iTRACT

Improving Transport and
Accessibility through new
Communication Technologies

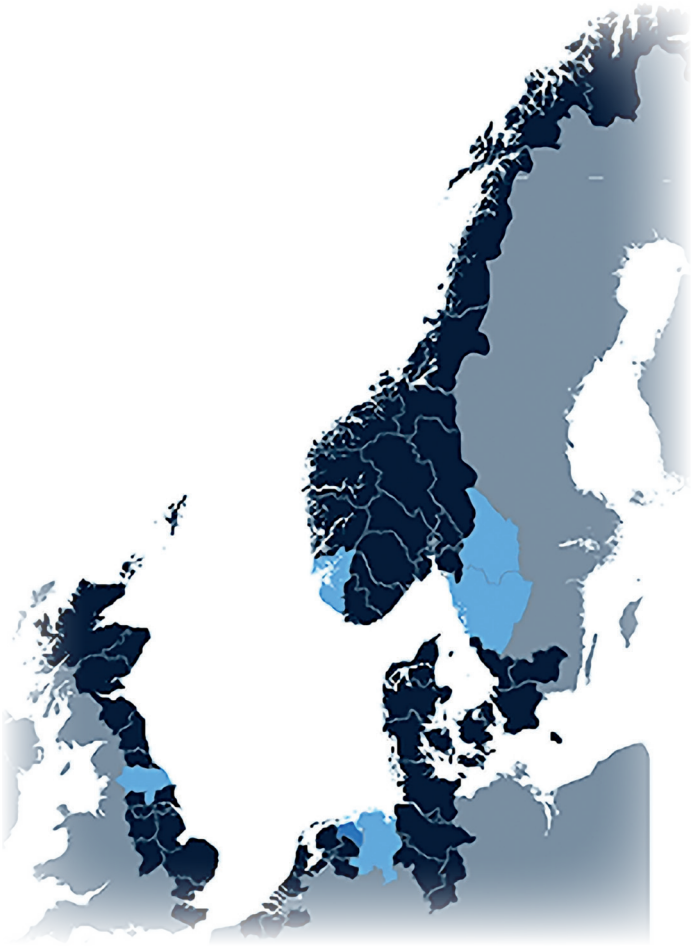
GOOD PRACTICE GUIDE

www.itract-project.eu

The Interreg IVB North Sea Region Programme

EUROPEAN UNION
European Regional Development Fund

Investing in the future by working together for a sustainable and competitive region



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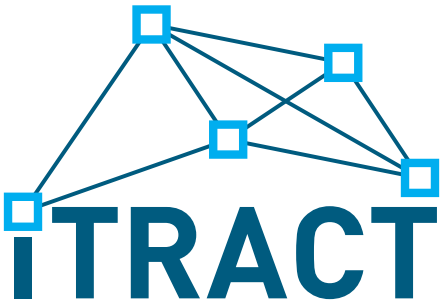

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FOREWORD

Accessibility and connectivity are essential for liveability and economic growth all over the world. More and more, digital connectivity is supplementing and sometimes replacing physical accessibility and connectivity. Rural areas are by definition lagging with respect to physical accessibility and connectivity. The Digital Agenda for Europe is vital for achieving optimal accessibility and connectivity in the North Sea Region – including rural areas – because digital connectivity can significantly augment physical connectivity and accessibility by means of more effective and efficient transport services, as was shown by the inception of a host of new digital mobility services.

Currently, the connectivity of EU regions is restricted by the use of different digital standards and regulations among the regions, and among different transportation authorities and operators. Furthermore, limited broadband capacity in many rural areas restricts the potential of digital transport services to overcome the existing limitations on accessibility and connectivity in those rural areas.

Almost two-thirds (65%) of the EU population used the internet daily in 2014, compared to less than a third (31%) in 2006. However, many Europeans – especially in rural areas – have not yet adopted digital services. User empowerment should help Europeans with limited IT skills to overcome their misgivings. But the still quite limited broadband that is currently available in several European rural areas is inhibiting the development of the digital skills of these citizens. This lack of digital skills can also be observed on the part of the stakeholders responsible for development of future transportation in rural areas. It is therefore imperative to put the Digital Agenda into effect!

Collaboration is essential in order to solve the problems of limited accessibility and connectivity in Europe. This Good Practice Guide presents examples of collaboration in the North Sea Region. Transnational collaboration within the North Sea Region was essential in order to achieve the deliverables within the project ITRACT (Improving Transport and Accessibility through new Communication Technologies), carried out within the Interreg IVB North Sea Program. We hope that the dissemination of the results of this project, as found in this Good Practice Guide, will inspire policymakers, enterprises, knowledge centres, and citizens to improve connectivity and accessibility in many European regions.

Theo Miljoen
Hugo Velthuijsen


Bus
Richting
Vertrek(min)

Optimising transport and accessibility means striking a balance between public and private transport. While private transport may offer more flexibility and comfort, public transport may offer higher efficiency by sharing transportation resources, resulting in lower costs and less environmental damage. However, in rural areas, it is difficult to achieve this kind of efficiency, and public transport options also become limited, especially for those who depend on them.

The ITRACT project (Improving Transport and Accessibility through new Communication Technologies) has used information and communication technology to develop new transport services that are more efficient and that help create an adequate range of mobility options for rural areas.

ITRACT was funded by the European Interreg North Sea Region Programme. Sixteen partners from 5 rural areas collaborated in the ITRACT project from 2012 till the beginning of 2015. The rural areas are: the Yorkshire Dales in England, Eastern Groningen in the Netherlands, Lower Saxony in Germany, Värmland in Sweden, and Rogaland in Norway. Among the 16 partners were transport companies, transport authorities, local and regional governments, and knowledge institutions. The lead partner was Hanze University of Applied Sciences in Groningen, the Netherlands.

Double vicious circles

Rural areas are areas with low population density. In areas with low population density, there is not enough demand for transport to maintain a dense and frequent public transport system. Consequently, these lower transport service levels end up attracting relatively fewer customers, thus lowering demand even further. This is one of the vicious circles.

When the availability of public transport options becomes very low, it may make the region less attractive for people to live in or for businesses to maintain their operations in, affecting in the end the population density itself. This is the second vicious circle.

Information and communication technology: a solution?

The premise of the ITRACT project was that information and communication technology (IT) can be used to create smarter transport services that are more flexible and demand-driven. Why stick to fixed routes and schedules when IT allows you to know exactly who wants to go where and when, and thus tailor-made transport can be organised instantaneously? Within the ITRACT project, over 40 IT-based solutions – apps or applications – were developed, based on input from citizens, travellers, and travel experts. An IT platform was developed to support these applications. The platform combines information from different data sources on, for example, train, bus, and car traffic, including real-time data such as delays, traffic jams, congestions, and travel plans. This has made applications possible that are personal, adaptive, multimodal, and interregional.

Many of the applications were tested in 15 pilot projects in the 5 rural regions participating in ITRACT. The pilots show that IT does offer many useful new opportunities for improved transport and accessibility. These conclusions were confirmed by other new IT-based transport services that have emerged during the ITRACT project such as Google Transit and Uber. But the ITRACT project has also made it clear that new technology alone does not suffice for adequate transport service to be offered in rural areas.

Digital infrastructure

The telecommunications infrastructure in some of the participating regions (e.g. the Yorkshire Dales and Eastern Groningen) is limited, thus making the use of IT-based services difficult or even impossible. Especially in those areas, where physical connectivity and services are scant and where digital services would be most welcome in order to complement physical services, the digital connectivity is insufficient to offer an alternative. A good digital infrastructure is necessary to compensate for the lack of a good physical infrastructure in rural areas.

Digital literacy of target groups

Most people living in rural areas do have their own means of transport: cars, bikes, cycles, etc. Relatively speaking, most of those who do not have access to private transport and who are most dependent on public transport are elderly or have a low socio-economic status. During the pilots it became apparent that many of these target groups were not used to using computers, smart phones, or tablets. The willingness and ability of the target groups to make use of IT-based services was low on average. Moreover, the on-going digitisation of today's society increases rather than decreases the social exclusion of these target groups. Involving the most relevant target groups with smart, that is, IT-based solutions does require a dedicated effort to empower users and improve their digital literacy.

IT expertise of stakeholders and digital leadership

The transport domain in rural areas is comprised of many stakeholders, including local and regional governments, transport authorities, public transport companies, private transport companies, and citizens. But who is responsible for incorporating smarter IT-based services in the rural transport landscape? Transport authorities are mostly concerned with optimising public transport; support for other solutions, such as ridesharing, that include private transport are outside their scope. Moreover, the expertise concerning the available new technologies needed for creating a vision and plan for optimising transport is often lagging behind in rural areas. This results in a lack of leadership when it comes to driving the transition towards smarter services.

This lack of digital leadership is not exclusive to rural areas. In many European cities, such as London, Paris, Barcelona, and Amsterdam, where the company Uber launched its Uberpop app (a smart phone application, that allows its users to arrange rides with owners of private cars and that is very much like the Rideshare app developed within the ITRACT project), existing taxi drivers mounted very loud and often well-received protests, leading to banning the service. Uberpop is deemed illegal (under existing legislation), offers unfair competition, and is unsafe (not properly insured). Yet, many users commented favourably on the price, courtesy, and level of service offered by Uberpop drivers. Uber does offer advantages, and in rural areas ridesharing is much less likely to be seen as unfair competition due to a lack of alternatives.

The valuation of the Uber company and the growth of both drivers and users signing up for Uberpop indicate that Uber is more than just an alternative to taxi and limousine services. In fact, Uber creates market expansion and provides solutions to travel needs that are currently not addressed by regular taxi services or public transport. The biggest change that Uber brings is lowering the need for private car ownership, blurring the distinction between public and private transport, and offering an affordable option for anytime, anywhere transport.

These applications such as Uber, as well as the services developed within ITRACT, use technology to fill gaps in current transport service offerings provided by public and private transport. However, most local, regional, and national governments lack the information, insights, and vision to formulate and implement the right policies for exploiting new technology that can lead transport to higher service levels and more efficiency and affordability.

Conclusion

IT offers many opportunities for improving transport and accessibility. But for improving transport in rural areas, introducing new technology is not enough. A good digital infrastructure, digital literacy on the part of the end users, user empowerment of the end users, and digital leadership of local and regional governments as well as the transport authorities are preconditions for the successful application of new technologies.


1 Voslapp-Süd
Jade
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ITRACT aims to improve the connectivity and accessibility of remote areas in the North Sea Region through the integration of innovative transport and communication infrastructure.

The accessibility of regions is clearly a precondition to their socio-economic development. With new technologies, such as smart phones, open data sources, and sensor technology, the transport in and accessibility of remote areas can be improved in innovative ways.

ITRACT's aim is to develop new intelligent solutions for transport and accessibility, using intelligent transport systems. The ITRACT project developed and tested innovative tools for efficient, user- and environment-friendly transport networks across the North Sea Region, based on sustainable business models. Our ambition was to create sustainable and inclusive regional economies and communities throughout the North Sea Region by improving virtual and physical modes of transport.

Most remote rural regions have problems with traffic and logistics. Outside of city centres, public transportation diminishes despite the widely held goal to increase the use of public transport over private transport. Moreover, in several locations the existent road capacity in rush hours suggests a need for an increase in the use of public transport. The ITRACT project partners believe that utilization of new wireless communication technologies may improve user experience with public transportation and therefore increase use and availability. The project started in January 2012 and ended in March 2015

Work packages of the project

There are 10 different work packages in the ITRACT project, which is divided into different areas of work, led by various project partners:

1 Project management (Hanze University of Applied Sciences)
2 Publicity and communication (University of Stavanger and Värmland County Administrative Board)
3 Development of services and self-optimizing networks (Viktoria Swedish ICT)
4 Information architecture and exchange mechanisms (Hanze University of Applied Sciences)
5 Pilot projects on transport and accessibility (Jade University of Applied Sciences)
6 Strategies for smart specialisation of the regions (University of Groningen)
7 Development and implementation of improved smart algorithms (University of Groningen)
8 Dynamic Scheduling and incentivizing strategies for sustainable transport (Karlstad University)
9 Pilot projects on transport and accessibility (Alliance Healthcare)
10 Smart specialisation (Hanze University of Applied Sciences).

Project Partners

The Netherlands: Hanze University of Applied Sciences, Groningen (Lead Partner), Municipality Oldambt, OV Bureau Groningen Drenthe, University of Groningen, Shuttle Drive, Alliance Healthcare.
United Kingdom: Metro.
Norway: Rogaland County Council, University of Stavanger.
Sweden: Värmlandstrafik AB, Karlstad University, Viktoria Swedish ICT, Värmland County Administrative Board.
Germany: Jade University of Applied Sciences, VEJ - Verkehrsregion, Nahverkehr Ems Jade.

About this Good Practice Guide

This Good Practice Guide is an overview of the various highlights of the project. In the summary of the different activities you can read about the methods used and who might benefit from using them. You can also read about the results and lessons learned. Each section contains contact information, should you would be interested in knowing more. Please visit www.itract-project.eu for more information about the ITRACT project. We hope you find this Good Practice Guide inspiring and useful.

TITLE

Transnational business models for ICT based transport services

Geographical Area

Groningen, Ems-Jade, Värmland, Dales.

Subject

Viktoria Swedish ICT was responsible for equipping and supporting the regional partners when assessing and identifying the transport needs of various target groups in remote areas. This knowledge of transport needs was used to create desirable and valuable service ideas. The various service ideas needed to take into account different national legislations, funding options, regulatory systems, and market organizations in all the participating countries.

Objectives

To contribute to knowledge sharing and learning of the key issues involved in creating new IT-based solutions to address the needs of various target groups in remote areas, who are themselves not knowledgeable about the potential of new IT-based services and the way these might address their implicit or explicit needs.

Primary Contact

Viktoria Swedish ICT and the regional partners in the ITRACT project.

Stakeholders

The regional partners in the ITRACT project.

Overview

The different phases of the processes of service and business models development depend on each other. The first aim was to provide a set of comprehensive and straightforward tools/work models to be used by the different partners in order to align the analysis in the different regions and to create a unified and prioritized base for conceptual service innovation. After the first identification of relevant target groups and their needs in the various regions, the next step was to use these insights to create useful and valuable new service ideas. The concept of a Data Maturity Model was conceived to assess whether there existed sufficient (open) data resources for implementing the project envisioned across the regions. Finally, Business Innovation Workshops were organized to develop the services further towards a sustainable business model and to bring them closer to users and market entry.

Methods Used

A toolbox was developed to support the different phases of service innovation and development. The toolbox was applied to support a process with the aim of guiding stakeholders to develop new service concepts that satisfy implicit and explicit needs of target groups within the specific context of a focal region.

The first step in the process is to assess and identify the needs for transport that various target groups have in the focal region. This knowledge is then used as input for innovative and novel 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 in order to determine and prioritise which service concepts – the results from step 2 – are capable of being transformed from ideas to 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. participating regions.

The process steps supported by the four tools in the toolbox are illustrated in figure 1.

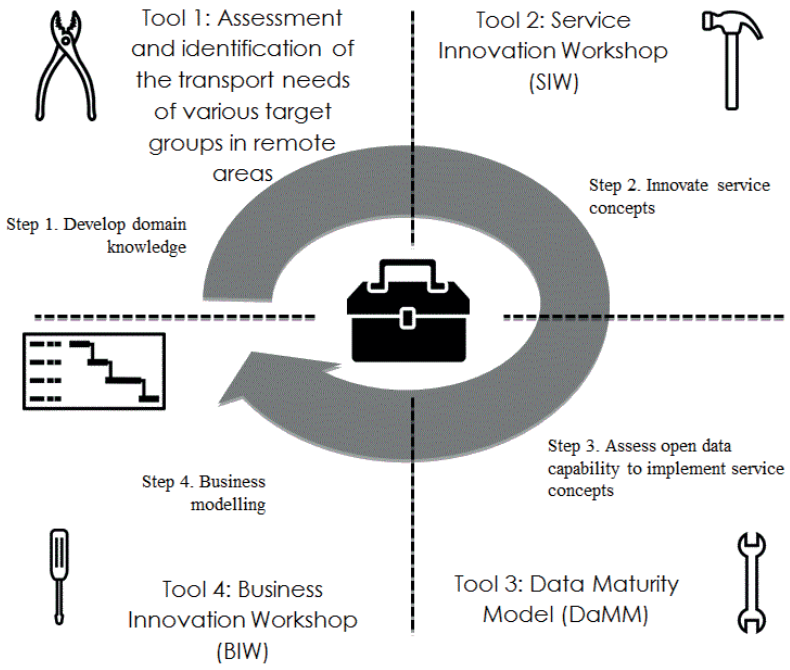

Figure 1: The process steps supported by the four tools in the toolbox

Time Scale

The work of developing transnational business models for IT-based transport services took place from the beginning of January 2012 to the end of 2014.

Evaluation

The process and the tools included have been evaluated through interviews with the participating regions. The evaluation of the actual outcome (services, prototypes, and solutions) has been carried out by other work packages in the ITRACT project, for example by running pilots.

Replication

The documentation and especially the Best Practice Guide Transnational business models for IT-based transport services was developed based on the idea that it would give the reader the necessary information for the transnational research programme (case) to be replicated.

Lessons Learnt

- Services needed are transnational
- Commitment is key – ownership and responsibility must be transferred to the region.
- It is easier to have success in the market if the idea is connected to an identified need.
- New service ideas need to stem from actual needs but can be more innovative if the parties involved are provided with a better understanding of what is possible.
- Going from prototype to market-ready is difficult, and is a process that requires persistent and diligent ownership.
- An understanding of the data and other capabilities available in the region makes it easier to understand what services can be developed.

Contact

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Further Information

- Website of the ITRACT project: www.itract-project.eu
- www.viktoria.se

SWEDISH ICT VIKTORIA

TITLE

Information architecture and exchange mechanisms for efficient transport concepts

Geographical Area

The Netherlands: Municipality of Oldambt, The UK: Dales, Sweden: Varmland Germany: Ems.

Subject

Creation of an IT architecture capable of supporting the functionality required by the apps used in the pilots of the services run during the ITRACT project.

Objectives

The objective was to create an IT platform consisting of services that support the use of dynamic information generated by services, apps, users, sensors, etc. The platform provides apps with common functionality in the form of building blocks to solve similar problems only once. It allows apps to combine all types of transport (multi-modal transport) and provides up-to-date information about the current situation of transport (traffic jams, delays, congestions, etc.) for planned trips. The platform thus provides features independent of the mode of transport and location. As such, it provides the technical means to cross the borders between modes of transport that are the result of the way transport is currently organized and managed by different authorities. As a result, the platform prepares the way to explore new means of organising transport.

Primary Contact

Hanze University of Applied Sciences and Karlstad University.

Stakeholders

Functionally: the regions and their pilot organisations, The Netherlands: Municipality of Oldambt, OV Bureau, The UK: Dales, Metro, Sweden: Varmland, Värmlandstrafik AB, Germany: Ems,VEJ – Verkehrsregion, Nahverkehr Ems Jade.
Technically: Hanze University of Applied Sciences, Karlstad University, Jade University of Applied Sciences
Scientifically and educationally: researchers and students of the universities involved, especially those at Hanze University of Applied Sciences, Karlstad University

Overview

The platform consists of:

- A series of Building Blocks providing reusable functionality.
- A number of generic components for the distributed IT infrastructure (multiple physical servers located in a number of countries).
- Interfaces for data sources, including translations for different data standards.
- A frontend with interfaces for building new apps with documentation and example apps.

The platform is illustrated in figure 2.

Methods Used

The Services defined in the service development workshops and the planned apps provided input for the required functionality of the platform. These apps vary from live travel maps to stop information and ridesharing. Common functionality was identified for designing the IT platform by means of a systematic presentation of the planned apps and services and their needs. This resulted in the definition of a number of reusable app building blocks.

The system must satisfy the following functional requirements:

- Allow for instantaneous updates such as delays to travellers.
- Ridesharing: support matchmaking between drivers with plans for a trip and potential passengers.

- Interactive map: display stops and current locations of vehicles on a geographical map.
- Multi-modal planning: generate travel plans consisting of different modes of transport such as bicycles, private cars, buses, and trains.
- Payment: support payments including logging and aggregation of individual travel data.
- User profiles: maintain user profiles including preferences, past experiences, and reputations.
- Dashboard: display real-time traffic information for a particular stop.
- During the course of the project a number of off-the-shelf software suites were adopted and integrated into the platform in multiple iterations. A helpdesk was created, and at the end a period of 'assess and improve' was implemented.

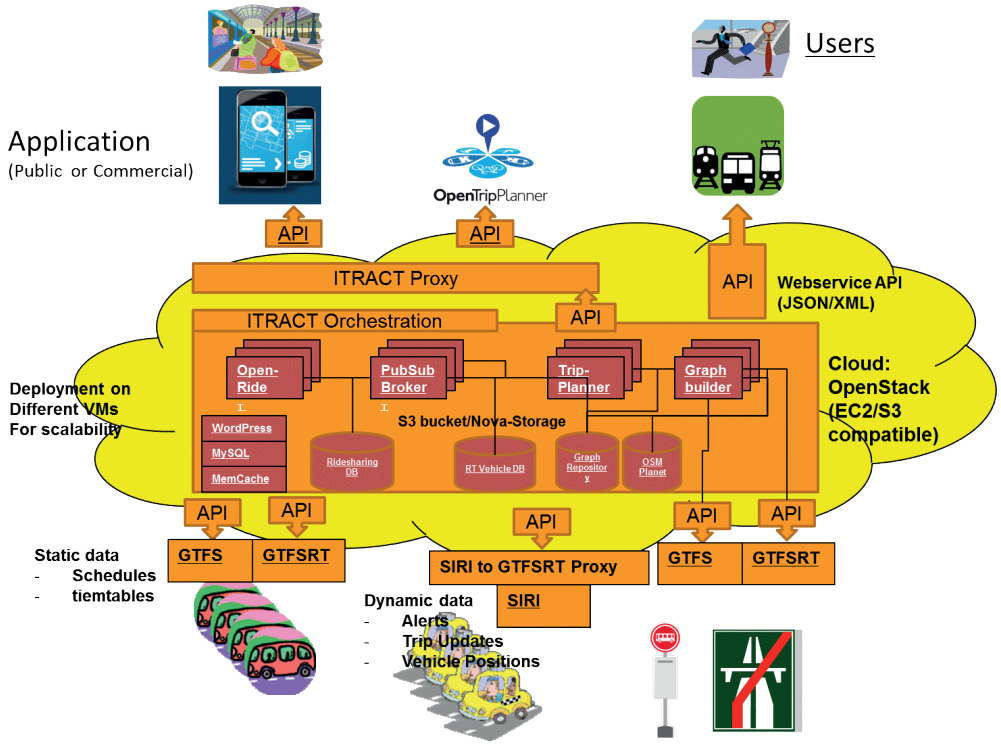

Figure 2: The platform

Time Scale

The project period started in January 2012 and lasted till March 2015.

Evaluation

A number of the apps from the pilots used the central platform. Not all functionality was subsequently used in the pilots, but implementing the platform did result in a great deal of knowledge and experience in setting up an IT platform for large scale, real-time intelligent transport services (ITS). A number of regions did not wait until the platform was fully finished but invested locally, using the knowledge and experience from ITRACT, to create a local implementation and bring it to production. We see that as a success: ITRACT was instrumental in providing the knowhow for those regions to create these local implementations.

Replication

The platform is documented in such a way that a follow-up project could relatively easily continue at the point where ITRACT left off.

Lessons Learnt

- Several open-source route planning software packages exist already. However, the available open-source route planning technology requires extensive improvements to become market ready.
- During a project running over several years, software can easily become out of date. It can take quite an effort to update the software, which might cause conflicts with other software packages. It requires a software architect with sufficient time and detailed knowledge of the project to avert this problem.
- Maintenance costs of existing software might outweigh the costs of developing a new implementation, while one might argue that development activities result in more worthwhile knowledge than maintenance of a project in the context of a research project and/or an educational institute.
- National laws and a country's specific ways of organizing transport lead to different, sometimes incompatible, data formats that are not always publicly available.
- As a research project, ITRACT merely develops pilot systems. However, third parties, especially those neither acquainted with software projects nor with research projects, tend to have much higher expectations, especially when the pilots are successful.
- More or less continuous interaction between the non-technical intended users of the IT platform and the technical developers of the platform is needed to make sure that the platform remains useful and aligned with the users' requirements.

Contact

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Further Information

A summary of the technical platform documentation and a number of example apps can be found at www.itract.cs.kau.se.

Hanze
University of Applied Sciences
Groningen

KARLSTADS UNIVERSITET


901 Karlstad

TITLE

Pilot projects on transport and accessibility

Geographical Area

Germany, Ems, The Netherlands, Oldambt, Norway, Rogaland, Sweden, Värmland, United Kingdom, Yorkshire Dales.

Subject

Pilot projects for transport and accessibility.

Objectives

Test whether the newly developed applications and services are the right services to support users in daily life and therefore to create more accessible transport.

Primary Contact

Jade University of Applied Sciences and the regional partners in the ITRACT project.

Stakeholders

The regional partners: Gemeente Oldambt, OV Bureau Groningen Drenthe, Rogaland County Council, Värmlandstrafik AB, Värmland County Administrative Board, VEJ – Verkehrsregion, Nahverkehr Ems Jade and Metro are the main beneficiaries of the project.

Overview

At the beginning of the ITRACT project, before the development of new IT applications started, service innovation workshops were held to define target-group 'personas' such as 'kids and teenager', 'fully fledged', and 'sunset generation' (to be found in: Transnational business models for IT-based transport services). Different stakeholders, such as bus companies and passenger federations, developed new services supported by IT applications, with the target groups in mind. These ideas lead to the development of over 40 applications to support the services created. To test and pilot these services and the applications, User Empowerment workshops and Living Labs were developed and organized. The goal of the User Empowerment workshops was to test how quickly users adopted the applications, and the living labs were there to test the applications in real life to see if the services would actually lead to more accessible transport.

Methods Used

For adopting and using the applications, User Empowerment workshops were organized. Users received instruction on how to use the application and were shown where the service would be helpful in making transport more accessible.
Living labs were used to test the applications in real life to see if users of the application were sufficiently supported in their needs.

Time Scale

The pilots were implemented in April 2014 and ended in August 2014. All regions conducted the User Empowerment workshops. Rogaland and Ems also conducted living labs during that period.

Evaluation

User Empowerment workshops showed that, potentially, the services developed and the applications defined could fill a need, that the process leading to the defined services was adequate, but that two important conditions needed to be met: collecting the sample of people who would be members of the target group and getting the IT up and running 100%. It also showed whether a workshop was empowering enough so as to shift people away from using their own private transportation. Investment in personal training of early adaptors was needed. Furthermore, the digital illiteracy of the elderly required closer attention in order to make the service a success.

The living labs in Ems and Rogaland showed that, if the conditions concerning the User Empowerment workshops were met, people would be willing to use the newly developed services and applications.

The lessons learned may be a valuable source of inspiration for:

- Transport service providers.
- Enterprises and residents.
- Local, regional, and national tourism authorities .
- Municipalities and cultural facilities.
- Chambers of commerce.

The most important lesson learnt about setting up User Empowerment Workshops is obvious but not automatic: to find people who fit the archetype defined in the Service Workshops and then to find out where best to implement the applications and services.

This requires a near one-to-one effort to shift people away from using their own private transportation; User Empowerment workshops are not enough to change people's attitudes towards public transport.

Just as obvious but very important: the IT Applications need to be 100% up and running.

There is a need and also a demand for training in computer skills and mobile devices, such as smart phones or iPads, especially for the elderly. The acquisition of such skills is a prerequisite for being able to use IT applications and consequently leads to user empowerment.

It would be a worthwhile task and future challenge for local and regional agencies in the North Sea Region to offer training not only for computer skills but also for public transport IT applications, and therefore to encourage the growing target group of elderly people to make use of new services. The newly acquired skills will also help this target group navigate other aspects of an increasingly digital world.

In the living labs, it became clear that, if the conditions were met, new services and applications could lead to more accessible transport.

Contact: Prof. Juliane Benra, PhD.
Email: benra@jade-hs.de

Best Practice Guide: User Empowerment Workshops using IT Applications.

JADE UNIVERSITY
OF APPLIED SCIENCES
Wilhelmshaven Oldenburg Elsfleth

THE SERVICES DEVELOPED

This section of the Good Practice Guide provides a description of several services developed as well as the experiences with these services.

TITLE

User-friendly IT solutions to support the elderly in the use of public transport in Oldambt: Scan & Go and Step-by-Step

Geographical Area

East Groningen Region, the Netherlands.

Subject

To offer elderly support in the use of public transport, ITRACT developed user-friendly IT solutions in the form of three different apps. These apps were designed to help older people before they use public transport (for example when planning a journey, looking up departure times, etc.) and when they are using public transport (for example to find out where to get off the bus, to find the bus stop for the return journey, etc.).

Objectives

To explore how and to what extent the developed apps contribute to the objectives of the ITRACT project, that is, whether they contribute to the mobility of the elderly and also to the development of user-friendly technologies. The result expected was an increase in the use of public transport by elderly people, thus improving social interactions by members of the target group.

Primary Contact

The municipality of Oldambt acted as initiator, the OV Bureau Groningen Drenthe as implementer.

Stakeholders

OV bureau GroningenAssen.
Stichting maatschappelijke ondersteuning Oldambt (organisation offering activities/facilities for eldery people).

Overview

It is expected that, in the future, a larger group of the elderly in East Groningen will be dependent on public transport. Not only because of an increase in the number of elderly people, but also because of the concentration of facilities in central villages. It is a challenge to maintain the accessibility of facilities and the mobility of the population of East Groningen at the highest possible level. During the pilot project in East Groningen, a group of elderly people tested prototypes of the apps in a living lab.

Methods Used

The research assignment was carried out in the following phases:

Phase 1: putting together a group or groups of test subjects
Three different groups of potential test subjects were approached, all belonging to the target group 'elderly people'.
Phase 2: questionnaires
Before the test period, the participants were asked to fill in a short questionnaire about their mobility and internet use.
Phase 3: support at the beginning of the test period and when the apps were tested
This involved providing support during use and explanations of the various apps.

Phase 4: group discussion
During a group discussion, the test subjects were asked about their experiences with the apps and about their ideas and needs for the future.

Time Scale

April-June 2014.

Evaluation

The test group was willing to use the Scan & Go app in the future, provided that its technology and speed were improved. The Step-by-Step app did not offer the participants any additional information, because they were experienced users of public transport. However, the test group did think that the app could be useful for inexperienced public transport users. They also saw the added value of combining the two apps, because one app gives information and the other shows you how to reach your destination.

A prototype of the OV Lift (Public Rideshare) app was not tested. However, we expect that this app will be a valuable addition to apps for public transport, especially in rural areas.

In general, the test subjects indicated that the apps provided a rather good explanation of public transport. However, this did not mean that they would take the train or bus more often. Either the participants indicated that they would continue using their cars or the participants were already using public transport quite a lot.

Cost

Developing costs per app/per platform are c. EUR 9-12,000; adapting an app to a different platform (e.g. from iOS to Android) costs c. EUR 7,000.

Replication

In principle it can be used in any region, but in remote areas especially it offers an added service.

Lessons Learnt

One objective of the development of the apps was to increase the mobility of older people through IT support. During the search for participants, it became clear that a lot of the older seniors had no experience in using the internet and smartphones, and that, in general, they did not want to either. The same was true for their use of public transport. If they did not own a car, they would use Regiotaxis (shared taxis), or ask relatives or neighbours for help. So, the question is whether the present generation of elderly people, vulnerable or otherwise, has any interest in the IT resources developed. It is expected that in the future more seniors will probably have a greater interest in those resources, because more of them will be used to the digitization of society.

Contact

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TITLE

Public use of apps for public transport in Rogaland

Geographical Area

Rogaland County, Norway.

Subject

The provider of public transport in Rogaland county in Norway, Kolumbus (which is a subsidiary of the county), launched three apps for public transport: a Realtime app, a Planner app, and a Ticketing app. Three surveys were conducted to investigate usability, functionality, and possible impact.

Objectives

The expected outcome of the surveys was insights into app use, user satisfaction, and input for future improvements. The positive effects expected from the apps themselves were an increase in the use of public transport due to improved information and user satisfaction. The target demography, in the first surveys, was mainly university students and, in the last one, users of public transport in general between the ages of 15 and 90. The last one included issues on rural versus urban destinations.

Primary Contact

Rogaland County with its subsidiary Kolumbus and the University of Stavanger.

Stakeholders

In the app development: Rogaland County and its subsidiary Kolumbus.
In the surveys: University of Stavanger, Rogaland County, and its subsidiary Kolumbus.

Overview

Kolumbus developed and made their apps available for public use in 2012-2013. The ITRACT pilot study is based on three surveys related to these apps. A small survey was conducted at the university in August 2013, a larger one at the university in June 2014, and a still larger one in the region in general in October 2014.

The background of the app development in Rogaland that started prior to the ITRACT project consisted of feedback that only 9% of travellers used public transport. A local political decision was made to increase this in order to reduce tailbacks during rush hours and to improve transport options in rural areas.

Methods Used

The three surveys used questionnaires developed locally and improved for each survey as a result of prior results. Information about the downloading of apps and related issues was added by Kolumbus. All available information was analysed by the University of Stavanger.

The results show downloads and daily use of apps together with survey feedback. This feedback is being used for future versions of the apps.

Time Scale

App development began before 2012, and the apps were launched in 2012 and 2013. Later, all three apps were upgraded in 2014. The surveys were done in 2013 and 2014.

Evaluation

Seventy-three per cent say that they will use public transport if they can get a direct bus line. Frequent travellers make regular use of the Realtime app, but less so of the Planner app. Infrequent travellers use the Planner and Ticketing apps more often.

All apps have a steady increase in downloads, and the Realtime app had more than 220,000 clicks (requests for information) per week during April 2014. In November 2014, the Realtime app had up to 57,000 clicks in one day. The pattern was that Mondays and Fridays showed the highest usage per week. About 80% want more integration with maps to improve usability.

A lower percentage of the respondents than anticipated did their main travel to – or from – an urban area. This is in contrast to the current bus-route pattern, which

assumes that most travellers are travelling to or from an urban area. This suggests that bus routes running directly between residential areas and non-urban industrial areas may increase the use of buses.

A significant number of respondents indicated that they would use public transport more due to the improved information via the apps. There was also a steady increase in app usage per month.

Replication

The Rogaland experience, with a high percentage of app users in the county, is relevant for other similar areas. Most of Rogaland can be considered as rural according to Scandinavian demographic structure.

The feedback on high user satisfaction due to more available information and the demand for more map integration should be generally applicable. The desire for fewer bus transfers is also a general issue to increase use of public transport.

Lessons Learnt

The success of the apps for public transport in Rogaland is due to several factors. It had a good start by becoming available at the time that many people started to use smartphones. Increased volume of app use for public transport was achieved when the Realtime app was introduced, probably due to much better information for users on when to expect the bus, due to delays.

The Planner app also functions with ferries and trains, and can be used for a much wider area than Rogaland alone. The Ticketing app was slow in user adoption from the start. This was probably due to the fact that it only worked with single non-discount tickets. Therefore, no frequent travellers would use it. The functionality of this app has now been changed to include discount tickets.

Contact

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Further Information

- www.itract-project.eu
- www.kolumbus.no
- Frick, J. (2014). Improving Transport and Accessibility through New Communication Technologies. 2014 APMS Proceedings, Part II, Springer Publishers: 572.

KOLUMBUS

University of Stavanger

ROGALAND FYLKESKOMMUNE

TITLE

ShareRoute

Geographical Area

The Yorkshire Dales National Park, Nidderdale Area of Outstanding Natural Beauty, and the surrounding area.

Subject

ShareRoute tackles the problem of limited scheduled public transport in remote rural areas. It incorporates demand-responsive transport, community transport, volunteer car schemes, and taxi services into a journey planner alongside regularly scheduled bus and rail services, enabling public transport users to plan door-to-door journeys using a combination of transport modes.

Objectives

The project aimed to show the feasibility of incorporating non-scheduled transport (demand responsive transport, community transport, volunteer car schemes, and taxi services) into a journey planner alongside regularly scheduled bus and rail services. It aimed to test how useful such a service would be, and to identify problems that would need to be overcome for full implementation. The positive effect hoped for from this case study was to make travelling without a car in and around the Yorkshire Dales a simpler and more seamless experience.

The target demographics were young people, older people, tourist visitors, and anyone without access to a car in the Yorkshire Dales region.

Primary Contact

Initiator: Dales Integrated Transport Alliance (DITA), West Yorkshire Combined Authority (WYCA, formerly West Yorkshire Passenger Transport Executive / Metro).
Implementers: WYCA, Data Images.

Stakeholders

- DITA (Dales Integrated Transport Alliance) including DITA's ten transport Hubs around the Yorkshire Dales.
- West Yorkshire Combined Authority.
- North Yorkshire County Council.
- Bus operators, community transport operators, and taxi operators within the Yorkshire Dales region.
- Residents of and visitors to the Yorkshire Dales and surrounding areas.

Overview

The need for the ShareRoute software was identified during the ITRACT Service Innovation Workshop in November 2012. The aim was to reduce the disadvantage of living without a car in the rural area, and especially the social isolation that can result from not having personal transport.

The ShareRoute pilot study consisted of testing the two elements of the software: the journey planner and the dashboard. The dashboard is used to make and manage trip requests for non-scheduled transport (community transport, volunteer car schemes, and taxis). It was tested from the point of view of Hub managers who manage community transport operations, and from the point of view of a member of the general public coming into the Hub to make a trip booking.

The journey planner was tested from the point of view of a member of the general public coming into a Hub to make a transport enquiry.

Methods Used

The target group for testing ShareRoute was identified as the Hub managers of the ten DITA Hubs located throughout the Yorkshire Dales and surrounding areas. Each Hub manager was visited for a one-on-one testing session tailored to his or her own requirements in their Hub setting. For example, some Hubs manage community transport operations, some are more visitor-focussed, and some more resident-focussed. The results will be fed back into continued improvement of the software and will guide its future development.

Time Scale

The project ran from November 2012 to December 2014, with pilot testing in November and December 2014. Some Hub managers are continuing to test the ShareRoute software and providing more feedback, which will go into its further development.

Evaluation

Final results of the ShareRoute Living Labs pilot testing indicated that the Hub managers rated the pilot software overall as satisfactory, and good in some respects. The Hub managers generally thought it was a good concept, which could be of use especially for tourist visitors. The main concerns were over the need for such a complicated system in an area where the number of transport options is so limited, and concern about how the system would be maintained following the end of the ITRACT project.

Cost

The cost to develop the ShareRoute pilot was approximately EUR 22,000.

Replication

Any region with similar problems of rural communities with limited or no directly scheduled public transport would benefit from a solution like ShareRoute. These could be in any country of the North Sea Region or beyond.

Lessons Learnt

The main lesson learnt is that technological solutions are not always the best for all users in remote rural areas. This is partly due to limited access to technology, such as limited smartphone ownership or poor mobile data connectivity, but also due to the existence of knowledgeable staff at the transport Hubs who can already advise residents of all the options available. On the other hand, the ShareRoute journey planner could be of great use to visitors who don't have access to the Hub's services before they arrive.

However, the software is extremely complex, and to bring it up to the level of a robust system suitable for large-scale public use would require around one further year of development time.

Contact

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Further Information

www.shareroutedita.flexiroute.net

METRO

TITLE

Hub Dashboard

Geographical Area

The Yorkshire Dales National Park, Nidderdale Area of Outstanding Natural Beauty, and the surrounding area.

Subject

To provide real-time bus information screens at rural transport hubs in the Yorkshire Dales area, with the ability to display additional information of local interest and relevance.

Objectives

Text-based real-time bus information displays are well established in Yorkshire towns and cities; however they had not been trialled in a rural context. The Hub Dashboard aims to test the usefulness of real-time bus information screens in rural locations. Instead of simple single-colour text displays, the test screens are full resolution and full colour, and can show other information of local interest as well as news about any disruptions.

It was expected that these screens would make it easier for people to use buses with more confidence, especially where they need to make a connection.

The target demographics were young people, older people, tourist visitors, and anyone without access to a car in the Yorkshire Dales region.

Primary Contact

Initiator: Dales Integrated Transport Alliance (DITA), West Yorkshire Combined Authority (WYCA, formerly West Yorkshire Passenger Transport Executive / Metro).
Implementers: WYCA, Region Services Limited (RSL).

Stakeholders

- DITA (Dales Integrated Transport Alliance) including DITA's ten transport Hubs around the Yorkshire Dales.
- West Yorkshire Combined Authority.
- North Yorkshire County Council.
- Bus operators within the Yorkshire Dales region.
- Residents of and visitors to the Yorkshire Dales and surrounding areas.

Overview

The need for the Hub Dashboard was identified during the ITRACT Service Innovation Workshop in November 2012, and further refined at visits to Hubs during 2013.

The aim was to improve passengers' confidence in using buses in rural areas, in particular with making connections.

Buses operating in the Yorkshire Dales were fitted with Ticketer machines capable of providing real-time running information to the screens during 2013. The Hub Dashboard screens were installed in March 2014. The case study consisted of seeking the views of a small number of DITA Hub managers and public transport user representatives about their experiences with the Hub Dashboard screens after several months of normal use.

Methods Used

The target group for testing the Hub Dashboard was identified as the Hub managers of the two DITA Hubs where the screens were located, and public transport user representatives.

The Hub managers were visited to seek their views, while the public transport user representatives were contacted by email. The results will be fed back into continued improvement of the screens and will guide their future development.

Time Scale

The project ran from November 2012 to December 2014, with pilot testing in November and December 2014. Hub managers and public transport users continue to provide more feedback, which will go into further development.

Evaluation

Final results of the Hub Dashboard Living Labs pilot testing indicated that the Hub managers and public transport users rated the pilot screens overall as good. The main problem identified was that the screens are not in optimum locations. This was due to the technology used being standard computer screens rather than ruggedized units, which would have been significantly more expensive.

Cost

The cost to develop the Hub Dashboard pilot was approximately EUR4500 per screen and EUR3700 per bus.

Replication

Any region with similar rural bus interchange locations, where passengers would benefit from real-time bus running information, could use the Hub Dashboard. These could be in any of the countries of the North Sea Region or beyond.

Lessons Learnt

The success of the project was largely attributable to simplifying the initial requirements, using a system already partly developed for West Yorkshire cities (although the ITRACT pilots were the first time the system had been tested in the field), and piloting it at two carefully chosen locations. We had underestimated the difficulty of getting real-time information working for bus operators who had not used it before. Furthermore, lack of technical knowledge on the part of the Hub managers at the locations where the screens were installed caused some delays and problems. These were overcome by sending out engineers.

Contact

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Further Information

Hub Dashboard locations:

- Grassington National Park Centre.
- Leyburn Tourist Information Centre.

METRO

TITLE

Useful IT-based services for travellers in Värmland

Geographical Area

The county of Värmland, Sweden.

Subject

To make public transports more attractive through IT solutions based on customer needs.

Objectives

To develop new e-services for ticketing and demand-responsive transport to make it easier for working commuters and others to use public transport.

Primary Contact

Värmlandstrafik AB.

Stakeholders

Värmlandstrafik AB.
Landstinget i Värmland.

Overview

The new IT services developed are:

1. 'Company Invoice', a service that allows employees to buy their tickets to buses and trains via the usual Värmlandstrafik app and get a ticket in their mobile. Their employer will then receive an invoice of all trips made during a month. The service also provides employers with a way to monitor travelling, for example to see who are travelling and where they travel.
2. 'Book demand-responsive transport', a service that allows booking of demand-responsive transport via Värmlandstrafik's website or app. In addition, airport buses can be booked online.

Methods Used

The whole process to develop the new services, contained these steps:

- Investigating customer needs.
- Service innovation workshop: create and select ideas for new services.
- Develop the services in cooperation with professional developers.
- Business Innovation workshop.
- Pilot tests of the new services. Both real-life tests and lab tests were carried out.
- Implementation and launch.

Time Scale

The development process was carried out during 2012-2015. The service, 'Book demand-responsive transport', was launched in June 2014, and 'Company invoice' is going to be launched in the beginning of 2015.

Evaluation

Voices about the two new services:

Book demand-responsive transport
"It makes everything easier and more flexible for both passengers and those of us in charge of traffic planning" – Carina Rosenkvist, Team Leader at Värmlandstrafik's booking centre.

"Many are already asking for this type of service. Integrating web-based solutions into existing systems is the way to go. And it stands out today, Värmlandstrafik is at the forefront…" – Per Sevrell, CEO of Elastic Mobile.

Company invoice

"We want to encourage our staff to use more public transport. It is important from an environmental perspective, but also for people's health and safety" – Miranda Fredriksson, Environmental coordinator at Värmland County Council.

"The system also provides a way to monitor travelling. You can now evaluate and see who are travelling, where they travel to and perhaps also make efforts to increase the use of public transport" – Stefan Johansson, CEO of Infospread.

Cost

In order to develop the new services, external experts have been engaged at a cost of about EUR 90,000.

Replication

The idea of the two services is transferable to any other region or country. The IT solutions are tailor-made for Värmlandstrafik and their IT systems, though.

Lessons Learnt

Värmland has good conditions when it comes to developing IT services. The infrastructure in Sweden is phenomenal, with good mobile coverage even in the more sparsely populated areas. And in addition there is an interest within the company to develop in these areas. ITRACT has accelerated different activities at Värmlandstrafik. Ideas that have grown from the project, both in terms of the apps and other ideas that will come into use in the future.

Another lesson learnt from ITRACT is that, in order to develop smart IT solutions, there is a need for high-quality data from the various data sources. And it is important they are quality assured.

ITRACT has broadened the horizon. The project has created ways to make new contacts, both with universities and research teams, with owners, other actors within the field of public transport, and colleagues in other countries. It is important to work together, both in terms of colleagues and in terms of suppliers and educational institutes. But it is not always easy; the risk is that the task at hand loses speed when you become too dependent on each other. It is important that we learn from each other.

Contact

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Further Information

www.varmlandstrafik.se/utveckling

Värmlandstrafik

TITLE

Dynamic scheduling and incentivizing strategies for sustainable transport

Geographical Area

The Netherlands.

Subject

To reduce the total cost of medicine distribution.

Objectives

To develop optimal strategies for dynamic scheduling and incentive strategies for sustainable transport .

Primary Contact

Initiators and implementers of the project were Prof. Kees Jan Roodbergen, PhD, and Dr Stuart Xiang Zhu, University of Groningen.

Stakeholders

Alliance Healthcare and its patients are the main beneficiaries of the project.

Overview

A case study was done for Alliance Healthcare to develop optimal strategies for the distribution of medicine in less populated areas. Alliance Healthcare wholesales, distributes, and retails pharmaceutical, surgical, medical, and healthcare products throughout Europe. The company supplies more than 180,000 pharmacies, doctors, health centres, and hospitals from over 370 distribution centres in 20 countries.
The project investigates the problem of medicine delivery faced by Alliance Healthcare.

By considering flexible delivery options, the study provides a sustainable solution for medicine transport in rural areas, including self-pick-up and home delivery. To improve accessibility, medicine lockers are placed in rural areas so that patients can pick up medicines from a medicine locker 24 hours/7 days.

The outcome of the project is to provide a decision-making tool that can provide useful guidelines to determine the location of lockers and recommend the best pick-up option for each patient. Consequently, medicine distribution is more cost-efficient and sustainable, and patients enjoy improved service. This tool could be widely used in the healthcare industry and contribute to the knowledge about dynamic scheduling and incentive strategies for sustainable transport.

Methods Used

A mathematical model was developed and implemented by using optimization software and route planning software. Based on the data from Alliance Healthcare, the software generates optimal solutions about the location of lockers and the best delivery option for each patient. Also a sensitivity analysis was performed to investigate the impact of incentive parameters on the performance.

Time Scale

The project started in October 2013 and will last till March 2015.

Evaluation

A program based on an optimization software programme has been developed to obtain the optimal strategy for achieving a cost-efficient medicine delivery. The program has been tested by using the data provided by Alliance Healthcare. The outcome is consistent with the current business practice of Alliance Healthcare.

Cost

Setup costs were approximately EUR 30,000. The cost to turn our decision tool into a public-ready product will be approximately one more year of development time, plus on-going licencing fees for use of the software.

Replication

According to the representatives of Alliance Healthcare, the franchisees of the company in the United Kingdom and Germany face a similar problem. We expect that the model can be implemented there with slight adjustments.

Lessons Learnt

One of the lessons learnt was that to make the model realistic, the assumptions should be thoroughly discussed at an early stage of the project. To adapt the model to another situation, the assumptions should be carefully re-examined and updated. Based on the modified assumptions, the model should be adjusted accordingly.

Furthermore, the key assumption of the current model is that each patient will follow the optimal delivery option indicated by the model so that the total cost can be minimized. However, in reality, each patient has his or her own preference of delivery option. Therefore, it is important to design incentive mechanisms (e.g. an attractive price or high-quality service) to motivate patients to follow the optimal delivery option indicated by the model.

Contact

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Further Information

- www.itract-project.eu
- A report named 'Routing Vehicles with Inventory Constraints' is available on the website.
- Two related research articles have been published on the well-known international journals.
- Riezebos, J., S. Zhu. 2015. MRP Planned Orders in a Multiple-Supplier
- Environment with Differing Lead Times. Production and Operations Management. DOI: 10.1111/poms.12318.
- Wu, M., S. Zhu, R. Teunter. 2014. A risk-averse competitive newsvendor problem under the CVaR criterion. International Journal of Production Economics, 156, 13-23.
- Vogels, L. 2015. Assignment algorithms for the multi depot vehicle routing
- problem. Bachelor thesis of Science programme Econometrics and Operations Research, Faculty of Economics and Business, University of Groningen.

TITLE

Patients' willingness to use new technologies in order to increase accessibility

Geographical Area

Beilen in the northern part of the Netherlands.

Subject

Increase accessibility of pharmacy services, raise service levels, and introduce new technologies and communication to service patients at a higher level and reduce costs for the local pharmacy.

Objectives

Gain insight into the willingness of patients with different backgrounds and technological skills to make use of new technologies in order to develop new innovations to improve accessibility and reduce costs.

Test the willingness of patients to use a locker system. Test what kind of population wants to use the locker system and test the willingness of patients to use new technologies in the UK and Belgium. Expected positive effect is a fast introduction of the locker system. Target demography: the patients registered at Kring Apotheek Beilen.

Primary Contact

ITRACT, Alliance Healthcare.

Stakeholders

Alliance Healthcare, Kring Apotheek Beilen, and its patients are the main beneficiaries of the project.

Overview

The pilots contained the placement of a locker, creation of an instruction video, setting up communication materials, and setting up and conducting two surveys. The surveys consisted of around 20 questions, which were conducted as follows: survey on tablets filled in by patients of Kring Apotheek Beilen, and an online survey sent by email to both patients of Kring Apotheek Beilen and a broader public (of Alliance Healthcare, ITRACT, University of Groningen, Hanze University of Applied Sciences).

Methods Used

- Development of communication materials including an instruction video.
- Reward offered for patients that fill in the survey in the pharmacy.
- Online survey: easy to use and to adapt.
- Analysis of the data.
- The end product helps in further development of new innovations and services for Alliance Healthcare and pharmacies in order to make care and services more assessable.
- Placement of a locker within the pilot location to experience real-life patient interaction with this new technology.

Time Scale

The first pilot was implemented in April 2014 (starting from April 19th onwards) and ended in May 2014. In the first two weeks the pilot was executed using the tablets in the pharmacy. Afterwards the online pilot was implemented, and this pilot was conducted over a period of four weeks. In September 2014 a second pilot was implemented with input of the mathematic model and outcome of the first pilot. An online survey was sent out per email to the customers that already used the medicine locker. In the email we explained the purpose of the survey and – to make it more personal – the email was signed by the pharmacist of Kring Apotheek Beilen. This approach was very successful and resulted in 430 completed questionnaires within two weeks after the survey was sent out.

Evaluation

Demonstrable results:
- In total, 676 surveys were completed.

Regional benefit:
- Better service.
- Better accessibility of the pharmacy.
- Knowledge to implement the system in other 'rural' areas in the Netherlands.
- Differences in regulation and market between countries need to be taken into account. Due to differences between the UK, Belgium, and the Netherlands, pilots were unable to be done in the first two countries.

Cost

The estimated cost to conduct the survey and analyse the results was EUR26.000 for pilots 1 and 2. Because both pilots made use of the same survey tool and analysis tool, we were able to keep the total material costs low.

Replication

A broad group of patients and pharmacies could benefit from this intervention. The communication material from this case is one example that could be used and the survey format can easily be copied.

Lessons Learnt

Success factors
- Clear communication adds value.
- The survey tool works well on the website.
- A video to provide customers with an idea of the different options available.

Difficulties
- It is important to test the database and to make sure that the data can be analysed.
- Having interns working from a distance works was not very effective – it helped to appoint a dedicated person who would visit the pharmacy and who had face-to-face contact with the interns.
- Setting up a mathematical model costs a lot of time. This has to be taken into account at the planning stage.
- Differences in regulation and markets between countries need to be taken into account when implementing services

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Further Information

www.mijnmedicijngemak.nl

Alliance Healthcare
Bringing healthcare closer

TITLE

Strategies for smart specialisation

Geographical Area

Germany, Ems, The Netherlands, Oldambt, Norway, Rogaland, Sweden, Värmland and UK, Dales.

Subject

Strategies for smart specialisation.

Objectives

To use innovative IT-based transport services as a strategy for enabling smart specialisation of the region.

Primary Contact

Hanze University of Applied Sciences.

Stakeholders

Local Governments and Communities.

Overview

ITRACT's policy goal is to stimulate social wellbeing and economic activity within rural areas. If public transport service offerings become very sparse or even non-existent in a given region, liveability and economic activity will be affected, and thereby influence people/businesses willing to live or operate in that region. So by improving the accessibility of the rural areas, smart specialisation is easier to introduce. Because this not only applies to rural residents but everyone who travels through and to the rural area (with new stakeholders like commuters, business people, maintenance engineers), this leads to greater interest in improving the digital infrastructure and services.

Methods Used

The aim of the ITRACT project was to improve mobility and accessibility in remote rural regions by developing IT-based solutions (Intelligent Transport Services; ITS).

Firstly, low population density means low (public) transport demand, which in turn leads to a limited public transport service offering. But a limited public transport service offering will drive people to look for alternative, including private, forms of transport, lowering public transport demand even more. As a consequence, over the years, bus lines have gone from hourly, to two-hourly, to four-hourly, to rush-hour schedules only in rural areas. Secondly, when public transport service offerings become very sparse or even non-existent in a given region, in combination with other facilities and services, this affects liveability and economic activity, and influences the number of people and businesses willing to live or operate in that region, thus leading to an even lower public transport demand. In rural areas this is even more the case.

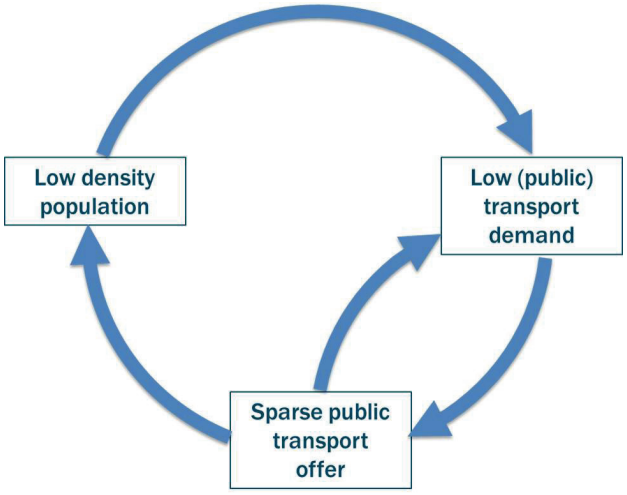

Figure 1. Double vicious circle of public transport in rural areas.

IT can be used to create ITS, which offer adequate but cost-effective service levels in rural areas, despite low demand for (public) transport. An important aim was to assess in which way IT-based innovations could contribute to improved mobility and accessibility for rural areas. In this way ITS in rural areas can fill this demand gap for transport, and low population density would no longer lead to inadequate transport offerings and consequently to a negative effect on the attractiveness of the region for working and living, thus breaking the vicious circles. In other words, active individuals, transport organisations and entrepreneurs search for creative new transport offerings and receive incentives to do so.

The project is implicitly based on the following three assumptions:

1. Smarter use of information leads to smarter transport services in rural areas.
2. Smarter transport services offer adequate service levels in rural areas.
3. Smarter transport services have a positive impact on the liveability and eco nomy of rural areas.

The project activities were aimed at testing the first two assumptions. The third assumption is supported by the scientific literature, developed within this project, which shows a positive impact from good transport solutions on the economy and liveability of a region, and a negative impact in the case of the absence of good transport solutions. Improvements in digital connectivity can promote this by empowering people and businesses, thereby stimulating economic development and social inclusion. The scope and scale of the project in itself was insufficient to contribute significant added support for this assumption.

Time Scale

The work on the development of strategies for smart specialisation took place from the beginning of January 2012 to the end of 2014.

Evaluation

The activities and results of ITRACT produced the following innovative contributions to smart mobility as a means to improve transport and accessibility in rural areas:

Ideas for mobile applications were identified in **Service Innovation Workshops** in the various regions. The Service Innovation Workshops were used as input for an analysis of regional target users and their needs – described in the form of user personas – and regionally available resources such as existing transport options and data sources.

An inclusive **IT platform** was developed that integrated information and data from different sources including both public and private transport. The platform is able to combine information from multiple transport authorities and organisations to create seamless multi-modal transport services. Furthermore, the platform supports the use of dynamic information generated by users, sensors, etc., to create smarter transport services and update travel plans based on current information.

The ITRACT project developed and piloted several new smart mobility service concepts. These services were developed for different target groups, such as transport users (e.g. the elderly, students, and tourists) and employees of transport organisations (e.g. conductors and traffic managers). Over 40 new applications were developed for the 5 participating regions.

Some of the target user groups turned out not to be automatic users of new IT-based transport services. A **transport service usability checklist** was developed to make sure that the services developed were actually adequate and easy-to-use for the intended users.

→

Furthermore, the concept of **User Empowerment Workshops** was developed as a tool to make sure that the target users were informed about the availability and use of new services and – if necessary – trained to use them.

In a later extension to the ITRACT project, the IT platform was used and expanded to support the optimisation of the transportation of goods. This led to the development of optimising algorithms for **Dynamic Scheduling and Incentivising Strategies.** These algorithms were applied to and tested in a pilot involving a sustainable and cost-efficient medicine delivery strategy for the healthcare industry.

Replication

The lessons learned may be a valuable source of inspiration for:

- Transport service providers.
- Enterprises and residents.
- Local, regional, and national government.
- Municipalities and cultural facilities.
- Chambers of Commerce.

Lessons Learnt

- Development and implementation of smarter ITS have a positive impact on the liveability and economy of rural areas. Especially in rural areas, they are desirable in order to create a better match between a relatively small number of travellers and a limited range of transport options. The use of personas and concepts of services is generically applicable, and concepts of services are potentially transferable across different (EU) regions.

- Pilots of newly developed IT apps demonstrated that public transport companies can successfully use IT applications to offer more and better information and services, and therefore attract more travellers. User empowerment plays an indispensible role for vulnerable groups (like the elderly).

- Digital innovation to promote mobility and accessibility in rural areas is limited by poor data infrastructure (supply) and poor digital engagement (demand) in rural areas. Offering devices and applications is not enough to assist people in becoming digitally included. For digital non-users to take the step towards digital engagement, the IT device or application has to connect to the everyday life and routines.

- As well as digital literacy, there is also a remarkable reluctance to use public transport (or services like ride-sharing): people have to be stimulated to cross the threshold to make use of new possibilities. Elderly people, for example, often have problems with travelling with public transport: car dependency, lack of familiarity with public transport, and difficulty reading timetables or understanding announcements at railway stations. User empowerment plays an indispensable role in this (cf. the Step-by-Step app).

- Local governments and communities need to take a leading role in rural areas in order to develop more transport concepts and services (telecommunication networks and services). The ITRACT policy report shows that rural-based approaches with integrated projects and alliances with a smaller scope, that is, not just remote rural areas, but also encompassing a wider domain – in other words, mandates from different sectors – could offer better solutions. This outcome dovetails with the crucial role of Community-led Local Development in the newly reformed European Cohesion Policies.

- Innovation seems to strongly support social integration and connectivity (e.g. inclusion). A specific target group approach is very rewarding for this approach.

- Rural transport research is also applicable to suburban areas, but in rural areas the need is most acute (from a sociopolitical point of view).

Contact

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Further Information

Best Practice Guide: Further Strategies for Smart Specialisation.

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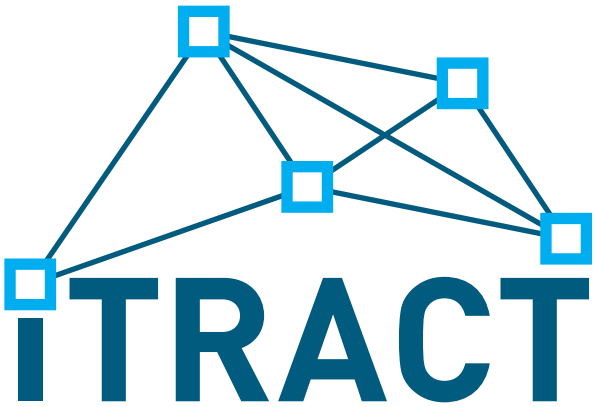
University of Applied Sciences
Groningen



iTRACT

Improving Transport and
Accessibility through new
Communication Technologies

PROJECT PARTNERS

Verkehrsregion Nahverkehr Ems-Jade

gemeente Oldambt

Karlstads Universitet

Värmlandstrafik

Jade University of Applied Sciences
Wilhelmshaven Oldenburg Elsfleth

Alliance Healthcare
Bringing healthcare closer

shuttle drive

Hanze University of Applied Sciences Groningen

Swedish ICT VIKTORIA

METRO

Värmland County Administrative Board

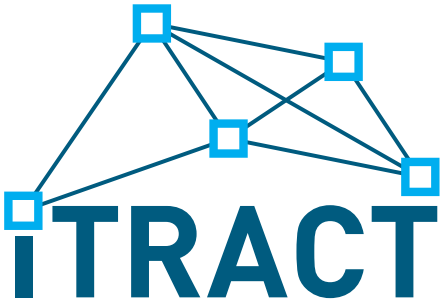
University of Stavanger

Rogaland Fylkeskommune

OV-bureau Groningen Drenthe

university of groningen / faculty of spatial sciences

university of groningen / faculty of economics and business



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Accessibility through new
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