Master's thesis

Degree programme in Culture and Arts, Leadership and Service Design

YDESIS16

2017

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SMART QUAY-CONCEPT

Services supporting users and service providers at Aurajoki and in Turku archipelago

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This service design thesis was a research study on integrable services in the new movable Smart Quay, which was planned to support the new automatized electrical ferry connection in Turku and Turku archipelago. In this study, the aim was to determine the demands of the users such as local inhabitants, tourists and boaters using possible services provided at the new Smart Quay. The aim was also to determine the needs and demands of possible service providers and stakeholders in Turku and Turku archipelago, as they also are possible users of the future Smart Quay concept. The thesis was conducted as a part of the ÄlyVESI – Smart City Ferries project that is a cooperation project between Novia University of Applied Sciences, Aalto University, Turku University of Applied Sciences and the City of Turku.

A service concept based on the research results gained mainly through documented material, interviews and benchmarking was created. This service concept showed how the Smart Quay could serve as a modular platform that benefits both the inhabitants of Turku, customers and service providers and people visiting, living and working in Turku and in Turku archipelago.

As this Smart Quay does not yet exist, the possible implementation of the suggested Smart Quay concept modules are to be made by the commissioner and stakeholders related to this project. As this was the first study conducted on the matter the service concept suggested here will be reevaluated and redesigned before an implementable version is developed.

KEYWORDS:

Smart Quay, Smart ferry connections, service design, user experience, boating, archipelago tourism

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LIST OF ABBREVIATIONS

FÖRI	a currently operating ferry on Aurajoki
Water Bus Föli	a small ferry operating in summertimes on different routes on Aurajoki.
Waterway	Refers here to any inland body of water, river or sea that can accommodate a boat service.
Shuttle	Refers to boats used to transport people and, by extension, transportation services by water
A station	a waiting place located on a bank or quay. It consists of a shelter and one or more platforms.

1 INTRODUCTION

The development of the transport network in Finland has since the 1960s been largely dedicated to motor vehicle traffic as the infrastructure of roads was developed much more than the connecting waterways. The use of waterways has been considered slow and expensive for a long time but as development and progress have been made in technology towards digitalization and automatization, the waterways are becoming interesting again.

The potential but also need for developing the traffic services on the waterways is now much greater. We are now in a situation where people are moving away from the archipelago to cities because of better work opportunities and because of difficulties commuting to the mainland.

There is a global trend in the world, also in Finland, of an increase in ecotourism and sustainable tourism. Cities along the coastline have realized that the best way to keep the archipelago alive and inhabited is by developing the archipelago tourism. New connection routes and services such as ecological Smart City Ferries and Smart Quays that support the infrastructure on the islands in the archipelago are needed. This development can be a determining factor on wether the archipelago will survive or not.

In 2017 Finland was chosen as the third most desirable travelling target in Europe by one of the world's most respected travel agency, The Lonely Planet. This was due to the tourist's values, which were especially the possibility to experience individuality, peace and quiet, clean nature and wellbeing experiences connected to the nature.

It is also a matter of urban development and sustainability. The stress on the environment, caused by the ever-increasing number of vehicles on the roads and pollution caused by old ferries running on raw oil on our seas, could easily be reduced within city areas and in the archipelago by developing non-polluting automatized waterway connections.

To be able to do that we need to implement the expertise and skills we have gained from other fields of technology more efficiently. As we already have the basic technology and the knowledge the greatest hurdle is the question if we have the will to do it.

2 BACKGROUND

2.1 ÄlyVESI - Smart City Ferries

The Smart City Ferries project is an innovation and development project created in cooperation between cities, technology companies and universities such as the City of Turku, Turku University of Applied Sciences, Novia University of Applied Sciences and Aalto University. The project is financed by ERDF/6.Aika and by the Finnish Transport Safety Agency as well as the cities of Helsinki and Espoo. The timeframe for this project is between 1.October 2016 – 28.February 2018.

The aim of the project is to create new procedures and survey possibilities for smart waterway mass traffic in urban areas. The aim is also to develop and test solutions and concepts for unmanned city ferries and smart quays with new innovative features and services. The goal of the project is to enable companies to develop new businesses in marine technology and ICT sectors.

The ÄlyVESI - Smart City Ferries project is divided into two separate work packages: Work package 1; "Possibilities and Solutions of Smart Urban Ferries" and Work package 2; "Smart Passenger Ferry". Smart Quay is a task under the work package 2.

Many students from Aalto University, Turku University of Applied Sciences and Novia University of Applied Sciences are also involved in the project via different workshops or by conducting their thesis for the project.

2.2 Smart Ferry Turku

As the City of Turku has plans to develop new automatized electrical ferry routes between Telakkaranta in Aurajoki to Hirvensalo and Ruissalo islands and further into the archipelago, (Picture1 and 2) Turku will have a possibility to utilize the results and information gained from ÄlyVESI- Smart City Ferries project for their own Smart Ferry and Smart Quay programs. These planned new automatized Smart Ferry routes will support the transportation of people living on the islands and commuting to the city as well as for tourists and visitors visiting these islands for recreational purpose. As Ruissalo is an island (Picture 2) frequently used in the summer time as a festival and recreational area fast, safe and ecologically friendly ferry connections between the city and Ruissalo island is highly necessary to minimize the polluting effects of both public and private traffic on the area.
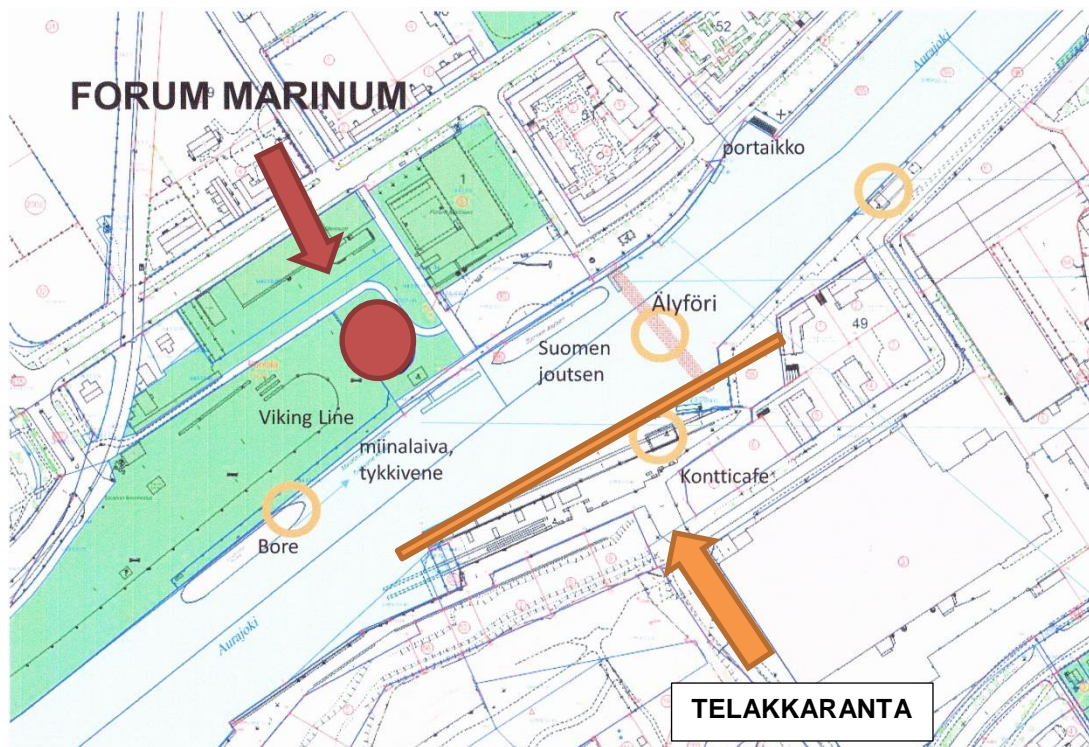
Picture1. A map of the location of boat quays and other facilities in Aurajoki 23.8.2016.
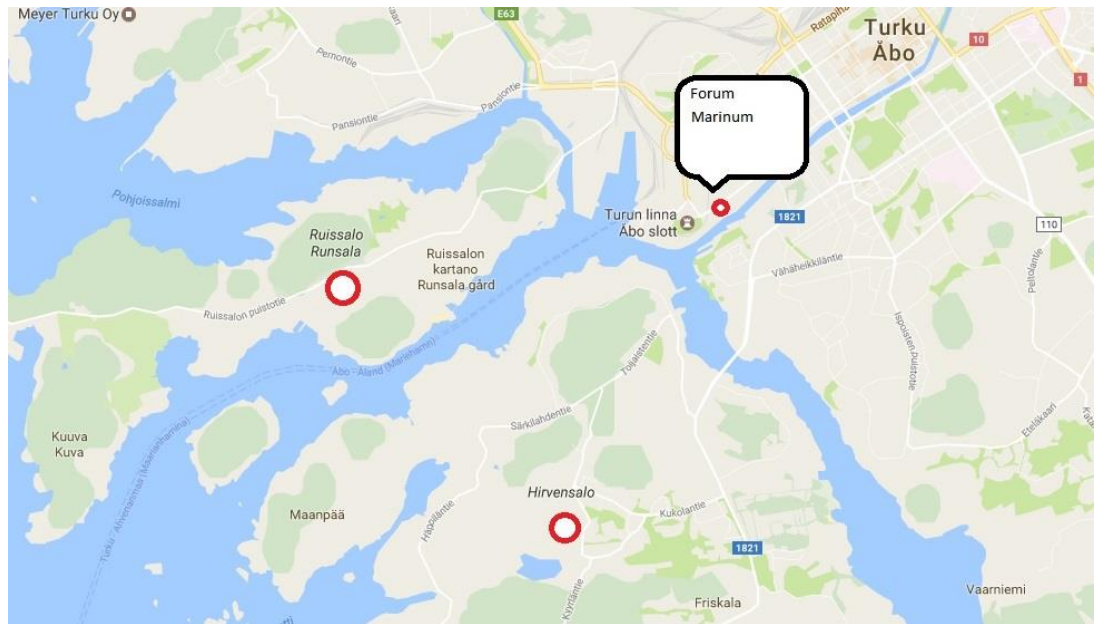
Picture2. Google maps Turku/Aurajoki.

2.3 Smart Quay

To be able to meet the demands and needs of the automatized Smart Ferry connection a new Smart Quay with the required features needs to be developed. The new Smart Quay should also work as a platform for other alternative services so the aim with this thesis was to try to determine what other services are desirable and developable to the new Smart Quay concept for making it more valuable to the users.

As the FÖRI and the Water Bus Föli are operating near Forum Marinum and the new smart Quay will most likely be located at or near the Forum Marinum marine museum, an increase of people passing in that area of Aurajoki would surely benefit the museum. Therefore, their visions and arguments needed to be considered as well.

According to Tre've-Thomas and Baudry, (2012) the potential for urban public transport on waterways in France the definition for a waiting area is a station. A station is located on a bank or a quay. It consists of a shelter and one or more platforms, this latter term encompassing the entire infrastructure necessary to allow passengers to move from the quay to the shuttle.

Picture 3 demonstrates the difference between a station with a floating platform and a station with a fixed platform. Fixed platforms with pontoons are usually firmly connected to the riverbank, as floating platforms are separate floating constructions that have gangways leading to them. Fixed platforms are often used when there is no need to get further out from the pier or no need to build something else connected to it. This is a construction often used at ferry docking stations as it gives better support for the ferry to dock and provides with better support for the exit/enter of passengers. In this case, when the goal is to create a movable platform where different services can be integrated, a combination of a floating platform with a fixed position at a riverbank or pier is the best choice.
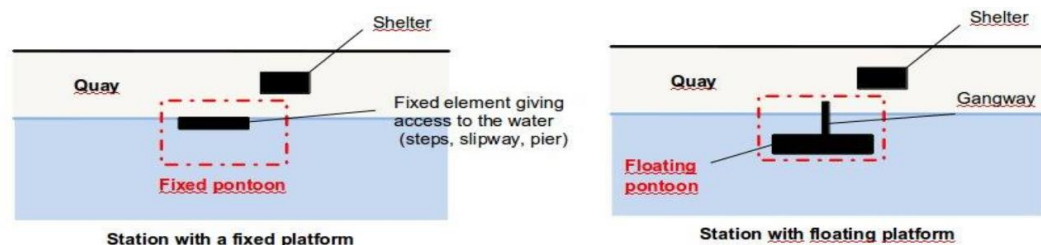
Picture 3. Tre've-Thomas, Baudry, 2012.

2.4 Movable Smart Quay

The goal with developing new ferry connections to the nearby islands is to increase the use of the archipelago for recreational use. The aim is also to improve the possibility for people working and living in the archipelago to commute between the mainland and the islands more easily. As new bridges would mean more traffic and more pollution, the most sustainable solution is to develop electrical and hybrid ferry connections. The city wants to make Turku more desirable for tourists by offering environmentally friendly ferry connections and Smart Quays providing different service possibilities. Tourists would surely visit Turku archipelago more frequently.

The idea with the movable Smart Quay is also to avoid building infrastructure and service points on every island separately. As this would be very expensive and not an environmentally friendly solution, a movable Smart Quay with integrated infrastructure and alternative services supporting tourism would be much more efficient.

3 THE AIM OF THE RESEARCH AND DESIGN PROCESS

The aim of this Master's thesis is to create a service concept based on the research material and gathered information and discuss how and what possible services can be created and implemented at the smart Quay. The focus is on the needs of the boaters and people spending time in Turku archipelago and the needs of the inhabitants, service providers and tourists visiting Turku archipelago.

Research questions

1. What services are developable for boaters at the Smart Quay?

2. What services supporting inhabitants, service providers and tourists in Turku archipelago are developable in the Smart Quay concept?

3.1 The framework of the research.

Needs of the users

Smart City Ferry customers, inhabitants, boaters, service providers and tourists in Turku and in Turku archipelago

SERVICES AT THE MOVABLE SMART QUAY

The needs of the stakeholders and service providers Forum Marinum, Turku guest harbor, LÅNAT.fi boat rental, Keep the Archipelago Tidy Association, local ferry operators, Visit Turku, City of Turku and service providers in the archipelago such as taxi boaters, guest harbors and restaurants

Figure1. The framework of the research

The framework (Figure1) shows the focus of this study. The study concerns a service, users of the service, service providers and stakeholders. The focus in this study is on the users. The users are the inhabitants, service providers and visitors in Turku and Turku archipelago, in addition, also boaters and users of other vessels using the services provided at the Smart Quay. The stakeholders are the service providers at the Smart Quay and parties that directly benefit from the Smart Quay.

3.2 Service design process

Definition → Research → Design → Evaluation
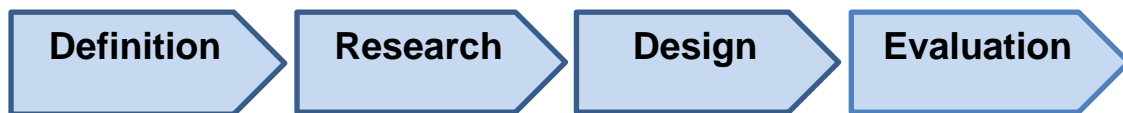
Figure 2 Service Design process

Definition. This stage defines the needs and goals of the Smart Quay study. As this thesis work is a task of the Smart City Ferries project the definition and framework regarding the scope and direction of the study is made with the commissioner. In addition, issues and matters that needs to be addressed and included in this study are also defined at this stage.

Research. This stage gathers information about the project and identifies the users of the Smart Quay, stakeholders and possible service providers. This is achieved by gathering documented material related to the subject, conducting interviews, benchmarking, attending workshops and by studying trends. To gain a better understanding of the needs and possibilities in archipelago tourism, a research on the needs of the current service providers and users of services in the archipelago is conducted. In addition, to recognize changes in peoples boating habits, a research of documented material in this matter is also conducted.

Design This stage is about generating ideas and developing a concept based on the material on users, stakeholders and service providers gained from the research. Design drivers collected from the different separate conclusions discovered from the research results are used as guidelines when designing the service concept. Tools such as personas, customer journey, business model canvas and service blueprint are made and used for creating a service concept.

Evaluation. As the results of this study are presented as a service concept, the evaluation, prototyping and testing of the service concept is to be conducted at a later stage by the commissioner if so decided. As service design is an iterative process changes will certainly be made to the service design concept and there it will be reevaluated.

3.3 Stakeholder map

According to Stickdorn and Schneider (2011, 52) both designers and users can be considered stakeholders in a design process. In addition, engineers, industrial and user experience designers and user researchers can be considered as external stakeholders as they are not directly involved in the project. They are more often relied on as experts and consultants where their expertise is needed.

EXTERNAL STAKEHOLDERS, VISIT TURKU, CITY OF TURKU AND MUNICIPALITIES IN THE ARCHIPELAGO , FÖLI, FÖLIX

CONNECTED STAKEHOLDERS, SERVICE PROVIDERS, MARINE MUSEUM, TURKU GUEST HARBOR, LÅNAT.fi, KEEP ARCHIPELAGO TIDY ASSOCIATION, CITY OF TURKU

INTERNAL STAKEHOLDERS, SMART CITY FERRY CUSTOMERS
SMARTQUAY USERS, CLOSELY CONNECTED SERVICE PROVIDERS
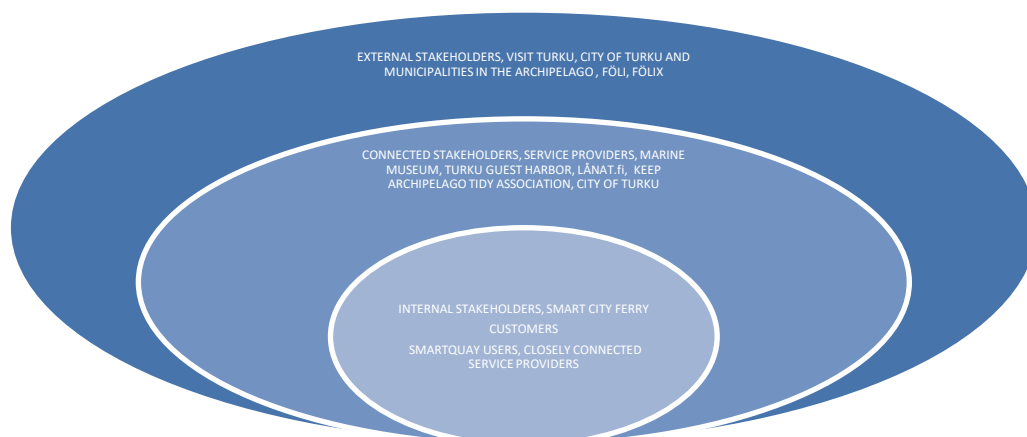
Figure 3: Stakeholder map

The internal stakeholders are the Smart Quay users and closely connected service providers but also the Smart City Ferry customers and Smart City Ferries organization.

The connected stakeholders were the businesses and service providers but also their customers and users. These are Forum Marinum, Turku Guest Harbor and LÅNAT.fi boat rental; Keep the Archipelago Tidy Association, local ferry operators, Visit Turku, City of Turku and businesses in the archipelago.

External stakeholders usually have an interest in an organizations activity and in this case, they are the City of Turku with the surrounding municipalities, Turku tourism and FÖLI bus organization and FÖLIX taxi service organization.

3.4 Research methods

Analyzing documents was one of the research methods used in this thesis. Important information was gained from documented material, previous research and studies on what Turku inhabitants think of an automatized electrical ferry connection in the region, what they expect from the service and what other services they would like to see at a Smart Quay. In addition, the earlier research material revealed insights and information on what services tourists, boaters, service providers and stakeholders in the archipelago would want to see at a Smart Quay.

Interviews of possible service providers and other stakeholders will give understanding of what kind of services would benefit them the most in value and business possibilities.

Workshops and brainstorming sessions with stakeholders created new ideas of services that might be of value for future users and how these services could be connected to the Smart Quay.

Benchmarking resulted in an insight and understanding on similar projects and what kind of visions and services related to the Smart Quay exist. The internet was the best tool for conducting benchmarking.

4 EARLIER RESEARCH MATERIAL

4.1 Smart Ferry in Turku

Turku UAS questionnaire

In the autumn 2016 students from Turku University of Applied Sciences performed a small-scale Internet inquiry, released on Turku City web page, about people's opinions on a new Smart Ferry connection in Aurajoki-region. As the inquiry was not directly a study of a new Smart Quay, the results were not directly usable as a reliable source of information but as the Smart Ferry and the Smart Quay are connected to each other, the results could be used as guidelines in the designing of a new Smart Quay. The total number of answers of the Internet questionnaire was 332.

Conclusions from the questionnaire:

80% of the respondents answered found a new ferry connection needed in the region and some 75% of the respondents answered they found a connection to Ruissalo and Telakkaranta necessary.

75% of the answerers answered yes when asked if they could trust a fully automatized ferry connection and when asked if they found it important that the Smart Ferry is environmentally friendly and ecological 80% of the respondents answered yes.

Based on the answers a conclusion was made that people in Turku had a positive attitude towards a new Smart Ferry connection and the development of new routes in the archipelago.

Interviews on the street

To reach the people not reached with the Internet questionnaire, the student group performed a study by interviewing people on the streets in Turku. The aim with interviewing 58 persons was to gain a wider perspective on what the people's opinions were regarding a new Smart Ferry and new ferry connections in Turku archipelago.

Conclusions from that interview were:

Almost every one found a new ferry connection especially to Ruissalo important and some of the interviewees found a connection to Hirvensalo island important. No one found only an update and improvement of the existing FÖRI-ferry important. When asked if they think people are ready to pay for suggested Smart Ferry services they answered yes.

All interviewees found it very important that one could use the existing FÖLI-ticket to the access and use of the Smart Ferry services.

Some 50% of the interviewees felt that an improved Smart Ferry connection could be an alternative service to the existing bus service to Ruissalo and Hirvensalo islands. The interviewees also felt, as Ruissalo Island is a protected area, that an electrical Smart Ferry would be important especially in the summer time.

Some found the existing ferry connection in Turku good enough and the money better spent on developing the existing infrastructure, meaning FÖLI city buses and the existing traffic connections.

When asked, what other services they would like to see connected to the Smart Ferry connection people found services such as restaurant services and rental points for electrical city bikes important. They also mentioned coffee shops, toilets, television kiosks, USB-charging point for smartphones, music and alcohol distribution, digital info boards and electrical kickboards.

4.2 ARCHIPELAGO TRAFFIC - definition for the need of digital services

The archipelago traffic - research for discovering the need for digital services to support and develop the archipelago traffic in Finland was ordered by the southwestern Center for Economic Development, Transport and the Environment (ELY) in coordination with the Finnish Ministry of Transport and Communication. The workgroup conducting the research and making development suggestions were Matson Oy, Appila Oy and Tuup Oy. Appila Oy and Tuup Oy made the user interface suggestions released in February 2017. (Archipelago traffic-definition for need of digital services 2017, Matson Oy, Tuup Oy, Appila Oy.)

The aim of the research was to determine with which digital tools and applications the archipelago traffic could be upgraded and improved. The workgroup looked at sectors funded by the government or funded by private means. The project was implemented in Turku region in cooperation with local operators and actors.

The different target groups of this research were inhabitants in the archipelago, people living in the archipelago only in the summer time (or on vacation) and tourists only spending their holiday in the archipelago. As the current ferry routes are too expensive to support the development of the archipelago tourism, the service needs improving to meet the demands of future users. There was also a need for developing a network of free agents that could provide taxi services for tourists more efficiently than the existing or rather non-existing service does. These goals are achievable by creating common digital platforms and services. An easier way to reach the archipelago would benefit all users and especially people living on tourism. This could be a way for maintaining the possibility to live full time in the archipelago. (www.visitfinland.fi/mystay) is a portal that exists for foreigners who are visiting Finland and the Finnish archipelago.

In the following chapters, the results from the interviews of existing and possible future customers of the archipelago traffic services can be seen. The study divided the customer segments in three different categories: inhabitants (people living in the archipelago), cabin owners, (people living in archipelago only during the summer season) and tourists visiting the archipelago.

4.2.1 The needs of the users

Inhabitants (people living in the archipelago)

Inhabitants living in the archipelago, unless they were pensioners, usually earned their living from some kind of business. It was either a part time or a full time business but they all had to face the same problems and challenges "surviving" and maintain a living in the archipelago. One feature they all had in common was the need for cheap and reliable transport of people and of goods. As many things usually were more expensive in the archipelago than in the city, the price of the transport costs reflected directly on the price of products and services in the archipelago. They who were running a business in the archipelago were very dependent on reasonably priced transport services. (Archipelago traffic-definition for need of digital services 2017, Matson Oy, Tuup Oy, Appila Oy).

To appeal tourists to the archipelago shopkeepers, accommodation providers and other service providers needed to be able to provide a reasonable basic service, so a cheap, reliable and functional transport system was obvious for the businesses to maintain a functioning infrastructure. All agreed on that a better organized common transport system would benefit all and would pro-long the tourist season as no one of them really needed the high season June- July months to get any busier (Archipelago traffic-definition for need of digital services 2017, Matson Oy, Tuup Oy, Appila Oy).

As some inhabitants in the archipelago also lived there in winter times, they found it important that the transport services functioned thru the whole year. Their need for transport services in the summer season did not vary much from the need in the winter season. Usually people living in the archipelago needed a connection to the mainland for their vehicles except on smaller islands with no roads or elderly people who relied entirely on public transport services. As they often were bound to other timetables, like public transport such as buses or taxis, it was important that they could depend on a reliable ferry transport to the mainland. It was also quite common for the inhabitants, especially the elderly to order their deliveries delivered to the ferry station on the island from where they would pick them up themselves. (Archipelago traffic-definition for need of digital services 2017, Matson Oy, Tuup Oy, Appila Oy)

All interviewed inhabitants agreed on that the monitoring of the location of the connecting transport ferry needed to be easy. Some looked for information of location

from sites such as (www.marinetrafic.org/AIS) information but not all; especially the elderly did not have access to or did not know how to use the internet. The possibility to have access to some sort of common archipelago traffic system or platform where you could order a transport is highly recommended by all. They all also agreed on that as not everybody had smartphones the application should also work through normal SMS-service or by calling the transport service provider in person. (Archipelago traffic-definition for need of digital services 2017, Matson Oy, Tuup Oy, Appila Oy).

Summerhouse owners

As the capacity of the connection ferries and their timetable did not always suite the summerhouse owners and seasonal travelers, the research showed that there was a need for extra transportation solutions in high seasons. Cheaper and smaller waterbuses and smaller ferries could probably cover this transportation. A summerhouse owner did not usually need the transport of their vehicles, as they usually parked the car at the ferry station. Especially those who had their summerhouses further out in the archipelago needed more tailor made transport services. The period for needing a cheap and fast transport service was usually from April to September with a peak in June and July. Building and maintaining a summerhouse in the archipelago was found expensive and time consuming so they were prepared to pay for a faster way to transport building material etc. Earlier building materials for summerhouses were transported on ice roads or by own boat but as all summerhouse keepers did not have relatives that own a boat, or them themselves did not own a boat, they have been forced to use the public ferry transportation. As most of the ferry connections charge a fee today this way of transportation is not so preferable anymore. (Archipelago traffic-definition for need of digital services 2017, Matson Oy, Tuup Oy, Appila Oy.)

Due to changing weather circumstances and changed ferry routes all summerhouse owners that where interviewed would appreciate a service where they could follow if the ferry was on time and if there was space available. That information should be available on internet via smartphones or /and SMS messages.

Tourists

Travel agencies and other group travel providers answered that they would benefit the most of being able to book trips many months ahead, therefore they really needed to know what they could sell and to what price. They did not need a large network of

transport providers to every little island in the archipelago as they knew that a few well organized group travel destinations was enough for travelers and tourists. (Archipelago traffic-definition for need of digital services 2017, Matson Oy, Tuup Oy, Appila Oy).

A sort of "island-hopping" by taxi boats or ferry to a few Islands with well-organized accommodation and restaurant services was an interesting possibility for travel agencies. Fast taxi boat connections across the waterways would minimize the "transit time" for tourists as visiting several islands, on the same day, meant hours of travelling in buses or cars due to long distances to existing connecting ferry routes. Travel agencies had also concluded that tourists from mid-Europe were willing to visit the Finnish archipelago at times we call off-season. By this, they meant early May and late September months. (Archipelago traffic-definition for need of digital services 2017, Matson Oy, Tuup Oy, Appila Oy.)

"Indi's travelers" or independent travelers usually followed what the travel agencies were offering so they found important a clear and easily understandable portal, where all information was gathered. "Indi's traveler" usually uses services as Booking.com, Google and Google Maps for planning the routes so the information should definitely be available there. The key to good service was to be able to provide reliable online information such as timetables, accurate prices, free seats and information on changed routes in one portal or place. The information should not be spread over several websites is impossible to understand for foreign travelers who do not speak Finnish or Swedish. (Archipelago traffic-definition for need of digital services 2017, Matson Oy, Tuup Oy, Appila Oy.)

There was a need for Free Wi-Fi as tourists usually searched for relevant information on the internet. The research revealed that there was a need for short tailored trips from central locations near the city center. The ease of finding and getting to the starting point was of most value. Quick tailor made "ex-tempore" trips with no further planning would be valued among the tourists. Local "taxi boaters" or private boaters could provide this service. Archipelago traffic of today was found conservative and" heavy" so different shapes and forms of new services are welcomed. (Archipelago traffic-definition for need of digital services 2017, Matson Oy, Tuup Oy, Appila Oy).

> *Conclusion:*
>
> *There was a need for easy to use application / digital solution for finding timetables, routes and prices for making reservations. Also online information on a common platform on delays and of cancellations of routes was found needed. Free W-FI to check for information online.*

4.2.2 The needs of the traffic operators

In the same research and conducted by the same research group the interviews of traffic operators functioning in Turku area revealed their wishes and demands for how to improve the archipelago traffic service.

Regular ferry connection

Common website for all operators where you could find all timetables, information on delays caused by bad weather would improve the service a great deal and prevent customers from calling for more information. A common electronical booking system with the possibility to pay for the trip digitally online, on all ferries, would decrease the need of extra staff onboard the ferries, as today on high season, a third person is needed to collect the fees. As some of the operators also had smaller taxi boats and taxi shuttles, a digital booking application would help the operators to more efficient meet the needs of the customers. In case of smaller groups, a taxi shuttle could be enough and save both time and money in smaller fuel costs. Today there is no incentive for the operators so from their point of view the fewer the customers the easier for them so the system should be planned to work on a profit base. The more customers the more profit for the traffic operators. This would tempt all operators to improve their services. (Archipelago traffic-definition for need of digital services 2017, Matson Oy, Tuup Oy, Appila Oy).

Operators working as free agents

Taxi waterbus and charter boat owners saw a longer season needed for their services. They would be prepared to drive from beginning of May to end of August instead as

current season reaching from mid-June to end of July. They would prefer big groups as big groups meant more profit. Big groups were usually more reliable to keep the booking as small groups easily cancelled in the last minute. A common platform or application for booking service could also work as a site to book other services such as restaurant services, guiding services and accommodation services. This would help operators and entrepreneurs to improve their services. (Archipelago traffic-definition for need of digital services 2017, Matson Oy, Tuup Oy, Appila Oy.)

Taxi boaters and small shuttles

The demand for so called "kutsu kyyti" meaning "call for transportation" is yet quite small but could be, if developed of huge importance when developing the archipelago tourism. This service, if marketed right and by creating a network of service providers in the archipelago, could create the demand for developing a common platform or application for booking fast and reliable transports of private taxi providers. Taxi boaters were mostly free agents who usually provided this service as a bi-product and it was hardly ever an enough profitable business to live on. They would surely benefit from a common booking application or digital platform. Then they could more efficiently be able to inform when their services are "online" or "offline". A service similar to taxi booking service onshore could function as a model. (Archipelago traffic-definition for need of digital services 2017, Matson Oy, Tuup Oy, Appila Oy.)

The customers also had a need to be able to pay in cash, with credit card or with a mobile application as tourists always wanted to save some cash to by souvenirs and local stuff. Taxi boaters had the same issues as taxi service providers onshore. With late night taxi callers, there were always risks of being stood up, not getting paid or other inconveniences or security problems. Taxi boaters would prefer staying quite near their home area as the risk of having to drive long routes empty was not desirable. In addition, as the Finnish law enquires a separate inspection and certification of the boat to function legally as a taxi boat the threshold for starting a taxi service was found quite high. The costs for a certification could be quite expensive and complicated so this law needed to be looked at. (Archipelago traffic-definition for need of digital services 2017, Matson Oy, Tuup Oy, Appila Oy.)

Conclusion:

A common website where all operators could inform customers in real time for delays or cancellations of boat or ferry connections was considered needed.

The possibility to pay electronically or online would save labor costs.

A more accurate booking system that informed the traffic operator on amount of passengers / bookings would make it easier for the operator to choose the size of the vessel in forehand. Open competition would result in better services.

In addition, a possibility to book other services with the same application such as restaurant services, guiding services, accommodation services.

Need of Uber-style taxi boat service provided by private persons. New laws for registration and certification of private "taxi boats" is needed to be easier to understand and implement if there is a goal to lure smaller private operators into the taxi boat market.

4.3 Visit TURKU

To gain a more accurate picture of the archipelago tourism in Turku area an interview with the development manager, Päivi Pohjalainen at Visit Turku was held on 11 May 2017. (https://www.visitturku.fi/en). As tourism in Turku region has increased with about 5% in the past few years, it showed that there was a pressure on the City of Turku to develop and improve the tourist services in Southwest Finland. According to Pohjolainen at Visit Turku 70% - 80% of all tourists in Turku were domestic visitors meaning that only 20% - 30% of the visitors arrived from abroad. The average time, according to Pohjolainen, the tourists spent in Turku was 1-2 nights. As Turku with Aland included has the biggest archipelago in the southwest region of Finland, there is a pressure to develop new and better services for future tourists. Here she mentioned the development of the St. Olav's waterway trekking path project that supports a sort of Island - hopping in the archipelago. (http://www.nordicpilgrim.n.nu/).

The challenges in developing tourism services in the archipelago are that a big part of Turku archipelago is a part of the National Park network in Finland. This means there are environmental laws and restrictions on what can be done and build in that area of the archipelago. As the tourism has been increasing in the area, there is a pressure on the City of Turku to start developing their services and start charging more fees for their ferry services. The archipelago trail (http://www.saaristonrengastie.fi/en) that includes several ferry connections is under a lot of pressure to become an even more expensive service in the near future

Digital services promoting experience travelling such as Doerz, (https://www.doerz.co/) and experience Airbnb, (https://www.airbnb.fi/host/experiences) are services that according to Pohjolainen have been growing and will probably be very popular in the future. As these services are according to Pohjolainen, mostly based on private persons selling services to other private persons there exists a need to develop the infrastructure in the archipelago to support this type of experience travelling. Based on her insights in the archipelago tourism, a floating movable Smart Quay could be one solution to the problem. She believed that making the Smart Quay to a tourist attraction itself could be a good idea. Smart Quays would solve the problem of building infrastructures on every island separately but instead enable to move the place of experience according to the demand. Pohjolainen thinks the the biggest challenge in the future will be how to get to the archipelago? Not what to do once you reached the archipelago.

Conclusions:

Need for Smart Quays that provide the infrastructure at the Islands and function as service experience platforms for tourists. The challenge is how to reach the archipelago

4.3.1 The needs of the service providers in the archipelago

The University of Turku Innovation and Business Development Center, BID conducted a study of the challenges and future development needs in Kemiö Island and Turku region including municipalities in 2011.

(https://www.utu.fi/fi/yksikot/braheadevelopment/palvelut/osaamisalueet/innovaatio-%20ja%20yrityskehitys/Sivut/home.aspx).

Participating businesses were on average micro sized businesses with personnel at high season of 4 persons and off season 2 persons and an average turnover of 200 000 euros in 2011. These businesses mainly functioned in the field of restaurant- and cafeteria businesses, accommodation businesses and as providers of experience travelling and guiding.

(http://www.utu.fi/fi/Ajankohtaista/Uutiset/arkisto/saariston-satamien-liiketoimintaa-kehitetaan-yhteistyolla.html.).

Customers have traditionally been boaters, summerhouse owners and other groups. Typical groups have consisted of business groups and different theme groups. The theme groups usually consisted of both young and elderly people such as pensioners. These groups were usually interested in fishing, local food, outdoor and hiking. The service providers could see a growth especially in wealthy pensioners and foreign travelers from mid-Europe, Russia and Asia. In addition, local people from Turku region have been a notable group of customers, as also independent "Indi's - travelers". The service providers could see a growth in ecological thinking and a grown interest in archipelago culture.

The biggest challenges for the service providers were the shortness of the season, in marketing of the services and accessibility for the customer. The service providers felt the need for creating a common digital platform where all customers, service providers and stakeholders could come together and share information on their services and needs. They also recognized a need for improvements in faster and more frequent ferry connections for tourists to and from the city. They recognized a need for a bigger network of charter and taxi-boat services with more routes and saw a need in joining

their forces especially in marketing of their services and in co-working more efficiently with other stakeholders such as municipalities and cities.

As boating has become more popular and possibilities to dock in natural harbors have decreased due to environmental restrictions such as archipelago Natural park areas, a need for more well equipped boat harbors with quays and docking places in the archipelago has increased. The increase of boat harbors equipped with basic infrastructure and services such as toilets, trash collection points, fireplaces with firewood would bring more customers to the archipelago and benefit the service providers in more sales. If these boat harbors equipped with better information posts and service facilities would be able to serve private boaters, charter and taxi boaters better, it would benefit all parties in the archipelago.

The service providers felt that the biggest threats to archipelago tourism were if the service infrastructure, the digital service network such as internet and ferry connections and routes to the mainland weakened. This could result in the archipelago becoming uninhabited and slowly die.

Conclusions:

The service providers felt the need for creating a common digital platform for micro sized businesses. They could see a growth especially in wealthy pensioners and foreign travelers and a growth in ecological thinking, and a grown interest in archipelago culture. The biggest challenges for the service providers were the shortness of the season. How to better market the services and how to make it easier for the customer to find them.

4.3.2 The needs of the archipelago tourists

A study of visitors in archipelago National Park 2014, conducted by Matias Heinonen and commissioned by Metsähallitus was released in 2016.In this study of 415 visitors, the goal was to discover the structure of the visitors and their opinions of the services in the archipelago. Archipelago National park founded in 1983 (picture 4) consists of both land and sea areas In Southwest Finland region such as Kimito Island and Pargas.

Of about 60000 visitors each year, 40% were from the southwest of Finland and 34% from the capital city region. The rest arrived from the rest of Finland. Only 5% of the visitors were foreigners. Some 58% of the visitors were men, the middle age was 49 years old and 90% of the visitors consisted of groups of 2-5 persons and usually of family members.

The most visited places were Jurmo, Björkö, Jungfruskär and Dalskär islands. High season was in July and almost 90% of the visitors arrived with motorboat or sailboat. The average nights spent in the National Park were 4.8 nights and in the nearby archipelago region 9.5 nights. Most popular was sleeping in a boat before staying in a rented cabin or local bed and breakfast.

Day tourists spent in average 6.1 hours in the National Park and its region. Most popular activities were enjoying the nature (81 %) as hiking, fishing, paddling, swimming and sailing. The visitors were in general satisfied with the beautiful and well-cared nature and possibility to use it for recreational use. Littering, waste management and tourist crowds caused most dis-satisfaction in high season. The needs for improvements were found in information provided in English, the reliability of taxi boat services and services provided by the businesses in the archipelago. Dogs running free and the lack of public toilets and their condition were also of concern. The most interesting points found were the stories and history of the archipelago, the food culture in the archipelago and nearby areas, as well as a concern for the condition of the archipelago sea area.

The total income from the visitors in the archipelago National Park and related regions was 6 338 447 euros.

Picture 4. The Finnish Archipelago National Park
(http://www.nationalparks.fi/archipelagonp).

Conclusion:

The main group arrived from south and southwest of Finland. They usually arrived by boat and often slept in the boat. The rest stayed in rented cabins or in bed and breakfast hostels. The most popular activities were enjoying nature and archipelago like (81 %) hiking, fishing, paddling, swimming and sailing. The most dissatisfaction was caused by littering, the waste management and tourist crowds in high season. Need for improvements were found in information provided in English, the reliability of taxi boat services and services provided by the businesses in the archipelago. Dogs running free and the lack of public toilets and their condition were also of concern.

5 KEEP THE ARCHIPELAGO TIDY ASSOCIATION

The law against boaters dumping their wastewater directly in the sea, established in Finland in the year 2005, meant waste from your chemical toilet and water closet. This wastewater must be collected in a separate septic tank. Today almost every guest harbor along the coastline belongs to the network where boaters can empty their septic waste tank by suction to a common collector waste tank. Where the suction waste network is not functioning, like in the archipelago, there are floating waste management tanks that enable boaters to empty their waste tanks by pumping the waste by a hand pump (picture 5, page 33). (http://www.pidasaaristosiistina.fi/in_english).

These floating waste management stations are operated by Keep the Archipelago Tidy Association, Pidä saaristo siistinä ry (PSS ry). The floating waste stations are located along the coastline, in the Vaasa region and in the east of the Finnish bay. In the inland, the waste stations are located in Pirkanmaa and Saimaa region. (http://www.hallskargardenren.fi/sv/salle-tjanster.)

Although the law forbidding boaters to dump their wastewater directly in the seas have been legal for the past 10 years, boaters still do it, so there is a need to improve this service. So far, these floating waste management stations have often been overcrowded in high seasons and sometimes been left full for weeks without anybody being informed about the situation. Because of the constantly increasing demand and use of these waste management stations the Tankkivahti-project started. (http://www.pidasaaristosiistina.fi/projektit/tankkivahti)

TANKKIVAHTI - survey

The goal of the Tankkivahti survey, that started in March 2016 and was conducted by Turku University in cooperation with all registered boat associations in Finland, was to define the experience and needs of the boaters using this service.

Of all 466 participants of the survey 89% said that they had proper waste water systems installed in their boats and had used a MOLOK floating wastewater station. Of the members of Keep the Archipelago Tidy Association 75% had used the MOLOK wastewater station service. Although 20% of the members of the association admitted

to never have used the service even though they knew the service existed. As a reason they said that the wastewater management stations were not located where they usually were boating. About 50% of the answerers agreed on that the stations were well located and 20% were still of the opinion that they could be placed more efficiently.

All agreed on that there was a need for more wastewater management stations in the archipelago. Approximately 85% thought that the use of the stations was easy or someway easy. The rest 15% thought the usability definitely needed to be improved. About 50% said they occasionally emptied the septic- tank in sea or lake. As a reason they said they could not find a wastewater station, the station was full or that the station was out of order for some technical reason. About 20% of the answerers thought that docking to the wastewater station was difficult (hard wind, big waves etc.) or that the length of the hoses or unsuitable adapters made it difficult to use.

Overall, there was a request for better maintenance of the service stations and a request of a more easy way to report of malfunction via smartphone or online. Although there was a positive response on the direction of the development, there was still much to improve such as the reliability of the service, the functionality of the service stations especially in rough seas and the docking of different sized boats to the waste station.

Most of the negative feedback was about the stations not being in service due to full tank or due to technical problems. As the boating season in Finland is short, the wastewater stations could not be allowed to be out of order for several days or weeks at a time. Therefore, a digital system that reports malfunction to maintenance was of highest priority on the feedback amongst users.

Conclusion

A need for more floating waste management stations existed. The usability in different weather circumstances needed improvement. In addition, technical issues needed improving, such as digital solutions for better supervision management of the wastewater stations.

Interview

To complement the results from the Tankkivahti-survey an interview with project manager Hanna Haaksi at Keep Archipelago Tidy Association at Turku office was conducted in April 2017. As she is in charge of planning the projects related to keeping archipelago tidy in southwest Finland her insights were important.

To the question of what is important when planning new services in the archipelago the main thing was to prevent poisonous chemicals to get in the water. Services for boat bottom washing built at marinas and boat clubs were one of them. The problem with bottom washing machines was to collect all fragments and material that came off the bottom. The problem was not big if you washed only one boat but if you washed ten boats per day, it became a problem.

To the question related to septic tanks, water toilets and other liquids the problem was that even though there is an ISO-standard regarding to the size of hoses and valves, all boats are not equipped with them. As the pump needs vacuum to empty the septic tank some fittings on deck prevented the pump from functioning properly. This caused problems when visiting a floating wastewater station.

When asked what it meant when the number of tourists in the archipelago grows the answer was that there is a need for more service stations in the archipelago. The association is building more MOLOK-floating waste stations (picture 6) but some improvements need to be made to the stations, such as fire safety at these service points. In addition, to educate the boaters to better sort their trash before entering a waste station would improve the service a great deal. The Association had plans to design their waste stations to function as composts. That would improve the service and reduce the costs for the company but again, the importance of pre-sorting of your trash would get even more important.

A great concern was that people do not always find the waste service stations in rough or bad weather. They need to make a mobile application or an internet service that shows the boaters exactly the position of the waste station. This application could show if the wastewater station was free, in function and ready to use. There should also be an easy way for the users to inform the maintenance in case of malfunction. There is a map showing the locations of the waste stations on the association's website but the problem was that all boaters' navigation skills were not that good as they navigate directly with the GPS and Plotter. Location maps need to be up loadable to the

navigation instruments in real-time. This would ensure that the boaters could find the service points more easily.

Many people that dwell, or are boating in the archipelago own pets. This creates a need to figure out how to solve the fecal matter. There are same rules ashore as offshore but to make the people follow these rules is another matter. As dogs and pet animals cannot run freely in the archipelago due to the sensitive fauna the need for building "dog parks" or closed agility areas could be at hand.

When asked how these floating Smart Quays / waste stations should be designed to better serve the sail association members she mentioned the need to be designed for boaters with different handicaps. As they provided sailing courses for people with handicaps, the Smart Quay should be designed to be most easy to enter and exit. There should also be a sort of a "panic bottom" for people when they are in destress.

Conclusion:

There was a need to prevent poisonous chemicals to get in the water at boat clubs and harbors and a need for more information to users on environmental issues. There was also a need for information on regulations if you have pets on the boat.

There was a need for ISO-standardization of "pistols" that can be used to empty the boat waste tank and an improved network of both septic and MOLOK-floating waste stations. Improvements in usability were suggested as mooring at the stations with different types of boats is difficult. A "waiting area" needed when the station is in use. Online information of malfunction is needed if etc. the tank is full. Safety issues like fire safety at stations, (methane gas from waste tank). Issues on how to find a septic tank station or a MOLOK service station in bad weather also needed attention. There was a need for an improved website and a need for digital navigation instruments co-working with a common digital platform. A both online and offline service was needed and a need for better design to meet the demands of handicapped users. A "panic button" when the user is in distress was suggested.

Picture 5. Septic tank waste management station in use. (http://www.pidasaaristosiistina.fi/files/2175/septi_saana2).

Picture 6. MOLOK-floating waste management station in the archipelago. (http://pidasaaristosiistina.fi/tiedotus/ajankohtaista/moloklaiturista_uudenlainen_tehokas_ratkaisu_saariston_jatehuoltoon.441.news).

6 INSIGHTS AND TRENDS

Finnish Federation of Marine Industries, Finnboat is the responsible organization for marine industry and trade in Finland. Finnboat members represent almost one hundred percent of the nation's domestic marine industry turnover and the value of export in the boat industry.

The aim of the federation is to connect boating enterprises and to promote enterprise activities and fair competition. The aim is also to advance activities within boating and to inform users about safety aspects of boating in Finland.

Boat 2007-2011, Better boats and services-program mission was to encourage businesses and actors functioning in the boat branch to develop their businesses and products to better meet the competition and needs of the users in the future.

The aim of the program conducted in co-operation with boat manufacturers, stakeholders, technical research centers, universities and development centers was to benefit their knowledge and expertise and put it to use. The coordinator for the program was VTT, (Technical Research Centre of Finland Ltd) in co-operation with Finnboat.

6.1 TULVA - research

TULVA-"the future of boat industry" research project that was a part of the Boat 2007-2011 program. The project focused on new boat concepts and the forecasting of boating in the future and also on how boating will be affected in the near future by energy savings and resource reductions. This research was important to conduct to find out how boating will change in the next ten to fifteen years. (http://www.finnboat.fi/fi/fi_7_3.html).

According to articles in Finnboat magazine (1/2008 and 3/2009) there was a concern within the boat industry in Finland how boating is considered interesting and appealing among new consumers and users in the future. As new hobbies, new products and activities make their entrance, traditional boating will be forced to compete with these new "players" on the market for its existence". Finnboat news (1/2008, 3/2009).

Boating in Finland is at the moment quite conservative and a result of that products on the market are quite similar to shape and function. If we want to get new users and customer into boating these matters needs to be approached. The research also pointed out that there was a growing need for new services amongst boaters in Finland. (http://www.finnboat.fi/linked/fi/TULVA_haapanen_ari.pdf).

The famous DIY, "do it yourself" mentality in Finland is decreasing as younger people with more money and less skills and less time are entering the boating scene. This will increase the demand for more full service- services. This new customer segment will also be more open to renting or leasing boats when needed. They do not have the mentality of today boaters that "I must own my boat" myself. Boaters will appreciate environmental, individual, safety and comfortability issues more in the future.

Boating and boaters attitudes are changing and things of value today will probably not be of such a high value in the future. The customer segments are changing and there are new users that do not have previous knowledge of boating.

It is important to recognize the demands of today but also important to visualize new boating concepts as the new users and customers do not even recognize what they want yet. Factors that will change the market the most are presumed to be the situation of global warming and cultural factors. Mega trends that affect us all are the aging of the population and the growing of individualism. In boating, we can also see the impact of growth in economics and the dividing of people economically.

Our expected energy consumption and economic and environmental issues and how we value our time in the future are mega trends that will have a major impact on boating in the future. As the trend is that people will have less and less time to spend on things they find important they probably will not want to spend a lot of time on the "transfer". Meaning that in the future the "transit time" to that special place or feeling must not be long. Future consumers want to be there immediately. This phenomenon is going to create a new way of boating called "laituri-veneily". This harbor boating or docking boating will open new business opportunities and a new interest towards houseboats, floating villas and floating apartments. This meant that some of the boaters in the future, not all but some wants to have their boat at a well-equipped pier, quay or other place where they can spend their time with family, friends and other boaters. This docking boating would create a new demand on docking places and guest harbors. (http://www.finnboat.fi/linked/fi/TULVA_haapanen_ari.pdf).

Sense-innovating ergonomics will be more important in the future when designing new services and products. This meant senses like smell, taste, hearing, feeling etc. With this sense-innovated ergonomics, future boat producers and service providers will try to have an impact on issues like safety in boating, enjoy ability, functionality and the pleasure felt by the user.

Conclusion:

Competition for our free time will increase with new products and services. The need for "now and here" possibility for users will increase. Meaning less "transfer time" wanted or accepted by users.

"Harbor boating" (laituri-veneily) is going to increase in shape and form of houseboats, floating villas and floating apartments and the demand for sense-innovating ergonomics and solutions will increase. As the TULVA research was six years old, some of these development suggestions have, to a certain level already been implemented.

6.2 WAVE-research

The Wave (visioning boats and services in Finnish boat industry, 2009-2011 research was also a part of the Boat 2007-2011 program and conducted by Western Finland Design Centre MUOVA and Aalto University, school of Art and Design. The purpose of The Wave, funded by Tekes, The Finnish Funding Agency for Technology and Innovation was to generate product and service visions for the boat industry for the forthcoming 10 to 15 years.

(http://www.finnboat.fi/linked/fi/Tuotteiden_ja_palveluiden_visiointi_WAVE.pdf).

As indicators of socio-cultural trends that have strong influence on boating as a phenomenon visions were used. Trend analyses were conducted in order to understand how socio-cultural trends might change recreational boating in the future.

When investigating lifestyles the focus was on how people spent their time, what people did, what their interests and opinions were and how they did see themselves and their environment. Socio-cultural trends define how people define, act, live and think of the future. They can function as a definition of what goals in values people have. Lifestyle research also helps to explain what people do, why they do it and what it means to them to do what they do. Hidden drivers for socio-cultural changes are often found in demographic and lifestyle changes. Socio-cultural trends also reflect on what attitudes, interests and fears people and communities might have.

The consumer behavior and consumer habits are changing towards an even more individualistic and personal way so trying to identify consumers only sociodemographic ally or economically (age, sex, education, income, social status) is not enough. It does not explain people's interest and habits. Therefore, to understand the consumer behavior and true needs better we need to implement lifestyle-factors to the equation. This way we can even better meet the customer's needs in products and services.

 (http://www.finnboat.fi/linked/fi/Tuotteiden_ja_palveluiden_visiointi_WAVE.pdf).

Parviainen wrote in an article in Finnboat news (1/2009) that he believed that due to demographic changes in consumer behavior, changes like ignorance, impatient, laziness and hastiness would build ground for new services also in boating.

Regarding to the Wave report five different trends were created. Those would have an impact on how people's demands, values and choices will change in the future. These socio-cultural aspects would also have an impact of future boating.

 (http://www.finnboat.fi/linked/fi/Tuotteiden_ja_palveluiden_visiointi_WAVE.pdf).

Hectic living

Constant stress, work related press and lack of time are the dilemmas of our lives today. Unpredictability of working life and constant travelling results in the spallation of our free time. We do not always have evenings, whole weekends or long holidays to do the things we like. Instead, we try to do our hobbies whenever it is possible, time wise. All this correlates into wanting easiness, simplicity, immediate experience and feeling of wellbeing.

The value of time increases when time is of essence so services that help us save time are something we are willing to pay for. Time saving decisions regarding to the time we can spend with the family and friends and doing things that feel important get more important.

In boating this means that future customers are buying services to save time. This opens room for new business opportunities. When designing future services we must take in to consideration that consumers will not invest too much time or money on preparing for the experience, so ease, effortlessness, functionality and quality are important aspects when designing future services.

Experience searching

Thrill seeking is born out of this accelerated rhythm of living. People are used to taking quick decisions and functioning under stress in their working life and this might reflect in the way they make decisions about their own time. If time is limited, people seek for immediate thrills and experiences. In addition, mental experiences and thrills are as important as physical experiences. People want one of a kind- individual experiences that give them a feeling of balance to a hectic lifestyle. These experiences and thrills can often be found in nature. Nature has a habit of providing for the place to seek thrills thru different activities. Boating and other recreational activities on water are a good examples of this. Some want fast, energetic experiences as some want peaceful,

relaxing experiences. Learning and doing things that give a feel of personal growth are also important for some people.

Seeking for wellbeing

By seeking for wellbeing, people try to find a balance of body and mind. As an opposite reaction for stress and a hectic lifestyle, people tend to seek for simple things. This might show as they concentrate their time and energy on themselves, on family, their home or on traditions. As boating is an activity that can easily be done on your own or with friends and family, and as it can provide with good memories and experiences, it is very important we design services that are needed and valued. Not services the manufacturers and service providers think we need.

Individual appreciation

Individual freedom, freedom to choose and doing something voluntarily are very important to all human beings. To be able to highlight own personality and fulfill own needs is highly valued and people are ready to invest more and more time and money to do that. The choices we make regarding the things we do and services we buy express more and more our identity and the way we think of life. As we can see more and more women as boat owners and buyers of boat related services the differences between sexes is vanishing.

Sense of community

As people are more "forced" to move because of job opportunities the connection to families and relatives are someway lost so people tend to seek other people or groups that have same values, hobbies and interests. Technology can bring people together and function as a way to meet other people with similar way of life. Future services should when working at its best, give the users a sense of community, appreciation and respect in that group.

(http://www.finnboat.fi/linked/fi/Tuotteiden_ja_palveluiden_visiointi_WAVE.pdf).

> *Conclusion:*
>
> *People wanted easiness, simplicity, immediate thrills and experience. Here and now!*
>
> *There was also a need for ease, effortlessness, functionality and quality in life. The value of time! People wanted to have a sense of belonging to a community or a group with similar values and needs.*
>
> *People appreciated freedom to live and choose according to own needs and wants and a balance of body and mind, simple things- feedback of wellbeing.*
>
> *Important were also individual experiences, feeling of balance to a hectic lifestyle, fast energetic experiences vs. peaceful, relaxing experiences. Appreciated was also the possibility to interact and learn by doing and have a feeling of personal growth*

6.3 The volume of boating and its economic and environmental impacts in Finland

This study commissioned by TRAFI the Finnish Transport Safety Agency in November 2016 and the final report conducted by Sito Oy was launched in February 2017. (Volume of boating and its economic and environmental impacts in Finland, 2017).

The goal of the study was to establish the status of boating in Finland today. The study contained estimates of the number of watercrafts as well as the safety of boating and its environmental and economic impacts. As the results from both WAVE-research and TULVA –research presented earlier are some six years old a more up to date data on boating was needed. Information gathered from this study was mainly what the volume of boating is today and what the boaters' habits are today.

According to the study, the number of watercrafts in Finland has increased somewhat during the last 12 years. Of 554,000 motorized watercrafts in 2016, the biggest group was outboard motorboats with engines of up to 20 hp. (horsepower) (54%). Other common boat types were outboard motorboats with engines larger than 20 hp. (30%), inboard motorboats (10%), and sailing boats (3%).

Regionally most watercrafts and sailboats were found in south and southwest of Finland followed by Pirkanmaa, i.e. in areas with easy access to the archipelago, sea, and inland waters. The average length of all motorized watercrafts in 2016 was estimated 5.4 meters and their average age at 19.5 years. The most popular engine types were outboard engines with an average power of 36 hp. The estimated time spent by Finns on boating has decreased slightly in recent years. (Volume of boating and its economic and environmental impacts in Finland, 2017)

Boaters used watercraft to visit their holiday homes (20%), for short day trips (69%), and for journeys of several days or weeks (11%). Boats were used considerably more frequently during the holiday season than outside the holiday season. During the holiday season, over 50% of all boaters used a boat at least weekly and 77% used a boat at least a few times a month. On average, 14% of boaters made overnight boating trips. Some 75% of the boaters used the watercraft close to their home marina, and the most popular boating area beyond home marinas was the Archipelago Sea.

Boating skills were generally well looked after in Finland. The safety of boating has improved in recent years. Awareness about the environment has increased among boaters. Requirements relating to environmental impacts have become stricter, and more boats are now equipped with modern waste management systems. (Volume of boating and its economic and environmental impacts in Finland, 2017).

Conclusion: 54% outboard motorboats with engines of up to 20 hp. and 30% outboard motorboats with engines larger than 20 hp. Most popular on average was 36hp. Most sailboats and boats in general were found in south-southwest Finland. Average length 5.4 meters and age 19.5 years. Some 69% used the boat for short daytrips near home marina, 20% as connection boat to summerhouse. Only 14% made overnight trips.

6.4 Workshop

I February 2017 a brainstorming session was conducted with Jari Paasikivi, the head of development in at the city planning office in Turku. It was an open discussion format meeting where the goal was to identify the challenges, possibilities and trends in the near future. At this brainstorming session issues as on what could be the services needed at a Smart Quay and how people's needs in boating are changing were addressed.

The insights gathered were that the technology developed and used in the auto industry is usable in the boat industry as well. That is automatized electrical/hybrid boats, waterjets, city bikes etc. This meant that a network of wireless charging points for these crafts would be required. Digital identification of boat renters and boat owners would result in easier and more personal services in the future. The need for experiencing new things will require quick and easy renting place of canoes, kayaks, boats and other new water related products.

The need for short-term docking places in Aurajoki and Turku would increase as daytime boating is increasing. Also the possibility to wash and do minor services on the boat will increase as new methods in mooring of the boat to the Smart Quay, wireless charging points for your digital instruments and a digital identification of the boat renter or boat owner.

The need for fast and cheap cruises to the archipelago will increase and an Airbnb-model in renting or sharing a boat is coming. A need for services like catering and events on Smart Quays at nearby islands that supports tourism and recreation in the archipelago will grow.

Conclusion

There was a growing need for charging points for automatized electrical/hybrid vessels and easy renting place of canoes, kayaks, and boats. There will be a need for short-term docking space in the archipelago and a possibility to wash or do minor service on your boat. Need for Uber-model taxi boat service and an Airbnb-model in renting or shared use of your boat, catering services on Smart Quays at nearby islands. A need for own infrastructure on movable Smart Quay that supports tourism and recreation.

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7 BENCHMARKING

Benchmarking is a commonly used method to determine what and how others have solved problems or developed their products and services. As this Smart Quay with connected services was a new service, there were difficulties to find existing, comparable solutions. Therefore, the Smart Quay had to be compared to similar existing concepts, individual products developed and trends seen "on the horizon".

Floating concepts are constantly developed and the trend seems to grow every year. When looking at floating concepts that could be connected to the Smart Quay there are concepts being developed such as floating swimming pools designed by Bluet.fi (picture 10), floating restaurants (picture 7) and recreation centers (picture 8). Also floating apartments (picture 11) floating hotel pods (picture 14) and floating marinas with floating service stations (picture 9) designed by Bluet.fi. In Paris, France, they are developing floating water taxi stations (picture 16 and 17) and floating gyms powered by people who work out (picture 12 and 13). In Japan, they are developing tiny capsule hotels for people who only need a cheap room for the night (picture 15). Picture 18 shows small capsules that can be used as sleeping pods or for just getting together. Picture 19 shows the same quay modules being used as a platform to wash the boat.

Picture 7. Picture of a floating restaurant with sun bathing possibilities and boat docking space.
(http://bluet.fi/ideagalleria/).

Picture 8. A floating recreational center equipped with a gym and cafeteria.
(http://bluet.fi/ideagalleria/).

Picture9. A floating boat harbor with integrated service facilities. (http://bluet.fi/ideagalleria/).

Picture 10. A floating amusement park with swimming pool, restaurant and a ferry connection station. (http://bluet.fi/ideagalleria/).

Picture 11. Salt and Water catamarans. These floating catamaran apartments can be docked to a hotel or service station with restaurant or other facilities or it can separately function as an electrical boat. (http://saltandwater.rs/).

Picture 12. The Paris Navigating Gym is a concept formulated by an Italian designer. The sleek 65ft-long vessel has glass walls and powered by human energy. Passengers use spinning bikes and cross trainers to cruise the River Seine. (https://www.carloratti.com/project/paris-navigating-gym/).

Picture 13 navigating gym

The gym is equipped with glass walls so the people inside can see the environment as they go on along Seine River. (https://www.carloratti.com/project/paris-navigating-gym/).

Picture 14 floating hotel pods

The floating Mizukami Hotel designed by Netherlands-inspired theme park Huis Ten Bosch in Nagasaki includes beds, toilets, and showers. The capsule slowly drifts toward an island that functions as a holiday resort. (https://www.commercialrealestate.com.au/news/japanese-theme-park-huis-ten-bosch-launches-floating-hotel-pods/).

Picture 15. Tiny capsule hotel. Japanese capsule hotels are becoming more popular and could easily be adapted to floating concepts. (http://tinyhouseblog.com/tiny-house/tiny-house-lessons-tokyo-capsule-hotel/).
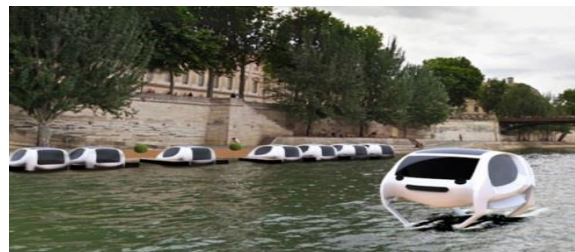
Picture 16. Water taxi. A new water taxi tested on the river Seine in Paris, France. It is equipped with hydrofoil "wings" that lifts the vessel to "fly" on the surface. (http://mymodernmet.com/seabubble-flying-water-taxis/).

Picture 17. Water taxi.
(http://mymodernmet.com/seabub
ble-flying-water-taxis/).

Picture 18. Rental pods.

Floating movable "puzzle"
quays are functioning as work
platforms or as movable
platforms for renting "floating
capsules" for tourists.
(http://versadock.com/).

Picture 19. Work platform.
(http://versadock.com/applicatio
n/floating-work-platforms/).

Picture 20. Tarzan boat. The
Tarzan boat is a small floating
platform that is trailer- able
and can be moved to any
location.
(http://www.tarzanboat.com/3-
different-size-))boats.html).

Picture 21. Decker Party Barge. The
Decker Party Barge is a rental
platform for bigger groups at events.
Depending on model, it can carry up
to 100 persons with crew and driver.
(http://www.lake-
grapevine.com/boat-rentals/).

Conclusion:

There is a trend towards floating quays and platforms equipped with solutions for accommodation services and for recreational use. There is also a trend of combining people's possibilities to work out with the ability to do sightseeing while moving. The trend for floating service facilities for boaters is growing. There is also a trend in developing new ways to transport people along cities waterways and in the archipelago.

8 CO-CREATION AND SERVICE DEVELOPMENT

The commissioner for this co-design course project was Forum Marinum marine museum that is located at Aurajoki in Turku. Originally planned for 35 000 visitors a year the marine museum now has approximately 140 000 visitors a year. This increase in visitors means the services around and connected to the marine museum must be developed further to meet the future demands. The marine museum saw a need for new connections and services in the Aurajoki area as the number of people passing along the area have increased every year.

Forum Marinum had unofficially discussed with Turku Guest Harbor how they could together improve the services they offer to their customers. Forum Marinum wanted to create a new service for customers that arrived by boat or other vessels to the area and Turku guest harbor wanted to be able to provide more and better services to their customers. By working together, they believed the guest harbor, the restaurant service and the marine museum would lure more visitors during the summer season. As the river area is rapidly expanding and as the city of Turku has plans to improve the ferry connection across the river and connections to other islands also Forum Marinum with stakeholders have been discussing how they could improve their services to better meet the needs of future customers arriving to Aurajoki and Turku along the river.

The goal of the project was to develop with the commissioner and stakeholder near the museum a Smart Quay service that would serve as a short-term docking place (1-3 hours) for customers arriving by boat or other vessels at the river. In addition, the goal was to design the service so that it would co-function with the Smart Quay, which will support the boat rental service and the new fully automatized hybrid ferry connection at Aurajoki.

8.1 Services for Turku guest harbor

In February 2017, a combined interview with both Forum Marinum and Turku Guest Harbor was conducted regarding their wishes to combine their services in order to better meet the demands of the future users and customers. As they by combining, their forces thought that they could both economically and in general improve and provide better services for their customers and users in the future. As the existing

hybrid boat rental LÅNAT.fi was already co-working with Turku Guest Harbor, Turku Guest Harbor represented them in this project and the actual occasion was conducted through open discussion and semi-structured interview. To address the question of the goal with co-working with Turku Guest Harbor from the marine museums point of view the following summarization was completed.

The museum and the Daphne restaurant at the marine museum were popular in the summertime by people who had planned their visit well ahead. They usually arrived by bus or car. People moving along the river by boat or other vessels usually using the services of other floating restaurants on the river hardly ever visited the marine museum. This was mainly because there was no place to dock the boat near the museum, as the shore was packed with museum vessels such as Suomen Joutsen.

The museum's goal was together with the guest harbor, to create a docking quay for 2-3 boats that could visit the museum and use their services. As the visitors, usually stayed only for a short period of time the need for docking space was about 1 – 3 hours. This was enough time to visit the restaurant or the museum. The problem was not the physical quay but the maintenance and daily administration of the boat docking service. The museum did not have resources to have guest harbor staff taking payments etc. for the whole summer season.

Another problem the museum wanted to solve was that their daytrip-rental service of smaller museum vessels for a tour in the archipelago did not meet its potential. A co-operation with the guest harbor could also improve this service. For example, a common booking system/application with the Turku Guest Harbor would decrease the pressure on the marine museum staff, as their main task would be to implement the daytrip service with the museum vessels and receiving the boating customers, not taking reservations or receiving payment.

The Turku Guest Harbor has a top-season of some 7 weeks. This developed a problem whether there was any ground on expanding too much and taking all the financial risk alone. Turku guest harbor was now building a restaurant for 90 customers beside their premises. Expectations of this service were to make the guest harbor more appealing to customers. The goal with the co-operation with the marine museum was to extend the season for the guest harbor and bring more customers to both places

The guest harbor had 70 boat docking spaces and the average customer was a group of 2-5 persons. The average stay was 1 – 2 nights. Ljungqvist at the Turku Guest

Harbor decided to try a mobile booking application for a 1 – 3 hour daytime docking in summer 2017. The LÅNAT.fi boat rental is going to have one hybrid rental boat at the guest harbor connected to the same booking service.

The last question was what events that would benefit all parties were planned for the incoming summer. Turku guest harbor had plans for the first time to host a floating boat show in Turku in summer 2017. This show was usually hosted by Naantalin guest harbor in the beginning of summer. Ljungqvist hoped it would be more appealing at Turku Guest Harbor because of the closeness to the city.

Forum Marinum and Turku guest harbor had decided that all tickets to Turku boat show would function in both places. This would benefit all services provided by both parties. In addition, the tall ships races in Turku 20-23.7.2017 would bring people to the area. By collaborating at these events, they hoped to benefit in increased sales and extended the otherwise so short season.

Conclusion

There was no service for extempore visit to the museum by boat or other vessel as there was no room for docking at the pier in front of the museum. Forum Marinum had no recourses for building and maintaining a boat quay alone. The short boating season meant financial risk. Turku Guest Harbor was also building a new restaurant and they were in close co-operation with the boat rental company LÅNAT.fi. They all wanted a close co-operation and a common digital platform for managing events and happenings arranged in Aurajoki.

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8.1.1 Visions and ideas for Turku guest harbor

Right after the combined interview, an open idea generating session was arranged on how the service could be developed in order to better meet the needs and demands of the future users of Turku guest harbors services. Toni Ljungqvist at the guest harbor shared some visions of possible future development of the guest harbor. The biggest challenges was the funding of the development. As the boating season is very short, the problem of receiving return on the invested capital was always an issue. This brought the difficulties in finding investors prepared to share the financial risks.

As this booking application that had been introduced as a part of the new service at the guest harbor and marine museum was not fully developed yet, there were areas and features to be improved. The booking and reservation application could also function as digital payment platform for other alternative services. The system used by VR was mentioned here, (Finnish railroad). VR have a well-functioning digital application for reservation, booking and paying for their services online via internet or by smart phone.

With other services, Ljungqvist meant the reservation, booking and payment for the floating service facilities planned at the guest harbor such as toilets, showers, sauna, washing machines, rental of water toys, hybrid bikes, electrical scooters etc. Services usually provided at guest harbor areas but usually offered by many different service providers.

As the boat rental, LÅNAT.fi, had their own application for now it was important to develop a common digital platform where all services could be found.

Because of no free space on the pier at the guest harbor, the new service facilitation should have to be a floating concept. This meant that the floating service concept could be moved anywhere at Aurajoki or in the archipelago where guest harbor services could be needed. By developing the digital application the guest harbor could be managed with less people and provide for more services.

Conclusion:

The booking and reservation application could function as a digital payment platform for other alternative services meaning the reservation, booking and payment for the new floating service facilities, including services such as toilets, showers, sauna, washing machines, rental of water toys, hybrid bikes, and electrical scooters and so on.

The floating service concept could be movable anywhere at Aurajoki or in the archipelago were guest harbor services could be needed.

As the boat rental, LÅNAT.fi had their own renting system it was important to develop a common digital platform where all services could be found.

8.2 Services for Forum Marinum

To gain more insights from potential users and customers on how the co-creation of the Smart Quay service was developable a brainstorming session with seven co-students in Leadership and Service Design master studies at Turku and Novia UAS was conducted in May 2017. The results of the Scamper session were interesting as the results are usable as a reflection of possible users and customers of the future services at the marine museum and Turku Guest Harbor. The name SCAMPER comes from the letters and is an easy method for creative thinking and problem solving. It is a good tool to develop new products and services. Following questions were asked:

Substitute. At what other location could you use the Smart Quay booking service? The answers were anywhere in the archipelago and in cities located on the coastline. Anywhere you need to book a service or product by a mobile application. For renting all sort of products related to recreation.

Combine. With which other customer segment could you combine this service? The answers were for renting all kinds of water toys, tourists renting boats, to book accommodation combined with resting areas.

Adapt. How could you adapt or re-design the Smart Quay service to serve another purpose? The answers were designing the service to function for booking maintenance

for your boat, for food deliveries while staying at the Smart Quay, renting a boat, to book a museum guide or booking other amusement such as yoga lessons.

Modify. What focus should be taken on to create a better booking service and better services at Smart Quay? The answers were the need to focus on better user experience by benchmarking similar services. The booking service could include information on specs of the boat, details and possible data from the service book. By looking at additional services e.g. pit stops and by building a booking service network in the area.

Put to another use. Who else would find the Smart Quay booking service useful? The answers were companies offering boat maintenance services e.g. interior cleaning etc. companies offering accommodation and other services for travelers in the archipelago.

Eliminate. Meaning on what aspects would you preferably focus on to improve the core service?

To focus on a customer friendly interface and an application that is easy to use. To prevent misunderstandings and overbooking a clear and easily understandable pricing list need making and the possibility to check for free docking space in advance.

Reverse. Meaning how to design the booking service, so it DOES NOT attract customers. The answers were by creating a single channel system meaning only one booking at a time. Supplying with too much information and having several different pricing groups. Only having one 3 hour booking a day. Hard to find booking application and difficulties of booking because of confusing application, missing important information, if malfunction with booking application no information how to proceed or whom to contact

> *Conclusion:*
>
> *The booking application and service could be implemented anywhere were similar application were needed e.g. renting of water toys, boats, accommodation, service facilities. In addition, to book maintenance, restaurant services, sauna, guiding services and other seasonal services related to happenings.*
>
> *The interface needed to be easy to use and had to be easy to check for vacancy in advance before making a reservation for minimizing the risk of overbooking. The pricing needed to be easy to understand and include clear information what to do and whom to contact if problems occurred.*

8.2.1 The users of Forum Marinum' and Turku Guest Harbor' services

The customers of this service can be both inhabitants and tourists visiting Turku by boat. In the summertime, many boaters cruise from Helsinki to Turku and Aland archipelago and some stay several weeks. They are the groups that need overnight services at guest harbors. There are also a group of daytime - and weekend cruisers in the southwest area of Finland that live somewhere in the region and have boating as a hobby.

They are usually young, middle-age people boating with friends and family. They sometimes have a "picnic" in a resting place or somewhere on an island but often they want proper restaurant services and plan the trip to a guest harbor or other restaurant facilities in the archipelago. They are probably the biggest group to visit the Forum Marinum's restaurant Daphne, the marine museum or the Turku Guest Harbor. They would appreciated the short-term docking service, as they usually want to "pop in" to the city center for shopping etc.

They are more likely to use the services and are prepared to pay good money for good services. They usually spend money on several services at the same time, as they do not "stock up" when going on a day or weekend-trip.

Veteran boaters boating for weeks have all the refreshments they need stocked up in the boat and they often overnight at an island by own anchor and prepare all food themselves.

Then there are the group of tourists that do not own a boat. They want to do "boating" a couple of times a year but do not want to own their own boat. In addition, tourists arriving from distant places and want to visit Turku archipelago need to rent a boat. As they do not bring anything with them, they are most likely to spend the most money on services like LÅNAT.fi boat renting etc.

9 DESIGNING OF SERVICE

9.1 Personas

The personas presented in this thesis are based on groups and people revealed in the research. The first persona, daytime cruisers are a group mainly based on the Forum Marinum's and Turku Guest Harbor customer segment revealed in the earlier chapter, The users of Forum Marinum' and Turku Guest Harbor' services. The research revealed that a great challenge with archipelago tourism and related services and for businesses related to boating, were the shortness of the season. Therefore, the second personas represent active elderly people as they belong to the group most likely to have the money and time to travel in Turku area and archipelago in off-season periods. The third persona represents service providers in Turku archipelago. The third persona tries to explain what kinds of services are represented in the archipelago and what challenges they meet.

Persona 1. Daytime cruisers

Picture 22 and 23. Personas.

(https://www.newsbox.fi/featured/venemessut-kokoaa-taas-veneilijat-vesiharrastajat-ja-kalastajat).

Pekka, aged 38, married to Mirva aged 36, are a young middle-aged couple with children. The family has a daughter, Pia aged 12, and son, Timo aged 10, and they live in Kaarina in the southwest of Finland. Pekka is an IT engineer working as a project manager and Mirva is working as a sales manager. They both have good salaries and

good economy. Due to having careers and limited free time, they spend as much free time as possible together as a family.

Pekka became interested in boating after meeting Mirva and is now a member of Kaarina boat club because of the services and benefits the club provides for its members and as he bought a 10-year-old, small, 5.90 m long cabin boat with a 50 hp four-stroke engine he does not want to worry about security and maintenance. He is happy with the services the boat club offers and would be ready to pay more for more services. He likes to go boating spontaneously with friends and family. They usually go for a day-trip or a weekend trip with the family in the nearby archipelago or to Turku. As they do not own a summerhouse, they feel owning a boat was a good choice. It makes it possible combining their own hobbies with the family.

Pekka likes to prepare the boat himself for the season meaning he washes it and does smaller repair work. Bigger issues such as engine services he buys from the boat club or from local marine service providers. He finds the environment important so he uses only material that is environmentally friendly.

He would be prepared to pay for more services if possible, such as winter storage and more complete overhauling as long as he could choose the services that suit his needs. He is a frequent visitor on boating forums and usually asks for advice and information before making any decisions or buying anything boat related.

Persona 2. Active elderly people

Picture 24. Personas (https://flexitreks.com/cycling-holidays/turku-archipelago-cycling-holiday/).

Karin, 66, and Eero, 68, are pensioners living in Helsinki region. As they are still very active in sports, they like to combine their holidays with activities. They have done cycling holidays on Aland before but never in Turku archipelago. They like to plan their

trips well ahead and book ferries and accommodation well in advance. As pensioners with all the time in the world, they like to do their trips outside high season as they do not like crowds and the high pricing on high seasons. They are surprised how difficult it is to find information and timetables on ferry routes in the archipelago. As they would do Island hopping to smaller islands outside the mainstream routes, they find it hard to obtain information on connections. They have to call Visit Turku office for direct numbers to private charter/taxi boat services. Still they have difficulties to arrange affordable services and the routes they want.

Persona 3. Service providers in the archipelago

Pictures 25 and 26. Personas (http://saaristolinja.com/catering/).

Marja Säkkinen and Juha Stormossa from the southwest of Finland took over the restaurant "Strudeln" located in Pargas in 2013 after the founders, Jörgen and Bettina Stormossa decided to retire and leave the business to their son, Juha and his wife. As both Juha and Marja had been working and helping at the restaurant "Strudeln" in high season every summer for the past 10 years the decision buying the restaurant and continue running it was an easy decision to make, as they both saw the potential in running a restaurant business in the Turku archipelago. Especially as Marja is a chef and Juha had grown up in Pargas. After taking over the business in 2013, Marja and Juha decided to expand the restaurant and cafeteria business by building 2 small rental cottages for tourists and also started arranging catering services in the nearby area.

They are now running the business themselves with the help of their children except in the high season when they usually employ a couple of summer workers. Säkkinen and Stormossa said the catering service in cooperation with other service providers in Turku archipelago exceeded all their estimations and was now about 25 percent of the income in the summer high season months. The biggest problem is the shortness of the season, which they try to prolong by arranging catering services at events in

cooperation with other service providers in the region. As they were located outside any ferry connection routes they own a charter boat with which they pick up tourist groups from the mainland and the archipelago but it is not easy to arrange a profitable charter transport in the archipelago on their own. The biggest challenges are marketing the business, finding paying customers and organizing everything with all stakeholders.

9.2 Design drivers

Information gathered from the different research methods such as interviews, documented material, research studies, and conclusions and from benchmarking, was gathered in a design driver's map. Design drivers functioned as "guide lines" to the designer to know in what direction the service could be driven. (Tuulaniemi 2011,156).

From the design driver chart (figure 5) you can see the design drivers made from the interviews, documented material, research studies, conclusions and from the benchmarking. The design driver chart shows the common design drivers for users, service providers and stakeholders. The first box shows the common digital platform where all parties meet in sense of sharing information. This does not have to be online as a lot of e.g. information on timetables, prices etc. does not change very often. This is also a platform where customers can give written feedback for all to read.

In the second box, online "real time" information the service providers and connected stakeholders can inform customers in case of malfunctions, delays of ferry connections, vacancies etc. Here all service providers and stakeholders can share intern information only for them and not for the customers. It can include matters like coordinating routes, inform other accommodation providers if they have cancellation and have vacancy left and so on. Here customers and users can also give feedback on purchased services direct to service provider and if for example the customer forgotten something in the hostel room and wants it back.

In the last box is described the actual physical Smart Quay and all the services that is possible to integrate to the Smart Quay. This is the place where the actual services take place but without a well-functioning and reliable common digital platform and online "real time" information place the Smart Quay cannot function at its best.

Needs of the user, locals and tourists

Common digital platform for information on several languages, timetables, prices, routes, bookings, multiple reservations e.g. restaurants, vacancies, related services, combined ticket, taxi/charter boats, guiding.

Here can users also give feedback on purchased services and products.

Needs of service providers and stakeholders

Online "real time" information

For general information, cancellation of routes, on delays, size of groups, max. passengers, vacancy, availability of services, info on malfunction of septic waste tank, travelling with pets, bicycle, hiking routes, payment process

Place for Intern communication with service providers and information/communication from/with stakeholders. Here users can also give feedback on purchased services direct to service provider etc.

Connectable physical movable Smart Quay

Providing for basic infrastructure, basic services, electronical key code system, toilets, shower, sauna, waste water management for boaters-tourists, place for experiences, movable guest harbor, short–time docking 2-3 hours. Place for pick up /drop off of customers, experiences for boaters, floating accommodation, charging point, interacting e.g. produce what you use, restaurant, catering, free WI-FI for all, enter / exit place for Smart Ferry passengers.

Figure 4 Design drivers chart

9.3 General Service map

To gain a more clear vision of the general process as a whole and to better understand how all parties involved in the service chain were connected at the Smart Quay a General service map was drawn. (Figure 6) This map shows how everything is linked to each other and in what order different processes are conducted. To clarify the service chain it was divided into pre-service, service and post-service.

Pre-service

The first step is that there is a need (red box) generated by customers, service providers, tourists or stakeholders. They all need a common digital platform (orange box) where to receive information and/or to supply with information. At this common digital platform, all parties meet for the first time.

Then as a customer, service provider or stakeholder you continue to the common digital platform (blue box) according to your needs. Here reservations can be synchronized, offers on services combined, etc. according to the need. Here money is transferred and distributed to the right service provider or stakeholder according to the purchase by the customer.

Service (Movable Smart Quay)

The physical Smart Quay (green box) is where the actual services take place according to the reserved and purchased service. On the other hand, the Smart Quay could function as a platform from where you continue to the actual service. As a service provider the purchased service can if so wanted be execute at the Smart Quay or it could function as a pick up/drop off place of potential customers

Post-service

After the service have been used and/or your services have been used you give/receive feedback on the service. (Blue box) Here e.g., internal fees, information and feedback between service providers and stakeholders are conducted. This is done on the same common digital platform used for making reservations etc. in the pre-service stage.

There is a need of tourists, inhabitants, service providers, stakeholders etc.

There is a need for a common digital platform with combined information on service providers and stakeholders, related websites and connected municipalities etc.

Pre-service

Customers/users

Connected and external stakeholders

Service providers

Common digital information platform for booking, synchronizing reservations, making offers on services (e.g. docking fees etc.) service providers (e.g. Turku region fishing licenses etc.) stakeholders and a digital platform where to pay for purchased services.

Service

Movable Smart Quay

This is a physical platform where the passengers can enter and exit the Smart Ferry. A platform where to use reserved and bought services or to execute sold services. In addition the Smart Quay can be used as a pit stop from where to continue to other location of execution. Smart Quay modules can be combined according to need.

Common digital platform for post-information, synchronizing intern payments, information etc. and feedback to service providers/stakeholders

Post-service

Connected and external stakeholders

Service providers

Figure 5 General Service map

9.4 Business Model Canvas

Key partners	Key activities	Value proposition	Customer relationships	Customer segment
Service providers and stakeholders in Turku and Turku archipelago. Boat guest harbors and boat service providers. Keep Archipelago Tidy Association, FÖRI, Visit Turku, City of Turku and municipalities in the archipelago.	**Provide for movable modular platform that enables users, service providers and stakeholders to buy and sell their services and experiences.** **Key recourses** Co-work with service providers and stakeholders in Turku with archipelago. Co-work with digital application and platform developers. Other municipalities in Turku archipelago	Provide a floating movable platform for users to experience different services. Create variable locations for service providers and stakeholders to execute their services. Bring basic infrastructure to alternative Islands in the archipelago. Create business opportunities in the archipelago. Support new Smart Ferry connections in archipelago	Smart Ferry connections, service providers, stakeholders, municipalities, **Distribution channels** The social media, Visit Turku network and Visit Finland websites. Travel agencies. Visiting travel expo's and connecting the boating world	Inhabitants, boaters, foreign and domestic tourists, stakeholders, service providers in archipelago, users of Smart Ferry. Other municipalities in Turku archipelago

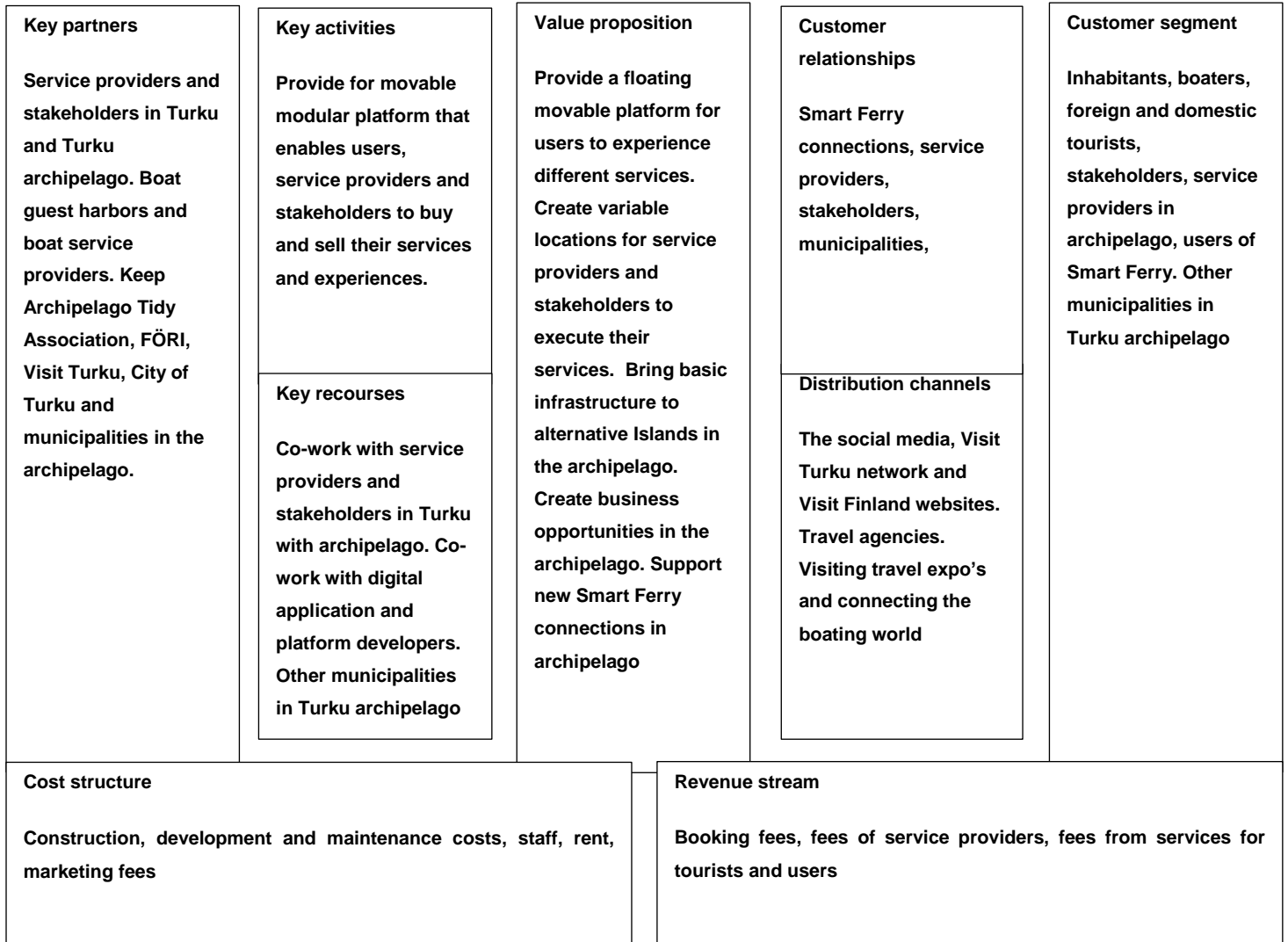| Cost structure	Revenue stream
Construction, development and maintenance costs, staff, rent, marketing fees	Booking fees, fees of service providers, fees from services for tourists and users

Figure 6. Business Model Canvas

The Business Model Canvas is a tool for visualizing the building blocks needed when starting or developing a business including value proposition, finance, customers and marketing. (http://www.eship.ox.ac.uk/business-model-canvas-explained).

The different blocks in the Business Model Canvas are customer segments: Who are the customers of the Smart Quay service? Value Propositions: What value does the Smart Quay deliver to its users and why do the customers use the services?

Distribution Channels: How is the Smart Quay with services promoted, sold and delivered? Customer Relationships: With whom and how are relationships established and promoted with regarding the Smart Quay? Revenue Streams: How does the Smart Quay business earn revenue from the core services? Key Activities: What key services does the Smart Quay deliver to the users? Key Resources: What key resources does the Smart Quay require to succeed? Key Partnerships: Which partners are needed so that the focus can remain on the key activities at the Smart Quay? Cost Structure: What are the Smart Quay business major expenses and costs and how are they linked to revenue?

10 MOVABLE SMART QUAY CONCEPT

From the results one could clearly see a pattern of the most wanted and needed services. To best meet these needs, the movable Smart Quay should be divided into separate modules that could easily be transported and combined according to needs of both customers and service providers. As an example if the need for short-term docking space is much greater than the need for harbor boating space at a certain location in the archipelago, the harbor boating modules could be changed to short-term boat docking modules. When stationed at an Island in the archipelago, outside the electrical network the Smart Quay needs to be self-sufficient to a certain extent. This could be managed by a solar or wind power system that provides for the basic electricity needed.

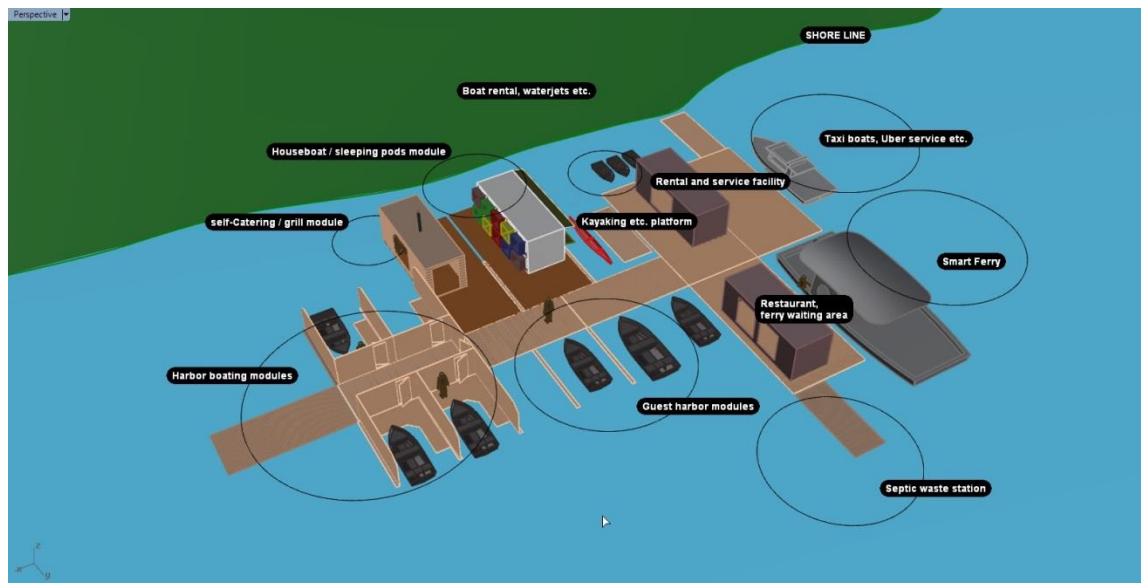## 10.1 Smart Quay module concept

Figure 7. General Smart Quay concept layout

Harbor boating

One aspect revealed in the research of future boating was the private island concept (laituri-veneily) (figure 8, blue dot). This concept makes the boat quay more than just a

place where you dock your boat. It is a small private place equipped with own toilet and perhaps a grill where you can alone or in company sit and enjoy the sunset or barbeque. It's a small area separated from others so it gives you a sense of individuality and privacy. It can also function as a place where you can meet as a community. You can even book a private person via Doerz https://www.doerz.co to come and prepare local food with you. These movable modules can be combined according to a need.
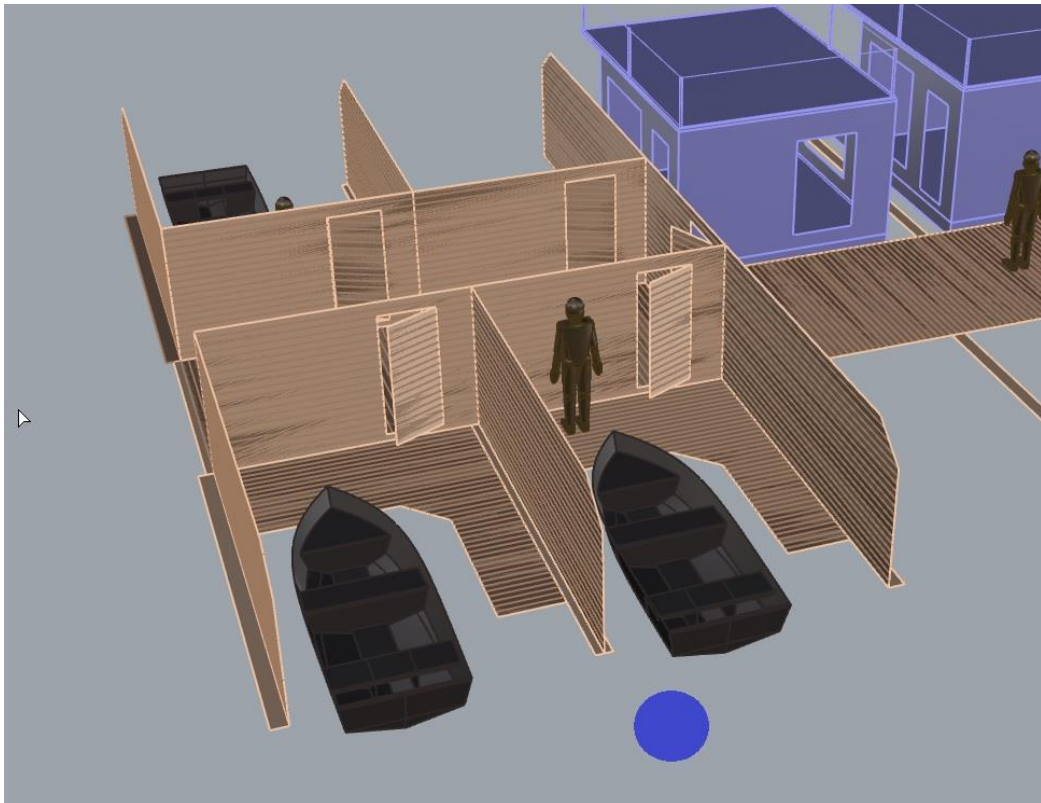

Figure 8 Smart Quay concept layouts

Guest harbor

This can be a short-term docking place 1-3 hours for visiting the restaurant, rent a kayak or hike on the island. (Figure 9, red dot) If you rent a boat via LÅNAT.fi boat rental, you can reserve the docking space equipped with charging points at the same time via the common reservation digital platform. This floating short-term docking space could be managed by e.g. Turku Guest Harbor and the boat rental LÅNAT.fi. As they provide for similar services in Aurajoki River, it would be easy for Turku Guest

Harbor and boat rental LÅNAT.fi to manage this short-term guest harbor stationed in the archipelago.

Floating cabins / Houseboats

Small floating houseboats (figure 9, yellow dot) perhaps equipped with small electrical engines you can reserve via the common digital platform as you buy a ticket for the Smart Ferry or book a taxi boat to pick you up from another Island. As Visit Turku manages the hostel ship s/s Bore in Aurajoki they could easily also manage these rentable houseboats. These floating houseboats and cabins could easily provide for the extra accommodation capacity needed in the Island in high season. A network of floating houseboats would certainly attract people to do Island hopping in the archipelago.
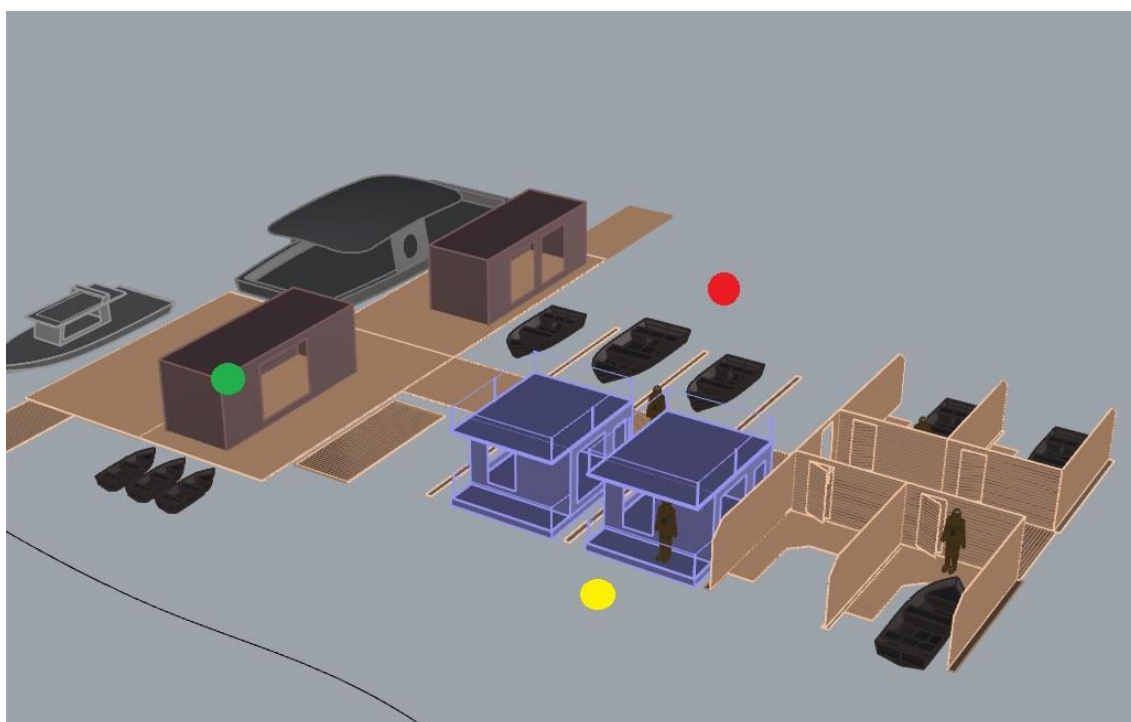
Figure 9 Smart Quay concept layouts

Rental service

From the rental and service facility (figure 9, green dot) you can by using the common digital platform reserve a kayak, rowing boat, waterjet and pick it up as you arrive to the Smart Quay. If you want an "off grid" experience, you could rent a tent, go hiking and sleep on the Island. Here you could also find services such as shower, washroom, (sauna) massage and so on. The customers could Via Doerz or experience Airbnb book a massage of another private persons travelling in the archipelago. On the other hand, if needed to, you could rent a small platform to stand on while washing or doing minor service on the boat.

Restaurant service

At the restaurant and ferry waiting area (figure 10, yellow dot), you can have a coffee or a hot meal while waiting for the Smart Ferry or a taxi boat to pick you up. Here you can also buy tickets, make other reservations charge your laptop, smartphone etc. If you do not have a smartphone you can on the interface in the restaurant make bookings, receive information etc. and pay with a credit card or at a cash automat. By making a reservation boaters can at the boat septic waste station point (figure 10, red dot) empty their septic waste tank. This service could be managed by Keep the Archipelago Tidy Association.
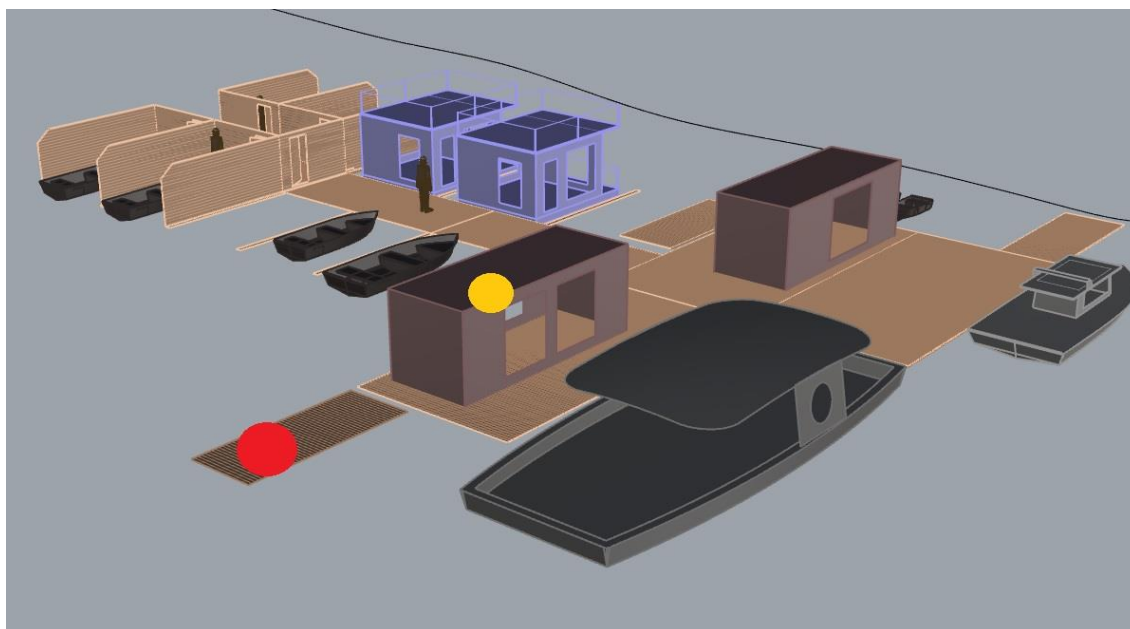
Figure 10 Smart Quay concept layouts

Smart Ferry

As the Smart Ferry connection is probably not needed or possible to connect to every Island in the archipelago, the automatic Smart Ferry charging module is optional. (figure 11, yellow dot) This means the module for the Smart Ferry could easily be replaced with another service module that is more needed. For example, an extra module platform for smaller charter boats or taxi boats that provides for transportation of people between Islands or a floating gym, boat wash or swimming pool with sauna.

Taxi and charter boats

At this module, any service provider or private boater who brings or pick up customers could dock. (Figure 11, orange dot) It is free of charge to use for the service providers and private boaters with a license to transport people. All taxi boats and charter boats would be equipped with an electronical identification that when docking to the Smart Quay the boat is identified. Boats docking to the module without a requested electronical identification would be fined for wrongful docking. This service could be managed and maintained by the city of Turku.
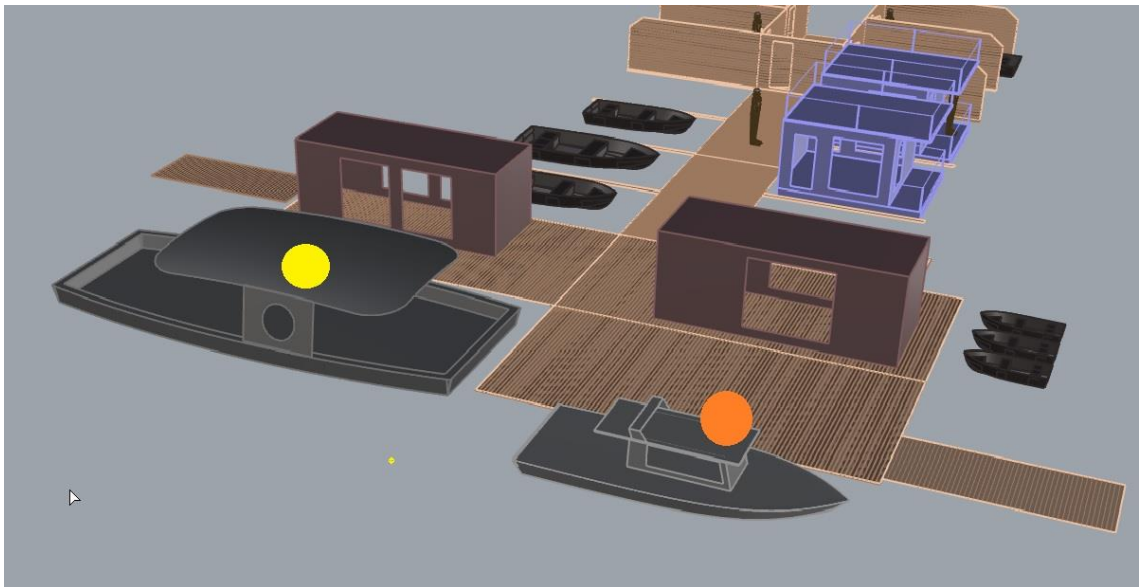

Figure 11 Smart Quay concept layouts

Power Gym

Instead of the Smart Ferry module, there could be an optional gym facility with sunbathing area on the roof (Figure 12, red dot). A floating gym module where people could get credits for the electricity they produce by working out on an exercise cycle or power stepper etc. This could be a sort of "produce what you use" electricity service system. The electricity generated by people working out could be used for basic lightning of the Smart Quay and its charging services.
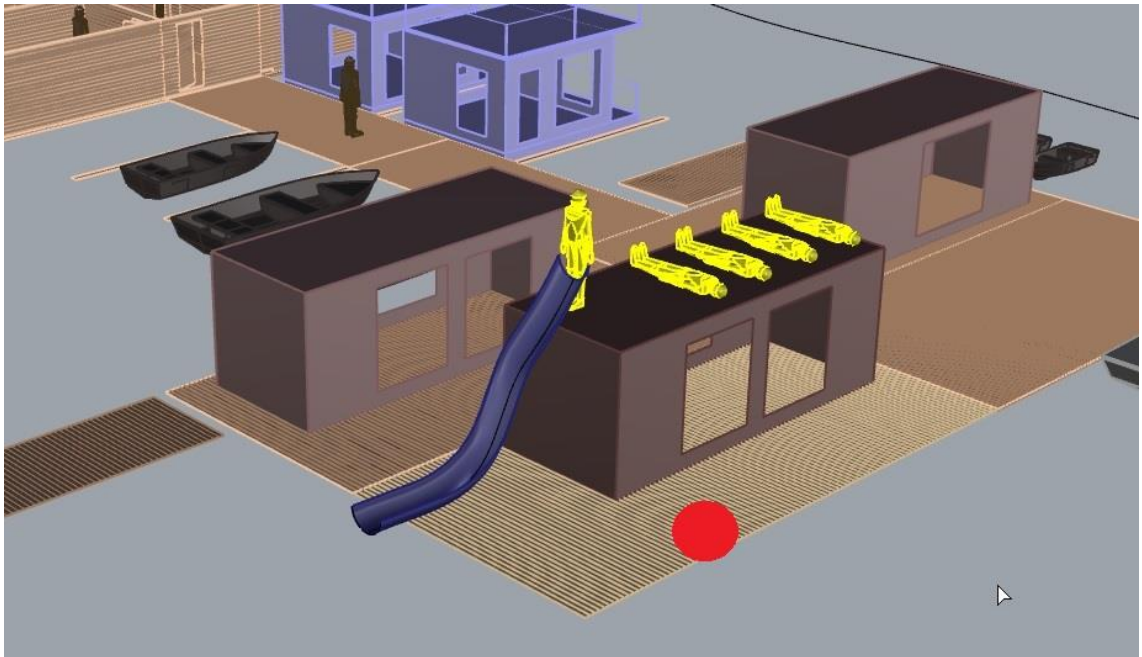

Figure 12 Smart Quay concept layouts

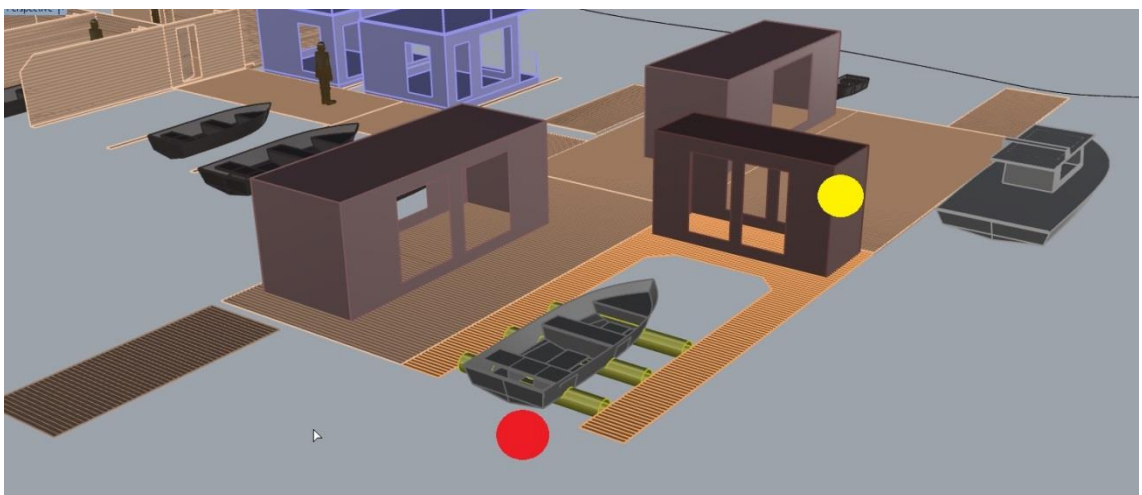**Boat service / fuel station**

Figure 13 Smart Quay concept layouts

Another additional module instead of the Smart Ferry module could be a boat washing service module managed by Keep the Archipelago Tidy Association. (Figure 13, red dot) There could also be a petrol station managed by Turku Guest Harbor. (Figure 13, yellow dot) Here boaters and users of e.g. waterjets could refuel or recharge their vessels if needed.
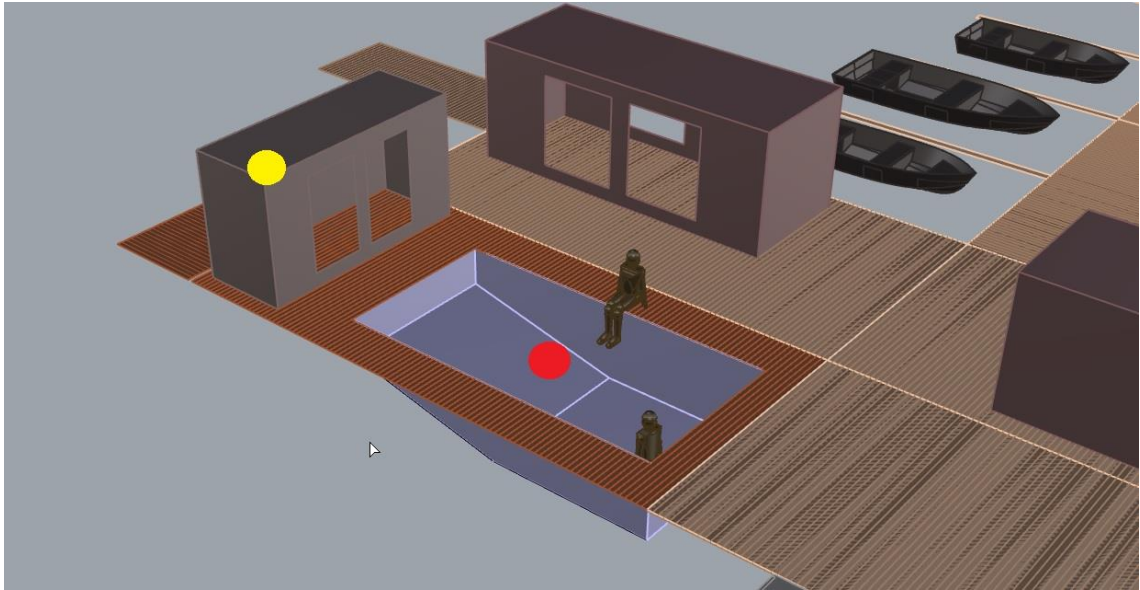
Swimming pool / sauna

Figure 14 Smart Quay concept layouts

Another additional module instead of the Smart Ferry module could be a swimming pool for adults and children. (Figure 14, red dot) A sauna could be connected to the swimming pool. (Figure 14, yellow dot)

Sleeping pods

A conclusion made from the research of needs of the service providers and users in the archipelago was the lack of accommodation in high season. Floating modules consisting of "Japanese sleeping pods" (figure 15, yellow dot) could provide for dozens of extra beds in the archipelago when needed. As they are floating modules the can easily be moved between Islands according to need. These sleeping pods would be of great use for people doing Island hopping in the archipelago. Furthermore, "sleeping pods" in the archipelago would be an attraction itself for many tourists and visitors.
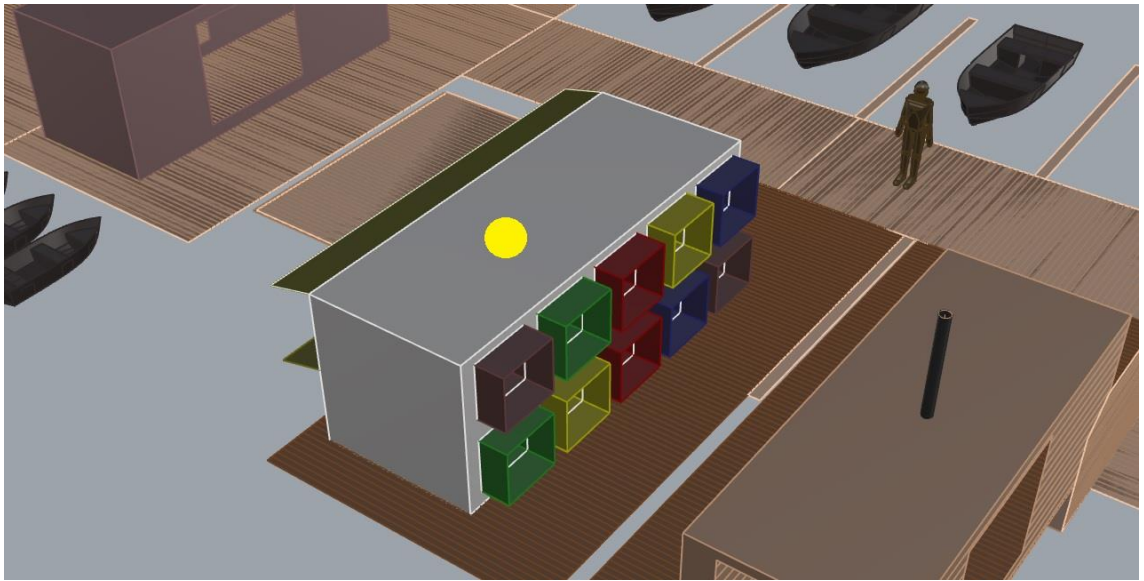
Figure 15 Smart Quay concept layouts

Grill /self-catering
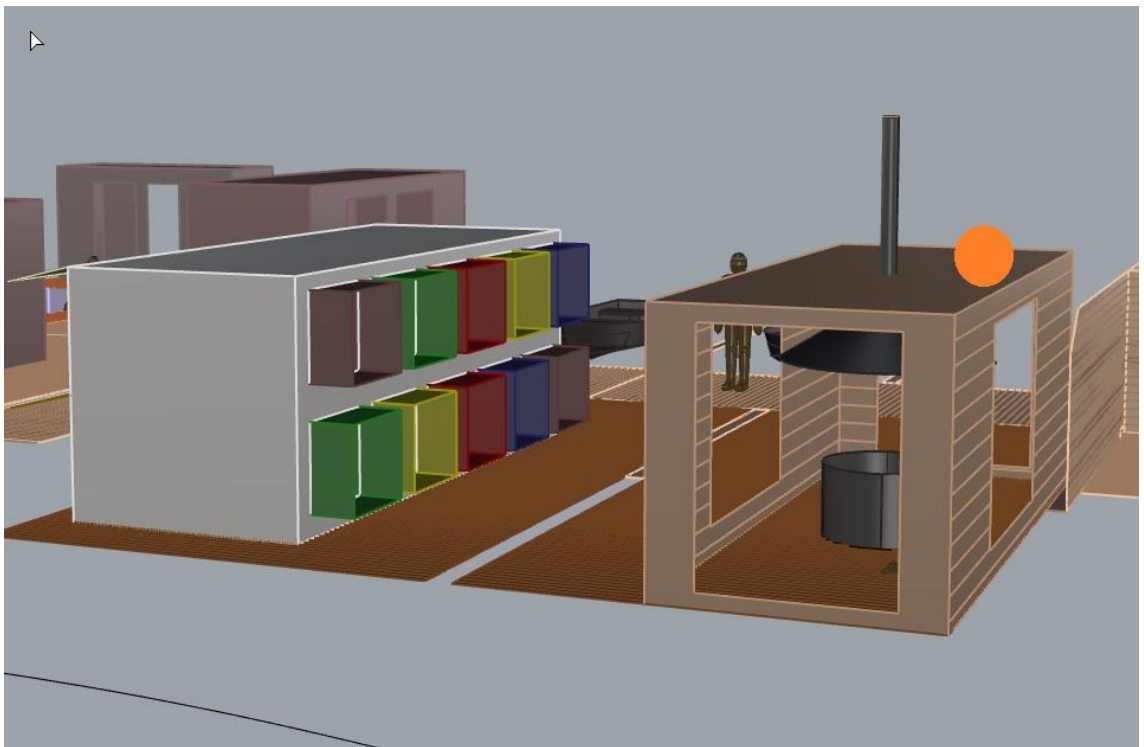
Figure 16 Smart Quay concept layouts

One of the trends revealed in the research was the growing demand for services like experience Airbnb and Doerz provide. https://www.doerz.co. This could be a floating grill or a self-catering module (Figure 16, orange dot) where all users of the Smart Quay can do their own grilling and cooking according to need. In addition, people who want to book catering services of local service providers can use this floating platform for that use. As earlier mentioned, people seeking experiences via e.g. experience Airbnb and Doerz can use this module or platform for sharing their experiences

Floating toilets

Figure 17 Smart Quay concept layouts

Another thing also revealed in the research was the lack of public toilets especially in high season. One concept could be a floating platform equipped with portable toilets (figure 17, yellow dot.) This could be much appreciated at the Islands especially e.g. festivals and other happenings in the archipelago.

Dog agility area

Figure 18 Smart Quay concept layouts

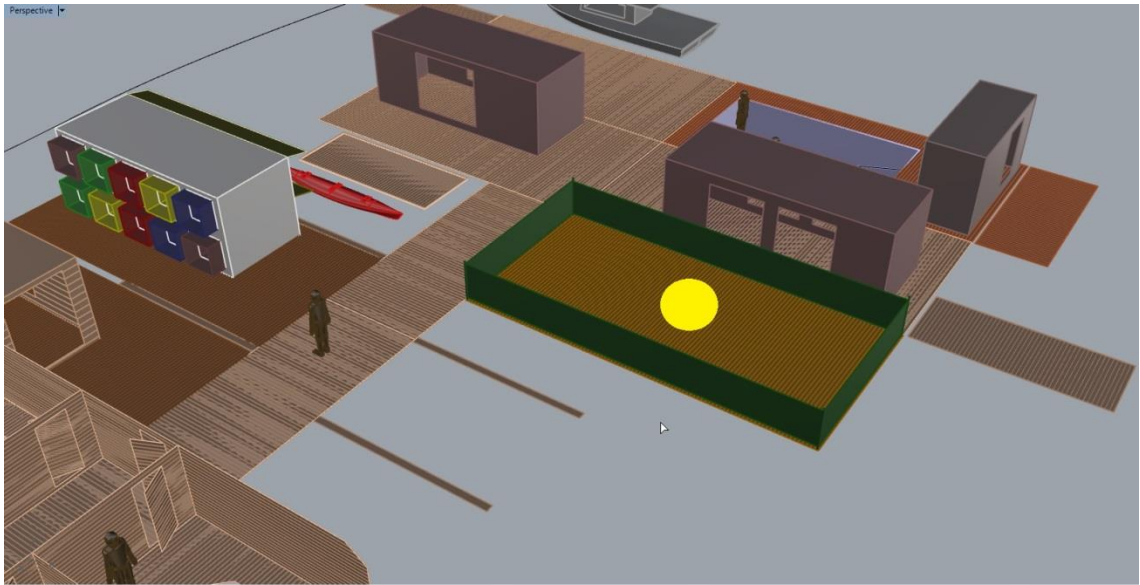Tourists, boaters and visitors in the archipelago also mentioned the growing problem with dogs running free on the Islands. A floating dog agility platform could solve the problem of dogs running wild in the nature (Figure 18, yellow dot) interrupting a sensitive fauna. As these dog-resting areas can be found in every city the same solutions and rules would apply here.

Conclusions

There is a global trend to develop floating concepts. One of the reasons is the lack of space and overpriced property on shorelines and rivers. However, building floating constructions in Finland brings new and different challenges as our seas and lakes freezes over in winter times.

If left in the archipelago in winter it has to withstand thick ice and winter storms that moves the ice. So developing an easily detachable modular construction in the size of some 4 meters wide and 10 meters long would be a good solution. The modules should be easy to transport and attach to the shoreline. The Smart Quay modules should be design to be connectable in any order according to need at different locations. At times not needed the quay modules could be dismantled and transported by e.g. Keep the Archipelago Tidy Association service ship to a safe storage place on shore.

The services represented in this movable modular Smart Quay concept are only some of the potential integrable services that are developable.

10.2 Customer journey of personas

The young middle age family Pekka, 38 and Mirva, 36 with the children Pia, age 12 and Timo, age 10 were planning a weekend together at the Smart Quay at Hirvensalo Island located in the Turku Archipelago with Pekkas parents Karin, age 66 and Eero, age 68. (Pictures: https://openclipart.org/)

Pekka with family was to arrive to the Smart Quay by own boat while Pekkas parents who are pensioners would first play golf at Aura Golf on Ruissalo Island and then meet Pekka and the family at the Smart Quay at Hirvensalo Island.

As Pekka with family wanted to sleep in the family cabin boat, they decide that Pekka would reserve the harbor docking module for two nights for his boat. Pekka

would also reserve a floating houseboat for his parents, as they did not want to sleep in a tent and wanted their own privacy.

Pekkas parents Karin and Eero was to book a taxi boat from Ruissalo Island were they had planned to be on Friday and arrive in the evening to the Smart Quay at Hirvensalo Island.

They decided to order fresh fish and homemade bread from a catering service provider working in the archipelago. They booked him to come to the Smart Quay and prepare a meal with all of them on Friday evening.

Pekka and Mirva decided to rent a SUP kayak on Saturday for the children Pia and Timo and to be sure, it would be available on Saturday they made the reservation well ahead.

Pekkas parents wanted to fish on Saturday so Pekka promised to reserve fishing gear and a rowing boat in forehand.

On Sunday Pekka and Mirva was to visit the marine museum in Turku with the family.

Pekkas parents were to continue their island hopping as they had reserved bicycles at Ålö Camping on Ålön Island on next Monday. (Pictures: https://openclipart.org/)

10.3 Service blueprint

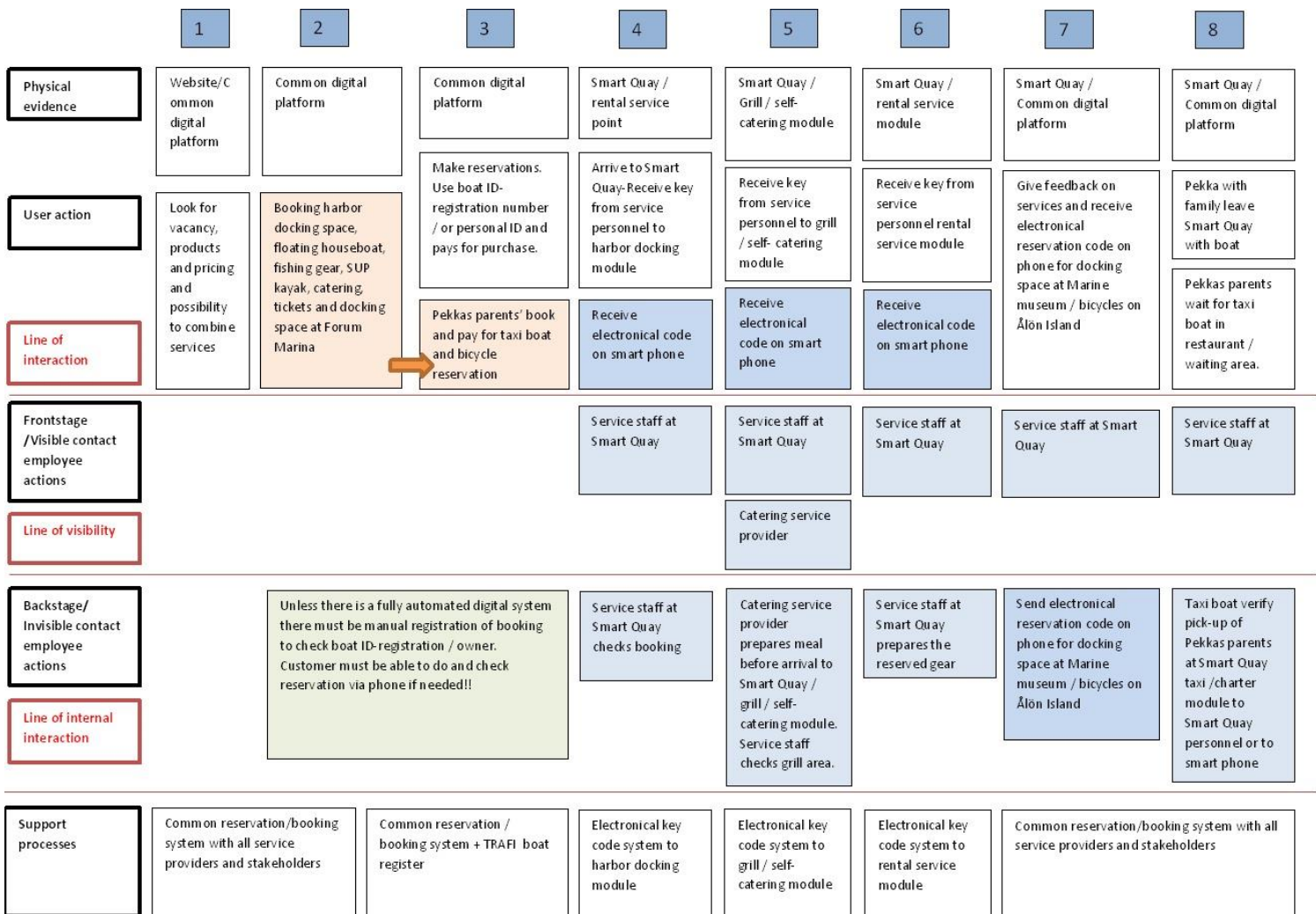|	1	2	3	4	5	6	7	8
Physical evidence	Website/Common digital platform	Common digital platform	Common digital platform	Smart Quay / rental service point	Smart Quay / Grill / self-catering module	Smart Quay / rental service module	Smart Quay / Common digital platform	Smart Quay / Common digital platform
User action (Line of interaction)	Look for vacancy, products and pricing and possibility to combine services	Booking harbor docking space, floating houseboat, fishing gear, SUP kayak, catering, tickets and docking space at Forum Marina	Make reservations. Use boat ID-registration number / or personal ID and pays for purchase. / Pekkas parents' book and pay for taxi boat and bicycle reservation	Arrive to Smart Quay-Receive key from service personnel to harbor docking module / Receive electronical code on smart phone	Receive key from service personnel to grill / self-catering module / Receive electronical code on smart phone	Receive key from service personnel rental service module / Receive electronical code on smart phone	Give feedback on services and receive electronical reservation code on phone for docking space at Marine museum / bicycles on Ålön Island	Pekka with family leave Smart Quay with boat / Pekkas parents wait for taxi boat in restaurant / waiting area.
Frontstage /Visible contact employee actions (Line of visibility)				Service staff at Smart Quay	Service staff at Smart Quay / Catering service provider	Service staff at Smart Quay	Service staff at Smart Quay	Service staff at Smart Quay
Backstage/Invisible contact employee actions (Line of internal interaction)		Unless there is a fully automated digital system there must be manual registration of booking to check boat ID-registration / owner. Customer must be able to do and check reservation via phone if needed!!		Service staff at Smart Quay checks booking	Catering service provider prepares meal before arrival to Smart Quay / grill / self-catering module. Service staff checks grill area.	Service staff at Smart Quay prepares the reserved gear	Send electronical reservation code on phone for docking space at Marine museum / bicycles on Ålön Island	Taxi boat verify pick-up of Pekkas parents at Smart Quay taxi /charter module to Smart Quay personnel or to smart phone
Support processes	Common reservation/booking system with all service providers and stakeholders	Common reservation / booking system + TRAFI boat register		Electronical key code system to harbor docking module	Electronical key code system to grill / self-catering module	Electronical key code system to rental service module	Common reservation/booking system with all service providers and stakeholders	

Figure 19 Service blueprint

Service touchpoints

Step 1-3, Pre-Service.

The conclusion from the research was that the interface of the common digital platform must be very easy to understand and use. All price lists, timetables and information on services between customers, service providers and stakeholders must be very easy to use and understand. This will prevent customers from calling and checking in person if the reservation "did go through". A good common digital platform would most certainly reduce the need for number of staff maintaining the services at the Smart Quays.

Although there should be a possibility to call if special needs, questions occur or there is a malfunction at an interface/digital platform at a service point.

A possibility to make the reservation system more reliable is to demand the customer to verify his or her identity via banking codes and by demanding the customer to verify that he or she has read all instructions and safety regulations and understood them before they can proceed with the reservations. When booking e.g. harbor docking space the customer could also in addition use the boat identification number. All boats over five meters and with an engine, over 20 horsepower must be registered in Finland in a register maintained by TRAFI-Finnish Transport Safety Agency. This would make it easy to make reservation with boat ID and to check who owns the boat in case of problems. (Customer has not returned rented products in time or in insurance cases etc.).

Step 4-6, Service

The better the common digital platform works the less the need for staff on the actual Smart Quay. The ideal would be that the customer receives electronical key codes and all information to his /her smartphone needed to open gates and receive rented gear etc. The customer would find all information needed online and would take care of everything without outside help. Although the reality is that, the Smart Quay cannot function very reliably without any staff present. Such as restaurant staff, staff cleaning and checking facilities after customer used the service, boat service and staff at the renting facility checking that everything runs smoothly.

As in this case, when booking outside service providers like catering there need to be some sort of verification that the event was done properly and all safety issues were followed. At the interview with Turku Guest Harbor it was mentioned that often "city boaters" are not the best "captains" when it comes to handle a boat. So to prevent collisions with other boaters and collisions to the actual Smart Quay a service person stationed at the Smart Quay is highly needed.

Step 7-8, Post-Service

If the customer has made multiple bookings in advance, the common digital platform would send him e.g. electronic tickets, key codes, verification on payments and reminder messages to his smart phone. The common digital platform would also function as a platform for feedback on received services. This feedback would be online and for all to see so that the next customer knows if the service was good or bad. This will most certainly force the service providers and connected stakeholders to maintain a high standard on their services. When the customer is leaving, the only task the Smart Quay staff would do is check that the customer have left the facilities in the condition as agreed.

A physical person is highly needed at the quay especially in high season. It is common that when the waiting que is long to the short-term docking space or to the wastewater service point there is always someone that tries to "sneak in", even though it is not his turn. The best way to prevent this is by having a person at the Smart Quay that checks that the next boat that docks have a valid reservation. Alternatively, to be able to "open" the docking space or start the septic wastewater pump an active digital code needs to be inserted to the system. A big issue here is that what if the customer does not arrive in time or at all. At what stage and how does the next in line, get permission to dock or to enter e.g. wastewater station?

11 CONCLUSION AND EVALUATION

CONCLUSION

There is a global trend developing floating concepts. Good examples of this are the massive floating buildings and terraces built in Dubai by Admares Ltd. However, long before starting to develop a Smart Quay the first step would be to verify and define the actual needs by contacting small service providers and businesses functioning in the archipelago. In addition, decisions should be made on the construction, financing and project management. Looking at the concept as a whole, it is a very costly project for only one stakeholder to develop and finance so there is certainly a need to diversify the costs. One solution model would be for the stakeholders such as the City of Turku with other municipalities to develop and finance the physical Smart Quays. They would also provide a digital application including maps (www.mapitare.fi) for users such as tourist, locals, people living in the archipelago and service providers to download and use free of charge.

The revenue back to the investing stakeholders would mainly come from rental fees and payments from the service providers and users using the services provided at the Smart Quay. For example, Turku Guest Harbor could rent and manage short-term docking space service. Likewise, Keep the Archipelago Tidy Association could rent and manage the waste management service and the local boat rental business, LÅNAT.fi could rent and manage the houseboat service. Similarly another business could rent and manage the restaurant and coffee shop service. By privatizing the Smart Quay businesses, the main stakeholders such as the City of Turku with other municipalities would gain interest on the invested capital and small private businesses and service providers would have a better possibility to offer their services in the archipelago. If there were several Smart Quays at different locations in the archipelago, it would create a need for a network of service providers and businesses in the archipelago. This would most certainly create jobs and business opportunities for inhabitants and people living in the archipelago.

As the aim of this Master's thesis was to create a Smart Quay concept, on how and what possible services could be created and implemented at the physical Smart Quay there was a need to obtain insights and information on which the actual users of the Smart Quay could be. To gain information and insights related to boating, tourism and

transport service providers in Turku and Turku archipelago a lot of research was conducted. The research methods used in this thesis were document analyzing from which important information was gained, previous research and studies on what Turku inhabitants think of new ferry connection in the region, what they expect from the service and what other services they would like to see at a Smart Quay. In addition, the research material also revealed insights on what services tourists, boaters, service providers and stakeholders in the archipelago would want to see at a Smart Quay.

Interviews of possible service providers and other stakeholders gave an understanding on what kind of services would benefit them the most in value and business possibilities. Workshops with stakeholders and brainstorming sessions with possible users gave new ideas of services that might be of value for future users and how these services could be connected to the Smart Quay. As the Smart Quay is a new phenomenon that actually does not exist anywhere yet, benchmarking revealed what kind of products and services related to the smart Quay exist elsewhere.

As the whole work was conducted on a very general basis, it was challenging to explain how the actual service could function so a General Service map was made to visualize the path of services at the physical Smart Quay. For the actual designing of the services, personas were created based on the research results and a customer journey functioning as a storyboard was made, showing the possible service journey. To make it easier to understand how and what actual services could be connected to the Smart Quay 10 different 3D-drawings were made. Visualizing the physical concept modules makes it much easier to understand how the Smart Quay could function in reality.

EVALUATION

Does the thesis address the research questions: What services are developable for boaters at the Smart Quay and what services supporting inhabitants, service providers and tourists in Turku archipelago are developable in the Smart Quay concept? The services presented in this work are only a few of the potential developable services as there are no limits on what services can be integrated into the Smart Quay. As this thesis only gives a perspective of the Smart Quay and integrable services on a general level, the next step would be to look closer on the different services connected to the Smart Quay modules and start designing the services and modules in more detail.

This was an exciting and interesting subject to work on as there is now a growing interest towards floating concepts and Smart Quays. Conducting this thesis gave a lot of information and insights on the subject and learning the methods and tools used in service design will most certainly complement the skills gained as an industrial designer. Having a background in the boat industry, the subject of this thesis, Services supporting users and service providers at a Smart Quay will surely be of professional value in the future.

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13 APPENDICES

Turku UAS questionnaire

1. Oletko käyttänyt nykyistä Föri-lauttaa?

ei: 9.64%

kyllä: 90.36%
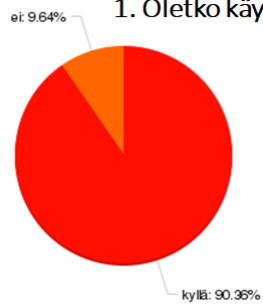
2. Koetko uuden lautan itsellesi tarpeelliseksi?

ei: 47.59%

kyllä: 52.41%

ei: 20.12%

kyllä: 79.88%
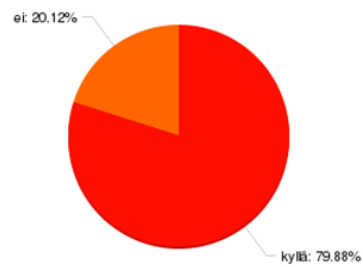
3. Koetko uuden lautan tarpeelliseksi alueen ihmisille?
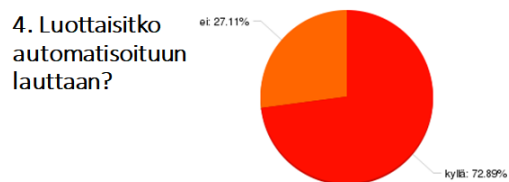
4. Luottaisitko automatisoituun lauttaan?

ei: 27.11%

kyllä: 72.89%

5. Paljonko olisit valmis maksamaan lautan käytöstä?

-Föli
-Vuosimaksu/edullinen kertamaksu
-Ilmainen (turistit)

Muuta: 10.54%

1-4 €: 34.34%

En yhtään: 55.12%
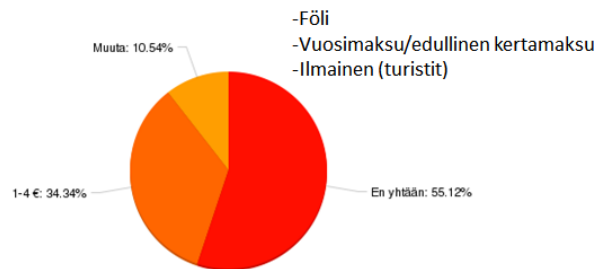
6. Koetko lautan ympäristöystävällisyyden tärkeäksi?

Ei tärkeää: 7.53%

En osaa sanoa: 14.76%

Tärkeää: 77.71%

ei: 27.05%

kyllä: 72.95%
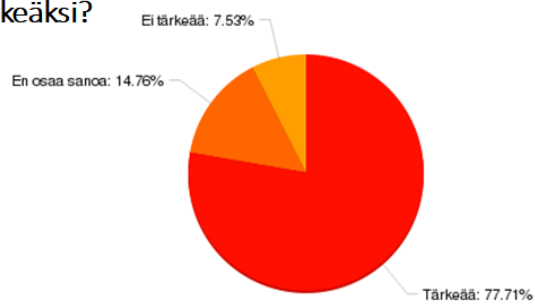
7. Kokisitko mahdollisen lauttayhteyden Ruissaloon ja Lauttarantaan tarpeelliseksi?
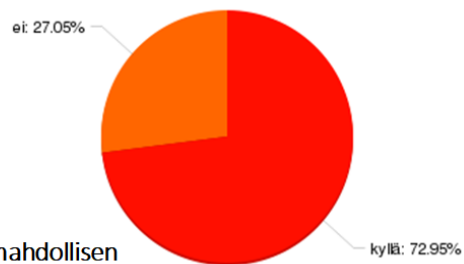
8. Haluaisitko nähdä lautan yhteydessä muita palveluita?

Ravintola

Sähköpotkulautoja

Kaupunkipyöriä

Ei mitään

Muuta

0   50   100   150   200
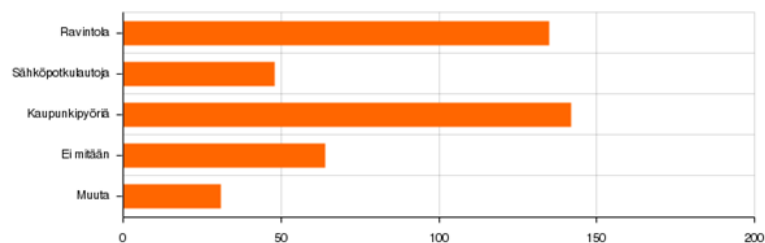
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-Televisio
-Kioski
-USB-laturipiste
-Kahvio
-Musiikkia
-Anniskelua
-Infotauluja (digitaalisia)

9. Koetko vesiliikenteen realistiseksi joukkoliikennevaihtoehdoksi? Millaisia ehdotuksia sinulla on Turun alueen vesiliikenteen kehittämiseksi?

-Vastaajia oli n.330.

-90% kokee realistiseksi vaihtoehdoksi.

-Lautta olisi hyödyllinen suunnitellussa paikassa

-Mainittiin myös pitkittäinen vesiliikenne jokea pitkin.

-Reittitoive Ruissaloon oli suosittu.

-Rajoittavia tekijöitä talvi, vesisade ja hitaus.
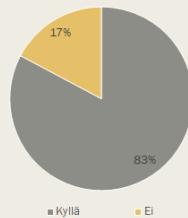
Turku UAS Interview on street

Vastanneita: 58
Kyselyssä kuultiin Turkulaisia.
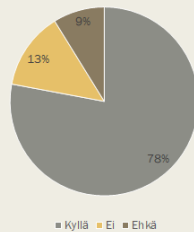
Kyselyn suorittivat Turun AMK:n
projektipaja 11 opiskelijat.
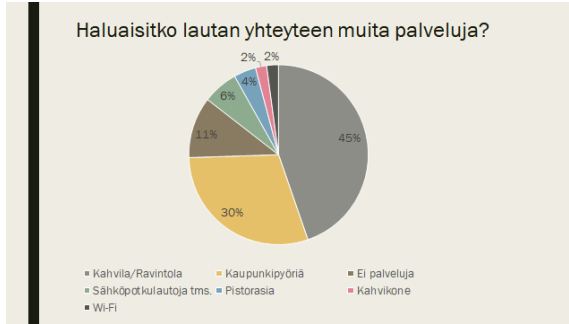
Aiheena Älykäs kaupunkivesiliikenne.

Oletko käyttänyt nykyistä Föri-lauttaa?

- Lautta koettiin tarpeelliseksi alueen ihmisille.
- Pelkän joen ylityksestä ei oltu valmiita maksamaan, mutta pidemmistä matkoista, esimerkiksi Ruissaloon ja Lauttasaareen kylläkin.
- Linkitys Föli-korttiin olisi hyvä asia.
- N. puolet pitivät vesiliikennettä realistisena vaihtoehtona bussiliikenteelle ja puolet eivät tai eivät osanneet sanoa.
- Sähköinen lautta koettiin ympäristöystävällisenä ja siitä pidettiin
- Ihmiset olivat kiinnostuneita lauttareiteistä pidemmille matkoille, esim. Ruissaloon etenkin kesäisin

Luottaisitko automatisoituun lauttaan?

Haluaisitko lautan yhteyteen muita palveluja?

Legend:
- Kahvila/Ravintola
- Kaupunkipyöriä
- Ei palveluja
- Sähköpotkulautoja tms.
- Pistorasia
- Kahvikone
- Wi-Fi

(45%, 30%, 11%, 6%, 4%, 2%, 2%)

Vapaa sana

- Moni koki pelkän joen ylityksen turhana.
- Hieno ajatus, toive ympärivuotisesta toiminnasta.
- Moni mainitsi Ruisrockin ja sen, että sinne kulkeutumisesta aiheutuva ruuhka voisi rauhoittua, jos sinne pääsisi myös lautalla.
- Hyvä tapa turisteille tutustua Turkuun.
- Ruissalo on luonnonsuojelualuetta ja koettiin, että lautan ansiosta autoilu sinne saattaisi vähentyä, mikä olisi hyvä luonnonsuojelun kannalta. Lautta olisi lähtökohtaisesti ympäristöystävällisempi kuin auto.
- Aikataulut olisi suunniteltava hyvin ja infoa niistä myös lautalle.
- Lautan turvallisuus huoletti muutamaa ihmistä.
- Pari henkilöä piti hanketta täysin turhana.
- Hyvä lisä kulkemiseen.

Moni ei kokenut joen ylitystä itselleen tarpeelliseksi, mutta Ruissaloon kuljetus kiinnosti todella paljon. Älyförin käytöstä oltiin valmiita maksamaan, jos se kulkisi Ruissaloon. Lautan ympäristöystävällisyys koettiin positiivisena asiana ja lautan oheen toivottiin myös muita palveluja. Moni myös piti vesiliikennettä realistisena vaihtoehtona bussiliikenteelle. Ylipäänsä hanke koettiin kannattavana ja kiinnostavana (edellyttäen lautan kulkua Ruissaloon).

Oletko hankkeen puolesta vai vastaan?

Legend:
- Puolesta (88%)
- Vastaan (12%)