2006, 127). Lower ability to produce force and slower reaction time together decline the leg-extensor power by 35 percent per decade between the ages of 60 and 90 (Poon et al. 2006, 128). Other risk factors that increase seniors' exposure to crime are loneliness, possible depression and social exclusion (Ministry of Justice Finland 2011, 13). Physical activity affects positively on physical and cognitive functioning of seniors with mitigating effect on depression and social isolation (Poon et al. 2006, 131). According to Poon et al. (2006, 195) three factors strongly affect the cognition, those being physical resources, disease states and mental resources. Estimate 8% of seniors aged over 65 have partly difficult or difficult dementia. Seniors are more exposed to crime where their property or money is stolen by deceit. (Ministry of Justice Finland 2011, 12-13.) Results from research of safety of citizens (Kansalaisturvallisuuden tila Suomessa 2016) state that deceit, cheating and abuse were mentioned as factors that affect the insecurity of seniors (Ministry of Interior Finland 2018, 32).

2.1.3 Travel safety related tools and implementations in EU for public use

The European Commission aims to improve the emergency communications and response to emergencies and has adopted a common emergency number 112. It works alongside the country's own emergency numbers. In many countries the service is provided in English and French in addition to the national language. In Finland, Estonia, Sweden, Denmark, Malta, Netherlands, Portugal and Romania 112 is the only existing emergency number. (EU emergency number n.d.) Anyone can call 112 free of charge from fixed and mobile phones anywhere in the EU (Your Europe 2023). EENA (The European Emergency Number Association) together with few other operators, launched a PEMEA project in 2018. The aim of PEMEA (Pan-European Mobile Emergency Apps project) is to interconnect the existing emergency apps, so that people can use the apps also when travelling outside of their own country. (EENA emergency apps N.d.) Italian app WhereAreU and Finnish app 112 Suomi joined the PEMEA network in 2021. Travelers from Finland can now use the Finnish app in Italy in case of emergency, and vice versa. (EENA PEMEA network 2021.) EENA is developing a NG112 service, which is a modern way of emergency communication. NG112 has an architecture that allows more depth data collection such as video, text, location and other additional data and therefore better response for emergencies. (EENA NG112 N.d.)

The technological developments enable smoother emergency communication. In European Telecommunications code (2018, clause 20) it is stated that the concept of emergency communication should cover all interpersonal communication services that are suitable for emergency services access. The law defines that the use of emergency communication must

be free-of-charge, including when using roaming services in a Member State. Examples of defined means of emergency communication in the law, are voice communication, SMS, messaging, video, real time text, total conversation, and relay services. The communication can be started by a person or a vehicle that makes an in-vehicle emergency call or an eCall. (EU Telecommunications code 2018, clause 285.) European Telecommunications code (2018) and article 110 states that all Member States must ensure that the public warning systems are in place by June 21st. The alert can be made by telephone networks or other available emergency applications, and it must be made easy for the end-users to receive (EU Telecommunications code 2018, Article 110). The Body of European Regulators for Electronic Communications (BEREC) holds a database of numbers of Member State emergency service numbers, to ensure that the emergency services can be contacted from one Member State to another (EU Telecommunications code 2018, clause 292).

ERCC is the Emergency Response Coordination Centre and is an important part of EU civil protection mechanism. Its main purpose is to coordinate the help to countries that are in the middle of crisis. ERCC delivers relief items, civil protection and expertise in form of humanitarian aid. ERCC operates around the clock and is able to provide assistance to any country in crisis upon request of national authorities or the United Nations. (ERCC n.d.)

The Foreign Ministries of Member states of EU are in charge of providing updated travel advice for their citizens (EU Consular protection n.d.). European Commission's Official webpage provides links to 27 EU countries' Travel Advice location online (Travel Advice n.d.). The authorities of the country of destination are responsible of taking care of the safety of foreign travelers staying in their country. Travelers must follow the instructions given by the authority of the country of their destination. The Ministry of Foreign Affairs of Finland suggests submitting the travel notification before the trip. It supports receiving help, such as contact from the mission for evacuation to a more secure area, in the event of a crisis from the mission abroad. When a crisis occurs, the missions update their websites, Facebook and other social media accounts and provide instructions. (Preparation for a crisis abroad n.d.) The help from the missions is not fully limited to country of residence. If a Finnish citizen requires help in crisis and no Finnish mission is nearby, the missions from other Nordic and EU countries are obligated to help as well. According to the Act on Travel Service Combinations, it is the travel organizer's duty to help the traveler in getting the medical assistance or repatriation, or other necessary measures. (A crisis situation abroad n.d.)

Some organizations provide information about disaster preparedness for public. The Red Cross has emergency preparedness guidelines on their website, but they have also published Disaster and Emergency Preparedness for Older Adults - booklet. It includes details of how to plan, response and recover from emergencies. The booklet encourages seniors to safeguard their important documents, develop a plan for local disasters and to create a communication

plan, which includes important contact details and alternative means of communication (Red Cross 2020). Older Adults Preparedness Checklist is available on Red Cross website and covering only two pages, it is convenient even as a printed version while travelling (Preparedness checklist 2022).

2.2 Urban area as a temporary destination

Urban area has not a standardized global definition. Countries use different criteria when defining the urban area such as size and density of the population, infrastructure, economic activity, or physical characteristics. This makes it difficult to compare the level of urbanization between countries. (Deuskar 2015.) In 2020 the UN statistical Commission introduced the Decree of Urbanization that is a recommendation for comparison of urban areas internationally (Dijkstra, Hamilton, Lall, & Wahba 2020). As stated in the Degree of Urbanization (Decree 2020), the three classifications are cities or densely populated areas, towns and semi-dense areas or intermediate density areas and rural areas or thinly populated areas. The criteria for classifications are population density, population size and contiguity using 1 km² grid cells (Decree of urbanization 2020).

2.2.1 Urban tourism definition and competitiveness of an urban destination

According to World Tourism Organization (UNWTO n.d.), Urban Tourism is defined as a tourism activity in urban space and has non-agricultural attributes, such as manufacturing, administration, trade and services and is concentrated in nodal points of transport. According to Heeley (2011, 22) the city tourism can be measured with its costs and benefits, volume, value and socio-demographic characteristics. Urban destinations offer variety of cultural, technological, architectural, social and natural activities and experiences for leisure and business travelers. Tourism is closely linked to better living conditions of the residents. Urban tourism has a driving force in the development of cities and countries. (UNWTO n.d.) Some destinations appeal more than others due to better attractors which shape the image of the destination and feature the competitiveness. Attractors are related to characteristics such as architecture or culture and make many European cities highly appealing among travelers. Tourists look for overall experiences and in addition to attractions, appreciate gastronomy, infrastructure, shopping possibilities and accessibility. Destination management organizations (DMOs) are operators who work in strengthening the destination's image. (Vinyals-Mirabent 2019.) Today updated information is easily available on websites and social media.

According to Statista research department (2023) the year 2020 affected negatively to the number of international tourist arrivals in Europe due to Covid-19 pandemic. The number increased again in 2021 up to 301 million. In the same year France received the highest number, 48.4 million, of international tourist arrivals worldwide. Next on the list were Spain (31.2 million), Turkey (29.9 million), and Italy (26.9 million) Travel & Tourism Development

Index (TTDI) is a global measurement tool for factors and policies of sustainable and resilient travel and tourism development. In 2021 Spain possessed the best TTDI score, followed by France and Germany. (Statista 2023.)

2.2.2 Attributes of a safe city

An inviting city is lively, well-designed, and safe. The quality of life and safety go hand in hand as safe feeling enables the free movement in the city and taking advantage of the infrastructure. In designing a modern urban city, sustainability and effective crime prevention are key elements. Sustainable development can be used to combat against crime and a sustainable urban environment should not threaten the current or future users of it. (Cozens 2002.) Safety has a high effect on the use of public spaces. If people feel safe, the public places are commonly in use. Despite crime does not often happen in a certain public space, yet a person feels unsafe, he or she might avoid visiting that place. (Ceccato 2020, 6.) Seniors may be afraid of crime due to lack of information and lost control of life. Fear of crime may limit movement from home and cause social exclusion. (Ministry of Justice Finland 2011, 14.) Avoidance due to fear of crime may affect negatively in person's social and commercial habits and possibly cause loss of revenue for business (Sayin, Krishna, Ardelet, Briand Decré & Goudey 2015). Some places are criminogenic due to the possibility to act anonymously and some places such as nodes of transportation, especially attract crime (Ceccato 2020, 6). In cities the private and public areas are side by side. Transition between private and public zones should be clearly distinguished with elements such as landscaping, staircases or gates to maintain the sufficient level of protection in private territories. (Gehl 2010, 103.)

One globally spread modern approach for crime and loss control is CPTED (Crime prevention through environmental design). It is based on the idea that physical environment gives opportunities for crime, and if the physical environment is changed, the crime will less likely happen. CPTED does not set the focus in offence and offender but emphasizes human activities and their exposure to crime and loss. (Crowe 2013, 15.) CPTED is also called a natural approach and it is built around three strategies, which are natural access control, natural surveillance, and territorial reinforcement. Those are divided in three classifications: organized, mechanical, and natural. Access control covers locking mechanisms (mechanical), security officers (organized) and spatial definition (natural) and therefore decreases the crime opportunities. Surveillance facilitates observation and spotting the offenders and can be classified as police patrol (organized), lightning (mechanical) and windows (natural). Natural access control and surveillance promote users to protect their territory better and this makes the territory less appealing to possible offenders. (Crowe 2013, 27-28.)

According to Cozens (2002) territoriality concerns the idea of protecting own space and keeping the property in good condition and well-defined. This way the possible criminals are

easy to identify. Natural surveillance means maximizing the surveillance with different means such as landscaping and lightning and presence of people. Surveillance might decrease the interest to crime as criminals avoid being seen. Access control gives permission to accepted people and can be organized with well-designed entrances and exits, fencing and directing the traffic so that it discourages crime. (Cozens 2002.) Activity support is mentioned in Cozens (2002) research as part of CPTED and it concerns an idea, that public places can be used for legitimate activity and discourage crime as it is clear to spot who has the permission to be there. Use of CPTED concepts has led to many benefits, such as reduction of losses from thefts and robberies, reduction of drug sales and general crime as well as improvement of passenger perception of safety (Crowe 2013, 12-13).

There are big differences in safe urban planning around the world, but the amount of vehicular traffic in urban space has been ascending everywhere. As a result, the roads have got wider and the space for pedestrians tighter. Increasing number of cars, narrow sidewalks filled with number of signs and many obstacles affect the safety of pedestrians and cyclists. (Gehl 2010, 91.) City planners pay more attention to the safety of pedestrians and cyclists and have come up with different solutions to enhance their safety. Car-free areas with concrete roadblocks are common in urban space, and streets can be designed for many purposes such as for vehicles only or a pedestrian street. In “shared space” different types of motor vehicles, pedestrians and cyclists can travel side by side safely. This approach aims to reduce accidents with pedestrian priority and due to the high vigilance of everyone. The side effect might be that special groups of people, elderly or children face an unsafe feeling while outside. (Gehl 2010, 93.) Bicycle lanes are common in big cities. It makes the difference how the lanes are situated in relation to the moving vehicles. The lanes that are located between the parked vehicles and traffic do not have the desired safety enhancing effect for cyclists. (Gehl 2010, 94.) In EU the road safety is regulated by multiple legislation concerning driving licenses, road safety enforcement, driving under illegal substances, professional drivers and vehicles. The road safety enforcement is an important mission in EU. In 2003 the European Commission placed a recommendation that aims to reduce fatalities in European roads. Speeding, drunk driving and non-use of seatbelts are main causes for fatal accidents. The Member States were requested to set up national safety enforcement plans and monitor the effectiveness of it. (European Commission 2003.)

According to Gehl (2010, 97) safety is experienced and perceived. Presence of people increases the safe feeling in the cities and invites the movement. The ground floor building has an impact in the attractiveness of the urban space. Services such as cafés, restaurants and shops on the streets, as well as light from the windows above at night, increase the safe feeling of people walking on the streets. (Gehl, 2010, 99.)

Another important factor is clear layout. It represents the good urban quality, as it helps people to move around the city without difficulties to find the route. Clear visibility is important in a safe urban area. Clear signs, directions, visible street names and good lightning in the dark, are key elements that contribute the security and quality. (Gehl 2010, 101.) Today, sustainability is in important role in urban design. Authorities around the world are trying to find solutions to decrease the unnecessary lightning to decrease the carbon emissions and cut the costs. Less lightning can be associated with fear of crime and unsafety in public places. (Ceccato 2020, 347-348.)

The emergency safety legislation varies between countries. The European Union Council Directive 92/58/EEC states the minimum requirements for the provision of safety and health signs at work. The Directive covers regulation about signs of prohibition, warning, specific behavior prescription, emergency escape and first aid, information, safety colors, symbols and pictograms, illuminated signs, acoustic signals verbal communication and hand signals. The Directive (1992) mandates that the emergency escape or first aid signs must be rectangular or square shaped, with a white pictogram on a green background, green color covering at least 50% of the sign. The fire-fighting signs are assigned to be rectangular or square shaped, with a white pictogram on a red background, red color covering at least 50% of the sign. Obstacles that form a risk of collision, objects falling or risk of falling must be marked with yellow or black stripes in 45 degree angles, or alternatively with red and white stripes, size of the sign being in respect of the size of the obstacle. (Council of the European Union 1992.) The signs described in this law are directed to protect the employees but are also visible for public and therefore important knowledge for everyone using public spaces in urban environment.

In Finland the legislation about emergency response and preparedness is comprehensive and it is relatively safe to use the public spaces. The Rescue Act (2011) states the provisions on emergency response, emergency plan and duty to act. It also covers the regulation about rescue services, fire and evacuation safety in buildings, emergency exits, emergency access roads, maintenance of equipment and civil defense, inter alia. Its purpose is to improve the safety of people and reduce the number of accidents. According to the Rescue Act (2011) the business operator of a building must ensure that the risk of fire is low, emergency exits are clearly marked and lit and are kept clear and serviceable. It is also the responsibility of the operator to ensure that the emergency access roads are kept clear for rescue services' use. The organizer of a public event must draw up an emergency plan if there is a risk for safety of people participating the event (Rescue Act 2011). In Finland a Safety Program of Larger Cities *Pelottomat puistot, kodikkaat korttelit* was published in March 2011. It aligns four principal action points that are cooperative models that enhance safety, building a safe living environment, decreasing the violence and enhancing the safety of children and young people. (Ministry of Justice Finland 2011, 33.)

2.3 Evacuation

The need of an evacuation occurs when life or safety of people is endangered. The reason might be a significant disaster such as a natural phenomenon, fire or a terror attack. Destruction of critical infrastructure due to a crisis, such as natural phenomenon or a war, can lead to an evacuation. According to Katz and Caspi (2020, 28) evacuation means movement of people away from a building or an area where occupants would experience harm if stayed. The term evacuation describes the movement of occupants with a limited time from danger to safety (Katz & Caspi 2020, 28). Full evacuation means that the whole building is emptied from occupants and partial evacuation means that only those in endangered area move to safety (Katz & Caspi 2020, 28).

2.3.1 Evacuation dynamics in urban areas

The successful evacuation depends on various aspects such as the preparedness of the society and awareness of the citizens. The complexity of topography or remote location may challenge the implementation of an evacuation. In urban areas the rescue personnel often arrive quickly, but dense population and upward and underground building are likely to challenge the evacuation dynamics. Evacuation from underground site happens upwards, which is same as the direction of the smoke (Rinne, Tillander and Grönberg 2010, 22). Training of rescue personnel is in key role in evacuation dynamics. After the terror attack of September 11, the new law required that the building plans and staff training must include response to various threats, such as weapons of mass destruction, nature hazards, chemical weapons among others (Katz & Caspi 2020, 17).

Big public events such as concerts and sport games are held in urban areas. Evacuation flow is affected in crowded areas and congestion is evident if exits are distant and people are forced to use same routes. Rinne et al. (2010, 25) calculate the flow rate by comparing the evacuated persons and time curve in evacuation. Their study shows that doubling the exit door's width, increases the flow by one person per second. Also, the physical size of the person affects the flow rate. The study of Rinne et al. (2010, 24) evidence that use of stairs and crowd density affect the walking speed decreasingly. Therefore, different aspects need to be considered when evacuating from an office building, event or on the street. Exit points are an important part in evacuation. Exit points mean the emergency doors and exits and all the usable normal doors, and they should be always clear from obstacles. Emergency doors are preferably fireproof, equipped with emergency handles, alarm and appropriate clear markings and lights. The amount of exit points should be in line with the number of people. (Al Hour 2012, 186-187.)

A thoroughly designed evacuation plan can improve the evacuation dynamics. In Finland the emergency plan is obligatory in many buildings associated to urban areas, such as shopping

centers, accommodation businesses, restaurants with over 50 seats, schools, libraries, churches, exhibition halls, sport arenas, amusement parks and public tunnels with a length over 100 meters, among others (Government Degree on Rescue Operations 2011). Emergency plan should be based on a risk assessment. It is more effective to concentrate on risk prevention than trying to minimize the impact of an accident that has already happened (Helsinki Rescue Department 2019). Evacuation plans should be proven safe, so that they will not cause any additional risks (Al Hour 2012, 182). Important features in evacuation plans are simplicity and clarity so that everyone could understand the plan (Helsinki Rescue Department 2019, Al Hour 2012, 183).

Clarity can be explained so that during an emergency people should not have to think about what to do next, but rather follow the plan (Katz & Caspi 2020, 16). It is important to make people aware of the plan and train them by using simulations or drills. (Al Hour 2012, 184). The use of evacuation drills and simulations is common today and may optimize the evacuation performance by reducing the number of deaths and injuries (Gao, Zhang, He, Gong, Zhao 2020). The evacuation drills also measure the emergency preparedness. Results from the drills can be used to plan an infrastructure that enhances the evacuation dynamics (Cabrera, Huertas, Medaglia 2022). A detailed evacuation plan based on observation and statistics can help confront the crisis and mitigate the impact. In their model for evacuation planning, Cabrera et al. (2022) emphasize establishing an evacuation plan with suggestions of evacuation routes. According to Helsinki City Rescue Department (2019) the emergency plan should include details on prevention of hazardous situations, preparedness, and action guidelines in case of an accident. The plan should be updated when needed and in regular basis (Katz & Caspi 2020, 30).

2.3.2 Evacuee's behavior and reactivity

The importance of awareness is in a key role in survival. Identifying the potential harm in advance, can help to act in time and escape before the danger becomes evident. A person who is actively paying attention to surroundings might also be noticed by the offender, making the person a less potential target. (Katz & Caspi 2020, 2-3.)

Situational awareness can be learned. Awareness training is part of security courses given to many agents, military personnel and police officers (Katz & Caspi 2020, 2). One of the approaches to study the awareness is called a color code awareness system. This system divides the levels of awareness into four colors in which the white indicates a full unawareness and red a stage where immediate action is needed to escape the danger (Katz & Caspi 2020, 3-5). Freezing is associated with the unpreparedness (Katz & Caspi 2020, 4). An aware person will more likely to act than to freeze as something in the surroundings has

already triggered the alarm. Nonverbal communication and signs are said to be more liable than what has been said aloud (Katz & Caspi 2020, 3).

Behavior of individuals in crisis situations is different than the everyday life behavior.

Research by Arru & Negre (2017) introduce three types of behavior in crisis which are: 1. Behaviors that allow fast action by struggle, astonishment, or evasion 2. Panic behaviors or crowd phenomena 3. Controlled, reasoned behaviors. The behavior of the evacuees affects the evacuation dynamics. Simulations can reveal how much the abnormal behaviors affect the individual and total evacuation time (Gao et al. 2020). Collective behavior occurs in a crowd when individuals change their motions in accordance with the local perceived conditions. The Leader-Follower relationship is one example of the collective behavior in crowd. Evacuation is more effective with existing leaders. (Xie, Wai Ming Lee & Yin Lee 2022.) An active leader can get everyone moving in an emergency (Gao et al. 2020). Most of the people are followers (Katz & Caspi 2020, 34). Using simulation models is one way to study the impact of behavior on evacuation efficiency. Factors such as distance to exit, response time, and even living habits, may affect the selection of the escape route (Gao et al. 2020). Emotions may affect the movement in evacuation. Fear or surprise, which are related to danger perception, may lead to panic movements (Marru & Negre 2017). Nervousness may affect the decision of evacuees of whether to follow others or independently search for an exit (Xie et al. 2022). Panic movements may worsen the crisis consequences (Marru & Negre 2017).

3 Implementation of the thesis process

The knowledge base provided me data for the content of the Evacuation guidelines for seniors travelling to urban areas. I chose the methods for this development work to form in depth understanding of the need of seniors in relation to the Evacuation Guidelines. It was important to understand the end user of the Evacuation Guidelines. It was also essential to find out what the end user wants, so that the guidelines would, at the end, promote user-friendliness and safety. The implementation of the Thesis is described in Figure 1.

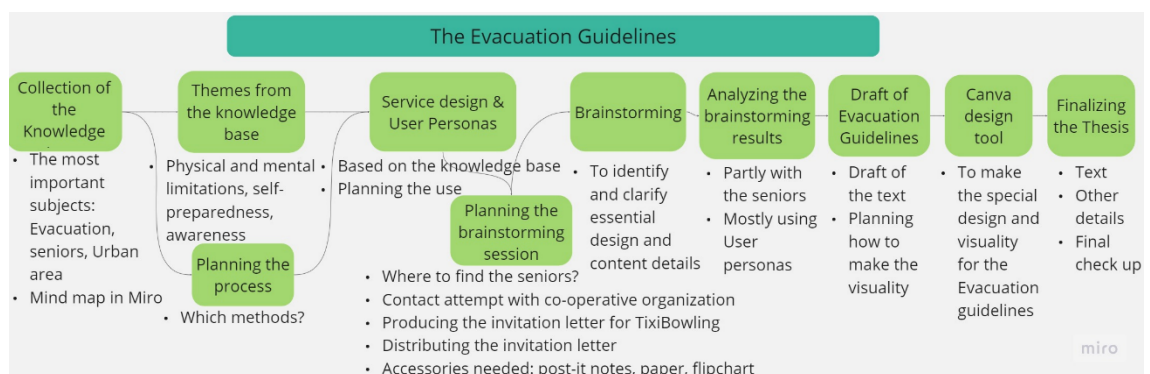


Figure 1: Process chart

3.1 Benefits of service design and product value creation

I chose to utilize service design as it offers solutions for value creation and more successful services. Services are seen today as processes that also create value (Morelli, de Götzen & Simeone 2021, 9). Services based on insights of the users will end up delivering value (Polaine, Løvlie & Reason 2013, 18). The process of value creation can be modified in many ways. The traditional way of creating value stops at the end user. It is suitable for products or more simple value production processes and can be explained so that several actors are aligned linearly and at the end there is the final customer. (Morelli et al. 2021, 13-14.) Another way of thinking is that the customer should be more involved in the value creation process and that the process includes also more interaction. Value is closely related to economy and considered as utility (Morelli et al. 2021, 14). The value creation can be explained also so that the producer stores the value in the product while the customer consumes the value (Morelli et al. 2021, 16). Service only creates value when it is used (Polaine et al. 2013, 23). Service can be seen as an interaction between people, supportive infrastructure of activities or systemic institution that is responsible of organizing the activities and processes. These three interpretations also represent the three areas where service design works on. (Morelli et al. 2021, 12.) Service design offers tools that allow building more adaptable and satisfying services. Service design leads to more effective use of existing diverse resources. (Polaine et al. 2013, 19.) Service design is a suitable method for this thesis, as it helps to form a better understanding of the end users of the Evacuation guidelines and develop the guidelines to match their needs.

3.2 User personas as a fictional group of end-users of the Evacuation guidelines

In my Thesis I decided to create user personas based on the knowledge base to represent the end-users and help in creation process of the Evacuation guidelines. Utilizing user personas offer a user-centered solution for service development and is one tool of service design. Users of products are different, and it is sometimes complicated to understand their needs, behaviors, and preferences. As mentioned earlier, senior travelers have versatile preferences and different limitations. Pleasing one group of users, may end up unsatisfying others (Pruitt & Tamara 2006, 6). Personas are fictive and specific and represent the target users of a product or service and help the designers to become more user-focused (Pruitt & Tamara 2006, 11). A good persona is based on thorough research of tasks, attitudes and behaviors of the product users (Caddick & Cable 2011, 11). Personas should be based on research of real people, described using short, bulleted points and descriptive photography reflecting user behavior (Caddick & Cable 2011, 12).

I created the user personas (Appendix 1) based on my knowledge base and themes that had come up in it, such as age-related diseases and limitations, seniors' travelling habits in EU

and importance of self-preparedness of seniors. The user personas in my thesis are all different and have some age-related limitations. First persona is a couple, because most likely many seniors travel with their spouses. The couple is a travel loving Finnish Italian Luigi Ferrari & Pirkko-Liisa Heinonen-Ferrari. Second persona is a golfer Esko Holari, who is fit for his age. Third persona is Vuokko Vapaa, who travels often alone and likes shopping and concerts. The User personas I created are all over 65 years of age. Their photos and names are very descriptive and reflect their behavior. Luigi and Pirkko-Liisa have very typical Italian and Finnish names and their photo shows their closeness. Esko's surname Holari means hole-in-one in golf and tells about his passion. Vuokko's surname means freedom and her photo also describes her free spirit. They have age related limitations, such as health issues typical for seniors, that has been previously introduced more in depth in this study. They all have special descriptive features such as their traveling preferences, based on my study about seniors' travel habits. The photos of the user personas are from the picture bank of Microsoft Office.

3.2.1 Utilization of the user personas in my thesis

User personas helped me along the thesis process. They were introduced in the brainstorming session, which is one of my methods and explained more in depth later in this work. The user personas were also used when I analyzed the most suitable ideas after the brainstorming session. I used the user personas as the principle while I analyzed the most suitable ideas to be used to achieve the goal of my thesis. For this process I used Miro platform. I transferred all ideas from brainstorming session post-it notes into digital form and translated them in English. I put the ideas under the same four categories as we had had in the session. Then I gave plus marks on behalf of each of the user personas, for the most suitable ideas based on their individual need (Appendix 2). Plus marks are color coded to match with the colors above the user persona in question.

Five ideas received three plus marks, one from all user personas as they are practical ideas that suit for all of them. These five ideas are suitable to create Evacuation guidelines for general purposes. Luigi Ferrari and Pirkko-Liisa Heinonen Ferrari have purple plus marks. They are 75 years old and have age related vision impairment and are frequent travelers. I put plus marks on their behalf to "Getting to know the evacuation routes and roads" as they will most likely spend many nights in different hotel accommodations on their trips in Europe. Pirkko-Liisa has issues with her legs and walks slowly, so plus was placed for "Moving aid/assistance". The last plus mark from them was given to "Assembly point agreed with travel companion/group" as they travel together and want to reunite after the dangerous situation.

Esko Holari has green plus marks. He travels short and long trips, so his plus mark was given to an idea of “Short trip or long trip, big city or small village”. Another plus was placed for “special regulations of destination” as he travels to a new destination every year. He travels sometimes alone and wants to make sure to reach help if needed. One plus mark went for “Keeping phone charged - power bank”.

Vuokko Vapaa is a free soul but wants to be safe on her trips. Her orange plus mark was given to “How to contact relatives, embassy if phone lost, broken, stolen” as she wants to be prepared. She travels often alone and likes to go to events, so it is important to know the evacuation routes. One plus went for “Getting to know the evacuation routes and roads”. One plus was given on her behalf for “Moving aid/assistance” as she has chronic condition and can’t walk long distances.

3.3 Brainstorming

I chose Brainstorming as one of the methods in this thesis, as it helped to identify essential design details for Evacuation guidelines. Brainstorming encourages creativity and helps to identify new risks and solutions (ISO 31010 2019, 41).

Brainstorming is usually held in group sessions, and it is a standard method for creative problem solving (Moilanen, Ojasalo and Ritalahti 2022, 4.7). Brainstorming can follow a structured or unstructured pattern (ISO 31010 2019, 41). Unstructured, less formal approach was used in this Thesis. In the beginning of the brainstorming, at a preliminary stage, the goals are set. Warming-up stage is used to remove the unnecessities such as mental limitations. The idea-generation stage starts with recording the free ideations and without any evaluation. Then the ideas are examined and evaluated using techniques such as 3+/- . The best idea gets the most plus marks. (Moilanen et al. 2022, 4.7.) A group of people tend to generate fewer ideas than the same people working individually (ISO 31010 2019, 41).

I wanted to perform the brainstorming session with Kanta-Helsingin kansalliset seniorit ry, which is a co-operative organization of the Safe-project. They suggested meeting in the city centre of Helsinki, Finland. Due to my office work hours, I could not organize the meeting with them during my workday. I managed to find another group of seniors with the help of the owner of Keilapartio Oy, who runs a bowling centre in Tikkurila, Finland.

The brainstorming session was held in TixiBowling’s premises in Vantaa, Finland as the Bowling centre’s senior customers were easy to contact in advance with an invitation letter (Appendix 3). 10 people were contacted on 20th September 2023 with an invitation letter. The brainstorming session was also promoted for senior bowlers on 25th September in the morning before their bowling competition. All in all, six people participated the session on 25th September, being five men and one woman. All participants were over 65 years old.

The brainstorming session started with introducing the goal of my thesis. I also verbally introduced the user personas of my thesis and the problem to be solved in the session: Evacuation from urban areas is not always clear enough for seniors. The participants were asked to imagine being in a threatening situation in a strange urban environment, willing to escape. The participants were asked: What kind of evacuation guidelines would help you the most to escape the danger?

After the introduction, the session continued with an individual brainstorming. The participants wrote potential ideas on post-it notes that I had distributed on tables before the session. They spent about 10 minutes for individual ideation. Then the notes were read aloud together and discussion about these ideas with the whole group generated more imagination and ideas. When the ideation slowed down, some key words were introduced. The key words used in the session came up from my knowledge base and were: Clarity, Self-preparedness and Complex city surroundings. The discussion around the key words led the session onwards and more ideas were discussed aloud. Some participants also told real life examples. I asked if they had been in a situation where they had to evacuate. One had been robbed on a cruise ship and another one told an example from his trip to Thailand when all electricity was lost. These examples fostered more ideas. When the discussion slowed down, the post-it notes were categorized together under four categories which were contact details, understandability, increasing self-preparedness and travelling alone/travelling in a group. I wrote down all the additional ideas from participants on papers around the post-it notes (Appendix 4). In the end of the session, I asked the participants to mark the most suitable ideas, but the participants decided that it was too hard to choose, and all ideas are important. As the number of ideas was not that big, I decided to end the session and use the idea list as it was. I did further analysis alone using the user personas as a target group.

4 Results

The results of this development work reveal the most important themes for promoting the successful evacuation of the seniors. The themes are increasing self-preparedness, increasing awareness en route and knowledge of how to act in danger. The Evacuation guidelines are generated around these themes.

4.1 The most potential ideas for the layout of the Evacuation guidelines

Seniors have different needs and preferences. I wanted to find out the need of the seniors in relation to the layout of the Evacuation guidelines. The most suitable layout will give more value to the users. The brainstorming was a suitable method to study the need of the seniors. As described earlier, I analyzed the idea list from the brainstorming using the user personas. I

gave plus marks for the most important ideas on behalf of all the user personas. As a result of plus markings given, the list of the most potential ideas for the Evacuation guidelines' layout was formed (Appendix 5). The list shows that increasing self-preparedness is in a key role, as half of the ideas are related to it. All the 12 ideas are suitable to create general Evacuation guidelines for the use of the Safe - project. These 12 ideas were further used to create the Evacuation guidelines.

4.2 Evacuation guidelines

The Evacuation guidelines (Appendix 6 and 7) were developed based on the knowledge base and data gathered with the methods used in this Thesis process. I made the guidelines in two separate document formats, one for the versatile use of the Safe-project and another one directly for the end-users, the seniors. I was informed that the guidelines should be generic and applicable to different kind of crisis situations that require evacuation in urban areas.

The Word-document (Appendix 6) created for the Safe-project's use includes same written content as the other jpg-document (Appendix 7) designed for the seniors. Additionally, it includes an introduction for seniors and other information related to emergency preparedness. The idea is that the commissioner can better further utilize the Word-document according to the need either directly in its form or using just the text. The word document includes the logo of the Safe-project. The font is according to the visual image of the Safe-project.

The jpg-document is designed using the google Canva design tool. I chose Canva as it is suitable for easy designing and includes various templates available for free. Based on the ideas of printability and pocket size, from the brainstorming session, I decided to make the guidelines in a three-folded form. End-users can print the guidelines and fold them to pocket or handbag. The pictures and images used in the guidelines are from Canva's picture bank. The round picture which shows seniors walking in a city surroundings, is created using artificial intelligence of Canva design tool. The jpg-document includes the logo of the Safe-project.

The layout of the Evacuation guidelines is designed based on the visual image given by the Safe-project and the ideas that came up in the brainstorming session. The colors are the green and grey that the project uses. The project's logo is shown on both documents. The text font is Open Sans based on the visual image of the Safe - project.

The content of the Evacuation guidelines is created around the themes that stood out in the knowledge base and are the most important themes in relation to successful evacuating of seniors. The explanation of which information led to each bullet point of the guidelines, is shown in the Appendix 8. The themes are increasing self-preparedness before the trip,

increasing awareness en route and knowledge of how to act in a dangerous situation. In addition, information related to escaping fire is included in the guidelines, because seniors have many limitations that affect their physical performance. Fire is a situation that requires an immediate response and for that reason needs to be emphasized. Information about a survival pack is included in the guidelines as this idea came up in the brainstorming session and is very practical and suitable for any trip that seniors make. Important contacts-part includes details of the contacts that are most suitable in a situation that will require evacuation. Other information related to emergency preparedness-part includes some URL addressed where seniors can find more information about how to prepare better for emergencies.

5 Discussion

The goal of this development work was to create Evacuation guidelines for seniors. The process started with creating the knowledge base. The key themes to study were safe travel of seniors, urban area and evacuation. I chose to use service design and brainstorming as methods to support the process.

5.1 The success of this development work

The results of this development work are liable as they are based on subject related knowledge base and data from the brainstorming session. The brainstorming session was performed with seniors and their ideas were used in creating the Evacuation guidelines.

The methods I used, were suitable for this development work as they offered me practical knowledge that supported the creation of the Evacuation guidelines. The user personas helped in decision making in situation such as the analysis of the results of the brainstorming session. The brainstorming session resulted a list of good ideas that were categorized. One of the categories was increasing self-preparedness and it is also an important part of the final version of the Evacuation guidelines. The final version of the Evacuation guidelines is general as the commissioner prefers. The layout is designed based on the needs and preferences of the seniors and is therefore suitable for the end users. The Evacuation Guidelines layout also complies with the visual image of the Safe-project.

The Results of this Thesis process are the Evacuation guidelines in two different formats. The printable three-folded version for the end-users and a word document for the commissioner. The Commissioner can further develop the content of the contacts-part, to match the need of seniors in different countries. Despite of the general form, the guidelines have some details that are more suitable for the use of Finnish residents. One example is the 24/7 contact details for the Ministry of Foreign Affairs in Finland. Other countries might have similar

emergency contact details for their residents' use. Due to the general form and clarity, it would not have been justifiable to add contact details to all Foreign Ministries in the EU.

5.2 The process and outcome

The process started with a thorough collection of knowledge base. After that it was easy to proceed to usage of methods. After the brainstorming session, I had most of the data I needed for the Evacuation guidelines. The user personas clarified the process. During the whole process I felt that developing general guidelines is not a simple task. I feel that I could have offered more precise evacuation guidelines if the order was to make those for a more specific crisis situation. I faced some difficulties in the use of the brainstorming method. I wanted to organize the brainstorming session with the co-operative organization of the Safe-project. It would have been more known and perhaps more liable in the eyes of the commissioner. I wanted to analyze the ideas from the brainstorming session together with the seniors in that session. The results could have been more liable. However, the seniors decided that all the ideas are important, and I ended up doing the analysis utilizing the user personas.

Further studies on this subject could include testing the Evacuation guidelines' function with seniors in the form of evacuation simulation. It could be interesting to expand the guidelines with specific crisis situations. The developed guidelines could include situations such as war, terror attack, flood, earthquake and being robbed or deceived.

I have considered the ethical aspect in my work. I have followed The Finnish Advisory Board on Research Integrity (TENK) guidelines. The aim of the guidelines is to encourage to responsible research process and to prevent contravention (TENK 2013).

My development work's goal was to create Evacuation guidelines for seniors travelling to urban areas. The Evacuation guidelines' clarity and layout promote user-friendliness. The Evacuation guidelines are suitable for the use of the commissioner and can be easily developed further.

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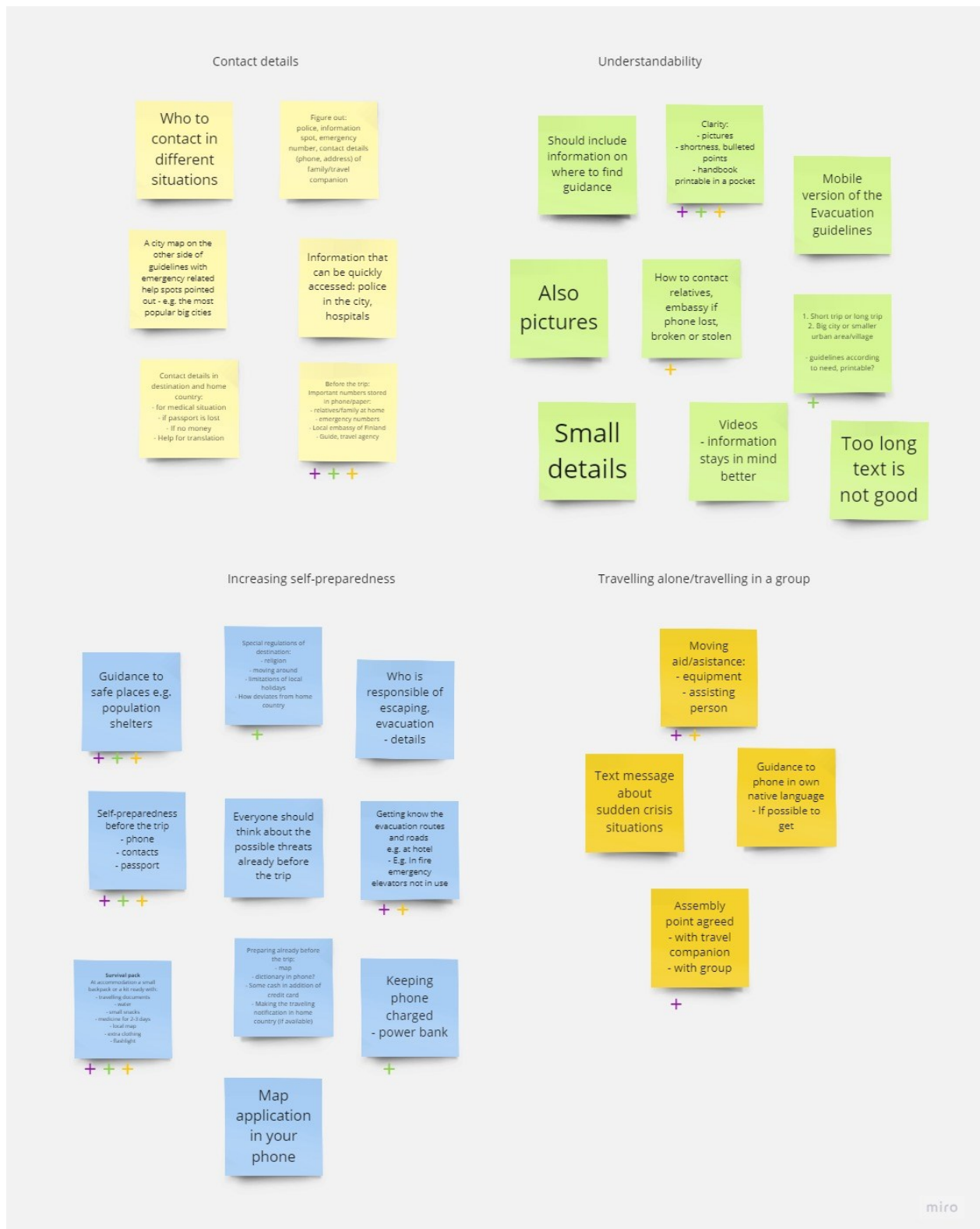
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Appendix 1: User Personas

Name	Luigi Ferrari & Pirkko-Liisa Heinonen-Ferrari	Esko Holari	Vuokko Vapaa
Image			
Age	75 years	67 years	71 years
Home location	Milan, Italy	Oulu, Finland	Helsinki, Finland
Travel preferences	<ul style="list-style-type: none"> • Travel in EU • 5-10 trips a year • Holiday, family and friends • City destinations • Cleanliness, safety 	<ul style="list-style-type: none"> • Golf holidays in Europe and Thailand • 2-3 trips a year • City and beach together • Good facilities and infrastructure 	<ul style="list-style-type: none"> • City destination • 1-3 trips a year • Shopping • Concerts • Cleanliness, safety, tourist attractions • Package holidays • Travels only to destinations where English is spoken well
Length of travel	<ul style="list-style-type: none"> • 3-7 days 	<ul style="list-style-type: none"> • 7 days to 12 weeks 	<ul style="list-style-type: none"> • 2-4 days
Limitations	<ul style="list-style-type: none"> • Luigi has age-related vision impairment and long-term medications for three chronic conditions • Pirkko-Liisa has lowered hearing, issues with her legs and walks slowly 	<ul style="list-style-type: none"> • Good condition in general • Age-related lowered hearing in left ear • Age-related slight vision impairment 	<ul style="list-style-type: none"> • Medication for high-cholesterol • Chronic condition and can't walk long distances
Other information	<ul style="list-style-type: none"> • Once a year Luigi and Pirkko-Liisa travel to Kuopio, Finland to see her daughter and grandchildren • Speak Finnish, English, Italian 	<ul style="list-style-type: none"> • Travels alone and with friends • One trip a year to a new destination • Speaks Finnish and some English 	<ul style="list-style-type: none"> • Speaks Finnish, Swedish, some English

Appendix 2: Ideas from brainstorming session



Appendix 3: Invitation letter for brainstorming session

Hei.

Opiskelen Turvallisuutta ja riskienhallintaa ammattikorkeakoulu Laureassa ja teen parhaillaan opinnäytetyötä aiheella: Evakuointiohjeet senioreille, jotka matkustavat kaupunkikohteisiin (Creating evacuation guidelines for seniors travelling to urban areas).

Ohjeet tulevat käyttöön aikanaan nettisivuille osana Safe – hanketta, joka on osa EU:n rahoittamaan Erasmus + projektia.

Etsin 5-10 henkilöä auttamaan minua ideoimaan opinnäytetyössäni tarvittavaa materiaalia. Ehtisitkö osallistua keilailun päätteeksi Ma 25.9. n. klo 11 keilahallin kahviossa aivoriihitapaamiseen ja ideoimaan aihetta kanssani. Pidetään tapaaminen lyhyenä n. 30-45min. Tarjoan osallistujille kahvit ja pullat tapaamisen päätteeksi.

Kiitos jo etukäteen.

Ystävällisin terveisin,

Susanna Saarinen

Appendix 4: Brainstorming ideation

[illegible]

Appendix 5: Top 12 ideas

Contact details	Understandability	Increasing self-preparedness	Travelling alone/travelling in a group
Before the trip. Important numbers stored in phone/paper: relatives/family at home, emergency numbers, local embassy of Finland, guide, travel agency	Clarity: pictures, shortness, bulleted points, printable in a pocket	Guidance to safe places e.g. population shelters	Moving aid/assistance: equipment, assisting person
	Short trip or long trip, Big city or smaller urban area/village - guidelines according to need, printable?	Self-preparedness before the trip: phone, contacts, passport	Assembly point agreed in advance with travel companion
		Survival pack At accommodation a small backpack or a kit ready with: <ul style="list-style-type: none"> - travelling documents - water - small snacks - medicine for 2-3 days - local map - extra clothing - flashlight 	How to contact relatives or embassy, if phone is lost, broken or stolen
		Familiarizing oneself with the evacuation routes and roads e.g. at hotel	
		Keeping phone charged, spare bank	
		Special regulations of destination: <ul style="list-style-type: none"> - religion - moving around - limitations of local holidays - How deviates from home country 	

Appendix 6: The Evacuation Guidelines (Word-document)



Evacuation Guidelines for Seniors

For increasing safe feeling and self-preparedness in urban areas

Introduction

These Evacuation Guidelines are designed to all travel loving seniors who aim to travel in city surroundings.

Ageing and age-related limitations do not have to affect the desire to travel. In the ideal situation, the safe feeling goes with us where we go. We do not always notice it until we lose it.

The safe feeling of seniors might shake due to physical limitations, mental uncertainties, or struggles with excessively modern digitalization.

Increasing self-preparedness can facilitate moving around.

Urban surroundings are complex due to high and underground building.

A crisis can happen anywhere, anytime.

Increasing tools for self-preparedness, awareness and knowledge of how to act in danger, lead to better success in evacuation and enhance the safe feeling!

Increase your self-preparedness before the trip

- Write down important phone numbers in paper and save those also in your phone:
 - Your support network of close relatives
 - Home country's mission contact details
 - Travel agency
 - Local emergency numbers (if you travel outside EU)
- Tell your close ones your destination and accommodation address – agree the how often you will stay in touch during your trip
- Think about the possible threats in the destination country
- Check Foreign ministry's travel advice (Missions' websites)
- Study few important words in local language e.g. Help me!
- Use your phone – install emergency apps (e.g. 112 Suomi and WhereAreU)
- Submit travel notification if available (Ministry of Foreign Affairs)
- If you need help in an evacuation situation - Find out online if there are local registries and sign up
- Prepare enough medication for the trip + a week's extra and the prescriptions
- Take photos of all important documents e.g. passport, prescription, blood group, insurance card and save in cloud or send to your own e-mail address
 - Also print the copies

Increase your awareness en route

- An aware person will more likely act than freeze in front of danger
- Some places attract crime – be extra vigilant in bus, train and metro stations!
- Acknowledge your limitations and vulnerability – Do not test your limits alone!
- Avoid walking in dark isolated streets or being alone in late hours outside
- Trust what you see: Many local people in a public space with happy faces indicate safe feeling
- Observe signs around you especially in Hotel, Shopping malls, events (emergency escape, fire-fighting, first aid)
- Locate the exit points, exit routes, closest fire extinguisher, first aid: defibrillator, assembly point, public shelter
- Agree the assembly point with your travel partners
- Awareness is in a key role in survival - Identify the potential harm in advance, act in time and escape before the danger becomes evident!
- Note: Person paying attention to surroundings is a less potential target
- Do not trust everyone - Be aware of deceit or cheating!

How to act and escape danger?

If you are in acute danger:

- Call 112 (everywhere in EU) – Outside EU: Call local emergency numbers
- Notice Public warning systems – check your phone and emergency application
- Stay calm – Avoid panic! - Bear in mind that panic movement worsens the crisis situation!
- Evacuation from high or underground: It will take more time for rescue personnel to arrive
- Evacuation is more effective with leaders – name a leader – it can be you!
- Nervous people might not do decisions in evacuation situations – Think first and make decisions!
- If exit point seems crowded or exiting slows down – seek for another exit!
- If you can't escape a threatening person – hide and wait for help

If you are in the middle of crisis, but in a safe place:

- In emergency call 112 (everywhere in EU) – Outside EU: Call local emergency numbers
- Contact Travel Agency or your home country's Mission
- Follow the Mission's guidelines
- Follow social media and local news
- Act if you notice public warning systems – check your phone and emergency application
- Check online information sources e.g. Foreign Ministry
- Check where nearest public shelter is located
- Ask for help and information from locals
- Contact your relatives frequently

Fire

- Call 112 (Everywhere in EU)
- Do not use elevators!
- Use emergency exits!
- Go to assembly point
- If you can't get out – close doors and move away from fire to a balcony, or other safe place WITH your phone and enough clothing!
- If moving in smoke: Stay low! - Breathing can be easier through a wet cloth
- Underground with fire – Be aware that smoke goes upwards!

Survival Pack

- Important medication (for 2-3 days)
- Prescriptions printed
- Travel documents printed
- List of written important phone numbers
- Flashlight
- Power bank
- Water
- Small snacks
- Local map
- Extra clothing

Important contacts

- 112 (Everywhere in EU – free of charge)
- The Ministry of Foreign Affairs
- The Red Cross – emergency preparedness instructions and older adults preparedness checklist
- Foreign Ministry of Finland 24/7: +358 9 1605 5555

Other Information related to Emergency Preparedness:

Travel Advice in EU:

https://consular-protection.ec.europa.eu/travel-advice_en

European Commission – ERCC (Emergency Response Coordination Centre):

<https://erccportal.jrc.ec.europa.eu/#/echo-flash-items/latest>

Red Cross – Disaster and Emergency Preparedness for Older Adults:

https://www.redcross.org/content/dam/redcross/get-help/how-to-prepare/Older_Adults_Disaster_Prep_Booklet_07272020.pdf

American Red Cross. Older Adults – Preparedness checklist:

https://www.redcross.org/content/dam/redcross/get-help/how-to-prepare/Older_Adults_Disaster_Prep_1Pager_11012022.pdf

List of European festivals and holidays:

https://www.eupedia.com/europe/european_festivals_holidays.shtml

PEMEA - All you need to know about the future of emergency apps in Europe: <https://www.youtube.com/watch?v=G71Z72611LU>

Appendix 7: The Evacuation Guidelines (Three-folded version)

Contacts:

- 112 (Everywhere in EU)
- +358 9 1605 5555 (24/7)
Ministry of Foreign Affairs in Finland
- Locate your local Mission

Survival pack

- Important medication (for 2-3 days)
- Prescriptions printed
- Travel documents printed
- List of written important phone numbers
- Flashlight
- Power bank
- Water
- Small snacks
- Local map
- Extra clothing

Save important contact details in phone and in paper!

Fire:

- Call 112 (Everywhere in EU)
- Do not use elevators!
- Use emergency exits!
- Go to assembly point
- If you can't get out – close doors, move away from fire to a balcony, or other safe place WITH your phone and enough clothing - CALL 112!
- If moving in smoke: Stay low! - Breathing can be easier through a wet cloth
- Underground with fire – Be aware that smoke goes upwards!

Evacuation Guidelines for seniors

Increasing safe feeling and self-preparedness in urban areas

Increase your self-preparedness before the trip

- Write down important phone numbers in paper and save those also in your phone:
 - Your support network of close relatives
 - Home country's mission contact details
 - Travel agency
 - Local emergency numbers (especially if you travel outside EU)
- Tell your close ones your destination and accommodation address – agree how often you will stay in touch during your trip
- Think about the possible threats in the destination country
- Check Foreign ministry's travel advice (Missions' websites)
- Study few important words in local language e.g. Help me!
- Use your phone – install emergency apps (112 Suomi and WhereAreU)
- Submit travel notification if available (Ministry of Foreign Affairs)
- If you need help in an evacuation situation - Find out online if there are local registries and sign up
- Prepare enough medication for the trip + a week's extra and the prescriptions
- Take photos of all important documents e.g. passport, prescription, blood group, insurance card - save in cloud or send to your own e-mail address
- Also take printed copies of important documents

Be prepared...

Identify, act, escape...

Increase your awareness en route

- An aware person will more likely act than freeze in front of danger
- Some places attract crime – be extra vigilant in bus, train and metro stations!
- Acknowledge your limitations and vulnerability – Do not test your limits alone!
- Avoid walking in dark isolated streets or being alone in late hours outside
- Trust what you see: Many local people in a public space with happy faces indicate safe feeling
- Observe signs around you at Hotel, Shopping malls, events (emergency escape, fire-fighting, first aid)
- Locate the exit points, exit routes, closest fire extinguisher, first aid: defibrillator, assembly point, public shelter
- Agree the assembly point with your travel partners
- Awareness is a key role in survival - Identify the potential harm in advance, act in time and escape before the danger becomes evident!
- Note: Person paying attention to surroundings is a less potential target
- Do not trust everyone - Be aware of deceit or cheating!

An aware person will more likely act than freeze...

How to act and escape danger

If you are in acute danger:

- Call 112 (everywhere in EU) – Outside EU: Call local emergency numbers
- Notice Public warning systems – check your phone and emergency application
- Stay calm – Avoid panic! – Bear in mind that panic movement worsens the crisis situation!
- Evacuation from high or underground: It will take more time for rescue personnel to arrive
- Evacuation is more effective with leaders – name a leader – it can be you!
- Nervous people might not do decisions in evacuation situations – Think first and make decisions!
- If exit point seems crowded or exiting slows down – seek for another exit!
- If you can't escape a threatening person – hide and wait for help

If you are in the middle of crisis, but in a safe place:

- In emergency: Call 112 (everywhere in EU)
- Outside EU: Call local emergency numbers
- Contact Travel Agency or your home country's mission
- Follow the mission's guidelines
- Follow social media and local news
- Act if you hear public warning systems – check your phone and emergency applications
- Check online information sources e.g. Foreign Ministry web page
- Recall the location of the nearest public shelter
- Ask for help and information from local people
- Contact your relatives frequently

Appendix 8: The Content of the Evacuation Guidelines explained

Topic	Method	Explanation
Write down important phone numbers in paper and save those also in your phone	Theory, brainstorming	Many seniors have memory related issues. Idea from brainstorming session about storing the important numbers in paper would also benefit in contacting relatives if phone is lost.
Tell your close ones your destination and accommodation address - agree the how often you will stay in touch during your trip	Theory	Many seniors have memory related issues. Seniors are vulnerable and might be an easy target for criminals.
Think about the possible threats in the destination country	Brainstorming	Better understanding on what can happen.
Check Foreign ministry's travel advice (Missions' websites)	Theory, brainstorming	The Foreign Ministries of Member states of EU are in charge of providing updated travel advice for their citizens
Study few important words in local language e.g. Help me!	Theory	Seniors prefer a destination where communication is possible in English. Knowledge of some words in local language can be useful.
Use your phone - install emergency apps (e.g. 112 Suomi and WhereAreU)	Theory	PEMEA project - local apps such as 112 Suomi work in other countries in EU

Topic	Method	Explanation
Submit travel notification if available (Ministry of Foreign Affairs)	Theory, brainstorming	Ministry of Foreign Affairs in Finland suggests submitting a travel notification before the trip. This idea came up also in brainstorming session.
If you need help in an evacuation situation - Find out online if there are local registries and sign up	Theory, brainstorming	Seniors often have physical limitations and might need help in evacuation. Idea of moving aid/assistance came up in brainstorming session.
Prepare enough medication for the trip + a week's extra and the prescriptions	Theory, brainstorming	30 percent of seniors over 65 have three or more chronic conditions. The trip might be delayed, because medication is ordered. Idea of Survival Pack came in brainstorming session.
Take photos of all important documents e.g. passport, prescription, blood group, insurance card and save in cloud or send to your own e-mail address. Also print the copies.	Theory, brainstorming	Many seniors have memory related issues. Idea of storing important numbers in phone/paper came up in brainstorming session.
An aware person will more likely act than freeze in front of danger.	Theory	Awareness increases the ability to act.
Some places attract crime - be extra vigilant in bus, train and metro stations!	Theory	Some places attract crime.

Topic	Method	Explanation
Acknowledge your limitations and vulnerability - Do not test your limits alone!	Theory	People with severe vision impairments are exposed more to violence and abuse, accidents with a motor vehicle and experience difficulties with other health conditions, such as reading the instructions on medications.
Avoid walking in dark isolated streets or being alone in late hours outside	Theory	An older person may be considered as defenseless and an easy target due to slower movement abilities or vulnerability in protecting own belongings. Physical and mental limitations make seniors more vulnerable against criminal acts.
Trust what you see: Many local people in a public space with happy faces indicate safe feeling	Theory	If people feel safe the public places are commonly in use.
Observe signs around you especially in Hotel, Shopping malls, events (emergency escape, fire-fighting, first aid)	Theory	The Directive covers regulation about signs of prohibition, warning, specific behavior prescription, emergency escape and first aid, information, safety colors, symbols and pictograms, illuminated signs, acoustic signals verbal communication and hand signals.

Topic	Method	Explanation
Locate the exit points, exit routes, closest fire extinguisher, first aid: defibrillator, assembly point, public shelter	Theory, brainstorming	Exit points mean the emergency doors and exits and all the usable normal doors, and they should be always clear from obstacles. Idea of knowing the location of nearest exit points and public shelter came up in brainstorming session.
Agree the assembly point with your travel partners	Brainstorming	To reunite in a chaos.
Awareness is in a key role in survival - Identify the potential harm in advance, act in time and escape before the danger becomes evident!	Theory	The importance of awareness seems to be in a key role in survival. Identifying the potential harm in advance, can help to act in time and escape before the danger becomes evident.
Note: Person paying attention to surroundings is a less potential target	Theory	A person who is actively paying attention to surroundings might also be noticed by the offender, making the person a less potential target.
Do not trust everyone - Be aware of deceit or cheating!	Theory	Seniors are more exposed to crime where their property or money is stolen by deceit.
Call 112 (everywhere in EU) - Outside EU: Call local emergency numbers	Theory	The European Commission aims to improve the emergency communications and response to emergencies and has adopted a common

Topic	Method	Explanation
		emergency number 112. It works alongside the country's own emergency numbers.
Notice Public warning systems - check your phone and emergency application	Theory	European Telecommunications code (2018) and article 110 states that all Member States must ensure that the public warning systems are in place by June 21st. The alert can be made by telephone networks or other available emergency applications, and it must be made easy for the end-users to receive.
Stay calm - Avoid panic! - Bear in mind that panic movement worsens the crisis situation!	Theory	Panic movements may worsen the crisis consequences.
Evacuation from high or underground: It will take more time for rescue personnel to arrive	Theory	In urban areas the rescue personnel often arrive quickly, but dense population and upward and underground building are likely to challenge the evacuation dynamics.
Nervous people might not do decisions in evacuation situations - Think first and make decisions!	Theory	Nervousness may affect the decision of evacuees of whether to follow others or independently search for an exit.

Topic	Method	Explanation
If exit point seems crowded or exiting slows down - seek for another exit!	Theory	To increase awareness. Exit points are an important part in evacuation. Exit points mean the emergency doors and exits and all the usable normal doors, and they should be always clear from obstacles. Emergency doors are preferably fireproof, equipped with emergency handles, alarm and appropriate clear markings and lights. The amount of exit points should be in line with the number of people.
If you can't escape a threatening person - hide and wait for help	Theory	To give an option if no chance to escape. Reaction time decreases 5 percent per decade starting from age 30. Lower ability to produce force and slower reaction time together decline the leg-extensor power by 35 percent per decade between the ages of 60 and 90.
Contact Travel Agency or your home country's Mission	Theory, brainstorming	According to the Act on Travel Service Combinations, it is the travel organizer's duty to help the traveler in getting the medical assistance or repatriation, or other necessary measures. It is possible to receive a contact from the mission for evacuation to a more secure

Topic	Method	Explanation
		area, in the event of a crisis. When a crisis occurs, the missions update their websites, Facebook and other social media accounts and provide instructions. The help from the missions is not fully limited to resident country. Idea of contacting the local mission came up also in the brainstorming session.
Follow the Mission's guidelines	Theory	Missions provide help in crisis. To emphasize this. To get help it is crucial to follow the instructions.
Follow social media and local news	Theory	The missions update their websites, Facebook and other social media accounts and provide instructions. Local news provide more information.
Act if you notice public warning systems - check your phone and emergency application	Theory	To emphasize that these systems exist to warn the public. The alert can be made by telephone networks or other available emergency applications, and it must be made easy for the end-users to receive. PEMEA project - local apps such as 112 Suomi work in other countries in EU

Topic	Method	Explanation
Check online information sources e.g. Foreign Ministry	Theory	Foreign Ministries provide information on their websites in crisis situations.
Check where nearest public shelter is located	Brainstorming	Idea of knowing the location of nearest public shelter.
Ask for help and information from locals	Own idea	Local people e.g. hotel staff can often provide information or help
Contact your relatives frequently	Theory	Red Cross suggests seniors to create a communication plan, which includes important contact details and alternative means of communication.
Fire	Own knowledge, Theory	Information is based on own knowledge based on Aviation Emergency training and company manuals. Theory: Evacuation from underground site happens upwards, which is same as the direction of the smoke.
Survival Pack	Brainstroming	Idea with the content list came up in the brainstorming session.
Contacts	Brainstorming	Idea of important contact list came up in brainstorming.