# D.T1.1.3 WORK PAPER: LEARNING FROM GOOD PRACTICES

Learning from analysed good practices in regard to the planned pilot activities and the Rumobil Strategy

Version 7

2 2017

## Sommario

# 1. Introduction

The deliverable "Work paper: Learning from Good Practices" aims at a **joint analysis of good practices in Central Europe** areas concerning the development of the transport connection between rural territories, in many cases also affected by an aging population, with the main TEN-T nodes. It is the final deliverable of the **Activity 1** "Concerted investigation and evaluation of good practices in rural areas' public transport" of the Technical work package no.1.

This work paper, in particular, summarises the learning from analysed good practice in regard to the planned Rumobil pilot activities and the elaboration of the Rumobil Strategy.

All the practices analysed produced and produce **benefits** and substantial **positive impacts** in terms of **sustainable mobility**, providing an effective and innovative service for each rural and peripheral area.

The **identification of the good practices**, documented following a common template (D.T1.1.2), included:

1. **study trips** (D.T1.1.1) carried out during this first phase of the project;
2. **evaluation of the past experience** of RUMOBIL partners in the field of transport and mobility in peripheral areas;
3. **interesting EU projects or further international initiatives** concerning public transport in rural areas.

Furthermore, all study trips and good practices concerned at least one of the following **topics**, which are the same according to which the project pilots will be implemented:

1. **new services to better connect rural areas** (e.g. new bus services, solutions to improve the intermodality and new rail services);
2. **enhanced passenger information** to increase the quality of PT in rural areas (e.g. SWs and GPS devices).
3. **improvement of access points** to national and EU transport network (e.g. upgrading of train and bus stations);

# 2. Good practices at a glance

In order to have a clear overview of the most important practices already implemented or planned in Central Europe and in the framework of the Activity T1.1, **29 good practices,** located in 17 areas and with 5 EU actions, were descripted and collected, of which:

- **11 from the study trip experiences** of project partners;
- **11 other EU experiences** concerning transport and mobility;
- **7 European projects**.

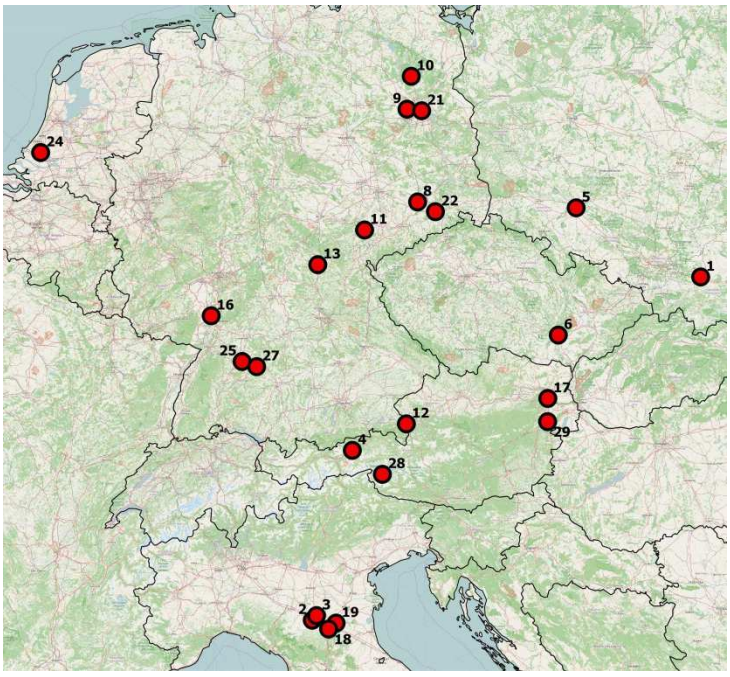
Three cases and two EU projects analysed include **several good practices for each location**, because more aspects developed can be considered as useful examples in order to promote sustainable mobility in rural and peripheral areas.

The good practices analysed and located in **Central Europe**, except for EU projects, are a set of **21 cases**:

- **Germany** (11), of which 4 in Baden-Württemberg, 3 in Bavaria, 2 in Saxony and 2 in Brandeburg;
- **Italy** (2), in Emilia-Romagna Region;
- **Austria** (4);
- **Czech Republic** (2);
- **Poland** (2).

Moreover, an additional practice located in the Netherlands was analysed in consideration of the interesting solution adopted in order to better connect the rural areas of every Dutch county.

Finally, 7 different EU good practices were analysed and concern 5 different projects. They were developed in the framework of past European projects carried out in Central Europe.




| ID | LOCATION |
|---|---|
| 1 | Krakow, Poland |
| 2 | Province of Modena, Italy |
| 3 | Modena, Italy |
| 4 | Jenbach, Austria |
| 5 | Wroclaw, Poland |
| 6 | Brno, Czech Republic |
| 8 | Lommatzsch, Germany |
| 9 | Dallgow-Döberitz, Germany |
| 10 | Gransee, Germany |
| 11 | Vogtland Region, Germany |
| 12 | Salzburg, Austria |
| 13 | Coburg and county (landkreis) |
| 16 | Mannheim (urban, suburban and rural area) |
| 17 | Wien - Lead partner |
| 18 | Provincia di Bologna - Lead partner |
| 19 | Bologna - Lead partner |
| 21 | Berlin - Lead Partner |
| 22 | Dresden - Lead partner |
| 24 | Rotterdam, Netherlands |
| 25 | Schönbuchbahn - region Stuttgart |
| 27 | Schönbuchbahn - region Stuttgart |
| 28 | Virgen, Austria |
| 29 | Pöttsching, Germany |

**Figure 1: Map of good practices**

Regarding the **different topics**, the good practices analysed include:

- **15 actions** focused on the implementation of **new bus or rail services** in rural areas, of which 8 in Germany, 2 in Italy, 1 in Poland, 1 in the Netherlands (outside the Central European area) and 2 developed in EU projects;

- **8 actions** aim at the enhancement of passenger information in more peripheral areas, of which 2 in Germany, 1 for each country of Austria, Poland and Czech Republic and 3 in EU projects;
- **6 actions** for the improvement of the access points, of which 1 for each country of Czech Republic, Germany and Austria and 2 in EU projects.

The following table summarise the main aspect of each good practice analysed.

| | GOOD PRACTICE | PARTNER | TOPIC | DESCRIPTION | MAIN INDICATORS |
|---|---|---|---|---|---|
| 1 | **Tele-Bus: DRT service in Krakow, Poland** | aMo | New services to better connect rural areas | DRT service operating in peripheral areas of the city of Krakow | Costs: € 1.22 / km - 212,000 / year (2015)<br>Passengers: 48,215 / year (2015)<br>Distance covered: 173,689 km (2015) |
| 2 | **Prontobus: DRT service in Province of Modena** | aMo | New services to better connect rural areas | DRT service operating in nine areas in Province of Modena, to connect dispersal areas with the main public transport networks | Costs: € 3 / km (2015)<br>Passengers: 75.000 / year (2015)<br>Distance covered: 455.000 km/year (2015) |
| 3 | **Night Taxi in Modena** | aMo | New services to better connect rural areas | Night taxi service between the centre of Modena and its peripheral areas | Costs: € 3 / km (2015)<br>Passengers: 8.000 / year (2015)<br>Distance covered: 40.000 km/year (2015) |
| 4 | **Achenseebahn and Achenseeschiffahrt, Jenbach-Achensee, Austria** | HŽ PP | Enhanced passenger information to increase the quality of public transport in rural areas | Leaflets and promotional materials for train and boat, promo material, website. A cooperation with the tourist board and local government is in place. | Costs: n.a<br>Passengers: n.a<br>Infomobility tools: n.a. |
| 5 | **iMPK - Vehicle tracking in Wroclaw, Poland** | Mazovia | Enhanced passenger information to increase the quality of public transport in rural areas | App for passengers in the framework of a larger development of infomobility in Wroclaw | Costs: ~ €23 M (entire development action)<br>Passengers: 16.5 M monthly of the entire service in Wroclaw; more than 10,000 app users<br>Infomobility tools: 1 app (+220 electronic boards at bus stops) |
| 6 | **Intermodal regional transport in Brno, Czech Republic** | UNIZA | Improvement of access points to national and EU transport network | Redesigning and improving of interchange points | Costs:<br>• costs to redesign intermodal points are variable, depending on the size of redesign: between € 10.000 - 1. million;<br>• total annual costs for managing the system of integrated transport in South Moravian region and city of Brno are around € 1 million; |

| | GOOD PRACTICE | PARTNER | TOPIC | DESCRIPTION | MAIN INDICATORS |
|---|---|---|---|---|---|
| | | | | | Passengers: 30.000 interchanges per day |
| | | | | | Stops and stations: 60 refurbished |
| 7 | | | Enhanced passenger information to increase the quality of public transport in rural areas | Managing centre of regional public transport based on GNSS for vehicle tracking | Costs:<br>• Electronic information board on stops are about € 5,000;<br>• costs to redesign intermodal points are variable, depending on the size of redesign: between € 10.000 - 1. million;<br>• Total annual costs for managing the system of integrated transport in South Moravian region and city of Brno are around € 1 million |
| | | | | | Passengers: 30.000 interchanges per day |
| | | | | | Infomobility tools: 180 infomobility panels |
| 8 | **Bürgerbus Lommatzscher Pflege** | Sachsen-Anhalt | New services to better connect rural areas | Minibus service driven by volunteers | Costs: 35,000€ (9 small buses); operation costs: 12.500 € p.a. |
| | | | | | Passengers: 10 per line and day |
| | | | | | Distance covered: 12,200 km yearly, of which<br>line 500: approx. 8,500 km yearly<br>line 501: approx. 3,700 km yearly |
| 9 | **Bürgerbus Dallgow-Döberitz e.v., Germany** | Sachsen-Anhalt | New services to better connect rural areas | Innovative bus service organized by volunteers | Costs: operating costs: 16.000 € p.a. |
| | | | | | Passengers: approx. 500-600 per month |
| | | | | | Distance covered: 34,200 km yearly |
| 10 | **Bürgerbus Gransee, Germany** | Sachsen-Anhalt | New services to better connect rural areas | Bus line based on the engagement of volunteers | Costs - operating costs: 13.500 € p. a. |
| | | | | | Passengers: approx. 4400 p. a. |
| | | | | | Distance covered: 36,700 km yearly |
| 11 | **Bürgerbus Vogtland, Germany** | Sachsen-Anhalt | New services to better connect rural areas | Bus services driven by volunteers between ordinary bus stops and peripheral areas | Costs:<br>• start-up financing of max. 15,000 € by the cities for operating cost |

| | GOOD PRACTICE | PARTNER | TOPIC | DESCRIPTION | MAIN INDICATORS |
|---|---|---|---|---|---|
| | | | | | vehicles<br>• approx. 100,000 € net per vehicle |
| | | | | | Passengers: n.a. |
| | | | | | Distance covered: 59,000 km yearly (calculated) |
| 12 | **Intermodal regional transport in Salzburg, Austria** | UNIZA | Improvement of access points to national and EU transport network | Integrated public transport in city and region and for cross border passengers; intermodal stops, park and ride and bike and ride facilities; ticket automats | Costs: n.a. |
| | | | | | Passengers: n.a. |
| | | | | | Stops and stations:70 refurbished |
| 13 | **Bus transport and on-demand transport in the city of Coburg and county (landkreis)** | SZZ | New services to better connect rural areas | On-demand taxi services | Costs € 1.8/km |
| | | | | | Passengers: 698 / month (10/2016); 13% modal split in Coburg |
| | | | | | Distance covered: 683,701 km/year (2015) |
| 14 | | | Improvement of access points to national and EU transport network | Intermodal terminal with the railway station Coburg | Costs: € 4,7 million |
| | | | | | Passengers: 4,5 million per year |
| | | | | | Stops and stations: 1 renewed (2013) |
| 15 | | | Enhanced passenger information to increase the quality of public transport in rural areas | Dispatching systems to provide info for Bayern Fahrplan website | Costs: around € 40,000 per stop (shelter and barrier free access) |
| | | | | | Passengers: 4,5 million per year |
| | | | | | Infomobility tools: 2 per stop; 18 stops |
| 16 | **Mannheim** | Vysocina | New services to better connect rural areas | New regional bus lines and individual taxis to better connect rural areas. Interconnection and mutual adjustment of all means of rural, suburban and urban transport has been implemented. | Costs: n.a |
| | | | | | Passengers: + 2,59 % (2015-2016) |
| | | | | | Distance covered: n.a |
| 17 | **EU projects_EDIT** | T Bridge | Enhanced passenger information to increase the quality of public transport in rural areas | Promoting Information and Communication Technologies and Alternative Solutions in real time for Enhancing Access between cities and regions. | Costs: € 2,424,266 |
| | | | | | Passengers: n.a. |
| | | | | | Infomobility tools: 3 platforms/webpages |
| 18 | **EU projects_Rail4See** | | Improvement of access points to national and EU transport network | Development of models, concepts, measures, harmonised strategies and policy actions targeted to the improvement of rail and intermodal transport in | Costs: € 4,826,900 |
| | | | | | Passengers: n.a. |
| | | | | | Stops and stations: 11 hubs improved |

| | GOOD PRACTICE | PARTNER | TOPIC | DESCRIPTION | MAIN INDICATORS |
|---|---|---|---|---|---|
| | | | | SEE. | |
| 19 | **EU projects_RailHuc** | | Improvement of access points to national and EU transport network | Enhancing rail transport by improving the feeding functions on rail of major hub-cities and their respective regions | Costs: € 2,894,015 for the whole project.<br>Passengers: n.a.<br>Stops and stations: improving accessibility in 3 rain stations. |
| 20 | | | Enhanced passenger information to increase the quality of public transport in rural areas | Impacts of implementing a new harmonized passenger information and traffic management system between the different modes were examined, including an integrated ticketing system in Győr. | Costs: € 2,894,015 for the whole project.<br>Passengers: n.a.<br>Infomobility tools: implementing a passenger information and traffic management system. |
| 21 | **EU projects_ Inter- Regio-Rail** | | New services to better connect rural areas | Improve the offer of Regional Rail Transport (RRT) and Removing barriers to regional rail transport implementing eight pilot projects. | Costs: € 2,044,754 for the whole project.<br>Passengers: n.a.<br>Distance covered: n.a |
| 22 | **EU projects_QUALIST** | | New services to better connect rural areas | Improving quality of life in small towns. Develop and test innovative concepts and sustainable mobility concepts aimed to increase attractiveness of small towns in the CE geographical area | Costs: € 1,878,700<br>Passengers: n.a.<br>Distance covered: n.a |
| 23 | | | Enhanced passenger information to increase the quality of public transport in rural areas | Implementation and extension of location information system. | Costs: -<br>Passengers: n.a.<br>Infomobility tools: n.a. |
| 24 | **Public transport in rural area - Netherlands (Rotterdam case)** | SZZ | New services to better connect rural areas | The “neighbourhood bus” (Wijkbus) is a taxi van service, with a fixed schedule and route. Buses are driven by volunteers. | Costs: less than € 40,000 per year<br>Passengers: n.a<br>Distance covered: 42,241 number of journeys per year |
| 25 | **Schöbuchbahn local railway_ infrastructure upgrading** | SZZ | Improvement of access points to national and EU transport network | Modernising and reopening of the local railway Schöbuchbahn in Baden-Württemberg | Costs: € 18.456 mil. (2000-14)<br>Passengers: 8,000 per day (2014)<br>Stops and stations:12 |
| 26 | | | Enhanced passenger information to increase the quality of public transport in | Websites and app mobiles with information for the users of the modernised | Costs: 13.7 mil. Euros (the entire investment)<br>Passengers: 8,000 per |

| | GOOD PRACTICE | PARTNER | TOPIC | DESCRIPTION | MAIN INDICATORS |
|---|---|---|---|---|---|
| | | | rural areas | and reopened local railway line named Schöbuchbahn | day (2014) |
| | | | | | Infomobility tools: 2 websites and 2 mobile apps |
| 27 | **Schöbuchbahn local railway_service** | SZZ | New services to better connect rural areas | New rail service on the modernised and reopened local railway Schöbuchbahn in Baden-Württemberg | Costs: € 3.6 mil. per year (service running and infrastructure management) |
| | | | | | Passengers: 8,000 per day (2014) |
| | | | | | Distance covered: approx. 400,000 km |
| 28 | **Dorfbus Virgen** | SZZ | New services to better connect rural areas | On demand service with 19 honorary drivers. A four-door passenger car is used as the vehicle | Costs: € 4,600 per year/€ 0.21 per kilometre |
| | | | | | Passengers: 4,300 per year |
| | | | | | Distance covered: 22,000 kilometres per year |
| 29 | **GMOABUS** | SZZ | New services to better connect rural areas | On-demand small bus system, also used for fixed routes | Costs: € 80,000 per year; € 1.4 per bus kilometre |
| | | | | | Passengers: 30,000 passengers per year and around 100 per workday |
| | | | | | Distance covered: 57.000 bus*km per year |

# 3. Comparative analysis of the good practices

The following table shows and compares the good practices analysed, excluding European projects because they are more focused on a transnational approach and therefore less aimed at local and specific development action.
The **comparative analysis** highlights for each topic and for each practice:

- **sub-topic**, for a better identification of the main issues tackled. In particular, the set of good practices includes:
  - 12 actions more focused on the implementation of new on demand and innovative bus services;
  - 1 action about the implementation of new rail services;
  - 1 action on the development of interchange terminal;
  - 1 action on the use of new rail infrastructure;
  - 1 action regarding the multimodal integration;
  - 1 action regarding the carrying out of traditional communication campaign;
  - 3 actions aimed at the development of info-mobility system at bus station and/or on board and/or by app(s);
  - 1 mainly focused on vehicle tracking;
- **type of location**, highlighting the type of context involved by the practices (e.g. rural areas and peripheral zones of a city);
- **target(s) of the users** which the practice is addressed to, which depends on the specific contexts and local characteristics of the actions;
- **need(s) to be satisfied** of the practice users, which can vary taking into account the local contexts and the population characteristics;
- **main characteristics** of the actions implemented;
- **needs satisfied and target addressed**;
- **standardised indicators**, in order to ease the comparison among the practices analysed. In particular, they are:
  - for the topic "**New services to better connect rural areas**":
    - **costs** for the operation of the new services [€/km];
    - **demand** [passengers/year and passengers/km];
    - **offer**, in terms of the public transport network supplied [km/year];
  - for "**Improvement of access points to national end EU transport network**":
    - **costs** for the upgrading actions [€/action];
    - **demand** [passengers/year and passengers/node or passenger/km[1]] that uses the node(s) analysed;
    - **no. of stop and station** refurbished or built;
  - for "Enhanced passenger information to increase the quality of public transport in rural areas":
    - **costs** for the upgrading actions [€/action];
    - **demand** [passengers/year] of the transport services interested in the infomobility actions
    - **no. of infomobility tools and devices** implemented.

[1] Passenger/km only for new transport infrastructure

## 3.1. New services to better connect rural areas

All the good practices analysed point out the spreading out of **DRT-Demand Responsive Transport systems** in several areas in Central Europe (Krakow, Modena, Coburg, Mannheim and further rural areas in Germany and Austria) and also outside (e.g. Rotterdam).
The entire set of bus services highlighted shows more **common points**, such as:

- **location** of these practices: connections among rural towns and between the centre of a city and its peripheral quartiers. In some cases, the services have been implemented during the night and weekend;
- **operation costs** distinguish **two kind of services**:
    - **minibuses or cars driven by volunteers**, in which costs are included between 0.25 and 1 €/km. In these cases, the system is similar to a taxi service but less expensive;
    - **minibuses managed by the PT operator or its subcontractor** and **with salaried drivers**. In this case, the costs are substantially higher (between ~1.5 and 3 €/km);
- **offer**, in terms of the distance covered yearly, which is less than 500,000 bus*km p.a. (except the case of Coburg, where the service level is higher, with 680,000 bus*km p.a.). Moreover, in many cases, the service provides less than 100,000 km yearly (e.g. night taxi in Modena and German services driven by volunteers);
- **lack or necessity to improve the SW** for the planning of the journeys in an automatized way and for the consequent (almost) real-time information flow towards users. In many cases and in consideration of the service level provided, the timetable is created and adjusted directly by the personnel or driver.

| SUB-TOPICS | LOCATION | TYPE OF LOCATION | TARGET(S) | NEED(S) TO BE SATISFIED | MAIN CHARACTERISTICS | STANDARDISED INDICATORS |
|---|---|---|---|---|---|---|
| New bus services | 1. Krakow (Poland) | peripheral areas of the city | Urban people who live in peripheral areas, involving both young and aged inhabitants | Getting downtown through useful services and almost door-to-door (in these cases, reliability of the service is more important than the frequency or speed) | DRT service (Tele-bus) was started up in the framework of the EU project Civinet-Caravel and is still working.<br>Tele-bus is a stop-to-stop service, that needs reservation but everyone can access to it standing at a bus stop where the bus transits.<br>There are not constraints about the time except the respect of previous reservations. | Costs [€/km]: 1,22<br>Demand [passenger/year]: ~48,000<br>[passenger/km p.a.]: 0.27<br>Offer [km/year]: ~175,000 |
| | 2. Province of Modena, Emilia-Romagna (Italy) | Rural areas | People who live in rural areas, involving young (mainly during peak hours) and aged inhabitants | Getting downtown of the closest town/city but also attractor nodes, such as hospitals, railway stations, main bus routes stops, etc. | To access the DRT service (Prontobus) it is necessary to book the trip to a reservation centre that takes care of optimizing the reservations with the aim of minimizing the distances of trips together to maximize the number of people who can use the service.<br>In some cases the services are subcontracted to small transport companies and have also been set up partnerships with taxi companies. | Costs [€/km]: 3<br>Demand [passenger/year]: ~75,000<br>[passenger/km p.a.]: 0,16<br>Offer [km/year]: ~455,000 |
| | 3. Modena, Emilia-Romagna (Italy) | peripheral areas of the city (night hours) | Urban people who live in semi- or peripheral areas. They are above all younger people. | Going back home in evening or night time (in these cases, reliability of the service is more important than the frequency or speed) | The night-taxi service connects the centre of Modena with its more peripheral areas.<br>It is possible to access the night taxi service from four stops in the centre, from which passengers can be transported to any address within the municipality. The service can be accessed by owners of subscriptions of PT. Rates are superior to those of ordinary public transport but they are much smaller than those of the ordinary taxi service. | Costs [€/km]: 3<br>Demand [passenger/year]: ~8,000<br>[passenger/km p.a.]: 0,20<br>Offer [km/year]: ~40,000 |

| SUB-TOPICS | LOCATION | TYPE OF LOCATION | TARGET(S) | NEED(S) TO BE SATISFIED | MAIN CHARACTERISTICS | STANDARDISED INDICATORS |
|---|---|---|---|---|---|---|
| | 8. Lommatzscher Pflege, Meißen, Saxony (Germany) | Rural areas | People who live in rural area not supplied by PT, mainly elderly people for whom the use of private car is inconvenient | Providing a public transport service to peripheral communities which would otherwise be isolated due to economic (private car would be too expensive) and/or geographic reasons | A small bus is driven by volunteer drivers. The buses serve two different lines twice a week. Both tours have fixed timetables and are completely integrated in the PT grid. | Costs [€/km]: ~1.02<br>Demand [passenger/year]: ~1,900 (estimation based on ~96 days p.a.) [passenger/km p.a.]: 0.16<br>Offer [km/year]: ~12,200 |
| | 9. Dallgow-Döberitz, Oberhavel, Brandenburg (Germany) | Rural areas | People who live in rural area not supplied by PT, mainly elderly people for whom the use of private car is inconvenient | Creating a secondary network to cover rural areas where it is not economically sustainable to set up a traditional transport service | Small buses are driven by volunteer drivers. There are fixed schedules for the bus service, installed bus stops, and standard tariffs. Buses were purchased by the federal state Brandenburg. | Costs [€/km]: ~0.47<br>Demand [passenger/year]: ~6,000 [passenger/km p.a.]: 0.18<br>Offer [km/year]: ~34,200 |
| | 10. Gransee (Brandenburg, Germany) | Small towns | Inhabitants of small towns, outside the areas covered by bus lines, and have no possibility of travelling by private means | Integrating the existing system of bus lines between small centres | Small buses are driven by volunteer drivers. Buses were purchased by the federal state Brandenburg. | Costs [€/km]: ~0.37<br>Demand [passenger/year]: ~4,400 [passenger/km p.a.]: 0.12<br>Offer [km/year]: ~36,700 |
| | 11. Bad Elster, Adorf, Lengenfeld, Saxony | Small towns | Inhabitants of small towns, outside the areas covered by bus lines, and have no | Integrating the existing system of bus lines between small centres | The service will be activated starting from 2017. Small buses are driven by volunteers. The project is supported by the respective cities and the local | Costs [€/km]: ~0,25 (estimation based on the start-up financing |

| SUB-TOPICS | LOCATION | TYPE OF LOCATION | TARGET(S) | NEED(S) TO BE SATISFIED | MAIN CHARACTERISTICS | STANDARDISED INDICATORS |
|---|---|---|---|---|---|---|
| | (Germany) | | possibility of travelling by private means | | public transport companies, who own the vehicles and cover all operating costs. Furthermore, the public transport association called "Verkehrsverbund Vogtland" provided support and acquired the vehicles using public funding by Saxony. | by the cities)<br>Demand: n.a<br>Offer [km/year]: ~59,000 (calculated) |
| | 13. Coburg, Bavaria (Germany) | peripheral areas of the city | People moving for occasional reasons at times of the day when several bus lines are not active. Mainly, they are young people, who travel for leisure. | Integrating the existing system of bus lines at times of the day without PT | On-demand bus services managed by Omnibusverkehr Franken (OVF), which is a bus company owned by Deutsche Bahn | Costs [€/km]: ~1.8<br>Demand [passenger/year]: ~8,400 (estimation based on the monthly data of 698, 10/2016) [passenger/km p.a.]: 0.01<br>Offer [km/year]: ~680,000 |
| | 16. Mannheim, Baden-Württemberg (Germany) | peripheral areas of the city (during weekends) | Tourists and inhabitants who travel for occasional reasons during weekends and disabled people. | Getting to nearest station or other attractor point from peripheral areas during the weekends | VRN (Verkehrsverbund Rhein-Neckar, transport operator) manages line taxis, which can be ordered by passengers half an hour in advance. Line taxis also replace certain bus connections during weekends in order to secure connection to the nearest railway station | Costs [€/km]: n.a.<br>Demand n.a<br>Offer [km/year]: n.a |
| | 24. Rotterdam, the | peripheral areas of the | People who live in suburban area and | Getting to main attractor nodes from | A special and typically Dutch form of public transport is the | Costs [€/km]: ~n.a |

| SUB-TOPICS | LOCATION | TYPE OF LOCATION | TARGET(S) | NEED(S) TO BE SATISFIED | MAIN CHARACTERISTICS | STANDARDISED INDICATORS |
|---|---|---|---|---|---|---|
| | Netherlands (and also other cities) | metropolitan area | need to move from/to the centre and also door-to-door because of physical problems | peripheral areas and allowing disabled people to reach their own destinations (door-to-door) | 'neighbourhood bus' (Wijkbus). This taxi van has a fixed schedule and route, just like a normal bus. The system is used in every county in the Netherlands. The main difference is that the bus is driven by volunteers, which eliminates personnel costs (a large cost item in public transport). The bus is made available by the regional transport company, which is also responsible for its maintenance. The exact routes, timetable and driver rosters are coordinated between the bus association and the transport company. This Regional Taxi makes it possible to reach any address between 7 a.m. and midnight. People with a (physical) limitation can travel door to door; other passengers are usually taken to or collected from a public transport stop. | Demand [passenger/year]: n.a.[2] [passenger/km p.a.]: n.a<br>Offer [km/year]: n.a. |
| | 28. Virgen, Tirol, Austria | Small towns | The elderly or very young who need to make short trips to small towns in a safe and cheap way. | Allowing a form of smart public transport in small towns where traditional lines would not be economically sustainable also through the use of both fixed and on demand stops, in order to meet the users' needs | A tailor-made mobility offer for trips within the municipality was realized in the municipality of Virgen (2,300 inhabitants). The offer corresponds to the demand: in the morning the bus is driven according to a fixed timetable, in the afternoon the service is user-oriented by phone booking. The objectives are enabling the use of PT by older people, increasing safety and reducing the use of private cars. The voluntary | Costs [€/]: ~0.21<br>Demand [passenger/year]: 4,300 [passenger/km p.a.]: n.a.<br>Offer [km/year]:22,000 |

[2] About 42,200 journeys p.a. (2015 data)

| SUB-TOPICS | LOCATION | TYPE OF LOCATION | TARGET(S) | NEED(S) TO BE SATISFIED | MAIN CHARACTERISTICS | STANDARDISED INDICATORS |
|---|---|---|---|---|---|---|
| | | | | | activity of driver allows the annual operating costs of around € 4,500 to be covered by the tariff revenues. The tariff is very simple and cheap: you pay € 1 per trip. | |
| | 29. Pöttsching, Burgenland, Austria | Small towns | People who need to move door-to-door in a small town and they do not have private cars (e.g. students) | Having a possibility to move quickly inside a small town without a private car and without a booking | Pöttsching (2,900 inhabitants ) is a small municipality in the Austrian region Burgenland in which the bus system was established on demand. The bus usually takes its passengers from home and transports them directly to their destination. If you call the number of the GmoaBus, you reach the operator who is currently on duty. The software system plans the route and instructs the driver where to collect passengers so that the kilometres travelled remain as low as possible. There are also regular trips, for example for children to school. | Operating Costs of the service [€/year]: ~80,000<br>Demand [passenger/year]: 30,000 [passenger/km p.a.]: n.a.<br>Offer [bus*km/year]: 57,000 |
| New rail services | 27. Böblingen - Dettenhause, Baden-Württemberg (Germany) | Suburban/rural area of Stuttgart | Commuters | Moving systematically (home-based). In these cases, it is important not so much the speed but rather the high frequency and reliability of service. | Modernising and reopening of the local railway Schöbuchbahn in Baden-Württemberg in south Germany near Stuttgart. It is 17 km long and it is operated by WEG railway which also maintains the infrastructure. | Costs [€/km]: ~9 (service running and infrastructure management cost)<br>Demand [passenger/year]: ~1.9 million (estimation based on the working-day data of 8,000 and the hypothesis of ~2,000 on the other days) |

| SUB-TOPICS | LOCATION | TYPE OF LOCATION | TARGET(S) | NEED(S) TO BE SATISFIED | MAIN CHARACTERISTICS | STANDARDISED INDICATORS |
|---|---|---|---|---|---|---|
| | | | | | | [passenger/km p.a.]: 4.75 (estimation)<br>Offer [km/year]: ~400,000 |

## 3.2. Improvement of access points to national and EU transport network

The good practices analysed concerning the improvement of the access points highlight the necessity to focus the development and upgrading actions on:

- **ITS system and vehicle tracking** in order to make more effective both the monitoring of the fleet and the service supplied and the real-time information flow for PT users. In this light, the use of the public transport service connecting the rural areas could be increased with environmental and social benefits;
- **comfort and functional organisation of the spaces** in the most important interchange nodes, in order to ease the intermodality and encourage the use of PT. Moreover, the functional organisation of access point spaces allows the different services supplied to be more recognizable by the users and it can reduce the accessibility problems for disabled and elderly people;
- **cross-border multimodality**, taking into account the transnationality of the journeys is a very important aspect, mainly in specific European contexts. Indeed, in several cases a unique urban area is located over a national border and the users should perceive the continuity of the PT offer;
- **multimodality with soft mobility**, taking into account the needs of people who get to stations and the main bus stops by bikes, other light vehicles and on foot. The soft mobility has important modal shares mainly in rural and peripheral areas.

| TYPE OF ACTION | LOCATION | TYPE OF LOCATION | TARGET(S) | NEED(S) TO BE SATISFIED | MAIN CHARACTERISTICS | STANDARDISED INDICATORS |
|---|---|---|---|---|---|---|
| Interchange terminal | 6. Brno, Czech Republic | Improvement of access point and ITS implementation in the city of Brno | Commuters who make long distance journeys and need to change transport means | Improving reliability and comfort at the interchange node, improving real time vehicle tracking and reducing waiting time. | About 60 stops were redesigned with the aim to create intermodal nodes in the whole region. A safe, comfortable and convenient environment for intermodal changes is essential, since the station area is where passengers spend some time and they need to know where they can wait safely | Costs for managing the system [€]: ~1,000,000<br>Costs to redesign intermodal points [€]: 10,000 to 1,000,000<br>Demand involved [Interchanges/year]: 30,000 |
| | 14. Coburg, Bavaria, Germany | Improved bus connections between Coburg and its own county (Landkreis) | Inhabitants who need to move between Coburg and towns of its county | Having a bus system which allows people to move between cities and rural areas | SUC Coburg and Omnibusverkehr Franken (OVF) are the two companies that provide the bus service, through 16 lines and some on-demand services. Buses and stops are ITS equipped. | Costs of the practice [€]: ~ 4.7 million<br>Demand involved [passenger]: 698 in October 2016 |
| New rail infrastructure | 25. Böblingen – Dettenhausen, Baden-Württemberg (Germany) | Reactivation of rail services on the railway line in peripheral areas (Baden-Württemberg) in south Germany. | Mainly commuters | Getting to offices and schools, avoiding the use of private car. | The Schönbuchbahn is a local railway in Baden-Württemberg in south Germany near Stuttgart. It is 17 kilometres long and the entire journey takes 25 minutes. Today 37 pairs of runs per day are offered and in 2013 the demand was ~8,000 passengers/working day. | Costs of the practice [€/km]: ~ 3,650,000<br>Demand involved [passenger/year]: 2,400,000 (estimation) |
| Multimodal Integration actions and policies | 12. Salzburg, Austria | Develop the main interchange nodes near Salzburg and along the Austria - Germany borders | Cross-border passengers using public transport. | Ensuring continuity of the journey despite national borders, also by good interchange (infrastructure, services and ITS) | The interchange nodes in the rural area around Salzburg and in the area along the border between Austria and Germany have been put in integrated transport system, also improving park and ride, bike and ride, ticket machine availability and ITS. | Costs of the practice [€/km]: ~ n.a.<br>Demand involved [passenger/year]: n.a. |

## 3.3. Enhanced passenger information

The practices analysed highlight the necessity to give passengers the **real-time information on the vehicle tracking**, in terms of real timetable at bus and train stations, and the interchange at the most important nodes, where there are the stops of different lines.

The infomobility campaign should provide the **web and app tools** in order to allow passengers to use in advance their own computers or mobile devices.

Particular attention has been paid to **tourist service**, for which the implementation of a more traditional promotion campaign has been carried out and it can be sufficient if the service does not cover all the year but only the summer season, when the number of tourists increases. Moreover, the website to promote the initiatives and transport supply has been improved.

| TYPE OF ACTION | LOCATION | TYPE OF LOCATION | TARGET(S) | NEED(S) TO BE SATISFIED | MAIN CHARACTERISTICS | STANDARDISED INDICATORS |
|---|---|---|---|---|---|---|
| More traditional communication campaign | 4. Achenseebahn and Achenseeschiffahrt, Jenbach-Achensee, Austria | Information campaign and tourist services in rural areas | Tourists | Attracting tourists thanks to the appeal of an old railway and the naturalistic heritage | The Achensee steam cog railway is a 6.76 km long. It runs between Jenbach and Seespitz near Lake Achensee in Tirol (Austria). The tourist train in a rural area can attract tourists thanks to private tourist operators through marketing campaigns and internet promotion. | Costs of the practice [€/km]: n.a.<br>Demand involved [users/year]: n.a. |
| Infomobility system at bus stations and/or onboard and/or by apps | 5. Wroclaw, Poland | implementation of ITS in the city of Wroclaw. | People who use PT within the city and need to know the stop location and the real-time timetable to organize their own journey | Organizing in a better and simple way the route using PT | IMPK is an application that contains information about the location of all public transport vehicles operated by MPK Wroclaw. The application, based on the GPS position, gives passengers the opportunity to know the real-time schedule of the services. | Costs of the practice [€]: 23 million<br>Demand involved [users/year]: ~ 10,000 app users |
| | 15. Coburg, Bavaria | New bus services between Coburg and its peripheral areas. | People who use PT and can request on demand bus service or who need real-time information | Moving using public transport having the possibility of requesting on demand service. Having real-time information about the next 4 stops, the traffic and the fare system. | In the County of Coburg, Omnibusverkehr Franken (OVF) is a bus company which supplies all the local bus lines in the city of Coburg. The new system has 5 lines and the rest of the County is covered by on-demand services that can be used at any time and allow people to get to bus and train stations. Every OVF bus has an on-board info system. | Costs of the practice [€/km]: n.a.<br>Demand involved [users/month]: ~ 700 |
| | 26. Böblingen – Dettenhausen, Baden-Württemberg | New rail services to better connect small towns in rural | Inhabitants who move between small towns by train and need to | Having real-time information on delays of trains using own | In order to enhance passenger information and increase the quality of public transport, 12 stations have been renewed and | Costs of the practice = ~ 13.7 mil. € (the entire investment) |

| | | | | | | |
|---|---|---|---|---|---|---|
| | (Germany) | areas | know delay or departure time of services. | computer or smartphone. | 4 sustainable vehicles acquired. Moreover, two websites and two mobile apps of VVS have been developed. | Demand involved [users/year]: 2,400,000 (estimated) |
| Vehicle tracking | 7. Brno, Czech Republic | Improvement of access node and infomobility in the city of Brno | Passenger who have to change bus line | Giving passengers real-time information of the services | Vehicle tracking using the GNSS allows the monitoring of the real positions of all vehicles within the IDS JMK service area. Moreover, about 60 stops have been redesigned with the objective to create intermodal nodes useful to the whole region and where passengers can safely wait for buses. | Costs of the practice [€/km]: ~ € 5,000 information board at stop. € 10,000-1,000,000 for the redesign of intermodal point. € 1,000,000 annual cost for managing the system |
| | | | | | | Demand involved [interchanges /year]: 9,000,000 (estimated) |

# 4. Lessons learnt

The analysis of the good practices collected highlighted the following **lessons learnt** in order to develop an effective service to connect rural areas with their closer and larger cities, here listed in order of importance coherently with what emerged:

- to implement an **integrated and coordinate system** in the most important nodes through an harmonised timetable and a selection of the best areas to create new nodes or renew older ones (as seen in the Rhein-Neckar Verkehrsverbund in the Mannheim area, Brno and Coburg). Interchanges can range in size from a single stop to an intermodal station but they should be always recognisable by the users. In this way, the users could find useful solutions to continue their own journey and reach the final destination;
- to implement a **unified tariff system**, including rail service (as seen in Salzburg and near the cross-border Austria - Germany);
- to **enlarge the network** to the surrounding cities or towns and also beyond country borders, if they are part of the same urban area and they have mutual demand flow (as seen in Vogtland, Salzburg, Baden-Württemberg near Stuttgart and Brandenburg with Bürgerbus);
- to adopt **DRT services in rural and peripheral areas**, which are one of the most effective ways to serve low-density areas and to connect them with the "traditional" services and the main transport corridors (as seen in Krakow, Province of Modena, Coburg and its county, Virgen and Pöttsching in Austria). Indeed, DRT services are characterized by a great flexibility and reduced costs, although great effort is needed to continuously manage the operation and all involved actors;
- to **involve small transport companies or taxi services** as subcontractors to provide DRT services and, in particular, to build synergies with taxi services already working and through a special tariff less expensive (as seen in Modena, Mannheim, Coburg and Rotterdam). In this light, an innovative on-demand taxi service could be implemented;
- to implement **on-demand bus services organised with volunteer drivers**, reducing substantially the operating cost of the service of about -50% of the costs per km (as seen in the Bürgerbus services in Germany, in Rotterdam and at Virgen). On the other hand, it is a long-time process to plan and implement a public transport service based in voluntary engagement, especially the implementation of legal requirements, which are a challenging task. Furthermore, it is a challenge to find enough drivers who are willing to support the action on a voluntary but long-term basis;
- to promote an **info-mobility system also through web and mobile app**, giving real-time information to users and increasing the quality and effectiveness of the interchange (as seen in Mannheim, Krakow, Brno and near Stuttgart with the implementation of the Schöbuchbahn website). A managing centre can be the technological platform upon which innovative services can be developed/managed/monitored by different partners. Moreover, managing centres can help local authorities to manage special events, emergences or daily stop-and-go traffic;
- to better develop the **information flow for potential and actual passengers**, which could improve the usability and access to a DRT service (as seen in Pöttsching). In this light, it is advisable to implement a software to manage information, focusing on those that could access to the service without a previous reservation, which is too often not possible;
- to create an **intermodal systems also favouring the use of bike**, often significantly used in rural areas through various types of facilities, such as simple bike racks, secure bike pounds, secure and sheltered parking places, etc. (as seen in Salzburg).

- to **cooperate with the municipalities, regional district and regional PT companies**, mainly in order to develop a real and effective integrate mobility system (as seen in Mannheim, Rotterdam, and Coburg). Especially politicians have to be interested in flexible and innovative transport solutions;
- to **involve SME and private operators** who, with the help of local government, promote innovative transport systems and the local heritage of territories, in cultural, naturalistic and artistic terms, and raise citizens' awareness (as seen in the Achenseebahn and Achenseeschiffahrt tourist railway, Saxony and Brandenburg). It is essential taking into account the development of transport systems, also in rural and peripheral areas, can be the starting point for a general growth of the areas less populated;
- to aim at the **social cohesion**, particularly important in rural areas too often affected by a population aging (as seen in Germany, Czech Republic and Austria with Qualist project). In this light, an additional important topic is the implementation of accessibility for people with disabilities. On the other hand, that requirement entails further challenges. For example, an accessible vehicle is much more expensive than an ordinary small bus. Furthermore, the conversion of the vehicle is combined with an increase in weight which leads to more ambitious requirements for the drivers.

The solutions examined highlight the strengths and weaknesses, whose main aspects are synthesised in the following table.

|  **STRENGTHS** |  **WEAKNESSES** |
|---|---|
| **New services to better connect rural areas** | |
| Possible involvement of volunteers and non-profit organizations to reduce operating costs in DRT services | DRT services can be supported by unskilled volunteers |
| Mutual cooperation of citizens of the same town or area and stakeholders | Volunteers driver often require the compliance of a specific legislative framework |
| Booking systems are very simple and managed on-time | The current booking systems and route management could not be adequate for higher level of demand |
| Flexibility of timetable and routes of DRT systems | Difficulties to create and manage an integrated tariff system with the traditional PT offer |
| Possible high level of accessibility to PT of disabled and elderly people who need to access to primary services (hospitals, schools, post offices, etc.), otherwise isolated from the public service, thanks to both door-to-door route and the use of specific small vehicles | high initial cost for the buying of buses |
| | coordination of various authorities and/or the availability of different operators sometimes even competitors in the same territory |
| | Elderly population and therefore not always easily movable |
| helping to ensure the right to mobility of persons who do not have (or cannot use) private car and living in the suburbs or rural areas where there are no public transport services | Buses that allow disabled people to access are most expensive and they require drivers more skilled |
| tourist appeal of the territories and, often, of the transport mains (e.g. tourist railway, integration with boat services) | |

| STRENGTHS | WEAKNESSES |
|---|---|
| Possible social cohesion among the different actors (citizens, public bodies, etc.) affected by the same problems<br>Low vehicle congestion | |
| **Improvement of access points to national and EU transport network** | |
| Interchange nodes and PT service planning more recognizable<br>More safety for the people who are waiting for the buses<br>More security or perception of security for PT users<br>The PT services in the same interchange nodes are more recognizable by the users | Results will be visible mainly in medium/long term<br>High investment costs<br>Need to use sophisticated tools for managing services in a complex interchange area |
| **Enhanced passenger information to increase the quality of public transport in rural areas** | |
| Large use of apps and web based tools by young people<br>Real-time fleet monitoring for users and other stakeholders<br>Possibility of checking and monitoring demand and offer by PT operators and the competent public body<br>Creation of the assumptions for the “internet of things” in order to improve PT systems | high initial cost for ITS tools<br>difficulties to use apps and web based tools by ageing people |