Mobility as a Service as an example – needs of customers

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i. smartcommuting.eu

ii. Mobility-as-a-Service (MaaS)

iii. Methodologies for studying mobility

iv. Methodologies used in our project

v. Results from three countries
Our scientific objective is to research:
- How intelligent transportation system services support new work arrangements.
- How these new services can be evaluated.
- How the intelligent transportation system influences mobile knowledge workers' job contents and fluency of their work?
- How these services challenges urban planning and design, as well as governance structures.

The practical objectives are:
- Implement sustainable and intelligent transportation system services in different markets.
- Evaluate existing and new services for mobile workers.
- Offer policies and guidelines to different stakeholders.
- Collect best practices in implementation and plan the scaling up of the implementation.
Smart Commuting
Smart and Mobile Work in Growth Regions

User needs & best practices

Decision support & stakeholder process

Assessment & scaling up

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Public transportation in Helsinki region. Visualization by Lauri Vanhala
Definition of Mobility-as-a-Service (MaaS)

“Multimodal and sustainable mobility services addressing customers' transport needs by integrating planning and payment on a one-stop-shop principle”

Multimodal transport; shared mobility
+ Multimodal traveller information
+ Integrated booking/ticketing/payment

http://www.vtt.fi/sites/maasifie
Elements of MaaS ranked by UK transport professionals - Landor LINKS/LTT (2017)
All mobility options in your hand
It all started from **Turku**...

- API for Turku public transport ticket for third parties available thanks to **iQ Payments Ltd.**
- Tuup Beta app has over 1,000 registered users (in stores from May 2016).
- Route planning for all modes in all of Finland thanks to **Digitranisit.**
- Public transport departures in all of Finland Digitranisit.
- Car-sharing and taxis are on their way...
Tuup creates value to both users and mobility service providers

Visibility & access brings new customers

Demand analytics & supply optimization

Mobility options info & travel planning

Mobility service purchase & access
Seinäjoki: Kätevä (“handy”) MaaS pilot

- Kätevä was a MaaS pilot in Seinäjoki, combining public transport (buses) with on-demand services.
- There were three different service packages (like bronze, silver and gold) available with varying prices and amounts of shared on-demand taxi rides etc.

- In advance, people were asked "Which MaaS package would you like to have?"
- Majority chose "bronze" level

- In the actual demonstration phase, when people actually had to pay and choose the service, they chose silver package

Why?
People do not know what they want and what are their actual needs

“If I had asked people what they wanted, they would have said faster horses.”

— Henry Ford

People don't know what they want until you show it to them. That’s why I never rely on marketing research. Our task is to read things that are not yet on the page.

— Steve Jobs
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Accessibility during morning rush hours. Visualization by Lauri Vanhala
Factors Influencing End User Mobility Behaviour

**Personal, internal factors**

- Socio-demographic aspects
- Social behaviour
- Attitudes
- Health (physical constitution)

**Perceived accessibility & directness**

**Individual Mobility Behaviour**

- Work trip purpose
- Trip distance (km & time)
- Natural environment
- Borders and boundaries
- Transport policy (incentives & restrictions)
- Mobility offers
- ITC offers

**External factors**

**Adopted from and supplemented: H. Kemming, W. Brinkmann and S. Greger. Verkehrsverhalten Sozialer Gruppen: Soziale Aspekte Der Mobilität 2007.**
Tools for discovering user needs in service design and development

- Interviews
  - Personal interview
  - Expert interview
  - Group interview
- Observation
  - Shadowing
  - Service Safari
- Self documentation
  - Diaries
- Surveys
  - Reflective Survey
  - Customer Panel
- Five whys
- Demonstration
- Drawing
- Scenario
- Focus groups

Personas / Categories
Customer Journey

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Example: National Travel Survey (NTS) in England
Trends in England’s NTS

Chart 1: Trends in trips, distance travelled and time spent travelling: England 1972/73-2016 [NTS0101]

Index 1972/73 = 100

Note: due to improvements in methodology, there is an increase in short walks (and thus total trips) in 2016, compared to earlier years. See page 5 of this document.
In this NTS a commuting trip is defined as a direct trip from home to work, or from work to home. On this definition, 15% of all trips are for commuting. However, this means that if a (nontrivial) break in the journey is made, for example to take children to school on the way to work, the trip is no longer classified as a commute.
Crowdsourcing
Moovit: smart travel planner

- People movement
- User attributes
- Transit data
- Additional info

Moovit Urban Mobility Analytics

Exportable Data & Results Visualization
- Origin-destination matrices
- Transit Insights

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Case study comparisons: comparison of shared on-demand ride services

<table>
<thead>
<tr>
<th>Service</th>
<th>Kutsuplus</th>
<th>ISTmobil</th>
<th>Kyyti</th>
<th>UberPool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic capacity</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Market based</td>
<td>subsidized</td>
<td>subsidized</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Operator</td>
<td>HSL (regional transport agency)</td>
<td>private startup</td>
<td>private startup</td>
<td>private startup</td>
</tr>
<tr>
<td>Pricing mode</td>
<td>fixed</td>
<td>fixed</td>
<td>dynamic</td>
<td>dynamic</td>
</tr>
<tr>
<td>Price known in advance</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Reduced price for flexibility</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Connected to other modes of public transport</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Only professional drivers</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
</tbody>
</table>
Service development
MAY THE HORSE BE WITH YOU
Quick mobile mini-surveys & service development questions
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# Background information on Finland, Austria and Switzerland

<table>
<thead>
<tr>
<th></th>
<th>Finland</th>
<th>Austria</th>
<th>Switzerland</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Area</strong> (km²)</td>
<td>338 000</td>
<td>84 000</td>
<td>41 000</td>
</tr>
<tr>
<td><strong>Population</strong> (people)</td>
<td>5 500 000</td>
<td>8 800 000</td>
<td>8 400 000</td>
</tr>
<tr>
<td><strong>Population density</strong> (people/km²)</td>
<td>16</td>
<td>105</td>
<td>205</td>
</tr>
<tr>
<td><strong>Rail length</strong> (km)</td>
<td>5 919</td>
<td>6 123</td>
<td>5 300</td>
</tr>
<tr>
<td><strong>Motor highways</strong> (km)</td>
<td>900</td>
<td>2 200</td>
<td>1 800</td>
</tr>
<tr>
<td><strong>GDP per capita, nominal (USD)</strong></td>
<td>43 000</td>
<td>44 000</td>
<td>78 800</td>
</tr>
<tr>
<td><strong>GDP per capita PP (USD)</strong></td>
<td>43 000</td>
<td>50 000</td>
<td>62 900</td>
</tr>
</tbody>
</table>
The selected case areas are intentionally different by nature for analyzing different policies and mobility with related services.

- The graphs illustrate the differences and similarities between the areas.
- Therefore, the results are not representative for the respective countries.
- In order to draw conclusions beyond the sample, the results should be weighted and extrapolated according to the respective national distributions.
Competition in Switzerland: Swiss railways

- ~5300 km of rails
- 2500 km travelled per capita annually
- Reliable, fast, high quality (expensive)
- Federal Government monopoly
- 1982: clockface timetables
- 2004: reduction of travel times between largest cities
- All Swiss public transport in cities timed accordingly
  - Local trains
  - All public transport
PostBus

- ~ 2200 buses
- A subsidiary of Swiss Post
- A monopoly of Swiss Confederation
- Routes to nearly every village
- Offers different services
  - PostAuto: Bus lines (municipal, regional, long-distance, vacation)
  - PubliCar: Dial-a-bus service for lightly traveled routes
  - ScolaCar: Small buses for student transportation
  - PostCar: Tourist travel (chartered)
Swiss Pass & General Abonnement

- Switzerland has an annual ticket for all public transport for Swiss citizens
- Includes also travelling in first class in trains
- Costs 3350 euros a year for a single adult, but has several (smart) special price groups, making it less expensive as a "whole family package"

Most Swiss people consider this to be a great deal
Last-mile solutions to fulfil customer needs in Basel
Networks of single-minded?
PubliBike vs. O Bike
Vienna: Policy example of reducing ticket prices
Vienna: Policy example of reducing ticket prices
Next step?

Trips made with Whim in Helsinki before and after Whim*

MaaS
Does it deliver?!
What would make you use more public transport?

- More frequent service
- Decreased travel time
- Cheaper tickets
- Better connecting services (decreased waiting time)
- Tickets provided by the employer
- Improved reliability
- Better walking accessibility
- More comfort in public transport vehicles
- Better bicycle-transport opportunities
- Better transport possibilities for luggage/goods
- Park & ride offers
- Opportunities to work during the trip
- Better safety-feeling
- Better bicycle parking opportunities
- Street tolls for private cars in city centers

Comparison by country:
- **Finland**
- **Switzerland**
- **Austria**
Survey results of the mobile workers’ needs

Future commuting – The market potential for new modes of commuting

*The question: “Could you imagine using one or more of the following transport modes for your commuting trips?”
Tools for discovering user needs in service design and development

- Interviews
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  - Expert interview
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- Observation
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  - Service Safari
- Self documentation
- Surveys
  - Reflective Survey
- Focus groups
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Focus groups: what customers want

• **Real-time information on the location of the public transportation vehicles** (buses, trams, trains etc.). This information could be shown in the bus stops and when the following buses are expected to arrive.

• **Enhanced travel chain optimizer application** that would dynamically suggest alternative travel chain alternatives if the original one is not feasible anymore, e.g. due to delays. The same application could also announce when it’s time to leave the vehicle.

• A (MaaS operator) **service** that would tell different alternatives between the destination and current location. User could choose between different alternative travel chains based on price, travel time, CO₂ emissions etc.

• **Ability to buy the ticket for the whole travel chain** from the mobile application would ease using public transportation.
Focus group findings

- Commuters seem to choose either walking or bicycle for their daily commuting if the travelling distance is at most 3 - 4 kilometers.
- Commuters’ children saved time when the parents either took them at school or picked them up by car.
- Commuters having children combined often other activities with their commuting.
- Choosing the place of living and the choice of commuting are related to each other. Some families rather live outside the city area in a larger house and use cars for daily commuting and other activities.
- The satisfaction to the chosen mode of transport was on average good.
- For longer distances, train was considered a good alternative as the time spend on train was often used either for working or used as spare time.
- The most significant challenges for long distance commuters in the growth corridors were the last mile problem and matching the timetables of different commuting modes.
# Survey vs focus groups

<table>
<thead>
<tr>
<th>Survey</th>
<th>Focus group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantitative</td>
<td>Qualitative</td>
</tr>
<tr>
<td>Possibility to draw definite conclusions</td>
<td>Explorative</td>
</tr>
<tr>
<td>Rigid</td>
<td>Flexible, possibility to get deeper</td>
</tr>
<tr>
<td>Conclusions on the larger population of commuters</td>
<td>In-depth knowledge of commuting in individual cases</td>
</tr>
<tr>
<td>Benchmark against previous data</td>
<td>Difficult to repeat</td>
</tr>
<tr>
<td>Everyone is equal</td>
<td>May be dominated by talkative individuals</td>
</tr>
<tr>
<td>Anonymous</td>
<td>No anonymity</td>
</tr>
<tr>
<td>Less time for thinking everyone is equal</td>
<td>More time for thinking</td>
</tr>
<tr>
<td></td>
<td>May be dominated by talkative individuals</td>
</tr>
<tr>
<td></td>
<td>Social interaction</td>
</tr>
<tr>
<td></td>
<td>Feedback and instructions</td>
</tr>
</tbody>
</table>
Findings on survey and focus group methods

**Similar findings**
- Commuters cannot yet identify the usability and value added of the new emerging modes and services like MaaS.
- The most relevant unit of analysis is not an individual commuter but the family and household.
- The methods show that the reasons why private cars are used in commuting, are highly rational.

**Dissimilar findings**
- Survey does not provide sufficiently in-depth knowledge that would help understand user-specific mobility needs on individual and household levels.
- Focus group method revealed latent needs of the participants that can be solved with MaaS and related services.
- When the questionnaire deals with unfamiliar and novel concepts, the respondents rather than stopping to think about the question further, tend to skip the questions or answer negatively. The context is different in the focus group sessions; participants have more time and they can be guided to think the topic from their own perspective.
Factors affecting behavioral change in commuting