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Developing sustainable mobility services at Ylläs resort

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This thesis presents the development plan for sustainable and transport mobility for Ylläs resort. The objective of the thesis was to produce a development plan for Ylläs region that worked towards fulfilling the user requirements for sustainable commuting in Ylläs and supports the sustainable mobility strategy for Ylläs.

The current state of the sustainable mobility at Ylläs was analysed using the user survey for sustainable mobility executed in 2017. In addition, the views and previous smart mobility pilots of Ylläs Travel Association were used in the thesis. The conceptual framework focused on service design and collaborative service design. Three benchmark implementations in Austria, Germany and Italy were reviewed to generate ideas for the Ylläs development plan.

This study resulted in the development plan for Ylläs with 12 prioritized development steps. These highlight the importance of selecting the sustainable mobility programme driver with a sufficient authority to involve the local service providers, national transport companies and Ylläs stakeholders to put in place a marketing programme that supports the sustainable transport mobility and creation of new services. It is recommended to create service offerings, which are based on the current and future customer segments for Ylläs and include end-to-end sustainable transport offering to travel from home to destination point at Ylläs and back home.

Keywords	sustainable mobility, service design, development plan, smart mobility, sustainable transport strategy

Contents

1. Introduction

Mobility services for work, school and other everyday commuting are arising in Finland and in other countries. The development has hype status but little attention has until now been paid to commercialization issues and understanding the user drivers for successful business modeling and how the emerging smart traffic choices will influence user preferences and behavior. The work around this thesis started with the general aim to analyse user perceptions in pilot implementations and based on the findings, suggest a business model that can increase usage of mobility services and contribute to creating a change in people's mobility choices. After more in depth study of the area the thesis objective was defined as to create Ylläs development plan for sustainable transport mobility supporting the creation of new services that support the Ylläs easy accessibility strategy.

Ylläs is a popular skiing and sporting resort in the Finnish context but the accessibility to the nature sights and to the area as such is a challenge and creates obstacles in expanding the visit season also outside the winter season and attracting to Ylläs new types of national and international customer groups. Mobility services for public and shared transportation are seen as an enabler for attracting younger technology-interested visitors and a way to expand the service portfolio for new areas.

One of the improvement areas, which has been highlighted in the Ylläs Travel Association customer satisfaction survey (Ylläksen matkailukeskus, 2016) is the unsatisfactory public transportation service within Ylläs region. Commuting with local busses has until very recently been practically only possible to places near the Äkäslompolo skiing resort. Busses have been operating only once to couple times a day in Ylläsjärvi side of the fell and in the both ends of the bus transportation network. The bus transportation outside the skiing holiday season has been at its minimum and left the local inhabitants with very few bus transportation services during other times of the year (Interview Ylläs Express, 2017).

The accommodation points, sport services and other service points have a long distance to each other and there are only a few alternatives to using an own car from moving from location A to B. The bus service level and frequency is starting to improve with the improvements to bus network made in late 2017. Much work remains however (Interview

Ylläs Express, 2017).

The difficulty for visitors and inhabitants to travel to the unique sites at Ylläs with public transportation and the desire of Ylläs Travel Association and other local decision makers to take the Ylläs brand to the next level, influenced the Finnish Ministry of Communications decision to choose Ylläs to Value Adding Mobility Services (VAMOS) program (VAMOS, 2016). VAMOS objective was to create new services and growth in the region by means of mobility, mobile applications and sustainable development.

1.1. Business challenge

Aurora is a public test ecosystem for intelligent and automatic transport created for arctic conditions in Fell Lapland and consists of sub-areas traffic automation, digital traffic infrastructure, intelligent management of road ownership and mobility-as-a-service (MaaS). Aurora is supervised by the Finnish Transport Agency (Aurora, 2017). Ylläs Around was one of the MaaS pilot solutions in the Aurora MaaS program and co-financed by the Finnish Ministry of Communications and private actors. Ylläs Around was further developed and launched under the name Ylläs Tiketti, where application usability for route planning and mobile payments had been improved.

The mobile application piloting done 2015-2017 did not generate the expected increase in the mobility service usage, creation of new services or increase in visitor amounts.
Some reasons for the low success had to do with usability issues with the Ylläs Around mobile application. These challenges have been analysed in the Ylläs Around final report (Ylläs Around Vaikuttavuustutkimus, 2017) and are not discussed in this thesis more than serving as input to Ylläs area recommendation and roadmap. The recommendation and roadmap are discussed more in detail in the chapter 1.4 Objective and Scope.

Some other reasons for low level of usage depended on the low frequency of bus services between the Äkäslompolo and Ylläsjärvi fells and even decreasing frequency when going to the outer areas of Karila and Katarova. These factors were hindering higher usage degree of mobile route planning and mobile payment application. Service offering at Ylläs, the service accessibility without an own car and differences in mindset and development scope between the local actors are other factors, which had been limiting the success.

The user survey for Ylläs mobility services (Ylläksen liikkumispalveluiden kehittäminen, 2017) ranked the expansion of bus network, increasing the route frequency and adding services that correlate with increased usage of busses as the most important enablers for sustainable mobility.
The Ylläs development plan contains decisions and activities to improve the bus service, get strategic visibility and common intent for smart mobility and accessibility at Ylläs and to create a service plan, which complements Ylläs core strengths, the clean nature and experiences connected to that.

1.2. Objective and Scope

The scope of this thesis is to produce a recommendation and a roadmap for long term development in Ylläs region that will increase the usage of sustainable mobility services based on public transportation and shared services, and give suggestions to new services in addition to sustainable transport mobility improvements. The thesis objective is to produce a development plan for Ylläs region that works towards fulfilling the user requirements for sustainable commuting in Ylläs and supports the Ylläs sustainable mobility strategy.

1.3. Ylläs region as the case organization

Ylläs attractivity and brand is in addition to Kolari and Kittilä municipalities taken care of by Ylläs Travel Association and Visit Ylläs /Ylläs Marketing Ltd.

Ylläs Travel Association is the main driver of transport and sustainable mobility at Ylläs. The association has been the main actor in the Aurora program and other initiatives with target to improve the local transport possibilities with mobility solutions. Ylläs Travel Association is a registered association and consists of 170 members. The primary task for Ylläs Travel Association is to maintain the skiing tracks and outdoor routes and develop the Ylläs internal transport routes. Ylläs Travel Association finances its' operations with membership fees and sales of their maps and other products as well as with voluntary fees for skiing slope usage (Ylläksen Matkailuyhdistys, 2018).

Visit Ylläs/Ylläs Marketing Ltd is the owner of Ylläs marketing communication and marketing strategy. The company objective is to expand the knowledge of Ylläs area, Ylläs events and Ylläs brand with digital and traditional marketing. Net sales of Ylläs Marketing Ltd increased considerably in the fiscal year 2016-2017 but the company reported a loss and considerably higher costs than for previous years (Ylläs Marketing Ltd, 2018). Visit Ylläs/Ylläs Marketing Ltd has same individuals in their board of directors as for the Ylläksen Matkailu Oy (Ylläksen Matkailu Oy, 2018), which provides holiday home services at and around the fells.
Ylläs competitive strategy is phrased as Ylläs naturally number one (Ylläs web page, 2018) and this will be reflected in the development plan of this thesis.

1.4. Key Terms

Mobility services are defined as travelling from one to another nearby location with public or shared transportation services where the route information can be accessed and payment done with a mobile handset by using a mobile app or a similar solution.

Smart traffic services are services where the mobile and ICT technology makes available data that can be collected and shared to enrich user's service experience.

MaaS stands for **Mobility as a Service** and is a common name for connecting all available transport offerings to one place, from which they can be accessed with a mobile device.

1.5. Thesis Outline

The results of user survey done in May 2017 was used as input to the wanted position for the bus service in Ylläs.

Qualitative interviews were held with Ylläs Express Oy, V. Rundgren Ky and Ylläs travel association to validate the wanted position and understand the key conditions for improving the transportation and value added services at Ylläs.

Supply chain and logistics development as well as sustainable mobility literature and articles form the basis for conceptual framework for the service strategy and service supply plan.

Existing literature on mobility services internationally was reviewed to gain guidance on successful experiences and mobility services models.
The draft development plan and roadmap will be discussed with Ylläs Travel Association and Ylläs Marketing Ltd to get valuable feedback and be able to improve the model to fit its' purpose.

1.6. Thesis process

This subchapter introduces the research design for my thesis.

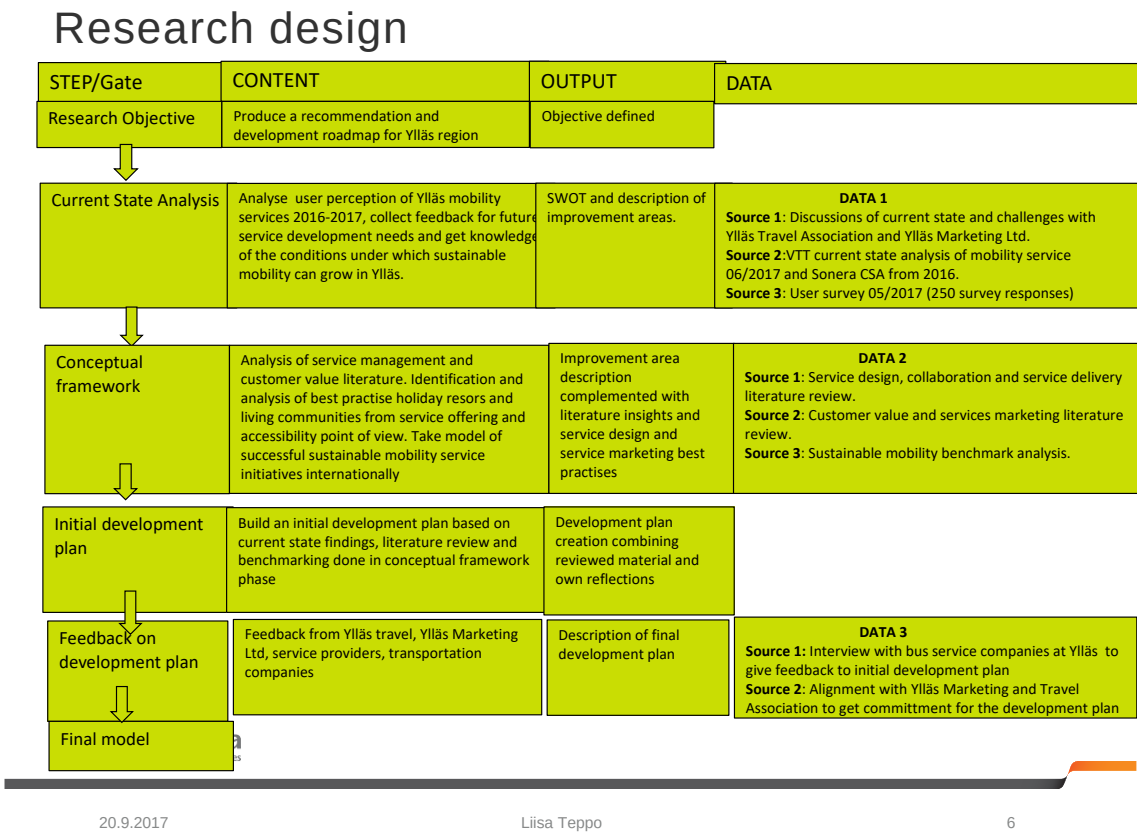


Table 1.6

The objective for my research study is to produce a development plan for Ylläs region. I used the survey results and interviews conducted during 2017 to analyse the current

state and create the development actions for the future. I look into best practise experiences from other holiday resorts and study service design and service marketing literature and articles to complement my plan. I seek feedback from the local actors and highlight how the development plan takes into account to the challenges and issues seen by the service operator, Ylläs Travel Associaton, and the owner of the Ylläs brand and marketing, Ylläs Marketing Ltd.

Acquiring knowledge about the challenges in the current state are a precondition for identifying the type of the problem. The mobility challenges at Ylläs are connected with the accessibility. The low accessibility for Ylläs is in the same time the strength and the weakness of the resort. There are not many places in the world who in a similar way can show a clean nature, beautiful fells with no other people taking pieces of your unique experience. Building accommodation near the unique sights would destroy part of the unique competitiveness at Ylläs so the reference objects must be chosen with care to be able to offer smooth customer experiences and sustainable mobility services that are perceived as valuable by the users.

The conceptual framework can successfully only be done after the current state analysis. The alignment with Ylläs actors is essential so that the region sees it as a valuable tool in their development and that the thesis can contribute to a positive development within the region.

2. Method and Material

This chapter discusses the research approach and introduces the research design for the thesis.

2.1. Data collection and analysis

The Research approach in this study is a mix of quantitative and qualitative research. I used the exploratory-sequential approach (Edmonds & Kennedy, 2013, p. 167), where the pre-exploration phase consisted of discussions with Ylläs Travel Association and Ylläs Marketing Ltd (data 1, source 1) as well as acquiring knowledge of the first pilot project with the help of VTT final report (data 1, source 2) and can be seen as the pre-qualitative analysis. The survey conducted in May 2017 represents the quantitative research when it comes to numerical questions and results in the performed user survey. The large portion of research concentrates however on the qualititative research, using open survey questions and semi-structured interviews to try to understand the reasons for why the mobility pilots reached only limited success at Ylläs and what are the users' expectations for the future.

The quantitative survey measurements on amount of users who had downloaded the Ylläs Around application and those who used the mobile app to pay for the bus fare were necessary information to get knowledge of the user baseline and start understanding why the figures were as low as they were.
Acquiring knowledge about the bus network, the bus operators' views on current challenges and realistic development possibilities, user views on the current service and their expectations for the future development, and the views and challenges raised by Ylläs Marketing Ltd and Ylläs Travel Association were only possible with means of qualitative research. I made the choice to apply semi-structured interviews by providing topics and areas to the persons interviewed but giving a high level of freedom to steer the interview based on how the discussion developed and where the main challenges and possibilities seemed to arise.

The exploratory-sequential approach was useful for the research problem as it was vital to gather knowledge and assumptions before designing the survey and conducting the qualitative analysis. It was critical to be able to formulate the right kind of questions to

build up hypothesis that could be further explored and discussed in the qualitative interviewing phase. Edmonds & Kennedy (2013, p. 167) argue that the two-phase sequential approach is especially useful when *the researcher is interested in developing a new instrument*. In this case the instrument can be seen as the service model, the applicability of which is tested with the local service providers, Ylläs Travel Association and Ylläs Marketing Ltd in order to land at a development plan for Ylläs region that brings value and can be used as a guideline for further development in the region. In my research approach I utilize both the instrument-development and treatment-development design (Edmonds & Kennedy, 2013, p. 168) and here the findings from quantitative analysis steer the development plan creation adjusted with views of what is realistic in the qualitative interviewing phase.

Data collection rounds 1-3 are presented in the table 2.1 Data collection.

Data Round	Data Type	Data Source	Date & Approach	Recording	Purpose/ Focus
Data 1 Current State Analysis	Online meetings	Ylläs Travel Association, operational director and mobility service specialist Ylläs Marketing Ltd, Marketing director	Several occasions between March 2017-October 2017 consisting of online meetings, telephone conferences, e-mail	Notes shared and reviewed by Ylläs Travel Association and Ylläs Marketing Ltd.	Build basic knowledge about Ylläs mobility strategy, marketing strategy, experiences with the Ylläs Around mobility service pilots 2015-2017.
	VTT current state analysis of mobility service 06/2017 and Sonera Current State Analysis (CSA) 2016	Final reports 250 user responses in user survey managed by Survey Monkey tool	May 2017-June 2017		Acquire detailed knowledge in form of SWOT analysis of the experiences with Ylläs Around mobility service pilots. Get concrete user feedback and ideas for future development
	User survey for sustainable mobility at Ylläs 05/2017	User answers to the survey.	May 2017 and the request to answer to survey was sent through Ylläs Travel Association and Ylläs Marketing Ltd traditional and online channels.	Survey responses in Survey Monkey tool and in a summary document in excel format.	Get user responses and suggestions for transport mobility and mobility services development.

Data Round	Data Type	Data Source	Date & Approach	Recording	Purpose/ Focus
Data 2 Conceptual framework	Literature review	Service design, service collaboration and service delivery literature	Selection and review of service literature during Q1-Q3 in 2018.	Chosen literature referenced according to Harvard style referencing.	Find appropriate service design modelling and build an understanding for service design and service delivery as a whole
	Literature review	Customer value and service marketing literature	Selection and review of service literature during Q1-Q3 in 2018.	Chosen literature referenced according to Harvard style referencing.	Gather insight into customer value buildup and service marketing to take use of for the development plan creation.

	Benchmarking analysis from sustainable mobility analysis within Europe.	Sustainable mobility implementation reviews in existing literature and articles.	Selection of good benchmarking cases from available sustainable mobility literature and articles in Q3 2018.	Chosen case reviews referenced according to Harvard style referencing.	Find experiences and ideas from sustainable mobility implementations which could be successful also for Ylläs sustainable mobility plan.

Data Round	**Data Type**	**Data Source**	**Date & Approach**	**Recording**	**Purpose/ Focus**
Data 3 Initial development plan	Discussion 1	V. Rundgren	24.11.2017 Online interview	MoM validated with the interviewed person	Get feedback on the initial development plan
	Discussion 2	Ylläs Express	12.10.2017 Online interview	MoM validated with the interviewed person	Get feedback on the initial development plan
Data 3 Feedback on development plan	Discussion 1	Ylläs Travel Association	16.5.2019 Online interview	MoM	Present and get feedback on the deveopment plan
	Ylläs Marketing Ltd	Ylläs Marketing Ltd	16.5.2019	MoM	Present and get feedback on the deveopment plan

Table 2.1 Data collection

2.1.1. Data Collection 1

Data collection 1 refers to current state analysis.

I started the data collection with discussions of the current state and challenges perceived by Ylläs Travel Association and Ylläs Marketing Ltd. The discussions were held with the marketing director at Ylläs Marketing Ltd as well as with Ylläs Travel Association director and mobility service specialist to understand the organizations, their drivers and their experiences with mobility service initiatives in the past at Ylläs.

In parallel I studied the Sonera mobility service Ylläs Around analysis 2015-2016 and the VTT current state analysis of the mobility service Ylläs Around from the pilot period 2016-2017. The reports studied were the final reports of each pilot period and contained the detailed analysis of pilot experiences and recommendations for next steps from the mobility solution and technology point of view. These steps formed the preliminary current state analysis to use secondary information to do the primary information survey.
As last part of the current state analysis I conducted a user survey for mobile application users, local inhabitants and other people familiar with Ylläs and the Ylläs Around mobile application using Survey Monkey as a survey tool.

The user survey data was and is accessible from the Survey Monkey tool and I also compiled a summary report taking use of Survey Monkey functionality. The initial discussions were documented in notes that were shared and commented by all parties in the discussion.

2.1.2. Data collection 2

Data collection 2 is about gathering existing knowledge to create the conceptual framework.

The theoretical analysis is based on literature review and benchmarking analysis within service design, service provider collaboration and service delivery. Another key analysis area in the literature review is done within customer value and services marketing. In the third step the literature analysis is complemented with benchmarking analysis where sustainable mobility benchmarks are chosen to evaluate the experiences from sustainably mobility implementations in reference countries to bring additional insights to the Ylläs development plan.

2.1.3. Data collection 3

Data collection 3 is the information gathering phase to get feedback on Ylläs development plan.

The input from the current state analysis as well as the outcome from conceptual framework analysis form the basis for the development plan. In the conceptual framework I intended to in addition to service modelling and service marketing practices, analyse holiday resorts with comparable service offerings and service accessibility. I planned to take model of successful sustainable mobility initiatives abroad. My main focus were the sustainable mobility implementations in Europe to align with the Lapland 2020 business strategy being the leading sustainable tourism destination in Europe (Lapland tourism development and strategy, 2013). The development plan was planned to be reviewed with the bus operators and in the next step with Ylläs travel association and Ylläs marketing Ltd, which are the receivers of the Ylläs development plan.

The bus service was in survey respondent views in the center of sustainable transport mobility. My plan was to conduct interviews with the bus transportation companies V. Rundgren and Ylläs Express, which take care of the majority of transports at Ylläs. The chosen interview persons were the operational directors of respective companies with

several and tens of years of track record in the business. From the author point of view, they possessed the knowledge to evaluate what is realistic to implement and what can be in the wish list for the future years. Combining user expectations with bus service business insights increased in my view the possibilities for the thesis findings to be implemented and found useful.

The interviews were conducted as semi-structured interviews, and the handouts included questions such as

- which of the improvements voted highest in the user survey can be realistic to implement (shuttle bus every 20 minutes, free busses within Ylläs, place for bicycles, skiing equipment in busses, frequent connections from cottages to main shopping places, frequent connections from slopes to shopping)?
- how should the future bus network look like in order to provide equal possibilities for commuting from the both villages Ylläsjärvi and Äkäslompolo?
- how could the local bus routes be developed to promote easier shopping activities and visits in pubs and restaurant in evenings?

2.2. Validity and Reliability

Semi-structured interviews are in the literature (Saunders, Lewis, Thornhill, 2016, p. 400) seen as increasing the validity if the interview questions are designed carefully and the interviewer's understanding of question responses is checked with discussion from various viewpoints around the theme in question. In my interviews, I chose a limited amount of subjects, provided summary of interview discussion themes in advance and I also checked correct understanding of responses with the interviewee after the discussion.

The reliability with semi-structured interviews is limited to the period when the interview was conducted as the situation with the interview data might change with time (Saunders, Lewis, Thornhill, 2016, p. 398-399). In my research the customer expectation data was a result of quantitative data survey. The results of the data survey were discussed with the interviewees to take advantage of the interviewee's long experience of the bus service provider business in order to interpret the quantitative data in a correct

way and bring business realism to the proposal to be developed further on in the process.

3. Current State Analysis

In this chapter I will analyse Ylläs current service offering and present the main findings learnt in Ylläs mobility service user survey, which has been used as the main source for current state from the customer point of view.

3.1 Ylläs service offering and sustainable mobility

Ylläs service offering consists of

- skiing, skirenting and ski lift activities and markets itself as the biggest downhill skiing centre in Finland
- guide and program services like eagle Safari, ice swimming and other guided trips in the nature
- Snow village with magic of ice and snow
- Hiking and trekking trails in Ylläs-Pallastunturi national park
- smoke sauna
- sport clothing and sporting equipment stores
- Lapland delicacies and Ylläs souvenirs
- Accommodation capacity of 23000 beds (Ylläs web page, 2018)
- cafés, restaurants at Äkäslompolo and Aurora Estate in Ylläsjärvi
- meeting services at Lapland hotel Saaga, Äkäshotelli and Lappean lohi organized by Kylmämaa

Ylläs marketing presents Ylläs with eight active seasons (Ylläs web page, 2018).

Ylläs Around was developed as the pilot application with mobile route planning and mobile payment options together with former Sonera (today Telia Company) for the seasons 2015-2017. The mobile application usage was quite small due to problems in usability and due to that mobile payments as payment method had not at that time been accepted for frequent use (Ylläs Around Vaikuttavuustutkimus, 2017). Ylläs Tiketti was developed as a local initiative and was an improved version of Ylläs Around where the route searching and mobile payment functions were easier to use. With Ylläs Tiketti the users can buy tickets for shuttle bus to Kittilä airport and Kolari rain station, the ski bus (local bus)

and events at Ylläs. Ylläs Tiketti can be downloaded from Apple Store or Google play for iOS or Android mobile devices (Ylläs web page, 2018).

3.2 Ylläs brand and value statement

Ylläs brand identity is built around the values of a unique nature with seven fells, the cleanest air in the world, offering the most popular national park in Finland, and the place where you can see the Aurora lights in the sky (Ylläs web page, 2018).

3.3 Main findings from the Ylläs mobility service user survey

Main findings from the user survey were that a well-functioning local bus service connecting the villages Ylläsjärvi and Äkäslompolo is a key enabler for the sustainable shuttle service development at Ylläs. The demand for local services increases if they can be offered at the traffic service connection points and offerings of non-transport related services either as fixed or mobile service points will further increase the demand and usage for the local bus service. The local bus service should be offered evenly within the current route infrastructure and there should be shared taxi services offered at the bus end points and along the bus route (Appendix 1, User Survey).

3.4 Summary of current state

Ylläs local bus as well as Kittilä-Kolari-airport and railway shuttle bus has improved the frequency of routes and welcome sporting equipment like bicycles in small volumes. The service offering in Ylläsjärvi village is still scarce and the longer bus service hours will not alone increase the usage of public transport routes to Äkäslompolo and to the nature sights.

The sustainable mobility strategy at Ylläs is scattered. Visit Ylläs, which is responsible for Ylläs Marketing does not according to author's analysis have sustainable mobility solutions on top of the company priority list. The sustainable commuting has been driven by Ylläs Travel Association and has not received sufficient priority to become a common and preferred strategy for all development actors at Ylläs. The commitment of local service providers to sustainable mobility has not been visible in concrete actions. The local service offerings that would support the usage rate of shared commuting alternatives are missing.

The visitor or local inhabitant values the unique nature, the fells and natural park surroundings at Ylläs, but finds it difficult to get around without an own car. The less developed shared commuting network puts limitations on Ylläs attractiveness and development to contribute to the Lapland tourism vision of being a *leading destination for sustainable nature and tourism in Europe by 2020* (Lapland tourism development and strategy, 2013). One of the four key elements in the Lapland tourism vision is accessibility including accessibility in traffic.

Ylläs has great opportunities for developing a unique service concept, which protects the unique nature, provides excellent outdoor activities in the fells and offers the free nature environment. This demands however the creation of the service strategy together with local service providers, skiing center owner, municipality decision makers, bus service companies and local inhabitants and visitors. It does not have the possibility to grow to its' full potential if the ownership and involvement for traffic mobility is only shared by a limited group of actors at Ylläs.

Ylläs SWOT is presented as follows based on the analysis in this chapter and findings made in the survey and interviews (Interview V. Rundgren, 2017; Interview Ylläs Express, 2017). User survey questions and answers as well as summary of the interviews can be found in appendix 2.

3.5 Key Findings and Identified Improvement areas

Successful execution of a customer journey that uses sustainable traffic solutions demands co-operation and co-creation from all actors and service providers in Ylläs region. The interviews with Ylläs Travel Association (Ylläksen matkailuyhdistyksen haastattelu, 2017) pointed clearly out that Ylläs service providers were not knowledgeable about smart mobility intiatives and did not promote smart mobility in their services marketing. In the analysis this was seen as the program driven by Ylläs Travel association but where few other actors were involved in.

One major finding is that this cannot be made alone by any of the organizations or actors at Ylläs.
Another key finding is that a well-functioning shuttle bus service is a key enabler and a foundation for sustainable traffic mobility in practice. This was clearly shown in the Ylläs smart mobility user survey (Ylläksen liikkumispalveluiden kehittäminen, 2017).

In the further analysis I focus on how the improved bus service schedule can respond to the user expectations highlighted in the user survey 2017 and combine these with user expectations for new services that could create a pull effect increasing the usage degree for bus services.

4. Conceptual framework

Based on the SWOT analysis, user survey and interviews with bus service companies the following conclusions can be drawn. What matters most for Ylläs success in smart mobility and resort attractiveness is how and for whom the services are designed, and how the customers and users are led through the different points in service flow. There are also several learnings and comments from users, which would be useful to take into account when building the service offering strategy of which sustainable transport mobility is a vital part of.

For these reasons, I have defined which service research areas can contribute to the Ylläs development plan. The areas are service design and service modelling as collaborative activity between the service providers. Further areas are customer experience at its' best and learnings done in other sustainable mobility benchmarks. All of these research areas have relevance for the development plan and bring insights, which Ylläs needs to have in their future detailed service modelling. I start each area description with the definition for the thesis purpose. At the end of each chapter I summarize how the made insights have been taken into account in the development plan or as input to later activities performed by Ylläs Travel Association, service providers and cooperation partners.

4.1. Service design

Service design goes beyond the development plan and is a strategy planning and service offering process Ylläs sustainable mobility program owner must start off. The intention is to build end-to-end service offering flows, where customers are guided when using the service, find easily information about and get support for the service, and where the local service providers find it attractive to offer their services as part of the prioritized and modelled service flows resulting to a richer service portfolio for Ylläs as a holiday resort and home community. Service design is here defined as modelling the service, showing examples of process methods that can be used when running through the process, expressing customers' benefits with the service and defining how the service meets up with quality and service performance requirements.

Service design exploration starts with defining the service firm's current business mission and creating a strategic intent for where the service firm wants to be at a defined time (Kasper, Helsdingen, Gabbott, 2006, p. 353).

The Service design has a target to *complement quantitative research with qualitative methods* (Reason, Lovlie, Flu, 2016, p. 8). It is about combining human experience with patterns that apply to large numbers of customers. According to authors, service design helps the customers to *delight, inspire and empower (*Reason, Lovlie, Flu, 2016, p. 8).

The three critical factors in service design are the service movement, service structure and service behavior. *Behavior is what happens between movement and structure.* If we can *influence behaviors through design, we can impact business performance* (Reason, Lovlie, Flu, 2016, p. 15-17)*.*

Every service has before, begin, during, after (customer life cycle)*. Where do the customers come from* and what *experiences* do they bring, what *expectations* they have. What do the customers do after using the service. Will they switch to somewhere else, or will they come back (Reason, Lovlie, Flu, 2016, p. 17-23).

Customer journeys are descriptions of how to deliver *the right experience to each individual customer* (Reason, Lovlie, Flu, 2016, p. 23-24). It is a step-by-step interaction process with the organization.

Service design tailors the way you engage with your customer to the service experience you want to convey and to the needs of the customer. Customer engagement must however be in balance with the business priorities, allowing customers to achieve their goals with the most efficient manner for the business (Reason, Lovlie, Flu, 2016, p. 72).

To stay competitive, the organizations need to differentiate their services from the others Customer proposition innovations demand a deeper knowledge of customer needs. Ideas to innovations can be seen in the life cycle for humans or in gap areas for different service models (Reason, Lovlie, Flu, 2016, p. 78-81).

4.1.1. Service design methods

Service blueprinting is a tool to describe the service process, and simultaneously define the customer contact points and service evidence from customer point of view. It breaks down the service to logical components, defines the steps in the process, how the tasks are executed and the evidence for customer experience. Evidence is understood as what the customer receives at each step in the customer experience (Wilson, Zeithaml, Bitner & Gremler, 2008, p. 197-206).

Six Sigma (Service Design, 2007, p. 214) defines 5 steps for service design and development of new processes. The steps are define (define service goals), measure (identify success factors, capabilities and risks), analyse (create alternative designs and choose the best one), design (develop detailed design and plan for verification) and verify (run pilots and prepare for live implementation).

When sufficient quantitative and qualitative research has been conducted about the customer situation it is advisable to *describe customer life cycles and create an outside in-view* (Reason, Lovlie, Flu, 2016, p. 145) of the customer lifecycle behavior with the industry and with the company. Defining typical customers, customer personas, and visualizing how they will act in the service situation add an additional angle to understanding customer choices and activity.

Servicescapes (self-service, interpersonal or remote service) can be drawn for the service and at the same time the physical evidence strategy can be defined.(Wilson, Zeithaml, Bitner & Gremler, 2008, p. 245-256).

It is further important to define employees' and customer's role in the service delivery (Wilson, Zeithaml, Bitner & Gremler, 2008, p. 301). A firm needs to understand the key drivers of service quality, customer retention and profits, p. 463.

4.1.2. Customer value

Christopher (Christopher, 2011, p.35) sees the benefits and the total offer delivering customer value. Bowersox, Closs and Cooper (Boxersox, Closs, Cooper, 2010, p.48) state

that a company competitiveness is measured with the effectiveness it identifies specific customer needs and manages to target activities to serve these needs. The authors present a satisfaction and quality model (Boxersox, Closs, Cooper, 2010, p.60) from service logistics point of view consisting of current and earlier service performance requirements.

Customer value is the end product of customer experience excellence and in essence strongly related to successful service design. Customer experience excellence is easy usability but it brings also additional value like nice surprises or amazing experiences. It is getting the basics right but also bringing a special experience (90% basics and 10% magic events). To know, what is a special experience for a given customer it is essential to understand what motivates the customer and how a service provider can help the customer to meet the motivational goals (Reason, Lovlie, Flu, 2016, p. 56-62).

Customer engagement should have the target to let the customer to reach his or her goals. Engagement is what organizations do when delivering value to a customer (Reason, Lovlie, Flu, 2016, p. 71).

A firm's long term growth depends on its' capability to attract and keep the most successful customers in the industry. Customer value can hence also be translated as a firm's capacity to increase the success of its' customers. Customer success demands a commitment from the company to long term business relationship with a given customer. Value-added services are the next development level of long term commitment and a result of joint development of *unique activities* (Boxersox, Closs, Cooper, 2010, p.63-65).

Researching customer needs is about identifying the benefits and attributes that are in line with customer expectations (Wilson, Zeithaml, Bitner & Gremler, 2008, p.131).

4.1.3. Service quality and service performance

Wilson et al (Wilson, Zeithaml, Bitner & Gremler, 2008, p.55-60) state that personal needs, expectations or the service logic are the characteristics that have the largest effect on customer expectations.

Service quality is about reliability, responsiveness, assurance in terms of the ability to inspire trust and confidence, empathy and tangibles provided with the service. The Nor-

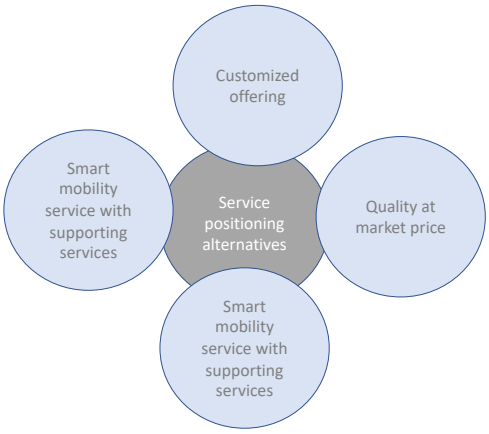
dic model of service experience reveals that the service experience and interaction between provider and receiver is as important as the end result of the service. Service encounter is where the service is delivered either well or badly. It is where the interaction takes place and the interaction can be either remote, phone or direct interaction (Wilson, Zeithaml, Bitner & Gremler, 2008, p.79-91).

There might exist different expectations on service quality on the market, and therefore the market should be segmented based on the presumptive buyers' service quality requirements. Service positioning need to be defined and reviewed regularly to ensure that the service offer matches with the market segment's service expectations. Customers can be segmented to four different groups: wealthy, not wealthy, customers that bring profitability to the company during the lifetime, and customers that do not bring profitability to the company during the service lifetime (Kasper, Helsdingen, Gabbott, 2006, p.125).

In order to get concrete results on where a service quality is created for the customer, the value of service offering should be defined from the customer's perspective (Kasper, Helsdingen, Gabbott, 2006, p. 203).

As an initial step to service offering definition, the provider should define their positioning on the market. For the smart mobility services the options worth evaluating are customized offering based on customer needs and the strength of the customer relationship, offering an accepted price versus quality, offering a high level of supporting services or creating an innovative offer (Kasper, Helsdingen, Gabbott, 2006, p. 225-226).

Service quality is also influenced by how using smart mobility services on-site as a physical service is combined with e-services serving the customer's needs to get pre-information of the service and speed up the delivery of the service (Kasper, Helsdingen, Gabbott, 2006, p. 329-334).



4.1.3 Service Positioning alternatives

Customers expect to be inspired or supported in order to continue using a service at each point of their lifecycle as customers. The service must function as a way for customers to reach their objectives or finalise their activities, i.e. as an enabler for customer performance. The service path plan should include moments when and how customers are supported to perform according to the goals set for targeted customer performance. Planning for the before and after experience is as important as planning for the service delivery. It is of utmost value to include a strong customer focus to the service plan in order to reach success at service launch and continuous usage (Reason, Lovlie, Flu, 2016, p. 109-118).

It is vital to get the service working and successful service experience implemented at once. Service providers should develop a strategy for how to design for positive customer experience (Reason, Lovlie, Flu, 2016, p. 119)

4.1.4. Summary of service design and its subcomponents

Successful service design inspires and empowers the user to solve the specific need and get him or her further with other activities. Service design gives possibilities to tailor the service to fit the customer needs and in the same time ensure that the goals for the business are met.

A company competitiveness is a measure of the efficiency it identifies customer needs and adapts the company capabilities to respond to these needs. Customer experience at its' best is getting the basics right but also providing nice surprises.

Customer value is seen as a firm's capacity to increase the success of their customers. The offered service should serve as a way for customers to reach their objectives or complete their activities. For a service provider it is as crucial to plan for what happens before and after a service has been delivered as the delivery of the service as such.

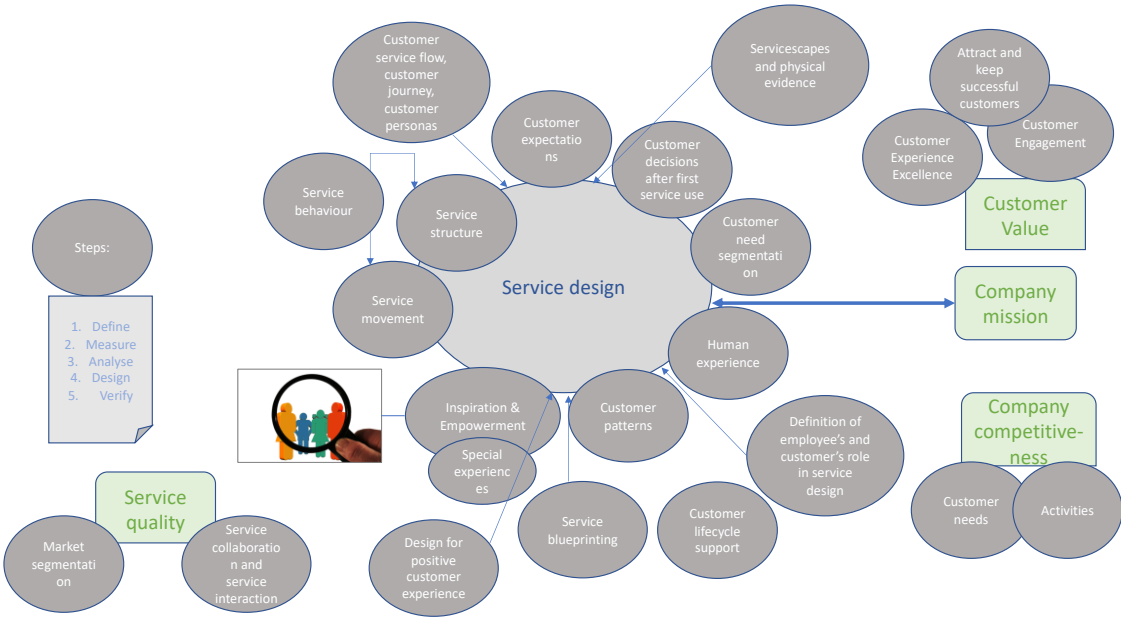


Figure 4.1.4: Forces influencing service design

Ylläs' segmentation of prioritised customers and potential customers will be a result of a customer strategy planning where Ylläs unique values like clean nature, excellent out-door facilities winter and summer, and new type of service concepts are combined with the exploration of who we can and want to attract to Ylläs now and in the future.

The development plan shows examples of customer segments and service packaging made for the example segment but this activity will be refined and taken further by the Ylläs team in coming years.

4.2. Collaboration, customer centricity and service delivery

Collaboration and service delivery in service design concept entails which local service providers at Ylläs are providing the service offering for a specific segment, what their common target is with the offering, what each of the providers' contribution is of the common target and how they interact with each other to ensure that the target is realized. The service design process can be used as a tool to evaluate which marketing channels function at best for a specific offering and customer segment. Services marketing and digital marketing are vital parts of the service delivery and collaborative way of working.

Reason, Lovlie, Flu (2016, p. 126-133) sees among the biggest challenges the preparation and internal organization to implement a change in a customer offer. Customer perspective and collaboration around the customer brings a change to the organizational function-oriented structure at corporations. Businesses that work together to define each provider's role in supporting the creation of customer value have higher possibilities to succeed. The first step in the cooperation is to agree on a common understanding of what the customer needs and customer expectations are. Once the needs and expectations are agreed on, the target performance for the service can be defined. The target performance should follow the business goals for the operations. When the target performance is articulated, the expectations and responsibilities can be defined for each service provider, and the service providers can work on their own to realize their specific parts and expectations.

For agile organizations it is crucial to develop a common view on what to deliver the customers and what is the contribution to the delivery by each organizational unit (Reason, Lovlie, Flu, 2016, p. 154).

An important part of transforming the service to customer needs is the level of engagement of service provider staff in the change process. Reason, Lovlie, Flu (2016, p. 136-138) name the phases in the process as *understand, imagine, design and create,* and use design processes as a way to clarify people's roles before, as and after (before,

begin, during, after) the change has been implemented. It should be defined clearly in the process what the customers' needs are and which are the needs for the business.

For service providers it is important to be able to find the part of the service, where investments in service quality will pay off as higher revenue or higher profitability than not pursuing the investment. Service quality can be defined in different ways by increasing the customer benefit or simplifying the usage (Kasper, Helsdingen, Gabbott, 2006, p. 175-179).

Figure 4.2 summarizes the content in the chapter.

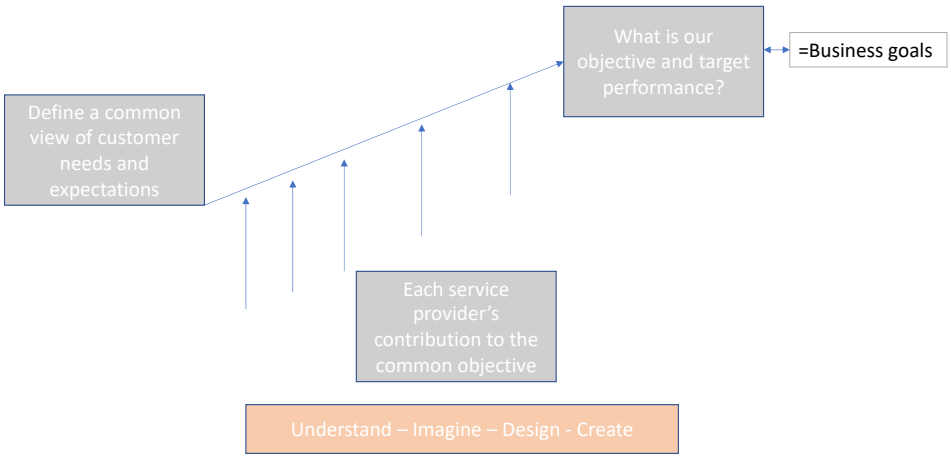


Figure 4.2 Collaboration and engagement in successful service design

4.2.1. Services Marketing

Kasper, Helsdingen, Gabbott (2006, p.2) state that services marketing is about understanding, creating and delivering value. The authors (Kasper, Helsdingen, Gabbott, 2006, p.57) see services as a process that consist of one or several activities, which

frequently are done in *close cooperation and interaction* between service provider and the customer.

Customer service experience is about interaction between the customer and the service provider. The interaction point is called the service encounter (Kasper, Helsdingen, Gabbott, 2006, p.63).

It is important that service providers inform honestly and adequately on what customers can and cannot expect of the service to keep the customers satisfied (Kasper, Helsdingen, Gabbott, 2006, p.79).

Service Marketing shall pay attention to differing buyer behaviours. For example business travellers from Asia in one hand and from western countries in another hand view complex services like luxury in different ways, p.98). They perceive and tolerate risks in different levels (Kasper, Helsdingen, Gabbott, 2006, p.98-99).

Figure 4.2.1 summarizes the content in the chapter.

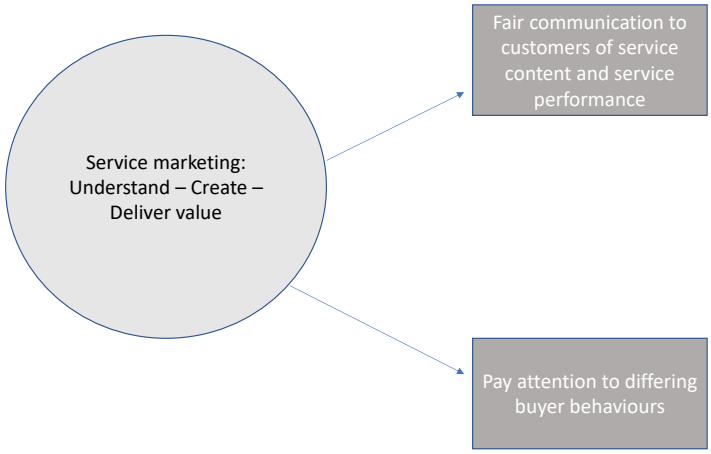


Figure 4.2.1 Service marketing content and objectives

4.2.2. Digital marketing excellence

Digital marketing excellence is according to authors when customers are connecting with each other and sharing information (Chaffey & Smith, 2017, p.163). The key is to influence customer engagement better than your competitors, for example by starting a brand ambassador program (Chaffey & Smith, 2017, p.168).

Selling personal value and selling what your customers want and expect are key characteristics of successful digital marketing (Chaffey & Smith, 2017, p.173-174).
The authors discuss the ladder loyalty, the process of moving the customers from suspects to prospects, and from customers to advocates who are loyal and happy to spread the word of the services (Chaffey & Smith, 2017, p.197).

Digital marketing is successful when it can help the customers to buy, find information and save money (Chaffey & Smith, 2017, p.298). Digital marketing uses multiple channels and the greatest advantages can be received when the digital media and technology increases the face-to-face marketing on site (Chaffey & Smith, 2017, p.316).

It is important that the e-commerce purchasing and supply chain is integrated with the sell-side e-commerce to get the largest advantage of digital marketing and supply efficiency. All applications shall be integrated digitally (CRM, ERP, supply chain, operating resource management, analytics, decision support, etc. (Chaffey & Smith, 2017, p.507-509).

Figure 4.2.2 summarizes the content in the chapter.

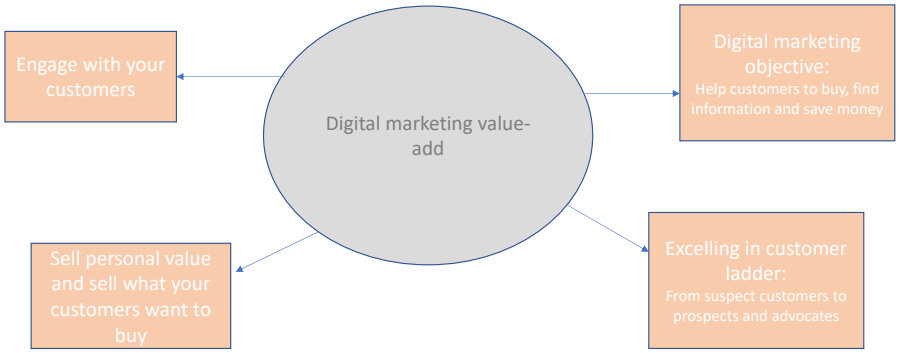


Figure 4.2.2 Service marketing content and objectives

4.2.3. Summary of collaboration and service delivery

One of the biggest challenges in services is the internal organization of service providers to fulfil a customer need. Successful services are provided by a service provider flow where roles for each service provider have been clearly specified. The process starts with defining what the customer needs and expectations for a specific segment are and goes on defining the target performance for a specific need.

Marketing is about understanding the customer needs and creating and delivering value to the customers. It is an interactive process between the customer and the service provider or providers.

Digital marketing can provide value both to online and offline customers. It is important to influence customers and get them active better than your competitors. The service provider buying and selling logistics systems should be integrated to provide best value and fastest service to the customers.

At Ylläs the service offering created for a specific customer profile will be created as a joint activity defining common targets, each service provider's target and measuring the

performance against target. Marketing will have a central role in the service development as it is divided between 2 organizations and there is the general knowledge that marketing about sustainable mobility has been insufficient.

4.3. Experiences from sustainable mobility benchmarks

In the next subchapters I discuss the experiences from sustainable mobility benchmarks. The presented implementations have been chosen as benchmarks due to their innovative ideas, which with the knowledge from the survey results, interviews and service design literature analysis have high relevance for the Ylläs sustainable mobility development plan.

The intention is to find best practises from similar type of tourism businesses where the best practises in European context might be well worth testing in Ylläs context even though the volume of visitors and the density of population is very different from Ylläs.

4.3.1. Alpine Pearls - case description and experiences

Alpine Pearls is a tourism cooperation between 22 Austrian alp villages, which offer a green vacation alternative within the defined geographic area, and with the ultimate goal to provide sustainable alternatives for commuting within the Alpine Pearl region.

The results obtained through visitor interviews and participant observation have shown that the railway network structured in line with national borders and the sector specific decision making are creating hinders for successful implementation (Verbeek, Bargeman & Mommaas, 2011, p. 45).

The Alpine Pearls' specifc priority is to get tourists to use busses, trains and electric vehicles for travelling to and from the destination and for commuting during their vacation (Verbeek, Bargeman & Mommaas, 2011, p. 46). The Alpine Pearls' focus is however not only on commuting but on the total end-to-end holiday experience.

Verbeek, Bargeman & Mommaas (2011, p. 47) use a sequence-based approach, similar to service design, in creating a smooth travel experience involving activities taking place at different times, at different locations and involving different activities or behaviours. In the Alpine Pearls' case analysis it was found that the ecological value was a unique selling point and key differentiator for the holiday destination valued also by visitors, who did not have environmental friendliness on top of their priorities (Verbeek, Bargeman & Mommaas, 2011, p. 49).

One of the observations Verbeek, Bargeman & Mommaas (2011, p. 49) had made was that the information about the different transport modes and available services was available during the whole duration of the visitor stay at Alpine Pearls' area. The information about Alpine Pearns was available at transport and other service points, basically at all places a visitor would visit before, during and after his or her stay.

The national transport infrastructure was seen as the barrier for Alpine Pearls travel passage. The region spans over 6 countries with national infrastructure in each of them. The problems lie in seeing transport to and from the holiday location as a separate activity and not embedded in the Alpine Pearls' holiday concept (Verbeek, Bargeman & Mommaas (2011, p. 50). Another barrier is the tourism association role as solution responsible for the the total travel experience but missing the decision power of transport or other services from the hotels or private service providers, which would improve the Alpine Pearls' visit experience. The conclusion of the Alpine Pearls case analysis is that a co-operation between the main service actors is necessary to develop the concept and provide a unique customer experience. The authors suggest also that tour operators with their market expertise might be better equipped in offering the end-to-end service experience instead of a non-profit tourism association (Verbeek, Bargeman & Mommaas (2011, p. 52).

Figure 4.3.1 summarizes the content in the chapter about Alpine Pearls.

Figure 4.3.1 Summary of Alpine Pearls' case

4.3.2. Experiences with sustainable mobility at German holiday destinations

The authors Gross and Grimm (2018, p. 410-415) found in their analysis that although the usage of own car by Germans is very common and difficult to change, some studied variables correlate with higher usage of public transportation.

Young travellers up to 30 years use public transportation more than the other age groups. Travellers with their home in middle-sized cities (50.000 to 100.000 inhabitants) and travellers from big cities (with 0,5M inhabitants or more) are more frequent users of public transportation.

Single travellers are more frequent users of public transportation (37,2% use public transportation) than people travelling as a family.

Travellers arriving to the holiday destination with train or bus were also more interested in using the public transportation at the holiday destination. 60% of travellers who had arrived with train used also public transportation during their holiday stay.

Travellers visiting the holiday destination as an organized group tend to use public transportation more than if they had arranged their holiday trip on their own.

Figure 4.3.2/1 summarizes the experiences in Germany.

Figure 4.3.2/1 Summary of findings at German holiday destinations

Gross and Grimm (2018, p. 415-416) recommend that it could make sense to make special offers to the lower age group and stipulate continuing usage of public transportation by booking possiblilities via social media and the like. The authors give as example the ideas of combined public transportation and entrance tickets for cultural or leisure events. They also suggest all-inclusive mobility tickets including the local mobility offers.

In the Bavarian forest (CSION PR Newswire, 2017) Freyung has started with an on the demand public transportation service, where a door-to-door shuttle service is ordered from a mobile app allowing ride sharing for the passengers.

The city of Freiburg (Gregory, 2011) offers a wide coverage of public transportation to affordable prices and each cultural or leisure ticket includes a public transportation ticket for free. The city is free from car lanes and the transportation is based on public tram, city busses and bicycle paths with connections to the regional railway system.

Gross and Grimm (2018, p.416) advise further, that holiday home owners and public transportation companies should see as their role to promote public transportation alternatives and should link marketing at their sites to relevant travel promoting mobile apps, for example Moovel, Moovit, Switchh, Qixxit. At the holiday destination, the traveller should have possibility to use the smart phone to get personalised tourist offers of activities, linking transportation and offered services, and be able to change his or her transportation plans in a smooth way. Gross and Grimm conclude that travellers from medium and large cities might be more willing to buy public transportation services for their holiday as they also are used to the public transportation mode from their home environment.

Figure 4.3.2/2 summarizes the offering packages for Germany.

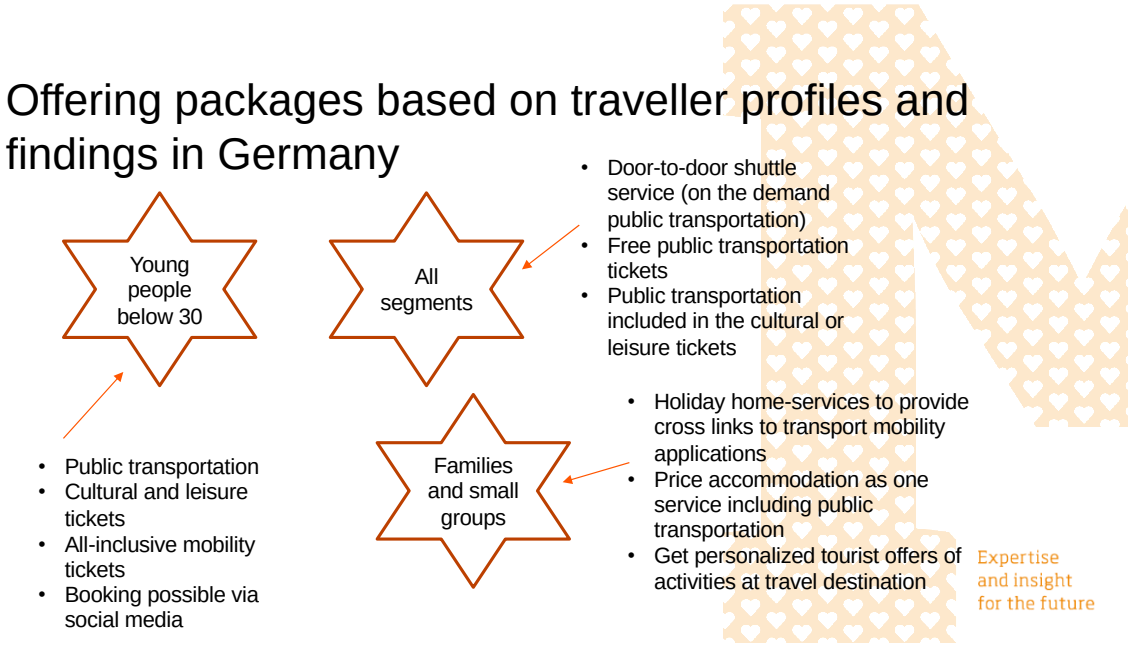


Figure 4.3.2/2 Offering packages based on finding in Germany

4.3.3. Experiences from sustainable mobility in Italian alp regions

Signorile, Larosa & Spiru (2017) raise Finland and MaaS Global as one of the forerunners in Mobility as a Service-implementations and analyse the usability of the concept for the tourism intensive Italian alp regions, namely for the Province of Trento and Aosta Valley Region (Signorile, Larosa & Spiru, 2017, p. 190). Trento and Aosta Valley are the main alpine vacation resorts in Lombardia and also suffer from increasing pollution as a

consequence of the tourism flows. For these sites sustainable mobility is not only a service benefit for the traveller but also an ecological necessity to preserve the uniqueness of the nature.

Signorile, Larosa & Spiru (2017, p. 190) state that Mobility as a Service model can bring environmental sustainability in terms of lower pollution levels, social sustainability meaning better accessibility to travellers and residents and economic sustainability with lower costs due to more efficient travelling options. This can lead to higher earnings to the tourism regions as the traveller gets a higher budget to be spent at the travel destination when the cost to travel to destination is reduced.

Figure 4.3.3/1 summarizes the sustainable mobility priorities in Italy.

Figure 4.3.3/1 Summary of sustainable mobility priorities in Italy

Milan is the most environmentally friendly and mobility driven city in Italy and a natural choice to analyse how the Mobility as a Service-model could be used to increase sustainable mobility in the Italian alp regions Trento and Aosta Valley. Approximately one third of all visitors to both areas come from the Lombardia region. In the authors' analysis almost 80% of the visitors from Lombardia travel to Trento country and Aosta Valley with their own car. Another 30-40% come from rest of Italy and the remaining 15-20% travel from other countries Signorile, Larosa & Spiru (2017, p. 191-195).

The authors recommend that the target market segment should be young travellers with the aim to influence their travelling habits towards sustainability with MaaS concept. The main benefits for the target market would be technology enabled means and an integrated alpine tourism offering. The stakeholders at the alp regions need to network with each other and improve the offering of transport related and other services like car rental, equipment, baggage management and encourage travel without an own car. The authors highlight also the possibility of MaaS to offer personalised services and with these differentiate the tourism offering from other providers, hence combining innovation with sustainability. Successful MaaS implementation demands thorough knowledge about visitor characteristics and their behaviour defined as their readiness to start using available MaaS services (Signorile, Larosa & Spiru, 2017, p. 196-197).

Figure 4.3.3/2 summarizes the sustainable mobility priorities in Italy.

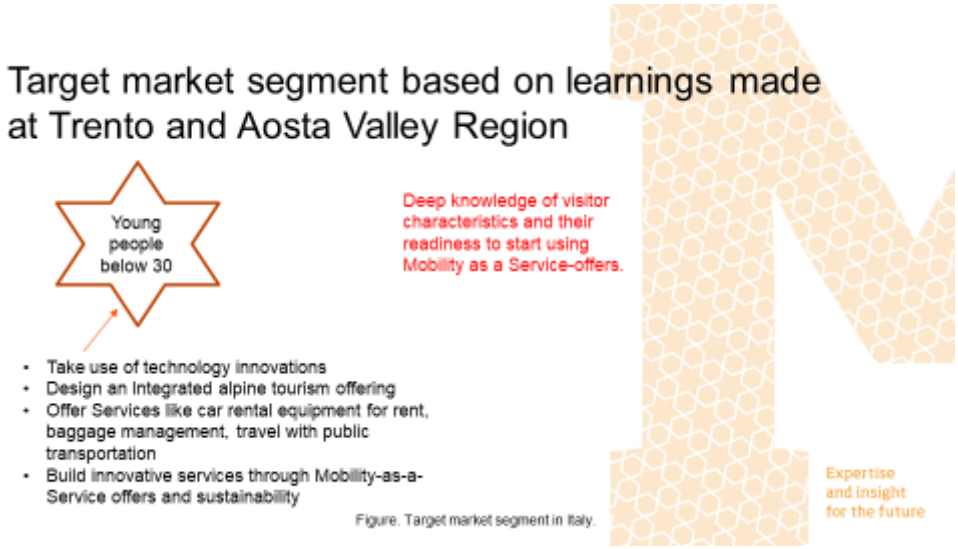


Figure 4.3.3/2 Target market segment in Italy

4.3.4. Summary of sustainable mobility experiences

In my benchmarking analysis I reviewed 3 distinct sustainable mobility implementations in Europe.

For a successful sustainable mobility implementation, the journey to holiday destination is not seen as a separate activity but an integral part of the holiday experience. Cooperation between the main service actors is necessary to develop the concept and provide a unique customer experience. It deserves thorough strategic thinking to evaluate, which actor is best equipped to take responsibility for the end-to-end service experience. In the Alpine Pearls review it was found that a tour operator instead of the non-profit tourism association could be a better choice for leading the customer experience activities.

The target of the Austrian Alpine Pearl sustainable mobility offering in the six alpine countries was to provide an end-to end sustainable mobility experience from home to travel destination, during the holiday and back to home location. The end-to-end solution target was to offer an interconnected solution of activities taking place at different times at different locations creating a smooth travel experience. For the Alpine Pearls the strategic re-direction became the unique selling point and a key differentiator for the holiday region.
Marketing of the Alpine Pearls concept was a key priority in the service rollout. Information about the different transport modes and offered services was available everywhere, where a visitor would enter from start of the travel journey, at the travel visit points, and in the end points of the journey.

The German sustainable mobility analysis showed that travellers living in medium-sized and big cities, young people as well as single households preferred public transportation more than other travellers. Visitors travelling to their holiday destination in a group travel arrangement were more willing to use public transportation than visitors travelling on their own. It would make sense to target marketing to young traveller segment, offer them combined cultural events with transportation included. Leisure home service providers should market transportation as part of the rent offer and it would make sense to on their digital marketing to link to sustainable mobility providers' apps or web sites to build knowledge of available transportation options connected to the travel to, at and from the holiday home destination.

For the Italian Alp regions Trento and Aosta Valley the target was to evaluate whether the Mobility as a Service (MaaS)-concept could be used to decrease the pollution levels at Italian alp villages and bring earnings growth and increased tourism interest to the alp villages. The recommendation was to target the sustainability efforts to the young population. The service offering should contain usage of proper technology tools to improve the customer experience and provide an integrated service offering of transportation and value added service for the commuting to and from the holiday and holiday stay.
In several of the benchmarking analysis it was highlighted that the possibility of MaaS to enable personalized travel offers should be used to get full potential of sustainable mobility connected with premium holiday experience. It is a necessity to know the customers' preferences and their readiness to start using sustainable mobility options to succeed in implementation of sustainable mobility solutions.

Some of the conclusions made based on the benchmarking analysis play a key role in Ylläs development plan. Sustainable mobility and related services demand a dedicated program owner, who has the mandate and a defined budget to realise sustainable mobility in practice. A key for public and shared transportation alternatives to take off is to bring the sustainable mobility alternatives to the potential customer's sight when planning the visit to Ylläs. Accessibility could be be turned from being a weakness to a unique strength built-into the pricing for other services and differentiating Ylläs from the other skiing and holiday resorts.

5. Development plan

The target for this chapter is to define the key elements and development areas and service offering examples for Ylläs region, which are

a) achieved with sustainable commuting solutions and
b) lead to an increased customer satisfaction and improved value for the Ylläs brand.

The target is further to relate the development plan to Ylläs' competitive strategy and vision 'Ylläs naturally number one'.

5.1. Method and scope

As highlighted in chapter 2.1, Ylläs development plan is based on the findings in data collection rounds one to three covering current state, reviewing existing knowledge and interviewing bus companies and Ylläs main stakeholders. Specifically, the successful experiences made in the sustainable mobility benchmarks were taken use of for the contents in the Ylläs development plan.

5.2. Gap Analysis of Ylläs current service offering

In this subchapter I highlight selected user views, which were collected in the user survey (Appendix 1, User survey) and where the respondents view that Ylläs was, at least at the point of user survey, not able to fulfill visitors' or the local inhabitants' expectations.

5.2.1. Spa services

Ylläs does not currently offer spa type of wellness services except small scale services at Lapland Hotel Saaga (Ylläs web page, 2018). Ylläs leisure activities are quite narrowly focused on the nature and national parks.

5.2.2. Ylläs brand awareness

Ylläs offering is the least known of the skiing centers in Northern Finland among the customer groups who share an interest for Lapland (Ylläksen matkailukeskus, 2016). Instead of looking at the other skiing center strategies, Ylläs marketing would benefit of taking a detailed look at Alpine Pearls and learning of their way of marketing the sustainable tourism solution (chapter 4.3.1).

5.2.3. Accessibility as brand differentiator

The outcome of the Ylläs image survey (Ylläksen matkailukeskus, 2016, p. 15) points out that people that value accessibility most probably have not visited Ylläs, and will not do it either until the area has offerings that meet the accessibility requirements of these visitors. **Accessibility** is hence clearly **a differentiator** and a way for Ylläs to attract new customer groups, which currently exclude Ylläs from their list of potential locations for holiday or business visit. Ylläs service development team could gain new insights from a dialogue with the service providers at the Italian Alp regions Trento and Aosta Valley and of their views on social sustainability and accessibility (chapter 0).

There are large expectations (VTT VAMOS, 2016; Ylläksen matkailukeskus, 2016) on improving the availability of Ylläs as holiday resort and being the forerunner in providing sustainable mobility in commuting within the Ylläs region. This requires however continuous development of the public transport infrastructure and development of new service offering models as a common activity with the local service providers. It demands a high level of collaboration as a continuous activity by the local service providers but also regional, national and even Nordic and transnational transportation and other service providers.

To increase the usage of shared commuting services (like busses or shared taxi), sustainable mobility must become a prioritized development area. There needs to be a clear driver and commitment both from Ylläs Travel Association, Visit Ylläs, the transport service providers and other local service providers. It is advisable for Ylläs to pay attention

to the findings at the Alpine Pearl experiences, where the Travel Association was not seen as the most effective solution responsible of the overall customer experience (chapter 4.3.1).

5.3. Targeted customer segments

Finnish and European travellers are the prioritized customer segment in line with the Lapland vision of becoming a leading nation for sustainable nature and experience tourism in Europe.

Following the findings in German and Italian benchmarks, youth groups should be a naturally preferred customer demographic segment to create an interest for nature and for Ylläs, which the today's young people will in best case keep after they have built families. Wealthy couples where the children do not any more live at home are another targeted segment. Families will have their share of interest for sustainable travelling models but due to simply the amount of packing that follow with families, they are not the natural first segment for which to target the sustainable mobility offerings.

5.4. Service solution development plan

A key driver for success with Ylläs sustainable mobility is to get the local busses operating frequently enough and work as a good alternative for daily commuting. A good service level for bus transport is a prerequisite for the rest of sustainable mobility alternatives and new services to take off and evolve.

In line with the literature review findings in service design and service provider collaboration as well as learnings made from sustainable mobility experiences, the ownership for end-to-end customer offer is a top priority issue for Ylläs to decide on. The ownership is defined as which entity that is best equipped to lead the transformation and own the end-to-end solution offerings for customers. According to learnings made at the Alpine Pearl villages (chapter 4.3.1), the tour operators could be best equipped in carrying the total solution ownership role. In Ylläs context, the tour organisers would be the event

service providers, which are providing the largest part of service visible to end customers and not foreign travel agencies, which are maybe most frequently seen as tour organizers at Ylläs today.

Another insight is that selling the mode of transportation must be done before the customer books the journey and should be in-built into the total holiday experience. It is often too late to get visitors using the public transportation and sustainable commuting means when they have arrived at the destination.

In the following I present 3 examples of service scenarios for personas that belong to the typical customer categories for Ylläs. These service scenarios give practical level of detail input to the development plan in order to make it as near the reality as possible.

The services presented are ideas to be further developed by the sustainable mobility business owner and the service providers at Ylläs. This includes building a service logistics plan defining who will deliver which part of the solution and how to make the common offering to work,

5.5. Service solution examples

The service solution examples are based on the customers, which are Ylläs main segments today. These are cross-country skiers who are frequent visitors at Ylläs and international group travels organized mainly by foreign travel agencies. The knowledge about the current segments has been collected through the many discussions with Ylläs Travel Association but also through Ylläs web page. The service solution 2 for international groups and the service package in that solution has taken influence from the sustainable mobility benchmarks discussed in chapter 4.3. The service solution 3 describes one of the future segments Ylläs should focus on partly because the cross-country skiers from service solution 1 will gradually not any more return to Ylläs and Ylläs needs to find new segments to focus on. The service packaging in each solution is based on the findings in current state analysis and on the review of the sustainable mobility benchmarks but is also a result of exploration of which services might be attractive for each service solution segment.

5.5.1. Service solution 1 – Cross country skiing for wealthy couples

The service solution 1 we are delivering to the customer is a cross-country skiing end-to-end holiday experience with a touch of glamour but with sustainable means. Our customer is a couple over 50, who in addition to favoring the cross country skiing, are wealthy and experienced also of travel outside Finland. It shall be possible for our customer couple to move between the frequently visited points in a sustainable way, with shared services. It shall naturally also be possible for the couple to travel to and back from Ylläs with public and shared services.

The process starts with defining the contributing service providers, and what contribution each provider will deliver to the whole solution. Essential for the contribution is to have full knowledge of the quality expectations the customers will have for the service we are planning to deliver (Kasper, Helsdingen, Gabbott, 2006, p. 223).

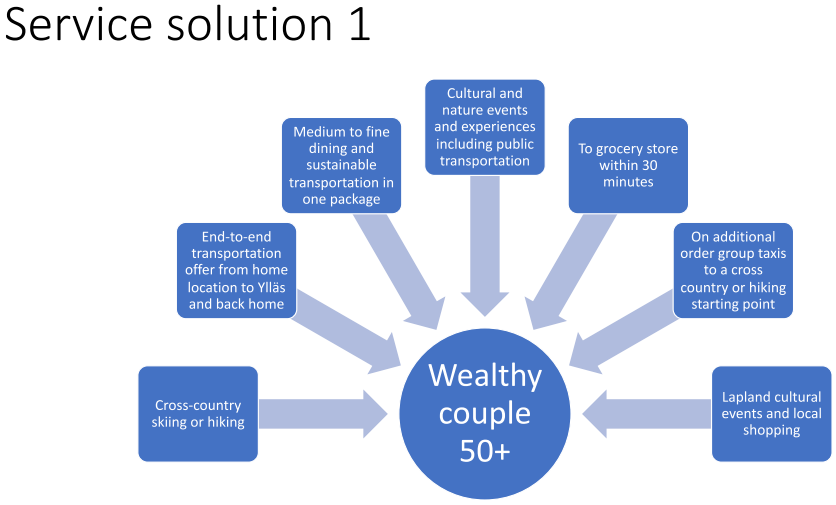
Services offered for the service solution 1 are e-cycling for rent and take your bike to every bus ride. These fees are in-built in the accommodation price.

As part of their package, the couple has ordered a premium shopping-and-commuting-service, which promises them to get to the grocery store and back to home within 30 minutes including 10 minutes shopping time in the store.

The couple's travel package includes also a travel to snow village with transportation.

As an option, it is also possible to book travel to nearby cross country starting points with group taxi or similar. The transport needs to be booked 12 hours before the start of your skiing trip.

Service providers, whose services are desired for this service solution are grocery stores, higher class restaurants, cafes, sights, and organized tours.



5.5.1 Service solution example 1

5.5.2. Service solution 2 – Adventures in the nature for International groups

The second service solution example is directed to smaller or larger international groups, One reason for this choice is the importance of widening Ylläs potential customer base and expanding the Ylläs brand awareness to selected destinations outside Finland. The customer profiles in the international groups are self-going groups of 4+ persons and are assumed to have a profound interest for environment friendly habits dks.

The starting point is to define and develop an offering with which the international groups can travel to Ylläs with public or shared transportation.

Services offered for the international groups could be organized journeys to snow village with either group taxis or with e-bicycles for the the more sporting segent of the international travellers prefer some sporting activities.

The nearby resorts will interest the foreign travelers and therefore visits to Palls and Olos should be part of the service package. There should be day trips with early bus routes and the opportunity to enjoy a dinner at a premium restaurant or just experiencing a full day in the nature and get back to Ylläs late in the evening. The day should include possibilities to visit local stores and craft shops and participate in a huskey safari or similar for the more nature adventure type of groups.

There should be an organized tour in the 2 villages, showing the main places for shopping but also the popular nature adventures like pliaces for. At least one day of nature adventure at Ylläs should be part of the package and the day could be finalized with a dinner at a medium dining restaurant. It should be possible to buy medium dining tickets in advance to selected café's and restaurant and these should be marketed by the holiday home owners.

Further it should be possible to borrow decent bikes for free so the cost for bikes should be in-built to the accommodation price.

Finally, there should be something unexpected as part of this customer segment are thought to be those customers that become frequent Ylläs visitors. What could be done to make them extra happy and confident on coming back one day.

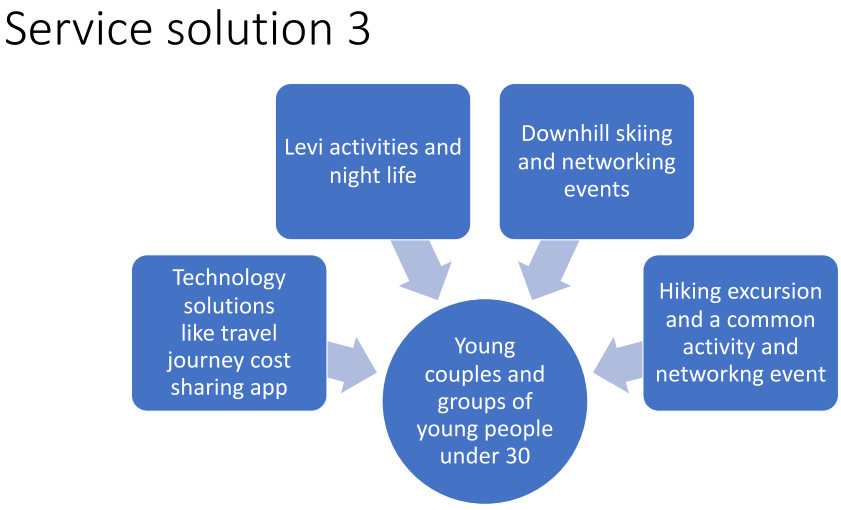
5.5.2 Service solution example 2

5.5.3. Service solution 3 – Young couples and groups of young people under 30

For the young generation segment, booking over social media is a key element and this segment appreciates travel cost sharing apps to get best price deals for the travel to Ylläs and back to their home destination. This group is usually interested in new technologies and are keen on trying out new ways to travel and new types of services.

For the young couple and group segment, visits to Ylläs activities and night events are a high priority and it would make sense to build a package including concerts or other preferred events for the youth segment combined with late bus service to make it possible to do a one-day-visit to Ylläs.

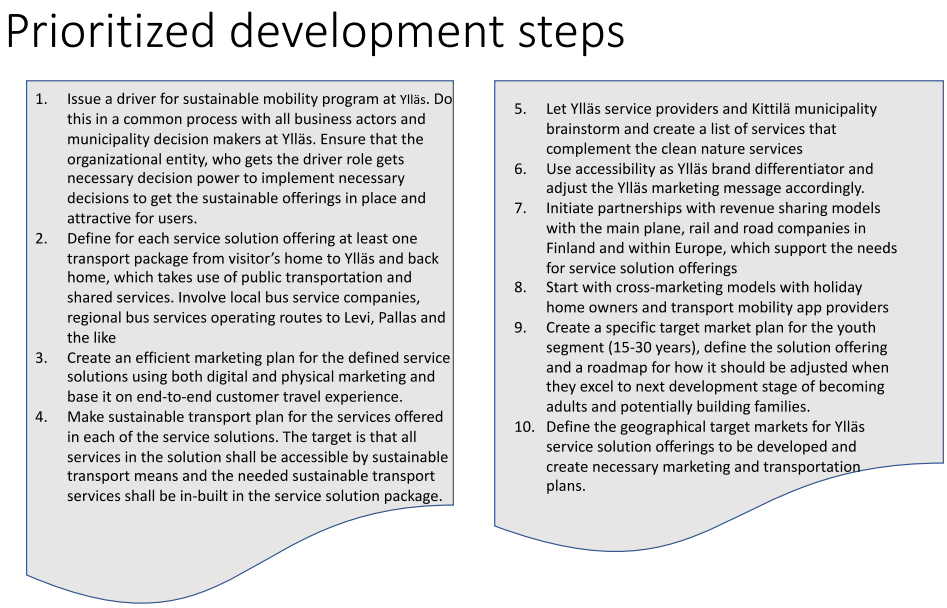
This customer segment would like to see a fixed price for all local bus travel including fares to local restaurants, grocery stores, Eelin kauppa and the commuting between the both fells, Ylläsjärvi and Äkäslompolo. At its best the bus card for one week could be in-built into the accommodation price.



5.5.3 Service solution example 3

5.6. Prioritized development steps

The following are the prioritized steps not necessarily in a priority order but as a guidance to start from broad strategic decisions and going forward to more detailed activities. These are the prioritized activities common for any solution offering but naturally keeping in mind the example solutions presented earlier.



Step 1 sets the starting of point and highlights the need for choosing the sustainable mobility program driver at Ylläs.

Step 2 points out the importance of arriving at Ylläs with public transportation or shared transport services. As the conceptual framework was shown, the means of transport for arrival will reflect one's choices also to move from A to B at the holiday destination.

Step 3 highlights the importance of a well-functioning and frequent bus service as this has been seen as the enabler for all other sustainable mobility services at Ylläs.

Step 4 defines the power of efficient physical and digital marketing of the service solution examples.

Step 5 details the activity to create a sustainable transport plan for each of the services depicted in the created service solutions.

Step 6 creates the list of services that will complement the clean nature service portfolio at Ylläs.

Step 7 highlights accessibility as Ylläs brand differentiator.

Step 8 introduces the necessity of partnerships with transport service companies to make end-to-end route planning possible and efficient

Step 9 pushes for cross-marketing between holiday-home owners and transport mobility app service providers.

Step 10 defines the importance of the youth segment service development roadmap over time.

Step 11 focuses on today's typical customer segment and defines a target market plan to keep these customers.

Step 12 is about defining the geographical target markets for the Ylläs service solutions and planning the marketing activities to match these strategies.

5.7. Valuable insights for Ylläs service design development and implementation

The sustainable program driver at Ylläs preferably uses visualization like service blue-prints when presenting the vision and the business strategy to local service providers.

One idea could be to make a simple video of 3 new service solutions to be developed. It is important to experience the solution as the customer would do it and the development should be a co-creative activity with all Ylläs service teams and developers (Reason, Lovlie, Flu, 2016, p. 10-12).

Another insight is to involve Ylläs visitors in brainstorming about the ideas. Ylläs sustainable mobility teams could Invite customers to come up with ideas or review them together with development teams (Reason, Lovlie, Flu, 2016, p. 11).

Essential for the service solution development is to enable customers and visitors to move around smoothly and efficiently. Choosing the right channel and engaging customers during the journey. It would make sense to develop a customer journey mapping and a customer life cycle plan for the chosen service solutions (Reason, Lovlie, Flu, 2016, p. 167-168) followed by organizational impact analysis. In the organizational impact analysis the impact of service design to delivery organization is defined (Reason, Lovlie, Flu, 2016, p. 174-175). Organizational impact analysis makes a direct connection between the customer experience and the delivery mechanisms

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6. Validation of Ylläs development plan

This chapter discusses the validation of Ylläs development plan.

6.1. Validation Round

This chapter presents the viewpoints collected and discussed in the validation meeting of the Ylläs development plan introduced in chapter 5. The key elements of the development plan have been reviewed by the executive manager for Ylläs Travel Association and project coordinator for Open Arctic MaaS program.

In the chapter Method and Material (chapter 2.1.3) I planned that the main elements of the development plan would be presented to and discussed with Visit Ylläs (Ylläs Marketing Ltd) and Ylläs Travel Association to get feedback and reflections on the development plan. Sustainable mobility as an area is driven by Ylläs Travel Association and it was agreed with executive manager Hanna Ylipiessa that as Ylläs Travel Association is in charge of Mobility as a Service at Ylläs, there was no need to involve Ylläs Marketing Ltd in validation of the development plan. Therefore, no validation with Ylläs Marketing Ltd took place.

The main target with the presentation and discussion was to review the prioritized development steps and experiences and input behind the development steps. There was also an interest to get knowledge of the Open Arctic MaaS program and its' influence on the sustainable mobility activities at Ylläs.

6.2. Arctic MaaS

Arctic MaaS is the next service development initiative at Ylläs. As it is mentioned in the next key points and feedback, some basic information about Arctic MaaS follows here.

Arctic Maas is a publicly financed development program for sustainable and smart mobility in Northern Finland. The program is driven by Sitra, VTT and a large amount of Northern Finland municipalities and organizations with the aim to create Lapland route planner. Lapland route planner uses the Digitransit platform based on open source code

and developed by HSL and Trafi. The maps used in the Digitransit platform are based on OpenStreetMap. OpenStreetMap is built on open data and the functionality is commonly developed by a large number of actors and basically by anyone who wants to add specific map points and mark specific sites of interest in the Northern Finland Region and make it available to all users (Arctic Maas program, 2019).

The participating organizations will make an effort to mark important and for every day mobility useful points of interest and information for travellers and local inhabitants and in this way enrich the platform functionality as a common effort.

Lapland route planner has the aim to be a door-to-door route planner using public transportation and shared transport services and covering the Northern Finland area.

6.3. Key points and feedback

Hanna Ylipiessa found the development plan reflecting correct and important development areas. Hanna also highlighted the fact that in getting smart mobility to work in practice, the work is so much more than just about choosing the right app or concentrating on the technology issues. A large part is about guiding the customers in the physical world and putting the correct service infrastructure in place, and Hanna found it good that the development plan was on a broad level and not focusing on a specific problem issue within the smart mobility. Bus stops in the north can become for example very difficult to detect for the tourists after heavy snowing, and work has been done to make them entertaining and findable in any weather.

As described in business challenge and current state analysis for thesis, Ylläs has been a forerunner in testing different applications in some years' time and through the exercises with mobile apps Ylläs Around and Tiketti come to the knowledge that the easy usability is an absolute requirement, but also with the best specific app for Ylläs, it is very difficult to get visitors to download an app for their one week visit or the only visit in their life time at Ylläs. Success in implementation and in operational work when the service is running, demands a very active supplier that is keen on collaborating with the stakeholders on continuous basis. The earlier and other specific app initiatives at Ylläs could not live up to the requirements on usability or implementation and onsite support. Therefore in the ongoing activities within the Arctic Maas, the target is to develop the Lapland route

planner based on openly available data. With the maps made available by OpenStreetMap and the service based on Digitransit, many visitors might already be using the same app or a web-based service from their home location and keep on using it at Ylläs, which makes them naturally better prepared for public and shared transportation at Ylläs. They can also easily and on their own explore the transportation alternatives to and from Ylläs with their local public transportation service.

Activities are now ongoing to hire developers and build back end system support. The local bus transportation companies will build their own interfaces to the route planner service.

Hanna Ylipiessa shared further that by the end of the year, visit Arctic Nordic bus program will start in operation. It will be possible to travel with bus from North of Norway to Sweden and further to Finland.

There are interesting new travel habits arising supporting the sustainable mobility The retired visitors who always took their own car to Ylläs, use to a growing degree the services by Onnibussi. as they find the length of the driving too long for them to drive any more and see Onnibussi also as a very economical alternative.

6.3.1. Service solution 2 for international groups

International groups are definitely a target group for Ylläs but according to Hanna Ylipiessa not directly in Ylläs Travel Association’s hands. Ylläs works for example with a British travel ageny who plans all their activities at Ylläs on their own but buy for example shuttle bus or taxi services from the Ylläs service providers. It makes sense to support growth in this segment as they bring business to Ylläs municipality as a whole.

6.3.2. Ylläs as a growing cycling resort

One of the top priorities for Ylläs is to move away from the one winter season business. With cycling Ylläs can grow in addition to winter resort activities to become a summer sporting resort.

Cycling routes and possibilities to transport your bicycle are now being developed in an EU-financed program.

There are still challenges to be solved in order to become a resort, which is active in 4 seasons in the year.

6.3.3. Cooperation with national transport service providers VR and Onnibus

Hanna Ylipiessa said that there is a good discussion climate with VR regarding railway travel and Ylläs is running campaigns for Onnibussi travel to Ylläs

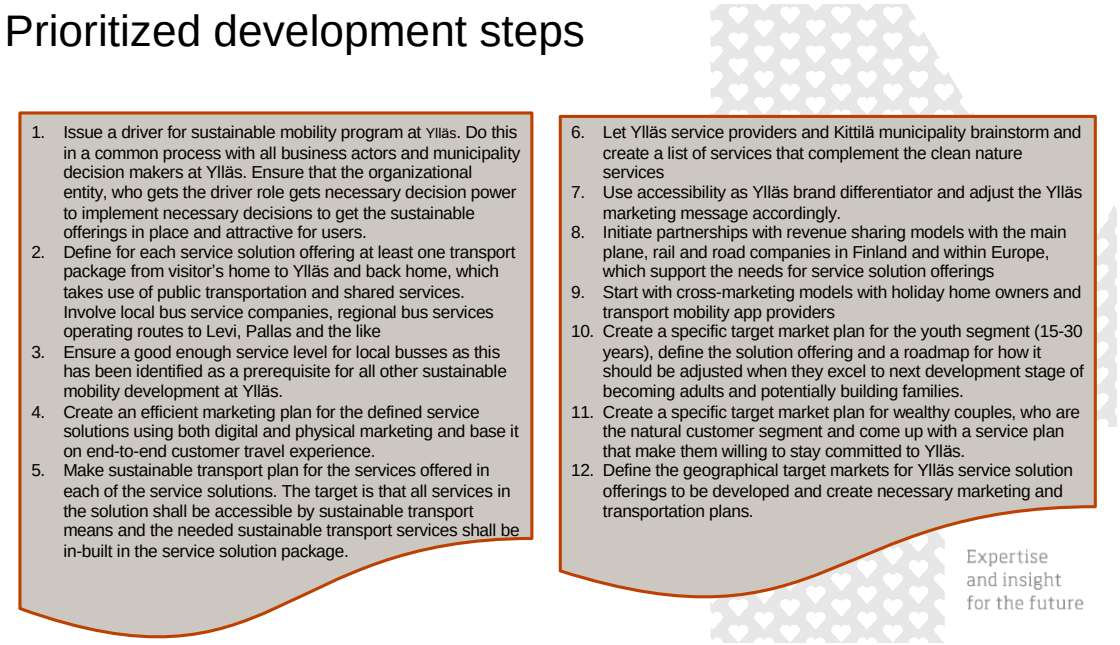
6.3.4. Presented benchmarks

Hanna Ylipiessa found it valuable to see that the Central and South European resorts work mainly on the same challenges than their counterparts in the much less populated North.

There are specific challenges due to the scarcely populated areas and large distances between the different accommodation and interest points. Ylläs has also due to their uniqueness from geographic and population challenges point of view received a lot of attention in the Arctic MaaS program. Ylläs road structure is quite unique and challenging for public transport. The main roads merge to hundreds of different sub roads, many of them so small that it is impossible for busses to make turns and no large bus service can be offered along the sub roads. For these roads other than bus transportation like for example bicycles must be planned.

6.4. Final Ylläs development model

The final Ylläs development model stays as it was before the validation, and is as follows:



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The service solution content will have more focus on cycling and the specific characteristics with international groups but the main twelve activities in prioritized development steps stay the same.

7. Conclusions

This chapter summarizes the thesis contents and results and its' implications for further development.

This thesis presents the development plan for sustainable and transport mobility for Ylläs resort. Ylläs target is to provide an exceptional nature and outdoors experience for the domestic and international visitors as well as the local inhabitants making it possible to visit the attractions and accessing the outdoor experiences without an own car. Ylläs objective is to develop Ylläs future uniqueness around the core strength accessibility and develop the service portfolio to gradually serve visitors and locals during he 4 seasons of the year.

Ylläs user survey for sustainable mobility executed in 2017 brought valuable insight of Ylläs current state when it comes to accessibility and user views on public and shared services. Ylläs Travel Association views and the history with smart mobility pilots gave necessary insights to understand the background, organizational and accessibility challenges at Ylläs. Service design research and literature findings of collaborative service design has formed the base for the conceptual framework. Three benchmark implementations in Austria, Germany and Italy were reviewed based on a literature review and the successful ideas generated during the review also influenced the creation of the Ylläs development plan.

My interest for sustainable mobility at Ylläs started with understanding the user drivers and the conditions for a successful business model. During the process I learnt that the challenge with transport mobiliy at Ylläs and at other scarcely populated places with long distances and less developed transport infrastructure are connected to multiple other themes like cultural heritage and uniqueness, the challenges of cold and snow rich winters and organizational and strategic and shared vision.

The development plan works now as one of the guidelines for Ylläs Travel Association together with the common program Arctic MaaS. In Arctic MaaS accessibility is developed with means of technology and practical improvements in Northern Finland and Nordic Arctic area. I think that Ylläs has already made good progress compared with the situation in 2017.

The thesis objective was to produce a recommendation and roadmap for long term development for Ylläs. I think that the prioritized development steps presented in chapter 6 fulfill this objective. It presents the way towards accessibility as a core strength and the chapter 6 also makes suggestions on which the prioritized customer segments could be and gives proposals on the services offered to these customer segments.

There are naturally more activities needed for Ylläs to realise accessibility in full effect but the development plan takes Ylläs to a good level together with other activities already ongoing.

Ylläs challenges with accessibility is an interesting area and it was exciting to follow the development and get insight to the resort practical challenges with their service offering and Ylläs accessibility.

I managed in my view to find good benchmarking cases and position the development plan on a manageable level. However, it is difficult to create well working development plan to suit a real case when you are not part of and tightly connected to the organization. I am happy to see that Ylläs has taken use of the findings made earlier in user survey and some of the earlier suggestions within the area.

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Appendix 1

User Survey Ylläs mobility services 2017.

Questions

Below are the questions in the English version of the Ylläs mobility user survey.

Ylläs Around user survey

This survey is connected to a research study and we are searching for feedback in order to develop services offered in Ylläs region and enhance the Ylläs Around mobility service.
Thank you for your time and very valuable feedback!
The responses are analysed with statistical methods ensuring that individual responses cannot be identified when research results are published.

* 1. Are you visiting Ylläs region

- ◯ for holiday?
- ◯ for business purpose or attending a work related conference?
- ◯ as local commuter and for short distance travel?

Please add details to your travel purpose here if you wish.

2. I am

Here you can give your exact age if you wish.

* 3. I have used Ylläs Around-mobile application

- ◯ not at all during my stay in Ylläs
- ◯ 1-4 times during my stay in Ylläs
- ◯ 5 times or more during my stay in Ylläs

* 4. Please tell us why you chose to use Ylläs Around mobile app when getting around in Ylläs region.

* 5. If you have not used Ylläs Around at this time, please tell us why not.

* 6. Which services have you been using when visiting Ylläs region?

- [ ] local bus/SkiBus, airport bus to or from Kittilä airport, bus connecting to or from Kolari railway station
- [ ] taxi
- [ ] event services like buying movie tickets at Kellokas Visitor Centre, attending to tours organised by Kylmämaa or other programme organisers or visiting the Snow Village
- [ ] ski resorts services
- [ ] cafés, restaurants or speciality shops or handicraft stores
- [ ] healthcare services
- [ ] conference services

Please tell us what other services you have been using or give us some additional information of your choices.

7. Which additional services would you like see in Ylläs region when you visit us next time?

* 8. If the services you prefer could be bought through the Ylläs Around mobile application, I would use these services

- ( ) more
- ( ) equally much as without the mobile application
- ( ) I am not sure about my preference

Please tell us more about your views and preferences.

* 9. What is your perception of Ylläs Around mobility service?

- ( ) I think the service is useful and I like it.
- ( ) I have not yet discovered the benefits with the services but I am neither against using the service.
- ( ) I do not see that the service is useful for me.

Please tell us more about your experiences and views.

10. Can we contact you after your visit in Ylläs and ask additional questions? Please insert your e-mail address and phone number in the field below.
Thank you for your responses!

User survey Ylläs mobility services 2017

Answers

265 responded on the Finnish survey and 9 on the English survey. The results in English translation refer to the responses in the Finnish survey. The results from the English version are not given here as they do not add any other information

not already present in the results to the Finnish Survey. Some questions were expressed some differently in the Finnish and English survey and therefore there is some discrepancy between the English question and corresponding translated answer from the Finnish survey. Complete report and the summary of the user survey questions and answers are available in Summary of Survey results 21.6.2017.

User survey, Ylläs mobility services

Q1

Are you visiting Ylläs region		
Answer Options	**Response Percent**	**Response Count**
for vacation?	90,2%	239
for business travel?	4,2%	11
as local commuter or for short distance travel	5,7%	15
Please specify if you wish your visit purpose.		127
	answered question	265
	skipped question	0

Visit purpose:

Cross-country skiing, downhill skiing, bicycling, visit Ylläs every 6 weeks, own cottage, local, season worker partly owned housing, all vacations, 6 months in a year at Ylläs.

Q2

My age is		
Answer Options	**Response Percent**	**Response Count**
7-25 years	10,2%	27
26-45 years	50,2%	133
46-63 years	30,9%	82
64-90 years	8,7%	23
	answered question	265
	skipped question	0

Q3

I have used Ylläs Around or Ylläs-tiketti mobile applications during my stay		
Answer Options	**Response Percent**	**Response Count**
0 times	91,7%	243
1-4 times	6,4%	17

5 times or more	1,9%	5
answered question		265
skipped question		0

Q4

How important do you view sustainable transport mobility? Could you consider not using an own car for moving within the Ylläs area?

Answer Options	Response Percent	Response Count
This is very important in my view.	40,8%	108
This would be a good alternative but I would still use my own car at Ylläs at least partly.	49,1%	130
I do not see a need for transport mobility services without an own car.	10,2%	27
answered question		265
skipped question		0

Q5

How should the services be organized at Ylläs so that you would spend your vacation or organize your business trip without own car?

answered question	265
skipped question	0

Free text answers about services without an own car:
I need own car, services at both sides of the fells, skibus, bicycles transported in the bus, free bus rides, transportation built into the accommodation fee, from the cottages easily to free ride skiing, in most places the ski bus is for free, frequently served bus routes, family prices for public transport, public transportation at everywhere, services closer to each other, good connections to Levi and Pallas, good add for sharing transportation costs, bus every ten minutes, possibility to get with bus to the grocery shopping and to downhill centres, more services near hotels Taiga and Saaga, bus routes near to hiking routes, non-stop busses, cheaper public transportation

Q6

We would like to increae Ylläs service portfolio by combining daily used services and experience type of services with sustainable transport services. As background information we would like to know which services you have been using during your visit at Ylläs or if you live at Ylläs, which services do you usually use. You have paid for the services either with Ylläs app, with cash or as card payment. You have used the following services:		
Answer Options	**Response Percent**	**Response Count**
Local bus, i.e. skibus, airport or bus to railway station	44,9%	119
Taxi or shared taxi	45,7%	121
Events and experiences like cinema at Kellokas, program services or visit at Snow Village	35,5%	94
Ski centre services	79,6%	211
Services related to cross country skiing, bicycling, hiking or other outdoors activities	78,9%	209
Café or restaurant services or speciality stores	96,6%	256
Health care services	24,5%	65
Conference services	1,9%	5
Rental car services like ShareIT Blox Car	1,1%	3
Or please tell us which other services you used or give some other information relating to your service experience.		32
answered question		**265**
skipped question		**0**

Free text answers about used services:

Theatre, beauty salons, massage services, grocery store Jounin kauppa, café's at cross-country routes, sleigh rental, dancing, spa, food delivery services, hotel/holiday home rental and equipment rental services.

Q7

Which other services do you wish to be offered in the future at Ylläs?		
Answer Options	**Response Percent**	**Response Count**
Neck massage during transportation	24,9%	66
Local guide to inform about actual events at Ylläs	44,2%	117

Recipe and ingredients about Ylläs area speciality meal to be delivered to skibus when leaving from slopes to the holiday cottage	24,9%	66
Order Santa Claus or Easter Chicken character to your home to prepare the speciality meal or entertain for 30 minutes	6,0%	16
Or please tell us what kind of services you would like to see combined with sustainable mobility or as standalone services.		96
	answered question	265
	skipped question	0

Free text answers on service suggestions:
More downhill bicycling routes, night club, entertainment activities for kids and more after ski events, more routes for cross country and snow shoeing in the fells with transportation to the starting point, delivery of meal packages to holiday homes, longer opening times for the store Eelin kauppa, rental of bathing tubes for outdoors use, bread and cake deliveries to cottages mornings or evenings, reindeer or husky riding, skiing and nature route guiding services

Q8

If the services in your wish list could be bought through mobile apps, I would use the services		
Answer Options	**Response Percent**	**Response Count**
more	21,1%	56
as much as also otherwise	42,6%	113
Difficult to say	36,2%	96
Please share your views to us.		24
	answered question	265
	skipped question	0

Free text answers:
If the app is easy to use, I would use it more; Supermarket orders (Jounin kauppa) through the mobile app directly delivered to the cottage; marketing of different activities like spa trips to Levi, or sleigh safaris through the mobile app could be attractive; could be a good way to share the knowledge about available services at Ylläs

Q9

What is your perception of sustainable mobility services defined as mobile apps Ylläs Around and Ylläs Tiketti?		
Answer Options	**Response Percent**	**Response Count**
I think the services are useful and I like them.	12,1%	32
I have not yet found the services as useful but I am neither against them.	34,0%	90
I don't find the services useful.	1,5%	4
I have not heard about Ylläs Around and Ylläs Tiketti and I don't know what they are.	52,5%	139
Please share us more of your views and experiences.		19
	answered question	265
	skipped question	0

Free text answers:

The are nice but the user interface could be improved and usage could be even better. It would be great if one could see from the mobile which lifts and slopes are currently open.; App information and time of actual arrival for the busses should be better synchronized, updated in real time; Still development to be done.

Q10

Can we contact you for further questions?Please add below your e-mail address and your phone number. Thank you for our responses. Your contribution is very important for us.	
Answer Options	**Response Count**
	100
answered question	100
skipped question	165

Interviews

Interview with Joanna Karinen at Ylläs Travel Association, 27.3.2017.

Questions & Answers

Q1. Please share with me the history of mobility services at Ylläs

A1. Ylläs Mobility as a Service project has been a part of the Aurora development program where the target was to create ecosystem for smart and autonomic transport system within Northern Finland Area. The prestudy showed that Lapland would be an interesting environment for autonomic traffic. The service costs were estimated to be covered during the high season and during the low seasons the services could also be beneficial for local people.

The Finnish Transport Infrastructure Agency provided financing for 2 years based on a suitable app. After that additional financing was not given. The transport alternatives are bus to and from airport, bus to the Kolari railway station and back to Ylläs as well as local ski bus.and shuttle bus between the fells and to attractions like Snow Village.

Q2. You said that the pilot project did not succeed. Please tell me about the challenges and their background.

A2. The biggest challenge with the mobile app is the marketing, sharing the knowledge that the app is existing. Most people do not want to download the app and there is no realtime GPS tracking. Busses come too late or not at all, and they might be full with travellers once they stop at the stop you are.

Q3. Marketing has been insufficient. Why was that so difficult as it can be seen as an operation activity that can be planned and done.

A3. Telia Company (then Sonera) said that the marketing cannot start before the app is ready. The service was launched in March and there was only 1-2 months winter season left of the first year. In the second year of piloting (2016-2017)the service was running since November but the bus service provider could not provide the bus time table in time for the app launch. There are bus stops where the driver stops only when someone wants to leave or enter the bus and it was difficult to base the time table on that vague information. Also in the second year the marketing was therefore started quite late. Additionally the organizational change between Ylläs Travel Association and Visit Ylläs (Ylläs Marketing Ltd) had a large effect on marketing. Ylläs Travel Association is responsible for MaaS services but the marketing resources are at Ylläs Marketing Ltd. The heard of

Ylläs Marketing Ltd does not see that marketing budget can be used for marketing of Ylläs Around service. Ylläs Travel Association has given out brochures at SkiExpo and at the Travel Exhibition and has also published ads in the local newspaper. Ylläs Travel Association were expecting that the local service providers would more strongly bring up Ylläs Around in their own marketing. There has been flyers in the ski busses, bus to the airport and railway station, and in hotels but the other service providers have not until now mentioned Ylläs Around in their marketing activities. The local paper Kuukkeli has been writing quite much of Ylläs Around service.

Q4. Ylläs has also international visitors. Which foreign people and groups come to Ylläs and what do they do?

A4. Foreign visitors come to Ylläs usually without an own car. Many of the foreigners come in groups and basically the travel agency has filled in advance their stay with full of activities. The travel agency does not cooperate with Ylläs Around or Ylläs Travel Association. The same busses are also used to transport the foreign groups. The busses could be utilized better if there would be cooperation and a mix of foreign groups and other travellers travelling in the bus. Visiting the small villages interests the foreigners but in practise it is very difficult to visit the places. Ylläs shuttle with 8 people in the taxi organizes trips for example to Snow Village twice in the week.

Q5. What is your view of the current bus service?

A5. The ski bus serves now between the most central locations between Ylläsjärvi and Äkäslompolo. The users would like to see the service to be expanded to further away from the village more central locations. The idea has been to get more parties to finance the busses and in this way be able to provide lower bus tickets. Bus ticket together with one week slope ticket is 50% cheaper (3,50€ both ways) than standard one-way tickets.

Q6. Which services could be candidates for packaging together with bus transport, shared transport or other sustainable transport tickets?

A6. Examples of other than transport related services are cinema visits to Visitor centre Kellokas. Ylläs Around app is based on open data platform, and anyone could offer rides to any other people and offer the services via the app. Cinema ticket with transportation included or entrance to Lainio icehotel could have some examples of new services. Dance and concert tickets could be another option. The transport services could be extended further out to the national park. The fee for cross country skiing tracks could also

be paid with Ylläs Around. There is also some demand at Ylläs for ResQ-service used in the Helsinki area. Via ResQ-service you can order excess food from the restaurants to your home address. The owners of local restaurants think however that the service is quite difficult to be maintained or there is simply no meals to be sold on discount at the end of the day.

Q7. Is there any cooperation with the transport providers from the visitor's home location?

A7. When the taxi licenses are not any more regulated, anyone can apply for taxi license. Lufthansa has opened up there timetables as the first airplane company to anyone's use. Lufthansa flies to Kittilä and now it would be possible to build a a door-to-door route from a German home location to the Ylläs holiday cottage.

Shareit Blox Car peer-to-peer car sharing service will be added to Ylläs services. Currently Ylläs has 4 cars in the car sharing service. Tuup has started to offer cheap taxi rides from 2-30€. The objective is to be able provide end-to-end travel chain by connecting taxi riders with busses and other public transportation.

Q8. What are your objectives and in the other hand challenges for Ylläs Around or other transport mobility solution?

A8. The target is that the bus service would in the future be more frequent and extended also to the outer areas. The challenge is to match the timetables of different service providers and to integrate all to the same service. Ylläs Around gives a bus route for a certain flight or train arrival time. If the flight or plain arrives late, the message is not forwarded to the customer. This effects the service trustworthiness. The travel association would like to see that the bus service providers would develop their route service. The original target for the Ylläs Travel Association was to find a mobility system provider, which would take an end-to-end service responsibility. With the experiences now acquired from the cooperation with Sonera, it is not probable that some other instance than the organizations at Ylläs would take financial responsibility for the operations. At Ylläs the yearly income must be earned within 3 months. It would also be important that in shared taxis the lower price would be felt by the customer and not as currently taken by the driver.

Interview with V. Rundgren (2017). Interview conducted with Lasse Rundgren, V. Rundgren Ky. 24th November 2017.

Backround to Lasse Rundgren and V. Rundgren Ky

Lasse Rundgren has been serving the passengers at Ylläs since beginning of 1980s. His brother was before that running the bus service to and back from the airport. V. Rundgren Ky offers the bus service from Ylläs to airport and Kolari train station and back to Ylläs.

The themes for the interview were:

- Transport of bicycles and other large equipment in the bus
- Current bus service route
- Storage of luggage
- Bus services to surroundings
- Luggage and equipment logistics services
- Bus ticket payment

Transport of bicycles and other large equipment

Bicycles are flight are usually no problem as they are well packaged during the light travel. Taking bicycles to the bus after train is currently not possible. Quite often there are 50 persons and 100 luggage in the bus and there is no more place for bicycles. Bicycle transport would mean a separate transport. In the autumn low season, there are travellers coming with bicycles and a couple of bicycles can be taken with the bus. Quite often, travellers with bicycles take contact in advance and ask whether bicycles can be transported in the bus. In the winter, sometimes people want to carry sledges with them in the bus. You cannot enter the bus with slalom boots as there is a risk of injury due to slippery floors and stairs. Cross country skiers can enter with their skiing bootsa. The busses used are long distance travel busses so all equipment is put below the bus.

Current bus service route

The bus takes after Kolari train station the route Kolari-Äkäslompolo-Ylläsjärvi. Sometimes, if the train arrives late at Kolari, the route is changed and the bus drives first to Ylläsjärvi. Otherwise, it might be that the bus would not manage to drive the Ylläsjärvi passenges at all to their destination because of the time table for the rest of the day.

Storage of luggage

We discussed possibilities to store luggage in the bus or elsewhere nearby at the last day of vacation. The busses drive to airport, pick up new passengers at Kolari train station and have also other scheduled bus services and pick up passengers to go to Kolari train station shortly before the bus scheduled leaving time. It is not therefore not possible to store luggage in the bus and there are currently no other alternatives either for storing the luggage the last day. Discussions should be taken with Ylläs Travel Association to get a luggage storage service in place. Learnings could be taken from the Airpro Travel Service offered by Finavia.

Bus services to surroundings

According to the feedback collected in the user survey mobility services, there are no bus services from Ylläs to Pallas and Muonio. There were also practical connections in the wish list to Rauhala, from where there is a connection to Enontekiö, Hetta and Kilpisjärvi. Several respondents wanted to see also bus connections to Ahvenkangas, and some others wanted to see more frequent routes to Kaulavaara and Karila. There was in general a large demand on regular bus connections throughout both villages, also the to the scarcely populated areas.

Lasse Rundgren told that there are connections to Levi. Levi routes are operated by Eskelinen Lapin linjat (http://www.eskelisen.fi/) and Tunturilinjat (www.tunturilinjat.fi). The route starts from Kolari train station and heads towards Äkäslompolo, drives through Ylläsjärvi and continues to Levi. At Ylläsjärvi there is a bus stop at the supermarket store Eelin kauppa. From Eelin kauppa the bus continues to airport and from their to Levi. Busses drive to Levi once a day and there is a longer waiting time at the airport before the bus continues to Levi.

V. Rundgren Ky drives scheduled bus routes at flight daparture and arrival. In Ylläs Around there are the timetables for busses to Ylläs but not those for Levi. There is also the possibility to take shared taxi to some Ylläs locations but not many people have been using it.

Luggage and equipment logistics services

The services would be provided from the airport and train station to Ylläs and back and in larger scale than today (bicycles and other large equipment). What additional requirements would it demand from the bus vehicles and from the drivers and employees?

Lasse Rundgren told that there are 21 scheduled bus routes planned for the forst 10 days in December (1.12-10.12). There are 31 scheduled routes in the following week (11.12-18.12). There is a larger number of Finnair flights in the high season.

Foreign chartered groups arrive at Ylläs, some of their journeys are organized by foreign travel agencies. Ylläs express (led by Juhani Salokangas) drives these busses and other people, except the foreign chartered groups, cannot use these busses.
No extra fee is charged for skis or luggage in the bus.

Bus fee is 12,60€. Onnibussi charges 1-5€ tickets. With Rundgren pricing it has been possible to serve also in low season when there are pre-booked travellers.

Bus ticket payment

In the user survey mobility services several users raised the possibility to pay with walttikortti (http://waltti.fi/walttikortti/) or other payment card, which is either for free or has low start-up or usage costs. The other payment type which was proposed was a travel card where value could be refilled or a mobile application

Lasse commented about Ylläs Tiketti as a payment device. Ylläs Tiketti was much more popular as payment device than Ylläs Around. Other customers paid with the bank card or as cash. It would be best to be able to skip the cash transactions in the bus.

Lasse told about the cooperation in bus service booking and payment with Matkahuolto. Since 2016 approximately 20 places in each bus travel is reserved for booking through the Matkahuolto e-booking service. Matkahuolto's system was less expensive for the bus service operator than Ylläs Tiketti. There is a monthly fee enabling the the payment through Tiketti. Additionally the bus service operator pays a provision on the ticket account. The ticket fees should be increased in order to have a business case for Ylläs Tiketti payments.
In general, mobile payment system for tickets is preferred because simiutaneously information can be spread to the bus service operator of how many customers have pre-

bought tickets for example to the scheduled bus from the airport. Information 3 hours in advance would be enough to know what size of the bus is needed for the specific route. Currently the customers can buy tickets but they do not get any update on route changes, and delays in bus departure time.

In comparison of Ylläs Tiketti and Ylläs Around, it was easier to buy ticket with Ylläs Tiketti. In Ylläs Around the user had to know the the train schedule or the destination address. In Ylläs Around you could see the busses for the next hour. Ylläs Tiketti tickets were valid for the next 7 days after uploading the ticket. The bus operator could see that a ticket had been bought but not for which time and day.

With Matkahuolto service V.Rundgren Ky knew 3 hours before the train would arrive at the train station, how many passengers are coming and what are their respective names. This was very informative system for the bus service operator.

Interview questions Ylläs Express (2017). Interview conducted with Juhani Satokangas, Ylläs Express Oy. 12th October 2017.

The themes for the interview were:

- Transport of bicycles and other large equipment in the bus
- Bus service frequency
- Bus services to surroundings
- Bus ticket payment
- Luggage and equipment logistics services

Background to Ylläs Express Oy and Juhani Salokangas

Ylläs express serves the local bus service between the fells and villages Ylläsjärvi and Äkäslompolo. Juhani Salokangas is running the local bus service for the 10th year now.

Transport of bicycles and other large equipment

Downhill skiing equipment are easy to transport in the busses. The bicycles started to enter to busses in the winter season 2016-2017. In less populated bus rides, the transport of bicycles would work fine. Ylläs Express uses low-floor busses.

Busses should be equipped with bicycle hooks to hang the bicycles during transport. 2-3 bicycles could be transported per bicycle hook Bicycle hooks could be in operation both in winter and summer. Bicycling is like snow-shoeing. It is a trend that started slowly and now these forms of exercising has started to expand.

Transport of bicycles in the busses would demand some planning. How to get them easily off at any bus stop. Pyörien kuljetus vaatisi suunnittelua, kuinka pyörät saadaan nopeasti nostettua pois kyydistä. Suurempi määrä vuoroja myös maksaa enemmän.

Bus service frequency

Until October 2017, the ski bus or bus between the villages has been serving the area 3 times daily. With the new route frequency the busses will drive 6 times a day, 7 times on a high season. The first bus in the new time table will leave a 9 am from Äkäslompolo. At Ylläsjärvi most people have accommodation near hotel Saaga. Visitors living nearby Saaga will primarily not use the bus but can ski in directly from the hotel to the slopes. Cross-country skiers leaving to their excursions leave mainly from Äkäslompolo. There are a couple of bus scheduled rides middle of the day and in the evening. The last bus leaves at 8 pm. Outside the high season, last busses leave at 5.30 pm. The last bus goes always from Ylläsjärvi to Äkäslompolo. Only some visitors use normally the last bus ride of the day.

Most passengers take the bus at 10.30-11 from Äkäslompolo to Ylläsjärvi and they return at 4-5 pm from Ylläsjärvi to Äkäslompolo. These busses can be fully booked. At other times there are usually free spaces.

Bus services to surroundings

In the user survey mobility services, most users suggested a wider coverage with the local bus than currently especially at Ylläsjärvi side. There were also wishes for a weekly ticket. More routes was requested especially in the mornings and in the afternoon at Ylläsjärvi side. There should be more marketing of the local bus to share the knowledge to locals and visitors.

Juhani Salokangas told that the amount of passengers is so small that it has not been possible to offer more routes. Usually there are only 1-2 passengers to these places. Foreign travellers in the other hand have a very tight schedule during their visit at Ylläs and it is very difficult to sell them any bus rides.

For travel to Visitor Centre Kellokas, also the shared taxis could be used or offer bus rides based on pre-booked tickets for a group.

In the new bus time table, there is the plan is to offer a bus service to Snow village twice a week with the local bus.

Bus ticket payment

The bus ticket between the villages was earlier priced to 7€. Now the ticket fee is 5€ to all destinations. For a 20km ride it is according to Juhani Salokangas a good fee level. The bus ride is for free for those who have Ylläs ski card for the whole season.

There are similar type of card readers at the slopes and in the bus. It is possible to buy a ski ticket including the ski bus ride.

Luggage and equipment logistics services

Juhani Salokangas told that taxis can take a large amount of luggages and a bus the luggage for 50 people. In the taxi rides there are 8 taxi drivers delivering the service. Service organization should be planned but this kind of a service should be possible to offer to an additional luggage delivery fee to customers.

Appendix 2

List of Figures