D6.5 EXPLOITATION STRATEGY

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Consortium of partners

PARTNER	COUNTRY
UNION INTERNATIONALE DES TRANSPORTS PUBLICS (UITP)	Belgium
FIT CONSULTING	Italy
OLTIS GROUP	Czech Republic
FSTECH	Italy
CEFRIEL	Italy
CERTH	Greece
EURNEX	Germany
EURECAT	Spain
POLIMI	Italy
UNIVERSITY OF NEWCASTLE UPON TYNE	United Kingdom
UNIFE	Belgium
UIC	France
UNIZA	Slovakia
ELLINIKO METRO/ATTIKO METRO	Greece
INLECOM	Greece
FV-Helsinki	Finland
METROPOLIA	Finland

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Jaroslav Mašek	UNIZA	Review of second issue, contribution to third issue
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Stefanos Gogos	UNIFE	Contribution to third issue
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EXECUTIVE SUMMARY

The aim of this deliverable is to present an exploitation strategy developed for RIDE2RAIL project. The deliverable describes the tools used to exploit the solutions of the RIDE2RAIL project to stakeholders, to members of the project and to their partners. The tools described in the documents should facilitate exploitation.

The RIDE2RAIL exploitation strategy is addressed to a continuous project process, accompanying its activities since an early stage, and channelling all efforts towards high adoption levels and self-sustainability of the solution.

As a background on the project, RIDE2RAIL aims to develop an innovative framework for intelligent mobility solution and to promote an effective ride sharing practice of citizens, making it a complementary transport mode that extends public transport networks. To achieve the increased uptake of the RIDE2RAIL solutions by relevant stakeholders in Europe and beyond, an adequate engagement level with the above mentioned stakeholders is essential, together with project solutions widely disseminated to relevant target groups.

To reach an audience as wide as possible, WP6 leader, UITP, worked during and after the project end to encourage other associations and organizations in the consortium to further disseminate of the project solutions and knowledge developed by the consortium in the 41 months of RIDE2RAIL lifetime. Their expertise in European research projects, prominent status in the field of transportation and wide cross-sectorial network make them an important tool in making the exploitation of RIDE2RAIL a success.

Business Model Canvas (BMC) has been chosen in this document to establish exploitable project results, setting out specific business plans, identifying the projects benefits and target groups. The BMC then describes how project results can be exploited – commercially or otherwise – and potentially by whom. The potential revenue streams identified include advertising, selling of data, and subscription fees. One of the most important aspects remains promotion and dissemination of RIDE2RAIL solutions.

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Abbreviations and acronyms

API	Application programming interface
BMC	Business Model Canvas
DC	Driver Companion
EU	European Union
GHG	Green House Gases
HSL	Helsinki Regional Transport Authority
IP4	Innovation Programme 4
ICT	Information and communications technology
IPR	Intellectual Property Rights
IT	Information technology
ITS	Intelligent Transport System
MaaS	Mobility as a Service
RP	Revealed Preference
S2R JU	Shift2Rail Joint Undertaking
SP	Stated Preference
TC	Travel Companion
TSP	Transport Service Provider
WP	Work Package

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BACKGROUND

The present document constitutes the Deliverable D6.5 “Exploitation strategy” in the framework of the Task 6.4 of the project RIDE2RAIL.

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OBJECTIVES/AIM

One of the RIDE2RAIL goals is to integrate multiple data sets and sources and existing transport platforms, and to integrate and harmonise real time and diverse information about rail, public transport, ride-sharing and crowdsourcing in a social ecosystem, testing it "on field" in the 4 demo locations (Athens, Helsinki, Brno, Padua). The project designs, develops and tests a set of software components, i.e. RIDE2RAIL solutions for the IP4 ecosystem (some developed within the RIDE2RAIL project and integrated in the existing S2R Travel Companion, others developed by S2R Call For Members project and provided to RIDE2RAIL partners. The project, as a combination of what internally develops and what provided by CFM projects (with whom strict collaboration was established from the very beginning) delivers a set of validated proof of concepts and business cases. These are described in this document, envisaging future mobility scenarios.

Main goals of the RIDE2RAIL exploitation strategy are to reach the following objectives:

- To create a set of business frameworks for the commercial exploitation of the RIDE2RAIL products, according to the European and worldwide market trends;
- To identify key stakeholders (industries, service providers, industrial or user associations, standardization initiatives, etc.) to be taken into account or liaised with, because of their high potential impact to project solution exploitation;
- To develop the exploitation strategy providing recommendations for the continuous use of the project solution after its closure, identifying the required actions leading sustainable exploitation.

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EXPLOITATION STRATEGY

RIDE2RAIL's overall objective is to develop an innovative framework for intelligent mobility, facilitating the efficient combination of flexible and scheduled transport services, thus enhancing the performance of the overall mobility system. This framework, consisting in a combined suite of travel offer classifications and software components, have been , over the project lifetime, integrated in the S2R ecosystem, together with existing collective and on-demand transport services, connecting, and reinforcing the mobility offer especially in rural and low-demand areas, in order to induct the access to high-capacity services (rail, bus and other public transport services) thanks to easy-to-use multimodal and integrated travel planning, booking, issuing and other features.

The exploitation strategy presented in this document provides the recommendations for the continuous use of the solutions after the end of the project. Furthermore, this strategy involves a set of business frameworks for the commercial exploitation for the RIDE2RAIL products. The described business models are expected to include a basic income generated by advertising, selling of data and know-how from the project, and offering premium features. It would be targeted at a wide range of potential customers from service providers to end users, in line with the goal to have the RIDE2RAIL outcomes applied by the widest possible audience.

This strategy identifies the required actions, to lead to sustainable exploitation plans. This especially means engagement with key stakeholders identified because of their high potential impact to project solution exploitation. To that end, RIDE2RAIL conducted a social media campaign and hosted events (demonstrations and workshops) to get the key stakeholders involved.

Commercialization potential for RIDE2RAIL identifies a list of exploitable project outputs that can be used as a product or a service. The list is settled and updated as needed, according to the European and worldwide market trends throughout the project duration. This document broadly outlines their commercial potential and highlights the value of proposed solutions.

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Table 1 – Identified business cases

EXISTING BARRIERS FOR RIDE SHARING	TRAVEL SCENARIOS	RIDE2RAIL BUSINESS CASES
Insufficient awareness of dedicated services	Cooperation between ride sharing and train operators	Cooperation with existing train operators and deployment of integrated ticketing schemes
Need for flexibility in scheduling to allow and cope with change in plans	Family routine	Network of trusted crowd-based TSPs according to predicted individual plans
Lack of trust and willingness to ride with strangers	Business Trips	Agreement ledger based on Blockchain technology defining specific travel paths and rating users
Uncertainty in reaching agreements on sharing costs	Millennials leisure & work	Provision of services classifying travel offers and exposing costs for Ride Sharing trips

RIDE2RAIL addresses the current challenges of identifying criteria for multimodal travel planning by addressing the mentioned existing barriers in Ride Sharing practice, developing travel scenarios and testing related business cases.

1.1. Commercialisation potential for the RIDE2RAIL

Commercialisation is the process of bringing new products or services to market. The broader act of commercialization entails production, distribution, marketing, sales, customer support, and other key functions critical to achieving the commercial success of the new product or service.

Commercialization potential for the RIDE2RAIL identified products is settled and updated as needed, according to the European and worldwide market trends throughout the project duration.

In the Deliverable 2.2, the market is explored and the recommendations for a successful integration of the ride-sharing concept in the Shift2Rail IP4

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ecosystem are identified. Following activities are organized and conducted in the Deliverable 2.2 (available on RIDE2RAIL project website):

- State-of-the-art analysis of existing ride-sharing systems operating around the world;
- Thorough review of the legal frameworks relevant to ride-sharing in the European countries, in order for potential barriers of implementation to be identified;
- Definition of ride-sharing users and identification of their characteristics.

Commercialization of the RIDE2RAIL solutions could be ensured by following channels and tools:

- Campaigns on social media;
- Press;
- Enhancing theliaison with practitioners and stakeholders;
- Enriched website;
- Submission of scientific papers to relevant journals and conferences,
- Presentation of solution and prototypes;
- Organization of Stakeholders' workshops.

Exploitation plans

Each exploitable result must contain a business plan to try to shorten as much as possible the time-to-market of the project outputs. Very important parts in the exploitation strategy are also dissemination and communication tools and activities. Through these tools, the RIDE2RAIL solutions are disseminated to target groups.

1.1.1. Project solution

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The project has developed exploitable concepts and solutions in its duration. With that come some general strengths, weaknesses, opportunities, and threats:

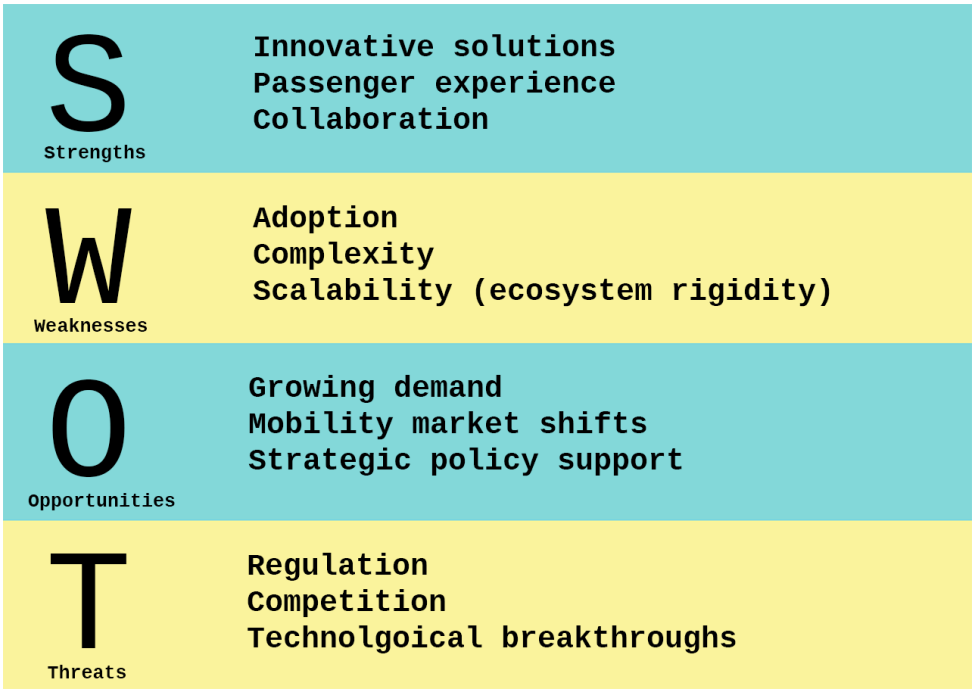

Figure 1 - RIDE2RAIL SWOT

The following list describes the project's solutions relevant to exploitation plans:

RIDE2RAIL delivers the conceptual model assessing the trip convenience based on several relevant dimensions, thus enhancing available IP4 ontologies to better reflect the actual trip categories, user preferences and choice criteria;

RIDE2RAIL develops, tests, and delivers a suite of as-a-service software components, by exploiting synergies of existing mobility offers that will be integrated into extended, multimodal transport networks without requiring ad-hoc customizations that hamper massive product uptakes;

RIDE2RAIL provides recommendations on future development, deployment, and replication to Shift2Rail IP4 with special regards to demand management strategies for collective transport systems;

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RIDE2RAIL delivers a set of validated proof of concepts and business cases envisaging future mobility scenarios where advanced transport solution was seamlessly integrated into existing rail and other collective transport services.

1.1.2. Benefits of the project's solutions

The results of RIDE2RAIL can provide many unique benefits and advantages to stakeholders, for example making user experience more seamless for end users, creating business opportunities for service providers, and giving local/national authorities better insights into transport trends, making planning easier.

Particular ways stakeholders can benefit from the project's solutions are that:

- RIDE2RAIL maximized the availability of mobility and behavioural data from different data sources and identified clusters of trip categories based not only on origin-destination itineraries, but also on both descriptive factors (travel time, cost, comfort, accessibility) and prescriptive factors (environmental aspects, traffic restrictions) that may influence travellers' choices;

- RIDE2RAIL synchronized and aggregated individual/spot mobility initiatives in structured, inclusive, and collective behaviours, connecting them to high-capacity transport services thanks to advanced journey planning, ride matching and influencing social features that will facilitate the access to multimodal itineraries and reduce reluctance to adopt sharing mobility practices;

- RIDE2RAIL enhanced carpooling diffusion, relying on widely-used communication channels, and contributed to a better understanding of the relevance of ride-sharing TSP complementary to rail and public transport in European urban and rural areas;

- RIDE2RAIL provided an open, connected, multimodal IT environment where innovative solution such as the Shift2Rail Travel Companion personal application and the RIDE2RAIL crowd-based TSPs are easily adopted by target user groups overcoming the existing barriers to user adoption;

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- RIDE2RAIL demonstrated, validated, and evaluated user acceptance of its solution in 4 European sites (Padua, Brno, Athens and Helsinki) by deploying trial activities with real users and disseminating the achieved impacts in terms of user adoption and related improved transport performances;

- RIDE2RAIL analysed factors influencing users' decisions and related attitudes in "consuming" mobility according to emerging models and systems that could become the ground-breaking solution for currently unappealing rural areas.

1.1.3. Target groups

RIDE2RAIL develops a complete definition of the clustered trip categories, and it identified incentives that are provided to travellers in order to urge them to make more environmentally conscious and less congestion-burdening choices. More information about the incentives' conceptualization is mentioned in the deliverables D2.1 First conceptualization of choice criteria and incentives and D2.4 Final conceptualization of choice criteria and incentives.

Identified actions and exploitation plans try to influence and address the related industries and end-users' customers.

Outputs could be used for the next exploitation in wide area by the followed target groups:

- Public and private transport operators;
- National, local and regional authorities;
- City and transport planners;
- ICT suppliers and software developers;
- Retailers, travel agencies, distributors;
- MaaS providers;
- Payment service providers;
- International associations;

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- Community groups;
- Regional, national, and European mobility clusters and industrial associations;
- Other networks and platforms;
- The academic community (researchers and students);
- Travellers.

1.1.4. Strategy

To encourage post-project use RIDE2RAIL solutions, the project focuses mainly on extensive dissemination and synergies. Nevertheless, project partners are engaged in several means to that end:

- **Dissemination, education, and awareness**: Workshops, seminars, and campaigns to promote the benefits of multimodal transport and raise awareness about the advantages of RIDE2RAIL's solutions. Collaborate with educational institutions involved in the project, industry associations, and local authorities to build awareness;
- **Stakeholder and end-user engagement and feedback**: Actively engage with stakeholders and end-users to gather feedback on RIDE2RAIL solutions, progress, and their experiences with RIDE2RAIL's services;
- **Continuing innovation**: Foster innovation based on RIDE2RAIL solutions within the RIDE2RAIL project and beyond. Continuously assess market trends and explore new features to promote possible follow-up solutions;
- **Business models and revenue streams**: Identify viable business models and revenue streams with the knowledge of products and services available on the market today. Monitor market trends for new business opportunities.

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COMMERCIAL EXPLOITATION OF THE RIDE2RAIL SOLUTIONS

The purpose of this section is to define a suitable business model approach for a commercial service perspective to possibly deliver a service offering based on the value proposition of the RIDE2RAIL solutions.

1.2. Context

There is a growing recognition of the importance of multimodal transport systems that seamlessly integrate different modes of transport. Rail plays a crucial role in such systems, providing connectivity between urban centres, airports, and other hubs and acting as a backbone of the mobility system in urban and rural areas. There also is a growing focus on sustainability in the transport sector with rail transport generally being considered more environmentally friendly compared to other modes of transport. With RIDE2RAIL aimed to further enhance sustainability and efficiency of transport, it naturally fills that demand.

The project also leans heavily into digitalisation, including data analytics. These subject are heavily sought after by commercial subject at the time of the RIDE2RAIL development for their potential to increase efficiency, improve safety, and enable better reliability.

Naturally, passenger comfort, connectivity, personalisation, and expanding the scope of passengers are subjects that have been on the market ever since and whilst perhaps not as directly commercially exploitable, it can give an important edge to service providers.

1.3. Business model

The chosen approach is the Business Model Canvas (BMC) that it is recognized as an internationally usable tool for innovative marketable solution. BMC will help to structure the correct business model, as it shows a graphical representation of all the important steps in a business model. It is structured into 9 blocks, all of them relevant to the solution considered: key partners, key activities, key resources, added value, user experience, channels, user segments, cost structure, revenue streams.

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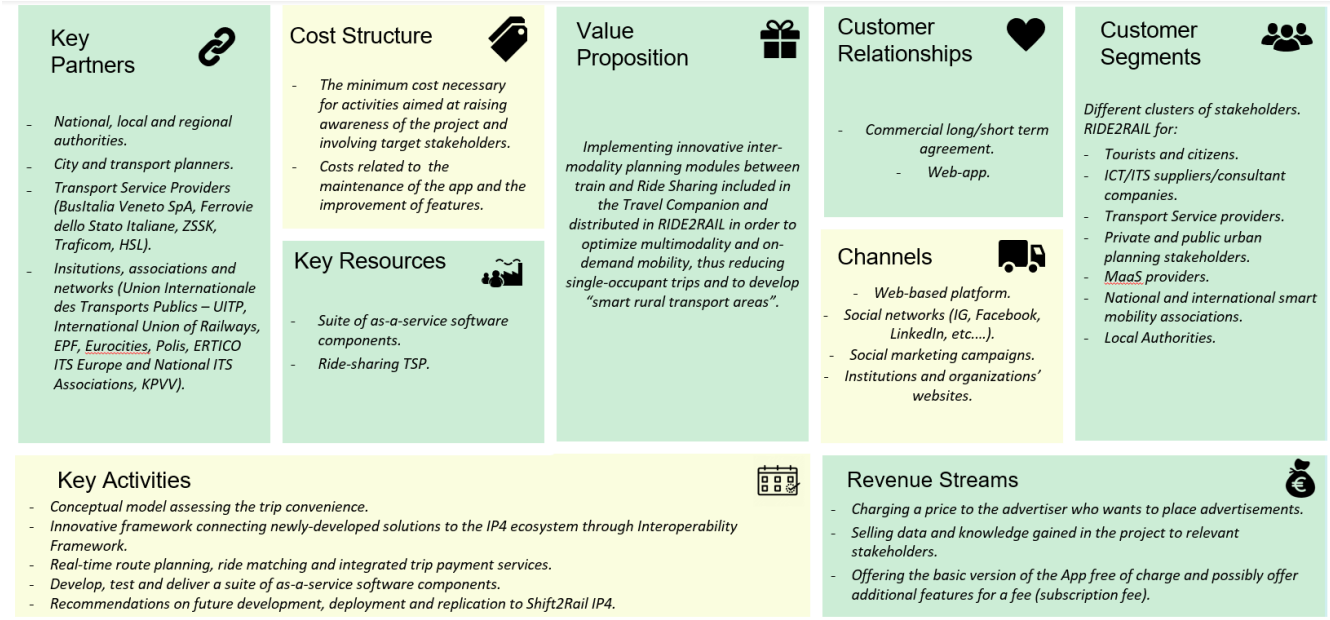

Figure 2 - Business Model Canvas

In the following section, selected project partners describe their specific exploitation strategies.

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UNION INTERNATIONALE DES TRANSPORTS PUBLICS - UITP	
Organization background	Since 1885, UITP -International Association of Public Transport, (see http://www.uitp.org) is the world-wide association of urban, suburban and regional passenger transport operators, their authorities and suppliers. As a passionate champion of sustainable urban mobility, UITP is internationally recognized for its work in advancing the development of this critical policy agenda. UITP is located in Brussels and with over 1,400 member companies, 18,000 contact members from 96 countries and 14 liaison and regional offices across the globe, UITP's main objectives are to study all aspects of public transport and mobility in order to promote the development of more efficient and attractive public transport services and to gain the maximum benefit from the latest available technology. UITP acts as a forum for transport operators and undertakings to exchange information and ideas on a world-wide basis. UITP organises special thematic meetings and conferences, projects and studies to meet the needs of its members, and every two years a biennial International Congress and Exhibition, the Global Public Transport Summit. UITP creates knowledge and enables innovation in specific topics related to all modes of transport like digitalization, security and safety, combined mobility and mobility as service, automated road transport, Bus, Metro, Light Rail, Regional and suburban rail, taxi and waterborne.
Exploitable results & knowledge	To make use of the RIDE2RAIL developments and the knowledge acquired in technology development and exploit it, when possible (in compliance with the project obligations, the GRANT and the Consortium Agreement) for the production of knowledge material and research project activities. The website and the tools developed within the project are kept for a certain amount of time in order to keep track of all the outcomes developed within the project lifetime and for documents repository.
Business objectives	The main objective is to give to the outcomes of the RIDE2RAIL project the widest possible visibility, both within UITP bodies and working groups and among UITP members and contacts.
Exploitation strategy	UITP will make sure that dissemination of project results will be transferred to the sector and its members, through members` newsletter, IT-TRANS, INNO-TRANS and the UITP Global Summit. RIDE2RAIL will help to bring new knowledge to the various activities interacting with the IT-ITS UITP Committee, Combined Mobility Platform, UITP Rail Committees and relative Working Groups, UITP Training programme and Transport Economics Committee to find synergies and to exchange knowledge on personal traveller information systems and trip tracking.

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Centre for Research and Technology Hellas – Hellenic Institute of Transport (CERTH-HIT)	
Organization background	The Hellenic Institute of Transport (HIT) is part of the Centre for Research and Technology Hellas (CERTH) which is a non-profit organization that directly reports to the General Secretariat for Research and Technology (GSRT), of the Greek Ministry of Culture, Education and Religious Affairs. HIT's main objective is the conduct and support of applied research activities in the field of transportation in Greece. More specifically on issues related to the organization, operation, planning and development of infrastructure, standardization, economic analysis, management, vehicle technology and impact assessment of land, maritime, air, and multimodal transport services. HIT consists of five vertical departments, which run all research projects and a series of "horizontal sectors" or "offices". CERTH/HIT team has **well acknowledged expertise in transport area. It is** a European leader in the field of transport. Since the beginning of its operation in 2001, CERTH/ HIT has participated in hundreds of National and European projects (research projects, services, etc.), acting as a leader of the Consortium in a vast number among them. CERTH/ HIT **deals with a wide range of transportation issues, related also to research areas included in the White Paper 2011, such as the following (indicatively):** Automation in Transport, including land transport, maritime transport and air transport; Electrification and renewable energy sources; Greening of Transport; C-ITS implementation; Urban Mobility Planning; New Mobility schemes for sustainable Urban Transport; Traffic Safety enhancement; Inclusiveness of Transport and Tourism; Shipping, Ports and Maritime Transport ; Supply Chain Management & Logistics ; New Skills for a Changing World.
Exploitable results & knowledge	To make use of the RIDE2RAIL developments and the knowledge acquired in technology development and exploit it, when possible (in compliance with the project obligations, the GRANT and the Consortium Agreement) for the production of knowledge material and research project activities. The website and the tools developed within the project are kept for a certain amount of time in order to keep track of all the outcomes developed within the project lifetime and for documents repository.
Business objectives	The main objective from a business perspective will be to take advantage of the experience gained in the framework of the project and use it to participate in other similar research projects and/or studies aiming to further develop and enhance the use of ride sharing platforms in large cities such as Athens, Thessaloniki, etc., both in Greece and in Europe.

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Exploitation strategy	CERTH has participated in the several conferences presenting the knowledge gained through the project, as well as prepared 2 major publications based on the project results. The participating researchers will continue disseminating the lessons learned from the project in more conferences, gaining this way visibility for the project, the commission, the institute and the notion of ride sharing in general.

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UNION DES INDUSTRIES FERROVIAIRES EUROPEENNES - UNIFE	
Organization background	UNIFE is a European association that represents the interests of the railway supply industry in Europe at the level of both European and international institutions. Its membership comprises manufacturers and integrators of railway rolling stock, subsystems, components, signalling equipment and infrastructure. Its mission is to pro-actively develop an environment in which UNIFE members can promote rail market growth for sustainable mobility.
Exploitable results & knowledge	To make use of the RIDE2RAIL developments and the knowledge acquired in technology development and exploit it, when possible (in compliance with the project obligations, the GRANT and the Consortium Agreement) for the production of knowledge material and research project activities. The website and the tools developed within the project are kept for a certain amount of time in order to keep track of all the outcomes developed within the project lifetime and for documents repository
Business objectives	Objectives: 1. Promote European policies favourable to rail; 2. Shape a European interoperable and efficient railway system; 3. Ensure European rail supply industry leadership through advanced research, innovation and quality; 4. Provide members with market, technical and political intelligence. 5. Mediation between UNIFE/industry members and all other interests 6. Coordination of input into standardisation activities at the end of the project (if relevant).
Exploitation strategy	UNIFE disseminated the results of Ride2Rail through its Technical Platform bringing together all UNIFE members' CTOs (or equivalent) and internal Working Groups, raising awareness of the relevance of the outcomes of the projects among its members and promoting the continuation of the work done in Ride2Rail in future R&D activities. UNIFE will make sure that the outcomes of the RIDE2RAIL project are disseminated to the widest possible outreach based on its membership and overall network, both within UNIFE committees and working groups and among UNIFE members and contacts.

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University of Žilina (UNIZA)	
Organization background	The University of Žilina (UNIZA) is one of the most significant educational institutions in the Central European region. It has a long tradition going back to 1953, with focus on technical studies. At present, there are about 8,000 students being educated in 184 accredited fields of study in all forms and degrees of university studies at UNIZA. University is divided into 7 faculties (among others Faculty of Mechanical Engineering, Faculty of Civil Engineering, Faculty of Electrical Engineering and Information Technologies, Faculty of Management Science and Informatics) and 2 research centres (University Science Park and University Research Centre), mostly concerned with transportation research and information and communication systems and education. UNIZA facilities have a yearly scientific and research capacity of almost million hours. Within this capacity, over 100 APVV and VEGA (national) projects, 15 projects from EU Structural funds, around 25 applied research projects and 15 projects of international science and technology cooperation are implemented each year. UNIZA cooperates with foreign universities and research organizations not just from Europe but also from America (USA, Mexico) and Asia (Korea, Japan, China, Taiwan). The cooperation is based on bilateral agreements, memorandums, or on specific programs (ERASMUS+, CEEPUS, Action Austria-Slovakia, etc.). The University has signed bilateral cooperation agreements with more than 150 foreign partners and it belongs to the most successful universities within the Erasmus+ Program.
Exploitable results & knowledge	UNIZA team got a lot of experiences from the design of a methodology for assessing the quality of transport in the context of the PRM passengers and experiences with mapping the current and future demand for the traveller's requirements, travel behaviour and mobility needs as well as in the analysis of legal aspects of ride-sharing in Slovakia/V4 countries. UNIZA team gained knowledge of the evaluation framework and associated methodology, plus oversee the data collection process to take place in CZ/SK pilot site. Highly valued experiences and knowledge were obtain from testing TC and DC application and co-organization the Brno demonstration.
Business objectives	UNIZA as non-business organization used obtained knowledge for expansion of the portfolio of partners for future cooperation in scientific projects and educational processes.

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Exploitation strategy	UNIZA team used all gained information and knowledge (in compliance with the project obligations, the GRANT and the Consortium Agreement) for upgrading teaching materials, application to the educational processes and possible future cooperation in field of transport science.

Politecnico di Milano (POLIMI)	
Organization background	Politecnico di Milano (POLIMI) was established in 1863 by a group of scholars and entrepreneurs belonging to prominent Milanese families. In Italy the term "Politecnico" is a synonym for "Technical University". POLIMI offers degrees in Engineering, Architecture and Industrial Design, spread over 7 campuses, with a central administration and management. The number of students enrolled in all campuses is approximately 40,000, which makes POLIMI the largest institution in Italy for Engineering, Architecture and Industrial Design. POLIMI is widely recognized for excellence in several research areas. Its most eminent professors over the years include the mathematician Francesco Brioschi (its first Director), Luigi Cremona, Giulio Natta (Nobel Prize in Chemistry in 1963) and Luigi Dadda, who brought the first electronic computer to Italy and was the founder of the Computer Engineering school. POLIMI is ranked as one of the most outstanding European universities in Engineering, Architecture and Industrial Design.
Exploitable results & knowledge	The POLIMI research unit, in the course of the RIDE2RAIL project, developed several technologies, which can be exploited in the future. In particular, it developed mechanisms to automatically learn user preferences from their past history, and to use them to rank travel offers according to the current context and preferences of the user. It also developed mechanisms to estimate the delay of car rides given their intended path and the current position.
Business objectives	POLIMI is a higher education institution and, though it can commercially exploit the technologies it develops, its primary mission is research and education. As such, the main goal of POLIMI is to increase knowledge and advance the research.
Exploitation strategy	POLIMI will seek to fulfil its business objectives in several ways: by incorporating the obtained results in offered courses; by disseminating the new knowledge through publications in academic international conferences and journals; by using and extending the developed technologies in future research projects.

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OLTIS Group (OLTIS)	
Organization background	OLTIS Group is a purely Czech business entity comprising member companies. Since 1997, it has stamped its authority on the information systems market for transport and logistics through sustained success and reliability. The associated specialized software companies within OLTIS Group work synchronously and effectively, thereby offering complex and highly customizable information system solutions wherein several key components are tailored to the needs of the clients. This is one of the key strengths and the niche of OLTIS Group. In particular, OLTIS Group focuses on development and implementation of sophisticated IT systems for transport, forwarding and logistics; innovative software solutions; implementation of railway interoperability; IT services and consulting and in connection with the RIDE2RAIL project, European research and innovations projects. OLTIS Group has rich and long-term experience with international research projects. In the case of Shift2Rail, OLTIS Group has cooperated in 11 projects, with a different position, such as a task leader, WP leader, etc.
Exploitable results & knowledge	To make use of the RIDE2RAIL developments and the knowledge acquired in technology development and exploit it, when possible (in compliance with the project obligations, the GRANT and the Consortium Agreement) for the production of knowledge material and research project activities. The website and the tools developed within the project are kept for a certain amount of time in order to keep track of all the outcomes developed within the project lifetime and for documents repository.
Business objectives	The main objective from a business perspective will be to take advantage of the experience gained in the framework of the project and use it to participate in other similar research projects and/or studies aiming to further develop and enhance the use of ride sharing platforms in towns such as Brno, Liberec etc., in the Czech Republic.
Exploitation strategy	OLTIS team will use all gained information and knowledge (in compliance with the project obligations, the GRANT and the Consortium Agreement) for a possible future cooperation with the companies operating in the transport sector.

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European Rail Research Network of Excellence e.V. (EURNEX)	
Organization background	The European Rail Research Network of Excellence is an association representing European institutional scientific knowledge, research and education. It comprises 33 scientific institutes in the area of rail transport and mobility. The objective of the association is to promote research and development of the rail system, particularly (i) to enhance co-operation in research and education as well as the knowledge transfer between the Members of the Association, European Universities and Research Establishments being interested in railway research, incl. multidisciplinary capabilities; (ii) to facilitate the scheduling and implementation of joint research projects between Members and to build up a sustainable research environment for the railway sector; (iii) to develop links between Members of the Association, industrial partners and operators within the railway sector; (iv) to increase the awareness of specific high quality research needs and opportunities for cooperation with the railway sector; (v) to promote the railway contribution to sustainable transport policy; and (vi) to improve the competitiveness and economic stability of the railway sector and industry.
Exploitable results & knowledge	EURNEX plans to make use of the lessons learned within the RIDE2RAIL activities - such as ethics-related issues, shared mobility frameworks and pilots' management – to be used in further proposal. EURNEX also plans to employ the gathered knowledge to advance academic research through specific papers.
Business objectives	Being EURNEX a non-for-profit organization, it has no business perspective as such. The knowledge developed within Ride2Rail will be used as mentioned above to improve the academic research and participation of universities in future projects.
Exploitation strategy	EURNEX plans to employ the lesson learned in ethics-related issues, shared mobility frameworks and pilots' management in other proposals and the production of future publications.

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TARGET STAKEHOLDERS

The composition of the RIDE2RAIL consortium representing all stakeholders' groups, allows the implementation of specific measures for a more efficient connectivity and information sharing for the new business opportunities and innovative transport schemes. The European and international relevance of the RIDE2RAIL partners gives the right confidence that project's actions have an international impact, as summarized below by the potential exploitation intentions of the most relevant stakeholders.

1.4. Most relevant stakeholders

- **Local Authorities**: continuation to use the RIDE2RAIL solutions, both technical and business related, for a longer-term ride-sharing service development and incentives to change user behaviour;

- **Transport Service Providers**: direct benefits brought by the RIDE2RAIL project by having an integrated system which expands their potential users/customers. They also investigate possible additional services enforcing their business;

- **ICT/ITS suppliers/consultant companies, both part of RIDE2RAIL**: contributed to push interoperable and cost-efficient solution. The technical developments supported in the project widened ITS offering and experience that commercially exploited thereafter;

- **Research Institutes**: disseminated the solution from the different sites, in controlled as well as field conditions, to the academic community by presentations at national and international conferences and in academic journals;

- **Transport Association**: ensure the enlargement of the consensus base of the solution within their members. This happened through the capitalization of the project solution into specific association activities and documentation like workshops dedicated to the project topics or the production of guidelines for members.

1.5. Stakeholders' engagement

As part of the exploitation strategy, stakeholders are engaged in multiple steps of the project. The exploitability of RIDE2RAIL solutions is ensured, by

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assuring consensus and concurrently practicality of the solution for the end users. WP6's Stakeholders Workshops acts as the interface for other WPs gathered input from external stakeholders in Europe. To organize the gathering of input from stakeholders, each WP defined its needs also by using information from workshops where stakeholders are invited to in order to provide feedback and other input for RIDE2RAIL. The stakeholders' workshops and engagement enhances the exploitability and credibility of the project solution by having a better understanding of the needs of the involved stakeholders, and thereby being able to tailor outputs to the users and contexts. Engagement is done, among others, through face-to-face (e.g. RIDE2RAIL's stakeholder workshops) as well as online stakeholder engagements formats (e.g. online surveys). Through its consortium partners and in particular UITP, EURNEX, UNIFE and UIC, the RIDE2RAIL project has a unique access to working groups and commissions/Committees/Working Groups that provided input and exploited project solution.

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RIDE2RAIL DISSEMINATION AND COMMUNICATION TOOLS & ACTIVITIES

The RIDE2RAIL project aims to develop an innovative framework for intelligent mobility solutions and to promote an effective ride sharing practice of citizens. To achieve the increased uptake of RIDE2RAIL solutions by relevant stakeholders in Europe and beyond, it is essential to ensure sufficient engagement with all stakeholders and progress/results are widely disseminated to relevant target groups. This has been done by focussing on various aspects:

- Establishing RIDE2RAIL as a brand while disseminating project objectives, raise awareness on topic of ride-sharing and public transport, generate interest through various channels including project website, brochure, press articles, animation video, newsletters;
- Active involvement of local practitioners and stakeholders: dissemination of demos and their objectives/set-up on website and social media, heavily utilising partners' networks for this. Local dissemination has played an important part in RIDE2RAIL seeing demo audiences were to be targeted locally, in local languages;
- Promote the findings of the project, promote the exploitation of the RIDE2RAIL innovations: through events (both organisation and participation) website, scientific publications, social media articles, newsletters, UITP Project Brief, final leaflet, and other.

1.6. Visual identity

To establish the RIDE2RAIL project as a consistent and strong brand, a full visual identity was created at the start of the project, including a logo, visual charter (colour scheme, fonts), and document templates. A solid identity increases engagement and recognition among the public and has been an essential part of the dissemination strategy.

1.6.1.RIDE2RAIL logo, symbol & visual identity

The RIDE2RAIL logo was developed in February 2020. Project logo and symbol were developed to support project visual identity.

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Figure 3 - RIDE2RAIL logo

Figure 4 - RIDE2RAIL symbol

To ensure consistent use of the RIDE2RAIL logo and colours, various templates have been developed: a PowerPoint template, a deliverable template, a meeting minutes template, and a meeting agenda template. All consortium partners are encouraged to make use of these templates when presenting the RIDE2RAIL project in internal or external meetings.

To further support the project identity, a full graphic character has been developed, consisting of the project colours and fonts. It also includes various other visuals, such as a banner and background, which can be used in the different dissemination tools, such as the project newsletters.

1.6.2. Project roll-up

The project roll-up was created as another means to strengthen the RIDE2RAIL identity and to be used at events.

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Figure 5 - RIDE2RAIL roll-up

1.7. RIDE2RAIL leaflets

1.7.1. Project leaflet

The first RIDE2RAIL leaflet has been produced at the beginning the project, to describe understandably the project background, approach, objectives, and scope. More specifically, it lists the project duration, the consortium partners, the EU funding, and the project website and contacts.

The leaflet is publicly available via the RIDE2RAIL website and has been distributed at events RIDE2RAIL has taken part in. The leaflet has been printed and distributed more than 100 times. Due to the COVID-19 crisis, distribution of the leaflet (in particular at project start) has happened mainly digitally.

1.7.1. Final project leaflet

In addition to the project leaflet produced at the start of the project, the final leaflet was created in the final month of the RIDE2RAIL project to highlight achievements of the project, focusing in particular on demo results.

The final project leaflet is distributed through the website, social media channels and partners' networks. Of course, this document (combined to leaflet 1) can serve long after project completion as a short summary of the RIDE2RAIL project and its solution.

The leaflet is available through this link: https://ride2rail.eu/wp-content/uploads/2021/04/FINAL-LEAFLET.pdf.

When it comes to the final factsheet, it is under preparation (at the time of writing this deliverable).

1.8. RIDE2RAIL website

The RIDE2RAIL website can be accessed via http://www.ride2rail.eu/. It has been the main communication tool for the consortium partners, relevant stakeholders, and the public. It was launched in March 2020 and has been one of the most important means to disseminate the project to a wider audience and to recap all project main activities. The website has a dedicated section where all relevant project news are listed. Public deliverable are uploaded on the website once officially accepted.

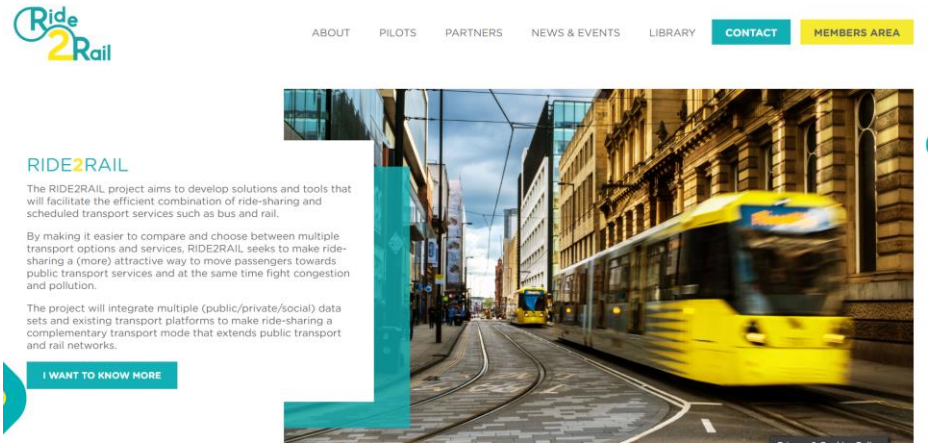

Figure 6 - RIDE2RAIL website homepage

1.9. RIDE2RAIL on social media

Social media are an established method to increase visibility and outreach and have been central to the RIDE2RAIL dissemination efforts. Social media offer a great opportunity to open the dialogue with the public, enabling direct interaction and raising awareness of the public towards the RIDE2RAIL project.

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1.9.1.RIDE2RAIL Twitter account

Twitter account for the RIDE2RAIL project was created in March 2020 (@RIDE2RAIL). The Twitter account allows to communicate with a network of professionals, experts and with the general public. The official RIDE2RAIL Twitter account has 256 followers (among them, institutions, policy makers, associations, other projects, industry, press, and also some top followers, followed by more than 80.000 people). RIDE2RAIL's top tweet earned more than 636 impressions.

1.9.2. RIDE2RAIL on LinkedIn

LinkedIn group for the RIDE2RAIL project was set up in 2020. The account on LinkedIn helps to impress stakeholders and create engagement around project developments with a more professional business-oriented community. The official RIDE2RAIL LinkedIn account has 124 followers.

1.10.RIDE2RAIL Newsletter

The RIDE2RAIL e-newsletter has been created to inform subscribers about the developments of the project and the most interesting events or happenings. It hosts project news, demo progresses and results, interviews with Europe's Rail and demo leaders/key project partners. Timing for the release has been flexible, as this always depended on the evolution of the project and content produced.

Throughout the project's lifetime, 4 official RIDE2RAIL E-newsletters have been sent out.

1.11. Video

Two videos have been produced within RIDE2RAIL Project Lifetime: one from the project partner INLECOM, mainly targeted at showing the WP3 features and in particular the Agreement Ledger; one from the coordinator UITP to be used as a dissemination tool to promote the project on a wider scale.

Links to videos are here:

INLECOM Video: https://www.youtube.com/watch?v=NryzSH57iZs

UITP Video: https://www.youtube.com/watch?v=bsPP-6pP2Ho1

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1.12. Papers and publications

RIDE2RAIL partners have published numerous articles and papers in scientific journals as well as at conferences throughout the project's duration. The list of some of the published papers and the publications is in the table below and the complete list of papers publications can be found in the Technical Periodic Reports. Here is a list of select key papers and publications:

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- Shared Mobility and Last-Mile Connectivity to Metro Public Transport: Survey Design Aspects for Determining Willingness for Intermodal Ridesharing in Athens. (Georgiadis, Georgios & Deloukas, Alex & Papaioannou, Panagiotis - ATTIKO METRO-AMETRO). Paper for 20th International Conference on Computational Science and ITS Applications – Cagliari, 01-04/07/2020. Link: icssa.org - DOI: 10.1007/978-3-030-58802-1_59 - In book: Computational Science and Its Applications - ICCSA 2020. Lecture Notes in Computer Science Publisher: Springer, Cham.

- "Towards Learning Travelers' Preferences in a Context-aware Fashion" (POLIMI). Paper for Workshop on New Applications for Public Transport (NAPT) – ISAmI Conference L'Aquila, 07-09/10/2020. Link: https://doi.org/10.1007/978-3-030-58356-9_20

- "Context Awareness in the Travel Companion of the Shift2Rail Initiative" (POLIMI). Paper for 28th Symposium on advanced database systes (SEBD 2020) – Villasimius, 21-24/06/2020. Link: http://ceur-ws.org/Vol-2646/15-paper.pdf

- Understanding Ride-Sharing Systems in Urban Areas: The Role of Location, Users and Barriers (CERTH). Paper for 48th European Transport Conference 2020, ETC 2020, 09-11 September 2020, Milan, Italy. Link: https://ride2rail.eu/wp-content/uploads/2020/10/ETC2020-Understanding-Ride-Sharing-Systems-in-Urban-Areas-The-Role-of-Location-Users-and-Barriers.pdf

- Ride2Rail: Integrating ridesharing for attractive multimodal rail journeys (UNEW + WP Leaders). Paper for WCRR - Birmingham (UK), 06-10/06/2022. Abstract submitted. Paper to be prepared if abstract is accepted.

- Carpooling to Public Transport: Exploring Drivers' Characteristics and Factors (CERTH). Paper for 10th ICTR conference "Future Mobility and Resilient Transport: Transition to Innovation" – Rhodes Island (Greece), 02-03/09/2021. Paper submitted. Under evaluation.

- [Conference Publication in-press] A. Javadian Sabet, S. Gopalakrishnan, M. Rossi, F. A. Schreiber and L. Tanca, "Preference Mining in the Travel Domain," 2021 IEEE International Conference on Artificial Intelligence and Computer Applications (ICAICA), Dalian (China), 28-30/06/2021.

- Factors Affecting Drivers to Participate in a Carpooling to Public Transport Service (Mitropoulos, L., Kortsari A., Aifadopoulou G. – CERTH, 2021). Paper for Sustainability Journal, 13(16):9129. Link/doi: https://doi.org/10.3390/su13169129

- Towards a More Informed Multimodal Travel Shopping (Mario Scrocca, Marco Comerio, Damiano Scandolari, Irene Celino - CEFRIEL). Paper for Third International Workshop on Semantics and the Web for Transport (Sem4Tra 2021) – Amsterdam, The Netherlands, 06/09/2021. Link: http://ceur-ws.org/Vol-2939/paper3.pdf

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- Semantic Conversion of Transport Data Adopting Declarative Mappings: an Evaluation of Performance and Scalability (Mario Scrocca, Alessio Carenini, Marco Comerio, Irene Celino - CEFRIEL). Paper for Third International Workshop on Semantics and the Web for Transport (Sem4Tra 2021) – Amsterdam, The Netherlands, 06/09/2021. Link: http://ceur-ws.org/Vol-2939/paper2.pdf

- Enabling Cross-Border Travel Offers Through National Access Point Federation via Metadata Harmonisation (Alessio Carenini, Andrea Fiano, Mario Scrocca, Marco Comerio, Irene Celino - CEFRIEL). Paper for Third International Workshop on Semantics and the Web for Transport (Sem4Tra 2021) – Amsterdam, The Netherlands, 06/09/2021. Link: http://ceur-ws.org/Vol-2939/paper6.pdf

- Ride2Rail: Integrating ridesharing to increase the attractiveness of rail travel (David Golightly, Marco Comerio, Cristian Consonni, Guido Di Pasquale, Roberto Palacin, Gabriele Pistilli, Giuseppe Rizzi, Matteo Rossi, Mario Scrocca, Carlo Vaghi). Abstract for TRA 2022 – Lisbon, Portugal, 14-7/11/2022 (paper not accepted).

- What factors affect travellers to use ridesharing with rail services in EU? (A. Kortsari, L. Mitropoulos (CERTH)) J. Pombo, (Editor), Paper for "Proceedings of The Fifth International Conference on Railway Technology: Research, Development and Maintenance", Civil-Comp Press, Edinburgh, UK, Online volume: CCC 1, 2022. 22-25 August 2022, Le Corum, Montpellier, France

- A Systematic Literature Review of Ride-sharing Platforms, User Factors and Barriers (Mitropoulos, L., Kortsari A., Aifadopoulou G. – CERTH, 2021). Paper for European Transport Research Review, 13(1), pp. 1-22. Link/doi: https://doi.org/10.1186/s12544-021-00522-1.

- Ride2Rail: Integrating ridesharing for attractive multimodal rail journeys (D. Golightly/R. Palacin (UNEW), M. Comerio (Cefriel), C. Consonni (Eurecat), G. Rizzi/G. Di Pasquale (UITP), G. Pistilli (FIT)). Paper for WCRR World Congress on Railway Research 2022, Birmingham (UK), 06-10/06/22 (poster accepted).

- Personalized Context-Aware Recommender System for Travelers (Mahsa Shekari, Alireza Javadian Sabet, Chaofeng Guan, Matteo Rossi, Fabio A. Schreiber and Letizia Tanca - POLIMI) Paper for 30th Symposium on Advanced Database System - Tirrenia (Pisa), Italy - 19-22 June 2022.

- Ride2Rail: Integrating ridesharing for attractive multimodal rail journeys (G. Rizzi, R. Palacin, G. Pistilli, L. Boratto, M. Scrocca). Paper for WCRR World Congress on Railway Research 2022, Birmingham (UK), 06-10/06/22 (presentation of poster based on a accepted paper).

- Ride2Rail: Integrating ridesharing to increase the attractiveness of rail travel (David Golightly, Marco Comerio, Cristian Consonni, Guido Di Pasquale, Roberto Palacin, Gabriele Pistilli, Giuseppe Rizzi, Matteo Rossi, Mario Scrocca, Carlo Vaghi). Paper for TRA 2022 – Lisbon, Portugal, 14-7/11/2022 (poster prepared based on the paper, accepted).

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- Modelling Business Agreements in the Multimodal Transportation Domain Through Ontological Smart Contracts (Mario Scrocca, Marco Comerio, Alessio Carenini, Irene Celino - CEFRIEL). Paper for SEMANTiCS 2022 conference – Vienna (and online), 13-15/09/2022. Link/doi: https://doi.org/10.3233/SSW220016

- Delay Estimation for Shared Rides From GPS Data (Sepehr Samavati, Alexander Nemirovskiy, Matteo Rossi - POLIMI). Paper for IEEE 25th International Conference on Intelligent Transportation Systems (ITSC) – Macau (China), 08-12/10/2022. Link/doi: 10.1109/ITSC55140.2022.9922316 + https://ieeexplore.ieee.org/document/9922316

- THOR: A Hybrid Recommender System for the Personalized Travel Experience (Alireza Javadian Sabet, Chaofeng Guan, Mahsa Shekari, Matteo Rossi, Fabio Schreiber, Letizia Tanca - POLIMI). Paper for Big Data and Cognitive Computing, vol.6, n.4, 2022, https://doi.org/10.3390/bdcc6040131.

- The interplay of costs, trip duration and perceived quality of travel time in nudging travellers towards green mobility: analysing mode choice through a recommender system (Cristian Consonni, Alex Martínez Miguel, Rohit Kumar, Yannick Cornet, Ghadir Pourhashem, Ludovico Boratto - EURECAT/UNIZA). Paper for World Conference on Transport Research (WCTR) – Montreal (Canada), 17-21/07/2023. Link/doi: http://wctr2023.ca/

- Study of travellers' preferences towards travel offer categories and incentives in the journey planning context (Malichová E, Straka M, Buzna Ľ - UNIZA), Scandolari D, Scrocca M, Comerio, M - CEFRIEL). Paper for PLOS ONE 18(4): e0284844. Link/doi: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0284844 + DOI: https://doi.org/10.1371/journal.pone.0284844

1.13. Dissemination activities via partners

The dissemination of RIDE2RAIL through partners' channels has been of the essence in the overall dissemination strategy. Most of the RIDE2RAIL partners participate in important networks of operators and universities, alongside engineering groups and specialists. With the aim of widening the dissemination of the project, UITP has encouraged the partners to use these networks to spread information about project activities and solution and to act as so-called 'Ambassadors' of the project.

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Demos' campaigns

The aim of this chapter is to describe the campaigns of individual demo sites, i.e. in with which tools and trough which communication channel were possible testers approached and subsequently recruited.

1.13.1. Padua demo

The demo has focused in urban and suburban area of Padua and surrounding areas, taking place from the 17/04/2023 to 21/04/2023 and focused on commuters belonging to the Padua province and travelling to/from the University of Ca' Foscari. The Transport Service Providers (TSPs) involved in the project were BusItalia, which handles road transport, and Trenitalia, which deals with rail transport. During the demo, both the Driver and the Travel Companion apps were tested, while the specific functionalities put under the spotlight included Preference & Profile, Trip Planner, Trip Sharing, Navigation, Issuing, Booking, Traveler's Feedback, Guest User, Offering a Ride, View your Journey and Collaborative Space.

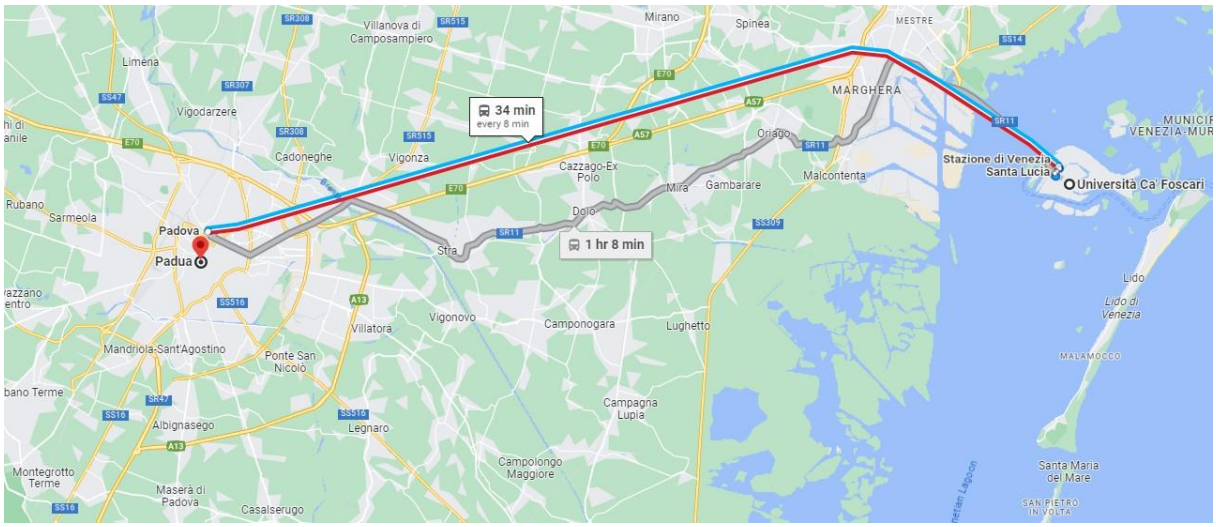

Figure 7 - Demonstration scenario of Padua demo site

In order to ensure the largest possible number of testers, a student engagement plan was structured through emails sent by university staff to students' mailboxes, including "Save the date" emails, reminders and an Engagement event on the Padua Demo and the TC and DC apps that took place on 14/04/2023. The goal was to train the Testers so that they could fruitfully tackle the demo. The training event lasted about an hour and half.

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The goals and objectives and purposes of both RIDE2RILE and IP4MaaS were explained to the students, along with the functionalities of the Travel Companion and Driver Companion applications: what they are, what they are for, and the minimum requirements for running them. No incentives and/or gifts were provided to Testers to encourage participation in the demo. The demo included the testing of demonstration scenario with the support of project partners OLTIS, FIT CONSULTING and CEFRIEL.

Since our cities can sometimes become unliveable due to smog, traffic congestion and overcrowded public transport, the project and specifically the demo in Padua aimed to test the Travel Companion and Driver Companion applications in order to cope with these problems. The main objectives of the Padua demo site was to encourage carpooling (and ride sharing acceptance) as complementary for public transport, to improve the efficiency of public transportation services, to encourage car drivers who travel alone to share the capacity of their car with other travellers and to reduce GHG emissions and traffic and parking congestions. At the end of the demo, the access links to the surveys to collect feedbacks were sent to the Testers for both the Travel Companion application and the Driver Companion were sent to the Testers. Feedback was collected from our project partners.

1.13.2. Brno demo

Brno demo site was mainly focused on commuters travelling from the Znojmo district to the city of Brno in South-Moravian region of the Czech Republic. The commuters were represented by the following three groups of commuters:

- employees commuting to Brno regularly/several times per week,
- students commuting to Brno regularly/several times per week,
- other commuters travelling to Brno for other reasons (e.g., to Brno hospitals).

In the picture below, it is possible to see a demonstration scenario of traveling from Znojmo to Brno, with two stops on the way. Just from this area, i.e. between Znojmo and Brno, the possible testers were searched for and approached.

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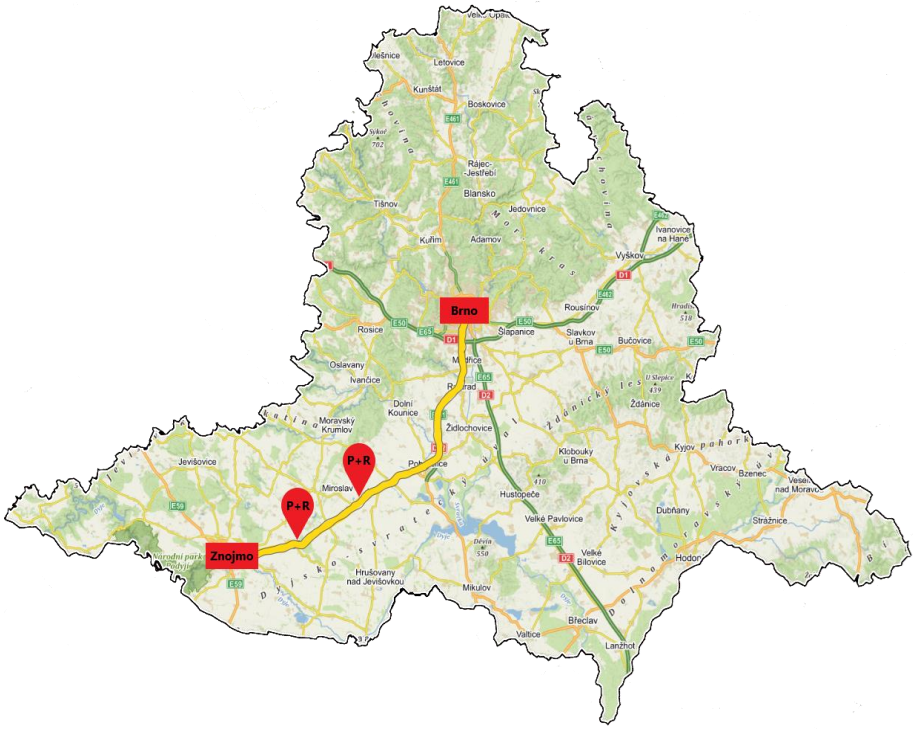

Figure 8 – Demonstration scenario of Brno demo site

The main goals of Brno demo side were to improve the quality of daily commuting within the South Moravian region and reducing the environment impact of commuting via several ways:

- to motivate commuters who had only travelled by cars so far to start travelling by private car from their home only to a public transport hub, where they transfer to public transport;
- to encourage those car drivers who travelled alone to share capacity of their vehicle with other travellers;
- to reduce GHG emissions and also traffic and parking congestions.

The way, how to achieve the defined objectives was to implement the outcomes of the software solution within the RIDE2RAIL project and from the entire IP4 ecosystem. In particular, this involved the testing of the Travel Companion and the Driver Companion applications that created the space for ridesharing to become part of a multi-modal transport solution.

In general, it can be stated that the efficient use of private cars and transport hub are having the potential to increase the availability of public transport for more inhabitants in rural areas where are no or only very poor public

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transport services. The RIDE2RAIL solutions also addresses the issue of the first and last mile. If the Brno demo site is taken as example, a driver travelling from/to a rural area in the Znojmo region to the city of Brno can use several local P+R hubs to transfer on public transport and at the same time traveller can share her/his vehicle capacity for other passengers on the route between Znojmo and Brno. This process can reduce the dynamic and static traffic load and also reduce GHG emissions from commuting.

In the Brno demo, more than 60 potential testers signed up on the basis of a leaflet disseminated in all public transport vehicles with the monitors in the entire South-Moravian region (with the electronic version of the leaflet - Figure 9), by social media (with the electronic version of the leaflet) and in cooperation with Brno universities (with the paper version of the leaflet - Figure 10). Potential testers had to fill in the recruitment questionnaire that divided them into three groups based on their role – traveller (use only the Travel Companion app), driver (use only the Driver Companion app) and traveller-driver (use both the Travel Companion & the Driver Companion apps). However, some testers did not meet the conditions for participation, so the final number of testers was 60.

Figure 9 – Electronic version of the leaflet

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Figure 10 – Paper version of the leaflet

As part of the Brno demo, a demonstration testing was also performed, in which a few selected testers participated under the supervision of OLTIS and UNIZA. This demonstration testing was tested according to the demonstration scenario as it is highlighted in figure below. This means that the participants travelled from Znojmo to Brno with the stops in Lechovice and Miroslav and the journey was planned and executed step by step.

Figure 11 – Demonstration testing under supervision of OLTIS + UNIZA, November 2022

1.13.3. Athens demo

The goal of the Athens demo site was to enhance the connection of low-density Attica Region areas to public transport modes, and specifically to the ATTICO Metro, through the provision of demand responsive ridesharing services. More specifically, travellers going to Athens (north and center) from peri-urban areas, with low frequency of public transport services, often use their cars for their trips. In this case, ride-sharing services were offered through a dedicated app, for the 1st and/or last leg of the trip.

In order to attract users to participate at the demo, the main channel was the conduction of Stated Preference Survey in Athens. For this reason, ATTIKO METRO SA (AM), procured a service contract for a combined Revealed and Stated Preference (RP/SP) survey aiming at determining the "Willingness to Accept Ridesharing/Carpooling" of commuters in the area of Attica Region. The contract, (TSA 416/22), awarded to POLINDE Consulting Engineers, a transportation consulting firm based in Athens, Greece.

The RP/SP survey was addressed to specific categories of trip makers and more specifically to those who commute from the eastern areas to Athens

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and vice versa using either the Metro and/or the Suburban rail system in the Attica Region. The main aim of the survey is to determine the willingness of these trip makers to accept to use for their first/last mile of their trip a ridesharing/carpooling alternative either as drivers or as riders, denoted as Car Pooling Driver and Car Pooling Rider respectively. A precondition for a person to be eligible to take part in the survey is to use metro or suburban rail for the main trip segment, whereas the last/first mile trip segment to be made by any means of transport other than on foot. Trip makers travelling on Business trips or on trips using cars provided by their employment are not examined in the survey.

The main objectives of the survey towards the satisfaction of the aim of the awarded contract can be summarised as follows:

- to determine the average Values of Time of potential carpoolers depending on their current trip and personal characteristics;
- to develop mathematical mode choice models for carpooling travel options;
- to estimate the probability of a person having specific trip and personal characteristics to choose among alternative travel options offered to him for the first/last mile of his trip;
- to examine the factors/attributes which have an effect on trip makers' choices
- to provide useful insights to ATTIKO METRO for drawing the required carpool policies satisfying the goals of the R2R project.

One of the main goals of the survey has been to find an adequate number of metro users willing to take part in the Athens demo site of the RIDE2RAIL project satisfying the selection criteria specified by ATTIKO METRO.

The study area selected for this research study is the catchment zone of the 20-km long air-rail corridor between "Doukissis Plakentias" and Athens Airport rail stations along "Attiki Odos" tolled motorway. This area comprises territories of five (5) municipalities with low population densities compared to the core centre of the Athens municipality. The survey was addressed to

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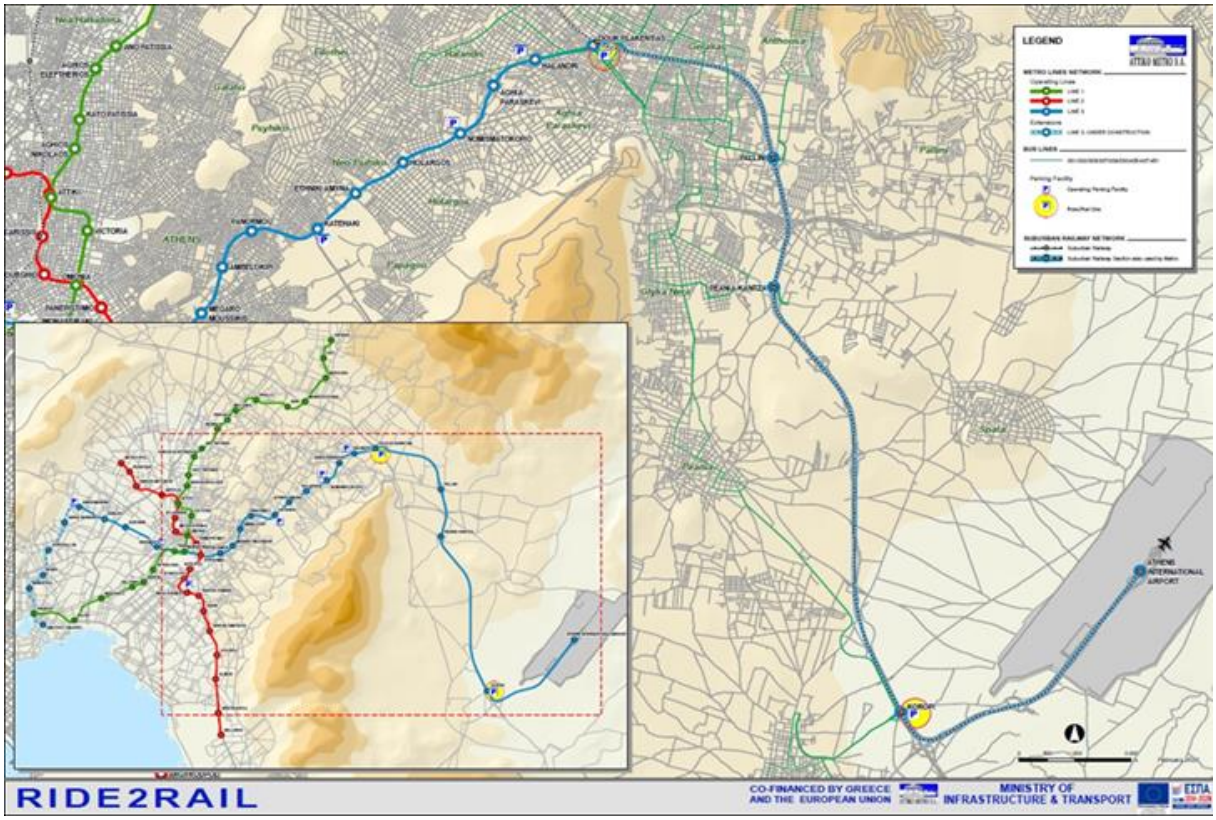
intermodal hub users, belonging to different categories according to the mode used for the first/last part of their journey.



Study area – Athens demo zone

In total some 5,400 persons were approached in the screening (first) phase of the survey, and from those some 2,000 persons were eligible to take part in the second phase. From the eligible participants approximately 1250 agreed to proceed and signed the data protection form and finally 493 persons completed the second phase questionnaire. The completed questionnaires involve:

- 227 Trip makers who travel alone towards the Metro/Suburban rail station;
- 143 Trip makers who use public bus;
- 79 Trip makers who travel by their passenger car together with other riders;

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- 44 Trip makers who use a Taxi to reach the station.

During the 1st phase a screening questionnaire was distributed at the stations (field survey), using the Computer Assisted Personal Interview (CAPI) technique. Overall, 5.400 persons were approached and 2.000 were found to be eligible to participate at the survey. Following, during the 2nd phase, the full RP/SP survey was completed by the respondents at home or at work, using the Computer Assisted Web Interview technique. In total 1250 agreed to proceed and 414 completed phase 2. 406 respondents of those who completed phase 2, accepted to participate to the RIDE2RAIL Athens Demo by giving their email addresses. On the 18th of July, 406 invitations were sent by email to them by ATTIKO METRO.

Apart from the Stated Preference survey, which was the main tool for the attracting users, extensive dissemination also took place through various other channels, such as social media, official webpages of the participating companies, emails and personal contacts.

Finally, as regards the incentives two types of those were provided to potential users. Users that agreed to take part in the demo, acting as drivers were granted a voucher of 50 euros for the purchase of gas, whereas the ones that agreed to participate as travellers were given vouchers equal to 30 euros for groceries from a particular super market in the area that the testing took place.

1.13.4. Helsinki demo

The Helsinki demo consisted of two parts, which both focus on reducing single-occupant private car trips:

- Testing the use of an automated shuttle bus in more rural areas, as part of a multi-modal last-mile journey, integrated in relevant travel planning applications (carried out in the autumn of 2021);

- Testing the RIDE2RAIL functionalities, as much as possible integrated with existing mobility platforms (e.g. public transport routeplanner).

The purpose of the second part of the demo was to test the ride-sharing functionality created in the Ride2Rail project together with the Travel Companion application.

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Activities for the demo were focused in both parts (Part I and II) simultaneously in the beginning of the project and the idea was initially to implement them at the same time. However as there were delays in the production of the applications it was decided to proceed separately with the parts and implement first the robobus demo while also preparing for the second part of the demo which would take place in a later phase of the project.

Demo Part I - Robobus demo

Demo part I in Ride2Rail focused on testing the robobus as part of a multi-modal last-mile journey, integrated in the HSL travel planning application (Reittiopas). This involved an approximately two months long demo where the bus operated on a regular route in Vuosaari between September 25th and November 17th 2021 for a fixed period of time per day.

The robobus was integrated in the HSL Reittiopas with line number 90R and was operated on public roads like a normal bus in the area among other traffic. The route was approximately 2 km long, had 7 bus stops and was driven in one direction from Vuosaari metro station to the vicinity of the Aurinkolahti Beach. The speed of the vehicle was limited to 20 km/h in the demo due to technical restraints of the automated system of the vehicle.

Goal of the robobus demo was to research how well an automated bus could improve access between the metro station and the neighbourhood as well as offer an opportunity for developing automated shared vehicle solutions in road traffic. In particular the focus of the robobus demo was also to test for the first time in Helsinki the possibility of on demand calls of robobus operation as part of public transport.

A total of 1112 persons used the vehicle during the demo.

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Figure 12 – Robobus pilot in Vousaari, Helsinki in October 2021

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Demo part II - Testing the RIDE2RAIL functionalities

The second part of the Helsinki demo focused on testing the Driver Companion ride-sharing functionality created in the RIDE2RAIL project together with the Travel Companion application as much as possible integrated with existing mobility platforms (ie. HSL public transport routeplanner). The OpenMaaS API sandbox environment of the HSL (local transport service provider) was used in the process.

In October, the Helsinki team and its test users carried out the testing of the two applications as planned during the two weeks piloting phase. There was a total of 22 downloads for the TC application and 7 for DC. 17 people answered the survey after testing.

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EVENTS

The events plays an important role within the RIDE2RAIL dissemination activities, as they provides an excellent opportunity to promote the project results to a more diverse audience other than those reached by dissemination means such as the website, social media, and the leaflet.

1.14. Stakeholders' workshops

The participation and involvement of key stakeholders during all the phases of the project is a key factor for the success of the RIDE2RAIL project. The project, in particular WP6, organized several stakeholders' workshops that aimed to set the pillars of collaboration among policy/decision makers, transport operators and academics in order to translate theoretical frameworks which promote seamless and sustainable transport into successful use-cases of practical implementation through the demonstrations within all demo sites. The several events have been organized:

One in February 2020, from UIC. It was organized online, with more than 100 participants. It was mainly focused on the project expectations and objectives and on MaaS initiatives in Europe.

One in May 2022, from UITP. It was organized as hybrid (with the in person part held in Karlsruhe, Germany). Around 50 people participated (more or less equally split between online and in person). It was organized jointly with IP4MaaS project and was mainly focused on demo activities, IP4 developments and investigation on MaaS requirements.

A Transferability workshop was organized as hybrid event (with the in person part held in Paris) in November 2022. About 40 people participated. It was organized by UIC and its focus was on demo activities and transferability of results to interested partners outside the project scope.

1.15. Local demo events

Local dissemination and demonstration events were organized in all demo sites locally in order to present their demonstration case and/or related solution. Events attracted press coverage and informed the local citizens and stakeholders. These events were organized by the demo leaders under the supervision of UITP. UITP ensured homogeneity of these events, while the

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partners represented the demos. These events brought visibility to the RIDE2RAIL consortium and the Shift2Rail JU towards local stakeholders and end users, while promoting the services and tools available in each city to encourage sustainable travel options.

1.15.1. Padua demo

In order to ensure the largest possible number of testers, a student engagement plan was structured through emails sent by university staff to students' mailboxes, including "Save the date" emails, reminders and an Engagement event on the Padua Demo and the TC and DC apps that took place on 14/04/2023. The engagement strategy was structured in collaboration with Ca' Foscari University professors who represented our intermediaries dealing with students, our target group. Although we sent emails to inform our target group, only 3 students attended the event. Nevertheless, in collaboration with university staff, we sent emails reminding them the start of the demo as well as all the training materials (presentation with the aims and objectives of the demo and applications, User guide) so as to incentivize participation in the demo as much as possible.

Figure 13 - Front Cover Engagement event

1.15.2. Brno demo

The aim of this demo was to encourage passengers who travel to Brno using a private car to share their regular rides with other commuters, or to travel

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to the nearest local hub, where they then transfer to public passenger transport. The demonstration took place in Brno and was conducted by OLTIS and UNIZA. Potential testers for this demonstration were approached after a brief local headhunting using both paper and electronic versions of the leaflet, and then categorised using a questionnaire. The online local event took place on 31st of October and it was attended by 60+ testers.

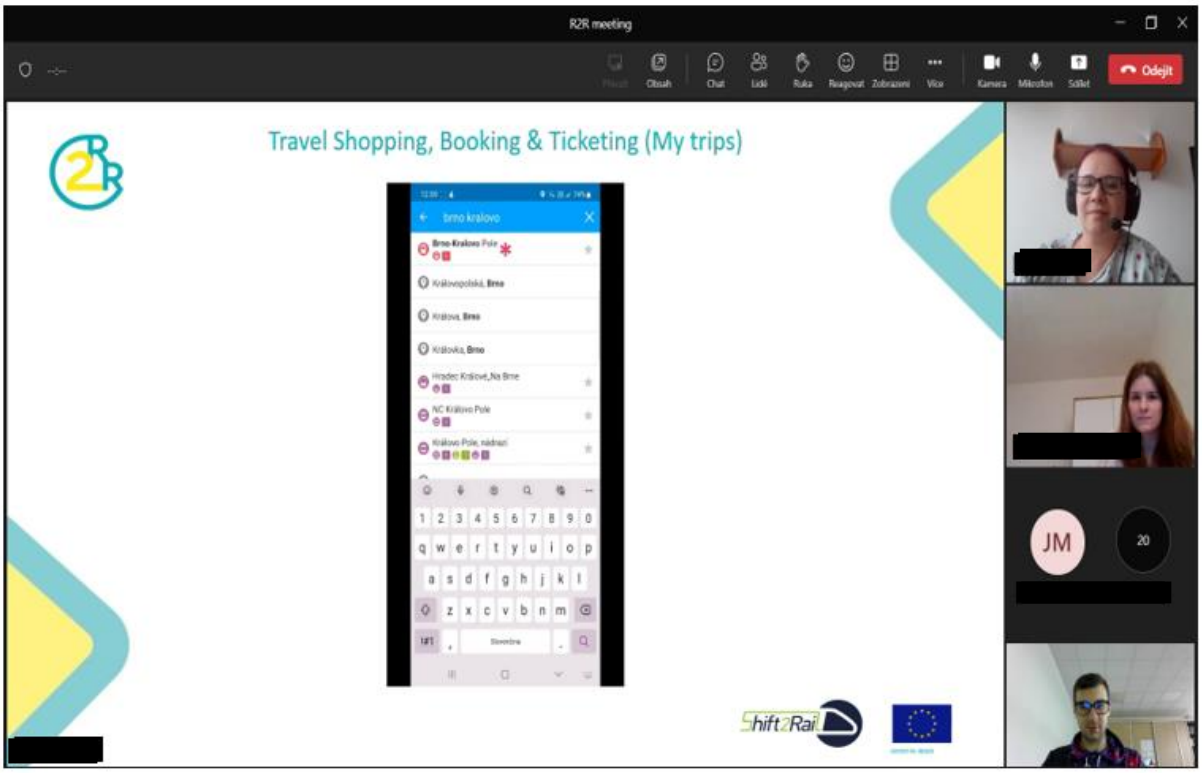

Figure 14 – Brno online local event

Some of these testers took part in the live scenario demonstration. This scenario was the Znojmo-Brno trip by car – each testing car was labelled with a RIDE2RAIL poster for easier identification. OLTIS and UNIZA supervised this demonstration and were in contact with the testers.

The public response was enthusiastic in general (with the TC/DC solution deemed a great idea) as the testers appreciated the possibility of linking public passenger transport with individual car transport and several of them followed the project's development after their participation. The Brno demonstration and test are described in detail earlier in this document.

1.15.3. Athens demo

The main event that took place in Athens was the conduction of the Stated Preference survey which was described in a previous section of the present

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document. Initially, the local partners had planned to organize a training session for the users, during which the application would have been presented and explained. Due however to the fact that the demo was delayed, it was decided to not organize this event after all. Continuous support was provided to users during the demo execution in the case that they had difficulties while using the app.

1.15.4. Helsinki demo

In early 2022, the Helsinki team created an engagement strategy that included a detailed description of the activities related to the testing of the two applications in Helsinki. As planned in the engagement strategy, a local event was organised on 19 September for appr. 50 persons to recruit test users from the students of Metropolia University of Applied Science. In Helsinki, a decision was made to only have an internal testing of the applications combined with test users from a Metropolia course on smart mobility due to numerous uncertainties around the development and timeline of the TC and DC application development.

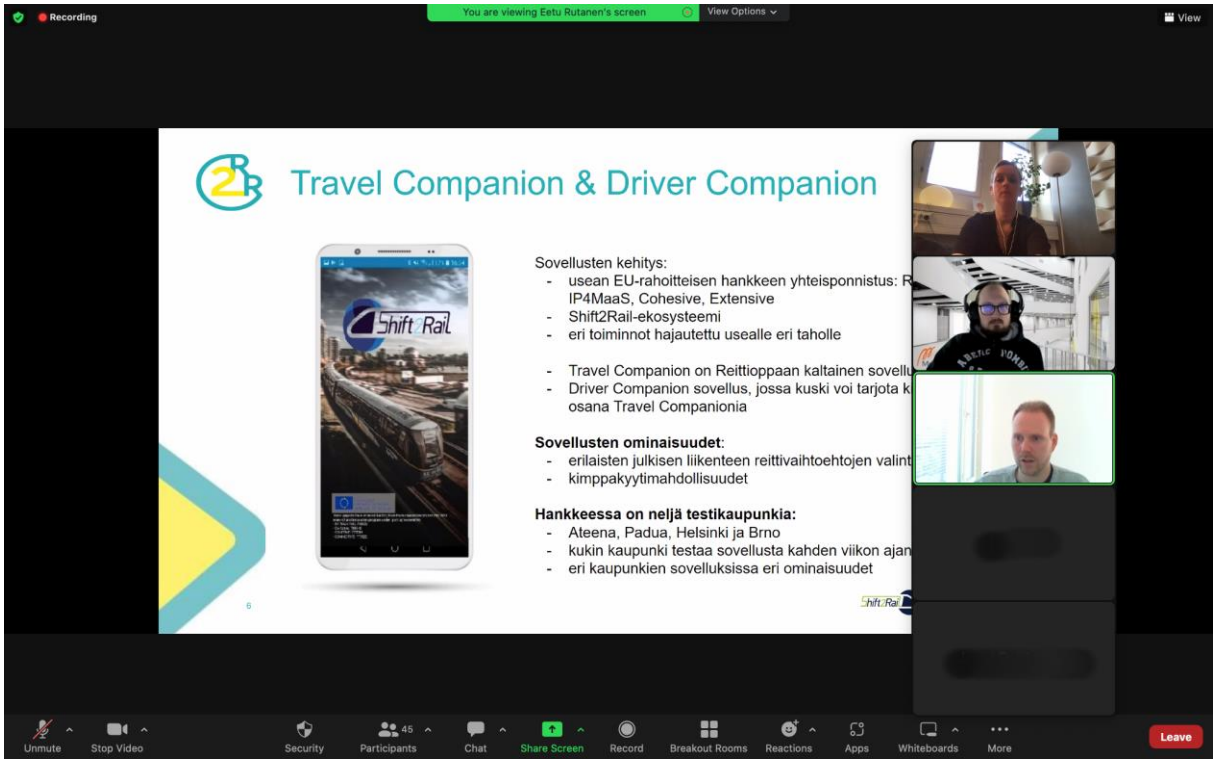

Figure 15 – Helsinki online local event with 50+ participants

Eventually a total of 20 test users were found amongst the organisations of Metropolia and Forum Virium Helsinki. The applications were tested for two weeks in Helsinki on 3 - 16 October 2022.

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The partners of the RIDE2RAIL project in Helsinki were particularly interested in testing ridesharing as a new mobility habit for users in the capital region of Helsinki. However, it may be that ridesharing as an alternative in the capital region with well-functioning public transport requires a longer period of time for testing and high-quality applications to facilitate the adoption of new mobility patterns.

Once the internal testing was done and the demo period started, the Helsinki team had regular communication with the test users: sending the pre-defined anonymized credentials and instructions on how to use the apps, reminders for testing and finally the survey. Also, the team simulated ridesharing options in the DC for the test users to see if they can find and book them on TC.

Dissemination activities took place, for instance, in the Stakeholders' Workshop in Karlsruhe, the Transferability Workshop in Paris in November (online) and the Smart City World Expo in Barcelona in November 2022.

1.16. External events

RIDE2RAIL partners participated in project-related and external events at international and national scales that stimulated public interest towards the project and reached out to a large public including external stakeholders. The project's visibility was enhanced through dedicated presentations in conferences and exhibitions.

1.17. Final event

The final event took place on 27 April, 2023, in Brussels. Participants included RIDE2RAIL partners, Europe's Rail representatives, and stakeholders from outside the project as well. Detail report can be found on the project's website - https://ride2rail.eu/and-thats-a-wrap-ride2rail-project-holds-final-event-in-brussels/.

1.18. List of events

The fundamental aim of participating in and organizing events is not only to communicate with individuals but rather to mobilize multipliers who can pass on information and knowledge about the project from a position of authority. Events are therefore a very important element of the exploitation activities and the alignment with other Shift2Rail projects.

There were over 40 national, European, and global events including international conferences and workshops where RIDE2RAIL was

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disseminated, ensuring increased awareness of the project across the transport sector and beyond.

The complete list of events can be found in the Periodic Technical Reports.

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IPR ASPECTS

In general, tools, methodology documents, benchmarks and case studies are available to all, and knowledge is governed in accordance with the Grant Agreement and the Consortium Agreement. Some proprietary training content and tools developed by the partners may be available at the discretion and terms of their respective owner. As per HORIZON 2020 and Shift2Rail JU obligations and recommendations, the project was largely developed in as open access. This was done by means of a public GitHub git where most of the technical deliverables are available. The project's website (ride2rail.eu) also includes freely available deliverables in the library section. As such, the project outputs are widely accessible to the general public for educative or scientific, exploitation (use, copying, modification and/or distribution) to facilitate wide adoption of project results.

Many of them are publicly available on the project's GitHub - https://github.com/Ride2Rail - as well as on Zenodo - https://zenodo.org/communities/ride2rail/ .

Specifics of access rights and exploitation possibilities are governed not only by both the Consortium Agreement and in case of exploitation also by the Grant Agreement, but also by the RIDE2RAIL's IPR Directory, as set out in 2.2.6 of the Grant Agreement.

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CONCLUSION

One of the most important point of the exploitation strategy is present, promote and highlight the solution of the RIDE2RAIL project and its future use. In general, the RIDE2RAIL solutions will serve for further research activities on intramodality, technologies and Shift2Rail IP4 and also for papers and publications which will have an impact at global level (solution presented in conferences, events, meetings etc.).

The partners involved in the RIDE2RAIL project operate in various areas of the transport segment which allows to exploit the RIDE2RAIL solutions by many options. For this reason, many actions were identified for exploitation. These actions will continue after the completion of the project and through these actions will be ensured maximal exploitation of the RIDE2RAIL solutions. For example, the partners will promote and raise awareness of relevance of the solutions in future research and development activities. Moreover, the partners have a unique access to working groups and commissions that can help to attract stakeholders and wide audience. The exploitation will be ensured also by the engineering software components and bringing them into the market.

The solution will also be disseminated within universities and educational environment through academic publications in journals or international conferences. The solution will be exploited to expand academic horizon for students and build on existing expertise in the fields of mobility planning, transport organization, as well as optimization of algorithms for shared mobility and mass transit. The RIDE2RAIL solutions will help to educate students in new relevant technologies that will help them in achieving their career goals, academic and industrial.

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