

OUTPUT FACTSHEET

Project index number	CE100054	Acronym	SUSTANCE			
Output type ("x" to be included)	Strategy/ action plan		Pilot action	PA1-PA2- PA3	Solution	X
Output number (O.xx)	O.2.2	Output title	Long-term sustainability guidelines for better connectivity & smart mobility solutions			
If the output target is > 1 in the AF, please specify the output(s) described in the factsheet	Long term sustainability guidelines for better connectivity & smart mobility solutions 3 Jointly developed solutions: PA1 (SZPP - SI), PA2 (GYSEV- HU) and PA3 (IDA - HR).					
Output delivery date	July 2025					
Project website	https://www.interreg-central.eu/projects/sustance/					

Summary description of the output

Please present the output by addressing the following topics.

Territorial challenges and needs in the regions specifically addressed by the output

(max. 700 characters)

The addressed regions—covering Italy (IT), Slovenia (SI), Croatia (HR), Austria (AT), and Hungary (HU)—share similar challenges: peripheral location, outdated or missing cross-border rail infrastructure, and limited multimodal connectivity for passenger transport. Long travel times, infrequent services, and limited cross-border coordination reduce the attractiveness of public transport and hinder sustainable mobility. The affected areas, rich in tourism potential, require modernised, better-integrated transport systems linking rail, bus, micromobility and cycling networks. The proposed solutions provide governance, planning, and operational guidelines to overcome fragmentation, enhance accessibility, and strengthen cross-border cohesion across Central Europe.

Main aim(s) of the output and how it contributes to tackle the identified challenge(s)

(max. 500 characters)

The output aims to strengthen cross-border public transport connectivity and sustainability by providing transferable planning, financial, and governance frameworks and guidelines. It addresses key challenges such as fragmented infrastructure, low service frequency, and limited coordination among institutions. By promoting long-term cooperation, improved intermodality, and innovative funding schemes, the output supports the process of establishment of a new cross-border connection, modernisation of regional rail systems, fosters modal shift, and contributes to achieving EU objectives for sustainable, low-carbon mobility and territorial cohesion.

Technical description of the output (e.g. scope, main features, innovative elements etc.)

(max. 1500 characters)

The output provides an integrated technical and governance framework designed to improve cross-border rail connectivity, operational efficiency, and the long-term sustainability of public transport services in peripheral regions of Italy, Slovenia, Croatia, Austria, and Hungary. It combines strategic planning, technical innovation, and institutional cooperation to address common challenges such as fragmented infrastructure, low service frequency, and limited financial and governance capacity. The three solutions identified define an innovative, transferable approach that integrates technical optimization, substantial stakeholder co-design and joint implementation. This holistic model bridges policy, operations, and infrastructure planning, providing a replicable blueprint for sustainable, low-carbon, and cross-border mobility systems. Solution 1, tested along the route Trieste-Divača-Pivka-Rijeka (IT-SI-HR) by Slovenian and Croatian Railways, provides a joint cooperation method described in the long-term guidelines together with a detailed analysis to ensure the establishment, continuity and scalability of cross-border rail connections, demonstrating how institutional and technical cooperation can overcome territorial and operational barriers. It includes a SWOT analysis, a checklist of technical and organisational requirements, and an operational roadmap covering interoperability, rolling stock compatibility, ticketing integration, and border management procedures. Solution 2, tested along the lake Neusiedl route Neusiedl am See-Fertőszentmiklós-Sopron (HU-AT), outlines a cooperation framework for technical alignment, maintenance, and possible financing of new cross-border train services to improve accessibility and tourism-oriented mobility (especially bicycle tourism). It introduces a blueprint for setting up train services in other cross-border regions with potentially or already developed touristic sites. Finally, Solution 3, addressing the rail corridor Divača-Buzet-Pula (SI-HR) offers a strategic framework for infrastructure modernisation and intermodality, fostering modal shift and alignment with EU sustainable transport objectives. This solution is suitable for peripheral regions across Central Europe seeking to modernise underused rail assets, strengthen territorial cohesion, and foster further intermodality.

Involvement of target groups during output development and/or implementation

(max. 700 characters)

The outputs were developed through broad stakeholder engagement at national, regional, and local levels across the participating countries. Public authorities (ministries, regions, municipalities, etc.), public transport operators, infrastructure managers, and tourism actors contributed through consultations and co-design sessions, ensuring that technical, financial, and governance aspects reflected real territorial needs. Their feedback shaped the sustainability guidelines, financing models, and strategic frameworks, enhancing ownership, replicability, and policy relevance of the solutions while laying the basis for future cooperation and service continuity.

Cooperation dimension of the output, i.e. joint development within the partnership and, if applicable, joint implementation (see output indicator definitions in chapter I.3.3 and Annex 2 of the programme manual)

(max. 700 characters)

The outputs were jointly elaborated thanks to an intensive cooperation among responsible project partners: Slovenian Railways, Croatian Railways, Győr-Sopron-Ebenfurth Railway Corporation, Istrian Development Agency and associated organisations, ensuring strong transnational ownership and coherence. Activities included co-design workshops (that included the entire SUSTANCE partnership), joint drafting, peer review, and data exchange to harmonise technical, financial, and governance aspects. Input from rail operators, authorities, and experts were consolidated into shared guidelines and strategic frameworks. This collaborative development process established a coordinated cross-border approach and set the basis for joint implementation and policy uptake within the SUSTANCE partnership.

Results - expected change and lasting effects in the territories generated specifically by the output, its uptake by relevant organisations and benefits for target groups

(max. 1000 characters)

The outputs generate lasting impacts by strengthening cross-border rail connectivity and promoting sustainable intermodality through a structured framework for cooperation and a coordinated approach to technical, operational, and governance development. In particular:

Solution 1 establishes a governance pathway for cooperation among Italian, Slovenian, and Croatian public transport authorities, towards enabling harmonised timetables, ticketing, and rolling stock compatibility. Expected changes include more integrated approach in providing efficient cross-border services, and the replication of multimodal features such as bike transport and tourism integration.

Solution 2 introduces a process of joint action between Hungarian and Austrian rail operators, aligning technical standards, service improvements, and financing mechanisms. It is expected to enhance regional accessibility and support the development of future sustainable, tourism-oriented mobility offers like the “Circle Line”.

Solution 3 adopts a strategic approach to cooperation between Croatian and Slovenian institutions, coordinating investment planning, infrastructure upgrades, and deployment of low-emission rolling stock. It will foster intermodality and modal shift, while the potential creation of a Joint Railway Corridor Committee would ensure long-term institutional cooperation and policy alignment.

General public showed solid interest during the testing phase of solutions 1 and 2, and with all the lessons learned during the process of stakeholders’ consultation, it is clear that the target groups that can benefit the most from these 3 solutions are public transport authorities and operators. Additionally, it can be expanded to relevant touristic organisations, to further enrich the lasting effects.

Ownership and durability of the output after the project end, considering financial and institutional support including, if applicable, maintenance

(max. 700 characters)

The outputs ensure long-term ownership of the implementing partners and durability through strong institutional commitments. For each of these 3 solutions, sustainability guidelines form the basis for regional roadmaps that will be endorsed through Letters of Support establishing a transnational cooperation network. This will grant durability of the outputs in terms of future planning, potential continuation or replication of these solutions. Solution 1 calls for an assessment of the financial and operational sustainability in SI/HR/IT of the service tested, while the approach remains available and will be further disseminated after the project’s end. Solution 2 foresees continued stakeholder dialogue to maintain and adapt the service, potentially evolving into a permanent “Circle Line” connection around Lake Neusiedl. Solution 3 is owned by IDA (HR) and transferred to Croatian and Slovenian authorities, possibly integrated into transport strategies, and supported by EU and national funding, with a future perspective of setting up a joint body ensuring coordinated governance.

Transferability of the output to other territories, sectors or target groups and planned measures for supporting such transfer

(max. 700 characters)

The outputs are designed to be transferable across territories with similar cross-border mobility challenges. They combine operational optimization, governance integration, and co-design processes that can be adapted to other contexts. Solution 1 provides replicable measures such as timetable coordination, technical harmonization, and institutional cooperation frameworks, exemplified by the IT-SI-HR collaboration, the on-going Operational Agreement between the Friuli Venezia Giulia Region (IT) and Slovenia, which provides an example for long-term cross-border service implementation. Solution 2 offers a blueprint for regions with touristic potential, like Lake Constance or the Upper Rhine, supported by roadmaps and public dissemination to facilitate replication and policy uptake. Solution 3 applies a modular approach integrating infrastructure diagnostics and intermodal planning, transferable to underused rail corridors across Central Europe. Transfer will be further promoted through the SUSTANCE Transnational Cooperation Network and stakeholder engagement.

Related final deliverable(s) (Number(s) and title(s) to be included)	D.2.5.1. Long term sustainability guidelines for better connectivity & smart mobility solutions
Output web link (if applicable)	
GPS coordinates (if applicable)	

OUTPUT FACTSHEET

Project index number	CE100054	Acronym	SUSTANCE			
Output type ("x" to be included)	Strategy/ action plan		Pilot action	PA4-PA5- PA6	Solution	X
Output number (O.xx)	O.2.2	Output title	Long-term sustainability guidelines for better connectivity & smart mobility solutions			
If the output target is > 1 in the AF, please specify the output(s) described in the factsheet	Long term sustainability guidelines for better connectivity & smart mobility solutions 3 Jointly developed solutions: PA4 (ITL - IT), PA5 (IDA - HR) and PA6 (HZPP - HR).					
Output delivery date	July 2025					
Project website	https://www.interreg-central.eu/projects/sustance/					

Summary description of the output

Please present the output by addressing the following topics.

Territorial challenges and needs in the regions specifically addressed by the output

(max. 700 characters)

The main territorial challenge is improving public transport (PT) accessibility in rural/peripheral areas using new and innovative ICT solutions developed and tested in three different Sustance pilot areas (Emilia-Romagna Region, Istria Region and Croatian Railway network). The key needs addressed are related to: a) improving users' accessibility to all public transport solutions, in particular Demand Responsive Transport Services (DRT), public buses and trains and bike sharing services; b) better public transport management system for transport operators and/or small companies in charge of managing such services. To facilitate the replicability of the solution, the Sustance Long-term sustainability guidelines provide insights, evidence and recommendations for replicating and upscaling the developed ICT solutions in other contexts.

Main aim(s) of the output and how it contributes to tackle the identified challenge(s)

(max. 500 characters)

The Long-term sustainability guidelines for better smart mobility solutions contribute to the challenge of improving public transport services in peripheral areas by describing the different strategies and measures to be adopted for reliable and enduring PT systems supported by innovative web-based solutions developed in the SUSTANCE project. Moreover, it provides some key recommendations on the technical and political measures to be adopted for guaranteeing a potential integration of these services in a wider Maas scheme. Finally, this output contributes to the wider EU discussion on how to increase the attractiveness of PT services in low-demand areas and/or peripheral areas where it is more difficult to provide reliable public transport services.

Technical description of the output (e.g. scope, main features, innovative elements etc.)

(max. 1500 characters)

The Long-term sustainability guidelines for better smart mobility solutions started from a SWOT analysis, which provides a synthetic overview of key strengths, weaknesses, opportunities and threats related to the digitalisation of a PT service in rural/peripheral areas. This analysis is based on both scientific literature and evidence collected during the Sustance testing period and the project's activities (round tables, peer-review events, etc.).

Starting from this analysis, the output provides three different solutions and strategies for overcoming the main barriers and guaranteeing a long-term replicability potential of the developed solutions. The three solutions are referring to: 1) Open-Source web-based application for the digitalisation of small DRT services (Tested by ITL in Emilia-Romagna Region-IT); 2) MaaS scheme with a specific focus on bike sharing integration (tested by IDA in Istria Region-HR); 3) Better digital PT information on the railway official website (Tested by HZPP in Croatia-HR).

For each solution, long-term sustainability goals have been identified for their continuation and replicability. Furthermore, hints on the implementation of the proposed strategies and for continuation and extension of the Solutions were described. Other technical focuses are related to the long-term financial sustainability and to the recommended governance schemes to be adopted to have full support in the management and promotion of such services. The most innovative aspect is related to supporting the adoption of an open-source approach for developing small but highly personalised digital systems for more attractive and effective DRT services in rural/peripheral areas.

Involvement of target groups during output development and/or implementation

(max. 700 characters)

The Long-term sustainability guideline output describes the key public and private stakeholders involved during the project and the key involvement strategies adopted to have a solid governance scheme. In this case, the full implementation of the different solutions is possible thanks to a full involvement of the key local and regional stakeholders since the writing of the project proposal. All the main SUSTANCE results and solutions were preliminarily discussed and approved with these relevant stakeholders, using the SUSTANCE round-tables and other public events aimed to enlarge the quota of relevant stakeholders and real users involved in the project. Finally, a monitoring system to collect data on the number of real users using the different SUSTANCE solutions was defined. This is an important step to assess if real users appreciate the different SUSTANCE solutions.

Cooperation dimension of the output, i.e. joint development within the partnership and, if applicable, joint implementation (see output indicator definitions in chapter I.3.3 and Annex 2 of the programme manual)

(max. 700 characters)

The Long-term sustainability guidelines were written in strict collaboration among ITL (IT), IDA (HR) and HZPP (HR) (with the supervision of the Lead Partner CEI-ES) in the framework of the Sustance technical activities related to pilot actions supporting new/improved ICT public transport solutions at the regional and cross-border level. The output was elaborated starting from the different co-design sessions planned during the different Sustance project meetings with the other project partners and during the three online peer-review meetings with three external technical experts (in particular Mr. Gabriele Grea and Mr. Riccardo Maratini). Finally, all the relevant local and regional stakeholders were involved in the joint implementation of the defined solution.

Results - expected change and lasting effects in the territories generated specifically by the output, its uptake by relevant organisations and benefits for target groups

(max. 1000 characters)

Different results were reached in the SUSTANCE project.

The key expected changes and long-lasting effects related to the Emilia-Romagna Region (IT) case are: 1) Utilisation of the SUSTANCE WebApp after the project conclusion; 2) Improvement of the SUSTANCE WebApp using an open-source approach. 3) Scalability of the SUSTANCE WebApp at the regional level.

The key expected changes and long-lasting effects related to the Istria Region (HR) are related to improving access to sustainable, multimodal transport in Istria through a unified digital platform for journey planning and real-time information. Thanks to its modular architecture, the solution is adaptable for future integration of new services, ensuring long-term relevance. Regional authorities and transport operators are expected to adopt and maintain the platform beyond the project lifetime, embedding it into local mobility strategies.

The key expected changes and long-lasting effects related to Croatian Railway (HR) case are: 1) Maintenance of the PT database for a better info mobility accessibility of Croatian train' users; 2) Continuation and expansion of multi-level stakeholder cooperation; 3) Upgrade of the existing platform with new add-ons and touristic attractions. The key stakeholders will be involved as an advisory body. All these long-term goals will be formalised with the signature of a Letter of support with all the relevant local and regional stakeholders. The key stakeholders to be involved in moving from a testing phase to a stable, long-term service are the public transport operators managing these services and the regional and local authorities. □

Ownership and durability of the output after the project end, considering financial and institutional support including, if applicable, maintenance

(max. 700 characters)

The SUSTANCE project's partners ITL (IT), IDA (HR) and HZPP (HR) are the owners of the different solutions composing this project output. In relation to ITL solution, the SUSTANCE WebApp will be published online under open-source licenses (MIT License) and with related guidelines and long-term sustainability guidelines. In relation to IDA solution, the MaaS platform will be owned and maintained by regional stakeholders and local transport operators, ensuring institutional anchoring beyond the project lifetime. Operational costs are expected to be covered through regional and municipal budgets, with potential reinforcement from EU programmes. In relation to HZPP solution, it was created through operational business tools owned by HZPP company, and it will be financed as such after the project closure, requiring only staff costs and being incorporated in the website maintenance contract.

Transferability of the output to other territories, sectors or target groups and planned measures for supporting such transfer

(max. 700 characters)

The long-term sustainability guidelines summarise the key strategies and measures to scale up and take up the developed Sustance solutions. Key target groups are: Small municipalities; Mobility agencies in charge of managing PT services in rural and peripheral areas; Regional/County authorities in the framework of the inclusion of a wide MaaS scheme development; Private stakeholders interested in providing on-demand transport services. The transfer of the Solution will be supported by dedicated communication and dissemination materials and events at local, regional and EU levels.

Related final deliverable(s) (Number(s) and title(s) to be included)	D.2.5.1. Long term sustainability guidelines for better connectivity & smart mobility solutions
Output web link (if applicable)	
GPS coordinates (if applicable)	