



Smart Mobility Services and Senior Citizens - A Framework for Co-creation and Analysing User Needs

Virpi Oksman, VTT Technology Centre of
Finland

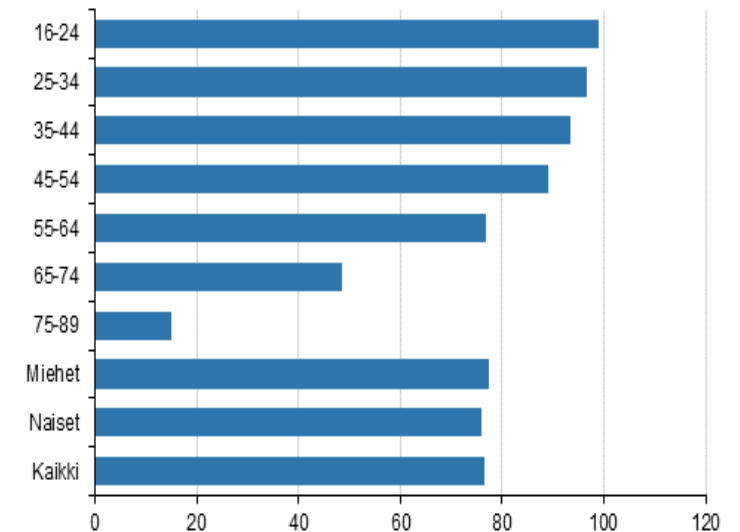
BACKGROUND



- The new smart mobility solutions, such as Mobility as a Service (MaaS) are providing a novel user-centred mobility paradigm. Travellers can save time and expenses and get better service experience with the integrated platform.
- The design and development of new services are usually done with young, tech savvy users in mind.
- The paper studies how to improve the design and accessibility of smart mobility services to provide quality services for senior citizens, i.e., for people over 60.
- As the percentage of elderly people is increasing, these services need also adapt to needs and preferences of senior citizens.
- The use of mobile services has increased and become more diverse also among senior citizens in recent years. Senior citizens are using the smart phones and tablets for a wide range of services such as banking services, TV and social media. (Official Statistics Finland, 2017)

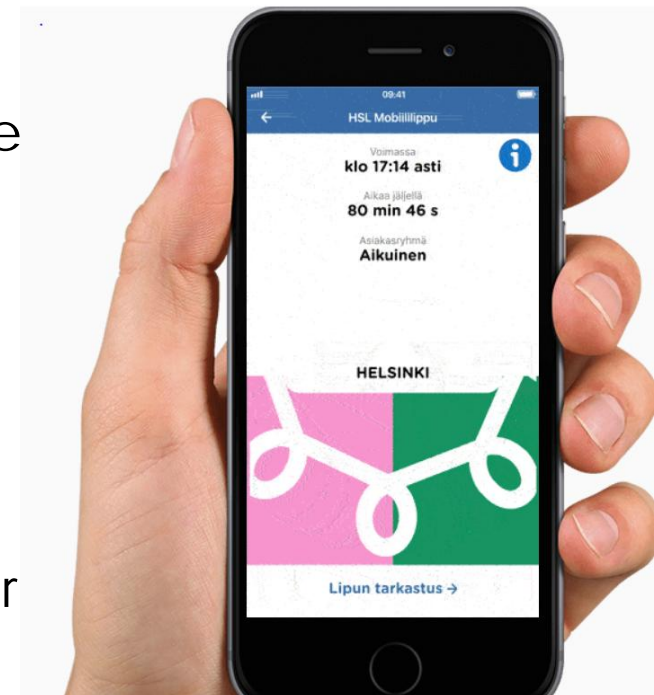
SENIOR CITIZENS AND USE OF SMART PHONES

- Senior citizens, i.e. citizens over 60-years old, started to use the mobile phones somewhat later than younger age groups.
- In 2017, 77 % of Finnish people aged 55-64 years, have a smart phone on their personal use and the mobile phone is the most popular device for using the web.
- These statistics are pretty similar compared for any other industrialised countries. For instance in the US, the share of Americans that own smartphones was 77% in 2017. 74% of Americans aged 50-64 years own a smart phone and 42% of over 65 years olds have a smartphone in their use.



USER NEEDS OF MOBILE SERVICES BY SENIOR CITIZENS

- As people age, there are several physical and cognitive factors that may affect the use of smart phone solutions. However, the use requirements for senior people have been often ignored in actual service.
- The visual aids are important and the font sizes need often to be increased in order to be able to read text.
- Limitations how to use colours and especially blue-green tones should be avoided for visually impaired users. Several studies suggest the use of voice interfaces, which are convenient for older people without limited hearing.



- Increasing the font size when needed
- Simple text
- Memory aids; appointments, reminders,
- Features to minimise user errors; extra confirmation dialog
- Safety features, increased cyber privacy
- Colour—neutral displays for visual impaired users, avoid blue-green tones
- Graphics and colours only to display information
- No animations or moving texts
- Images for navigation
- The audio settings need to be set to a loud setting by default
- Buttons, icons and fonts of sufficient size should be used, while still providing the user with a clear overview
- Cost effective services
- Voice user interface availability, voice-directed services
- Chatbots for instant queries

CO-CREATION APPROACH

- Co-creative approach, which engages citizens and other stakeholders, is beneficial in many ways. More attention is paid to making the development processes more participative and changing from a top-down and technology-driven access towards user-driven, accessible approach and participation. (Steen et al. 2011)
- Co-design has been defined as 'creative cooperation during design processes', and it pays special attention to users and customers and setting their experiences central. (Steen et al. 2011)
- To study seniors' insights for the development of smart mobility services and two main methods were used: 1. An Open Innovation, Owela web lab study and 2. A case study.



SENIOR PEOPLE'S INSIGHTS FOR THE DEVELOPMENT OF SMART MOBILITY SERVICES

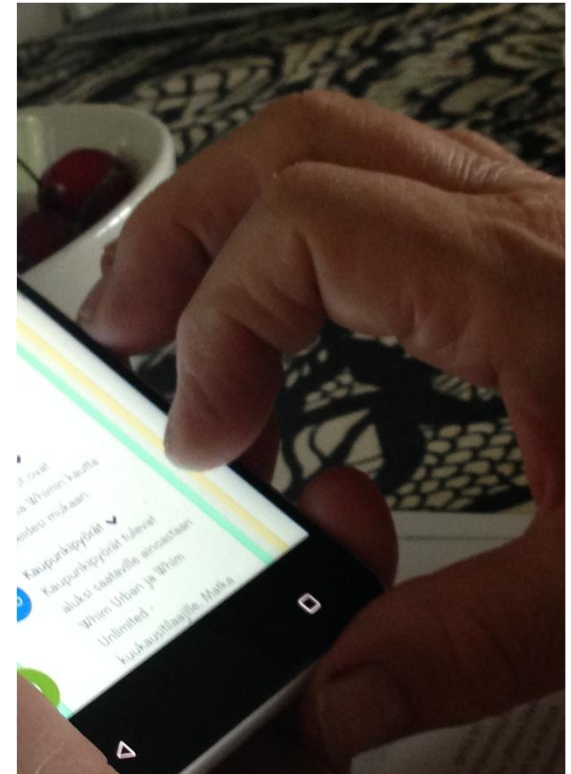
- 52 participants attended to Open web lab discussions.
- The mean age of the participants was 60 years and 14 of them were over 60-years of old. Five of them replied that they have never used digital services related to public transport with their smart phones, while 19 of them have used them occasionally or are using them regularly.
- The most used digital mobility service was the Journey Planner. The most commented topic in Owela was *New kinds of travel chains: MaaS – the mobility as a service concept*, which was welcomed by simplifying travel purchasing, that was seen as complicated and inflexible process at the moment.

A CASE OF HILDA, 80 YEARS

- The usage of the internet and smart phone, travelling and the concept and expectations for smart mobility services from the seniors' point of views was discussed with Hilda, 80 years. In addition, we downloaded smart mobility apps Whim! and Kyyti to Hilda's phone.
- Hilda lives in a big city in Finland. She travels abroad a couple of times a year and uses mainly bus or more rarely her own car inside the city.
- Hilda uses Internet daily to look for information for instance about travels, maps and prices and she downloads her bus card online. She uses the Journey Planner on her computer. She has bought recently a new smart phone with the limitless internet use and a new laptop computer.



- Hilda prefers the computer for smart phone to use all services because: *“On the phone the texts are so small that there is not much inspiration. And also when you get older the fingers become stiff and it is harder for older people to use the touch screen than it is for the younger ones.”*
- Hilda has also got a mobile identification for bank services and payment on the mobile to but she hasn't yet used mobile phone for paying any services. *“I'm waiting for a restful time when I get try it. The situation must be good and calm.”*
- Hilda was able to download Whim! and Kyyti applications on her phone with some support. The main challenges for her were related to unnoticeability of some radio buttons or check marks. *“Sometimes it may depend on a very small matter that it is not possible to get something done online. At some corner there may be some tiny button that you can't even notice.”*
- The visibility of these UI elements could be improved with stronger colors and clear design, which would help the services to meet the special needs of senior citizens.



CONCLUSIONS

- Senior citizens of today are not similar smart phone and service users than this age group was approximately ten years ago: more and more seniors own smart phones, use them when they move outdoors and their use of mobile services is diversifying.
- Designing the services to meet seniors' special user needs would support seniors' use of these services in the daily life. Another question is, how to guide seniors to download and use these services.
- Many seniors have the smart phone at their use and would benefit of peer-to-peer counselling or some other calm and slow-paced learning context.
- As the internet use is widespread among people over 60, open innovation and web lab discussion forums could be also considered as useful means to stimulate and facilitate co-creation among seniors.





Passenger Engagement Tools



Environment Perception for Automated Driving



Enhanced Weather Predictions



Road Slipperiness Detection



Driving Optimization
Via CAN bus data



Intelligent eMobility
Emission free buses



Road Data Collection



PASSENGER EXPERIENCE



ENERGY EFFICIENCY



SMART SERVICES