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# REGIONAL ACTION PLANS

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## Table of Contents

<b>1. Introduction .....</b>	<b>5</b>
1.1. Short project summary .....	5
1.2. Objectives of the Regional Action Plans.....	6
1.3. Synoptic view of the Action Plans' priorities .....	7
<b>2. Action Plan of the South Balassagyarmat Region.....</b>	<b>11</b>
2.1. Introduction .....	12
2.2. Priority list in the field of multimodal service .....	13
2.3. Priority list in the field of smart mobility .....	17
2.4. Priority list in the field of regional governance .....	19
<b>3. Action Plan of the South Moravian Region .....</b>	<b>20</b>
3.1. Introduction .....	21
3.2. Priority list in the field of multimodal service .....	22
3.3. Priority list in the field of smart mobility .....	24
3.4. Priority list in the field of regional governance .....	25
<b>4. Action Plan of the Friuli-Venezia Giulia Region .....</b>	<b>28</b>
4.1. Introduction .....	29
4.2. Priority list in the field of multimodal service .....	30
4.3. Priority list in the field of smart mobility .....	34
4.4. Priority list in the field of regional governance .....	39
4.5. Pilot Action .....	40
<b>5. Action Plan of of Ljubljana Urban Region.....</b>	<b>43</b>
5.1. Introduction .....	44
5.2. Priority list in the field of multimodal service .....	45
5.3. Priority list in the field of smart mobility .....	49
5.4. Priority list in the field of regional governance .....	51
<b>6. Action Plan of the Metropolitan Area of Styria .....</b>	<b>53</b>



6.1. Introduction .....	54
6.2. Priority list in the field of multimodal service .....	54
6.3. Priority list in the field of smart mobility .....	57
6.4. Priority list in the field of regional governance .....	59
6.5. Pilot Action .....	61
6.6. References .....	61
<b>7. Action Plan of the Elster Railway Line .....</b>	<b>62</b>
7.1. Introduction .....	63
7.2. Priority list in the field of multimodal service .....	64
7.3. Priority list in the field of smart mobility .....	65
7.4. Priority list in the field of regional governance .....	66
7.5. Pilot Actions .....	67
<b>8. Action Plan of the Lubin Region .....</b>	<b>69</b>
8.1. Introduction .....	70
8.2. Action plan for realisation of infrastructure investments .....	71
8.3. Priority list in the field of multimodal service .....	74
8.4. Priority list in the field of smart mobility .....	75
8.5. Priority list in the field of regional governance .....	76
8.6. Pilot Actions .....	77



# 1. Introduction

## 1.1. Short project summary

While traveller's expectation for door-to-door mobility is constantly increasing, only a well-organized (public) transport system can be a realistic alternative of motorised individual transport. This issue is even more crucial in peripheral areas (such as rural, remotely located or border regions as well as in the hinterland of urban areas) which consist 93% of the EU territories. Therefore the mission of the project is to improve public transport in peripheral areas through targeted interventions (analysis, action plans, pilot actions, pilot investments and evaluation) addressing the following three main thematic areas:

- Multimodality & integrated transport
- Enhanced use of Intelligent Communication Technology (ICT) & Intelligent Technology System (ITS)
- Better cooperation through transport associations and cross-border marketing.

The consortium representing the following regions and includes the following project partners:

- German Association for Housing, Urban Development and Spatial Affairs (Lead Partner)
- Region around the city of Balassagyarmat (border region Slovakia / Hungary): KTI Institute for Transport Sciences Non Profit Ltd
- Region South Moravia (border region Czech republic / Slovakia / Austria): KORDIS JMK
- Region Friuli-Venezia Giulia (border region Italy-Slovenia): Venice International University & Trieste Trasporti S.P.A.
- Ljubljana Region: Regional Development Agency of the Ljubljana Urban Region (Slovenia)
- Region around the City of Graz: Regional Management Metropolitan Area of Styria Ltd (Austria)
- Vogtland region (border region Germany / Czech Republic): Authority for local public transport Vogtland
- Region Lubin: Powiat Lubiński (Poland)

The following table depicts two statistical dimension of the focus area for each of the seven Regional Action Plans: size (km<sup>2</sup>) and population.

FOCUS AREA	FOCUS AREA Size (km <sup>2</sup> )	FOCUS AREA Population
Balassagyarmat	532	42.000
Region South Moravia Podyjí area (11 districts)	1.590	113.797
Ljubljana urban Region	2.555	547.893
Metropolitan Area of Styria	1.900	481.000
Friuli Venezia Giulia Region (Province of Trieste Pilot)	213	234.874
Elster Valley	163	350.000
Lubin Region	711	106.355

*Table 1: Size (km<sup>2</sup>) and Population of the seven Focus areas of the Peripheral Access's Regions*



## 1.2. Objectives of the Regional Action Plans

On the basis of the identification of critical issues, bottlenecks and missing elements at regional level (included in the regional analysis), the objective of the Action Plans consists of the identification of a rank of priorities, strategies, interventions and projects in the field of multimodal services, smart mobility/ITS and regional governance to be developed so as to address the identified critical issues and missing elements. Peripheral Access project is intended indeed as a pro-active mean to foster regional planning by identifying and ranking priorities for intervention. With this aim, the project partners provided a rank of priorities for the three thematic pillars of the project, along with a short description of each of the identified priorities, interventions, strategies and projects, according to a common list of issues: (1) main objectives to be achieved (2) technical contents of the proposed intervention (3) plan for implementing the proposed intervention (3) Stakeholders and roles for a successful development and implementation of the proposed intervention (4) Time Plan.

FOCUS AREA	ACTION PLAN PRIORITIES - WP FOCUS		
	MULTIMODALITY	SMART MOBILITY	REGIONAL GOVERNANCE
Balassagyarmat	2	4	0
Region South Moravia Podyjí area (11 districts)	5	4	5
Friuli Venezia Giulia Region	3	3	3
Ljubljana urban Region	4	3	4
Metropolitan Area of Styria	4	3	3
Elster Valley	4	4	3
Lubin Region	5	3	3
<b>tot</b>	<b>27</b>	<b>24</b>	<b>21</b>

*Table 2: Sum of Regional Action Plans' priorities per type*

All in all, 72 priorities have been identified at the project level by the seven Regional Action Plans. The following table reports this amount of priorities per the three thematic focus: multimodality (27 priorities), smart mobility (24) and regional governance (21).

With the aim of clustering the territorial approach of the seven Action Plan under the topic of the “peripheral” access, the following table shows how the seven Action Plans deal with the central vs peripheral dichotomy, by the use of two features: whether or not the Action Plans focus on the link between the regional hub and the remote areas of the region and how the Cross border topic is stressed (with a scale from 1 to 5).

FOCUS AREA	Central - Periphery Dichotomy	
	Link between regional hub vs remote areas (yes/no)	Cross Border focus (1>5)
Balassagyarmat	no	3
Region South Moravia Podyjí area (11 districts)	yes	5
Ljubljana urban Region	yes	1
Metropolitan Area of Styria	yes	1



Friuli Venezia Giulia Region (Province of Trieste Pilot)	no	3
Elster Valley	no	5
Lubin Region	no	1

Table 3: Central - Periphery focus of the Peripheral Access's Action Plans

### 1.3. Synoptic view of the Action Plans' priorities

In the following pages, the 72 priorities are reported for the seven Action Plans, one table per each of the three thematic pillars of the project:

- Multimodality
- Smart mobility
- Regional Governance

For each of the three thematic pillars, the common interests/topics among the Action Planes have been highlighted with different colours.

- Multimodality
  - **RED: Improvement of the current transport facilities (park and ride, intermodal points, etc.)**
  - **ORANGE: Improvement of the current cycling / pedestrian facilities**
  - **BLUE: Improvement of the current public transport services**
  - **GREEN: Demand Responsive Transport / actions on low demand areas**
  - **PURPLE: Promotional Activities**
- Smart mobility
  - **RED: electronic/smart ticketing**
  - **ORANGE: Development of new smart services / modernization of the transport vehicles**
  - **BLUE: Infomobility**
- Regional Governance
  - **RED: Improvement of the schemes for developing the transport service**
  - **BLUE: Coordination among Authorities**
  - **GREEN: Education, awareness and public participation**



## MULTIMODALITY

BALASSAGYARMAT REGION	SOUTH MORAVIAN REGION	FRIULI-VENEZIA GIULIA REGION	LJUBLJANA URBAN REGION	METROPOLITAN AREA OF STYRIA	ELSTER RAILWAY LINE	LUBIN REGION
<ul style="list-style-type: none"> <li>Priority 1: The construction of a north-south and an east-west bicycle road</li> <li>Priority 2: Development of existing bus terminal (and bus stops) in order to provide weather protection</li> </ul>	<ul style="list-style-type: none"> <li>Priority 1: cross-border on-demand off-season bus transport for improvement of contacts and off-season tourist opportunities</li> <li>Priority 2: support of the cyklobuses (buses which enable transport of bicycles on a special trailer) connecting the area with important TEN-T transport nodes and subnodes</li> <li>Priority 3: improvement of the cross-border public transport</li> <li>Priority 4: tourist development with Austria</li> <li>Priority 5: interconnection of cyklobuses with neighboring South Bohemian Region</li> </ul>	<ul style="list-style-type: none"> <li>Priority 1: multimodal infrastructures: additional number of CIMR (Regional Multimodal Centers)</li> <li>Priority 2: multimodal public transport services to attract random demand</li> <li>Priority 3: multimodal maritime public transport services</li> </ul>	<ul style="list-style-type: none"> <li>Priority 1: Upgrading public transport for multimodality implementation</li> <li>Priority 2: Network of bicycle connections for a well-connected public transport</li> <li>Priority 3: Establishing park and ride intermodal points and for carpooling</li> <li>Priority 4: Establishing DRT as an complementary offer to existing public transport in the rural areas</li> </ul>	<ul style="list-style-type: none"> <li>Priority 1: Expansion of multimodal mobility nodes (REGIOtim)</li> <li>Priority 2: Strategy development and implementation “Park and Ride”</li> <li>Priority 3: Expansion of bus corridors (RegioBus)</li> <li>Priority 4: Promote pedestrian and cycle access to public transport</li> </ul>	<ul style="list-style-type: none"> <li>Priority 1: Touristic Hotspots</li> <li>Priority 2: Action Points</li> <li>Priority 3: Intermodality</li> <li>Priority 4: Bike rental Points</li> </ul>	<ul style="list-style-type: none"> <li>Priority 1: Change of the model of communication lines in county passenger transport</li> <li>Priority 2: Launching of new communication lines</li> <li>Priority 3: Fix the congestion of all modes of transport around the interchange center</li> <li>Priority 4: Transfer of the PKS bus station from Skłodowska Street to the interchange center</li> <li>Priority 5 - Strengthening transport services for the airport in Wrocław</li> </ul>

Clustering of the common topics:

- **RED:** Improvement of the current transport facilities (park and ride, intermodal points, etc.)
- **ORANGE:** Improvement of the current cycling / pedestrian facilities
- **BLUE:** Improvement of the current public transport services
- **GREEN:** Demand Responsive Transport / actions on low demand areas
- **PURPLE:** Promotional Activities

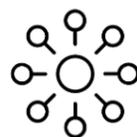


## SMART MOBILITY

BALASSAGYARMAT REGION	SOUTH MORAVIAN REGION	FRIULI-VENEZIA GIULIA REGION	LJUBLJANA URBAN REGION	METROPOLITAN AREA OF STYRIA	ELSTER RAILWAY LINE	LUBIN REGION
<ul style="list-style-type: none"> <li>Priority 1: <b>Electronic and interoperable ticketing</b></li> <li>Priority 2: Dynamic individual passenger information system for smartphones</li> <li>Priority 3: Dynamic on-board passenger information system</li> <li>Priority 4: Dynamic passenger information in bus stops</li> </ul>	<ul style="list-style-type: none"> <li>Priority 1: cooperation on electronic cross-border apps involving journey planners</li> <li>Priority 2: <b>electronic ticketing based on bank cards</b></li> <li>Priority 3: further development of the mobile application IDS JMK Poseidon (possibility to order on-demand transport)</li> <li>Priority 4: Reservation of spots for bicycles in the cyklobuses and transport reservation for the larger groups of travelers</li> </ul>	<ul style="list-style-type: none"> <li>Priority 1: <b>smart on demand services</b></li> <li>Priority 2: <b>smart ticketing</b></li> <li>Priority 3: infomobility /traveller information systems</li> </ul>	<ul style="list-style-type: none"> <li>Priority 1: <b>Complete implementation of integrated ticketing system for public transport and fostering intelligent information solutions</b></li> <li>Priority 2: <b>Modernisation of the public transport vehicles</b></li> <li>Priority 3: <b>Introducing of the intelligent technology and communication system of DRT</b></li> </ul>	<ul style="list-style-type: none"> <li>Priority 1: „Mobility as a Service“ - The development of a smart regional system</li> <li>Priority 2: <b>Expansion of the demand responsive transport network</b></li> <li>Priority 3: <b>Expansion of public transport real-time information</b></li> </ul>	<ul style="list-style-type: none"> <li>Priority 1: Augumented Reality (AR) Application</li> <li>Priority 2: Microsite</li> <li>Priority 3: Static Information Boards</li> <li>Priority 4: Wi-Fi</li> </ul>	<ul style="list-style-type: none"> <li>Priority 1: Widespread and easy access to passenger information</li> <li>Priority 2: Intelligent search for multimodal communication connections</li> <li>Priority 3: <b>Autonomous vehicles in public transport</b></li> </ul>

Clustering of the common topics:

- **RED: electronic/smart ticketing**
- **ORANGE: Development of new smart services / modernization of the transport vehicles**
- **BLUE: Infomobility**



## REGIONAL GOVERNANCE

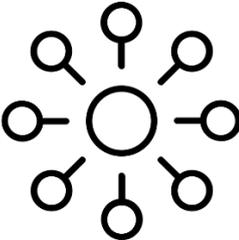
BALASSAGYARMAT REGION	SOUTH MORAVIAN REGION	FRIULI-VENEZIA GIULIA REGION	LJUBLJANA URBAN REGION	METROPOLITAN AREA OF STYRIA	ELSTER RAILWAY LINE	LUBIN REGION
	<ul style="list-style-type: none"> <li>Priority 1: cooperation with local activities and municipalities on the cycling development and on the tourism development</li> <li>Priority 2: better interconnection with South Moravian Integrated public transport system (IDS JMK)</li> <li>Priority 3: new marketing product - special train from both sides of border (presentation of Znojmo and Waldviertel region)</li> <li>Priority 4: tourist ticket Podyjí / Thayatal</li> <li>Priority 5: closer cooperation with Tourist Authority South Moravia (CCRJM).</li> </ul>	<ul style="list-style-type: none"> <li>Priority 1: governance schemes to carry out new CIMRs</li> <li>Priority 2: governance scheme to carry out additional road public transport services</li> <li>Priority 3: governance schemes of smart integrated ticketing systems at regional level</li> </ul>	<ul style="list-style-type: none"> <li>Priority 1: Coordinated and active governance at different levels (vertical and horizontal)</li> <li>Priority 2: Education, awareness and public participation</li> <li>Priority 3: Integrated traffic planning, coordinated between different areas (traffic, spatial, economic, etc.).</li> <li>Priority 4: Implementation of a common DRT in LUR</li> </ul>	<ul style="list-style-type: none"> <li>Priority 1: Development of a community toolkit "Mobility"</li> <li>Priority 2: Survey about the mobility behavior of children</li> <li>Priority 3: Continuation of a mobility committee in the Metropolitan Area of Styria</li> </ul>	<ul style="list-style-type: none"> <li>Priority 1: Involvement of stakeholders</li> <li>Priority 2: Tickets</li> <li>Priority 3: Active involvement of the Vogtlandbahn - Training of employees as Voglar - brand ambassador</li> </ul>	<ul style="list-style-type: none"> <li>Priority 1: Promotion of public transport and multimodal connections within the region</li> <li>Priority 2: Development of a connection model taking into account the needs of neighboring counties</li> <li>Priority 3: Agreement between the County Management Boards regarding the joint implementation of transport connections</li> </ul>

Clustering of the common topics:

- **RED: Improvement of the schemes for developing the transport service**
- **BLUE: Coordination among Authorities**
- **GREEN: Education, awareness and public participation**



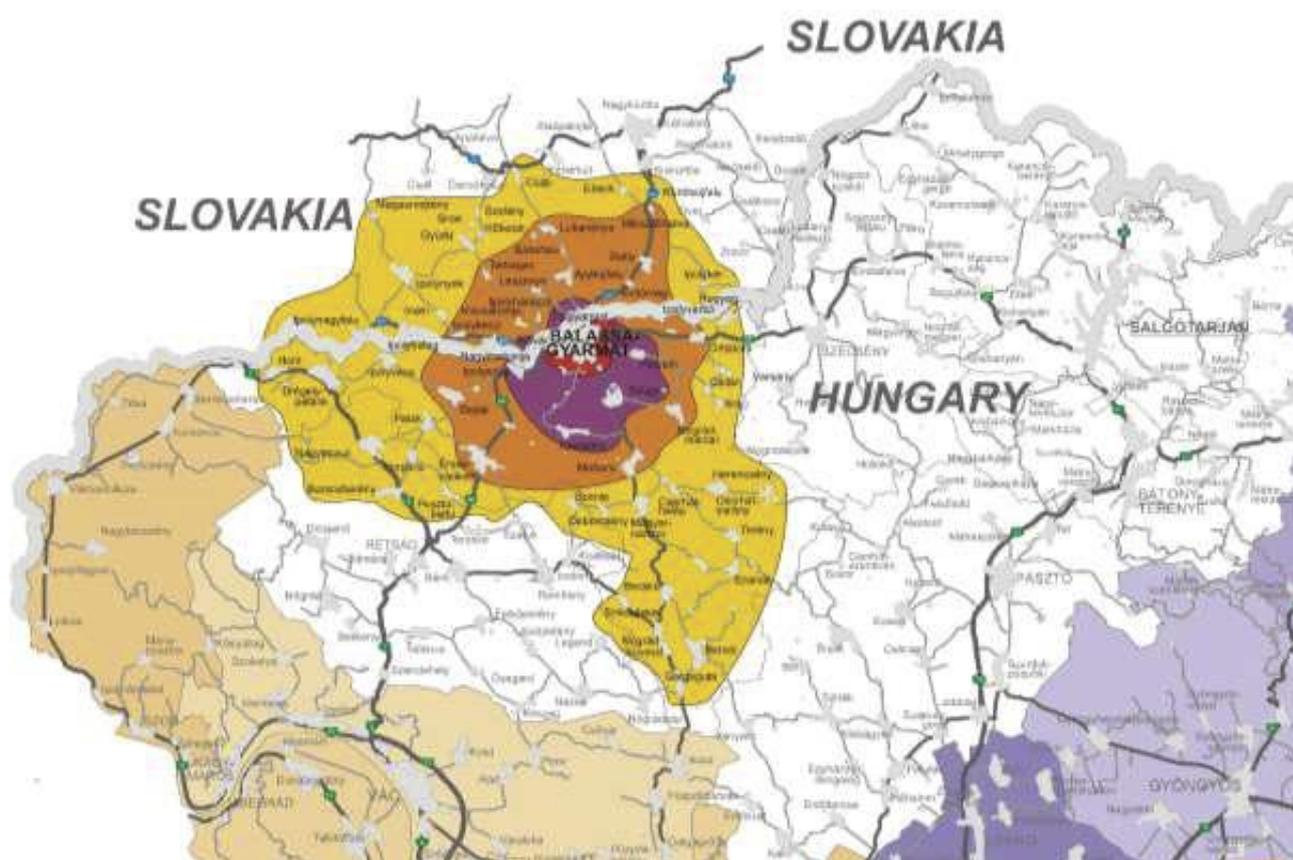
## 2. Action Plan of the South Balassagyarmat Region

MULTIMODALITY	SMART MOBILITY	REGIONAL GOVERNANCE
 <ul style="list-style-type: none"> <li>■ Priority 1: The construction of a north-south and an east-west bicycle road</li> <li>■ Priority 2: Development of existing bus terminal (and bus stops) in order to provide weather protection</li> </ul>	 <ul style="list-style-type: none"> <li>■ Priority 1: Electronic and interoperable ticketing</li> <li>■ Priority 2: Dynamic individual passenger information system for smartphones</li> <li>■ Priority 3: Dynamic on-board passenger information system</li> <li>■ Priority 4: Dynamic passenger information in bus stops</li> </ul>	

## 2.1. Introduction

According to the explored deficiencies of Balassagyarmat and its subregion the most relevant transport developments to be implemented are related to multimodality and smart mobility. Therefore the action plan deals mostly with these two topics, which are in line with work package one (WP1) and work package two (WP2). Prioritized planned actions of these two work packages follows the introduction and then a short explanation introduces why pilot actions are not considered related to work package three (WP3).

The action plan is based on the status quo analysis of Balassagyarmat. The suggested developments were evolved by interviews s stakeholder of the municipality and of the local (and regional) bus service provider company and furthermore personal experiences of the local transport system. During the interviews mainly the quality of transport services was in focus which provided a remarkable basis for priorities of the action plan.



*Figure 1: Primary (purple), secondary (orange) and tertiary (yellow) functional agglomeration of Balassagyarmat (source: KTI)*



## 2.2. Priority list in the field of multimodal service

Integrated urban development strategy (ITS) of Balassagyarmat does not plan to change multimodal structure of public transportation in Balassagyarmat. The operating modern bus terminal was built in 2007 in the northern part of the city but the bus transport towards Slovakia is still missing which is not consistent with the strategy. The quality of railway transport service needs to be developed by constructing new stops at the hospital and the industrial zone. The only bicycle road of Balassagyarmat is 150 meters long and runs next to the Ipoly Bridge (which connects Hungary and Slovakia here). From Szügy settlement (south of Balassagyarmat) there is also a bicycle road to the border of Balassagyarmat (Figure 1) but for having a well connected bicycle network it is essential to have a north-south and an east-west bicycle road (at least).

### **Priority 1: The construction of a north-south and an east-west bicycle road**

The integrated urban development strategy declares the importance of a north-south and an east-west bicycle roads. The east-west bicycle road would be constructed next to main road No. 22 and in the middle section it would be located alongside the railway. The north-south bicycle road would be constructed between the existing bicycle road from Szügy settlement and the Ipoly Bridge. This bicycle road would connect the southern industrial zone, the bus terminal, the recreation area, TESCO supermarket and Slovakia which can be an effective transport solution even for commuting inhabitants.

The Municipality of Balassagyarmat starts to implement two EU supported projects in 2018 to develop the bicycle network. The first project is financed by TOP-3.1.1-16 and includes building of two bicycle roads (in the length of 4.08 and 1.01 kilometres) and a roundabout. The other project (financed by TOP-2.1.2-15) aims to implement a green city concept by constructing a pedestrian promenade in the northern part of the city. This pedestrian promenade will be also suitable for bicycle transport. Figure 3 shows which other bicycle roads are planned (as their tender is being currently assessed). Estimated cost of TOP-3.1.1-16 project is 1.7 million € and for TOP-2.1.2-15 it is 3 million €. The municipality is the main stakeholder, but potential users and civil biking organisations are also involved in the planning process.

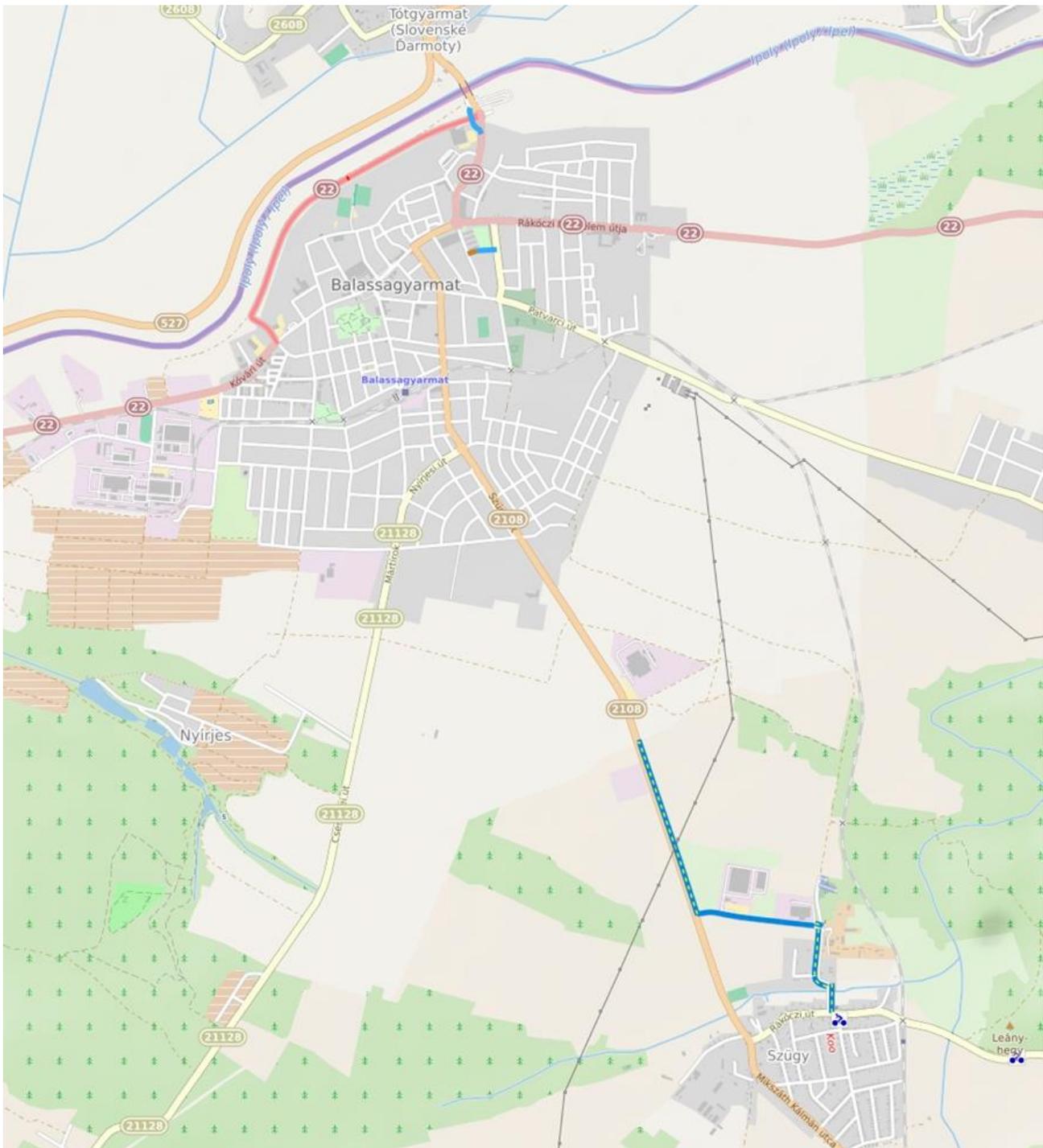


Figure 2: The current bicycle network of Balassagyarmat (source: merreterjek.hu)

**Priority 2: Development of existing bus terminal (and bus stops) in order to provide weather protection**

In Balassagyarmat and in its subregion there are several bus stops where there is no protection against all weather conditions. This is also an issue at the bus terminal where the platforms do not have roofs (Figure 2). Managing director (on county level), of KMKK (Eastern Central Hungarian Transport Centre) mentioned that the municipality and the operator of the terminal should join forces in order to make the terminal more comfortable for the thousands of travellers who use it day-by-day. Besides passenger comfort accidental issues also indicates the importance of rain protection. The estimated cost of the project is currently unknown.



*Figure 3: The platform of the bus terminal (source: KTI)*

**Priority 3: Construction of new railway stops near to the industrial zone and near the hospital**

The integrated urban development strategy suggests two new railway stops in Balassagyarmat. The first one would be located next to the industrial zone to make those workplaces more accessible by public transport. The second one would be constructed behind the hospital providing a new option to access it by train and then a 200 meter long walk. Currently the industrial zone and the hospital are served by only buses however the railway line runs close to them. The estimated costs of the project is currently unknown, the main stakeholder (railway operator - MÁV Start Zrt.) should consider cost effectiveness of this project idea and its influence on overall competitiveness of the train service.

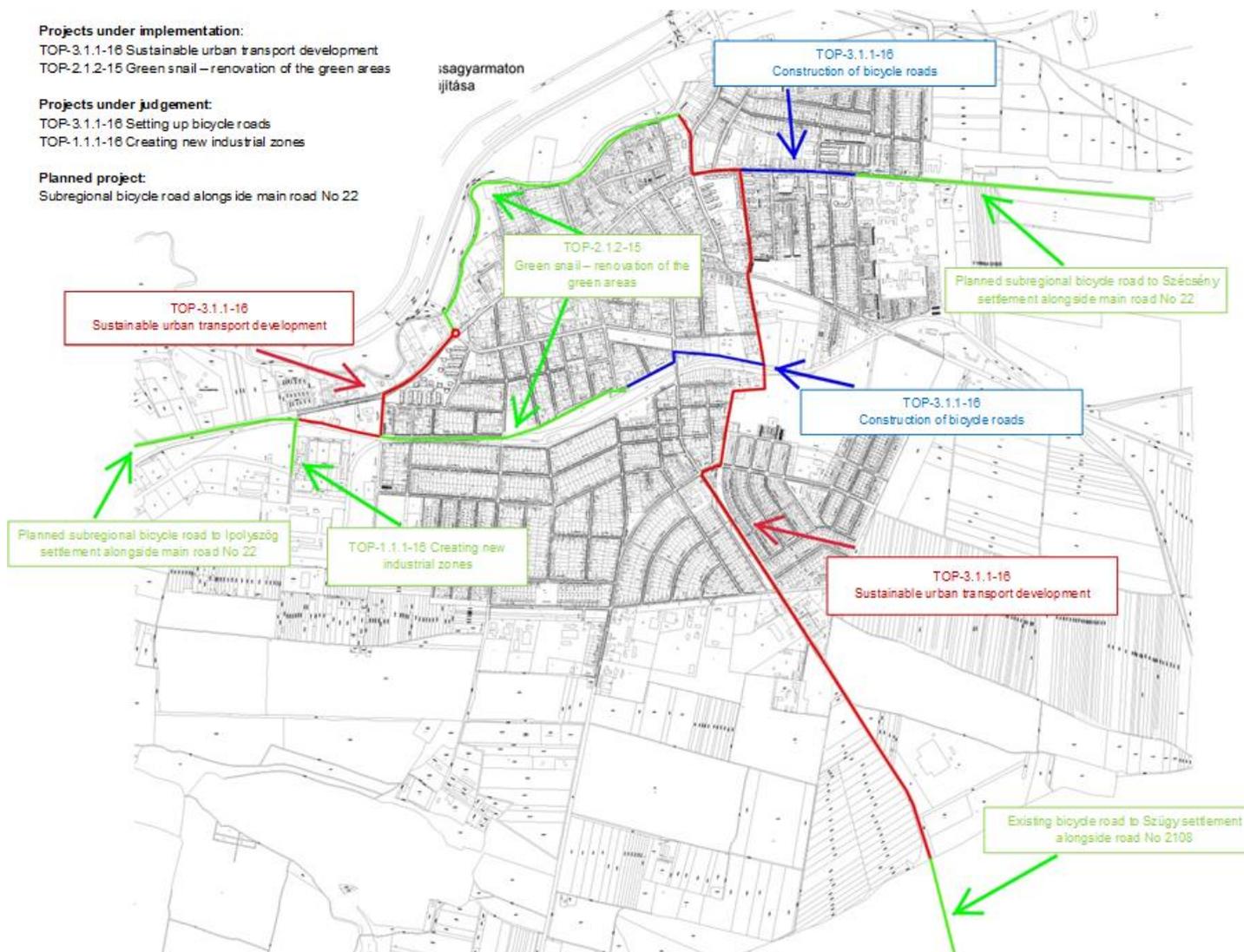


Figure 4: Planned pedestrian and bicycle projects in Balassagyarmat (source: Municipality of Balassagyarmat)



## 2.3. Priority list in the field of smart mobility

In the field of smart mobility Hungary has an on-going project having a great importance on public transport of Balassagyarmat and its subregion. The HKIR project (information system of suburban public transport) aims to improve competitiveness of public transport by improving the availability and quality of services by providing real time travel information and online platforms for purchasing online interoperable tickets (Figure 4). Harmonization of local and suburban transport services which can have much benefit for travellers is also an aim of HKIR project. The estimated cost of the project is 55.3 million € financed by the EU and the Hungarian government however it covers development costs of the overall Hungarian public transport infrastructure.



*Figure 5: Main goals of HKIR project*

In Balassagyarmat (and also throughout the country) the penetration of intelligent transport systems is far below the European average. The HKIR project will improve the competitiveness of bus and railway services of Balassagyarmat and motivate passengers to leave their cars at home by providing comfortable, high quality public transport services.

### **Priority 1: Electronic and interoperable ticketing (HKIR)**

In the recent years Hungarian railway operator (MÁV Start Zrt.) developed its ticketing system to a European level, as it is interoperable, there are several ticket machines and it is also possible to buy tickets by using



a smart phone application or an internet browser. The EGYJEGY ('joint ticket') system is being developed on this basis.

Hardware demand of the system is quite high as vandal-proof ticket machines, mobile validation devices and special on board units (OBUs) need to be developed. These OBUs have to perform every function of ticketing: purchasing and validating tickets and transferring data to the central system unit. Beside these functions OBUs should also be responsible for passenger information systems.

The EGYJEGY system can only be successful in Balassagyarmat and its subregion if there are enough platforms for public consultations and potential passengers are getting aware of the reliability and convenience of the new electronic ticketing system comparing to the existing system.

### **Priority 2: Dynamic individual passenger information system for smartphones**

Giving real-time passenger information for smartphones can be an attractive point of public transport against individual (car) transport. Currently buses of Balassagyarmat are equipped appropriate OBUs and the central server is able to monitor the actual localization of the buses that's why the only missing element of the system is a connecting smart phone application. This application can also help in route planning and work together with EGYJEGY systems to provide only one platform for every kind of activities in the field of public transport.

As it was mentioned in priority 1 public consultation is crucial in the planning and implementation phases to satisfy all the sustainable passenger demands and motivates passengers to use the application.

### **Priority 3: Dynamic on-board passenger information system**

It is necessary to improve the on-board passenger information systems in Balassagyarmat (and the subregion) as there are no real-time acoustic or visual information on the buses. On some of the vehicles existing hardware environment is appropriate for these functions but rest of the bus fleet should be equipped with new devices. The implementation does not require public consultation as it the competence of the local service provider (KMKK).

### **Priority 4: Dynamic passenger information in bus stops**

In Balassagyarmat and its subregion there is no real-time information in the bus stops. The bus terminal is equipped with devices that can provide dynamic information for passengers but currently only static timetable data are displayed. Providing dynamic information in the bus stops would improve current comfort level of the service as waiting time could be minimized this way. Deployment of new display devices has relatively high cost therefore it is less probable to be implemented without involving EU funds.

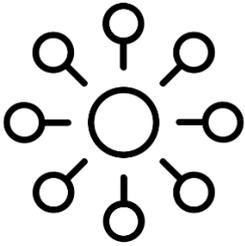


## 2.4. Priority list in the field of regional governance

Regional governance has a several possibilities to improve cross border connections with the neighbouring Slovakia. As Hungary and Slovakia became a member of EU borderline between the two countries lost its former role when border crossing individual transport is considered but cross border public transport continuously has its legal barriers. Public bus service has to be divided into domestic and international service. While domestic bus lines (that are not allowed to cross the border) are public services supported by the government and the municipalities, international bus service are not co-funded since travelling on an international bus line is considered as not an everyday activity. Base on this legal framework bus connection between Balassagyarmat and Tótgyarmat (Slovenské Ďarmoty) and its Slovakian subregion can be initiated only by an international bus service. However according to the representative of KMKK an international bus service could not compete with the individual car transport so it would not be economically sustainable.



### 3. Action Plan of the South Moravian Region

MULTIMODALITY	SMART MOBILITY	REGIONAL GOVERNANCE
 <ul style="list-style-type: none"> <li>■ Priority 1: cross-border on-demand off-season bus transport for improvement of contacts and off-season tourist opportunities</li> <li>■ Priority 2: support of the cylobuses (buses which enable transport of bicycles on a special trailer) connecting the area with important TEN-T transport nodes and subnodes</li> <li>■ Priority 3: improvement of the cross-border public transport</li> <li>■ Priority 4: tourist development with Austria</li> <li>■ Priority 5: interconnection of cyklobuses with neighboring South Bohemian Region</li> </ul>	 <ul style="list-style-type: none"> <li>■ Priority 1: cooperation on electronic cross-border apps involving journey planners</li> <li>■ Priority 2: electronic ticketing based on bank cards</li> <li>■ Priority 3: further development of the mobile application IDS JMK Poseidon (possibility to order on-demand transport),</li> <li>■ Priority 4: Reservation of spots for bicycles in the cyklobuses and transport reservation for the larger groups of travelers</li> </ul>	 <ul style="list-style-type: none"> <li>■ Priority 1: cooperation with local activities and municipalities on the cycling development and on the tourism development</li> <li>■ Priority 2: better interconnection with South Moravian Integrated public transport system (IDS JMK),</li> <li>■ Priority 3: new marketing product - special train from both sides of border (presentation of Znojmo and Waldviertel region)</li> <li>■ Priority 4: tourist ticket Podyjí / Thayatal,</li> <li>■ Priority 5: closer cooperation with Tourist Authority South Moravia (CCRJM).</li> </ul>



### 3.1. Introduction

In the frame of the Peripheral Access project KORDIS JMK is targeting Podyjí area, the southwest part of the South Moravian Region bordering to Austrian Waldviertel area. This zone has specific characteristic, such as low population density, low number of public transport connections, hilly terrain and consequently it is the popular summer touristic area with many castles and recreational sites such as Vranov dam and cross-border National Park Podyjí / Thayatal.

The area faces the big difference of amount of visitors in summer and in the off-season months. During the summer Podyjí area has to cope with high number of tourists. On the contrary in the other months the area is dealing with lack of visitors. Similar situation appears on both sides of the cross-border region.

Podyjí area is well suitable for cycling and the services for cyclists are already developed. But until the measures taken under the Peripheral Access Project there has not been the possibility to reach the area by sustainable transport way (by public transport). Now there is an opportunity for municipalities from both sides of the border to develop this type of tourism.

**Geografická mapa Jihomoravského kraje**  
*Geographical map of the Jihomoravský Region*



Figure 6: Geographical map of the South Moravian Region (source: <https://www.czso.cz/csu/czso/mapy-a-kartogramy-wpx831xfog>)

Based on these grounds KORDIS JMK together with the regional stakeholders has drawn up this action plan<sup>1</sup> that presents desired actions towards more effective public transport and integration of the public transport

<sup>1</sup> The Action Plan addresses project deliverables: D.T1.3.3 - Action plan on elimination of intermodal bottlenecks, D.T2.3.3 - Action plan on elimination of ICT / ITS bottlenecks, D.T3.3.3 - Action plan on elimination of governance and marketing bottlenecks.



services in the tourism sector in the Czech-Austrian border region. The actions were structured respectively to the 3 main priorities identified in the Peripheral Access project, as follows:

**Priority 1 - Multimodal services** - cross-border on-demand off-season bus transport for improvement of contacts and off-season tourist opportunities, support of the cyklobuses (buses which enable transport of bicycles on a special trailer) connecting the area with important TEN-T transport nodes and subnodes, improvement of the cross-border public transport, tourist development with Austria and interconnection of cyklobuses with neighboring South Bohemian Region.

**Priority 2 - Smart mobility** - cooperation on electronic cross-border apps involving journey planners, electronic ticketing based on bank cards, further development of the mobile application IDS JMK Poseidon (possibility to order on-demand transport), reservation of spots for bicycles in the cyklobuses and transport reservation for the larger groups of travelers.

**Priority 3 - Smart governance and marketing** - cooperation with local activities and municipalities on the cycling development and on the tourism development and its better interconnection with South Moravian Integrated public transport system (IDS JMK), new marketing product - special train from both sides of border (presentation of Znojmo and Waldviertel region), tourist ticket Podyjí / Thayatal, closer cooperation with Tourist Authority South Moravia (CCRJM).

### 3.2. Priority list in the field of multimodal service

<b>Action 1.1</b>	<b>On demand connections</b>
Description of action	Creating an offer of transport links for less-favoured regions that are less used by transport; with using of mobile app to order the connection.
How it will be realized	Delivering of mobile app for „on demand connections“, after that promotion for public with the manual for ordering the connections on demand (the app IDS JMK POSEIDON and information in the search engine tool IDOS will be used - see action 2.3.)
Timeframe of action	Year 2019
Budget	The pilot project will be implemented within the project DTP1-1-017-3.1 Linking Danube.

<b>Action 1.2</b>	<b>Support of carriage of bicycles</b>
Description of action	Retention and development of newly established cyclobus lines Brno - Znojmo - Vranov nad Dyjí - Vranov Dam, during tourist season
How it will be realized	The first year of operation is already over, the concept has to be developed in next years. Further, the promotion is necessary not only by KORDIS JMK, but also in tourist information centres, articles in bike-magazines, on professional websites, social networks, bike-associations in the region etc.
Timeframe of action	From the season 2018 every year.
Budget	Part of the budget for financing the operation of IDS JMK.



<b>Action 1.3</b>	<b>Support of cross-border tourism with Austria</b>
Description of action	<p>A. Enabling the transport of bicycles from Uherčice to Drosendorf (cyclobus line 816, planned as twice a day in the summer season - connection on demand) with a connection to a tourist train with a bicycle transport in Austria (Reblaus Express)</p> <p>B. Tourist ticket valid in Czech and Austrian border region (see more at the Priority 3)</p>
How it will be realized	In the form of communication with the country of Lower Austria and NÖVOG (Reblaus Express operator) regarding discounted tickets and subsequent connections. Track possible synergies between actions and initiatives in AT and CZ (railways, cycling, cultural festivals).
Timeframe of action	Supposed in 2020
Budget	Part of the budget for financing the operation of IDS JMK.

<b>Action 1.4</b>	<b>Alternative offer of transport to frequented tourist spots (Vranov dam, castles Vranov nad Dyjí, Bítov).</b>
Description of action	Support for overloaded car parks at the Vranov Dam and other localities in the form of an alternative public transport offer, allowing to the passengers to travel in busy times without a car.
How it will be realized	In the form of public transport offer in frequently visited locations (increase of connections in the season, adjustment of timetables).
Timeframe of action	Realized already from 2018, tuning according to current demand in next years.
Budget	Part of the budget for financing the operation of IDS JMK.

<b>Action 1.5</b>	<b>Linking of cyclobuses IDS JMK with South Bohemian system of cyclobuses</b>
Description of action	Renew of possibility to transport bicycles by cyclobuses in the direction of South Bohemian region
How it will be realized	The possibilities of improving the connection of IDS JMK buses with bicycle buses organized by the South Bohemian Region in the direction from Jindřichův Hradec will be examined.
Timeframe of action	2019
Budget	Part of the budget for financing the operation of IDS JMK.



### 3.3. Priority list in the field of smart mobility

<b>Action 2.1</b>	<b>Cooperation on cross-border electronic applications including e.g. search engine tools and applications, with the relation to cross-border area (Danube Region Journey Planner (DRJP) and application DanubeScout)</b>
Description of action	Cooperation with Austrian and Slovak coordinators of transport on transferring actual dates of regular and diversion timetables.
How it will be realized	Delivery of software interface Open API; data about connection by public transport in the area of neighbouring countries will be downloaded from regional foreign search-engines and transferred to the central search database, which enables the searching of requested cross-border connections (the search engine tool DRJP); at the same time the promotion campaign for the public will be realized.
Timeframe of action	The first half of year 2019
Budget	Pilot testing will be realized as part of the project DTP1-1-017-3.1 Linking Danube.

<b>Action 2.2</b>	<b>Electronic tickets - continuation of smart ticketing</b>
Description of action	The introduction of cash registers into regional bus lines (cash desks that allow payment by bank cards), later enlargement to the whole region and train lines, possibly also to non-cash payments on cross-border lines).
How it will be realized	In the form on new delivered equipment which will provide to the passenger pay by card
Timeframe of action	During year 2019
Budget	Assumption of paying by pooling resources from different sources.

<b>Action 2.3</b>	<b>IDS JMK Poseidon - continuing of developing a mobile application - e.g. the ability to order connection on demand (see Priority 1)</b>
Description of action	Adding the module of the mobile app IDS JMK Poseidon for the possibility to make an order of the connection on demand, including the interconnection to central dispatching centre.
How it will be realized	Supply of software upgrade of application IDS JMK Poseidon - new module for ordering the connection on demand, pilot verification of operation.
Timeframe of action	2019
Budget	Assumption of paying from the project DTP1-1-017-3.1 Linking Danube.

<b>Action 2.4</b>	<b>Possibility to book carriage of bicycles in cyclobuses and organize transport of larger groups.</b>
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Description of action	Booking of transport of bikes in cyclobuses and organizing of transport of larger groups through websites and mobile app IDS JMK Poseidon.
How it will be realized	Supply of software upgrade of the mobile app IDS JMK Poseidon - new modules: a) booking of carriage of bicycles in selected connections b) booking of transport of larger groups
Timeframe of action	2020
Budget	Assumption of paying from the resources of KORDIS JMK.

### 3.4. Priority list in the field of regional governance

<b>Action 3.1</b>	<b>Cooperation with local interest groups and municipalities on development of bicycle transport (in Vranov region)</b>
Description of action	Establishing group of bicycle specialists in Znojmo region consisting of regional representatives of tourism, representatives of region and city of Znojmo (including representative of local bicycle-club) with the goal of creating of the offer for cyclists within IDS JMK
How it will be realized	Establishing group of bicycle specialists in Znojmo region with regular meetings before starting tourist-season and after its ending (exchange of experience, timetable modifications, frequency of cyclobus connections, other topics). Collaboration to promote these cyclobuses in the region; options for discounts and discounts for cyclists for entry to tourist destinations and cycling services.
Timeframe of action	Realization from April 2018, assumption of continuation in next years
Budget	Negotiation costs will be covered from different sources, work of the group will be covered from the sources of the project CE979 Peripheral Access.

<b>Action 3.2</b>	<b>Cooperation with local interest groups and municipalities on development of tourism and its better connection with IDS JMK.</b>
Description of action	Establishing working group of local representatives of tourism, representatives of region and the city of Znojmo with the goal of exchange of information, cooperation and creating of new products.
How it will be realized	Establishing working group with regular meetings before the start of summer season and after its ending (exchange of experience, timetable modifications, frequency of connections, other ideas). Collaboration on common promotion of these connections in the region; possibilities of discounted tariff and discounts for tourists and entrance fee in tourist destinations.
Timeframe of action	During 2019 and next years.



Budget	Negotiation costs will be covered from different sources, launch of the work of the group will be covered from the sources of the project CE979 Peripheral Access.
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<b>Action 3.3</b>	<b>New tourist product - special train on both sides of the border, presentation of the Znojmo region and Waldviertel.</b>
Description of action	Once a year a special train will be realized for promoting the Znojmo region and Waldviertel region
How it will be realized	Establishing of working group for developing tourism in the Znojmo region and ensuring at least two meetings - before starting the summer season and after its ending (exchange of experiences with realization of tourist event, eventually ideas for further modification, other ideas). Cooperation of common promotion of the tourist event.
Timeframe of action	Assumption of realization from summer season 2019 ...
Budget	Costs of pilot ride of special train will be covered from the project CE979 Peripheral Access, other rides by pooling the resources from different sources.

<b>Action 3.4</b>	<b>Tourist ticket Podyjí / Thayatal</b>
Description of action	Creating a new tourist product - cross-border seasonal tourist ticket for Moravian - Austrian border regions; in cooperation with VOR and KORDIS JMK, state Lower Austria and South Moravian Region (consultation with CCRJM and Regionalmanagement Niederösterreich).
How it will be realized	In the form of bilateral agreement of KORDIS JMK and VOR about common recognition and re-invoicing of the costs for common ticket. The range of validity of the ticket and promotion of this product will be agreed in cooperation with tourist authorities of SMR (CCRJM) and Lower Austria (Regionalmanagement NÖ), eventually with other subjects of tourism.
Timeframe of action	After year 2020.
Budget	Exact costs will be calculated after the completion of expected transport and economic solution.

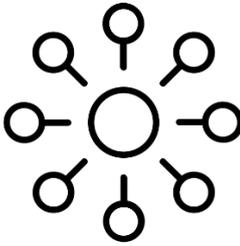
<b>Action 3.5</b>	<b>Cooperation with CCRJM - on mutual awareness and realization of common actions</b>
Description of action	Exchange of information on tourist events, about the possibilities of tourist trips by using the regional transport; about current possibilities of bicycle transport within regional public transport, joint promotion of tourist events, participation in training of the staff of information centres in the region and during other suitable events organized by CCRJM (e.g. for guides, representatives of municipalities, etc.).
How it will be realized	In the form of regular meetings before the start and end of summer season in South Moravian Region, eventually ad hoc meetings during coordination of



	joint events, otherwise regular month-newsletters sent by KORDIS JMK and CCRJM, joint publishing of the news on websites of KORDIS JMK and <a href="http://www.jizni-morava.cz">www.jizni-morava.cz</a> ; participation in regular meetings of the staff of information centres and other events.
Timeframe of action	Activities will be realized during the whole year 2019 and will be continued in next years.
Budget	Assumption of minimal organizational costs, which will be covered from the resources of KORDIS JMK, resp. CCRJM.



## 4. Action Plan of the Friuli-Venezia Giulia Region

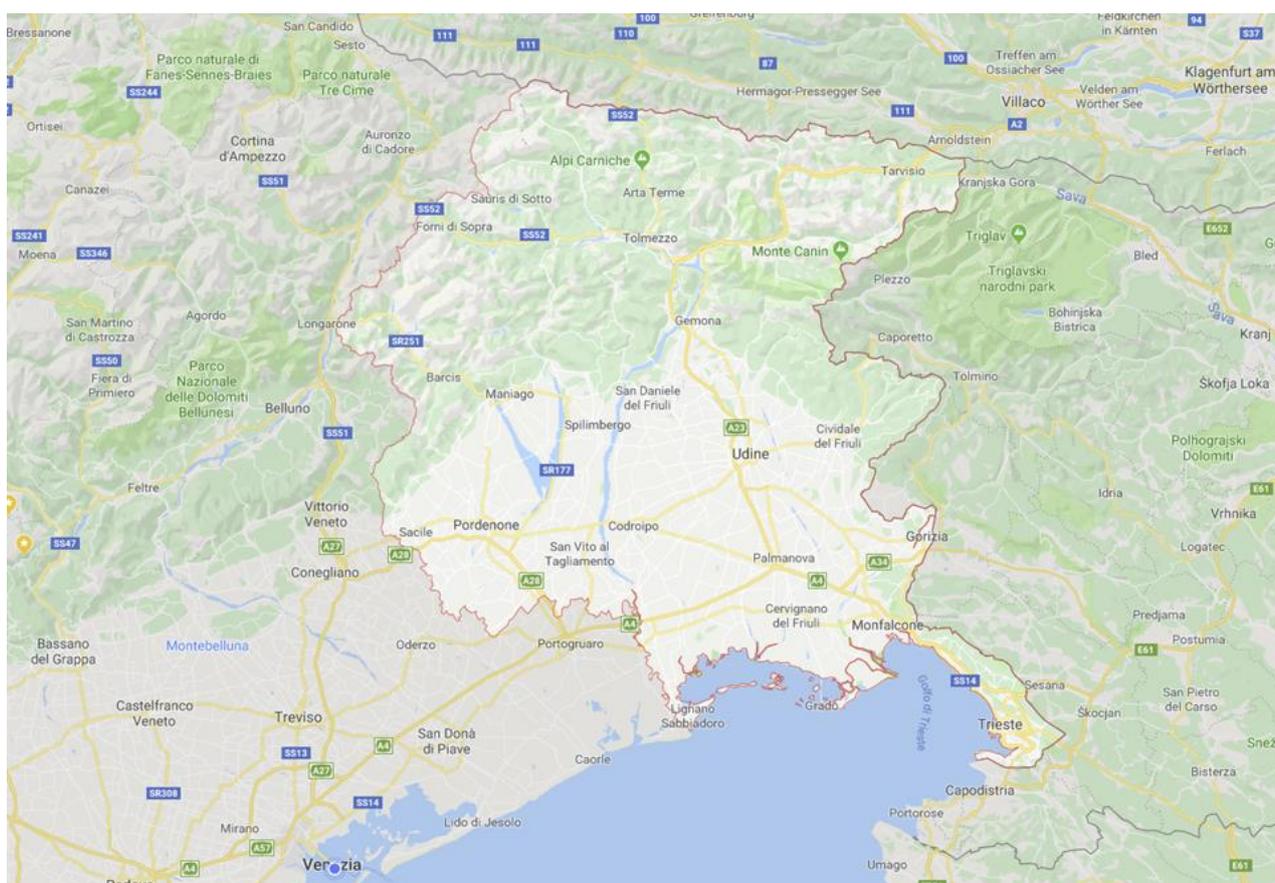
MULTIMODALITY	SMART MOBILITY	REGIONAL GOVERNANCE
 <ul style="list-style-type: none"> <li>■ Priority 1: multimodal infrastructures: additional number of CIMR (Regional Multimodal Centers)</li> <li>■ Priority 2: multimodal public transport services to attract random demand</li> <li>■ Priority 3: multimodal maritime public transport services</li> </ul>	 <ul style="list-style-type: none"> <li>■ Priority 1: smart on-demand services</li> <li>■ Priority 2: smart ticketing</li> <li>■ Priority 3 infomobility /traveller information systems</li> </ul>	 <ul style="list-style-type: none"> <li>■ Priority 1: governance schemes to carry out new CIMRs</li> <li>■ Priority 2: governance scheme to carry out additional road public transport services</li> <li>■ Priority 3: governance schemes of smart integrated ticketing systems at regional level</li> </ul>



## 4.1. Introduction

According to regional policies and plans as well as stakeholders' needs, a number of priorities in the three thematic areas of PERIPHERAL ACCESS have been identified.

In the field of multimodal services, there is first a stringent need to foster the development of additional nodes - including multimodal centers (CIMRs), railway stations, bus stops - in order to complete the public transport regional network and achieve the goal of a better integration among transport modes. Secondly, the need to increase the number of public transport users by focusing on random transport demand - rather than the traditional regular one - is of utmost importance at regional and cross-border level. Eventually, public maritime transport should be improved along the main regional and cross-border coasts.



*Figure 7: Map of the Friuli Venezia Giulia Region*

In the field of smart/ITS mobility, a major regional focus is on the development of on-demand services in regional areas characterized by weak and dispersed transport demand. The aim is to increase overall territorial accessibility in peripheral and rural areas. Different kind of services can be designed here following specific regional guidelines with a view to cross-border integration. Linked to that is the goal of developing and implementing an integrated ticketing system at regional level supported by smart tools (smart ticketing) to include both on-demand and traditional services. Some guidelines can be found here about the general ITS architecture to be employed. Finally, a major priority is represented by the development of traveller information systems (so-called infomobility). A number of regional strategies are envisaged to improve the ability of users to plan their trips by getting real-time information at major nodes and on-board vehicles.

In the field of governance, specific models are envisaged to carry out the necessary investments on multimodal nodes, additional public transport services - including on-demand and flexible services in peripheral and rural areas - and smart ticketing system.



## 4.2. Priority list in the field of multimodal service

### Priority 1: multimodal infrastructures

In the field of multimodality, an additional number of CIMR (Regional Multimodal Centers) is going to be carried out at regional level. Additional CIMRs are necessary to achieve the overall goal of fostering integration among transport modes at regional and cross-border level. In fact, the bottom-line requirement to accomplish an integration of transport services consists on the realization of the physical network, where nodes play a major role.

Regional policies provide for specific requirements to be met by such additional investments, namely:

- CIMR dimensions must be determined according to peak-hour traffic;
- platforms must be totally covered;
- waiting rooms and pedestrian paths must be provided to users;
- CIMR must be equipped with parking areas and related pricing policies promoting short-term stays;
- information systems (monitoring, variable message panels) must be available;
- ticketing systems and equipment must be in place.

The CIMRs to be developed are identified in the table (fig.5). The geographical map representing planned CIMRs and other nodes is shown in the attachment (Attach 1). On top of CIMRs, additional railway stations will be developed to foster mode integration. New 4,000 bus stops in relevant locations will be deployed as well according to the following spatial distribution at regional level:

- Province of Gorizia: 415;
- Province of Pordenone: 887;
- Province of Trieste: 945;
- Province of Udine: 1,753.

In particular, bus stops will be located at main school and sport clusters, hospitals and trade areas which are not served by a CIMR yet. Bus stops must be carried out according to the number of passengers in peak-hours in an average winter weekday.

Policy priorities are temporally ranked as follows:

1. completing first-level CIMRs;
2. developing bus stops at school and hospital clusters and second-level CIMRs;
3. developing additional equipped stops;
4. developing additional (not equipped) stops.

By 2020, all first-level CIMRS will have to be carried out along with some 50% of second-level CIMRs and equipped stops. Major stakeholders to get involved are detailed in the ad-hoc governance scheme described in section 4. At the moment, no specific budget figure is available being cost estimates left to negotiation among public stakeholders within the envisaged governance scheme.

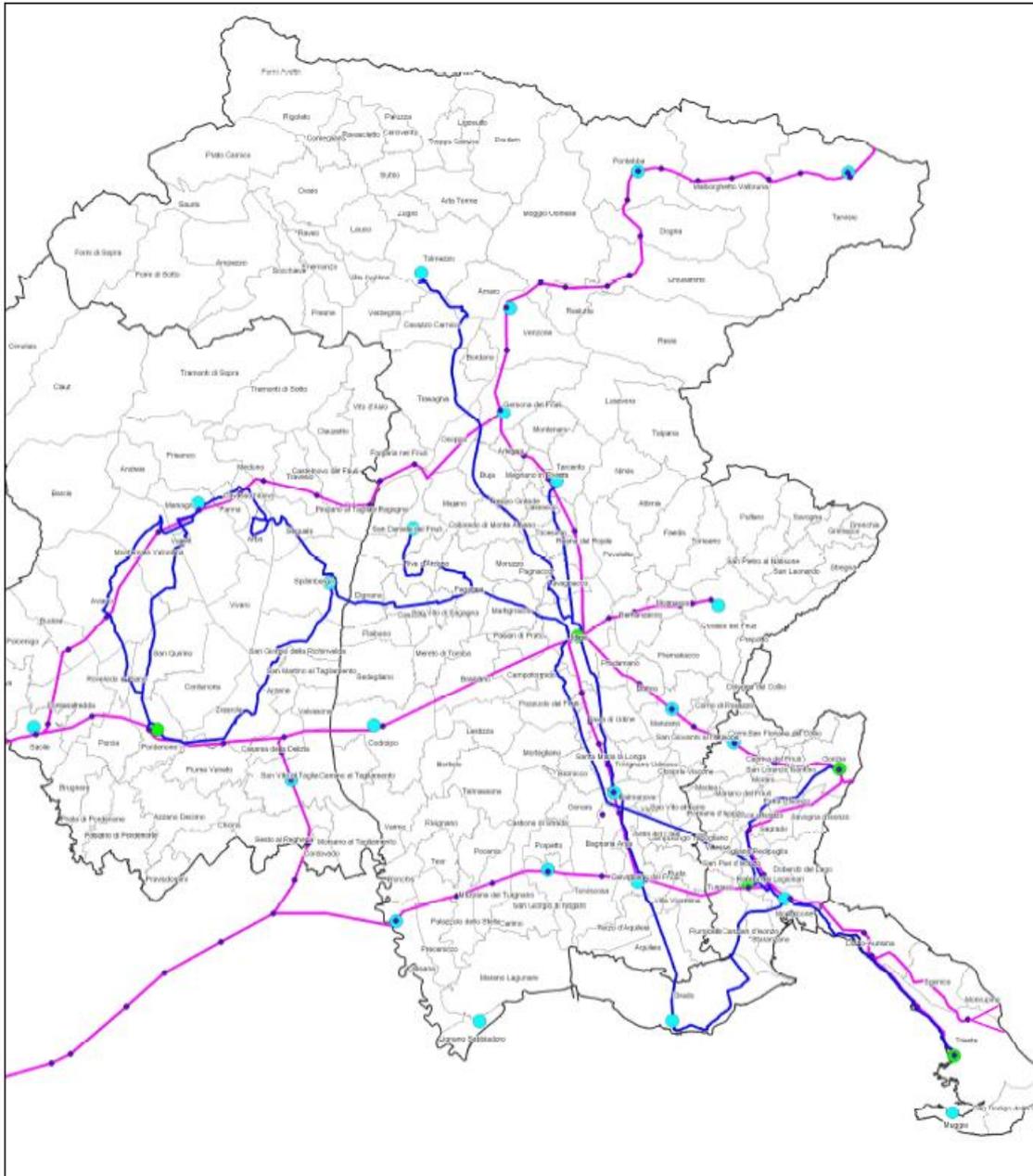


CIMR				Servizi di Trasporto Pubblico					
Livello	Denominazione	Comune	Provincia	Autobus	Ferrovia	Aereo	Navigazione	Taxi	
CIMR di 1° Livello	Gorizia	Gorizia	Gorizia	SI	SI			SI	
	Pordenone	Pordenone	Pordenone		SI			SI	
	Aeroporto FVG	Ronchi dei Legionari	Gorizia		SI	SI		SI	
	Trieste	Trieste	Trieste		SI			SI	
	Udine	Udine	Udine		SI			SI	
CIMR di 2° Livello	Cervignano del Friuli	Cervignano del Friuli	Udine		SI				Eventuale
	Cividale del Friuli	Cividale del Friuli	Udine		SI				
	Codroipo	Codroipo	Udine		SI				
	Cormons	Cormons	Gorizia		SI				
	Gemona del Friuli	Gemona del Friuli	Udine		SI				
	Grado	Grado	Gorizia					SI	
	Latisana	Latisana	Udine		SI				
	Lignano Sabbiadoro	Lignano Sabbiadoro	Udine					SI	
	Maniago	Maniago	Pordenone		SI				
	Manzano	Manzano	Udine		SI				
	Monfalcone	Monfalcone	Gorizia		SI				
	Muggia	Muggia	Trieste					SI	
	Palmanova	Palmanova	Udine		SI				
	Pontebba	Pontebba	Udine		SI				
	Sacile	Sacile	Pordenone		SI				
	San Daniele del Friuli	San Daniele del Friuli	Udine						
	San Giorgio di Nogaro	San Giorgio di Nogaro	Udine	SI					
	San Vito al Tagliamento	San Vito al Tagliamento	Pordenone	SI					
Spilimbergo	Spilimbergo	Pordenone							
Tarcento	Tarcento	Udine	SI						
Tarvisio	Tarvisio	Udine	SI						
Tolmezzo	Tolmezzo	Udine							
Carnia	Venezzone	Udine	SI						

Figure 8: planned multimodal centers (CIMRs)



**Priority 2: multimodal public transport services to attract random demand**



*Figure 9: first-level multimodal public transport services*

Additional road public transport services are foreseen to attract random demand. Depending on the various territorial and socio-economic regional features, such services aim at improving mode integration and service reliability on major transport routes. Intermodality, regular scheduling and timetable integration principles must be in place here.

Within such a policy framework, first-level services are envisaged to improve public transport to attract random demand of users along major routes without substituting rail services and in accordance with airport flights' timetable. Timetable integration should follow the Rail Operations Model and airport scheduled flights.

Envisaged first-level services are displayed in the following figure.



Regional policies provide for additional 900,000 km/year and 810,000 km/year to improve selected urban and peripheral public transport services respectively. Current vs foreseen output of selected first-level services are shown in the previous table.

Linee automobilistiche di 1° Livello	Km nell'anno			Variazione %
	Attuali	Di progetto	Variazione assoluta	
Linea G01 "gorizia, aeroporto, monfalcone, grado"	841.850	860.335	18.485	2,2%
Linea P13 "maniago, aviano, roveredo in piano, pordenone"	401.804	549.192	147.388	36,7%
Linea P14 "meduno, maniago, pordenone"	327.145	342.646	15.501	4,7%
Linea P18 "spilimbergo, san giorgio della richinvelda, zoppola, pordenone"	533.918	585.410	51.491	9,6%
Linea P51 "maniago, sequals, spilimbergo, udine"	524.961	603.472	78.511	15,0%
Linea U62 "tolmezzo, udine"	458.484	489.483	30.999	6,8%
Linea U70 "san daniele, udine"	525.671	576.349	50.677	9,6%
Linea U78 "udine, tricesimo, tarcento"	512.287	531.855	19.568	3,8%
Linea U98 "grado, cervignano, udine"	640.149	704.521	64.373	10,1%
<b>Totali</b> (esclusa Linea G51 "udine, aeroporto, monfalcone, trieste")	<b>4.766.270</b>	<b>5.243.263</b>	<b>476.993</b>	<b>10,0%</b>
Linea G51 "udine, aeroporto, monfalcone, trieste"	1.520.526	1.668.670	148.143	9,7%
<b>Totali Linee di 1° Livello</b>	<b>6.286.796</b>	<b>6.911.932</b>	<b>625.136</b>	<b>9,9%</b>

Figure 10: first-level road public transport services features (current vs foreseen output)

In short:

- major improvements are expected on connections from/to the regional airport (Ronchi dei Legionari);
- some 47% of additional output is allocated to the sub-regional area of Pordenone;
- some 26% of additional output is assigned to the sub-regional areas of Udine.

Moreover, output reallocation among sub-regional areas (provinces) could be considered to achieve better territorial balance of services, according to demand needs.

Regional policies point out that the development of new transport services and the improvement of existing ones are left to ad-hoc projects, including EU projects. New projects must take into account the potential integration of services within the regional territory and the cross-border areas so as to enhance the attractiveness of public transport and foster its development by involving additional centers. Integration among services must firstly be pursued with respect to major regional interchange nodes (CIMRs). As such, stakeholders to get involved, timing and budget are left to the specific ad hoc project.

### **Priority 3: multimodal maritime public transport services**

In the field of maritime transport, regional policy priorities call for a larger territorial coverage - including main regional coasts - as well as better connections with neighboring regions.

Regional policies confirm the interest to operate the existing cross-border service (Trieste-Piran-Rovinj-Pula) given the role of Croatia entering the EU and the potential development of maritime routes in the Quarnero area.



An additional cross-border priority consists of the improvement of the existing Trieste-Muggia connections towards Slovenia (in particular, Koper).

Once again, the development of new services and the improvement of the existing ones are left to ad hoc projects, including EU projects.

### 4.3. Priority list in the field of smart mobility

#### Priority 1: smart on-demand services

Under the provision of additional rail and road public transport services, the development of smart services in weak-demand territorial contexts is particularly emphasized. Such services aim at increasing territorial accessibility and optimizing public transport supply. Flexible services - called “third-level” connections - are specifically considered by regional policies. Such connections are to be designed at a different level of details with respect to first-level services. Flexible services must be provided according to the specific territorial context and require an in-depth analysis of the territory considered and related transport demand.

TYPE OF SERVICE	DESCRIPTION
<b>A - Fixed route service</b>	Routes are predefined and can not be changed. Routes consist of a predefined sequence of stops. This category represents the kind of flexible service as much like the traditional ones. Major features (or sub-types) are: <ul style="list-style-type: none"> <li>- A.1: Services are operated only if requests are made;</li> <li>- A.1: Schedule can slightly change depending on requests.</li> </ul>
<b>B - Baseline routes with possible detours</b>	Predefined routes are identified and they can be slightly changed depending on requests. Changes can consist of limited detours on a predefined network. Timetables are provided within a predefined time period of service operations and availability. They can be modified - indeed, significantly - provided that the service is operated within the predefined time period.
<b>C - Free routes connecting a predefined set of network nodes</b>	These services can be further classified into: <ul style="list-style-type: none"> <li>- “zonal services”: connecting major network (eg, interchange stops) and peripheral predefined nodes (eg, public transport stops);</li> <li>- “area wide services”: connecting peripheral nodes (eg, public transport stops).</li> </ul> In both cases, significant service flexibility in terms of schedules and routes is allowed, however with some limitations: <ul style="list-style-type: none"> <li>- routes are specified according to a predefined network;</li> <li>- schedule must be provided within the time period of service availability.</li> </ul>
<b>D - Free routes connecting any set of nodes</b>	These services are similar to collective taxi’s. They are completely flexible. However, some limitations are in place in terms of: <ul style="list-style-type: none"> <li>- routes: a predefined network must be used;</li> <li>- schedule must be provided within the time period of service availability.</li> </ul>

*Table 4: type of regional on-demand public transport services*



Smart on-demand services must be developed firstly as pilot actions. EU projects are recommended here, in which stakeholders to get involved, timing and budget of the pilots should be identified. Following pilot results, flexible services can be formally recognized and included in regional plans.

Regional policies specify action plan guidelines for the development of smart flexible public transport services. In particular, managing smart on-demand services requires an Operational Center, which would be in charge of booking management activities, service operation and programming. Communication between users and the Operational Center should rely on smart tools, phone calls (toll-free numbers must be provided), messaging, e-mails or other (off line/on line) means.

In case of off-line booking, user requests should be made prior to the beginning of the operating service, usually by the day before the request. The Operational Center then collects users' requests and processes them by optimizing overall inputs.

In case of on-line booking (smart tools), users' requests can be accommodated also while operating the service, provided the requests are received by a predefined period before the beginning of the service schedule. They are then processed in real-time.

Guidelines also specify the various types of flexible/on-demand services that can be designed and developed at regional level. Types of service basically depend on the degree of service flexibility. The following table summarizes major features.

Operational models of smart on-demand services derive from the matching of the type of services (specified above) and the selected booking management models.

TYPE OF ON-DEMAND SERVICE	BOOKING MANAGEMENT MODELS	
A1	Off line (a)	
A2	Off line (b)	
B	Off line (c)	On line (e)
C	Off line (d)	On line (f)
D		On line (g)

*Table 5: possible operational models of on-demand public transport services*

Regional policies provide indeed some guidelines to support the matching between the type of flexible service and the type of transport demand on the territory. In fact, while various types of service can accommodate different types of transport demand, some suitable matches can nevertheless be suggested as follows:

TYPE OF TRANSPORT DEMAND		TYPE OF SERVICE						
weak demand urban connections	holiday days, off-peak hours			C	D			
	night services					E	F	
	area wide			C	D			



weak demand peripheral connections	specific axes	A	B					
fast peripheral connections (among few centers)		A	B					
specific categories of users								G

*Table 6: Type of on-demand service and transport demand on the territory*

Monitoring plans should be envisaged with regards to service demand and supply. They should focus on the following activities:

- booking;
- conformity of booking with respect to actual service;
- type of users and customer satisfaction/perceived quality of service.

In this field, given the general planning framework depicted above, the priorities are temporally ranked as follows:

1. planning a first pilot action (selection of area, identification of on-demand type, identification of operational periods, estimation of the number of vehicles, definition of ITS architecture of the system, ...);
2. putting it in operation for a certain amount of weeks/months (these two actions are needed because this kind of transit service is new in this Region and should be presented to the population, both commuters and potential new transit users) and tested.
3. monitoring the pilot project to better understand advantages and disadvantages of the service and improve it towards its final architecture. These three actions will be developed within the current EU project
4. extending the services to other peripheral areas in FVG region by using the same ITS and ticketing approach (from planning perspective this action is already included in Regional Transit Plan);
5. extending the service at cross-border areas (this action needs specific agreement between the cross-border institutions and perhaps a review of specific international regulation in the filed of transit services); in the current project a first MOU could be prepared and signed.
6. planning similar regional and cross-border intermodal and flexible services specifically oriented to tourists.

The activities from 1 to 3 are already planned in the current project. The activity 4 may start in the context of the new Service Contract that should be signed in short between the FVG region and the transit company (at the end of the tender procedure). Activities 5 and 6 may be considered for new EU project that may foster and encourage such kinds of actions. At the moment, the budget for activities 1-3 is partially included in this project, activity 4 is included in the Service Contract while no specific budget figure is available for activities 5 and 6.

**Priority 2: smart ticketing**



As mentioned in the regional analysis, regional policies call for the development of a smart integrated ticketing system supporting both traditional and innovative (flexible) services. Smart ticketing systems may be considered as means to realize the overall regional integrated ticketing system. Current trends show a shift from traditional paper-based tickets to electronic/smart ones, which also implies an improvement of the ability of operators to collect data on users and to design more effective strategies (eg, user segmentation, service differentiation and integration, etc.).

It should be highlighted that smart ticketing tools may be seen as means to pursue the overall regional strategy leading to the adoption of an integrated ticketing system, not as tools in themselves. As such, they have to be designed to reach an overall balance between costs (investments, operational) and benefits. In principle, integrated ticketing systems and smart ticketing strategies are to be seen independently, although relevant synergies can be in place.

A regional law pinpoints the integration among transport modes and services as a major policy goal to be attained also through “an integrated ticketing system supported by smart tools (smart ticketing)”. The overall strategy includes the realization of major interchange nodes and timetable integration as additional regional policies.

The development of an integrated ticketing system is expected on the basis of the following temporal steps:

- developing an smart ticketing system including all public transport services at regional level (including also rail services, which at the moment are not included in the transit plan, while busses and water services are already considered);
- step-by-step implementation of the system starting from users subscriptions;
- developing an integrated ticketing systems by defining integrated pricing schemes, price levels and clearing rules;
- developing a smart and integrated ticketing system exploiting relevant technological tools.

More specifically, two steps are envisaged in order to deploy the overall strategy:

- first: from current situation (paper-based tickets and no integration) to smart non-integrated ticketing system;
- second: implementing the integrated and smart ticketing system.

The overall ITS architecture supporting the smart ticketing system (second step) should be defined in detail at the beginning of the implementation step and will include of:

- a Regional Service Center (CSR) managing data flows from central and peripheral systems. The CSR will be based on an IT (HW/SW) platform (server, communication tools, operational systems, shared database, etc.) connected with smart ticketing devices and workstations of regional public transport operators. Eventually, the CSR is entitled of revenue sharing management activities on the basis of data coming from peripheral smart ticketing devices;
- Company Control Centers (CCA), one for each regional public transport operators.

At local level, we have:

- on-the-field peripheral systems (eg, on-board ticketing devices) connected with final users and transport operators;
- equipment (at stations, depots and parking areas), which constitute the first-level aggregation of peripheral systems data;
- contactless cards to access public transport services.



Regional policies also provide some estimates of the economic impacts following the implementation of the smart integrated ticketing system. In particular, it is estimated that investment costs would be in the range of 13-14 ml euros, while operating costs - including personnel, maintenance and technological upgrading - would be some 12% of the investment costs, thus in the range of 1,4-1,5 ml euros annually. A breakdown of operating costs is shown in the following table.

TYPE OF COST	ML €
Regional Service Center	0.3
Company Control Center	0.7
On-board vehicle and at station devices (selling, checking)	5.7
Station/depot/parking equipment (first-level aggregation)	1.3
Commercial equipment	3.5
Control equipment	0.5
Design and planning costs	1.4
<b>Total</b>	<b>13.4</b>
Annual maintenance and upgrading costs	1.4

*Table 7: Operational costs of the regional smart integrated ticketing system*

Smartcards costs are not estimated since tickets will be overcharged and the additional costs will be recovered progressively by users when recharging.

### Priority 3: infomobility/traveller information systems

One of the priority of regional policies is the implementation of a traveller information system supporting users in various travel decisions and choices. In particular, each user accessing public transport systems should be able to:

- plan her/his trips by choosing the best travel option with regards to her/his needs;
- get real-time information about waiting times when accessing the service;
- get information about the trip and possible emergency events (delays, incidents, etc.) - including available transfer options - while travelling.

Such goals should be attained both through governance/organization and technological measures. It should be underlined that on top of providing users with suitable information, traveller information systems provide also public administration with relevant data and information about transport planning.

In the field of infomobility, a number of regional policies and priorities are identified, namely:

- organizational/management measures: to be developed and implemented by public transport operators;
- measures regarding vehicles and infrastructures: to be developed and implemented through the involvement of various actors.



More specifically, measures consist of:

- improving traveller information systems at major public road transport stops by:
  - updating and enhancing general information, including schedules and graphic schemes of routes in each stop;
  - installing variable message equipment along the route;
- improving traveller information systems on-board vehicle by:
  - installing audio and visual devices on-board vehicles;
  - deploying new vehicles (including trains) fitted with information systems about trip features and possible transfer options;
  - providing users with general information about ticketing options, costs, green phone call, claiming procedures, etc.;
- improving traveller information systems at CIMRs, railway stations and stops by:
  - upgrading existing audio and visual equipment;
  - providing users with better information about stops, schedules and various trip features;
- developing dynamic information systems of timetables at major stops through:
  - text messaging systems;
  - web-based real-time information;
- developing traveller information system supporting overall trip planning by:
  - designing and implementing search systems supporting users with useful information to plan their trips in a multimodal manner.

Among such measures, the following are considered of particularly high priority at regional level:

- actions improving traveller information systems at major public transport network access points;
- actions implementing the dynamic information system of timetables and overall trip planning.

The former kind of actions will be developed within the on-going service contracts time horizon between the regional administration and public transport operators, while for the latter an overall cost (including designing and planning, procurement and deployment activities) in the order of 250.000-300.000 euros plus operating and maintenance annual costs is expected.

## 4.4. Priority list in the field of regional governance

### Priority 1: governance schemes to carry out new CIMRs

The foreseen additional CIMRs will be carried out through a specific governance scheme. In case both rail and road operations are considered, many institutional bodies turn out to get involved. A strategic agreement will first be concluded between the Region and the rail infrastructure manager (RFI) to regulate the sale and availability of necessary areas. Following the agreement, a feasibility study will be conducted. Then, specific agreements will be signed between the infrastructure manager and the Region to deal with cost-sharing schemes about infrastructure development and management.



According to the deadline of 2020 to complete the foreseen investments, Provinces will have to elaborate three-years programs of public investments. Foreseen investments will depend upon funds' availability by the Region. Provinces have to annually inform the Region about the monitoring of expected investments' data and resources.

### **Priority 2: governance scheme to carry out additional road public transport services**

Foreseen additional road public transport services will have to be carried out according to the following governance scheme; it is a sort of virtuous cycle which includes:

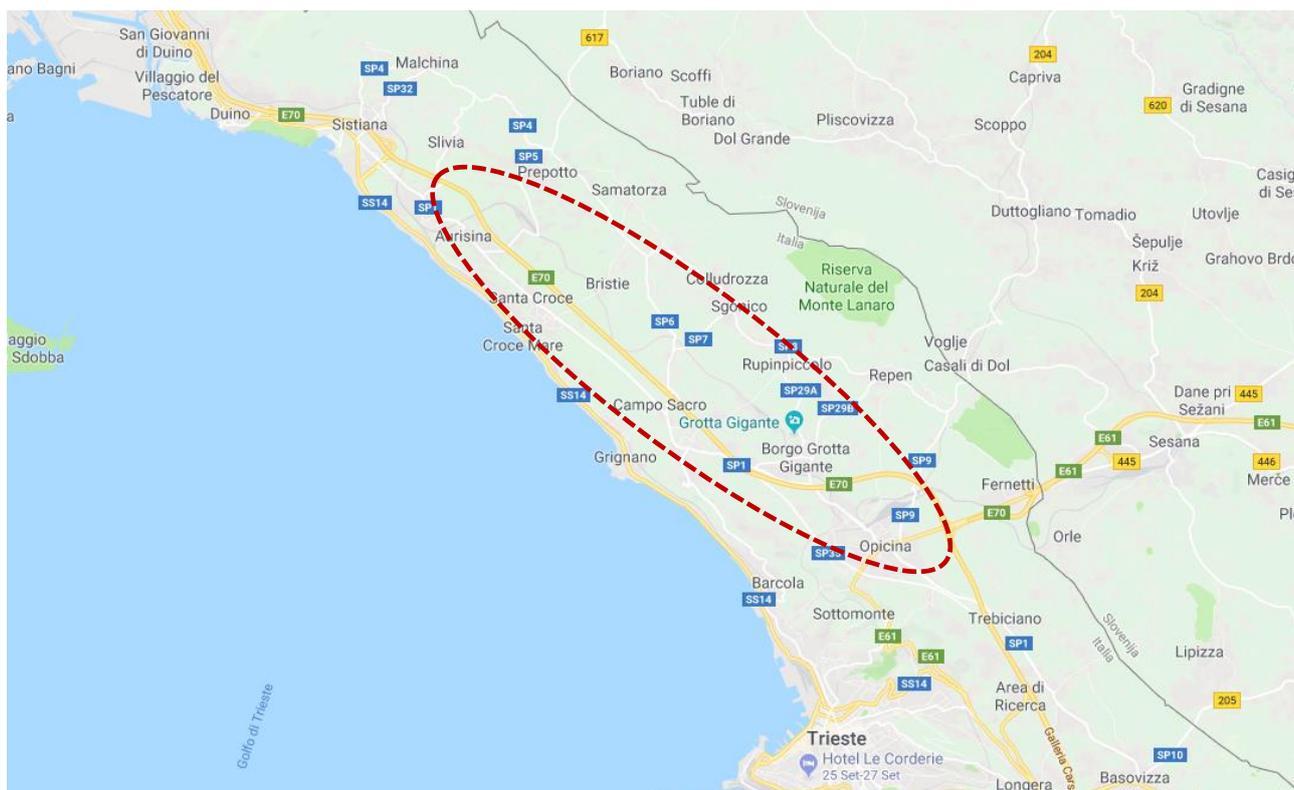
- **Planning:** regional plans provide for the strategic framework of transport supply by defining first-level and secondary services in peripheral areas. Some degree of flexibility is envisaged at this stage;
- **Tendering:** additional services may be subject to open tendering procedures, including services' main features; if these services are in some extent included into the offer of transit company, any additional tender is required;
- **Assignment:** following tendering procedures services are assigned to operators. Possible revisions of assigned services can be considered as well as the allocation of flexible/on-demand services;
- **Operations:** services are optimized at operational level.
- **Monitoring:** definition of suitable KPI to be monitored during service operation and data collection. Possible revisions - also, in the form of flexible business models - can be considered according to monitoring rules.
- **Feed-back to planning stage to improve the services according to the results of the monitoring activities:** these improvement may refer to covered areas, operations (for example service times, type of flexible service, connection to regular services, ...), number and size of vehicles, governance, fares.

### **Priority 3: governance schemes of smart integrated ticketing systems at regional level**

Various practices and policies in the field of smart integrated ticketing systems call for a significant role of the regional public administration to drive and coordinate various involved actors and stakeholders. The identified governance model at regional level is the one based on "negotiation" rules, which means that public transport operators are allowed to conclude agreements about revenues collection and management issues - something which is coherent with the applied net cost contract model - based on guidelines about clearing rules (revenue sharing criteria and weights) set by the Region.

## **4.5. Pilot Action**

Besides major investments needed at regional level on multimodal nodes, a clear-cut macro-strategy emerges aiming at increasing overall public transport demand by means of innovative services. Random/non-regular transport demand is to be targeted - both along major routes and in peripheral and rural areas - by designing, developing and implementing flexible / on-demand services supported by smart tools and systems. Such kind of services get a formal recognition in relevant regional policies and plans currently enforced. Remarkably, it is foreseen that the development of innovative/smart services targeting non-regular transport users should be left to ad-hoc projects, which in turn should be first developed through pilot actions. EU projects to deal with that are specifically recommended.



*Figure 11: Pilot Project's focus area*

As such, the pilot project carried out in the scope of Peripheral Access project strictly follows the above mentioned regional strategies, guidelines and priorities. It focuses on a specific sub-regional cross-border area with the aim of developing and implementing innovative and smart on-demand services, including ticketing issues. Importantly, provided that the pilot would produce significant benefits for the population in peripheral areas, the business model will be adopted formally by regional policies and spread to other regional areas.

As stated before, the pilot project is really important (rank 1 among the actions towards smart on-demand services) both to present these kinds of services to the population and to gain experience in order to extend these services at regional and cross-border level. It has been designed to cover a peripheral area, which is not well connected at the moment to the city through traditional transit services to get new passengers. The involvement of the transit company is crucial to test also all operational issues regarding for example the ITS solutions, fleet management and to let the company increase its experience in these kinds of flexible services.

A specific attention will be posed on intermodal appointments as in the pilot area there are different nodes where the innovative on demand service could call to pick up passengers commuting from one mode of transport to another. A train station, a tramway station and also different bike paths characterize the pilot area. The operational model of the service has still to be developed but following the regional policies it should be a free route connecting a predefined set of network nodes, some of them will be intermodal nodes.

The passengers will use smart IT tools that will allow innovative on-line services, as on-line booking. Through the app the user could book the service while it is operating, provided the requests are received by a predefined period before the beginning of the service schedule.

Under the cross-border prospective, the area covered by the pilot is characterized by border proximity. This will be a first opportunity to test cross border transport solutions where passengers originated by Slovenia could also use the innovative on-demand service in the predefined nodes on the Italian territory. In



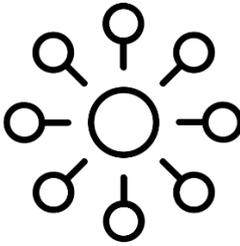
Peripheral Access, Trieste Trasporti and VIU will also check the current laws in order to allow, in the future, the activation of a cross-border as the current laws do not yet allow cross-border connections with intermediate bus stops. With this aim, an intense communication will be targeted to Slovenian citizens through the involvement of the Municipalities as stakeholders of the pilot action. The discussion should lead to a working hypothesis with the aim of intervening on the regulations in force to guarantee suitable cross-border connections by bus, especially for cross-border workers.

Specific vehicles, rented for this service because Trieste Trasporti doesn't own buses with less than 25 seats, will run the pilot. The operational model studied will suggest the proper dimension of the vehicles that should be employed.

The regional transport operators in other peripheral areas will adopt the experience acquired through the pilot and the smart technological solutions tested will be the first adopted also in other territorial contexts. The pilot action will be also the first occasion to test a new management model of transport service, based on the peculiarities of on demand transport. Through an intense cross fertilization in the Region the solution tested will be presented for the adoption for other pilot actions in other regional peripheral areas.



## 5. Action Plan of of Ljubljana Urban Region

MULTIMODALITY	SMART MOBILITY	REGIONAL GOVERNANCE
 <ul style="list-style-type: none"> <li>■ Priority 1: Upgrading public transport for multimodality implementation</li> <li>■ Priority 2: Network of bicycle connections for a well-connected public transport</li> <li>■ Priority 3: Establishing park and ride intermodal points and for carpooling</li> <li>■ Priority 4: Establishing DRT as an complementary offer to existing public transport in the rural areas</li> </ul>	 <ul style="list-style-type: none"> <li>■ Priority 1: Complete implementation of integrated ticketing system for public transport and fostering intelligent information solutions</li> <li>■ Priority 2: Modernisation of the public transport vehicles</li> <li>■ Priority 3: Introducing of the intelligent technology and communication system of DRT</li> </ul>	 <ul style="list-style-type: none"> <li>■ Priority 1: Coordinated and active governance at different levels (vertical and horizontal)</li> <li>■ Priority 2: Education, awareness and public participation</li> <li>■ Priority 3: Integrated traffic planning, coordinated between different areas (traffic, spatial, economic, etc.).</li> <li>■ Priority 4: Implementation of a common DRT in LUR</li> </ul>



## 5.1. Introduction

Action plan for Ljubljana urban region covers multimodality, ICT and smart governance issues with a focus on demand responsive transport (DRT). It includes the most important measures for sustainable mobility improvements in the fields of multimodality, ICT and smart governance in the region. One of the measures in all three fields deals with the DRT, which is also a key topic of the pilot project.

Sources for comprising the Action Plan:

- stakeholders conference on the subject of DRT in Ljubljana urban region (made within the Peripheral Access project),
- Regional analysis, prepared by LUZ, d.d. (made within the Peripheral Access project),
- various stakeholders meetings on the subject of DRT (organised within the Peripheral Access project),
- the process of Sustainable urban mobility plan (SUMP) for the Ljubljana urban region (LUR).

The mobility in the urban region of Ljubljana is a comprehensively studied topic of the SUMP, developed for the Ljubljana Urban region in November of 2018. It deals with all subjects of sustainable mobility on a regional level (walking, bicycling, public transport, traffic, freight and logistics as well as comprehensive planning). All 26 municipalities of the LUR were involved in the development of the LUR SUMP.

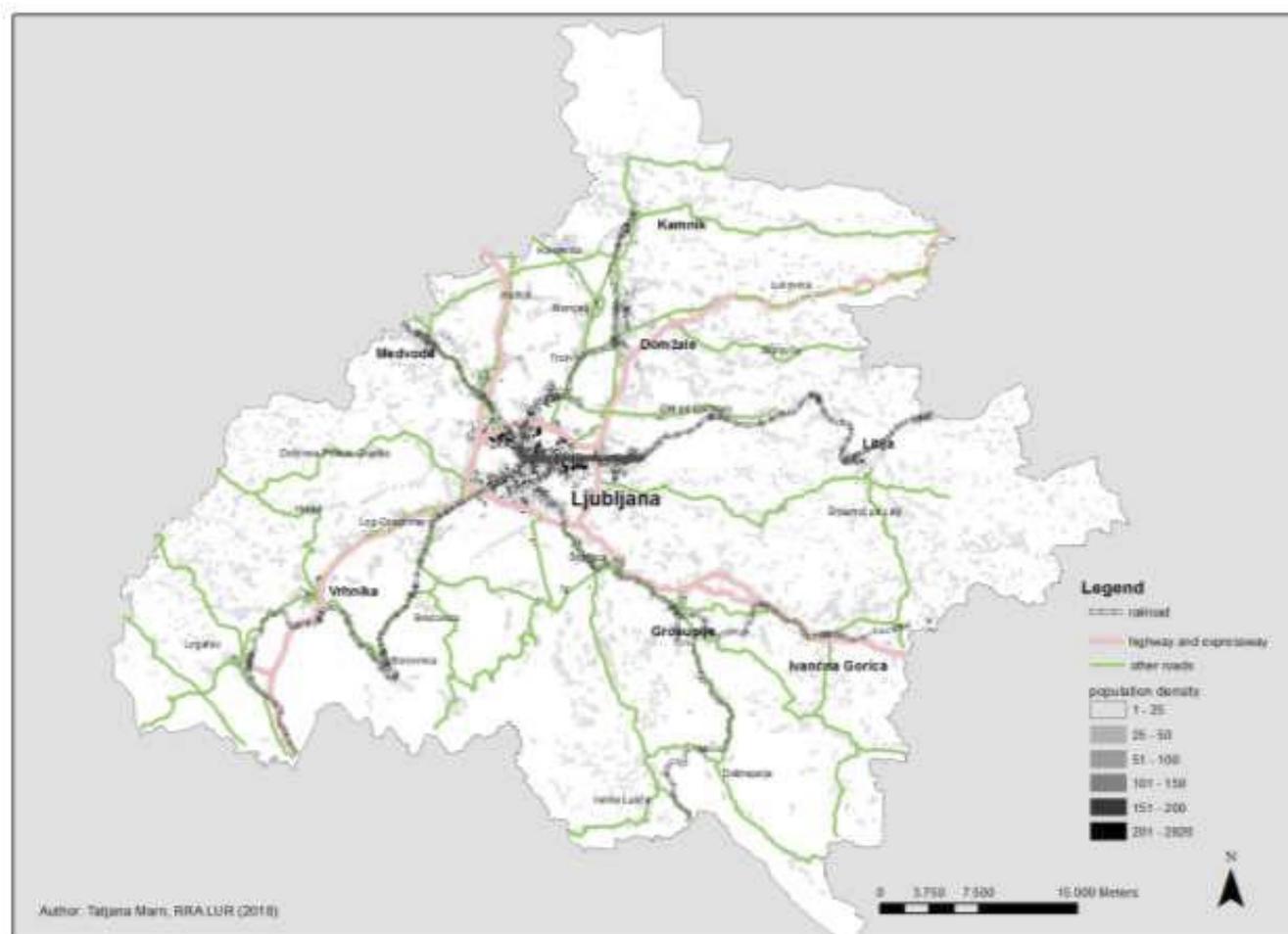


Figure 12: Transport infrastructure in LUR - roads and rail, 2018



## 5.2. Priority list in the field of multimodal service

Improving public transport is considered as the biggest potential in the sustainable mobility development in the LUR. Public transport - buses and trains - connect the more densely populated urban centres, while the accessibility of rural areas is less favorable. The share of daily users of public transport in the LUR is about 8 %. The interregional and intercity public transport connections are considered by the users as being too slow, their frequency is unsatisfactory, timing is unpredictable and the service is too expensive in comparison to the cost of personal transport.

The Ljubljana bus station does not provide an efficient flow of buses and trains and is in a desperate need of a thorough reconstruction and renovation. Bicycle travel is considered as a big potential for daily migrations on a regional level, particularly in consideration of the recent development and popularity of electric bikes, used for fast and long distance rides.

The system of public transport stops is being successfully upgraded with a park and ride system. Nevertheless only a quarter of the planned park and ride areas has been built until today. Lately, the carpooling is gaining in popularity but there is a lack of suitable parking spaces to interchange.

The municipalities show a great interest for the DRT, especially in the areas which are poorly connected to public transport. Nevertheless, most of the municipalities are still in the phase of analysis and exploration of the possibilities of implementing the DRT. For now, there is still no established system to make the DRT available, although there is a great need for such a form of public transport according to the findings of the LUR SUMP project.

### **Priority 1: Upgrading public transport for multimodality implementation**

The key step toward a comprehensive system of passenger transport in the region are complete renovations of the Ljubljana central railway and bus station, renewals of other railway stations, railways and newly built railways for public transport (such as Vrhnika, Ribnica, the Ljubljana Airport). This will raise the quality of railway and bus transport and shorten the existing public transport travel times.

The public transport upgrade should include prolonging of some of existing public transport lines as well as establishing new tangential integrated lines with a connection to the park and ride areas in the whole Ljubljana urban region. It's important to keep on building the park and ride locations at the entrance areas of the existing urban centres.

It's also essential to establish fast lines for an efficient connection between the regional and the municipality centres. In the field of bus transport, the City of Ljubljana gradually started to implement separate public transport lanes, which shortened the time travel of buses inside the city centre. The process needs to be continued in the wider region, where the short time travel turned out to be one of the more important features of the public transport.

One of the suggested improvements is also a 15, 30 and 60 minute clock-face scheduling, depending on the line direction and demand. A better frequency of public transport in the city of Ljubljana needs to be established by complementing the existing frequencies of bus and train rides.

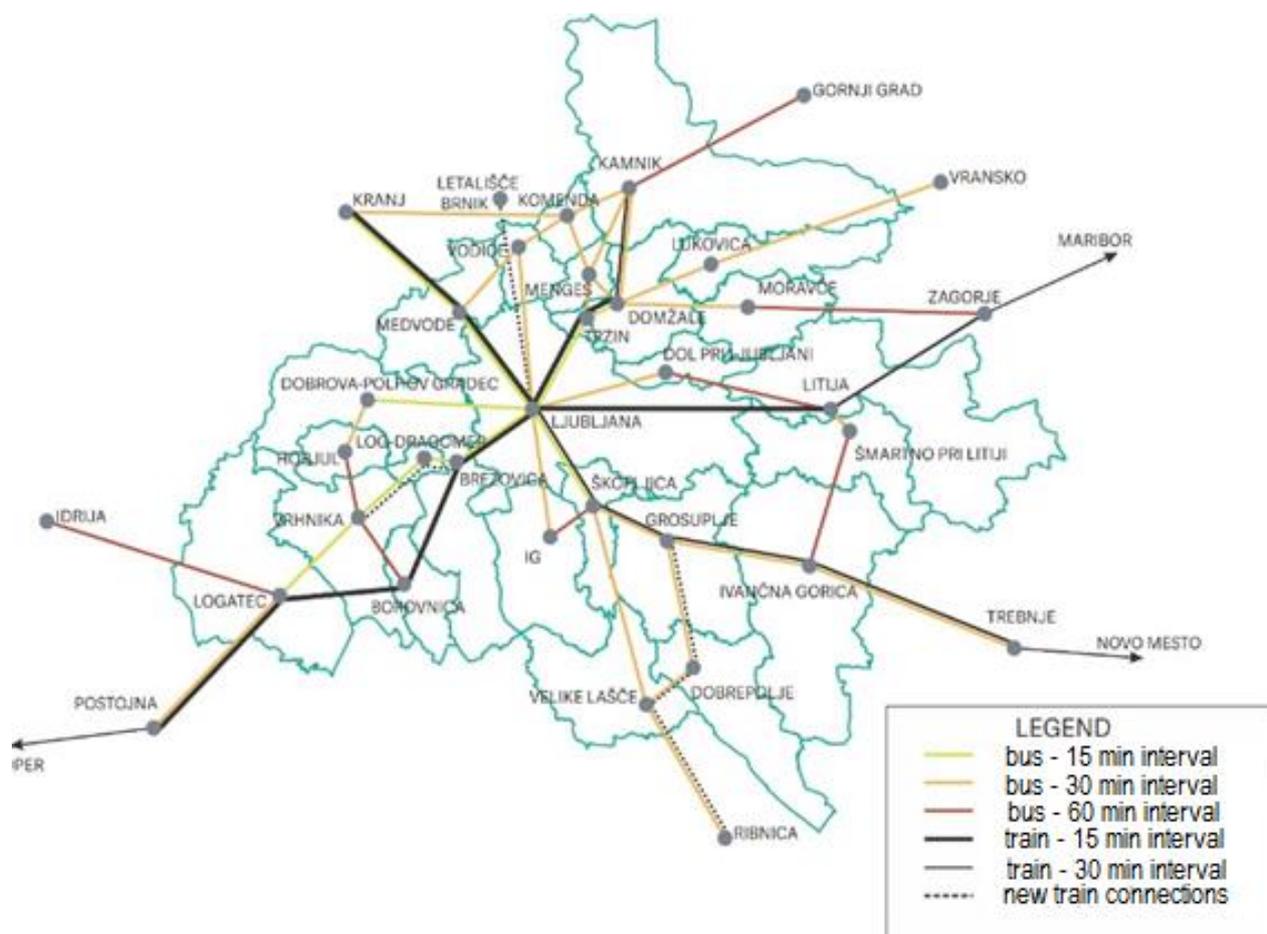
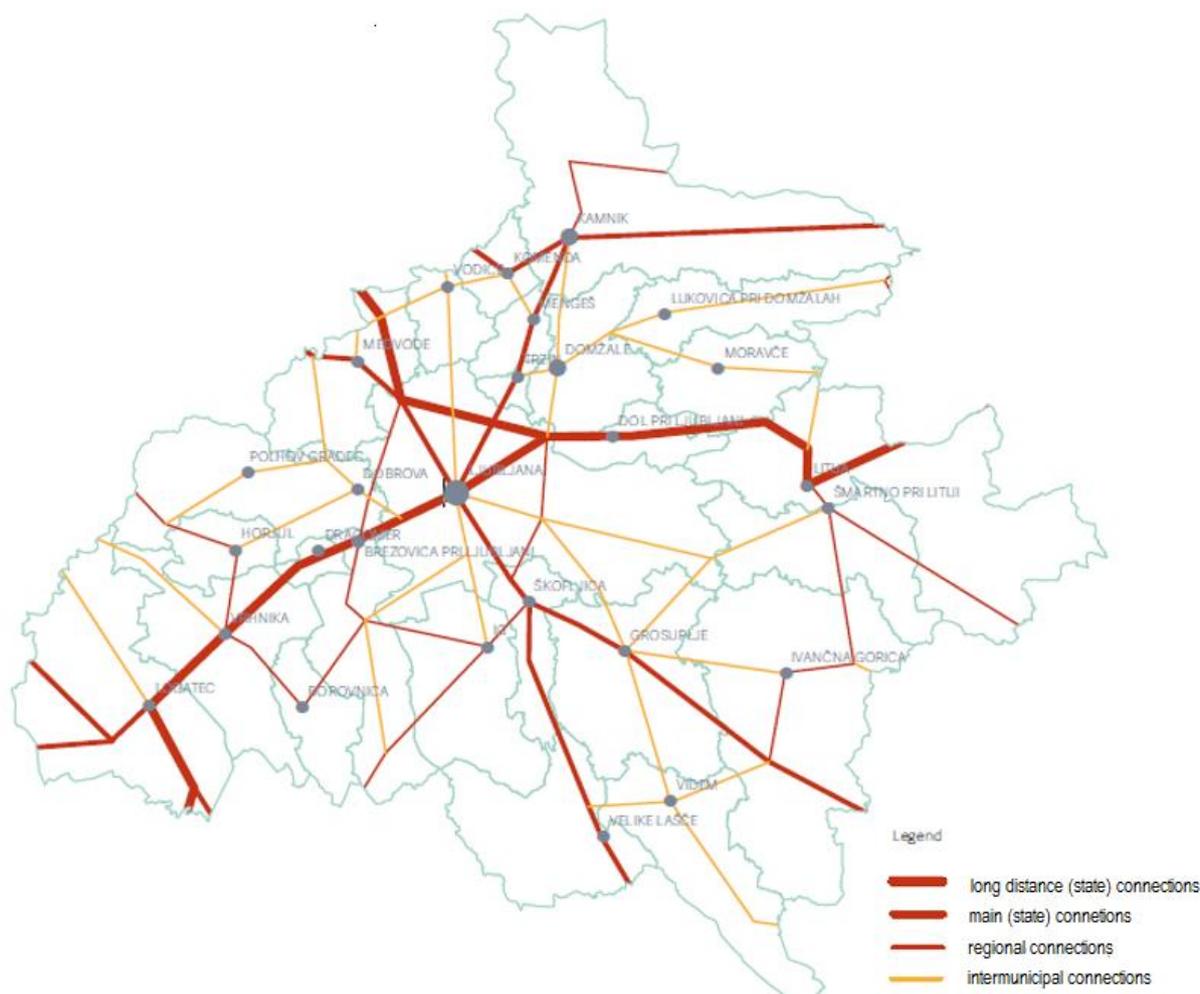


Figure 13: Proposal of public transport frequencies in the peak time. Source: Ljubljana traffic institute and Research Centre of the Slovenian Academy of Sciences and Arts, Anton Melik Geographical Institute, October 2018

**Priority 2: Network of bicycle connections for a well-connected public transport**

A network of new bicycle connections that will connect regional urban centres will be established in the Ljubljana urban region. Foremost the network will serve the daily bicycle rides, but also the tourists and recreational cyclists. List of priority bicycle connections will be made by regional body for regional bicycle connections that is planned to be established in the near future. A well connected network of bicycle connections with the public transport can also encourage a more sustainable freight traffic, for instance with bicycles in the densely populated urban areas. It's essential to establish safe and comfortable bicycle connections to intermodal points that will encourage users toward more sustainable modes of transport.

All the public transport stops in the centres of social infrastructure network should be properly equipped for cyclists (safe bike boxes, electric bicycles chargers, rent-a-bike etc.) and therefore encourage the intermodality.



*Figure 14: Network of bicycle connections for a well-connected public transport*

**Priority 3: Establishing park and ride intermodal points and for carpooling**

Further development of the park and ride locations in the region with easy access to public transport is crucial to achieve better conditions for combining different modes of sustainable transport.

Well planned parking policy can enable and encourage the development of public transport or forms of carpooling and car sharing. The LUR municipalities can establish a balance between offer and demand with optimal sustainable mobility conditions by smart parking policy.

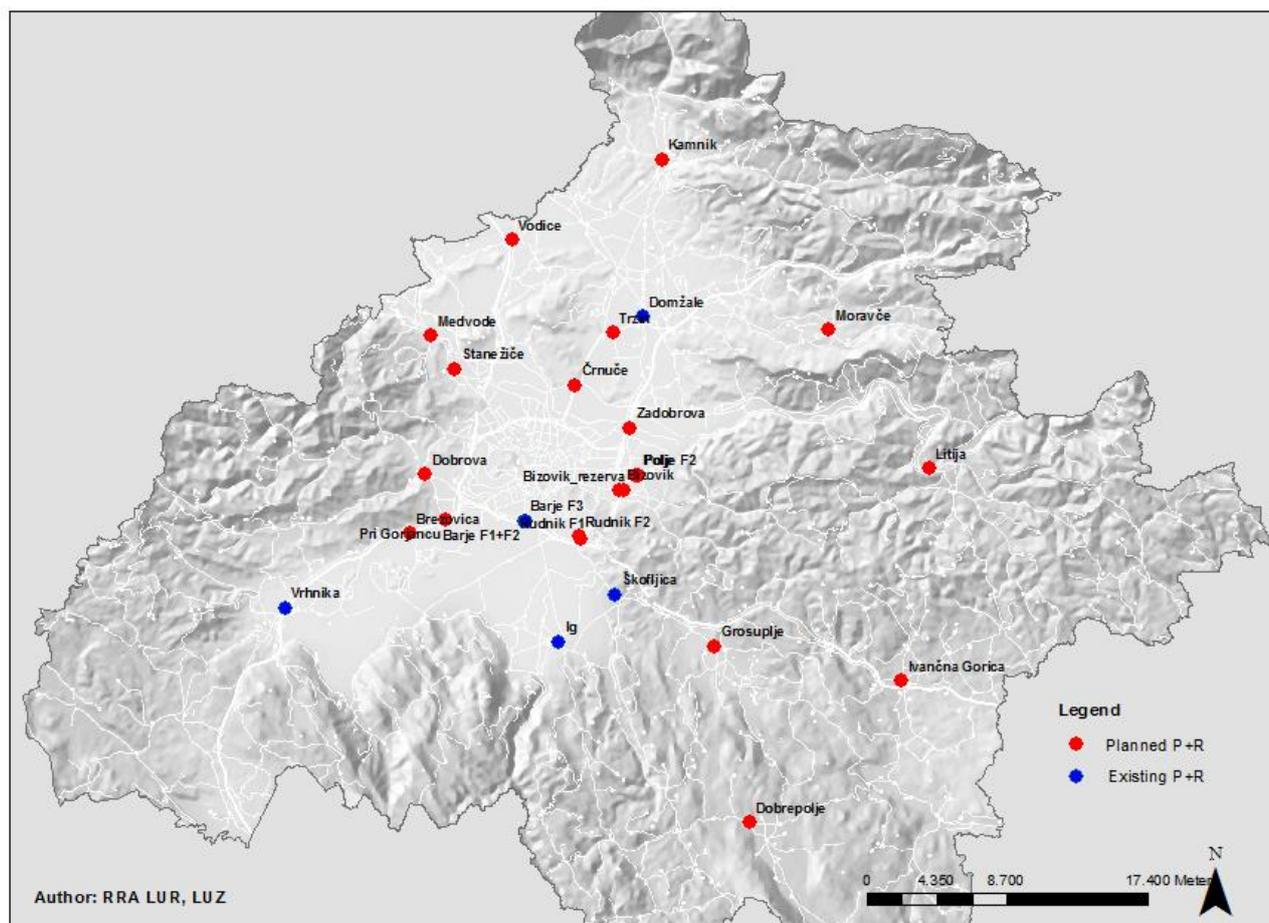


Figure 15: Park and ride locations outside the City of Ljubljana - existing and planned (RRA LUR, LUZ, 2018)

**Priority 4: Establishing DRT as an complementary offer to existing public transport in the rural areas**

The results of the survey, carried out within the regional SUMP (2018) preparation, has shown that more than 70% of the respondents supports the introducing the DRT in the more remote areas.

The areas that are poorly connected to public transport present the potential for establishing a DRT. Roughly these are all the hilly areas with dispersed settlement in the hinterland of urban areas, where there is either no public transport or a very low frequency of PT. It's recommended to establish the DRT on the territory of the region as a whole, but it's estimated that the DRT system will be the most economically efficient in the areas near the urban centres or near the corridors of existing public transport with a good (high) public transport frequency.

The choice for the most suitable DRT model on a regional level in a long term should be based on the premise that it should suit all social groups, bundling the passengers and act as an addition to the existing public transport.

At the consultation on demand responsive transport in the Ljubljana Urban Region, organized within the Peripheral Access project on November 23, 2018, various models of transport on demand were compared:

- a voluntary model, with a emphasis on the social component: it usually involves voluntary drivers, elderly people as a target group, full flexibility with regard to timing and the location of the collecting points, and free of charge services,
- a model that is complementing the public transport: the service is available for all inhabitants, it runs where there is no public transport; the final destinations are public transport stations, larger centres and tourist points. It's usually payable.



- a model where the service is provided on a fixed line and schedule, but it runs only when someone orders the service. It is very similar to the classical public transport.

These models were designed according to the degree of flexibility of the service and whether the social component or the strengthening of the role of public transport component is more emphasized. The best performance (considering some of the pilots) in terms of using the service are shown in those models where the time and place is completely flexible. Where time and lines are fixed, success depends on several factors. At the beginning of the consultation the municipality representatives were thinking more about voluntary model implemented at a smaller (municipality) level. Towards the end of the event the majority of participants have recognised as a long-term solution in the second model complementing the public transport services, implemented at regional level, with a limited flexibility regarding the time and the lines but available to all social groups.

### 5.3. Priority list in the field of smart mobility

A smart mobility enables an effective mobility and flexible ways of travel with different modes. In the broader sense, it's a new way of thinking about mobility and travelling that is economic, fast and sustainable. It's also a new tool based on the digital technology, applications and systems that serve to connect different modes of travel for a more sustainable mobility.

In Slovenia, the implementation of an integrated ticketing system for students and elderly in 2016 was part of the integrated public transport project that planned a single ticket for different public transport providers (bus and train travel) with harmonised timetables and common management centre for the whole country. An integrated ticketing system for public transport is still unavailable for most public transport users in Slovenia.

The City of Ljubljana has implemented a unified urban card called Urbana for all users and for all the services it offers. It's used on the prolonged lines of public transport in some other municipalities but it does not connect the intercity bus transport and the railway transport, which are governed by the state and should be uniformed by the technologically similar uniform integrated ticket (IJPP). BicikeLj, a Ljubljana bicycle sharing network system with 58 locations with 580 bicycles is constantly growing and updating. By using the website and a mobile application, the users can identify the number of available bicycles in any given location. Electric car sharing system Avant2go in Ljubljana has shown increasing popularity and is extending the area of services.

Several applications showing public transport timetables in the region are available. It's possible to buy a public transport ticket for Ljubljana by different means, but it's still not possible to buy a train ticket online only at the railway stations, on the train or at the authorised travel agencies.

The DRT is currently implemented on certain existing lines as an economic measure for public transport in areas with little user capacity.

#### **Priority 1: Complete implementation of integrated ticketing system for public transport and fostering intelligent information solutions.**

The integrated ticket (IJPP) which is now available for the students has to be extended for general use. An online purchase of the tickets should be available. It's also important to introduce an uniform pricing for all passengers and areas.

Public transport data need to get more accessible in order to develop different route planning applications and enable mobility as a service in the Ljubljana urban region.

Modernisation and improvements of the public transport stations, the service and the provided information in Ljubljana and some other local centres proved to be encouraging and well accepted by the public. This



process needs to be continued in other public transport stations in the region, especially on the railway stations and stops.

### **Priority 2: Modernisation of the public transport vehicles**

Just as some of the providers of public transport have already engaged in modernizing the vehicles to air conditioned, environmentally acceptable and suitable for passengers of all abilities, all other providers in the public transport system should follow this practice as well as increasing their number. This is especially needed in the rail traffic, where more rolling stock is needed as well as the introducing the alternative fuels or electrification, a modern design with features for the passengers of all abilities, bicycles transport, the Wi-Fi and air conditioning.

### **Priority 3: Introducing of the intelligent technology and communication system of DRT**

The technological part of implementation of the DRT includes:

- A traffic model which includes all the information on potential users, on the existing public transport system and the traffic information in the area,
- A software needed for optimisation of service (bundling the travel requests),
- Technological solution for users (call centre, application, rout planner, collecting points, time and duration of the transport),
- Technological solutions for the service provider,
- Technological solutions for the manager.

It's recommended to bundle the travel request in order to make the offer more sustainable, with less driven kilometres than in the case of individual rides. It's also important to optimize the service in terms of the choice of vehicles, determination of assembly places, final destinations, timing etc.

The application should serve as a route planner that would allow the user to harmonize the DRT with the existing public transport, when it's available. The model would tell if the user should use DRT for his whole ride, or combine it with the public transport.

The technology part should also include the price calculation for each individual service.



## 5.4. Priority list in the field of regional governance

In Slovenia, as well as in the LUR, the management of different systems of mobility is in hands of various stakeholders (ministries, concessionaires, municipalities). The regional SUMP clearly showed that there is a lack of cooperation between stakeholders. The need for regional coordination body for sustainable mobility was pointed out multiple times in the process of the regional SUMP preparation.

### **Priority 1: Coordinated and active governance at different levels (vertical and horizontal)**

The effectiveness of governance needs to be enhanced through more coordinated action at different levels: vertically (from the municipal to the state level) and horizontally at all levels (cooperation between municipalities, between regions, between ministries). Coordinated action means to establish permanent dialogue between stakeholders on common projects and common issues. Coordinated and targeted mobility management could significantly reduce the costs of administrative work, shorten procedures, facilitate mutual communication, and make better use of existing professional staff.

Possible measures to achieve the goal of a more coordinated and targeted management:

- Human resources: providing appropriate staff for coordination at the national, regional and municipal levels,
- Organizational: establishing regular communication, information and initiatives exchange and coordination of joint projects, continuous communication between municipalities and the state through regional body and
- Implementation: harmonization of regulations, adjustment of the method of granting concessions.

The process of preparation of the regional SUMP showed that majority of stakeholders (municipalities, sectors, decision makers) strongly support the measure of establishing a joint coordination board at the regional level for mobility projects. The Joint Coordinator would provide an adequate professional support and be responsible for coordinated preparation of inter-municipal projects and more efficient communication between the state and the municipalities. Municipalities see good opportunities for rationalizing resources and better organization in the establishment of the coordination board. The Ministry of Infrastructure is already implementing activities to establish regional coordinators to coordinate promotional activities between municipalities at events related to the European Mobility Week (ETM). The regional SUMP events also showed willingness of the municipalities to co-finance the measure with joint funds if it proved to be effective at facilitating of the municipalities' work with various common, inter-municipal content. At the implementation level, it is necessary, in the long term, to provide regular sources of funding and harmonize regulations so that municipalities can implement measures related to sustainable mobility in the region more effectively.

### **Priority 2: Education, awareness and public participation**

Awareness campaigns and the promotion of sustainable mobility, which may lead to actual changes in travel habits of the economically active population, should be extended beyond the existing frameworks of ETM and implemented in smaller units, such as enterprises, public institutions, neighbourhoods or large, completed housing units.

By creating integrated transport strategies first on the municipal level and then at the regional level, more incentives for continuous monitoring of travel behaviour and needs has already been set up. By monitoring the situation, the findings should continue to be used in the planning of further measures at the regional level.

Public participation is crucial in the course of each project or process that concerns mobility changes.



**Priority 3: Integrated traffic planning, coordinated between different areas (traffic, spatial, economic, etc.)**

For an effective regional plan, the communications between vertical levels as well as the integrating of spatial and transport planning together with housing and employment policies is essential. "In order to establish a balanced polycentric system of settlements around the metropolis, additional elements of social infrastructure should be provided in individual settlements in accordance with the settlement function in the polycentric urban system." (RRP, 2014-2020: p. 37).

Opportunities for improving the connection between spatial and transport planning are most evident in the process of preparing the Regional Spatial Plan (RPP), which will be adopted by 2023. It shows that the interests of the transport development should be harmonized with all other development interests at the region level. Strategic mobility planning at the regional level should be harmonized with measures at the municipal level, for example the process of making the spatial plans, the expansion of settlement areas, providing social infrastructure, employment and institutional activities.

**Priority 4: Implementation of a common DRT in LUR**

A consultation conference on the topic of DRT in the LUR showed that about a third of the municipalities in the region have a strong interest in such services. For the moment, the representatives of the municipalities are not yet thinking about a common model that would serve the whole region, but first the implementation of certain pilot projects with different characteristics.

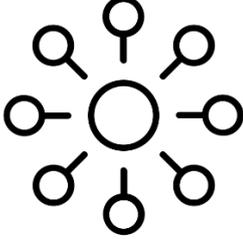
In the long run, the municipalities see a potential of a regional DRT as a common service for all users that involve different providers, and an addition to public transport services inside the region. The municipalities are also interested in combining school transport with public transport and the DRT. In remote areas, the municipalities should strive to see cross the municipal borders.

In this process, the Regional development agency of the LUR was identified as a possible co-ordinator for unifying the existing models and mediating the dialogue with the state, especially with the Ministry of Infrastructure. An important role will be played by the public transport manager (providing an informational platform, coordination ...). (According to the new regulation, this role should be taken over by the DRI). It will be necessary to define the roles of different stakeholders: municipal and state (DRT and school transports), which is yet not clear at the moment. Certain changes to legislation would be required as certain laws oppose to each other: for example, the combination of public transport and taxi service is not permitted under the current legislation, transport on demand is possible only with vehicles up to 8 seats etc.

On the basis of several criteria, within the analysis and preparation of the DRT, the municipality of Škofljica came up as a possible case for the pilot project implementation Action Plan. The pilot project service will be carried out with E-urban vehicles provided by the LPP (Ljubljana Public Transport service). It is estimated that one of the most costly elements of the pilot project implementation will be the cost of the staff (the drivers) and the technology.



## 6. Action Plan of the Metropolitan Area of Styria

MULTIMODALITY	SMART MOBILITY	REGIONAL GOVERNANCE
 <ul style="list-style-type: none"> <li>■ Priority 1: Expansion of multimodal mobility nodes (REGIOtim)</li> <li>■ Priority 2: Strategy development and implementation “Park and Ride”</li> <li>■ Priority 3: Expansion of bus corridors (RegioBus)</li> <li>■ Priority 4: Promote pedestrian and cycle access to public transport</li> </ul>	 <ul style="list-style-type: none"> <li>■ Priority 1: „Mobility as a Service“ - The development of a smart regional system</li> <li>■ Priority 2: Expansion of the demand responsive transport network</li> <li>■ Priority 3: Expansion of public transport real-time information</li> </ul>	 <ul style="list-style-type: none"> <li>■ Priority 1: Development of a community toolkit “Mobility”</li> <li>■ Priority 2: Survey about the mobility behavior of children</li> <li>■ Priority 3: Continuation of a mobility committee in the Metropolitan Area of Styria</li> </ul>



## 6.1. Introduction

The regional mobility plan for the Metropolitan Area of Styria was developed in 2016 and provides a new holistic approach to the field of mobility with several integrated recommendations. The subjects within it are the following (1) space and mobility planning, (2) pedestrian and bicycle traffic, (3) public transport, (4) motorized private transport, (5) multimodal mobility, (6) awareness raising and (7) freight transport.

Along the project priorities of Peripheral Access (1) "Multimodal Mobility", (2) "Smart Mobility" and (3) "Regional Governance", the present Action plan for the Metropolitan Area of Styria serves an in-depth assessment of the region, based on the Regional Analysis done before, as well as other existing strategies and plans.

Together with regional stakeholders, it has already been able to set initial priorities, which will be specified in the framework of this action plan. One result of the regional analysis is that there is considerable development potential in the areas of "Multimodal Mobility" and "Smart Mobility". Therefore, the focus of this Action Plan will be on these two topics.

To be able to meet the challenges of our region it is important to interconnect the municipalities of our region, in consideration of the local structure and individual needs.

The following, altogether 10 priority fields were setup in constant exchange with regional stakeholders of the region. Some of the project ideas have already been launched (especially thanks to the new Regional Development Law of Styria (StLREG) and the integrated regional fund), other projects are still at the beginning of the project development phase. With the help of this Action Plan, the importance of those projects for the Metropolitan Area of Styria should be communicated to stakeholders, local communities and funding bodies.

## 6.2. Priority list in the field of multimodal service

### **Priority 1: Expansion of multimodal mobility nodes (REGIOtim)**

The mobility in the region is characterized by a strong link with Graz as the core city, which is easily accessible by private car and by public transport services like regional buses or trains (S-Bahn). A disadvantage however is the accessibility of the stops from peripheral areas by public transport services. The development, networking and attractiveness of intermodal mobility solutions away from the motorized individual traffic in a city-periphery cooperation is therefore a current priority.

The provision of this comprehensive range of mobility services should be concentrated on a so-called Multimodal Mobility Node (MMN). Part of an MMN are access to public transport, micro public transport, car sharing, secure bicycle infrastructure and components that increase the quality of stay. The aim is to facilitate access to car-free mobility and reduce the need to buy a private (second) car.

Currently, 12 multi-modal nodes are planned ("REGIOtim" projects) - a pilot of a multimodal node will be implemented as part of the investment in Peripheral Access. The main purpose of the evaluation is to find out if such an alternative offer is also accepted in the peripheral rural area. The overall aim is that the new hubs are linked to the existing urban system "tim" with the same system and appearance. The cost of planning, implementing and evaluating of a multi-modal node (excluding IT / software, royalties, brand usage rights and car sharing vehicle) are estimated at € 110,000 to € 250,000 €. Important stakeholders for the expansion of multimodal connection points (REGIOtim) are the Holding Graz - Kommunale Dienstleistungen GmbH (a company that bundles all community services from the City of Graz), the Province of Styria, transport companies/alliance, energy suppliers and the municipalities in the region. The first implementation is planned for 2019.

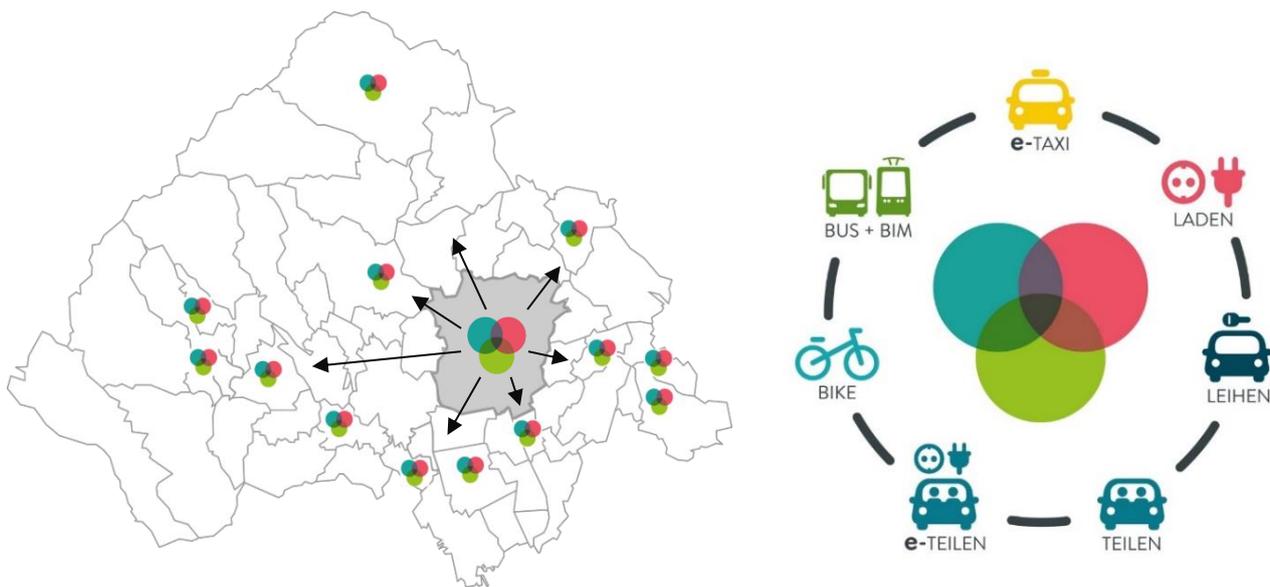


Figure 16: planned REGIOtim projects (left) and system tim (right). (c)RMSZR & (c)Holding Graz

**Priority 2: Strategy development and implementation “Park and Ride”**

The attractiveness of the city of Graz as regional working and living space leads to strong commuter links within the region. The proportion of individual traffic is very high despite the good public transport offer. This leads to overloading of inner-city and regionally important main roads.

The aim of this priority is to create a strategic overall plan for Park and Ride facilities in the Metropolitan Area of Styria. The goal is to reduce the individual vehicle traffic in the metropolitan areas and to increase the proportion of public transport users and to foster multimodal mobility. The strategy also aims to highlight bottlenecks for regional stakeholders and to recommend implementation measures.

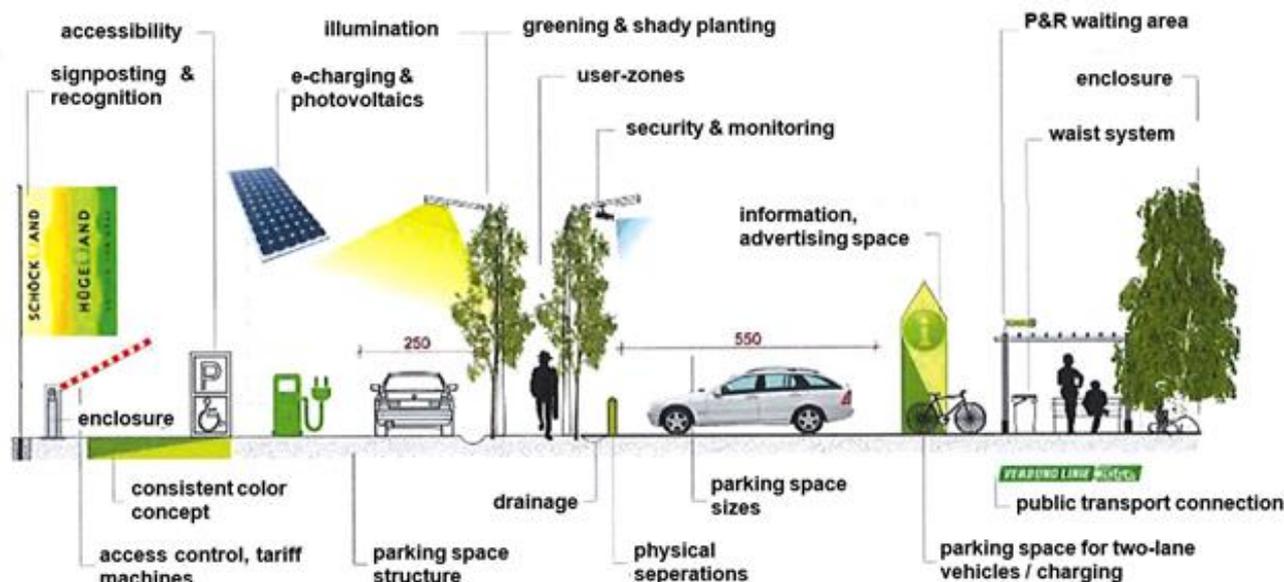


Figure 17: modular design planning of Park and Ride in the LEADER region Hügelland-Schöcklland ©.



Furthermore, this planning phase will be used to carry out module-based traffic and parking planning for three to five selected potential P&R locations in preparation for subsequent detailed design plans.

This approach has already proven itself on a smaller scale. For example, three municipalities in the LEADER region Hügelland-Schöcklland used a modular design planning of Park and Ride facilities to agree on common foundations for instance in the fields of pitch geometry, planning requirements or uniform waymarks and signage.

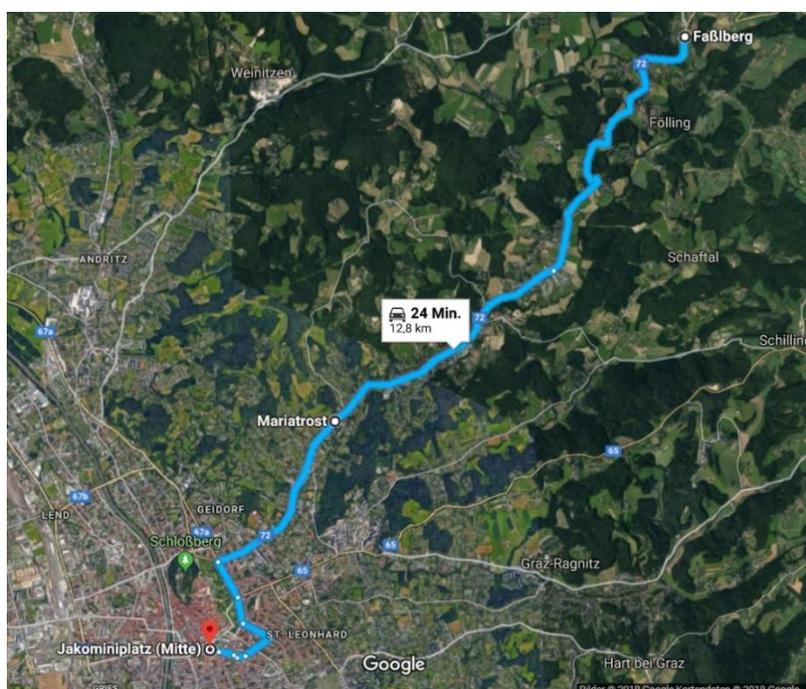
In a greater regional context, the project should also consider the Park and Drive potential and existing P&R spots in order to increase the occupancy rate and infrastructure.

Average costs for the strategy and module-based preliminary planning: € 40,000 regional Average costs for detailed technical planning: € 30,000 per P & R

Average cost of implementation: € 5,000 per parking space

### Priority 3: Expansion of bus corridors (RegioBus)

Beside the railway network “S-Bahn” along the main axes, the Regio-busses play a very important role for the rail-unreached-areas. Since July 2018, the province of Styria together with the alliance “Steirischer Verkehrsverbund” is launching improvement measures to ensure a better bus service in the whole region/province. As a result of EU-wide requirements, bus services have to be newly planned and tendered. This is done in so-called “bundle”. In the course of these plans, line management, timetables, operating hours, school start and end times, etc. are surveyed, discussed with all participating municipalities and the new timetables are adjusted considering these factors. Experiences show that a continuing enhancement of the offer and specific marketing measures can increase the customer frequency by 20 to 30 percent (cf. Land Steiermark, 2018).



**Figure 18: Rural-Urban connection „Faßberg-Graz” gets a 20min-tact from 2019. (c) Google maps**

In the course of the regional bus tender bundle “Weiz”, the bus offer (operation start July 2019) between Weiz and Graz was significantly expanded. The linchpin of the new bus concept is an interchange in the Faßberg area. Through this transfer node, a regularly bus change it is possible between Weiz, St. Radegund, Andritz, Eggersdorf, Weinitzen, Kumberg and Graz. To foster the attractiveness of this transfer node in Faßberg, it should be upgraded to a bigger interchange with multimodal components. Therefore, it is necessary to integrate micro-public transport systems, cycling, pedestrians, kiss and ride and electromobility. On weekdays between Faßberg and Graz a 20-minute interval is planned.

The project is being implemented in close

cooperation with the municipalities of Weinitzen, St. Radegund and Eggersdorf as well as the provincial department 16 and the Regional Management. The Regional Management also represents other mobility



projects such as the micro-public transport system GUSTmobil and the implementation of multimodal nodes (REGIOtim), so that the planning is well coordinated between all forms of mobility in the region.

Costs for the planning and construction of the interchange Faßberg: € 1 million; funding of the planning phase (€ 60,000) via regional fund (StLREG) start of the project is 01/2019.

#### **Priority 4: Promote pedestrian and cycle access to public transport**

80 percent of the population in the peripheral-rural districts of Graz-Umgebung and Voitsberg have access to public transport services within walking distance (500m). This is the result of a Regional Analysis from 2018, which was carried out as part of "Peripheral Access". However currently it is not known exactly how the quality of the main access paths is from the point of accessibility, barrier liberty, topography or security (cf. Verkehrsplus, 2018).

The aim of priority 4 is therefore the analysis, planning and preparation of recommendations for the consistent development of high-quality accessibility of public transport services such as train stops (S-Bahn stops) and bus stops, especially by bike and on foot.

The Province of Styria currently offers funding opportunities (up to 70 percent) for cycle traffic concepts and the implementation of bike trails because cycle paths require little space, therefore cycling is a good form of mobility compared to other modes of transport. Also, the Province of Styria is presently working on a pedestrian strategy, because active mobility like walking should be much more in the spotlight.

Important stakeholders for the regional survey about the accessibility of public transport services are the Province of Styria and the municipalities in the region.

Estimated costs: 50,000 €; Financing option: Regional fund 2020 (StLREG)

### **6.3. Priority list in the field of smart mobility**

#### **Priority 1: „Mobility as a Service“ - The development of a smart regional system**

Mobility as a Service (MaaS) is currently a much-discussed term in the mobility sector. The idea of MaaS is the promotion of public transport, micro-public transport, pedestrian and bicycle traffic as well as pooling and sharing services. The goal is to reduce the proportion of individual traffic in a region. In the context of MaaS mobility is seen as a service that is made as attractive and user-friendly as possible by the integration of digitization technologies. A MaaS-system makes it possible to consume mobility offers without owning a vehicle. But in a MaaS also other community services can be integrated, for example entrance tickets for public swimming pools, library cards, waste disposal services or parcel boxes.

Whether with a service card or an app, the priority in this field of action is the development of a regional smart system that combines the examples given above including routing and ticketing options according to the idea of MaaS. This planned "all-in-one" platform will be designed in a low-threshold way and with a high customer comfort, to give the inhabitants of the region an incentive to give up their own (second) car.

Currently the City of Graz is involved in the Interreg CE project SOLEZ. Part of the project is a study about future mobility trends and the opportunities that exist to develop Mobility as a Service for the city region Graz. First recommendations for action will be presented in spring 2019. Also, currently within the Horizon 2020 project Rural-Urban Outlooks: Unlocking Synergies (ROBUST) stakeholders will be identified which should be involved in the further development of a smart (city) regional MaaS platform. On this basis, in the regional working program 2019 funds (StLREG) for an exploratory study have already been budgeted.

Cost of an explorative study 2019: 50.000 €

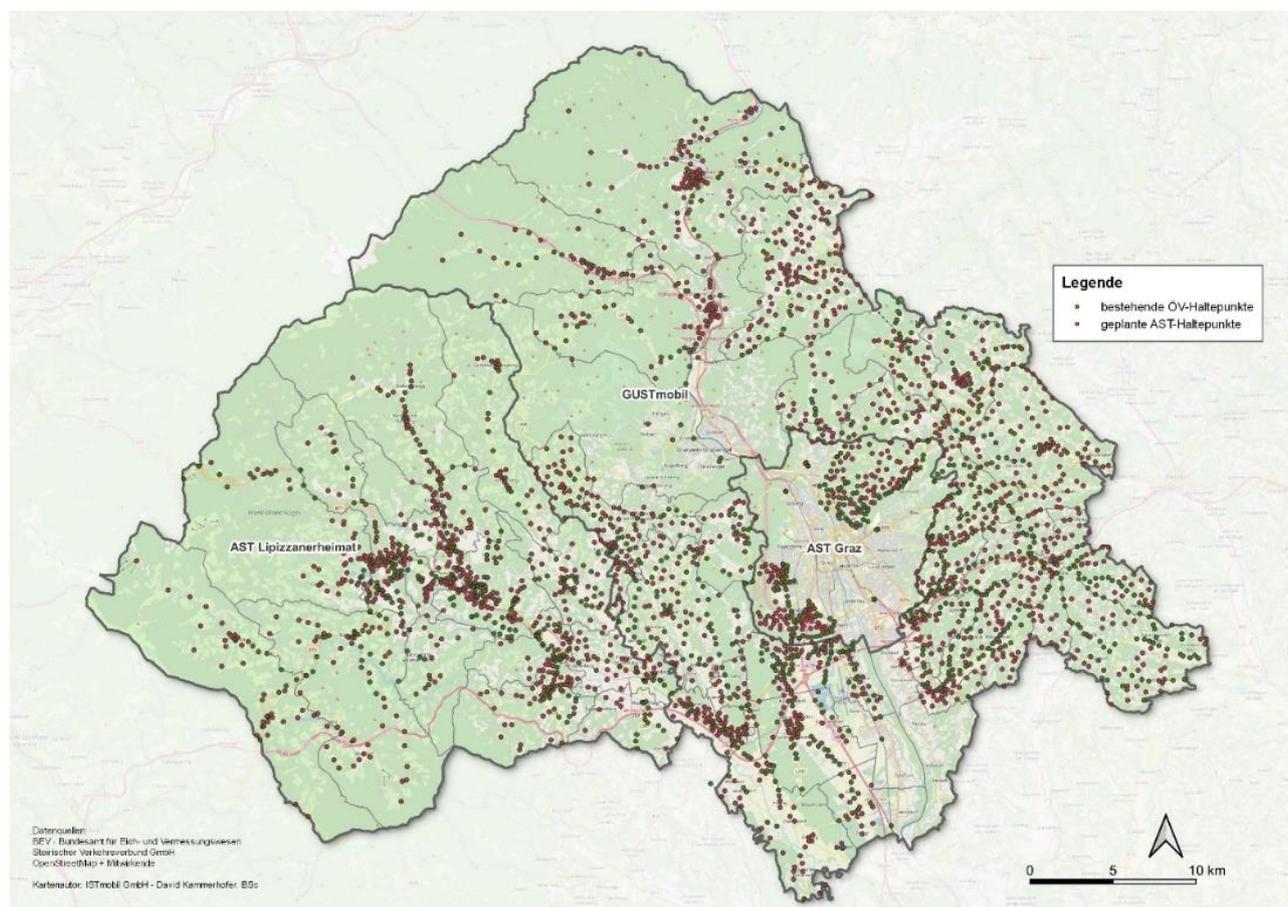


## Priority 2: Expansion of the demand responsive transport network

In general, the Metropolitan Area of Styria has a good public transport system, especially along the main bus and train axes. But in peripheral regions is the public transport offer insufficient particularly for the last mile.

The aim of the demand responsive micro mobility systems in the Metropolitan Area of Styria is to provide a comprehensive basic mobility supply in the area of the 29 GUSTmobil municipalities (in operation since 2017), the city of Graz (GUSTmobil expansion planned for autumn 2019) and the 15 municipalities in the district of Voitsberg (planned commissioning for autumn 2019) to enable an everyday mobility for all inhabitants in the region without an own car.

After the implementation of the planned projects, there will be all together 3.100 collection stops in the project area (see diagram). Between these stops DRT trips can be booked to a kilometre and person-dependent tariff by phone or app. In this context, it is also important to note that the existing public transport offer will be considered in the project, there is no competition of the existing transport systems.



**Figure 19: micro-public transport collection stops in the Metropolitan Area of Styria from 2019 (c) ISTmobil.**

The backbone of this DRT system from ISTmobil is the unique disposition software in the background, which also enables collection trips. The travel orders are transmitted via tablets from the system to the taxi drivers. They carry out the journeys as commissioned. The payment for the journey is made directly in the vehicle by cash payment or via a monthly billing of the customer card mobilCard.

The DRT systems are carried by the respective municipalities themselves. They can receive funds from the regional fund (StLREG) and the Province of Styria (approx. in the amount of one third each).



Cost of an implementation study: € 20,000-40,000 (depending on the number of municipalities and inhabitants)

Costs for the operation for 29 municipalities with 110,000 inhabitants (eg GUSTmobil): approx. 830,000 € p.a.

Additional added value that could be explored in combination with the micro-mobility system in the future is the use of the system not only for passenger transport but also as a delivery service for goods in peripheral areas. A feasibility study is currently submitted through a federal funding program. A conceptual deepening and testing could be achieved through the regional fund (StLREG) in 2020.

Costs for the implementation concept and test operation (3 years): 140,000 €

### Priority 3: Expansion of public transport real-time information

In addition to the re-planning of the Styrian line bundles, currently also improvements of the timetable information are planned. The basis for this exists for years via web and app (see "BusBahnBim"), the next extension concerns the topic of real-time information. Currently some projects with this aim are implemented to secure the connections also with the regional bus range.

Therefore a real-time data system will be developed, where GPS information from all buses converges and can be disposed. In addition, each bus should be equipped with a counting system by 2023, which always enables up-to-the-minute passenger number evaluations and important planning-relevant derivations. Furthermore the (digital) real-time customer information at the bus-stops of the main corridors is a future topic.

Stakeholder: Province of Styria, Steirische Verkehrsverbund GmbH; Duration: until 2023; Costs: currently unknown

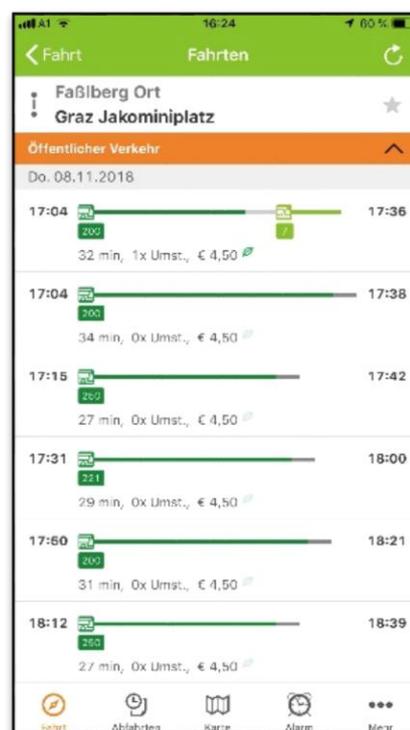


Figure 20: BusBahnBim (c) -App - soon with real time information?

## 6.4. Priority list in the field of regional governance

### Priority 1: Development of a community toolkit "Mobility"

In principle, municipalities see themselves as essential actors and authorities in the field of transport and mobility. Political decision-makers at the local level act in the sense of the demands and wishes of their citizens. The diversity of demands in the field of mobility is evident and requires sensitivity and objectivity of the community representatives.

The integration of the population works by passing on information regarding traffic and mobility using various media channels and participation processes. The right time and the appropriate method of involving the population is an essential aspect of civic participation, because too early involvement can lead to a poor



understanding of the development ideas and too late integration often allows no more adjustment options in the planning process. In principle, however, the involvement of the population should map the needs in the area of transport and mobility and, as a result, implement them accordingly.

The annual obligatory citizens' meeting in municipalities of Styria opens the possibilities of informing citizens on the one hand about local developments and, on the other hand, of finding a platform to discuss with the community leaders. Citizen surveys on mobility and transport are also frequently carried out. In doing so, communities can query and process aspects of suggestions, criticism and potentials for developments. Above all, the longer-term public participation processes accompanied by experts (moderation, process support and sectoral planning) lead to high-quality results and valuable foundations for the planning and further development of the topic of transport and mobility at the municipal level.

Some of the measures mentioned above are already being applied in the Styrian Central Region, but many municipalities still lack on ideas and suitable tools to increase the involvement of citizens regarding mobility. Important information - which is currently needed, for example, when planning the new traffic bundles - is often inadequate.

One idea of the project is therefore to develop a kind of "toolkit" for municipalities of the Styrian Central Region, which includes best-practice examples in the fields of participation, raising awareness, use of media channels, marketing, cooperation possibilities with local companies, inquiry of mobility needs and corresponding funding opportunities.

Cost of developing a Mobility Toolkit: € 50,000; Stakeholders: regional management, municipalities, Province of Styria, possibly Steirischer Verkehrsverbund; Implementation planned for 2020 (funding via StLREG)

### **Priority 2: Survey about the mobility behavior of children**

Especially at the beginning of school it is repeatedly discussed that children are less and less likely to start their way to school on foot or by bicycle. Many reasons speak for the parents, but also for the children, to be brought to school by private car. However, there are studies that show that the experiences on the way to school promote the cognitive development of children. The aim of one project idea is to increase the mobility behavior of primary school pupils and the differences between city and surrounding communities, with the aim of increasing the awareness that children start the journey with gentle mobility, namely on foot, by bicycle, by scooter or by public transport.

Costs for the survey and evaluation in all primary schools of the region 2019: 30,000 €

### **Priority 3: Continuation of a mobility committee in the Metropolitan Area of Styria**

The involvement of all mayors and community representatives in the Metropolitan Area of Styria is fundamental in terms of inter-communal development, especially in the field of mobility.

There are currently several major projects and strategy processes ongoing in the fields of Multimodal Mobility, Mobility as a Service, Micro-Public Transport, Freight Transport & Logistics and Park & Ride. In all projects it is important to include stakeholders. Usually always the same institutions and representatives are involved in certain subject relevant projects, this is the reason why it is important to bundle information and appointments.

Already in 2016 and 2017, working groups or committee meetings on mobility took place in the Styrian central region - a format that has proven itself and which is recommended to continue again in 2019 to bring forward the project progress of all existing mobility projects, as well as discussing new ideas developments together. For a committee, external planners and experts can be consulted.

The supervision and organization of a mobility committee is a basis task of the Regional Management. Hereford are no additional costs needed.



## 6.5. Pilot Action

### Implementation and testing of a multimodal node in a peripheral rural municipality in the surrounding of Graz

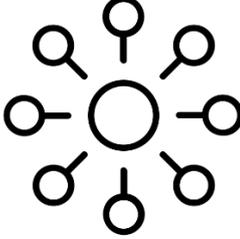
Multimodal mobility and the implementation of connection hubs is currently the first priority in the Metropolitan Area of Styria in the field of mobility (see Priority 1: Expansion of multimodal connection points (REGIOtim)). This is also the reason for the selected Pilot Action in the context of Peripheral Access.

## 6.6. References

Verkehr plus (2018) Analyse: Regionale Mobilität Steirischer Zentralraum. Peripheral Access. Endbericht 2018. [https://www.zentralraum-stmk.at/fileadmin/user\\_upload/Regional\\_analysis\\_2018\\_07\\_30.pdf](https://www.zentralraum-stmk.at/fileadmin/user_upload/Regional_analysis_2018_07_30.pdf)



## 7. Action Plan of the Elster Railway Line

MULTIMODALITY	SMART MOBILITY	REGIONAL GOVERNANCE
 <ul style="list-style-type: none"> <li>■ Priority 1: Touristic Hotspots</li> <li>■ Priority 2: Action Points</li> <li>■ Priority 3: Transport</li> <li>■ Priority 4: Bike rental Points</li> </ul>	 <ul style="list-style-type: none"> <li>■ Priority 1: Augumented Reality (AR) Application</li> <li>■ Priority 2: Microsite</li> <li>■ Priority 3: Static Information Boards</li> <li>■ Priority 4: Wi-Fi</li> </ul>	 <ul style="list-style-type: none"> <li>■ Priority 1: Involvement of stakeholders</li> <li>■ Priority 2: Tickets</li> <li>■ Priority 3: Active involvement of the Vogtlandbahn - Training of employees as Voglar - brand ambassador</li> </ul>



## 7.1. Introduction

As part of the preparation of an action plan based on the regional analysis of the project partner ZVV, an external agency was commissioned to draw up a marketing concept for the project route of the Elster Valley Railway.

As a result, a story about the giant "Voglar" was created, which travels the Vogtland and uses the Vogtlandbahn. Various aspects of the work packages in the project were included and used for this purpose.

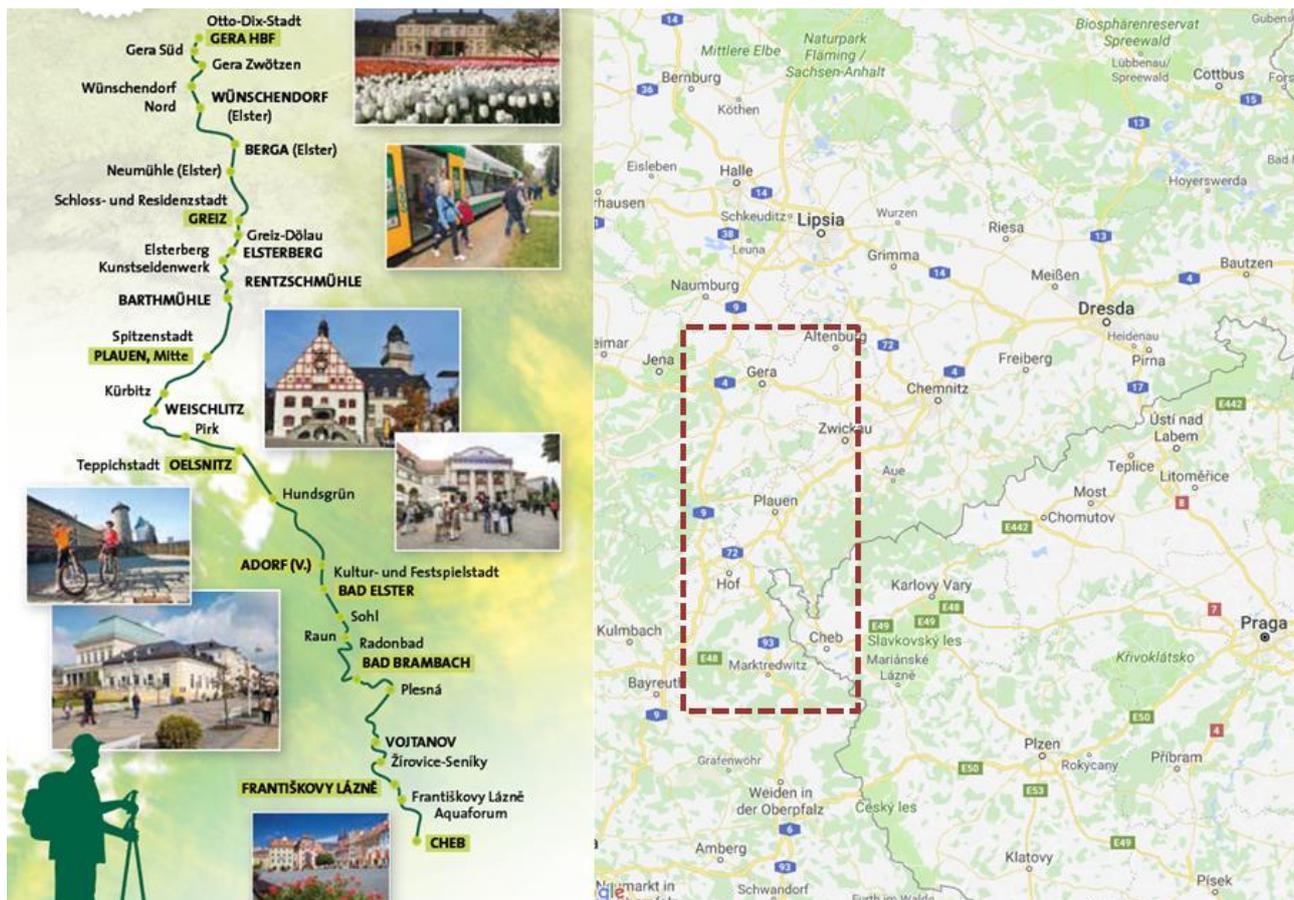


Figure 21: Map of the Elster Railway Line

Is that possible? A friendly giant, let's call him "Voglar", often goes unrecognized in the Elster Valley Railway - the route from Gera to Cheb. He likes to mix with the passengers and pretend to be one of them. He succeeds in shrinking to human size, as long as he is traveling in the Elsterbahn. In the trains, he mixes with the passengers and enjoys being one of them. Is he the biker, on the way on a mountain bike excursion, the wanderer who lures it into the nature, the boy who is looking forward to the water park or the girl who wants to go canoeing? The giant loves to be one of them and all together - very colorful and diverse, whether in Germany or the Czech Republic. He thinks it's great to frolic between people, to walk in their tracks, how to do that on his own. Exactly - follow his tracks - that works now! The giant leaves the train at the stations, he grows huge. In order not to be discovered, he therefore quickly disappears into the forests of the Vogtland, jumps over bridges and castles. He loses and leaves a number of utensils and clues at selected breakpoints - these show how big he could be. The giant paws are also hints. They invite to amazement and have fun in the real, but also the virtual world along the route. Because a real giant is both: really real and somehow not. So you can playfully get to know the region as far as the Czech Republic. Has family or friend fun, gathers new impressions and acquaintances. Who does not want to come out huge and on the way



discover new worlds without having to travel long? The action plan shows possible steps to implement. These steps have different priorities and rankings. These rankings are based on importance, feasibility and temporal as well as monetary feasibility.

## 7.2. Priority list in the field of multimodal service

### **Priority 1: Touristic Hotspots**

At certain action points along the route arise so-called Hot spots. These are places from which certain activities take place develop - bike tours with bike rental, walks, entertaining small events on well-attended days.

### **Priority 2: Action Points**

The "traces" of the giant mark action points in and around the track. In part, these tracks lead visitors to the desired Places. There are audiovisual experiences that lift language barriers. The journey to the action points at the track takes place via Vogtlandbahn, car or e-bike, optionally via sharing.

### **Priority 3: Intermodality**

The vehicles and employees of the Vogtlandbahn are included in the journey (due to design and action). After leaving the Vogtlandbahn you can continue to explore the Elster Valley and travel through various public transport services.

In the Vogtland railways of the Elster Valley Railway, passengers discover that they can download access to the giant world via a footprint (Floor Graphic) in order to go on a giant tour. It also shows that it pays to display on the ticket machines (giant ticket), ceiling / window stickers and foot prints and fingerprints (floor graphics).

The train attendants can also give information, and on multilingual train destination announcements also come invitations to join.

### **Priority 4: Bike rental Points**

One way to increase multimodality is to create bike rental points. A current trend in Vogtland are e-bikes, for a rental and charging station, the stop "Plauen Mitte" would be suitable because there is next to the train stop a park and ride car park, a tram stop and a bus stop.



Another possibility of a bicycle station would be the stop "Weischlitz", because you have to change there and have a waiting time of 20 minutes. In addition, behind the train station in the immediate vicinity runs a bike and hiking trail.

However, this requires the interest of various interest groups, such as the city council, owners of the station buildings and platforms to build a rental point and to ensure a power supply for e-bikes.



*Figure 9: Bike-train integration service*

### 7.3. Priority list in the field of smart mobility

#### Priority 1: Augmented Reality (AR) Application

An Augmented Reality (AR) application creates a special connection so that families, adolescents and young adults can go on a cross-border tour and discover the places. You see something that nobody else sees. With the help of a mobile phone APP and the WLAN available in the vehicles, a fantastic journey is realized.

At selected stops on the Elster Valley Railway, it pays off to get out. Here Floor Graphics as a guidance system point out to the giant story. These are huge footprints or thumbprints provided with QR code. The codes are sent via smartphone or tablet scanned. You just need the instructions and stories on the Screen to follow - with the phone in hand. Already one rises from the everyday reality in the giant world and looks very easy three-dimensional, fantastic things that others do not discover: the real Vogtland expands into the virtual space and fantastically merges with the everyday and leisure reality on site. That gives new Impressions for the senses.

The Elstertal distance has in Germany and to the Czech Republic the first "Augmented Reality" - adventure tour - a fantastic travel story. The route, but also the Vogtland as a whole has an absolute unique selling point. Even in cities like Plauen or Cheb / Eger, more anchor points / footprints can be set in the city and the radius of experience can be extended by involving business people and institutions.

The AR tour is tied to the locations and can only be directly at the Viewpoint / QR code or via the app / flyer at a certain distance to be activated. The users of the railway line are so motivated, to visit individual points on the track and get off at certain stations so they can use the AR tour.

Selfies can be made while using the AR function, these can for example be shared via an Instagram feed, with an attached hashtag.

#### Priority 2: Microsite

On the multilingual microsite (German / Czech / English) and in the social network (instagram) from Voglar, every traveler can go on a journey and intuit the story intuitively. But it will be always give one or the other surprise on the way.



In the Vogtland app there is a button with a footprint, which leads to the giant story. They make you want to log in via any smartphone or tablet.

### **Priority 3: Static Information Boards**

One possibility of the static representation of the project route and the giant idea is the presentation of an information board as a footprint at station buildings or platforms on the track.

In the footprint there is the possibility to inform about a QR code about the EU project, the project route, the giant story and tourist highlights. This was multilingual.

The printed footprints are optionally affixed to walls, floors or other facilities in or around the station.

If you follow the footsteps, you will automatically use the new modern guidance system at selected stops, picking up tourist information in a playful way.

Potential: The giant footprint may gradually turn out to be a hint to establish for "particularly interesting tourist attraction" - over the Elster Valley Railway. Where it is appropriate, there are many Opportunities for city marketing, cooperation with companies and Institutions, so huge to marvel and experience - such as in O.E. Plauen Museum. Here 2020 could be a narrative party to be organized take place for giant history etc.



*Figure 22: Static Information Boards - The giant footprint*

### **Priority 4: Wi-Fi**

The traces of the smart giant "Voglar", the way always with his "white magpie" is on the road, can also be experienced online (microsite with mobile passenger information / AR app). You can share them, after all there is Wi-Fi in the trains (use intelligent Communication technology), so also between the breakpoints no boredom arises.

## **7.4. Priority list in the field of regional governance**

### **Priority 1: Involvement of stakeholders**

In order to implement the externally commissioned action plan, the involvement of all relevant decision-makers and interest groups is necessary. In order to be able to put the created marketing concept on a good path, the general interest in the Eu project must be present. In addition to political decision-makers, those responsible include the Vogtlandbahn and the Vogtland Tourist Board. In the true sense, the marketing concept is a tourist idea to allow the Vogtlandbahn more passengers and the region more guests for cycling and hiking tours. However, since the station buildings belong to either the Deutsche Bahn, the municipality or a private person, the consent is necessary to set up static information boards at these places. Also, the nationwide coverage must be given with Wi-Fi along the project route, which is the task of the Vogtlandbahn within the train. Without the possibility of using Wi-Fi, the usability of the AR app is severely limited. Other important points are the willingness to provide space and power for potential e-bike stations, the possibility of promoting the marketing strategy on trains, buildings, public facilities and the media, and the timely



implementation of the concept. For this it is important that short communication paths arise between decision makers and interest groups and that decisions are not postponed for the long term.

### Priority 2: Tickets

Normally, the Vogtlandbahn day ticket is enough to get on to the discovery of the region. Special tickets are conceivable, but due to the large number of existing ticket offers little sense.

### Priority 3: Active involvement of the Vogtlandbahn - Training of employees as Voglar - brand ambassador

The goal of the Vogtlandbahn as a company must be to be able to win over more passengers. For this, the interest in the project is decisive, and whether important decision-makers want to actively participate in the project.

The first point of contact for passengers is always the train conductor, who should be actively involved in the marketing campaign.

- For a new culture of welcome sharpen the understanding of roles and Refresh communication with passengers / users
- Use of the AR Trail
- Explain and convey the use of the app and microsite
- Provide information about other nearby attractions along the route
- Give away the giveaways / merchandise

## 7.5. Pilot Actions

After the external creation of the Action Plan, the priorities of the smart mobility and the multimodal services for the pilot action were bundled and a concept for the launch of the Marketing Campaign was created.

For this purpose, various actions of the 3 work packages were summarized and a ranking of possible steps was recorded in order to start with the "giant" story.

### Step 1: Designing the Giant Story and AR Tour

Design of the product "Augmented Reality Giant Tour": The idea is implemented using a modular augmented reality trail on the Elster Valley route from Gera to Cheb / Eger.

- Development of the "Giant" titles,
- Design of a "giant" logo,
- Design of Floorgraphics with finger and footprints with QR access codes in the Vogtlandbahn and at the selected stopping points as well as attachment along the route, these serve as static information boards (affixed to the floor or walls of the station buildings or platforms or near surroundings)
- Design of 8 - 12 Voglar motifs and scene design for the AR / implementation of the Giant story in audiovisual pictures
- Preparation of texts for app, microsite and information boards in German, English and Czech
- Design of music / sound for train announcements, app, web etc.



- Development of a Voglar microsite (for introduction / display / use with Informations / Access / Photos / Video Voglar-world) in Wordpress. The site is multilingual: German, English, Czech. The site can be reached via a link directly from the app and vice versa (link to the App Store)
- Development of an app design with user guidance, also multilingual
- Implementation of the AR design, programming of the AR breakpoints and APP programming
- Design of the information boards in the form of footprints or fingerprints (possible design content: QR code to the App / Microsite, information about the respective city at the breakpoint, information about cycling and hiking trails, picture of the respective city)

### **Step 2: The announcement and marketing of the AR Trail after completion**

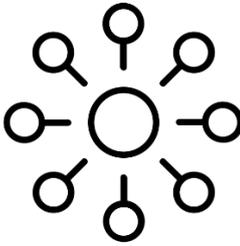
- Development of the campaign idea with development of motives, slogans, Subslogans, info texts, photos
- Implementation on transport advertising: stickers of all vehicles of the Vogtlandbahn with action motif
- Adapting the design to ticket vending machines / displays in Vogtlandbahns
- Design and production of posters and ceiling stickers with campaign motive for stations / stops, Vogtlandbahn and buses
- Drafting and recording of info texts for train multilingual destination announcements
- Design of free giveaways via train attendants in Vogtlandbahns (for example stickers or candies)
- Design and production of information material for the Voglar story (in the form of flyers, multilingual)
- Design, preparation and implementation of the press presentation press information and sampling of the media (media-effective event)

### **Additional 3rd step: Add on route attractiveness**

- with Voglar fan shop and snack bar / Foodtruck (Weischlitz), Bike rental (Barthmühle), electric charging stations at breakpoints
- Clarification of cooperations / sponsoring with local companies for "Giant" biscuit, O.E. Plauen, lace manufacturer Plauen, children's railway Plauen, ... for anchor points outside the range
- VIP tours in German, English and Czech
- Special promotions on selected weekends suitable for Giant story that appeals to more passengers might be: Fire traces (narrative festival and Feuerartistik) in Plauen and Cheb in November, beer festival at selected stops in August, etc.



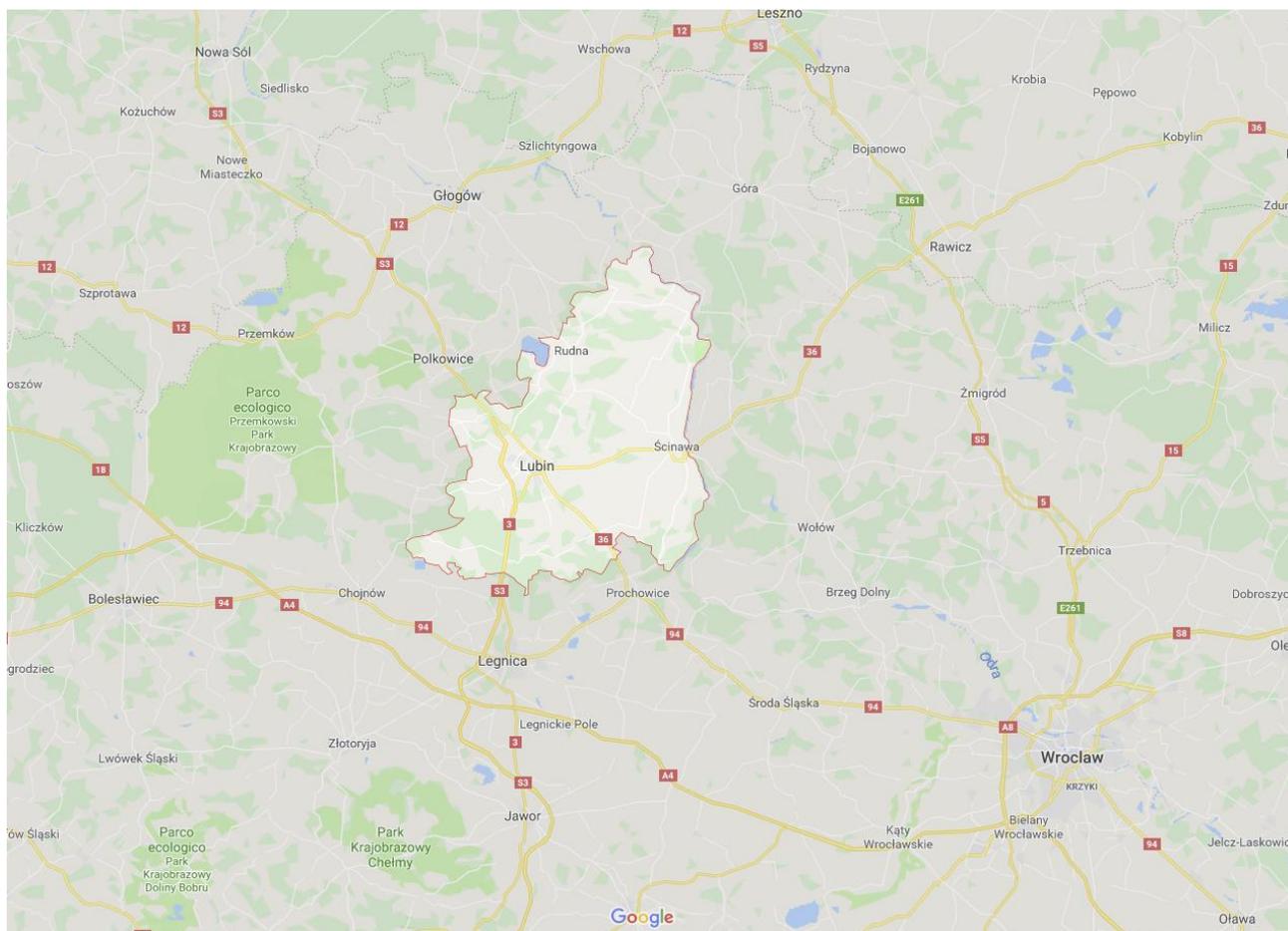
## 8. Action Plan of the Lubin Region

MULTIMODALITY	SMART MOBILITY	REGIONAL GOVERNANCE
 <ul style="list-style-type: none"> <li>■ Priority 1: change of the model of communication lines in county passenger transport</li> <li>■ Priority 2: Launching of new communication lines</li> <li>■ Priority 3: Fix the congestion of all modes of transport around the interchange center</li> <li>■ Priority 4: Transfer of the PKS bus station from Skłodowska Street to the interchange center</li> <li>■ Priority 5 - Strengthening transport services for the airport in Wrocław</li> </ul>	 <ul style="list-style-type: none"> <li>■ Priority 1: Widespread and easy access to passenger information</li> <li>■ Priority 2: Intelligent search for multimodal communication connections</li> <li>■ Priority 3: Autonomous vehicles in public transport</li> </ul>	 <ul style="list-style-type: none"> <li>■ Priority 1: Promotion of public transport and multimodal connections within the region</li> <li>■ Priority 2: Development of a connection model taking into account the needs of neighboring counties</li> <li>■ Priority 3: Agreement between the County Management Boards regarding the joint implementation of transport connections</li> </ul>



## 8.1. Introduction

Based on the status quo analysis of mobility solutions in public transport in the Lubin County, as well as voivodship development plans for the rail network in the Legnica-Głogów Copper District, the Lubin County Board undertook activities aimed at optimizing the connection network in terms of increasing the modality of transport in its various types.



*Figure 23: Map of the Lubin County*

Analyzing the system of communication networks and real needs of passengers as well as forecasts of the region's economic development and the consequent changes in the communication system and land development, new areas have been designated which in the future will constitute new traffic generators, important for public transport. In order to adapt existing communication links to future social needs in this area, an action plan was adopted in the following areas:

- road infrastructure in terms of ensuring adequate capacity and functionality of transport connections and accessibility of areas with higher economic activity,
- increasing the availability of multimodal services in collective transport,
- adjusting the system of transport connections to new infrastructure solutions and new modes of transport in the Lubin County.

The basic factors taken into account at the stage of planning changes in public transport were:



- a business activity zone being created in the western part of the city, between the beltway and the S-3 express road, including investment areas with an area of nearly 400 ha,
- the S-3 expressway being built along the national road No. 3, which transfers transit traffic from the city and increases accessibility to new areas of the city and is a direct connection to the expressway and highway network,
- planned expansion of the Regional Sports Center with new facilities such as a sports shooting range or aquapark,
- planned change in the development of areas between Chocianowska, Kolejowa and Stary Lubin Streets currently constituting areas marginalized in terms of architecture and functionality,
- the launching in June 2019 of railway connections linking Lubin with Legnica, Wrocław, Głogów and Zielona Góra,
- the construction of a tourist port on the Oder River in Ścinawa and the planned start of connections in water transport to Wrocław,
- a scientific and technical branch of the Faculty of Aviation of the Wrocław University of Technology, including scientific and didactic facilities, and laboratories enabling testing of modern solutions applicable in the aviation industry and autonomous vehicle transports, created on the areas adjacent to the airport.

All the above-mentioned factors determine the need to make changes to the existing land development, especially in terms of the road system, and consequently changes in the way public transport is organized. In fact, due to infrastructure changes as the investment, economic, residential and recreational areas develop, the development of the current Lubin city center will continue over the next fifteen years. Therefore, in the near future, as a priority, it is planned to create a modern interchange center in the area of the planned railway station. This investment will be the first step in achieving the assumed goal, which is to develop a model of effective public transport in the Lubin County in all relevant modes of transport.

## 8.2. Action plan for realisation of infrastructure investments

As part of the activities aimed at adapting the existing infrastructure to the assumed objectives, the following priorities were adopted:

1. Construction of the railway station
2. Reconstruction of Chocianowska Street
3. Construction of the interchange center on the eastern side.
4. Exit road from the Maczek bypass
5. Route for autonomous vehicles
6. Construction of the interchange center on the west side together with the adjacent business center.

### **Priority 1: Construction of a railway station**

It is planned to build a railway and bus station building with ticket offices, ATM, waiting room, catering, travel information, etc. The facility will consist of two buildings located on both sides of the railway traction connected by a covered corridor running over the tracks with descents to the platforms .

Due to the planned launch of railway connections in 2019 and the return of the project after almost 20 years to the railway map, the project works will start in 2018 and the implementation of this part of the investment is planned for 2019



### **Priority 2: Reconstruction of ul.Chocianowska**

As part of the investment, the reconstruction of Chocianowska Street from the intersection with Stary Lubin Street to the intersection with ul. Jana Pawła II Street and Witolda Pileckiego Street. Reconstruction will cover a section of about 600m, and the road will follow a newly marked trail. This road will be "straightened out" in relation to the current state of the site, which will contribute to increasing the safety of road users. Currently along the footpath of Chocianowska street stretches only to the intersection with Stefan Okrzei street. In the future, a sidewalk will be created on both sides of the roadway. In addition, a bicycle path will be created, which will connect with the already existing path on the beltway of Gen. Broni Stefan Maczek.

From Stefan Okrzei street to the roundabout with Jana Pawła II street a dual carriageway will be built with two lanes in both directions separated by a green belt. At the intersection with Jana Kochanowskiego street and Sudecka street additional lanes will be built. They are designed to make the traffic more fluent. At the crossroads there will be a pedestrian crossing on both sides of the road, as well as a bicycle path from Jan Kochanowski street. The intersection will be collision-free with traffic lights for vehicles as well as for pedestrians and cyclists.

Years 2019 - 2021 is the estimated period for carrying out design works and rebuilding of Chocianowska street. This part of the investment in terms of design will be implemented jointly with the construction of the interchange center on the eastern side. Ultimately, the order of execution will be decided by the traffic schedule after the Lubin - West node is put into service along the S-3 road and the junction between this node and the Alley of General Broni Stanisława Maczka, who is an extension of Chocianowska street.

### **Priority 3: Construction of the interchange center from the east .**

The area on the eastern side of the interchange center is located around such facilities as Biurex , the Regional Sport Center, ie the area along Odrozdenia, Kolejowa and Władysława Sikorski streets. Access to the interchange center will be organized:

- from the south-west via the Small Lubin Bypass directly connecting to Kolejowa Street;
- from the east - by building an extension of Generała Władysława Sikorskiego Street and connecting it to the existing roundabout next to the RCS hall;
- from the north-east and the city center - through 1 Maja and Kolejowa streets, as well as through Odrozdenia Street.

Infrastructure planned around the area of the node:

- parking lots for passenger cars,
- two bus stops along Kolejowa Street,
- directly at the platforms - stops for buses and taxi stands with entry from the side of Kolejowa Street.

Renovation of existing roads is planned, so that residents can efficiently reach the interchange center.

The Kolejowa Street will be rebuilt on the section from the intersection with the street of General Władysław Sikorski to the intersection with Odrozdenia Street. A dual carriageway will be created there, separated by a green belt. There will be bus stops in the immediate vicinity of the platforms, which is a great convenience for travelers. The next section of Kolejowa Street towards the small beltway will also be modernized.

In order to be able to get quickly and safely to the center, the Gen. Władysław Sikorski Street will be straightened out, whose main goal will be to decrease traffic on Odrozdenia Street. The street will be rebuilt in such a way that it will be possible to efficiently reach the facilities of the Regional Sports Center (stadium, hall, swimming pool complex, shooting range, as well as Aqua Park that is to be built here ). For this purpose, the existing inlet of Sikorskiego Street in Odrozdenia Street will be closed for cars and moved; two large



intersections with traffic lights will be built, allowing direct entry to the parking lots located at the RCS hall. For travelers planning a change of means of transport, as well as for future users of the sports and recreation complex, new parking spaces located at Gen. Władysław Sikorski Street, and in the near vicinity of the interchange center. Obviously, sidewalks and a bicycle paths will be created on both sides of the road, while at the level of the former Tax Office there will be bus stops in two directions.

The part of Odrozienia Street will be rebuilt (from the intersection with Generała Romualda Traugutta Street and at the intersection with the interchange connecting the Odrozienia Street with Generała Władysława Sikorskiego Street). Additional left turning lanes will be created at the intersection with Generała Romualda Traugutta Street and at the intersection with the street serving as a link between Odrozienia and Generała Władysława Sikorski streets. This solution will allow for elimination of the problem of currently forming traffic jams, visibility and safety will increase, and pedestrians and cyclists will be able to move freely along roads.

Today, this part of the investment, due to the proximity of railway connections, seems to be more necessary than the reconstruction of Chocianowska Street. However, as previously mentioned, the decisive influence on the order of implementation will have changes in the vehicle traffic flow in the city center after the Lubin West hub starts its operation and the reconstructed section of the county road constituting the extension of Chocianowska Street is finalised.

#### **Priority 4: Exit from the ring road of General Stanisław Maczek Street and a small beltway**

In the future, it is also planned to connect a large beltway with a small ring road through the construction of a one-sided exit from al. Gen. Broni Stanisława Maczka in Kolejowa Street. This solution will allow for more efficient access from the "Lubin West" junction on the S3 expressway to the eastern side of the interchange center. The traffic at the exit will be managed by means of traffic lights. The infrastructure dedicated for pedestrians and cyclists will also be built in the downhill ride.

As the interchange center develops, it will be necessary to provide additional connections with the main communication routes. Therefore, in 2021/22, it is planned to develop project documentation and build switches enabling direct access from the eastern part of the interchange to the S-3 road.

#### **Priority 5: Route for autonomous vehicles**

As part of the implementation of the construction of the interchange center, it is planned to build roads for autonomous vehicles, which will be responsible for the transport of employees between the planned zone of economic activity and the railway station. However, the implementation of this part of the investment will largely depend on the evolution of Polish and Community legislation in this area and the development of the economic activity zone being created. It is planned that the areas currently devoted to economic investments will have undergone gradual development until 2030. Therefore, the implementation of this part of the investment is offset in time after 2025, with the possibility of its eventual acceleration, eg. In a pilot program at the time of approval by the relevant provisions of the functioning of communication supported by autonomous vehicles also outside closed areas and roads intended exclusively for the traffic of such vehicles.

#### **Priority 6: Construction of an interchange center on the west side, including service and office buildings.**

The construction of the western side of the interchange center will include the construction of:

- platforms for city, inter-city, regional and long-distance buses,
- parking spaces for taxis;



- parking spaces for travelers changing means of transport;
- parking spaces for bicycles,
- a building housing the railway and the bus station.

In addition, it is planned to build a business center adjacent to the interchange center with multi-level office buildings and a hotel.

To the west side to the interchange hub, access will be possible by two routes: through Chocianowska Street, and then through Towarowa Street, Sudecka Street or ul. Stefan Okrzei Street, or through a newly built road section constituting an extension of Przemysłowa Street, running along the railway line. These roads will be connected with a one-way street located within the interchange junction, which will be a loop connecting all the infrastructure of the interchange node and business center, and the route will be followed by a circular intersection. All existing roads located within the interchange infrastructure will require reconstruction, which will affect the use of the communication system. Among other things, additional jumper belts will be created, traffic jams that are safe for traffic, no collisions, pavements, bicycle paths, and parking spaces. Thanks to many alternatives to travel to the interchange node, the travel time will be shortened.

Ultimately, it is planned to create a business center on the west side of the interchange center. However, the process of searching for investors ready for the construction of office buildings may take several years, therefore as a temporary solution, at the initial stage the investment will be implemented in a much narrower scope. Such a solution will allow to increase accessibility to the station from the west, and thus better use of its infrastructure, and will not involve the need to incur high financial outlays.

This part of the investment in the construction of office buildings and hotel facilities requires investing funds by external investors. The investment areas on the west side of the interchange center will be opened to investors after the redevelopment of Chocianowska Street. The size of investments and their type will, however, determine the need to expand the interchange center on the western side due to the need to service adjacent investment areas and the northern part of the city, as well as the economic activity zone and long-distance connections in bus transport. Due to the dependence of investments on many economic and social factors, its implementation is planned after 2025.

### 8.3. Priority list in the field of multimodal service

Taking into account the planned changes in development of Lubin city center, the transportation system and the planned rail connections, the Lubin County adopted a list of priority actions in the field of multimodal transport services offered to passengers.

#### **Priority 1: change of the model of communication lines in county passenger transport**

In the first place, it will be necessary to introduce changes in the course of existing transport lines in county passenger services of public utility character implemented on the basis of an agreement concluded with a transport operator, (ie: Przedsiębiorstwo Komunikacji Samochodowej SA in Lubin - PKS). The current contract will run until 2022 and the communication lines implemented within it will be remodeled when railway connections with Wrocław, Legnica, Głogów and Zielona Góra start and the eastern part of the interchange center is handed over to use. It is planned to strengthen the communication service of the streets of the 1 Maja, Kolejowa and Odrodzenia streets by directing more lines through these streets and more connections hourly adapted to the planned trains arriving and departing from the station "Lubin". It will also be necessary to provide direct access to the station for part of the "country" lines serving the towns from the area of Lubin Commune and Ścinawa Commune, (so-called "Hundreds") and concentration of the remaining part of these lines in the area of Niepodległości Avenue with the possibility of changing the same stop to the lines connecting to the interchange center.



### **Priority 2: Launching of new communication lines**

At the same time, it is planned to launch new communication lines serving the area of Rudna Commune and areas of communes from neighboring counties that do not have direct access to rail connections and long-distance bus connections. All these activities will have to be preceded by the study of passenger flows, the structure of these flows as well as research into the demand for the functioning of such connections. However, already today one should assume that due to the lack of economic and functional justification, it will not be possible to route all connections through the interchange center area. Therefore, one of the possible solutions will be the creation of a new communication line operating on the principle of a "loop", whose task will be to connect all major interchange points in the city center with a built-in interchange center. In the current legal system and conditions included in local regulations, some of these activities will require the conclusion of relevant agreements with counties concerned or a change in the way public transport is managed by creating, for example: a Traffic Union, which will be entrusted with the task of managing public transport within several counties.

### **Priority 3: Fix the congestion of all modes of transport around the interchange center**

Under this priority, it is planned to transfer all communication services to the area of the interchange center being created. The designed infrastructure in this area will enable to locate in the immediate vicinity of the station the stops of the "BUS" type of communication, long-distance buses, taxis and private vehicles on the "Park & Ride" car parks designated for this purpose. It is also assumed that it will be possible to locate bicycle parks and a city bike rental facility in the vicinity of the interchange center, which makes it possible to reach the existing part of the city with an existing network of cycle paths that currently connect all parts of the city of Lubin.

### **Priority 4: Transfer of the PKS bus station from Skłodowska Street to the interchange center**

An indispensable element guaranteeing the functionality of the interchange center will be the transfer of the currently operating bus station in Lubin from Skłodowska-Curie Street to Kolejowa Street. For currently functioning number of intercity bus connections three platforms are sufficient. The planned expansion of the number of connections will be associated with the need to increase the number of platforms, what was included in the concept of infrastructural changes, which assumes operation of the new railway station at the interchange center with the division to intercity bus stops on the eastern side, and support for long-distance and international connections on the western side due to its proximity and better accessibility to the S-3 expressway.

### **Priority 5 - Strengthening transport services for the airport in Wrocław**

Currently, no direct connections with the airport in Wrocław are functioning within the framework of public transport. At present it is not possible to reach the airport by direct rail connection. In the future, it is planned to organize a direct connection between the Lubin Transit Center and the Airport in Wrocław. Due to the proximity to the express road S-3 and its connection at the height of Legnica with A-4 highway, it will be possible to reach the Wrocław airport from the center hub in Lubin in less than one hour, what makes it extremely attractive for airline customers.

## **8.4. Priority list in the field of smart mobility**

The introduction of intelligent solutions in the field of transport brings invaluable benefits in terms of both economic and infrastructural as well as environmental issues. Therefore, also in this area Lubin County



intends to take measures to use modern forms of communication and to communicate in order to limit the number of journeys made by passengers using private means of transport.

### **Priority 1: Widespread and easy access to passenger information**

This priority assumes the dissemination of access to passenger information through mobile devices and tactile information boards located in major transfer points. The electronic information systems currently available at stops only allow access to information on the actual arrival time of buses of individual lines and their possible delay or earliness. It is necessary to expand the existing system with additional functions giving the ability to display timetables of all connections in various modes of transport while allowing passengers access to the automatic connection search, including multimodal, from point A to point B itinerary. Ultimately, such a system in addition to availability in the form of applications for mobile devices should also be present in every vehicle in the form of a touch screen.

### **Priority 2: Intelligent search for multimodal communication connections**

It is a related element and partially described in the first priority. The assumption that should be implemented by the activities of the organizer of transport is that a passenger intending to travel by public transport from point A to point B could quickly find a direct connection or combined not only in the Lubin county but also in the province and ultimately the entire country. To this end, an information platform should be created with an on-line database of all available timetables and a connection search engine allowing to set travel priorities such as the place of departure, place of arrival, repetition of reaching a specific destination, preferred means of transport, transport of animals and objects (bicycle) etc. .

### **Priority 3: Autonomous vehicles in public transport**

Due to the lack of legal conditions that currently enable the functioning of such vehicles in public transport and thus the highest risk in terms of implementation, this is the priority that is furthest postponed in time. Its idea is to allow passengers to order autonomous vehicles that will reach the interchange at a certain time, taking along several to a dozen people on the way, which have ordered such a vehicle in a given part of the city. At the same time, such vehicles should function as multi-person taxis, which will provide passengers in individual parts of the city with passengers arriving to Lubin at a certain time, eg by train. The role of the passenger would then be to send information in the form of a text message about the time of arrival at the station and the address from which he would like to travel within the city. The system for managing autonomous vehicles upon receipt of such an application would send back the feedback from the number of the vehicle to go to, the place where the vehicle will take passengers and the time of departure from the interchange center. In the historical reality, such a transport system may seem something remarkably remote but it must be remembered that technological progress in the field of transport is extremely fast and what seems unlikely in recent years may turn out to be an everyday reality.

## **8.5. Priority list in the field of regional governance**

Planned changes in the functioning of public mass transport and the development of multimodal connections will require future changes and innovations in the field of transport management throughout the Lubin County, as well as neighboring counties in the event of their joining the joint transport services. Therefore, it is planned to take action towards decapitation of the transport management method and aggregate as many connections as possible in hands of one managing authority. To this end, the following actions were assumed within the following priorities:



### **Priority 1: Promotion of public transport and multimodal connections within the region**

The first and primary priority is to promote public transport throughout the region. For the last four years, the largest free public transport in Poland has been operating in Lubin County, and the very fact of eliminating payments for transport was the most effective marketing activity. During the first year of communication, the number of passengers carried in all lines has doubled. Nevertheless, not all residents are still convinced to use free communication services. Therefore, at the moment of creating the interchange center, it will be necessary to place great emphasis on promoting multimodal connections in local media as well as on stops and information boards throughout the city. An extensive transport offer combined with preferences for passengers using public means of communication will aim to increase the demand and efficiency of public transport.

### **Priority 2: Development of a connection model taking into account the needs of neighboring counties**

In order to limit itself to the area of the Lubin County, the first steps are already being undertaken to create new communication lines in the future, enabling residents of neighboring counties to reach the interchange center in Lubin and use various means of transport accumulated in one place. It is planned to connect public transport lines of the main interchange points in the following counties: polkowicki, glogowski, legnicki, wotowski and gorowski in such a way that their residents can reach the interchange center directly, from where they can continue their further journey.

### **Priority 3: Agreement between the County Management Boards regarding the joint implementation of transport connections**

Such activities, however, require the agreement between the authorities of all individual districts to outsource the task of creation and management of the communication line, and the manner and scope of its financing. Therefore, it is extremely important to conduct a dialogue at the local government levels allowing to learn about transport needs and the possibilities of their implementation in terms of management. The effect of this dialogue should be to develop and sign appropriate agreements regulating in a comprehensive way the rules of functioning of public transport on a detailed basis interprovincial in terms of the shape of the network of connections, the principles of their financing and management, but also joint adoption of the form of management by creating a thematic department in one of the local government units or appointing a company, a municipal plant or establishing a union of representatives of municipalities and counties.

## **8.6. Pilot Actions**

In the second half of 2018, the Lubin County (acting as a public transport organizer in county passenger transport) began pilot activities aimed at determining the real market demand for transport services provided as part of free car communication in the municipalities not yet covered by the existing communication lines.

### **Measure 1: establishment of the Lubin - Rudna - Lubin pilot line**

From the beginning of October 2018, a new communication line was launched No. 113 between Lubin and the village of Rudna, which until now was not covered by the reach of county public transport. Under the proposal to create such a line, over 1,600 residents of the Rudna commune have signed up, who see the need to get a direct connection with Lubin. In order to examine the actual demand for the operation of the line No. 113, they were launched as a pilot for a period of three months, ie until the end of 2018. During this period, it is entirely financed from the own resources of the Lubin County as functioning within county



communication specified in the provisions of the Act on public transport as performed between at least two municipalities but within one county.

Currently, continuous monitoring of vehicle filling is carried out on all courses performed in accordance with the adopted timetable, which perfectly illustrates the demand for this connection. Already after the first month, it can be clearly stated that the line 113 is very popular among the inhabitants of the Rudna Commune and it is worth thinking about its continuation in the future, however, it will largely depend on the principles of its financing by the commune authorities, which currently do not make connections on this route and functioning bus-type lines are commercial and are performed by private carriers.

### **Measure 2: establishment of the Lubin - Chocianów - Lubin pilot line**

A similar concept was adopted at the launch of line 111 between Chocianów and Lubin, which was a much longer line, and what is important and as it turned out was decisive for the success of the project with a line going beyond the boundaries of Lubin County. The cities and commune of Chocianów are located in the Polkowice County. Thus, in order for the line to have a county-like character between the authorities of the counties concerned, an appropriate agreement should be concluded on the implementation of such a merger. In the case of the 111 turned out to be decisive and despite of willingness to finance calls for a pilot period of three months by the Lubin County there has been no agreement and the line could not be launched in framework of transportation district, because in case of a lack of an agreement between the counties, such connection is a voivodship line and should be implemented by the Management Board of the Lower Silesian Voivodship, as provided for in the Act on public collective transport and the Public Finance Act. This action did not take place, however thanks to the attempt to create a new line, it gave a certain picture of new problems and risks in the management of public communication concerning regional political aspects that may prove decisive for the success or failure of the actions undertaken.

Nevertheless, the Lubin County will make further attempts to communicate with the commune and county authorities regarding the shape of the communication network, its functioning and funding, striving to optimize the solutions adopted and maximize the efficiency of public transport services.