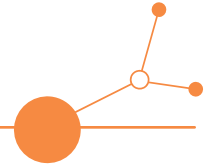
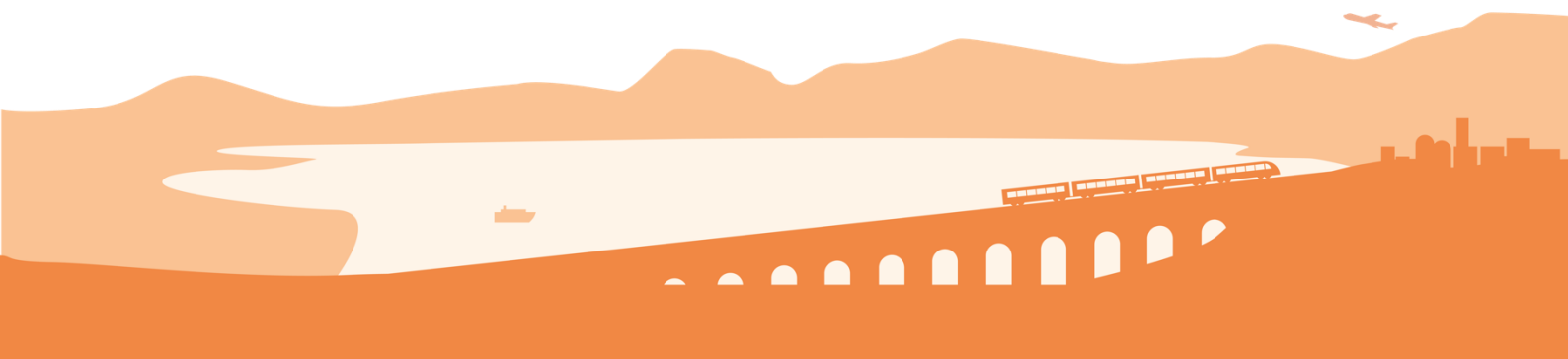


## D2.1.3 Development scenarios for DRT innovative digital and operational approaches



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## 1. Executive summary

The territory of Central Europe is characterised by uneven transport connections and mobility opportunities, across and within regions, between urbanized contexts and rural and peripheral areas.

The project's common challenge is to improve accessibility and connectivity in CE peripheral and rural areas through better integration of public transport networks with Demand Responsive Transport (DRT) services, building on joint development and implementation of governance, planning, digital and operational innovations.

DREAM\_PACE will develop innovative DRT concepts complementing regional mobility networks.

The project will improve DRT planning and delivery capacities of public authorities and operators.

A new generation of DRT services will become functional and integral part of regional mobility networks, enhancing accessibility for citizens, territorial cohesion, and social inclusion. Integration is the key to the DREAM\_PACE innovative approach, as DRT services are mostly developed as stand-alone solutions to specific needs, the potential of scalable strategies and solutions is widely underestimated.

Project Partners (thereafter PP) will jointly develop a strategy for DRT in Sustainable Urban Mobility Plans to be adopted at EU level, co-design, test and implement innovative DRT solutions enhancing mobility networks. Strategies and solutions will foster a better integration of DRT and public transport (Bologna, Pavia, Budapest areas), support a higher coordination among existing DRT initiatives (Osttirol, Baden-Württemberg) and experiment new integrated approaches for DRT "green fields" (Split-Dalmatia County).

DREAM\_PACE will exploit the potential of integrated planning and digital and operational innovations for a common strategy and develop innovative DRT modular solutions. The project implementation builds on transnational cooperation to guarantee an adequate responsiveness and adaptability of project results to specific characteristics of mobility ecosystems across CE rural and peripheral areas.

This deliverable presents, after a brief background analysis, the stages of scenario development for each pilot for DRT innovative digital and operational approaches. The following pilots are concerned in these topics: Pavia - Oltrepo, Budapest, Osttirol and Split-Dalmatia County. Partner organizations contributed to this report through holding their Living Labs (LLs) about scenario development and filling out the related chapters.

The second chapter contains the methodological background, based on the DREAM\_PACE deliverable D.3.1.1 Methodological background for the design of DRT integrated solutions.

From then on, the chapters 3 to 6 illustrate the scenario development as started by each pilot, divided into the following steps: information on the process, strategy development, composing scenarios and scenario evaluation. Ultimately, one scenario per pilot will be selected or newly composed, which will undergo further refinement through a co-design process involving the LLs' partners and stakeholders.

Chapter 7 is about the Conclusion that summarises the scenario development process in each related pilot area, focusing on the main outcomes.



## 2. Methodological background

The document D.3.1.1 “Methodological background for the design of DRT integrated solutions” introduces the DREAM\_PACE methodology, tailored for analyzing, diagnosing local contexts, engaging stakeholders, and co-designing innovative DRT solutions. This methodology provides essential guidance to the project’s Living Labs.

Chapter 6 of D3.1.1 specifically delves into the crucial phase of scenario development. Here, the focus lies on crafting a DRT strategy through aligning a shared vision, setting clear objectives, comprehending risks, and exploring alternative scenarios via participatory dialogues. Objectives encompass delineating precise goals, grasping both risks and opportunities, and crafting alternative scenarios to inform decision-making processes. Key tasks are strategy formulation, scenario definition, and prioritization through thorough scenario evaluation workshops, underscoring the role of stakeholder involvement in envisioning the future landscape of urban mobility.

The D3.1.1 Annex IV, titled “Phase C: Guidance on Scenario Development”, supplements this chapter by furnishing practical guidance, complete with templates and step-by-step instructions for crafting alternative scenarios for DRT solutions.

The activities and outcomes of this phase for each pilot are documented in reports such as D1.1.3 “Development scenarios for DRT innovative governance and planning approaches” and D2.1.3 “Development scenarios for DRT innovative digital and operational approaches”.

This phase is structured into three key steps:

- Step 1: Strategy Development;
- Step 2: Definition of Alternative Scenarios;
- Step 3: Scenario Evaluation Workshop.

The following chapters will detail those three steps for the WP2 pilots.



## 3. Pilot area Budapest

### 3.1. Information on the process

Currently BKK operates several Demand Responsive Transport (DRT) services in Budapest. The services can be requested through the online interface developed as part of the SMACKER project<sup>1</sup>, via customer service phone number, or by notifying the driver in person at some endstation points. After registration on the online platform, indicating the intention to travel happens relatively quickly. The online service has several advantages, including the ability to save the most frequently requested routes in the "Favourites" menu, making the request even faster; requests can be easily modified or cancelled in case of changes; and a departure alert email can also be set up. Requests for the service can be made at least 30 minutes before departure, and cancellations are possible up to 15 minutes before departure.

The following DRT services and models are available currently in Budapest:

- Service operates only with reservation (including the line 937, night service). This line is an extended section of one of the core night lines 901;
- Service operates as a regular public transport system on weekdays, and as demand responsive system on weekends and public holidays (e.g. 219, being beforehand a full-time DRT, showing its success);
- Service operates as a regular public transport system during the day, and as demand responsive system early in the morning and in the evening on a part of the line with lower demand (e.g. 87, 221);
- Service operates as a demand responsive system only on route extensions (e.g. 65, 157);
- Service operates as demand responsive system except during morning and afternoon peak hours (e.g. 269, 275, 297, 298).

The main challenge in the DREAM\_PACE project is that contrary to the current DRTs in Budapest having a fix line, there will be an opportunity to test a demand responsive system with a flexible route on a certain part of the line. Since such a service is not currently operating in Budapest, it is considered as challenge both in terms of operation and IT.

A Living Lab meeting, conducted online on 4<sup>th</sup> March 2024, was organized to evaluate various scenarios, with the participation of employees from BKK, Mobilissimus, and Budapest University of Technology and Economics. BKK briefly presented the status of the pilot, including the planned area, coverage, concept of the timetable, options for service availability and accessibility, and types and locations of possible stop points. During the discussion, the following topics were addressed:

- Extension of the service area and better connection opportunity to local railways (HÉV) and other BKK bus lines;
- Modification of the itinerary;
- Possibilities for modifying the timetable concept;
- Reducing density of stops;
- Method of placement of the stop points.

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<sup>1</sup> <https://programme2014-20.interreg-central.eu/Content.Node/SMACKER.html>



### 3.2. Strategy development

Identified issues & needs	Stakeholders/ User Group	Strategic Objectives for the DRT pilot	Indicators	Expected Impacts (Targets)
Better accessibility Higher flexibility	Local residents Workers Students	Accessibility	Spatial coverage Nr of passengers	Less car use Reduced walking distance
Connectivity Reliability	Local residents Workers Students	Reliability of connections New connections to regular PT	Travel time Average delay	Guarantee connectivity Better interchange options to several other lines and services
Vision:				
Create a new service area that guarantees <b>accessibility</b> for all the residents, workers and students (and those living in the surrounding areas) with <b>flexible route planning</b> , that gives valuable <b>connections</b> to the regular public transport network with <b>reliable</b> schedule				

During the meeting, BKK made a presentation about their ideas regarding the pilot area, introduced it to the stakeholders. As a main part of the strategy development process, the event continued with a brainstorming session, focusing mainly on the indicators (identified issues & needs, and stakeholders were agreed):

- spatial coverage;
- travel time;
- number of bus stops;
- travel time.

The vision was clear and appropriate for all participants.

### 3.3. Composing scenarios

#	Identified issues & needs	Functional description of the component	Target Users	User stories
1	Better accessibility Higher flexibility	New service area with flexible route planning, stop points placed within easy reach	Local residents Workers Students	Shorter walking distance to the stop point to reach the nearest PT stops for those without a car
2	Connectivity Reliability	Connection of the new service area to the suburban railways, strong time related	Local residents Workers Students	Good and punctual connection to the local railway for



#	Identified issues & needs	Functional description of the component	Target Users	User stories
		connection to the suburban railways		workers, students and local residents

### 3.4. Scenario evaluation

At the online meeting, participants discussed various elements:

- Territorial coverage and expansion: Currently, only a small area is covered by the planned demand responsive public transport service, but there's a consideration to extend it to the neighbouring areas where there is currently no regular public transport either. It's also important not to exclude these areas from the possibility of demand-driven transportation;
- Flexible route planning: The system will generate routes based on user registrations, but there was a suggestion at the meeting that users should give their planned arrival times in order to plan their onward journeys effectively;
- Access to new connections: A suggestion was that that routes should reach important locations such as the Árpádföld HÉV station and the bus line 31;
- Schedule related questions: It's crucial to consider the schedule of the HÉV local railway when planning;
- Placement of stops: Fewer but well-placed stops are recommended, preferably with some form of indication like schedule boards.

The final scenario will be shaped based on these discussions, likely involving territorial expansion and examining accessibility to the local railways. Colleagues of BKK will examine these proposals for the next LL stakeholder meeting. BKK, in collaboration with Mobilissimus, plans to conduct a survey among local residents, to understand the current transportation habits and to see the needs for the new demand responsive transport service. The results of the questionnaire will also be taking into consideration during the co-design process.





## 4. Pilot area Pavia - Oltrepò

### 4.1. Information on the process

Miobus is a DRT service with flexible routes and schedules, to meet the needs of citizens, active in the Oltrepò / Stradella area since September 2019. It has been subject to an important upgrade in June 2023, with the deployment of a new management system, more digital and integrated with other business systems. Customers can book a ride, as well as by phone, also from App at the preferred time, within the available service hours (school period: from Monday to Friday 9.30-11.30 / 16.30-18.30, Saturday 6.00-10.00 / 12.00-14.00 / 17.00-19.00; non-school/summer period: from Monday to Saturday 6.00-10.00 / 12.00-14.00 / 17.00-19.00). During the booking phase, the passenger can choose the departure stop, the arrival stop and the desired departure or arrival time. The management system accepts the request and organizes the ride according to the availability of the buses and the presence of other pre-existing bookings. In the same area, in addition to the DRT service, there are some fixed lines, to guarantee the possibility to reach other destinations outside the area (e.g. line 132 Stradella-Voghera; line 95 Castel S. Giovanni-Stradella-Pavia-Milano Famagosta), where interchange with the DRT service is possible.

The main advantages of the Miobus service are:

- Completely digital experience for the customer: booking, change (up to 30 minutes before departure time), confirmation, real time notifications, check-in and travel;
- Fully digital service experience for the driver: list of journeys to be made and passengers to accompany and check-in on a special device installed on board the bus;
- Optimisation of routes between booked stops according to actual travel requirements to ensure environmental sustainability;
- Integration with traditional scheduled services within the customer app.

A major challenge is to fill the current following gap: the service should be able to integrate flexibility and reliability and bring all targets of the population, even elderly, to the use of the service. The filling of these gaps requires a more composite approach to the service planning and the digital and operational innovations listed above.

The first two Living Lab meetings (22 and 21/11/2023) engaged stakeholders in identifying the main challenges of the territory and the state of the art both from the supply and demand side. While the first one had local authorities as main target, the second included representative of users.

A third meeting focused on the scenario development, in order to set the scene for the co-design of solution components and pilot tests on the territory. Missing integration and knowledge about the service and its potential emerged as relevant aspects. From the governance point of view, integration must be considered in the long planning perspective.

A new collaborative approach is expected to engage the territory to define solutions built around community needs, with the specific challenge of allowing the process to happen within the boundaries of the service contract. Among the elements discussed to improve the digitalisation and operational approaches, the following have been noted and discussed:

- Better integration between DRT and local public transport;
- Digital and operational enhancements:
  - New digital tools in the App to facilitate the integration of DRT with LPT<sup>2</sup>:

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<sup>2</sup> Local Public Transport



- Timetables of bus and railway lines with interchange at the DRT stops;
- Possibility of booking DRT service in connection with bus line service;
- Points of interest near the DRT stops (public services, touristic attractions, cycling routes, etc.);
- Introduction of hotspots at the 3 main stops, available (upon availability) even without reservation within scheduled routes;
- Installation of totems in hotspots to check the places available on incoming vehicles and book the service;
- Experimental DRT service in a new regulatory framework (with associated partner “Agenzia per il TPL”, which is the PTA in the pilot area).

## 4.2. Strategy development

The following table summarizes the main findings in terms of relevant needs and strategic objectives to be brought forward in the definition of final scenarios for the co-design and testing.

Identified issues & needs	User Group	Strategic Objectives for the DRT pilot	Indicators	Expected Impacts (Targets)
Accessibility Flexibility (Matching)	Elderly Disabled Leisure	Accessibility and inclusion	Spatial Coverage	Elderly and disabled people are more likely to use the service  Better spatial coverage attracts more users from the user groups.  Route and timetable flexibility opens the accessibility to the service for elderly, disabled people, and for leisure purposes.
Connectivity Reliability Time effectiveness	Workers without cars University students	Improve performance	Travel time Average delay	Guarantee connectivity  Decreased journey- and waiting time, less detours
User friendliness	Elderly	Improve accessibility	Accessibility for vulnerable groups and differently abled	Elderly are more likely to use the service
<b>Vision:</b>				
Create a network of services combining <b>accessibility for all</b> (overcome physical and digital barriers), <b>flexibility</b> for specific groups, <b>reliability</b> for intermodal mobility (e.g. ensure connection with regional buses/trains), improve user friendliness				

Regarding the strategy development, in general, there is a need for improved health and public services for the elderly, emphasized by the Mayor of Casteggio. Currently, there are limited train stops, requiring



individuals to travel to Voghera or Milano by car, posing challenges for the elderly and people with disabilities accessing hospitals and essential services. The Miobus service, although an active service, is often not well-known among citizens, highlighting a need for better communication and information dissemination. It is important to address these accessibility issues by connecting to major health services and local facilities. Communication efforts, including flyers, local newspapers, and in-person engagements at supermarkets, aim to raise awareness and provide necessary information.

Furthermore, the focus extends to addressing the transportation needs of workers without cars, particularly in Bosnasco, where a fixed service aligned with work times is needed. While there's potential synergy with DRT, additional analysis on the number and scheduling of workers' transportation needs is necessary. Companies are willing to invest in such services. In order to manage mobility effectively, the proposal includes establishing mobility managers in companies with over 100 employees to coordinate transportation needs and provide information to the Public Transport Agency. The target groups for transportation services include workers, students with non-traditional schedules, and those residing outside main transportation lines.

Finally, the overall strategy and vision have been validated by the participants.

### 4.3. Composing scenarios

#	Identified issues & needs	Functional description of the component	Target Users	User stories
1	Accessibility Flexibility (Matching)	Mix of services in different time frames with flexibility and accessibility complemented with less flexible services which reach at predefined times points of interest (stations etc.)	Elderly Disabled Leisure	Serving different transport needs and shift modal split to public modes.
2	Connectivity Reliability Time effectiveness	Limitation of flexibility and accessibility by the use of hot spots	Workers without cars University students	Good and punctual connection to the regular services, increasing social inclusion
3	User friendliness	Use digital tools and totem screens to enhance the accessibility to services	Elderly	Encouraging as many residents as possible

### 4.4. Scenario evaluation

The third meeting, focusing on scenario development, highlighted the main relevant challenges of the territory, and validated the strategy and the scenario perimeter where the pilot activities will be co-designed. Main elements emerged are accessibility, improvement of reliability and flexibility, as well as a better communication of the services on the territory.

The process of scenario evaluation was straightforward. Stakeholders agreed on the three main components identified as main fields for the co-design and testing of new solutions, resulting in a prototype of innovative operational approaches.



At the same time, stakeholders agreed on the fact that both components can be carried out in the next phases, and co-designed synergically to be tested within the pilot activity dedicated to governance and planning approaches.



## 5. Pilot area Osttirol

### 5.1. Information on the process

In Osttirol, demand responsive transport (DRT) services are available in only two regions: Pustertal and Defereggental, operating as dial-a-taxi services from 5 am to 7 pm. These services work on a reservation basis, requiring bookings at least 60 minutes in advance. Additionally, various applications cater to different mobility services in the region, leading to fragmentation.

A Living Lab meeting was held on February 22nd, 2024, to develop scenarios for optimizing existing DRT services in Osttirol and integrating them into a unified mobility app for the region.

During the meeting, stakeholders, including representatives from local authorities, transportation authorities, and technology providers, discussed strategies to improve DRT services in Osttirol and streamline mobility solutions.

Topics addressed:

- **Optimization of Existing DRT Services:** Participants discussed strategies to enhance the efficiency and effectiveness of the current Demand-Responsive Transport (DRT) services in the region. This included evaluating route configurations, adjusting schedules, and improving service coverage to better meet the mobility needs of residents and visitors;
- **Availability of Public Transport (PT) After 7pm:** Deliberations centered on addressing the lack of public transport options available in the region after 7pm. Participants explored potential solutions to extend the operating hours of public transportation services, ensuring accessibility for commuters and enhancing mobility during evening hours;
- **Unified App for All Mobility Services:** Discussion revolved around the development of a unified mobile application that integrates various mobility services available in the region. Participants highlighted the importance of consolidating information on DRT, public transit, ride-sharing, and other transportation options into a single platform for ease of access and enhanced user experience.

The main challenge in the DREAM\_PACE project in Osttirol is optimizing the existing Demand-Responsive Transport (DRT) services. Additionally, the project aims to extend DRT coverage to more parts of the region, addressing the current limited availability of public transport options. Moreover, ensuring the availability of public transport after 7pm poses a significant challenge in Osttirol. Furthermore, the existence of different apps for various mobility services complicates accessibility and user experience. To tackle these challenges, the vision is to develop a unified mobility app that integrates all transportation options in Osttirol.

### 5.2. Strategy development

Identified issues & needs	Stakeholders/ User Group	Strategic Objectives for the DRT pilot	Indicators	Expected Impacts (Targets)
Better availability of DRT services (uneven mobility services)	Residents Workers Students	Optimisation of existing DRT services and even after 7 pm	Territorial coverage Time-based coverage Nr of passengers	Less private car usage Reduced walking distance



Identified issues & needs	Stakeholders/ User Group	Strategic Objectives for the DRT pilot	Indicators	Expected Impacts (Targets)
One integrated app for all mobility services in the region (fragmented services)	Residents Workers Students	Integrated app for better mobility planning	Better planning and accessibility of all mobility services in the region	Better mobility planning and availability of all mobility services
<b>Vision:</b>				
Optimisation of existing DRT services in the region and streamlining all mobility apps and creating one unified app for mobility.				

Regarding the scenario development phase, diverse group of stakeholders were engaged by RMO in discussions about the mobility challenges they faced in the region. Together, participants brainstormed and crafted scenarios to address these challenges.

### 5.3. Composing scenarios

#	Identified issues & needs	Functional description of the component	Target Users	User stories
1	Better availability of DRT services	Availability of existing DRT services in different parts of the region Availability of PT options after 7 pm in the region	Residents Workers Tourists	Maria must commute from her home in Nußdorf-Debant to the hospital in Lienz The existing bus route does not fit in well with her shift times, requires her to change buses and takes longer than necessary.
2	One integrated app for all mobility services in the region	As there are different apps for different mobility services in the region it's better to have one integrated app for all mobility services in the region	Residents Workers tourists	Maria must use different apps for different transport services in the region and its difficult for mobility planning

### 5.4. Scenario evaluation

At the online meeting, participants discussed various elements.

The workshop highlighted two crucial areas for improving mobility in the region. Firstly, it emphasized the need to address the limited accessibility of public transport, especially for those living outside main routes. Participants recognized the scarcity of local taxis and the lack of female representation in transportation



as significant obstacles. However, proposed solutions like tailored taxi services and expanding Demand-Responsive Transport (DRT) offer promising ways to enhance accessibility. Secondly, the workshop discussed the fragmentation of mobility services caused by multiple separate apps, making it challenging for users to find efficient transportation options. The proposal for a unified app encompassing all mobility services could significantly streamline mobility solutions and provide users with better recommendations.

To build on these discussions, it is essential to conduct feasibility studies to assess the practicality and effectiveness of proposed solutions. Engaging with stakeholders, including transportation authorities and technology firms, will be crucial in collaborating on solution development and implementation. Pilot projects should be initiated to test proposed interventions in real-world settings, allowing for evaluation and refinement. Simultaneously, efforts should proceed with developing an AI-based chatbot for mobility coordination and travel planning. Monitoring and evaluation mechanisms need to be established to track implementation progress and make necessary adjustments based on feedback and evolving mobility trends. These follow-up actions aim to enhance accessibility and streamline mobility services, improving the overall mobility experience in the region.



## 6. Pilot area Split-Dalmatia

### 6.1. Information on the process

According to the current state, in the Split-Dalmatia County (hereinafter: SDC) area as well as in the Republic of Croatia, there is no implemented DRT service.

The main general challenges in the SDC area include the general acceptance of the new concept of public transport (DRT) and the acceptance of digital solutions (applications) among older user groups. Additionally, one of the challenges is the variability of input costs (e.g., fuel prices) and their impact on operations, as well as the availability of human resources for providing DRT services. Another challenge is conducting targeted campaigns to raise awareness about the use of DRT.

A second stakeholder workshop was held on February 8, 2024, organized to assess different scenarios. Participants included Dyvolve and SDC as project partners, as well as representatives from the City of Sinj, mobility service providers Autoherc d.o.o., Promet Split d.o.o., Flixbus CEE South d.o.o., and Clissa d.o.o.

At the first workshop with stakeholders, inputs were collected and analysed, which were then presented at the second workshop. The results of the analysis showed four main sub-areas where there is a possibility of implementing DRT services. After mapping, stakeholders were presented with criteria for ranking the four sub-areas. The criteria included coverage area (km<sup>2</sup>), number of inhabitants within the coverage area, business zones, number of available public transport lines, frequency of public transport lines (average), and stakeholders' assessment. As a result of the discussion, stakeholders prioritized sub-area IV, which includes the area around Dugopolje, Trilj, and Dicmo. The final area for DRT service in sub-area IV will be agreed upon with stakeholders before initiating the procurement process for the DRT service.

The scenario development involved defining a specific area for the implementation of the DRT service. After Dyvolve proposed seven areas where prerequisites for the DRT service exist, based on the previously conducted study of the public transport network for SDC, the SDC partner chose one area encompassing the administrative regions of the cities of Sinj and Trilj, as well as the municipalities of Dicmo and Dugopolje. Stakeholders from that area, along the first workshop, the selected area was divided into four sub-areas. All four sub-areas were presented to the stakeholders, who then voted to select one area (IV) for testing the pilot DRT service, covering the region of Trilj, Dicmo and Dugopolje. Participants in the discussion included Dyvolve and SDC as project partners, representatives from the City of Sinj, and mobility service providers Autoherc Ltd., Promet Split Ltd., Flixbus CEE South Ltd and Clissa Ltd.

The methodology used to encourage participation included parameters such as the area coverage (km<sup>2</sup>), the number of inhabitants within the coverage area, business zones, the number of available public transport lines, and the frequency of public transport lines. Ultimately, stakeholders voted on which area to prioritize for pilot testing. Each stakeholder had the opportunity to vote for multiple areas. The discussion was conducted following the world café model.

### 6.2. Strategy development

Identified issues & needs	Stakeholders/ User Group	Strategic Objectives for the DRT pilot	Indicators	Expected Impacts (Targets)
The necessity of using personal vehicles for	Employees	Increasing the share of public transportation usage in total travel	The share of public transportation	Change in travel habits (favouring public transportation)





Identified issues & needs	Stakeholders/ User Group	Strategic Objectives for the DRT pilot	Indicators	Expected Impacts (Targets)
daily/occasional travel	Customers in shopping canterers / markets		trips in the total number of trips	
	Users of healthcare services Users of Community Centers	Adaptability of the transportation system to all social groups	The number of transported passengers (passenger categories based on ticket types)	Popularization of using public transportation for daily commutes
	Pensioners Students with extracurricular activities	Improved management of total costs in public transportation	Offered capacity versus occupancy, number of empty rides, number of tickets sold, number of kilometres travelled	More efficient utilization of financial resources required for providing DRT service
Reducing the amount of harmful emissions from transportation		Enhancing connectivity of rural areas through DRT (Demand-Responsive Transportation)	Number of introduced flexible DRT lines	Reduction of harmful emissions from transportation
			Trend, user satisfaction number	
		Introducing digital innovations into the DRT system	Number of implemented digital solutions for using DRT system and trip planning	Simplified trip planning and service utilization Reduction in the use of physical tickets
<b>Vision:</b>				
Increase mobility without the use of personal vehicles in rural areas through the use of sustainable and economically viable DRT solution.				

The project partner Dyvolve prepared a proposal for scenario development and briefed the stakeholders on the proposed strategy. Dyvolve presented all the details related to identifying mobility needs in the coverage area, target user groups currently lacking access to public transportation, strategic objectives for implementing the DRT pilot project, which are aligned with regional, national and European transportation strategies. Additionally, indicators to measure the success of the pilot project were presented, along with the expected changes. The main vision of the pilot project was also showcased. Scenario development was outlined, and the stakeholders present were divided into groups. Stakeholders then had the opportunity to propose additional guidelines for scenario development. The discussion followed the world café model.



### 6.3. Composing scenarios

#	Identified issues & needs	Functional description of the component	Target Users	User stories
1	<p>The necessity of using personal vehicles for daily/occasional travel</p> <p>Reducing the amount of harmful emissions from transportation</p>	<p>Solution: DRT Service</p> <p>Flexible stops</p> <p>Flexible schedule for shift work</p> <p>Direct connection, without transfers and/or minimal number of transfers</p> <p>Meeting mobility needs without the use of personal vehicles</p>	Employees	<p>The employee works in a business zone in three shifts</p> <p>Their shifts start at 6:00 AM on one day, 2:00 PM on another, and 6:00 PM on the third day</p> <p>Existing county lines do not suit the employee (stops are too far from the starting and ending points of the journey)</p> <p>Their travel choice is a personal vehicle</p>
2	<p>The necessity of using personal vehicles for daily/occasional travel</p> <p>Reducing the amount of harmful emissions from transportation</p>	<p>Solution: DRT service</p> <p>Flexible stops</p> <p>Flexible schedule</p> <p>Direct connectivity, without transfers or with minimal transfers</p> <p>Meeting mobility needs without the use of personal vehicles</p>	Customers in shopping centres/markets	<p>The user/customer decides to go shopping at a shopping center and/or market</p> <p>Existing county lines do not suit the user/customer (stops are too far from the starting and ending points of the journey)</p> <p>Their travel choice is a personal vehicle</p>
3	<p>The necessity of using personal vehicles for daily/occasional travel</p> <p>Reducing the amount of harmful emissions from transportation</p>	<p>Solution: DRT service</p> <p>Flexible stops</p> <p>Flexible schedule</p> <p>Direct connectivity, without transfers or with minimal transfers</p> <p>Meeting mobility needs without the use of personal vehicles</p>	Healthcare services users	<p>A user of healthcare services decides to attend a scheduled appointment for examination and/or medical treatment</p> <p>Existing county lines do not meet the needs of healthcare service users (stops are too far from the starting and ending points of the journey)</p> <p>Their choice of travel is a personal vehicle</p>
4	<p>The necessity of using personal vehicles for daily/occasional travel</p>	<p>Solution: DRT service</p> <p>Flexible stops</p> <p>Flexible schedule</p>	Users of Community Centers	<p>A user of the Community Centre has organized activities throughout the week at different times (morning and afternoon)</p>



#	Identified issues & needs	Functional description of the component	Target Users	User stories
	Reducing the amount of harmful emissions from transportation	Direct connectivity, without transfers or with minimal transfers  Meeting mobility needs without the use of personal vehicles		Some activities start at 9:00 AM, others at 2:00 PM, and others at (:00 PM  Existing county lines do not meet the needs of Community Centre users (stops are too far from the starting and ending points of the journey)  Their choice of travel is a personal vehicle

## 6.4. Scenario evaluation

During the meeting, stakeholders discussed the following various elements of the new public transport service (DRT):

- **Vision of DRT Service:** Stakeholders analysed the vision of the DRT service. Challenges and needs were identified, along with strategic objectives of DRT, user groups, indicators, expected impacts, and constraints. For each scenario, user groups and their mobility needs were defined. A functional description of the DRT service solution was provided, along with a user story, application areas, operational parameters, and success factors to increase usage and attractiveness. Groups analysed scenarios according to SWOT analysis. After the workshop with stakeholders, a supervisory workshop was held with SDC representatives. The joint Dyvolve-SDC team evaluated the table with proposals for pilot components/solutions for SDC, areas/topics that the pilot will cover, planning and management, identification of challenges and needs, description of solutions/strategies, proposed stakeholders and their roles, as well as potential challenges and risks. It was stated that in the future, DRT could be tested before the introduction of regular public transport lines. During the testing of the DRT service, potential service providers see the need for additional human resources and vehicle fleet;
- **Implementation Area:** Based on the presented criteria, stakeholders voted for the sub-area number IV (Dugopolje, Trilj, and Dicmo). The final coverage area will be agreed upon with stakeholders before initiating the procurement process for the DRT service;
- **Target User Groups:** For each scenario, user groups and their mobility needs were defined, and a user story was created for each user group, encompassing transportation issues from origin to destination.

The final scenario will be shaped according to the inputs from the workshops. Stakeholders prioritize sub-area IV (Dugopolje, Trilj, and Dicmo) for testing the DRT service. The analysis of the four proposed scenarios showed possibilities for providing services to four target user groups. The next workshop will be held as needed.



## 7. Conclusions

The DREAM\_PACE partners directly involved in the pilot activities went through the scenario development process on Living Labs with their stakeholders. Scenario development allowed participants to explore diverse solutions tailored to local contexts, considering factors such as population density, existing transport infrastructure, and user preferences. By defining several scenarios, stakeholders could prioritize them based on the identified needs and the potential impact. Each pilot area recognized the importance of digital solutions in improving the accessibility and efficiency of newly developed or improved demand responsive services.

The scope of DRT implementation diverged across regions, some partners focusing on specific sub-areas (e.g., Split-Dalmatia County) while others aimed for broader coverage (e.g., Pavia).

In Pavia partners put an emphasis on offering flexible booking options for customers, integration with traditional scheduled services, and route optimization for environmental sustainability.

In Budapest the pilot explores flexible scheduling options, integration with existing public transport, and the development of the existing MaaS app for enhanced user experience.

In Osttirol, partners aim to optimize the current services and improving accessibility through digital solutions with a focus on integrating mobility services into one common platform/application for effectiveness.

The pilot in Split-Dalmatia County aims to introduce a newly developed DRT service in an area lacking public transport, and by developing a digital solution for the service.

Finally, while each pilot solution varies in its approach and focus, they all share a common goal of improving accessibility, efficiency, and sustainability in public transportation through innovative demand responsive transport models. The scenario development phase highlighted the importance of stakeholder collaboration, customization of solutions, and proactive identification of challenges.

The insights gained from the scenario development workshops will serve as a blueprint for the implementation phase of the project. The diverse solutions and priorities identified by participants/stakeholders will guide the partners in tailoring their strategies to meet the specific needs of the regions. This implementation phase will involve further collaboration among stakeholders to refine and execute the proposed solutions to enhance accessibility, efficiency, and sustainability in public transportation.



## 8. References

- 1) DREAM\_PACE D2.1.2 State of the art report on digital and operational approaches for DRT in the pilot areas. 2024.
- 2) DREAM\_PACE D.3.1.1 Methodological background for the design of DRT integrated solutions - Chapter 6, Annex IV. 2023.