iTRACT

Improving Transport and
Accessibility through new
Communication Technologies

ITRACT – Best Practice Guide

Transnational business models for
ICT based transport services
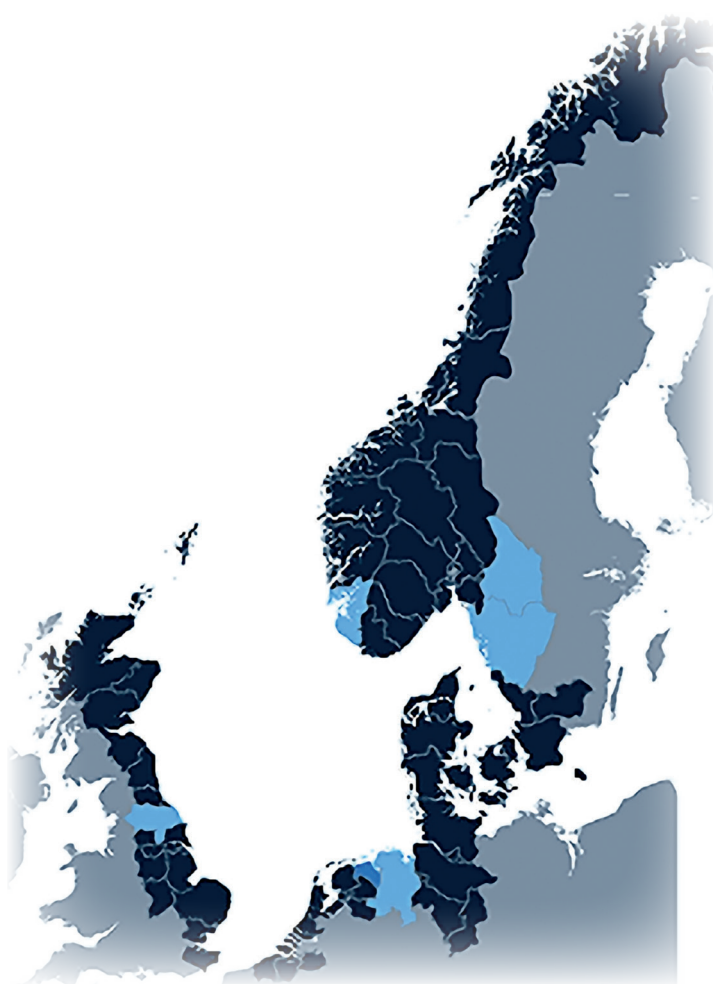
Work Package 3

'Viktoria Swedish ICT did a terrific job in empowering the participating regions throughout the project'

- Attie Sijpkes, OV-bureau Groningen Drenthe

Viktoria Swedish ICT
Niklas Johansson and
Anders Hjalmarsson
ITRACT WP 3
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EUROPEAN UNION
European Regional
Development Fund

The Interreg IVB
North Sea Region
Programme

Introduction

Accessibility and connectivity are essential for livability and economic growth throughout the world. Improving the accessibility of physical transport is important for achieving the social and economic inclusion of rural areas. In reality, rural areas lag behind with respect to physical accessibility and connectivity. The ambition of the ITRACT project (Improving Transport and Accessibility through new Communication Technologies) was to use ICT to create smart mobility services to improve accessibility and connectivity in rural areas.

The Digital Agenda for Europe is vital for realizing optimally accessible and connected rural regions in the North Sea Region. Moreover, collaboration between regions is essential to solve the problems of limited accessibility and connectivity in Europe. The transnational collaboration within the North Sea Region proved to be essential for realizing the mobility services within the ITRACT project, undertaken within the Interreg IVB North Sea Region Programme.

The ITRACT project started in 2012 and concluded in March 2015, developing more than 40 new ICT transport service concepts, in close interaction with users, transport organizations, transport authorities and local governments. These new smart mobility services were tested in fifteen pilots in five different rural regions in Norway, Sweden, Germany, England and the Netherlands. A novel ICT architecture was built to support the services. In a project extension awarded in 2013, new algorithms were developed to optimize the combined transportation of people and goods. These algorithms were also tested in pilots. To achieve the results, the project was divided into ten different work packages.

Work packages of the project

The ten different work packages were led by various project partners who collaborated in multidisciplinary and cross-border exchanges to create innovative and creative service concepts which were tested in diverse environments and regions.

General Project Activities
WP 1 Project management (Hanze University of Applied Sciences)
WP 2 Publicity and communication (University of Stavanger and Värmland County Administrative Board)

Service Development, Realization, Implementation and Testing

WP 3 Development of services and self-optimizing networks (Viktoria Swedish ICT)

WP 4 Information architecture and exchange mechanisms (Hanze University of Applied Sciences)

WP 5 Pilot testing on transport and accessibility (Jade University of Applied Sciences)

WP 7 Development and implementation of improved smart algorithms (Karlstad University)

WP 8 Dynamic scheduling and incentivizing strategies for sustainable transport (University of Groningen)

WP 9 Pilot testing on transport and accessibility (Alliance Healthcare)

Policy Recommendations

WP 6 Evaluation and strategy development (University of Groningen)

WP 10 Strategies for smart specialization of the regions (Hanze University of Applied Sciences)
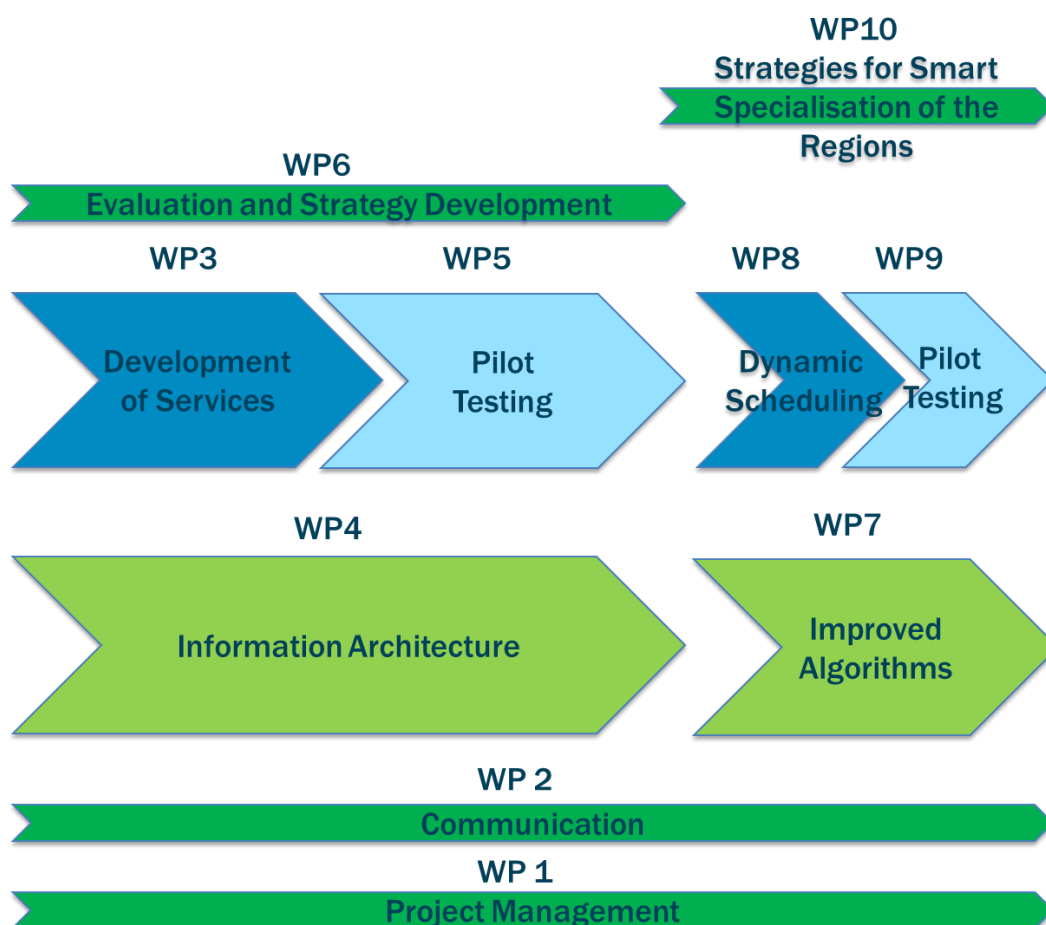
This Best Practice Guide

This Best Practice Guide (BPG), '**Transnational business models for ICT-based transport services**', presents the results of WP 3. It intends to present findings, results and key issues based on the experience of sharing expert knowledge within a transnational partnership and with various cross-border and cross-sectorial stakeholders. The aim of this BPG is to contribute to knowledge sharing and learning in relation to the key issues regarding the setting up of a transnational research programme that assesses and identifies the transport needs of various target groups in remote areas. The project and the partnership has taken into account different legislation, funding options, regulatory systems and market organization in all the participating countries. This included the work of designing service concepts to be used and tested in the participating regions. This Best Practice Guide is intended for practitioners involved in transnational service development activities.

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1 Purpose

The aim of the BPG is to contribute to knowledge sharing and learning in relation to the key issues regarding the setting up of a transnational research programme that can assess and identify the transport needs of various target groups in remote areas. Using this as a basis, the BPG proposes a toolbox to 1) transform the needs of target groups in a region into service ideas that meet challenges in the focal region, 2) assess the open data resources available in the region to build the proposed services, and 3) develop transnational business models that ensure viability in the defined services. The toolbox in the BPG presents four tools to support regional stakeholders in transforming initial conceptual ideas into service concepts with appropriate business solutions.

2 Introduction to the process and toolbox

The tools support a process with the aim of guiding stakeholders to develop service concepts based on challenges identified in a focal region. Step 1 in the process is to assess and identify the transport needs that various target groups have in the focal region. This knowledge is then used in Step 2 as input into innovative service concepts that address the challenges identified. In order to investigate the capability of the focal region to transform the novel service concepts into implemented digital solutions, Step 3 involves the assessment of the open data resources available in the region to determine and prioritize which service concepts – the results of Step 2 – can be transformed from ideas into tangible solutions. In Step 4, business models are created to determine the viability of the service beyond the development projects supporting the implementation of the services, and also to investigate whether the services can be transferred to other regions, cities and areas. The process steps, supported by the four tools in the toolbox, are illustrated in Figure 1.
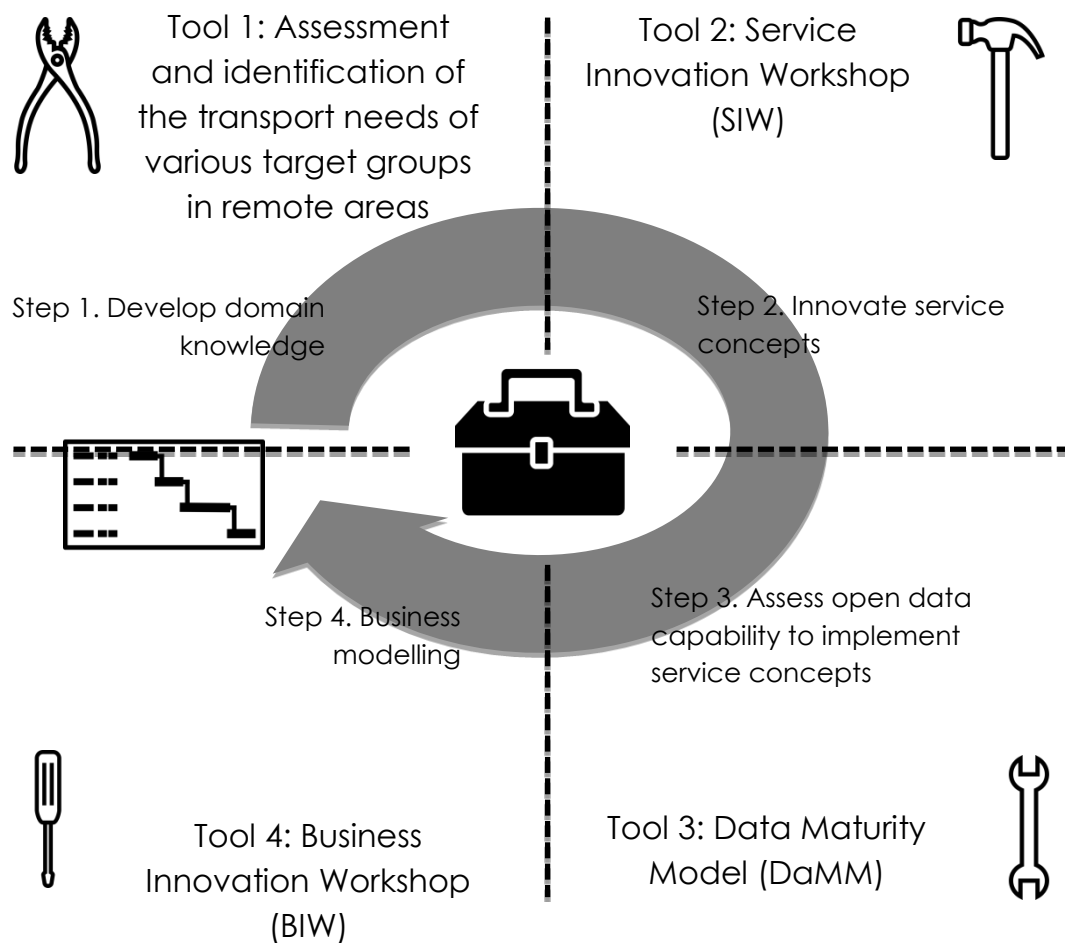
*Figure 1: From regional challenges to service concepts based on open data
with appropriate business models*

The tools supporting the first two steps are based on a user-centred design approach that argues that digital mobile and web-based services should be built to meet user needs and conditions. The techniques put forward in these steps involve both the use of user profiles that reflect and present the conditions and needs of different user groups (Hjalmarsson et al., 2015a)[1] and the provision of advice on how to set up and organize systems design workshops to transform challenges into service concepts that fit user or process needs (Hjalmarsson et al., 2015b).[2]

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[1] Hjalmarsson, A., Gustafsson, E., Cronholm, S. (2015a): Exploring the Use of Personas in User-Centered Design of Web-based e-services. Accepted to the Proceedings of iConference 2015, Newport Beach, California, USA, March 24-27.

[2] Hjalmarsson, A., Recker, J., Rosemann, M., Lind, M. (2015b): Understanding the Behavior of Workshop Facilitators in Systems Analysis and Design Projects: Developing Theory from Process Modeling Projects. Accepted for publication in Communication of the Association of Information Systems 2015.

The tool supporting the third step builds on the emerging field of open data services. Within this field, it is argued that successful open data service development must be preceded by a systematic analysis of the open data capability in the area where the digital service is to be built (Hjalmarsson et al., 2015c).[3] The Data Maturity Model provides such support.

The tool supporting the fourth step is based on the prominent and recognized canvas-based methodology for developing business models (Osterwalder & Pigneur, 2010).[4] The tool includes support concerning how to use this generic canvas – which addresses how business models can be analysed, described and illustrated – in a workshop setting, involving important stakeholders within the region, ultimately with the aim of implementing the service and making it viable beyond the project.

The BPG's outline is as follows. This introduction is followed by a step-by-step introduction to the four tools constituting the process in this BPG. The lessons learned and recommendations will follow, based on the utilization of the tools in the ITRACT project. The BPG is completed with examples (found in the Annex) of outcomes developed in the ITRACT project for each of the four steps.

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[3] Hjalmarsson, A., Johansson, N., Rudmark, D. (2015c): Mind the Gap: Exploring Stakeholders' Value with Open Data Assessment. Accepted to the Proceedings of HICSS-48. Kauai, USA, January 5-8, 2015.

[4] Osterwalder, A. and Pigneur, Y. (2010) Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers, Wiley.

3 Tool 1: Assessment and identification of the transport needs of various target groups in remote areas

Tool 1 was designed to help regional partners with the analysis of customer needs, target groups/profiles, challenges and the regional context as a basis for the conceptual service innovation to be undertaken in the subsequent phase (Tool 2). The aim of this tool was to provide a set of comprehensive and straightforward steps to be used by the different partners to align the analysis that must be done in the different regions and create a unified and prioritized base for conceptual service innovation.

Tool 1 (Figure 2) consists of four steps:

Step 1: Customer needs
- If there is material that describes customer needs, it should be condensed into a brief summary. If knowledge about customer needs is absent, then data must be collected through customer focus groups, interviews or a customer questionnaire.

Step 2: Target group and profiles
- Identify and choose one or several target group(s) in the specific region and design suitable user profiles (personas) representing each target group.

Step 3: Transport challenge
- A work model to document the transport challenge(s) that the user profiles currently have in the specific region.

Step 4: Regional context
- Summarize and analyse the specific regional contexts, based on a situational analysis of the region.
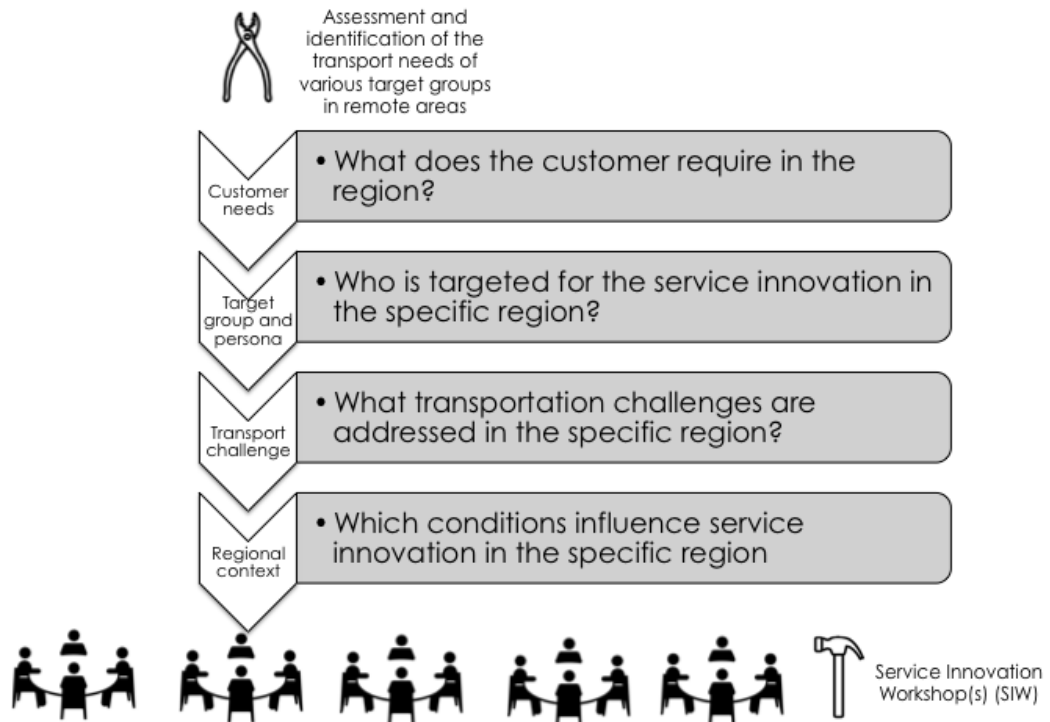
*Figure 2: Assessment and identification of the transport needs of various
target groups*

3.1 Step 1: CUSTOMER NEEDS

The first step in obtaining a good understanding of what type of service is needed
in the region is to obtain a good understanding of the customer. This can be done
in various ways. Focus groups, interviews or questionnaires are common tools for
this purpose. Understanding the customer can mean different things depending on
the purpose. If this concerns the initiation of a service development process
(which is the case here), there is a need to understand how customers perceive the
service offered today and a need to understand what the customer would like the
service to be in the future. One way of doing this is to obtain a better
understanding of customer needs. Sometimes it is better to focus on needs rather
than ideas about a potential new service, because customers do not always know a
great deal about the transportation system, rules and regulations. If the customer
talks about their needs, it is possible to use that knowledge as the start of a service
innovation process. It will also ensure that the development of the service does not
head in the wrong direction at the very beginning of the journey.

3.2 Step 2: TARGET GROUP AND PROFILES

The approach to conceptual service innovation that is used in ITRACT rests on the idea that digital innovation originates from understanding why a novel system, product or, in this case, service is needed. One component in that understanding is the articulation of the needs of the intended user of the service. In order to support the articulation of such user needs, a target group for the intended service must be selected and justified in each region. This selection activity must then be followed by an activity in which the target group is represented and described. A user profile (persona) represents one segment of the target group today, rather than any one individual. It is based on data about the user segment and depicts a specific part of the target group. The purpose of the user profile is to inspire the design of new products and services by providing support to the designer to go beyond their own values and wishes connected to the service. By focusing on needs connected to the user profile, the designer has a base from which he/she can design purposeful new services for the target group.

The target group is based on actual demographic data about the region, while the user profile is then developed and designed based on sensitive judgements made using target group data. It requires justified selections with regard to how to delimit and focus the target group (e.g. gender, age, living location). The user profile is often described in a 'story', which is connected to the purpose of the innovation (e.g. personal transportation). The story is a representation of how the target group, represented by the profile, live their lives. A user profile should therefore be based on an analysis of the values that the target group have with regard to the purpose of the innovation.

3.3 Step 3: TRANSPORT CHALLENGE

The transportation challenge should be anchored in the user profile's life situation and should illustrate a value or situation that the service innovation should meet. When a target group like this, as well as one or several user profiles representing this group, are selected, a challenge might be designed based on the outcomes achieved from using the first step in this toolbox. By analysing customer needs and comparing these with the characteristics of the user profile, one or several challenges at hand for the profile are illuminated. One way of preparing conceptual service innovation, apart from articulating the challenge as such, is to correspondingly model and illuminate different paths that the profile may use to reach his or her destination, and relate this to the transportation challenge at hand.

At a glance, this representation both describes the transportation available to the user profile and at the same time illustrates the transportation situation (choices to be made) that the profile has to make in order to reach their destination. With this pre-understanding as a baseline, conceptual service innovation can be performed

in order to develop service innovation ideas that solve the transportation challenge at hand.

3.4 Step 4: REGIONAL CONTEXT

By now, knowledge has been gained about customer needs, target groups and user profiles, as well as transportation challenges. This knowledge is related to the individual to a rather high degree. However, in order to fully understand service innovation needs, knowledge about contextual factors for the specific regions are of equal importance.

The purpose here is to become acquainted with previously gathered results and facts relating to regional decisions and policies, and, if necessary, the inclusion of any key factors for understanding the regional context. Examples of valuable facts could be:

- Number of inhabitants
- Area (square kilometres)
- List of major cities, based on number of inhabitants
- Population structure
- Economic structure
- GDP per household
- Unemployment percentage over the last 10 years
- Highest level of education
- ICT adoption and prices
- Transport sector situation, including market
- List of expected economic and social reforms in the region

An example of the use of Tool 1, created by Värmlandstrafik AB (VTAB), can be found in the Annex.

4 Tool 2: Service Innovation Workshop (SIW)

The purpose of Tool 1 is to develop knowledge and facts about needs, target groups, challenges and contextual issues. The purpose of Tool 2 is to use this knowledge and translate it into useful and valuable service ideas addressing the needs identified by Tool 1.

The overall connection between Tool 1 and Tool 2, as well as the content of the service innovation workshop, is shown in Figure 3. The knowledge from Tool 1 functions as input to the Service Innovation Workshop. The workshop consists of three major steps, **(1) Creation**, **(2) Focus** and **(3) Design**, where the ideas are refined (taking place after the workshop).
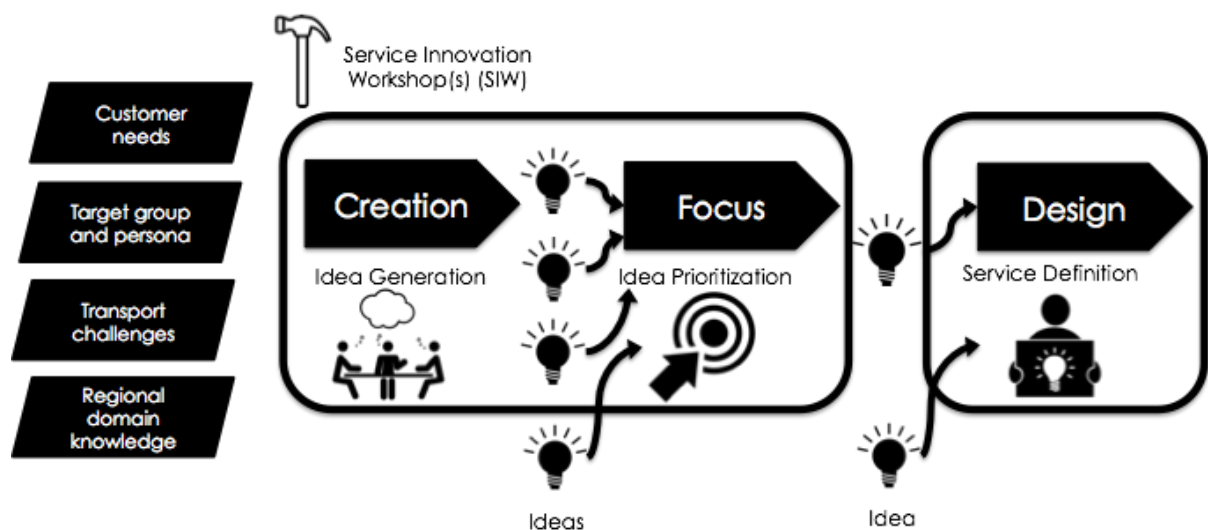
Figure 3: Service Innovation Workshop (SIW)

4.1 Step 1: CREATION

The first step, creation, can be approached in many different ways. It is important to define what you want to get out of the session, including a clear and reasonable goal. Based on the choice made, participants should be selected carefully. Once the appropriate number and composition of people are determined, the workshop should be planned in detail. Do not underestimate the importance of supplying something to eat and drink, and make sure the participants feel they are valuable. The method used in the workshop is important and will have an effect on the outcome. Here are some examples of methods (Stina Wessman, Interactive

Swedish ICT) used during the creative sessions in the participating regions. It is possible to use more than one method for this step but, preferably, choose one.

4.1.1 Memory: actor + touch-point + need

Write down each and every need, actor and touch-point defined and put them upside-down on a table. Mark them with N, A and T on the back. Then choose one of each category, come up with an idea and write it down.

Forced associations can make people think in new and valuable ways. The material researched can be used as a foundation, this session will never be a waste of time.

4.1.2 User profile (persona) scenarios

Place the user profile in a scenario to project ideas and trigger new ones. Read the scenario to the participants. Have them look at it critically and develop it into a more desirable solution. This will add context to the profiles and then test early ideas.

4.1.3 Touch-points

Service touch-points are the tangibles that make up the total experience of using a service. Touch-points can take many forms, from advertising to profile cards, web, mobile phone and PC interfaces, billing, retail shops, call centres and customer representatives.

In service design, all touch-points need to be considered in totality and crafted in order to create a clear, consistent and unified customer experience (www.servicedesign.org). Write down all the touch-points that occur chronologically during the service. Putting all the touch-points on the map will help in gaining an understanding of the whole picture, leading to a better service design.

4.2 Step 2: FOCUS

The outcome of Step 1 in Tool 2 will most likely be more than one service idea. For several reasons it is not appropriate to focus on too many ideas and therefore it will be necessary to prioritize the ideas. It is not always easy to throw away what are believed to be really good ideas, but rest assured that good ideas can always be recalled later. Nevertheless, some of the techniques below might help in choosing the best idea. Before going through this step it might be valuable to go back to Tool 1 and review the section about the target group and user profiles. This will ensure that you do not forget the intended user of the service idea.

Below, there are two examples of focus techniques: idea cards and a rating event.

4.2.1 Idea cards

Describe and represent all the ideas that have potential. Rate them together. The idea cards will help refine and rate the ideas and give them structure.

4.2.2 Rating event

Invite people to a presentation of the ideas. Display the idea cards on a wall and give people adhesive colour-coded dots to rate their favourite ideas. This will quickly make clear where the potential is.

4.3 Step 3: DESIGN

Once you have decided on one, or perhaps even two, service ideas, it is recommended that you further work you describing and presenting the ideas. There are a number of software products which can be used to illustrate the actual service and describe the functionality of the service idea. A service idea is a good start, but in order to really test whether the idea could and should be developed into a real service, you need to work more with the idea.

One way might be to describe the service in a scenario. Tell a story in which the service idea is used and make sure you describe how it functions, when it will be used and what needs among the selected profile(s) will be addressed and fulfilled. If the skills and resources are present, it is recommended that a prototype of the service ideas be built. Below are two examples of prototyping.

4.3.1 Quick and dirty prototypes

Create quick prototypes to see what the idea feels and looks like. Quick prototypes enable the further revision of the idea.

4.3.2 Experience prototypes

Prototype the concepts quickly and use these to learn from the experience. Test and refine how the concept is experienced.

An example of Tool 2, created by Connecting Dales, can be found in the Annex.

5 Tool 3: Data Maturity Model (DaMM)

While Tools 1, 2 and 4 should be completed in a sequence, this is not the case with Tool 3. Tool 3 should be regarded as, more or less, a stand alone tool, but nevertheless valuable for the overall service development process. The Data Maturity Model (DaMM) may be useful in several ways in the service design and development processes. The Data Maturity Model is especially valuable since it addresses the service transferability deliverable by simplifying the service description of specific services regarding the required and available data sources and utilization to implement digital services across regions. In particular, the Data Maturity Model addresses the question of how different open data stakeholders can benefit from performing systematic open data assessment (Hjalmarsson, Johansson and Rudmark, 2014).

5.1 BACKGROUND AND PURPOSE

The initial idea of a DaMM (Data Maturity Model) in the ITRACT project was to support regional actors in identifying, understanding and potentially publishing data by using a specification to indicate the level of data maturity. Existing frameworks, for example 'five stars of open data', were seen as insufficient indicators of data maturity service transferability, and considered as one reason why the project required the development of DaMM.

The initial purpose of DaMM was to enable the transferability of services between regions through the identification of available data sources. From a transferability perspective, data sources were seen as critical components, due to both availability and transferability. Aspects such as differences in licence agreements, data formats, etc., are examples of elements that possibly affect the design and transferability of digital services. One important aspect in service design and service realization is that relevant data sources are available and it is possible for service developers to utilize them. Nevertheless, data sources are needed for the realization of digital services, which is why the data maturity model (DaMM) was proposed as a tool to support the determination of the availability of data sources and further data source utilization.

The second purpose was to support the identification of data sources needed to realize a specific service. This is somewhat the opposite of the more general identification of available data sources in a specific region, as a specific service drives the identification of specific data sources. Thus, this analysis is also based on a similar specification structure and the same aspects are considered important.

5.2 DESCRIPTION OF CONTENT

A Data Maturity Model simplifies the representation of the current 'state of the art' regarding the availability of data (related to personal transport in the ITRACT project) in a specific region. Furthermore, the identification of available data sources can be used to compare regions with respect to how a selected service can be implemented and which actions are required to successfully implement selected services in a specific region. The Data Maturity Model includes support for the following activities:

- Preliminary (and iterative) assessment of required data sources/data sets
- Inventory and classification of data sources/data sets from a categorization
- Description and classification of the identified data sources/data sets
- Documentation of data sources/data sets

The activities for which DaMM can be used, shown in Figure 4, are not necessarily sequential. Different activities are relevant for the purpose of determining the maturity of data with regard to accessibility and transferability in a specific region, and other activities are more suitable for data categorization and specification as such.
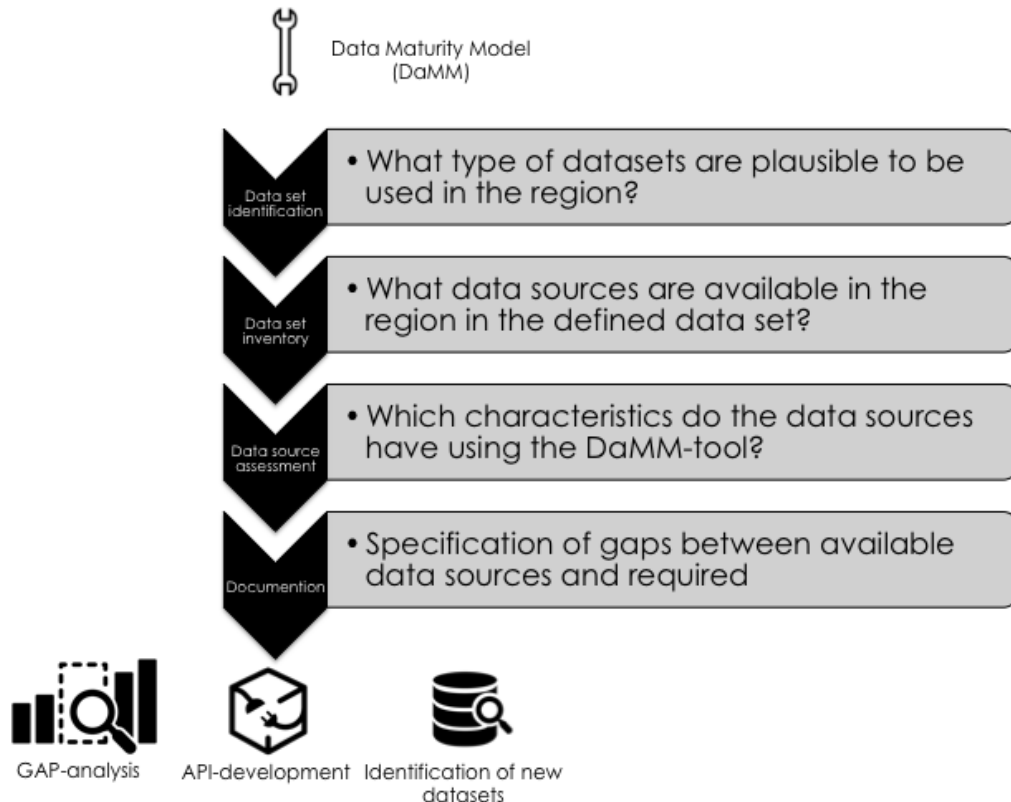
Figure 4: Data Maturity Model (DaMM)

The activities in DaMM are interconnected and could be used as a method to perform GAP analysis and/or Requirement Elicitation for API development and Data Set Identification.

5.3 Step 1: DATA SET IDENTIFICATION

Data Set Identification can be used as a basis to identify the data sets available. Furthermore, Data Set Inventory can support the specification of the data sources available for specific regions and the data sets defined, which can be seen as a more detailed description of the Data Sets. This analysis, using the DaMM specifications, can then be used, alone or in combination, to conduct a GAP analysis. Such a GAP analysis can identify the need for the development of APIs and/or new data sets.

The development of DaMM was inspired by, and is intended to complement, existing methods such as the European PSI Scoreboard (PSI indicators) and 'The five stars of open data'. DaMM provides a generic description of data sets and detailed domain-specific specifications. In ITRACT, a Data Maturity Model is especially interesting, since it addresses the service transferability deliverable by simplifying the description of specific services regarding the required and available data sources and their utilization in the implementation of services across regions.

5.4 Step 2: DATA SET INVENTORY

To be able to differentiate and compare the usability of different data sources, there is a need to define a data source on the basis of the 'data sets provided' by that source, and also to define the functional mode of the data provided. A data set in the DaMM model is a way of clustering data that shares the same context of use or area of creation. Data sources in the data sets do not necessarily have to originate from one and the same data provider, but there is probably at least one dominant actor providing data sources for a specific data set. Examples of data sets with relevance for ITRACT are public transport, roads departments, public services, etc. To support the utilization of DaMM in a service design process, both as a tool to assess data maturity and the level of transferability, and to support data and service documentation, two appendices were developed.

5.5 Step 3: DATA SOURCE ASSESSMENT

This means creating an inventory of data sets to enable an overview/assessment of data sources available and/or required to realize a specific digital service. Each data set is described through a more detailed specification and the required data sources can be characterized in terms of level of openness, process-ability, technical availability, licence availability/cost, level of support and level of

quality. These parameters have been identified as relevant in determining data maturity and enabling the assessment of a certain realization potential.

To enable a comprehensive overview of the data sources available in a region, the DaMM model categorizes data sources into functional modes. In the model, four functional modes have been defined (see Matrix 1: Data Source Characterization – an example): STATIC data, DYNAMIC data, STATISTICS data and SERVICES (which consist of data processed or aggregated to provide a new set of data).

Data set	Static	Dynamic	Statistics	Services
Public transport	Bus stop, Bus line (geographical), time table	Bus position, delays, disturbances	Bus line departure density, Bus line history of delays	Travel planner
Roads departments	Road network	Floating car data, accidents,	Road usage, transport types,	Queue detection, parking advice
Taxi/car-pooling	Taxi stops, car register	Positions	Route statistics	Ordering, pre-ride price estimate
Public service	Location of schools, hospitals etc., school curriculum	Available health care appointments	Demographics	Doctor's appointment/booking

Matrix 1: Data Source Characterization – an example

5.6 Step 4: DOCUMENTATION

This step provides a detailed description of available and/or required data sources based on a number of relevant parameters to ensure utilization of the data sources required for a specific digital service. In order to describe a certain data set and enable the assessment of the potential for service realization, and thereby the level of transferability of services across regions, the following parameters were identified as essential: Support, Access, Licence, Cost, Technical Aspects and Quality. The documentation is regarded as a valuable basis for evaluating the possible realization and development of services in other regions. Each parameter is specified by describing a number of underlying variables using 'YES'/'NO'. One integrated activity in the development of DaMM was data sources classification.

Type	Available (yes/no)	Short description	Contact info/URL
Completely free	Yes: the full and most recent version of the API/dataset that can be retrieved/used without any costs.		Link to information about this grant.
Free with restrictions	Yes: data is available for free, but under some kind of restriction, e.g. only for a limited (trial) period, older versions of the data, an incomplete dataset.	Description of the restrictions imposed on free access.	Link to information about the restrictions.
Associated with cost	Yes: there are versions of the data that need to be purchased. This does not mean that there are only pay versions.	Description of pricing model and prices (if this can be described briefly).	Link to pricing information and conditions relating to this.

Matrix 2: Level of transferability

As mentioned above, service developers are the primary user group of DaMM, and the intention is to support them in the process of (1) analysing the availability and maturity of available data sources for a specific region and possibly for a specific domain, as well as (2) identifying relevant data sources for a specific service, (3) as a basis to assess a possible service realization, and (4) to document data sources required for the realization of specific digital services. Digital services that are specified according to DaMM specifications function as an important demarcation and provide the developer with a 'quick overview' of the data sources required and the intended use.

5.7 CONCLUDING REMARKS

Even if the application of DaMM in ITRACT has been limited, we believe that DaMM has proven to be an efficient support tool for both the service innovation process and to enable the transferability of digital services across regions. In the future, when DaMM is available from the start, it can be utilized to its full potential and thereby support the design service process to an even greater extent. It is important then to integrate the application of DaMM into the overall service innovation design process.

An example of Tool 3, created by OV-bureau Groningen Drenthe can be found in the Annex.

6 Tool 4: Business Innovation Workshop (BIW)

The purpose of the BIW is to further develop the service in the direction of becoming a business. This is important because in order to be able to produce value for the intended region, the service has to become viable on the market. Important aspects of viability include the service's ability to generate benefits and income to finance the costs that are generated by the service. This tool (Figure 5) provides techniques to understand the service as a business and, based on this investigation, to develop or integrate it into an organization.
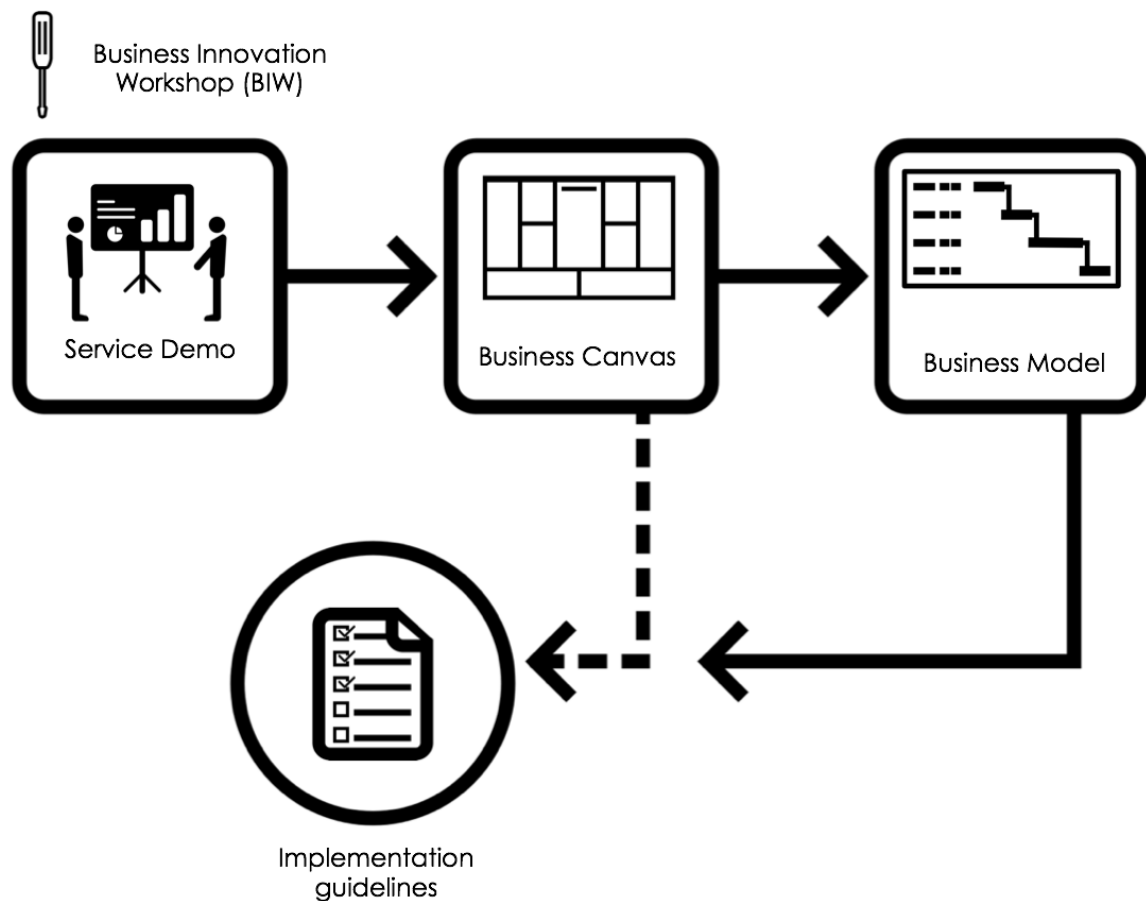

Figure 5: Business Innovation Workshop (BIW)

6.1 OVERALL REQUIREMENTS

In order to be able to use this tool, three requirements must be fulfilled. The first requirement is that the service innovation must have resulted in a tangible and presentable service. This requirement is crucial, as the investigation designed to understand the service as a business is fuelled by the value that the service provides to users and stakeholders. Thus, the value should not only be understood as a potential idea but as a reality.

The second requirement that must be fulfilled to use this tool is that a diverse but productive team with different competences is recruited to participate in the BIW. The team should be selected with care and also briefed about developments that have already occurred within the project. This does not mean that the team should be made up of people already involved in the development work: participants should be recruited with diverse competences such that they can evaluate the service developed with a critical eye, while at the same time are able to conceptualize the service as a business. The dialogue in this process will be complex and in order to smooth the process, collaborative participants must be engaged in the BIW.

The third requirement is that a facilitator team with knowledge of a business-modelling technique not only supports the team but is also involved in the investigations based on the categories that constitute the modelling technique.

6.2 Step 1: SERVICE DEMONSTRATION

To trigger the process of investigating the service as a business, the BIW starts with a service demonstration, in which a prototype of the service is presented to the participants in the BIW. The aim of this demonstration is to describe the service in its intended use situation to the participants, which will enable them to discuss the service as a business in a structured co-design dialogue. The estimated time for a comprehensive service demonstration is 30-45 minutes.

6.3 Step 2: BUSINESS CANVAS CO-DESIGN

The majority of the BIW is devoted to business canvas co-design. This process follows the service demonstration and is structured by a selected and prepared business-modelling technique. The facilitators lead this structured dialogue and document the outcome in real time as it evolves. In the ITRACT project, BUSINESS CANVAS INNOVATION (Osterwalder) was successfully used to manage this important phase. This method is structured in terms of nine blocks. Each block represents an important aspect of a business. Thus, these blocks can be used to structure the business canvas co-design into topic sequences that enable the facilitators to time-box the workshop. The blocks used were:

- Block 1: State the users who will benefit

- Block 2: State the service value for the users

- Block 3: State the channels through which the value should be transferred to the users

- Block 4: State customer relationship

- Block 5: Define which key *activities* are needed to complete, launch and maintain the service

- Block 6: Define which key *resources* are needed to complete, launch and maintain the service

- Block 7: State the key partners needed to complete, launch and maintain the service

- Blocks 8-9: Discuss revenues and costs

For each block (topic sequence), a number of questions should be prepared, with which to orchestrate the dialogue.

Example of Block 1:
- o 'Profile x' – retired, 70 years old – is one of the profiles in <the region>. Is this the primary user group for the service in region?
- o Who else in <the region> could benefit from using <the name of the service>?
- o Can other user segments be defined for <the name of the service> in <the region>?

One facilitator worked with the group and facilitated the dialogue. In parallel, the other facilitator documented the conclusions and outcome generated through the co-design approach.

6.4 Step 3: IMPLEMENTATION GUIDELINES

Step 2 in Tool 4 generates an understanding of the service as a business that becomes the building block to generate a business model for the service. In order to go from business model to a service in business, Step 3 aims to elicit guidelines from the building blocks that enable those responsible for the service to not only complete the service design but also continue to build a business around the service, to maintain the service, market the service and operate the service. During the BIW, the tentative implementation guidelines are developed by the group, as they are invited to reflect upon the outcome generated in the workshop and turn it into advice to those responsible for the service.

6.5 Step 4: BUSINESS MODEL DEVELOPMENT

The fourth step, business modelling-development, may be either an integrated part of the BIW or a separate activity performed after the workshop, based on the material generated during the BIW. The experience from ITRACT is that this step is preferably performed after the workshop, as services developed in the project demanded that the BIWs focused on several services as businesses and not only one. The outcome of this fourth step, regardless of whether it is done within or outside the BIW, is to generate a comprehensive business model that could be utilized as a business plan guiding those responsible for the service, not only to ensure the service is an ethical product but also is a viable business or activity.

An example of Tool 4, created by Verkehrsregion-Nahverkehr Ems-Jade (VEJ), can be found in the Annex.

7 Lessons learned and recommendations

One issue that has been raised a couple of times during the ITRACT project is the perceived gap between the more technical and the non-technical part of the project. This is, to some extent, explained by the actual structure of the ITRACT project. One substantial part focused on the development of services, while another important part focused on information architecture and exchange mechanisms. The connection between the people who developed the services and the people who were responsible for making them technically possible was insufficient because of the inability to communicate and understand each other. A suggestion for the successful development and implementation of digitally based services is to ensure there is good communication and alignment between service developers and ICT support developers, by using a boundary spanner who is familiar with both worlds.

This gap could also be explained by the fact that the more non-technically oriented people represented public transportation companies focusing on how to provide value to their customers, while the more technically oriented people in the ITRACT project came from different universities and focused on research issues. While some of the regional partners expected market-ready apps – not prototypes – to be the outcome, other partners in the projects declared the prototypes and the information architecture to be of great value for research.

In addition, the project was structured so that students could be part of different development activities, but in some cases the regional partners expected more professional resources to develop market-ready apps providing value to their customers. Those professional resources could not be expected from students.

Another question that has been discussed during the ITRACT project is the degree of originality and innovativeness of the services and prototypes developed. It became evident that the more technically oriented people pushed the boundaries regarding the information architecture, while the regional partners did not have the same urge to push boundaries, but rather to provide value to their customers, no matter how simple or innovative the service. These two perspectives made it difficult to maintain agreement and share exactly the same goals in the ITRACT project.

7.1 A TABLE OF HELPFUL TIPS

As a last recommendation, a few helpful tips will be given in the table below. It is divided into the four tools and the steps in each tool. For each specified step, a few short notes will be given regarding lessons learned and our recommendations.

Tool	Step	Lessons learned	Recommendation
Tool 1: Assessment and identification of the transport needs of various target groups in remote areas	Preparation	Commitment is the key!	Ownership and responsibility must be transferred to the region. Use the initial step in Tool 1 to build ownership and commitment
	Meetings	Weekly meetings make people work	Include scheduled meetings in the work process
	The outcome	The outcome must be relevant to the subsequent tools	Try to make an overall plan for all tools and the relationship between them
Tool 2: Service innovation	Preparation	It is the participants who will produce great ideas in the service innovation workshop	Make sure you carefully select the people to invite. Get support from decision-makers
	Meetings	It is easier to succeed in the market if the idea is connected to an identified need. Use the service innovation workshops to connect ideas to needs	Make sure the SIW is connected to the selected profiles in Tool 1

Tool	Step	Lessons learned	Recommendation
	The outcome	The method chosen will influence the type of ideas that will be the outcome of the SIW	The expectations of the SIW must be related to the chosen profiles, the participants and the intention of the service (i.e. prototype or market-ready)
Tool 3: Assessment of open data capability	Preparation	It is not likely that the same people will be involved in the DaMM and the SIW. Use the preparation to bridge service innovation with data assessment.	Explain why it is important for the DaMM to relate to what it is possible to develop
	Meetings	An understanding of the data available in the region must be connected to the SIW. Use the DaMM meetings to ensure this connection.	It could be valuable to include a person with knowledge about the DaMM and its content
	The outcome	The DaMM could be useful to a lot of stakeholders within and beyond the project	Publish and distribute the DaMM to stimulate open innovation

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Tool	Step	Lessons learned	Recommendation
Tool 4: Business model innovation	Preparation	The transformation from prototype to market-ready product is difficult. A successful e-service is not only a technical solution. A business must be created that maintains, explores and markets the service	Building a business around the e-service not only requires technical competence but also funding opportunities and the involvement of key actors. Invite the right people with broad competences to the BIW
	Meetings	Use the meetings in this tool to anchor the business model in relation to key topics, such as customer segments, value propositions, channels for service delivery and user care	Make sure people in the project understand that a successful service not only involves a technical solution but also a business endeavour

Tool	Step	Lessons learned	Recommendation
	The outcome	A business case which requires human activity to be transformed into business activity. Use the business model to also explore the possibility of transferring the service to other regions and markets.	Create a comprehensive business case. Build ownership and commitment to execute the business plan. This requires support from decision-makers within the organization. If several regions are involved in the project, use the same method for business model exploration to investigate the possibility of transferring solutions between markets and regions.

Table 1: Lessons learned and recommendation

The Interreg IVB
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Annex - Examples from the regions

Tool 1: VTAB – Regional context description Värmland/Sweden

Tool 2: Dales – Service Innovation Workshop

Tool 3: Groningen – Data Maturity Model

Tool 4: VEJ – Business Innovation Workshop

Toolbox WP3 The Netherlands, Municipality Oldambt

Tool 1: VTAB – Regional context description Värmland/Sweden

WP3 Värmlandstrafik (VTAB)

Contents

Introduction

In accordance with the ITRACT project, Värmlandstrafik is planning to develop an ICT solution (e.g. a mobile application) with information about public transport available in *one place* (including information on both on-demand and line services). The information will be reliable, easy to comprehend, relevant and user-friendly. Examples of content include: real-time information about vehicles, information regarding payments, delays, timetable and other changes, as well as bookings of on-demand transport services.

Värmlandstrafik will thus complement the existing public transport system with an ICT-based information service. While the focus will be on the information necessary for work commuters, the aim is for all our passengers to benefit from this new information service.

In order to limit the scale of the project it will only encompass Säffle Municipality, more precisely, the Värmlandsnäs peninsula, where Värmlandstrafik will create better conditions for work commuters.

The report follows the structure of Work Package 3 (WP3.1).

1 Customer needs

At Värmlandstrafik (VTAB), knowledge about the Värmland customers' needs is gained through:

- *Kollektivtrafikbarometern (Kollbar)*: A quality and attitude survey (industry-wide). Monthly. Based on interviews. Target group: public, 15–75 years of age (both users and non-users of public transport)
- *Boomerang*: Internal system to address customer queries
- Customer satisfaction surveys
- Customers' fora on the VTAB web and social media (e.g. Facebook, Twitter)
- Counting journeys and studying travel behaviour

Customers' public transport needs in general

Important for travellers in general:

- Time: frequency/travel time/latency (*väntetid*)
- Reliability
- Proximity to bus stop
- Vehicles and stops: comfort/safety
- Drivers: competence/commitment/driving (*körstil*)
- Information: available/usable, user-friendly
- Price

Unattractive public transport – what was dismissed/rejected in public transport?

- Difficult to use
- Critical events (unwanted experiences)
- Not reliable/safe
- Feeling that you have no control of the situation (need for control)
- High price
- Identity (not getting confirmation of your own self-image and identity)
- Being dependent
- Uncomfortable

What do non-users think?

- Public transport must become more attractive (unspecified)
- Nothing can make public transport attractive
- Lower price
- Increased supply
- Shorter travel time

What will make motorists use public transport? There is no simple answer to the question, but some important points are:

- An efficient public transport system is a cornerstone
- Find the right routes, plan for public transport
- Being able to perform their daily activities is important
- Satisfaction with travel is important
- Motorists who try to use public transport *may* be public transport users; the hard part is getting them to continue use

Customers' public transport needs in rural areas

Source: Kollbar

The needs of public transport users in rural areas

- Time: fast/short travel time
- Ease of use
- Reliability
- Relevance

Customer demands in relation to combined journeys (source: Börjesson, 2012):

- Ease of use
- Reliable service from start to finish
- Reasonable pricing
- Good connection points

- Safe connections
- Time for connections
- A complete-journey perspective

Travellers' information needs

'There is a feeling of great dissatisfaction when it comes to local public transport in Sweden. In particular, the information on delays and disruptions is far too poor, according to three out of four Swedes' (*Dagens Nyheter*, online, 09-02-2012).

Värmland is no exception to the rest of Sweden. According to Kollbar, the inhabitants of Säffle have the following opinions about public transport information:

- 60% think it is easy to get information about departure times
- 47% think it is easy to purchase tickets
- 37% think information about changed timetables and routes is satisfactory
- 25% think information about delays and disruptions is satisfactory
- 51% think it is easy to travel with VTAB
- 36% know how to travel with VTAB when it comes to most of their trips

In terms of customers' information needs concerning public transport, the following are important:

- The customers want information that is available, usable and user-friendly
- An application has to be easy to understand, easy to use and at the same time provide accurate and relevant information of high quality

This information could:

- Mitigate or even prevent certain critical situations
- Increase the customers' sense of control, e.g. by allowing them to plan their journey in the best possible way and perhaps reduce the waiting time
- Contribute to public transport being perceived as less complicated

Information needs among work commuters' in Värmland:

- *Access to combined information about both on-demand and line services.* This need can be found mostly among passengers travelling on timetabled/line-based on-demand services and who need information about other public transport line services (trains, buses) to enable connections. It is important to provide a complete picture of a diversified public transport system, as well as a complete-journey perspective.

- Information about disruptions (e.g. delays, cancellations and changed timetables). Information that is correct, up to date and easy to access and comprehend.

- Increased opportunities for 'spontaneous travel' with line and timetable-based on-demand services and complementary services. Ensure every potential passenger receives information that a trip has been booked, e.g. via a text message, informing them when someone in the same area has booked a trip. Those who want to travel as well could, through some form of simple confirmation, sign up for the same trip.

- *Facilitate private car-pooling in rural areas.* In sparsely populated areas, car-pooling can be a good alternative for work commuting and journeys with connections. An important part of the ambition to provide a complete-journey perspective.

2 Target Group

Target group selection and description

Our target group will be *commuters*. This is motivated by:

- One of VTAB's prioritized goals is to broaden and enlarge the local labour market area

- Stable, sustainable development requires better possibilities to commute to work and school

- Värmland has high unemployment rates and a decreasing population

- There is a need to broaden the labour market in Värmland

- School commuters are an important ground for establishing public transport awareness

- An ICT application that includes information about both on-demand and ordinary line services is useful not only to the selected target group but also to others

We are going to concentrate our pilot tests on one or two areas: Säffle (and Sunne). The choice was based on the fact that the transport system in these areas has been developed to support commuting to work (in urban centres). The new elements of the transport system are: new or changed bus lines, more departures (buses and trains), fewer stops (less travel time) and improved on-demand services.

Description of commuters

Commuting is steadily increasing in the region, but there is still a great deal of untapped commuting potential which would facilitate an expansion of the regional labour market. Today, accessibility within the county is lacking in several areas, partly due to long distances between the municipal centres, and partly due to the low standard of the public transport system. The time it takes to travel by train or bus often prevents daily commutes to work and school. Greater accessibility is pivotal for the growth of the regional labour market and for people to have access

to higher education, culture and social networking. The access to Karlstad
University is also of strategic importance.

Commuters' travel chains

A commuter's daily routine can be described through a *travel chain* – a number of
travel profiles based on real-life cases. The travel chains of families with young
children who commute using public transport are shown below (Gottfridsson).
The travel chains represent commuters with daily recurring travel chains and
commuters with varying travel chains. Travel chains linked to commuter profiles
provide examples of different commuter behaviours.

TRAVEL CHAINS TO WORK:

Travel chain 1: Home – Workplace

Travel chain 2: Home – Nursery school – Workplace

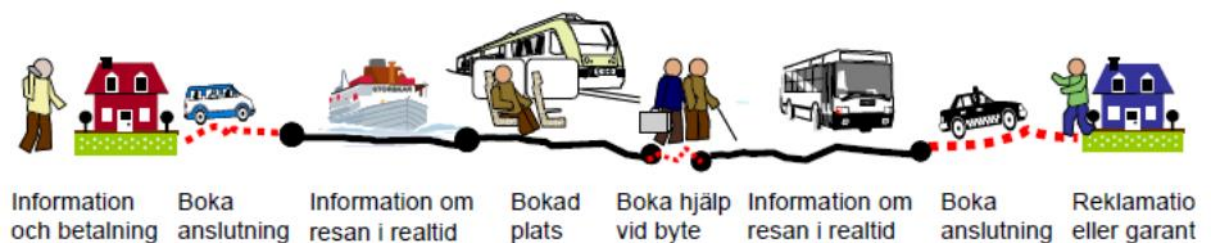Travel chain 3: Home – Nursery school – Errand – Workplace

Travel chain 4: Home – Nursery school – Errand – Errand – Workplace

TRAVEL CHAINS FROM WORK:

Travel chain 1: Workplace – Home

Travel chain 2: Workplace – Nursery school – Errand – Home

Travel chain 3: Workplace – Nursery school – Errand – Errand – Home

| Information | Boka | Information om | Bokad | Boka hjälp | Information om | Boka | Reklamatio |
| och betalning | anslutning | resan i realtid | plats | vid byte | resan i realtid | anslutning | eller garant |

3 Transport Challenge

Public transport can never replace the car in a geographical area such as Värmland, but public transport can be a realistic alternative for commuters living in towns and commuters to and from urban centres.

Is it possible to have public transport in rural areas? The inhabitants in rural areas:

- Are few and they live sparsely
- Have cars to a great extent
- Travel mostly by car
- Lack entrepreneurs in transport

Travel is so infrequent that it is difficult to study travel behaviour.

- Public transport is a small part of total travel
- 9-10% a few times per week or more often
- Commuters to schools/higher education institutes/universities are an important foundation/basis
- Journeys to activities

Transport challenges in the region

From a general point of view, the key to success for public transport in rural areas can be said to rest on the same principles as public transport in general: for people to have access to time-efficient travel with few stops or connections; to be able to get on/off within a convenient distance, and to avoid long waiting times. In rural areas, long geographical distances and a sparse population make it expensive to maintain a public transport service of high quality, and thus good conditions are often lacking. It is important to note that all public transport in rural areas should be seen as a complement to and not as a replacement for the car.
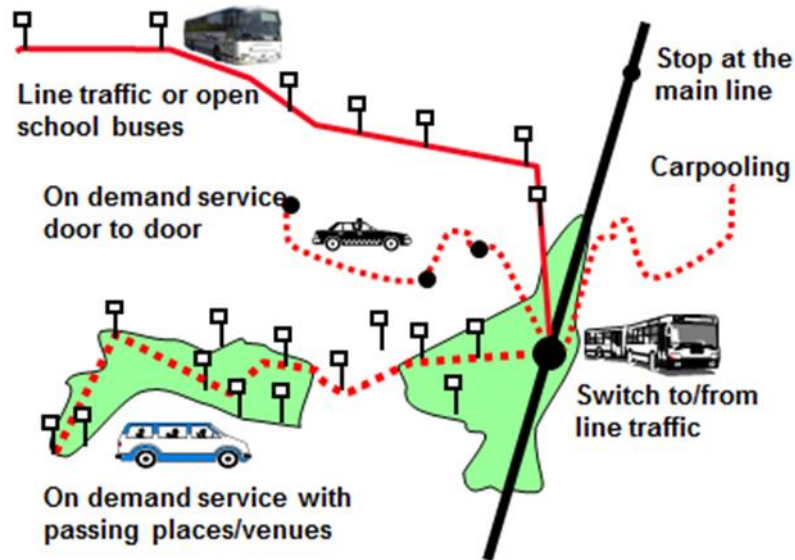
Figure 1: Public transport solutions in rural areas

For passengers to reach the stops along the main lines in a comfortable and safe way, connecting modes of public transport and/or safe foot/cycling paths have to be in place (the complete journey perspective). Figure 1 above shows different transport solutions for rural areas, which can be combined. *On-demand services* have been used with great success in rural areas. Since such services only run when there are passengers, this is a cost-efficient solution in areas where there are no great transport demands. An on-demand service which has a given destination and runs according to a timetable is the most successful model. Great potential can be found in combining timetable-based line services on a number of main lines with feeder services from various peripheral areas that have on-demand services. Despite the relatively high success of on-demand services in rural areas, there are a number of problems that need to be dealt with:

- The low departure frequency in public line services, to which the on-demand service often connects

- The fact that travel has to be booked in advance

- Departure and arrival times are unreliable as travel has to be coordinated with other users, leading to limitations in the number of departures and destinations

- A complete-journey perspective, where the customer's needs are put in focus, is often lacking

- What purpose should the services have? Is it a matter of maintaining a minimal service level with the aim of offering elderly people transportation from their homes to the nearest municipal centre a few times a week, or should it be about offering an excellent alternative to public transport, enabling both work commuting and travel for leisure?

4 Regional Context

Regional Context – Värmland

Värmland is one of 21 counties in Sweden. It borders Norway, with Oslo just 100 km away. From the county boundary in the east, Stockholm is 250 km away. Companies involved in pulp and paper, the chemical industry, and steel and engineering are traditionally strong here. Today they have been joined by other sectors, such as ICT, packaging, food, tourism and culture. Many people also work in the public sector – in the municipalities, the County Council and other government agencies. Main land use: 70% woodland, 9% water and 7% agricultural land.

Compared to Sweden in general, in Värmland:

- The population has low average income
- The tax levels are high
- There is a decreasing and ageing population (20% are over 64)
- The average age is high (43.5 years)
- The level of education is low
- The unemployment level is high (9.5% of the workforce)
- The level of sick leave among the employed is high (7.5%)

There are 16 municipalities in the county of Värmland (see Figure 2). In terms of area, Torsby is the largest and Hammarö is the smallest municipality. However, in terms of population the county town of Karlstad is the biggest, with around 88,000 inhabitants, and Munkfors, with around 3,700 inhabitants, is the smallest. In ITRACT, VTAB will focus specifically on the municipality of *Säffle*.
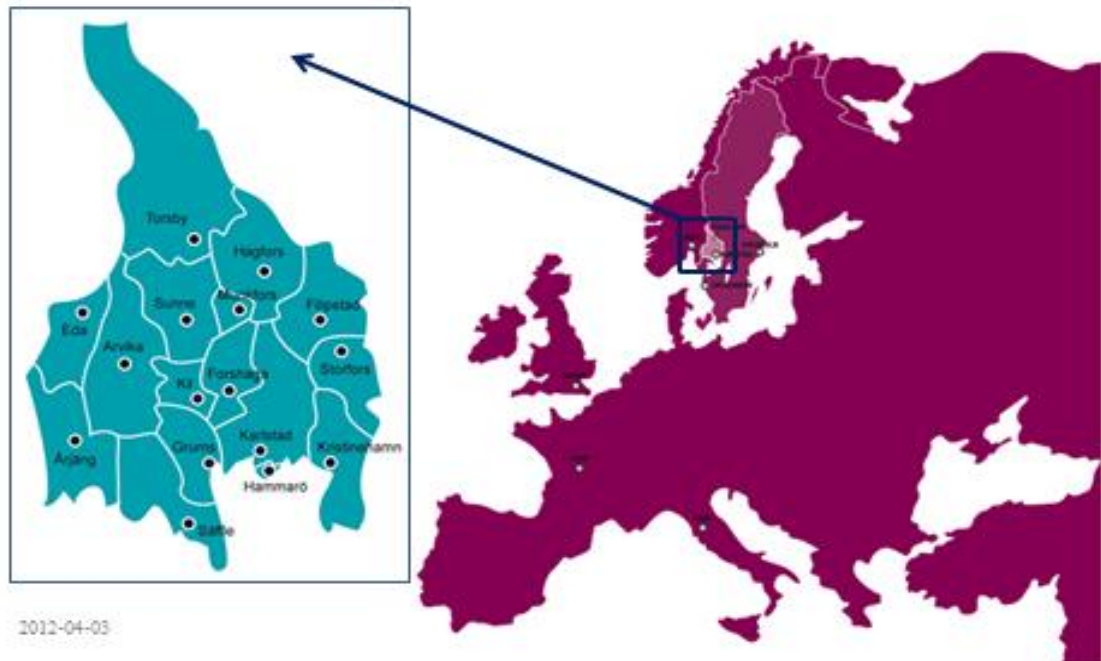
Figure 2: Värmland

Organization of public transport in Värmland

Public transport in Sweden is regulated by law, and organized by a Regional Public Transport Authority (a PTA) in each county. The PTA in Värmland is an organization called 'Region Värmland'. Region Värmland works on issues such as regional development, growth and infrastructure planning in the region (issues relating to railways, roads, shipping and aviation). It is a politically controlled organization (the politicians are not directly elected, but are selected indirectly by the delegates of the municipalities and the county council). The main task of Region Värmland is to provide a long-term regional policy perspective on the public transport system and express this in a 'programme of service supply' and decisions about 'the obligations of the transport service'.

Värmlandstrafik (VTAB) is a *Regional public transport organizer* (PTO) and provider of public transport in the county of Värmland (not including the municipality of Karlstad). In short, Värmlandstrafik contracts and manages all buses, trains and taxis used for public transport in the region, as well as public

transport from and to the region. Värmlandstrafik is owned by the municipalities and the county council through Region Värmland. The owners finance the equivalent of half the budget and the passengers the other half.

The main tasks of Värmlandstrafik are to:

- Coordinate joint needs of passenger transport
- Increase the county's accessibility to urban areas
- Expand the labour market

The services are outsourced and provided by privately owned operators. Värmlandstrafik buy services from operators through a public procurement process that describes the service provision requirements. Värmlandstrafik and the operators have different roles and responsibilities, as shown in Table 1.

Table 1: Responsibilities and roles in the inter-organizational business relationship

Värmlandstrafik (PTO)	The Operator
- Buys the service - Writes the contract and requirements - Plans the service - Indirect contact with customers - Owns the brand - Secondary equipment owner (ticket machines, radio systems in vehicles, bus stops with information boards, etc.) - Provides education	- Sells the service - Receives the contract and requirements - Provides the service - Handles direct (face-to-face) contact with customers - Carries the brand - Primary equipment owner (vehicles, except for the trains, owned by the PTA) - Receives education

Public transport in Värmland

The regional public transport network is of great importance to the growth of a common labour market in Värmland and to bring it closer to neighbouring regions. By enabling daily commutes by bus and train, people's access to work and education will improve.

Värmland is a rural area where most transport occurs on roads. About 400 buses and 200 smaller vehicles are in service on the roads in Värmland every day and in addition there are 15 trains running. The transport services managed by Värmlandstrafik (2010) include:

- Inter-regional buses and trains
- 89 regional bus lines
- *4 train lines* driven by the operator Tågkompaniet
- *Urban services*: 23 lines in three towns (but not in Karlstad where the municipality itself drives the urban services and owns the bus company Karlstadsbuss)
- *The mobility service/transportation for the disabled*. A special form of public transport for those who are unable to use general public transport due to a disability
- *Service lines*, mini buses that are modified for the disabled
- School buses/school services in 15 municipalities
- *On-demand services* (taxi or mini-buses)
- Patient transport service

Some figures relating to public transport in Värmland (2011):

- 15.1 million scheduled kilometres
- 8.6 million journeys (bus, train, school buses, special public transport)
- 1% increase in travel (bus +/- 0%, train + 6.4%)
- 78% satisfied customers
- Every citizen in Värmland contributed SEK 978 to Värmlandstrafik through taxes
- In total, the public transport system in Värmland receives SEK 630 million from taxes each year

- 143,651 cars in the county (526 cars/1000 inhabitants)

- Average distance travelled: 22.86 km

The map below shows the main bus and train lines in Värmland

Market situation in public transport

The total number of passenger kilometres travelled along roads, railways and seaways in Sweden has increased sixfold since the 1950s. Public transport has, however, decreased from 49% in 1950, to 18% in 2009. Today, only 24% of the inhabitants in Sweden choose public transport for their daily travel. A united public transport sector has therefore decided to double its market share by 2020. In Värmland, this is to be done by increasing public transport by 3% every year.

Travel by public transport is steadily increasing in Sweden. The number of trips (recorded in terms of the number of boardings) made using public transport increased 19% over the last decade. Trips have increased by 3% over the last year alone. Trips by bus have shown the greatest increase, representing over half of the total increase in trips, while journeys by light rail, train and underground have also increased.

While the use of public transport in Värmland has thus slowly increased since the mid-1990s, in relation to the use of buses and trains at the national level, Värmland is below average. Altogether, public transport in Värmland accounts for approximately 10–12% of total travel in the county today. Commuting to school/higher education institutes and work are the most common.

On an ordinary weekday in Värmland, most of the travel is work-related. Today, around one fifth of those employed, work in a municipality other than where they live, and the distances that people commute has almost doubled over the past 50 years. More people also travel longer distances to do their shopping or leisure activities than a few decades ago. The explanation for this development can to a great extent be found in the fact that more people have access to a car.

Today, half of the population in Värmland has a car. The car is and will most likely remain the most important means of transportation for many of the people in the county. The extent of car ownership is higher than in the rest of the country.

Surveys on travel habits also show that residents in Värmland travel more in their cars than the average person in the country at large. According to regional figures estimated by the Swedish Transport Administration, the use of private cars in Värmland will increase by 1–9% by 2020. In certain parts of the county, the increase will be even greater – the traffic to and from Norway, for example, is thought likely to increase more than the regional traffic. Over the past five years, traffic across the border has increased by about 25%.

A clear majority of the people using public transport in Värmland travel by bus. However, the greatest potential for future travel most likely lies with the train service in the county, partly because the speed it offers may contribute to more commuting and thus also regional expansion, and partly because it is perceived by many as a better alternative to the car than a bus service, and thus has greater competitive capacity to attract more passengers.

Conditions for public transport in Värmland

There are *good conditions* for public transport in Värmland. It is strategically a good location, between the three metropolitan areas of Stockholm, Gothenburg and Oslo. Furthermore, the region has access to the infrastructure of all four modes of physical transportation – railroads, roads, seaways and airways. This makes it possible to combine different types of transport systems, which can both increase efficiency and benefit the environment.

- Karlstad Airport, one of the most modern airports in Sweden, offers regular *flights* to Stockholm and Copenhagen, as well as charters to Spain and Greece. The county also has two airports in Hagfors and Torsby, with regular flights to Stockholm.
- *The regional roads*, which are of particular importance to the connection with neighbouring regions, including Road 61 to Norway, Road 63 to Bergslagen and Dalarna, and Road 172 to Västra Götaland. The roads are important for commuting within the county, to other regions, and also to Norway.

- The *national roads*, E18 and E45, also play an important role in Värmland's connections with neighbouring regions, as well as the metropolitan regions of Stockholm, Gothenburg and Oslo.

- *The railroads*, the Värmland Line and the Vänern Line, are also important to Värmland's connections with both neighbouring regions and the metropolitan regions of Stockholm, Gothenburg and Oslo.

- The less beneficial conditions for public transport in Värmland concern above all, the great distances to the metropolitan regions, as well as the distance between different municipal centres within the region.

Thus, increasing accessibility within as well as to and from the region is a key factor if Värmland is to grow and assert itself as a competitive region.

Measures to increase public travel in Värmland

Värmlandstrafik is working towards the coordination of public transport in the region, creating better connections between the different public transport systems and other forms of transport. Important points in our work are:

- *Connection points* which link several different means of transportation. Several municipal centres already have such connection points; however, Karlstad is still lacking a travel hub which integrates connections between buses, trains, cars, bikes and pedestrians.

- *Easy access and useful information* on how you can use the system – marketing of public transport.

- Coordination of timetables and routes, as well as payment and information systems.

Värmlandstrafik's strategy for regional train and bus services aims to contribute to the economically, socially and environmentally sustainable development of the region. This requires:

- *Commuting by public means of transport should be facilitated* to expand the regional labour market. Education-related trips (e.g. to Karlstad University) are also included here.

- The main lines, which are used by trains and buses, should offer frequent, fast and regular services more or less 24 hours a day. Main lines to larger towns without a train service should be prioritized over other main lines with a bus service.

- *The regional and the interregional train services provide important conditions for further regional expansion*. The regional train service along the Värmland Line, the Norway/Vänern Line and the Fryksdal Line is, however, dependent on measures being taken in the national transport system.

- The railroad needs to cut travel times and increase the number of departures.

The development work focuses on the areas where public transport use is still increasing (where there is potential). One ambition within the region is to increase the customer benefit of existing infrastructure, for example by customizing and coordinating transport services to increase the value to customers. Important aspects of this work include:

- Rationalizing the bus service: shorten travel times and increase frequency, thereby improving the connection between different bus lines

- Establishing better train connections to Oslo and Gothenburg

- Improving important transport hubs within the county

- Building a travel hub in Karlstad which integrates changes/transitions between bus, train, car, bike and pedestrian traffic (ongoing work)

- Coordinating timetables

- Improving payment and information systems

- A new ticketing system, introduced in 2012

- A new communication system in the vehicles, installed in 2012

Regional context - Säffle/Värmlandsnäs

'You should be able to commute, travel and send goods quickly' (The Säffle Vision for 2026).

The number of inhabitants in Säffle is decreasing each year. Today, there are about 15,550 people living in an area of 1,220 square kilometres. In Säffle Municipality, Värmlandstrafik has chosen to focus on developing new public transport solutions on the peninsula of Värmlandsnäs (North and South Värmlandsnäs). Today, public transport on Värmlandsnäs has an unclear structure and is more suitable for school transport than commuting to work. The current public transport service has been neglected and does not suit those who wish to travel to Säffle or Värmlandsbro for further commutes (e.g. to Karlstad or Åmål).

A total of 1,755 people live on Värmlandsnäs, out of which 30% (a little more than 550 people) do not have access to public transport (based on living more than two kilometres from the nearest bus stop and the service running frequently enough). Figure 3 shows the areas that have access to public transport on Värmlandsnäs. Each circle has a two-kilometre radius surrounding a bus stop (blue dot on the map).
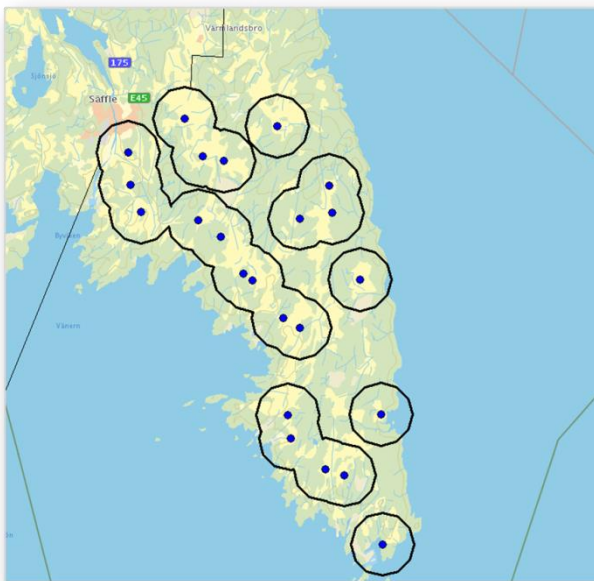

Figure 3: A little more than 550 people living on Värmlandsnäs do not have access to public transport, living outside the circles on the map

Commuting to work

There are 5,005 people who both live and work in Säffle, while 1,523 commute
from the area and 1,051 commute to the area (2009, source: SCB). South
Värmlandsnäs has 1,110 inhabitants, out of which, roughly 340 commute to work
in other areas. Figure 4 below, shows commuting from South Värmlandsnäs. The
arrows show the destination of the commuters who work in other areas. The
number concerns how many commuters there are for each of the destinations,
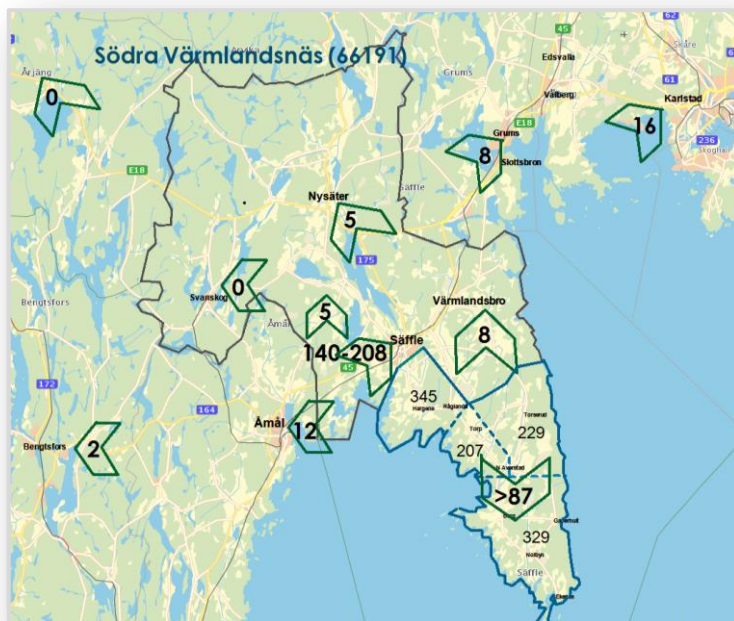respectively.

Figure 4: Commuting from South Värmlandsnäs (Source: SCB)

North Värmlandsnäs has 645 inhabitants, out of which roughly 399 commute to work in other areas. Figure 5 shows commuting from North Värmlandsnäs.
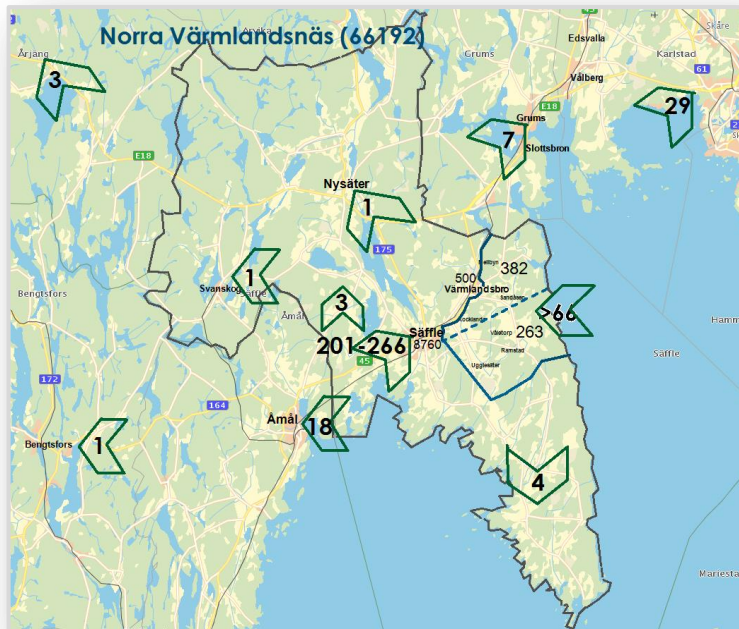

Figure 5: Commuting from North Värmlandsnäs. The arrows show destinations of commuters who work in other areas. The number concerns how many commuters there are for each of the destinations, respectively. (Source: SCB)

Measures for work commuting with public transport

To increase the commuting opportunities available to the people living on Värmlandsnäs, a list of measures has been compiled:

- Co-use already existing vehicles and drivers in the area in order to create new commuting possibilities
- Improve services on two routes: Eskilsäter–Säffle Travel Centre, and Ölserud Church–Värmlandsbro
- Divide the new services into public line services and on-demand services
- Create new services that suit commuting

- Synchronize the routes with train and bus departures to enable further
  commutes to Karlstad and Åmål

A pilot scheme was run from December 2012 until December 2013, funded by
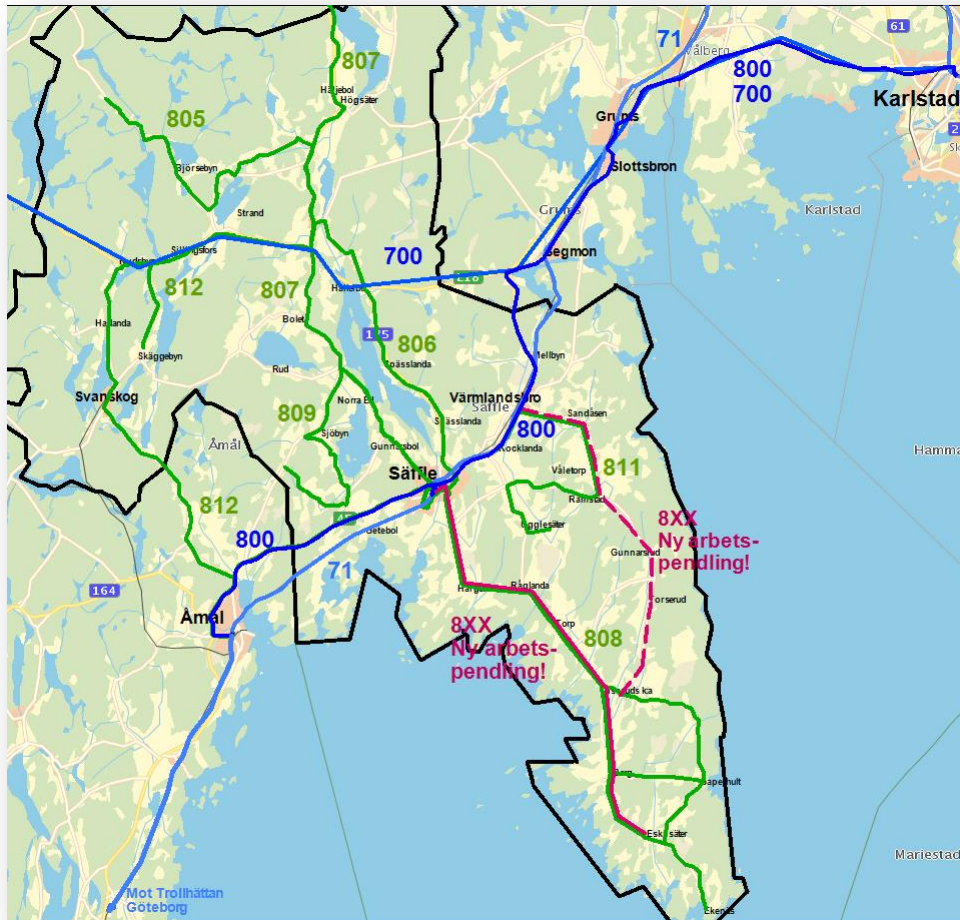Säffle Municipality. The new, suggested services are shown in Figure 6.

*Figure 6: Existing public transport in Säffle Municipality (marked in blue and
red), along with the new routes on Värmlandsnäs (marked in pink) to increase
commuting*

5 Facts and figures

Sources: www.scb.se, www.pts.se, www.trafa.se

Area and travelling distances

Area (square kilometres) (2012)	21,923
- Land	17,591
- Water (inland water, the lake Vänern is not included)	1,797
- Vänern	2,535

Large cities in neighbouring regions with travelling distance	
Karlstad – Oslo (Norway)	230 km
Karlstad – Stockholm	308 km
Karlstad – Gothenburg	248 km
Karlstad – Örebro	112 km

Population – growth, structure, etc.

Number of inhabitants (2011)	272,736 (decrease -529)

List of major cities, based on number of inhabitants (**2010**)	
Karlstad	61,685
Kristinehamn	17,839
Arvika	14,244
Skoghall	13,265
Säffle	8,991

Kil	7,842
Forshaga	6,229
Filipstad	6,022
Skåre	5,402
Hagfors	5,146

Population growth in the municipalities in Värmland

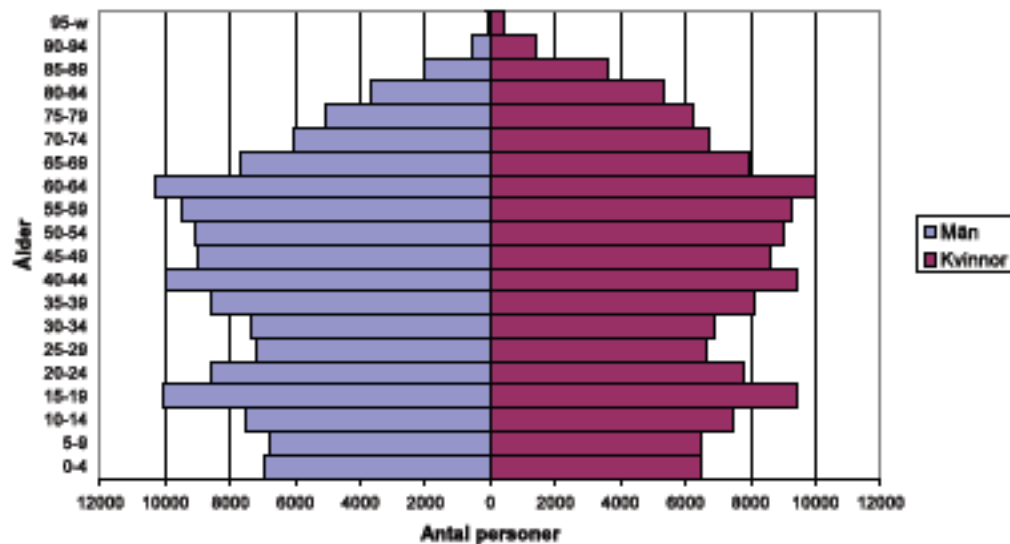Figur 1. Befolkningsutveckling i länets kommuner under perioden 1998-2008
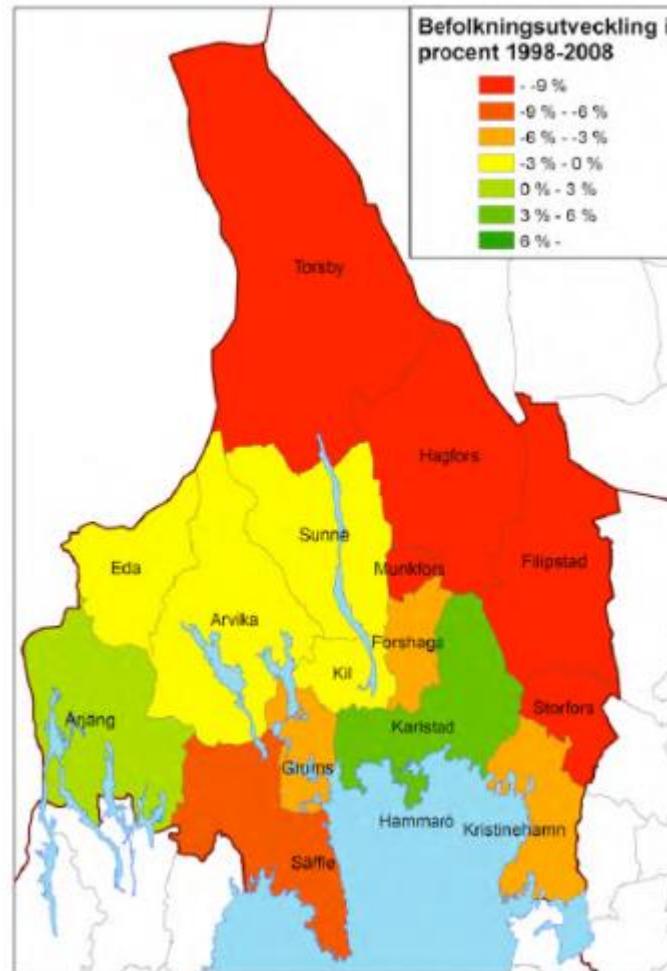
Population demographics (2010)	Värmland	Sweden
Average age (years)	43.5	41.1

Over age 64 in Värmland	
2011	20%
Expected 2030	27%

Population structure in Värmland, 2008

Ålder = age; Antal personer = number of people; Män = men; Kvinnor = women

Diagram 4. Befolkningspyramid för Värmlands län år 2008

Källa: Egen bearbetning av data från SCB.

Education, employment, etc.

Highest level of education, 25–64 years, 2011		
	Värmland	Sweden
Primary school	13%	14%
Secondary school	53%	45%
University, etc.	32%	38%
Graduate	0.5%	1.2%

Economic structure (workplace according to sector), 2011	
Agricultural Värmland/Sweden	38.3/20.4%
Industrial Värmland/Sweden	11.3/13.2%
Services Värmland/Sweden	50.4/66.4%

GDP per capita in Sweden	SEK 369,900 (2011)
	SEK 361,800 (2008)
GRP (Gross Regional Product) per capita	SEK 284,000 (2008)

Year	Unemployment percentage (age 20–64)	The degree of participation in the workforce percentage (age 20–64)
2000	8.8	72.9
2001	8.6	73.4
2002	8.7	73.5
2003	9.4	73.0
2004	9.3	74.5
2005	8.8	74.3
2006	8.2	75.4
2007	7.6	76.3
2008	6.9	75.5
2009	8.3	72.3
2010	8.6	73.9

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ICT adoption etc

ICT adoption in Sweden (2011)	
ICT usage in enterprises (1–9 employees)	
- Use computer	89%
- Internet access	88%
- Uses internet-connected computer	65%
ICT usage in enterprises (10 or more employees)	
- Use computer	97%
- Internet access	96%
- Use internet-connected computer	66%
ICT usage in households	
- Internet access, total	93%
- Internet access, 65–74 years	73%
- Internet access by mobile phone (16–74 years)	31%
- Internet access by mobile phone GPRS (16–74 years)	3%
- Internet access by mobile phone 3G, 3G+, 4G (16–74 years)	26%
- Internet access by notebook outside home/work (16–74 years)	34%

(Source: www.pts.se)

Broadband* access, Sweden**		
	2007	2011
Households and businesses in, or within 353 metres of a property that is connected to a fibre or cable television network	47%	60%
Households and businesses with access to 100 Mbps	-	49%
Households and businesses with no access to broadband	7,100	800

(Source: www.pts.se)

* Broadband is defined as a connection to internet with access to 1 Mbit/s.

** In Sweden people live and work on approximately 6% of the total land area. This means that the broadband survey does not investigate the access to broadband on 94% of Sweden's surface, where households and businesses are lacking.

Broadband access, Värmland, 2011			
	Total	Urban areas	Rural areas
Wire or wireless access	99.98%	100.00%	99.92%
Wire access	96.39%	99.88%	86.98%
Fibre	23.38%	29.96%	5.64%
Cable TV	19.40%	26.35%	0.67%
xDSL	95.87%	99.70%	85.53%
Wireless access	99.97%	100.00%	99.90%
Wireless broadband via HSPA	99.54%	99.99%	98.33%
Wireless broadband via CDMA 2000	99.95%	99.99%	99.82%
Wireless broadband via LTE	21.19%	27.87%	3.15%

Source: www.pts.se

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Access to at least ... (actual speed), 2011			
	Total	Urban areas	Rural areas
1 Mbit/s	99.98%	100.00%	99.92%
3 Mbit/s	99.68%	100.00%	98.81%
10 Mbit/s	84.19%	96.36%	51.30%
50 Mbit/s	29.52%	38.14%	6.21%

(Source: www.pts.se)

Price of broadband internet (10.0 MB p/S) connection per month, EUR	
Karlstad	24–36
Kristinehamn	28–43.5

(Source: www.pts.se)

Market situation in public transport, car usage, etc.

Number of trips and mode of travel (in thousands)										
	Private car, driver	Private car, passenger	Bus	Metro, tram	Train	Air	Bike	Walk	Other means of travel	Don't know	All
Värmland	185	62	23	0	2	0	37	98	8	2	417

Mean passenger distance for the mail travel by mode (km)										
	Private car, driver	Private car, passenger	Bus	Metro, tram	Train	Air	Bike	Walk	Other means of travel	Don't know	All
Värmland	29	39	23	0	51	0	5	2	77	0	23

Use car as driver or passenger (in thousands)							
	4–7 days/week	1–3 days/week	1–3 days/month	Less often	Never	Don't know	Total
Värmland	157	68	15	5	2	3	249

Use public transport (bus, metro, tram, train, etc.) (in thousands)							
	4–7 days/week	1–3 days/week	1–3 days/month	Less often	Never	Don't know	Total
Värmland	21	16	29	87	95	2	249

Car usage

Tabell RSK2

Personbilar i trafik efter kommun och ägande m.m. vid slutet av år 2011

Passenger cars in use in counties and by ownership etc at the end of year 2011

Kommun-kod	Kommun	Personbilar i trafik	därav ägda av kvinnor	ägda av män	ägda av juridisk person	därav personliga företag
	Municipality	Cars in use (total)	Owned by women	Owned by men	Owned by corporation unin	Thereof corporated enterprises
1715	KIL	6 370	1 834	3 328	1 208	1 000
1730	EDA	5 208	1 573	2 410	1 225	1 122
1737	TORSBY	7 822	2 126	3 192	2 504	2 115
1760	STORFORS	2 418	719	1 366	333	267
1761	HAMMARÖ	7 883	2 319	4 450	1 114	578
1762	MUNKFORS	2 143	676	1 193	274	210
1763	FORSHAGA	5 916	1 791	3 376	749	604
1764	GRUMS	5 052	1 494	2 802	756	642
1765	ÅRJÄNG	6 151	1 573	2 411	2 167	1 907
1766	SUNNE	8 072	2 221	3 149	2 702	2 318
1780	KARLSTAD	40 369	12 086	20 993	7 290	3 927
1781	KRISTINEHAMN	12 042	3 474	6 695	1 873	1 150
1782	FILIPSTAD	5 675	1 648	3 259	768	523
1783	HAGFORS	7 240	2 109	3 825	1 306	1 064
1784	ARVIKA	14 325	4 207	7 042	3 076	2 597
1785	SÄFFLE	8 644	2 402	4 229	2 013	1 695
	Värmlands län	**145 330**	**42 252**	**73 720**	**29 358**	**21 719**

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Tool 2: Dales – Service Innovation Workshop

SERVICE INNOVATION WORKSHOP - WP 3 - Idea Cards

DALES Workshop 19th November 2012

Idea Groups 1   "The Chain of Information" and 2 "Using our ICT"

Name of idea   The Hub Dashboard

Description

The DITA vision is for seven transport "hubs" in the Dales area. These are the "eyes and ears" feeding back to the DITA back office (which holds databases of user requirements and available transport resources together with scheduling and information) and receiving information which can be used to assist local users find their best transport choices.

The DITA hubs will be equipped with plasma display screens. Information that could be displayed includes:

- Your Next Bus (Real Time bus information)
- local traffic information – map display including locations of public transport vehicles and any road delays
- marketing information for local services and attractions accessible by public transport
- weather information

Target group

All groups: NB Dales workshop considered that personae were useful and their needs should be considered but the overall numbers of travellers were not sufficient for targeted services: focus of discussion was on making best use of available resources for all travellers.

Appropriate Actor

DITA, Transport Authorities

Picture of idea

(Plasma screen)
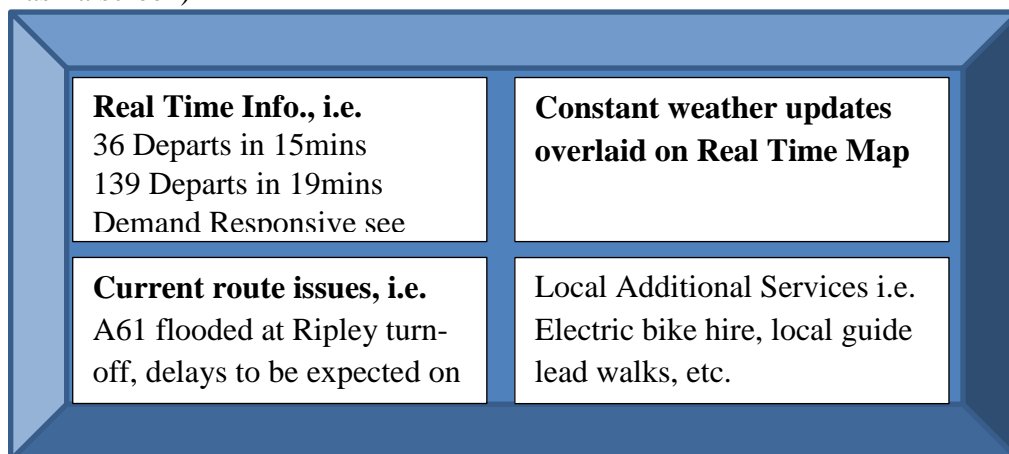
Real Time Info., i.e. 36 Departs in 15mins 139 Departs in 19mins Demand Responsive see	**Constant weather updates overlaid on Real Time Map**
Current route issues, i.e. A61 flooded at Ripley turn-off, delays to be expected on	Local Additional Services i.e. Electric bike hire, local guide lead walks, etc.

	low				high
Value for Customer				4	
Fits our Project					5
Economical Potential				4	
We are ready for this				4	
We like this					5
Strength of idea					5

SERVICE INNOVATION WORKSHOP - WP 3 - Idea Cards

DALES Workshop 19th November 2012

Idea Group 1   "The Chain of Information"

Name of idea Transport Watch

Description

Use "crowd sourcing" techniques to ensure all actors are fed the most up-to-date information on user experiences and service availability. Use existing communication networks including Telephone, Twitter, face-to-face, web-based forums, etc, to capture and pass on important information about local route or transport issues. Key information is derived from the general population as well as from operators and authorities enabling user to become providers of information and vice-versa. A scenario to explain this further would be that a bus has broken down just outside village A which was witnessed by passengers and local residents who pass this information on, for example using Twitter and telephone calls.   This information is then picked by people in Village B (destination of broken down bus) and passed on by similar means. In this way transport users from Village B can make alternative arrangements (if possible) to get to where they need to go.   The local DITA hub monitors these information sources and ensures that the operator is aware if they have not already obtained the information through their own channels.
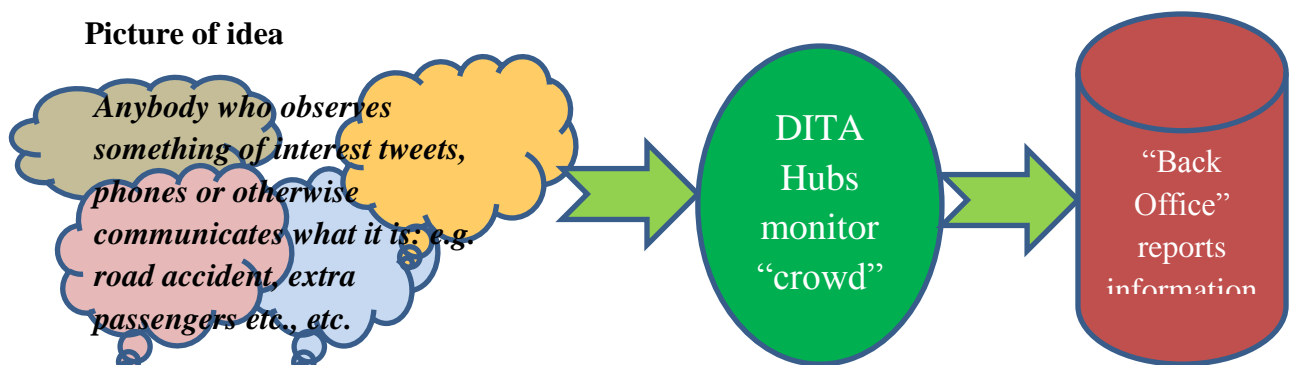
Target group

Primarily local hubs to develop crowd sourcing networks. Users need to be convinced of the value of them playing a part in the chain of information, especially when disruption occurs orv may be expected (floods are a case in point!).

Appropriate Actor

All actors but particularly users and operators should benefit.

Picture of idea

	low				high
Value for Customer					5
Fits our Project					5
Economical Potential		2			
We are ready for this			3		
We like this					5
Strength of idea					5

SERVICE INNOVATION WORKSHOP - WP 3 - Idea Cards

DALES Workshop 19th November 2012

Idea Group 2 "Using our ICT"

Name of idea Minding the Gaps/Thresholds of Viability

Description

As smart ticketing is rolled out across Yorkshire (the Yorcard project), some operators in the Dales are being equipped with Ticketer Electronic Ticket Machines (ETMs) which have smartcard, GPS and GPRS capabilities (n.b. other manufacturers also provide these capabilities). Yorcard provides cloud based storage and back office facilities which can used by operators and DITA under suitable data confidentiality agreements. This means that the location, loadings and earnings of each bus are available almost in real time, although the immediacy depends on GPRS coverage which is weak in much of the Dales.

This idea is to use the information from ETMs, initially Ticketer, to estimate the "gaps" between current utilisation and sustainable viability (including subsidy payments) of each route. This will then allow marketing and travel planning activities to try to generate the additional passengers required to achieve sustainable viability.

Target group
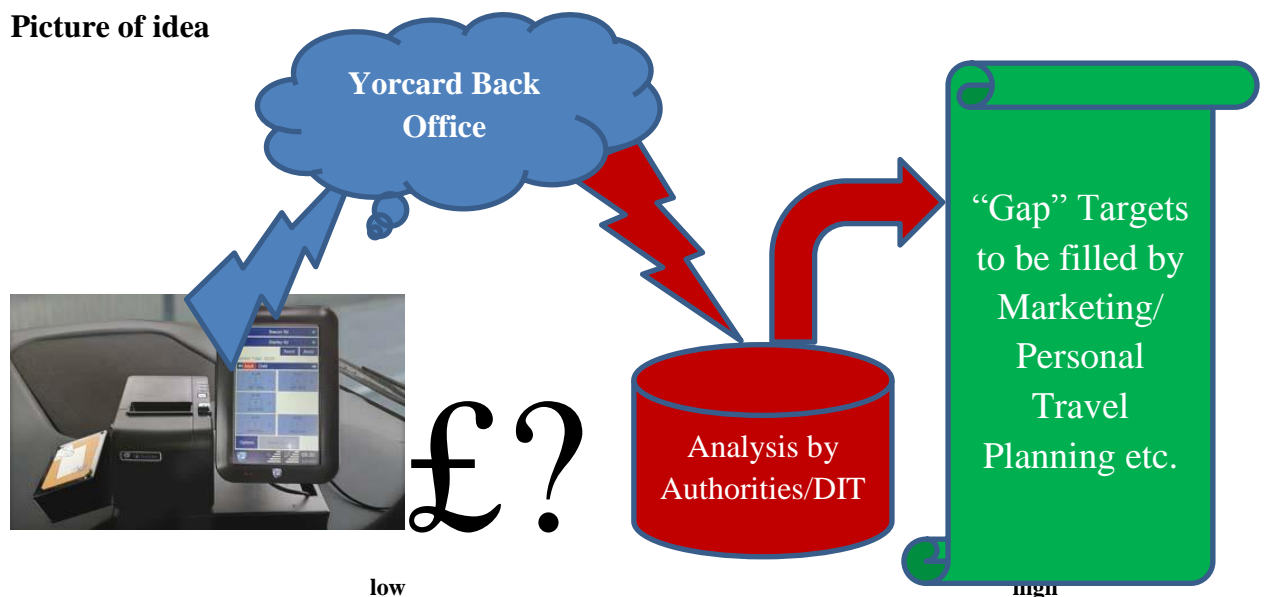
All types of customer.

Appropriate Actor

DITA, transport authorities (North Yorkshire County Council and Metro).

Picture of idea

	low				high
Value for Customer				4	
Fits our Project					5
Economical Potential				4	
We are ready for this			3		
We like this					5
Strength of idea					5

Ideas Priority list from the Dales
Service Innovation Workshop

Priority	Description
1	**Transport Watch** (Idea Group: Chain of Information) A crowd sourcing approach to collecting information on transport performance and demand. Pilot involves setting up monitoring networks for local communication channels such as telephone, face-to-face interaction in public places such as shops, pubs etc., Twitter and operator radios. Web-application will involve collating all this information to give a current picture of local operation. For example, how buses will actually operate when flooding forces diversions.
2	**The Hub Dashboard** (Idea Groups: Chain of Information and Using our ICT) A technical pilot combining local information such as the following on a hub display screen: • Your Next Bus (Real Time bus information) • local traffic information – map display including locations of public transport vehicles and any road delays • marketing information for local services and attractions accessible by public transport • weather information Much of this information already exists in various web-based applications.
3	**Linking Demand Responsive Services with Journey Planners** (Idea Group: ICT development) Develop data exchange protocols to allow information on Demand Responsive Transport to be combined with existing journey planning outputs for scheduled transport. Thus a demand responsive (or other community transport) option would be available for all or part of a suggested journey plan.
4	**Hub Training** (Idea Group: Chain of Information) Development of training materials (both conventional and digital) to train volunteer hub staff, back office staff and possibly public transport operator staff in use of the available information and ICT resources. This could also generate further ideas for improving information services.
5	**Car Links** (Idea Group: ICT development) Extension of existing Community Transport Scheduling and Allocation software to encompass voluntary car schemes and car sharing schemes. Complements Priority 3 as another component towards the development of a full transport brokerage solution.
6	**Links to Attractions** (Idea Group: Chain of Information) Develop widgets for use in web-sites or apps promoting key destinations for tourism, recreation or other purposes. Ideally all such web-sites or apps would suggest public transport access options.
7	**Minding the Gaps/Thresholds of Viability** (Idea Group: Using our ICT) A study to use information from Electronic Ticketing Machines to estimate the "gaps" between current utilisation and sustainable viability (including subsidy payments) for each route or service. Marketing and travel planning activities can use this information to try to

	generate the additional passengers required to achieve sustainable viability.
8	**The Chain of Information** (Idea Group: Chain of Information) The Chain of Information is a Marketing concept about "why" a customer should use collective transport along with the invaluable "how to" information. The customer needs advice on what is available and the most appropriate choices to make. The Chain of Information will use a variety of web-services and apps. Some already exist others will be developed in ITRACT.
9.	**Active Bus stops** (Idea Groups: Chain of Information and Using our ICT) Incorporating mobile phone technology into existing or additional bus stops to give basic transport information on demand at far lower cost than traditional real-time systems. Could also have commercial potential if used to provide local wi-fi hotspots.

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Tool 3: Groningen – Data Maturity Model

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DAMM_DATASET_INVENTORY

Region	GRONINGEN

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History

Version	Date	Changes
V0.0	11-6-2012	Document created

DATA_SET	PUBLIC TRANSPORT		
Static	**Dynamic**	**Statistics**	**Services**
Busstop	Bus position, delays, disturbancies	Passenger per route	Travelplanner
Time-tables	Delays per route/ departure	Ticketing per busline	Report complaint API
Bus-routes	Current disturbancies	Complaints per bus-route	
Commuter-parking sites			
		above are examples	

DATA_SET	ROAD ADMINISTRATOR		
Static	**Dynamic**	**Statistics**	**Services**
Road network	Current trafficflow	Traffic density	Parking guidance
Parking-lot positions	Accidents/Disturbancies	Average speed	Que-warning
Traffic-light positions	Free parkingspaces per parkinglot		
Bicycle network			
		above are examples	

Tool 4: VEJ – Business Innovation Workshop
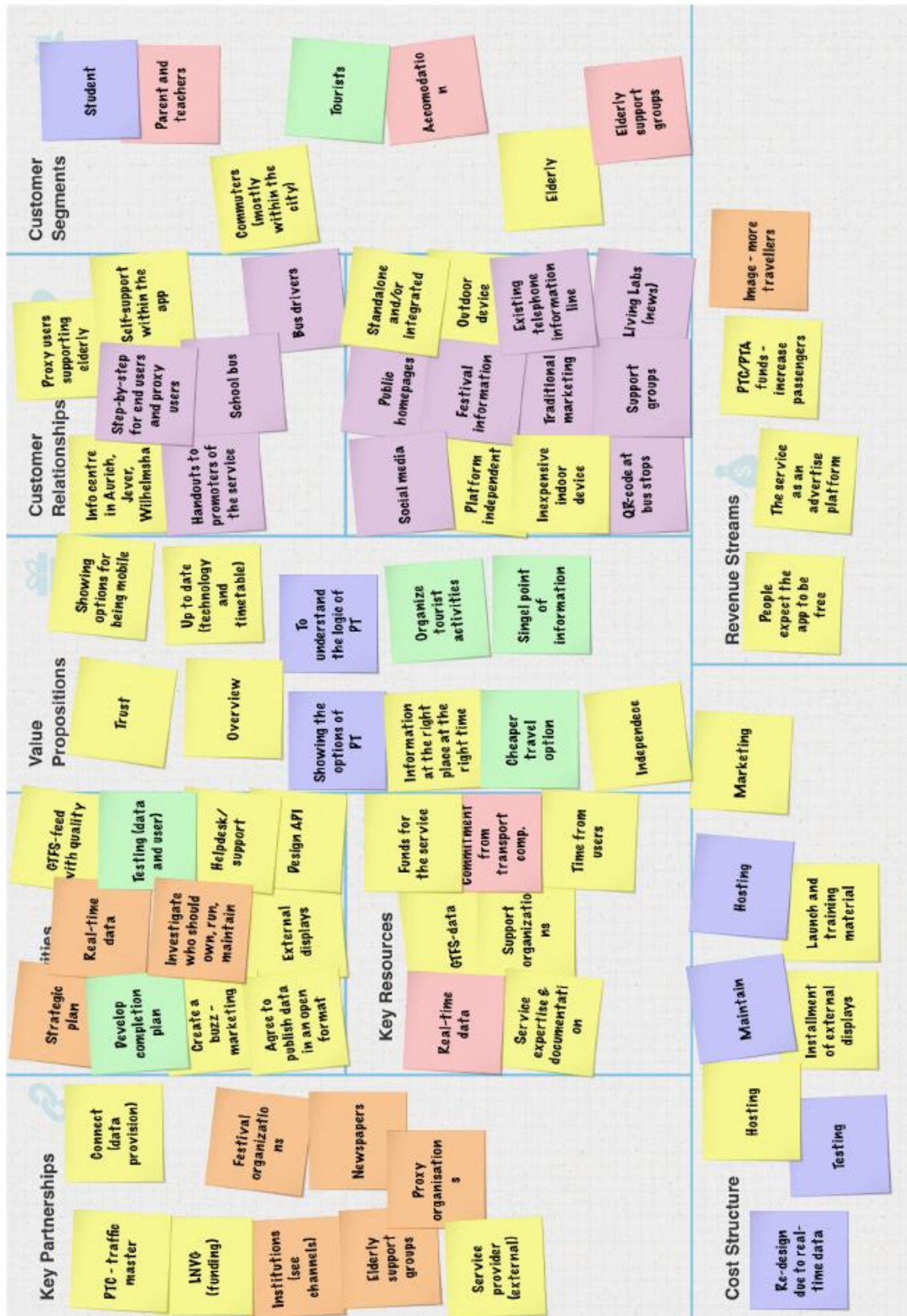
Tentative Implementation Guidelines for Online Route Network

Short-term To-Do list for transforming the prototype to a viable service		
What to do	Who	When
Speed-up the provision of GTFS-feed of data	VEJ → Connect VEJ → PTC	ASAP
Toolbox to be used to implement and test the service in the region	XXX → VEJ (other partners)	ASAP
In order to ensure transferabillity of the service test the GTFS-data from other regions and translating the content	Jade University	ASAP
Develop a completion plan incl budget additional costs	VEJ	ASAP
Recruit and organize testing groups (using toolbox; elderly people)	VEJ + Jade University	
Develop an organizational plan for the service based on the canvas (first structure (asap) then after trial improved plan)	VEJ + PTA	ASAP (improvement after the trial)
Establish contact with news paper in order to get media coverage of trial	VEJ→Media	
Investigate the costs potential benifits/revenue from launching the service in Friesland	VEJ	
Update deliverables from WP5 and WP6 with conclusions from today		

Long-term To-Do list for transforming the prototype to a viable service		
What to do	Who	When
Transfer the service from University to another host	University → VEJ → XXX?	
Scan for additional expertise and possibilities for continuation (companies, students, start ups,	VEJ	

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new calls)		

Additional to-do's		
What to do	Who	When

Designed by: Designed by: Verkehrsregion Ems Jade, Landkreis Friesland, Jade University OV-bureau Groningen, University of Groningen, Viktoria Swedish ICT	Date: 2014-01-21	Version: FINAL

Toolbox WP3 The Netherlands, Municipality Oldambt

Customer needs
Target group
Transport challenge
for the East-Groningen Region, Municipality Oldambt

May 2012

Cartoon by E.P. van der Wal, Groningen

Translation:

The sign says: *Bus canceled due to 'krimp'* (shrinking of population)
The lady comments: *The ónly bus that still passes is the 'ideeënbus'* (bus here meaning box, i.e.
a box to put your ideas in)

Under the cartoon it says*: Inhabitants of East-Groningen were asked to give their opinion*

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Customer Needs

Based on two sessions with focus groups, held in Winschoten (Oldambt) on April 25th 2012.

1   General

Participants of the sessions on public transport (PT) were very enthusiastic about the design of the study. The personal touch and the fact that their opinion is sought, was rated very positively. The study paints a clear picture of the current review of the PT in East Groningen and the ideas about its future. Furthermore the research brought to light a number of specific issues and could form a solid foundation for further development of future transport concepts that maintains the viability and accessibility of East Groningen.

2   Satisfaction with current public transport

The insufficient supply of PT in the area leads to low usage and low satisfaction with the PT network. Overall trend is that the use of PT will only increase when it offers a good alternative to other modes. The sessions also showed that the willingness to use PT is certainly present, but that for many people it is currently simply not a real alternative.

Here the problem was recognized that it is very difficult to have a sufficient cost coverage of PT services in a shrinking area as East Groningen.

3   Small-scale solutions

The general idea that can be achieved clearly from both sessions is that the solution for mobility in East Groningen is not to be found in high-technology concepts, or an entirely new form of transport. In the eyes of respondents, the key lies precisely in concepts that best fit existing structures and networks.

Elaborating on this it also showed that it is felt that mobility in the future must be offered on a smaller scale and differentiated. As in other markets one should have a better look at the needs of (potential) customers.

During both sessions it showed that two important groups can be distinguished, namely: 1) elderly and 2) students and commuters.

3.1 Seniors

The elderly are largely dependent on PT. They make us of a range of existing (social) structures such as the Steunstee's[5] and the so called Plusbus (available for

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[5]   A Steunstee is a social service with a central location in a town or village. It provides information and advice for inhabitants.

day trips; ran by volunteers). If a number of additional services could be realized, it would be possible to meet the needs of this target group in clustering them and to supply a suitable offer of (extra) services. Specifically, one can think about:

• using Steunstee's to help identify the structural need for mobility within a certain village or town (time, day, destination, frequency). Based on these input combinations can be made so that a regular network is created with a structural supply for this group;
• using Steunstee's as a channel for information on timetables and other necessary information (e.g. OV-chipcard, destinations)

Important preconditions for this transport are (a) accessibility (including disabled) and (b) regularity. Frequency and travel time for this group are of less importance. In addition, this group especially needs transport during off-peak hours.

3.2 Students and commuters

The target group 'students and commuters' is in need of (a) fast and (b) punctual connections during the morning and evening hours. The sessions also showed that for this group it is sufficient to have one or two trips a day, provided the times fit with the school- and working hours and guarantee connections to other PT lines.

4   Preconditions for public transport

The participants of the sessions were unanimous about the fact that everyone should have the opportunity to travel. Mobility is an important part of a vital life and essential to actively participate in society. Especially for the elderly who because of limited financial resources, lack of drivers license or poor health, are not able to travel around easily, mobility and accessible transportation are essential to prevent social isolation.

The suggested solutions do not lie in extensive PT, but in customized group transportation. They should be sought within existing structures (including de Steunstee's). In future realization of mobility the following conditions must be taken into account:

Regularity
The buses should drive on a regular basis. A self-explanatory and clear frequency is the starting point. This is not necessarily a half hour or a one hour frequency through the whole day. Some participants indicated that they preferred to be able to travel for example every two hours on a regular basis, instead a bus service that

has a one hour frequency but for which it is necessary to make a reservation one hour in advance. (the so called LijnBelBus)

Acceptable travel time

Travel time is of less importance than the number of fixed travel opportunities per day. The travel time by bus could last approximately 1.5 times longer than the travel time by car. Sidenote here is that people find it very annoying to have large detours. As an example, the connection between Bellingwolde and Stadskanaal was mentioned; you have to travel via Winschoten and there the transition (and waiting) time is approximately half an hour.

A network with good connectivity

In the choice between car or PT the overall journey plays an important role. In this context the transfer time is particularly important. When a transition takes longer than 15 minutes, the PT is no longer seen as a real alternative. Some participants indicated that they would not mind a few switches during a trip, as long as this does not take too much time. Especially if there is a regular and fixed connection in the smaller towns or villages in return.

Competitive rates

The cost for traveling with PT are currently far too high according to many participants. Especially since the introduction of the OV-chip card. One participant stated that the government wants to encourage use of PT, but this is not apparent from the prices used. According to some of the respondents in some cases it is even more expensive than traveling by car.

Accessibility

According to some, the accessibility of especially the smaller busses is not as it should be. The buses have an entry that is too high for the elderly. Some participants indicated that for wheelchair users it is practically impossible to travel by PT. Especially in a region as East Groningen with a growing number of elderly people accessibility is an important prerequisite for good mobility, according to the respondents.

Safe system

The safety of the PT system is important. This is meant both social and in the sense of road safety. Some parents of young children find it strange that wearing safety belts is not required. They also doubt whether in the future travelers will still have a good feeling while traveling by bus, since society is becoming more aggressive. The PT must be a safe place for everyone.

Communication

Additional communication about mobility should be provided for the target groups. Where students and commuters generally can be reached online (website, apps), to the seniors the traditional communication channels still apply (brochures, posters, local newspapers). Also with regard to communication it is recommended to use existing structures and information systems.

5   *Differentiated offer*

When brainstorming about the future during both sessions it was mentioned spontaneously that a more differentiated offer would be good for PT. This stems from the idea that students and commuters have different needs than older people. For the elderly, for example, a longer journey is not considered a big problem. (note: probably considering time, not costs. See also Competitive rates))

It is therefore suggested that the PT services should be more focused on different target groups. During peak hours fast connections to and from larger cities or bus- or railway stations are important. The departure and arrival times should be adjusted to school and working hours. One or two rides in the morning and one or two rides in the evening are sufficient in this setup, according to the participants. Between peak hours the timetable can be completely different. The connections do not have to be very fast, but should occur on a regular basis. During off-peak hours the bus services should focus on reaching as many villages, towns and neighborhoods as possible in a fixed pattern, where the travel time is of secondary importance. This means that the route could vary by time of day. Another option of this idea is that two parallel networks are offered. A commuter/school network and a network for seniors.

The network for the commuters and students should focus on providing connections to larger PT axes (Qliners and railways) The senior network mainly maintains local and regional links between the villages and neighborhoods. Not only the routes and operating times can then be tailored to the audience, but also the equipment and information.

6   *Dividing buses among the villages*

Another idea that was suggested is to "divide the bus among the villages and neighborhoods." This would mean that on Monday and Tuesday, a bus connects locations A and B and on Wednesday and Thursday the Y and Z. This would be particularly suitable for off-peak hours, as for students and commuters a daily connection is required.

Target group selection and description

Target Group: Retired inhabitants of smaller villages in East Groningen.

Demographic development
The demographic development shows that the number of elderly people in the East-Groningen region will grow in absolute numbers as well as in relative numbers.

Population decline
For 2040 (compared to 2010) the prediction is that a large number of the municipalities will have to deal with a population decline. This decrease in population will have consequences, especially for the regions East Groningen (i.a. Oldambt), Eemsdelta and The Marne. The expectation is that many facilities will have trouble to maintain their service level and that this will have implications for the existence and accessibility of these facilities. It is also expected that social involvement will decrease because of a decline in the number of inhabitants. It will become more and more difficult to maintain an active network of volunteers and informal care. A decline in employment and a deterioration of the economic situation will make these regions particularly susceptible to the consequences of population decline (Dijkstal and Mans, 2009).

Fewer young people, many more elderly
The number of young people in the province of Groningen will decrease from 22% in 2010 to 19% in 2030. The number of elderly is increasing. With a population decline this leads to a significantly larger percentage of older people: from 19% in 2010 to 29% in 2030.

Age Projections
The number of elderly will increase further in the coming years. It is estimated that in the province of Groningen the number of people over 65 will have increased with 57,000 in 2040. A third of them are between 65 and 75 years old and over two thirds are over 75 years.

Oldambt: population by age, absolute numbers and percentages 2012. Source: CBS							
age group	0-19	20-34	35-49	50-64	65-74	75 +	Total
absolutely	8,405	6,744	10,907	11,470	5,062	4,316	48,747
%	17.2	13.8	22.4	23.5	10.4	8.9	

The Interreg IVB
North Sea Region
Programme

Target group description

The target group lives in the smaller villages surrounding Winschoten, the central
town of the municipality Oldambt. Winschoten has several regional bus
connections and a train station with a direct connection to the city of Groningen,
capital of the province of Groningen and Leer, a city in Germany, close to the
Dutch border.
Members of the target group usually travel by car, and occasionally take the bus
(less than one day per month/ 1-3 days per month). When they use the bus their
destinations are: a visit to dentist, physician of hospital, shopping in a town or city
nearby, recreational purposes (visiting a museum or a consumer fair in a bigger
city, e.g. in Amsterdam or Utrecht). In and around their own villages they travel
by bike (distances up to 5/8 kms).

The target group is not used to working with tablets or smartphones. They have a
personal computer at home, which they mainly use for sending or receiving e-
mails and finding information about goods or services. They start using the PC for
internet banking or downloading and reading newspapers or newsletters.

We would like the relatively younger group among the target group to explore the
possibilities of public transport (by bus) while they are still active in volunteer
work and in their social life. Once they know how the system works and what the
possibilities are, they will keep using public transport when they grow older and
become more and more dependent on public transport. Also, since they are still
actively involved in their communities, they can be an example for others, or
teach/help others (for example elderly people who cannot drive their own car
anymore) in using public transport.

Income

Income situation Oldambt
Disposable income (in 1000, - euro): Oldambt 13,2 (Province Groningen 13,6,
Netherlands 14,8)
Oldambt belongs to the 10 Dutch municipalities with the lowest general income
(2008).
In general East -Groningen has a high level of unemployment, low income and a
relatively low education level (combined with low literacy).

Social situation Oldambt
The risk of not participating in the society is not equal for everyone. The
following groups have an increased risk not to participate and to miss
opportunities in the further course of their lives:
• elderly (> 65 years);

• widowed and divorced;
• immigrants;
• people with low incomes (including beneficiaries);
• people with disabilities.

The size of this risk groups in the municipality Oldambt is shown in the table below:

Target group	Size		Target group	Size
WB	996		Wajong	739
WIJ	133		WAZ	
IOAW	48		AOW /old age pension	7.470
IOAZ	6		Immigrants	4.107
WW /unemployed	1.053		Elderly > 65 jaar	7.604
WAO / unfit to work	1.719		Widowed	2.956
WIA	228		Divorced	2.804

Sources: Municipality Oldambt (Oldambt in figures; 2010) and CWI (figures in late 2009)

Between these groups are doublings: people are classified in several groups.

User Persona 1

Greetje Postma, 63

Bio — Greetje lives in Finsterwolde, a small town ca. 8 km north of Winschoten. She used to work as a domestic help in a nursing home for the elderly in Beerta, a small town between Finsterwolde and Winschoten. She is now retired.

Family — Greetje is married. Her husband Tjalle is 62 and unemployed. He used to be electrician in shipbuilding. They have three children, two sons and a daughter. Their eldest son is married and has two children. Her daughter is single and lives in Winschoten, her eldest son and his family moved to Zwolle, and her youngest son still lives at home. He works as help in the kitchen of a restaurant in Bad Nieuweschans.

Hobby — Greetje likes to make postcards. Her favorite shop for buying things for her postcards is in the city of Groningen. Once every two weeks she meets a few friends in Westerlee; they spend an evening exchanging ideas and work together on their postcards.

Greetje is also a volunteer at the Steunstee Finsterwolde. There she's doing a computer course and learns to use the internet and e-mail.

Travel behavior: Greetje doesn't have a drivers license. Usually she and her husband take the car to visit their children, family and friends. She doesn't really like to travel by bus, because she finds it complicated and doesn't know where to find the information. She hears horrible stories about the OV-chip card and so far has avoided to buy one. She sometimes visits her daughter in Winschoten on her own and then she buys a ticket in the bus. When she meets her postcard friends in the evenings, one of the others arranges the so called 'LijnBelbus', for which you have to make a reservation one hour in advance. For her visits to Groningen, she asks one of her friends to find out about train schedules and connecting buses in Groningen.

Quote: "Traveling by bus and train is complicated, especially since the introduction of the OV-chip card. Time schedules change every time and I don't understand the way the LijnBelbus works. Maybe I should learn more about it, because I am not sure for how long we can still afford a car. It's getting more expensive every day."

User Persona 2

Egbert Waalkens, 82

Bio Egbert lives in Bellingwolde, a small town near Winschoten and close to the German border. He used to work as a history teacher in a secondary school in the city of Groningen. He is physically relatively fit, but due to a minor chronic disease, he needs to visit a specialist in the hospital in Delfzijl (North Groningen) regularly.

Family Egbert is a widower for 20 years. He has twee daughters. Both are married. His oldest daughter has two children and she and her husband live in Delfzijl. His youngest daughter has one child and she and her husband live in Midwolda, north of Winschoten. Two of his grandchildren live in Groningen, one lives in Amsterdam.

Hobby Egbert likes to visit museums in the neighborhood and art exhibitions in Groningen or other cities like Assen, Utrecht and Amsterdam. In his seventies he followed a course on Art History at the Open University. He still meets with students of that same course to visit art exhibitions and museums and to go to lectures on Art History.

Travel behavior:

Egbert has a drivers license and owns a car. He doesn't use his car very often and only for short distances. He doesn't like to drive his car when it is dark or when it is raining. He owns a Personal OV-chip card and can make use of the reduced tariff for elderly people (65+). Every now and then he takes the train or bus to visit old colleagues in Groningen or to go to further destinations, e.g. to meet friends and to visit a museum or exhibition. He knows about the LijnBelbus and regularly makes a reservation when he needs public transport in the evenings or weekends to destinations that can be reached by bus.

Quote: "I like to be independent as long as I can and drive my own care when I feel like it. But I also enjoy a trip by bus, especially through the beautiful Groningen landscape. And what I also like about it is meeting other people and chatting with fellow passengers ."

Municipality of Oldambt

Transportation Challenges

Public Transport when travelling by car is no longer an option

Greetje
Finsterwolde

For Greetje the biggest challenge is to start to learn how to use the public transport system independently, without the help of others. She will need information about:

1   How to plan her bus trip
2   How to pay for her bus trip
3   What is helpful during her bus trip
4   Arriving at destination and the return journey

Destinations
Winschoten
Westerlee
Groningen City Centre
Zwolle
From Finsterwolde Greetje can travel with bus 17. Bus 17 has a regular hourly service during the day. After 7 o'clock PM bus 17 becomes a LijnBelbus. If you want to use it, you have to make a reservation one hour in advance.
Bus 17 goes to Winschoten Station and offers a good connection for the train to Groningen. In Groningen there are lots of possibilities for travelling further by bus or train, both regional and national. For reaching Westerlee, Greetje needs to change buses in Winschoten.

The journeys themselves are not very complicated, but the trouble lies in planning the journey (will I have enough time to change buses or fetch the train in time), reading timetables (what do all the footnotes mean) and the use of the OV-chip card (when and how to check in or out, do I have enough money on my card to travel to ..., where to find charging points, what to do if the card doesn't work properly, etc.).

It would be easier for Greetje if she would know that there would be a bus at the bus stop at certain times and that there are no busus like the LijnBelbuses. She'd

rather have a bus every two hours if that means she doesn't have to make a reservation in advance, than having a bus every hour of the day.

Greetje never learned to use the computer, but she is doing a course now in the Steunstee. She prefers information in the 'old fashioned way', i.e. brochures, posters and information in local newspapers. However, she is interested in the use of computers and likes to learn.

Public Transport when driving your car is no longer an option and when your physical condition limits your possibilities

Egbert
Bellingwolde

For Egbert it is important that he can travel around, visit family, friends and go to museums nearby and a bit further away. Accessibility, comfort and a short waiting time when changing buses or continuing his journey by train are important. (A short time but not too short, because he needs his time to get to another bus or to fetch the train))

Egbert will mostly travel outside rush hours and he finds it helpful that the schedules offer regular services and a fixed frequency on all days. However, he knows how to plan a (complicated) journey and uses his PC at home to find information and occasionally book e-tickets.

Destinations
Delfzijl
Midwolda
Winschoten
Groningen
Different places in the Netherlands and sometimes Belgium

Since Egbert meets with friends from all over the country to visit art exhibitions etc., it is important to know in advance about delays and detours. It would also be helpful if during the journey he and his friends could know about and inform each other about unexpected delays. They can then reschedule their meeting time or even organize another destination for that day.

Visiting the Hospital in Delfzijl is a rather long journey (bus 12 and bus 119, approximately one and a half hour) and in the future he may not be able to go to

Delfzijl by bus or car, because of his physical condition. He and his neighbour, who also needs to go to see a doctor in Delfzijl every now and then, discussed the possibilities of putting together an number of people that have to go to Delfzijl in a certain week or on a certain day and arrange for transport together. Maybe there could be a regular and more or less flexible bus service that picks up people who need to go the hospital in Delfzijl. This bus should also pick up and bring home passengers from and to their home address.

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