Deliverable D1.4:

Communication, Dissemination and Exploitation Report

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Table of Contents

List of Figures

List of Tables

1 Executive Summary

This document consists of the deliverable D1.4: Communication, Dissemination and Exploitation Report (CDER) of the MaDe4Rail project, which contains the updates and reviews of the D1.3: Communication, Dissemination and Exploitation Plan (CDEP). As known, CDEP provides the set of activities and platforms foreseen within the project – presenting the general information, results and outcomes produced within the project – including the processes to be followed and the means to achieve them.

Since the CDEP is subject to continuous update taking into consideration the new activities that could be defined on the duration of the project, the CDER should also contain these updates.

The primary goal of the CDER is to reflect these updates and summarise the results in the CDEP. Moreover, this shall also present the impact of the project outcomes and the feedback received from the participants of the events and other activities.

Keywords: Communication Report; Dissemination Report, Exploitation Report

2 Abbreviations and acronyms

Abbreviation/Acronym	Description
CA	Consortium Agreement
CDEP	Communication, Dissemination and Exploitation Plan
CDER	Communication, Dissemination and Exploitation Report
DCMT	Dissemination and Communication Management Team
DB NETZ	Deutsche Bahn Netz
DITS	Development and Innovation in Transport Systems
DLR	Deutsches Zentrum für Luft- und Raumfahrt
ETRR	European Transport Research Review
EU	European Union
FA	Flagship Area
FSI	Ferrovie dello Stato Italiane
GA	Grant Agreement
GoA	Grade of Automation
EU-Rail JU	Europe's Rail Joint Undertaking
KER	Key Exploitable Result
KPI	Key Performance Indicator
KTH	KTH Royal Institute of Technology
IJTDI	International Journal of Transport Development and Integration

ITF	Italferr
MaDe4Rail	Maglev-Derived Systems for Rail
Maglev	Magnetic levitation
MAWP	Multi Annual Work Programme
MDPI	Multidisciplinary Digital Publishing Institute
MDS	Maglev-derived System
RFI	Rete Ferroviaria Italiana
SCNF	Société Nationale des Chemins de Fer Français
TRA	Transport Research Arena
TRV	Trafikverket
TSI	Technical Specifications for Interoperability
TU Delft	Technische Universiteit Delft
Uni.Eiffel	Université Gustave Eiffel
UPM	Universidad Politécnica de Madrid
WP	Work Package

3 Background

The present document constitutes the Deliverable D1.4 “Communication, Dissemination and Exploitation Report” in the framework of the Flagship Area (FA) 7 - Innovation on new approaches for guided transport modes as described in the EU-Rail Multi Annual Work Programme (MAWP).

4 Objective/Aim

The main objective of this report focusing on the Communication, Dissemination and Exploitation Report (CDER) is to summarise and conclude the activities foreseen in the CDEP, which had the purpose of providing and disseminating most of the results publicly and most importantly, to the European Union, Railway Sector, Scientific Community, Technological Developers, and other stakeholders.

The exploitation activities of the MaDe4Rail Consortium are also described in this document, specifying the different results and outcomes that would be used for commercial, societal, and political purposes.

5 Report on the Communication of Project Outcomes

The MaDe4Rail project utilised different communication channels to inform and promote its activities and results to its target audience. It should be noted that the target audience differed depending on the medium of communication used. Moreover, the amount of information communicated also varied based on the capacity of the medium. Therefore, the information transmitted to the target audience had to be carefully considered to convey the message clearly, effectively, and efficiently. The use of a variety of communication means also helped to spread information regarding the project to a wider range of audience. In this way, the MaDe4Rail consortium was able to engage with different stakeholders such as industry partners and policymakers, attract experts, innovators, and academia, raise awareness of how public money was spent, and demonstrate the success of European collaboration (European Union, 2023).

5.1 Webpage

The MaDe4Rail Consortium committed to carry out activities to inform and promote the results of the project to citizens, stakeholders, and the media. Therefore, this leads to the increase of impact of the outcomes of the project and interest to this technology.

A public webpage was set up for the project, both in English (https://www.rfi.it/en/Network/in-europe/MaDe4Rail.html) and Italian (https://www.rfi.it/it/innovazione-e-ricerca/progetti/nuovi-sistemi-di-mobilita/made4rail.html) languages.

The webpage contains key project information and its objectives and provides updates on the progress of the planned activities through the publication of results and deliverables, most of which are available to the public. This medium also shows the different organisations and companies involved in the project.

The Project Coordinator (RFI) provided the webpage dedicated to the MaDe4Rail Project within its own website. This webpage was also linked within the Europe's Rail Joint Undertaking (EU-Rail JU) website under the EU-Rail Projects section (https://rail-research.europa.eu/eu-rail-projects/).

The publication of the deliverables with public dissemination level in the webpage represent, in most cases, the first disclosure of the project's results, unless another dissemination activity is specifically organised for such purpose. The visitors and interested parties can navigate independently the webpage and select the information they are interested in. The publication of the deliverables was also communicated to the EU-Rail Project Officer for dissemination on the EU-Rail website and newsletter.

During the whole duration of the project, the webpage, both in Italian and English languages, had page views of 1067. Specifically, the English webpage received a total of 893 views, while the Italian one received 174 views.
Below, the temporal variation in the number of visits is highlighted. *Figure 1* refers to the webpage in English. It is noted that a domain change was necessary for the latter (which occurred on 30th July 2024); consequently, two different curves can be observed. On the other hand, shows the number of views for the Italian version.

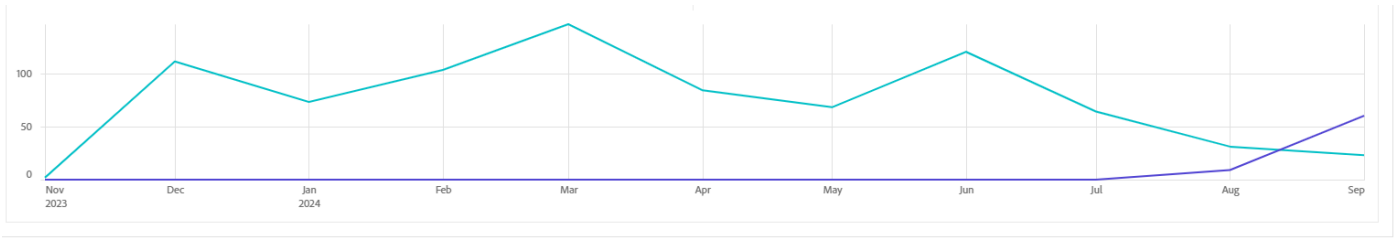

Figure 1: Variation in the number of views of the webpage in English

Figure 2 refers to the Italian version of the MaDe4Rail project webpage.

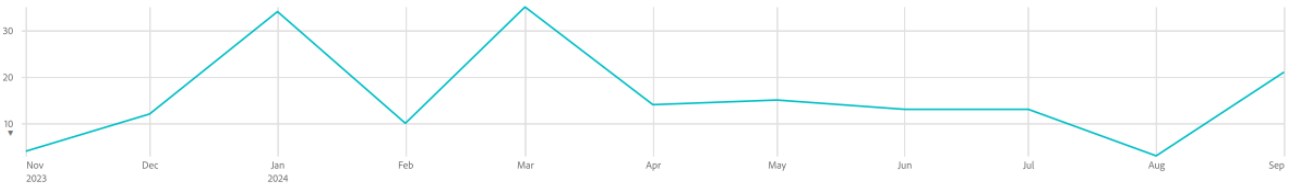

Figure 2: Variation in the number of views of the webpage in Italian

5.2 Emails

Throughout the MaDe4Rail project, sending emails has proven to be a crucial tool for maintaining regular and direct communication with the consortium members and various target groups involved. Emails, sent on a weekly basis, have primarily been addressed to consortium partners to provide continuous updates on the project's progress and its key phases. This communication method has already ensured that all recipients remain informed about the most relevant developments and has allowed for timely feedback when necessary.

The emails have been written concisely but accurately, highlighting the most important information to allow recipients to quickly grasp the message and take prompt action. This approach will be used continuously in future communications, as it has proven effective in

facilitating rapid responses and improving the flow of communication within the consortium and with other stakeholders.

In addition to the consortium partners, emails have been and will continue to be sent to strategic stakeholders such as participants from other Flagship Area (FAs) of EU-Rail, media representatives, policymakers, railway and transportation authorities, transportation associations, technology developers, and academia. Each email has been carefully tailored to meet the specific informational needs of each target group, ensuring that relevant information is conveyed clearly and effectively to all stakeholders.

Moreover, these communications have played a key role in engaging the general public by providing essential updates that have helped raise awareness and interest in the project.

Looking ahead to future post-project phases, regular email communication will remain an indispensable tool for ensuring smooth collaboration among the various actors involved, keeping everyone informed and aligned with the shared goals of the Made4Rail project.

5.3 Press releases

Press releases provide an opportunity to constantly update both the global railway sector and the general public. Throughout the project, several press releases have been issued, addressing both key milestones (such as the kick-off meeting that officially launched the project) and more technical topics, including the challenges of MDS technology.

The table below provides a summary of the titles and a brief description of the topics covered.

Table 1: List of Press Releases

Chanel	Title	Description
Europe's Rail webpage	MaDe4Rail – Exploring non-traditional and emerging maglev-derived systems	Examines the potential and challenges of innovative transport systems derived from maglev, highlighting how these emerging technologies could revolutionize the railway sector in terms of sustainability and efficiency.
FSNEWS.IT	Gruppo FS ad Abu Dhabi per la Middle East Rail	At the Middle East Rail expo in Abu Dhabi, FS Group highlighted its expertise in high-speed rail and logistics, showcasing projects like MaDe4rail and other innovative projects.

FS ITALIANE.it	The MaDe4Rail project dedicated to innovative solutions for rail networks kicks off	The article summarises the Kick-off held in Rome in June 2023. After outlining the objectives of the project, the composition of the working group is highlighted, distinguishing the roles and responsibilities of the partners.
NEVOMO.TECH	The Made4Rail project dedicated to innovative solutions for rail networks kicks off	The article summarises the Kick-off held in Rome in June 2023. After outlining the objectives of the project, the composition of the working group, empathising their professional background, is highlighted.
GESTE.GROUP	Kick-off meeting Made4Rail in Rome	The press release summarises the Kick-off held in Rome in June 2023. After outlining the objectives of the project, the composition of the working group is highlighted, distinguishing the roles and responsibilities of the partners.
FSNEWS.IT	Al via il progetto MaDe4Rail per l'innovazione delle reti ferroviarie	The press release highlights the innovative value of the MaDe4Rail project. Furthermore, it provides an overview of the partner involved, emphasizing the heterogeneity of the working group. Finally, in the press release the scope of the project is highlighted.
RFI website	Pioneering maglev-derived systems for Rail: MaDe4Rail project presents breakthrough results at InnoTrans 2024	The press release summarizes the final event held in Berlin on occasion of InnoTrans. Furthermore, the news goes in depth in the 3 panels and highlights the topic covered.

All the links of the listed press release are available in any moment on the MaDe4Rail project webpages.

5.4 Newsletter

The newsletter subscription for the MaDe4Rail project has been made available through RFI's LinkedIn Page. The newsletter has been an important communication tool to keep the target audience regularly updated on the project's progress. Through it, subscribers have been informed about the team's work, objectives, completed activities, and milestones achieved, as well as provided with an overview of the expectations for the upcoming phases of the project.

Three newsletters have been published. The links to these newsletters are specified in Table 2.

- MaDe4Rail: an opportunity to improve the potential of railways through maglev-derived systems
- Increasing project impact through extensive and effective communication and dissemination
- MaDe4Rail Project: Presented Its Groundbreaking Results At InnoTrans 2024

The first one, published on 10th of September 2024, the project structure was described in detail. The technical results achieved so far were also highlighted, thus ensuring the visibility of the project and helping to increase the interest of the entire railway sector in the world of MDS technologies.

In the second one, whose publication occurred on 17th of September 2024, the dissemination activities that the project carried out was highlighted. The second scope of this publication was to make know that the Final Event of the project would take place on InnoTrans. More details about the final event will be provided in *chapter 6.5*.

The last one entitled "MaDe4Rail Project: Presented Its Groundbreaking Results At InnoTrans 2024", which was published on the 30th of September 2024, provides to the readers an update about the final event, highlighting both the key results of presented and the topics covered during the panel discussions.

These updates have provided detailed and timely information on the project's status, keeping the audience engaged. Additionally, the newsletter has offered an opportunity to actively involve readers in events organized by the consortium, especially its final event at InnoTrans 2024, fostering dialogue among the various stakeholders. Thus, the newsletter has played a dual role, both informative and participatory, supporting collaboration and knowledge sharing among partners and interested recipients.

As of the 27th of September 2024, the newsletter account has 45677 subscribers. Taking into account both the first and the second publications, 17535 users have read the newsletters which totalises more than 7400 impressions. Precisely, the number of impressions amounts to 74048.

5.5 Social media

The consortium utilised social media platforms to provide continuous updates about the project and enhance its visibility to the target audience. Social media became a key communication channel, ensuring the timely dissemination of information and keeping all stakeholders informed about the project's developments. Regular updates are shared on the social media accounts of both the project partners and the official project webpage. These updates include announcements related to milestones, presentations of results at conferences, participation in workshops, and other significant events associated with the project. The frequency of posts depends on the availability of new information and project-related activities.

In total, 5 posts were published on LinkedIn. Following the results:

Table 2: Insights of LinkedIn post

Post	LinkedIn Profile	Impression	Views	Interaction
Made4Rail kick-off meeting	RFI	NA due LinkedIn constraints	NA due LinkedIn constraints	NA due LinkedIn constraints
Made4Rail kick-off meeting	DITS	NA due LinkedIn constraints	NA due LinkedIn constraints	NA due LinkedIn constraints
MaDe4Rail: an opportunity to improve the potential of railways through maglev-derived systems	RFI	49834	2637	1404
Increasing project impact through extensive and effective communication and dissemination	RFI	24848	14925	307

MaDe4Rail Project: Presented Its Groundbreaking Results at InnoTrans 2024	RFI	NA	NA	NA

5.6 Workshop

Workshops were an opportunity not only to raise awareness of the MDS technology sector but also provided important insights for the success of the project.

In October 2023, four workshops were held as part of D7.1: Use Case Analysis. These were conducted entirely remotely and were attended by various railway industry players and experts in the field of transportation.

The primary goal of these workshops was to disseminate information about the innovative features of MDS technology among a wide range of stakeholders within the European railway and mobility market. By convening stakeholders in focused workshops centred on this specific topic, valuable discussions were facilitated, leveraging the diverse perspectives of the participants. To encourage these discussions, the workshops were intentionally structured and participants from various stakeholder groups were included. Furthermore, on the same occasion, 20 use cases were identified that are later analysed through a Multi-Criteria Analysis (MCA) in D7.1. More details are available in this latter.

In April 2024, a second market consultation was performed, with the aim target of:

1. Verifying the identified 20 use cases with the railway industry, to gather feedback on them.
2. Verifying the proposed stepwise approach with the railway industry, as a base for the MDS roadmap for EU.

Totally, more than 30 participants were involved from 18 different companies and organisations. The whole value chain participated in these workshops allowing a holistic view and a broader discussion.

6 Report on the Dissemination of Project Outcomes

Meanwhile, dissemination is referred to as the public disclosure of the results by appropriate means, which has the objective of providing knowledge and research results produced within the project publicly available and free of charge. In such way, scientists, industry, public authorities, policymakers, and civil society could learn and benefit from these.

The different means to communicate and disseminate the goals, results, and outcomes of the MaDe4Rail project will be discussed and elaborated in the next sections.

6.1 Articles in transportation community and professional association magazines

The publications of articles emerging from the MaDe4Rail project, in transportation community and professional association magazines, were several.

These publications allowed the dissemination of the research results and the consolidated knowledge regarding the magnetic levitation sector in the railway field.

The papers aimed to reach a diverse audience (technology developers and enablers, railway and transportation authorities, policy makers, etc.).

Following a chronological order, the first paper published could be found in the "publications" section on the Europe's Rail website. EU-Rail JU is a public-private partnership between the European Union and the rail sector, established with the aim of contributing to the European Union's policy priorities, specifically the Sustainable and Smart Mobility Strategy, which highlights the importance of this publication.

The article was published on April 29, 2024 (https://rail-research.europa.eu/news/made4rail-exploring-non-traditional-and-emerging-maglev-derived-systems/). It summarised the interview with Giuseppe Carcasi, Head of Technology & Digital Product Owner in RFI and the coordinator of the MaDe4Rail project. In the interview, he described, in detail, the project's objectives, challenges, and benefits.

Carcasi, discussing the evolution of the railway system, explained that the project focuses on the enhancement of the railway system through the integration of maglev-based levitation and propulsion technologies into the existing infrastructure, following the principle of overlapping technological layers. This integration aims to implement collective transport systems, making them more attractive, efficient, and focused on sustainability, in line with new trends.

The second article entitled "Potential application of Maglev Derived system to improve railway performance" is placed in the first section, more specifically in "Railway facilities, Vehicles design

and Operation Optimization" of Road and Rail Infrastructure VIII, Proceedings of the Conference CETRA 2024 (ISSN:1848-9850 DOI: https://doi.org/10.5592/CO/CETRA.2024).

The paper, focusing on the analysis of the concrete potential of Maglev technology in the railway sector, was written by Arbra Bardhi, Stefano Ricci, Luca Rizzetto, Giuseppe Carcasi, Marjorie de Belen, Giovanni De Blasio, Angela Nocita, Camilo Patiño Puerta, and Pawel Radziszewski. It was published by the University of Zagreb Faculty, Civil Engineering Department of Transportation, which contained more than 149 papers from 39 countries and 136 institutions (including 64 universities) was presented at the 8th International Conference on Road and Rail Infrastructure, held in Cavtat, Croatia from 15th to 17th of May 2024.

According to reports, there are about 250 printed copies of the document described. Furthermore, in the coming months, the full paper will be made available in free access to anyone accessing the conference website.

Given the specificity of the topic, the MaDe4Rail consortium wanted to actively participate in the Maglev 2024 event, which took place in Malmö from 18 to 22 September. On this occasion, three papers were presented to transportation community.

The first one, entitled "Applications of Maglev Derived Systems into European interoperable railway network: compatibility challenges, required interfaces, potential benefits" written by Stefano Ricci (DITS), Arbra Bardhi (DITS), Giuseppe Carcasi (RFI), Luca Cesaretti (IRONBOX), Marjorie De Belen (RFI), Giovanni De Blasio (RFI), Angela Nocita (RFI), Lorenzo Andrea Parrotta (RFI), Camilo Patiño Puerta (RFI), Luca Rizzetto (DITS), is in the "Maglev project and applications of superconductivity" section (Reference Number: 7817-A-2466).

This paper describes the research activities of the MaDe4Rail project, funded by the EU-Rail JU, which explores the feasibility of implementing Maglev-Derived Systems (MDS) on European railway lines, as well as the analysis of the costs, compatibility, energy efficiency, safety, and benefits such as improved performance, reduced maintenance, increased capacity, and financial viability generated by the implement of the MDS technology.

The second paper, which was written on the occasion of Maglev 2024, is entitled "Technological Readiness and operational concepts in specific use cases of Maglev derived systems to improve railway performance". The authors who contributed to the paper are: Michael Meyer zu Hörste (DLR), Jesus Felez (UPM), Benedikt Scheier (DLR), Michael Schultz-Wildelau (NEVOMO), Luca Cesaretti (IRONBOX), Lorenzo Andrea Parrotta (IRONBOX), Giuseppe Carcasi (RFI), Marjorie De Belen (RFI), Giovanni De Blasio (RFI), Angela Nocita (RFI), Camilo Patiño Puerta (RFI), William Liu, (KTH) and Carlos Casanueva (KTH) (Reference number: 7814-A-2466).

The paper offers an overview of the technological readiness assessment of various extant and forthcoming Magnetic Levitation Derived Systems (MDS) identified during the initial phases of the MaDe4Rail Project. Moreover, the paper discusses potential configurations of the most promising technologies for different use cases through systematic evaluations, incorporating

SWOT analyses of identified MDS applications system architectures. For the chosen MDS, constraints and design methodologies for operational procedures under typical regular and perturbed regimes are identified and evaluated. Furthermore, the paper outlines the process of identifying specific use cases foreseen for examination in the last phase of the MaDe4Rail project.

The third paper, entitled "Potential Benefits of Linear Motor Traction Boosters for Reducing Track Construction Costs in Conventional Railways", has been prepared and written by William Liu (KTH), Carlos Casanueva (KTH), Mohammad Maghrour Zefreh (KTH), Michel Gabrielsson (Trafikverket) and Pär Farnlof (Trafikverket). The paper focused on one of the maglev-derived technologies that is traction boosters. The feasibility and effectiveness of this technology have been presented in this article, specifically the results of the Swedish case study on the Gothenburg-Borås corridor.

The three articles are freely accessible to the entire scientific community and the technological research sector related to railways, which can be accessed through this link (https://bth.diva-portal.org/smash/get/diva2:1918096/FULLTEXT01.pdf).

6.2 Scientific articles in peer reviewed journals

Given that this deliverable should be submitted at the same time of the closure of the project, the latest results of the project are being finalised and will be published upon the approval of EU-Rail JU.

The production of scientific articles in peer-reviewed journals requires an effective data analysis phase that allows for valid and concrete outputs in line with the credibility of the journal. For this reason, scientific articles regarding the MaDe4Rail project results are currently under review.

Despite this, months ago, the research team had already contacted several scientific journals, like Machines, IEEE Transactions on Vehicular Technology, among others. Some of them have confirmed their interest in publishing a few scientific papers related to the MaDe4Rail project in the coming months.

The consortium, led by Universidad Politécnica de Madrid (UPM), has been working on two strategic articles for the project. One of these is related to the Swedish use case, entitled "Maglev Derived Systems: An Interoperable Freight Vehicle Application Focused on Minimal Modifications to the Rail Infrastructure and Vehicles" which has been published on the 28th of November 2024 in Machines Journal that is an international, peer-reviewed, open-access journal on machinery and engineering, published monthly online by MDPI (Multidisciplinary Digital Publishing Institute). This journal has high visibility regarding indexed (Scopus, SCIE (Web of Science), Inspec, and other databases) Journal Rank for the Mechanical Engineering subject (JCR - Q2) and Impact Factor (2.1 for the year 2023).

The second article would focus more on the Italian Use Case: Hybrid MDS based on magnetic levitation configuration, in which the Consortium aims to publish on the Electronics journal. This is an international, peer-reviewed, open access journal on the science of electronics and its applications published semi-monthly online by MDPI (Multidisciplinary Digital Publishing Institute). More specifically, the article is planned to be submitted within three weeks and to be included in the section of Electrical and Autonomous Vehicles.

At the same time, Université Gustave Eiffel is leading the consortium in writing and publishing two articles. One of these, entitled "A model-based approach for safety analysis of disruptive technologies in railway systems", has been submitted on the 27th of September 2024 to the journal "IEEE Transactions on Vehicular Technology", wherein its acceptance will be confirmed soon. The IEEE Transactions on Vehicular Technology focuses particularly on the publication of peer-reviewed original contributions of research regarding the theory and practice of electrical and electronics technology in vehicles and vehicular systems. The audience of this journal is broad and diverse, including the scholarly community, such as engineers, researchers, educators, and graduate students specialized in the field of vehicular technology, also industrial organizations, research centres and government agencies.

Publications in these journals represent a very important milestone, capable of increasing the project's visibility. As previously mentioned, another article is also in the works by the consortium, this one is focused on the "Temporal aspects and telecommunication for control modelling of braking phases for hybrid maglev-derived systems running on wheels". In particular, this article is only targeting a Scopus-indexed journal such as the International Journal of Transport Development and Integration (IJTDI), and for that, it needs careful analysis of the journals to which it would be strategically beneficial to submit. The team is currently waiting for the confirmation on the possibility to submit the paper.

6.3 Presentations of results of the activities of the project at third-party workshops and conferences

Participation in third-party workshops and conferences offers numerous benefits and is strategic for the success of the MaDe4Rail project. First, these events provide an excellent platform for researchers to share their findings with a wider audience, facilitating the dissemination of knowledge and increasing the visibility and the credibility of the project. Moreover, engaging with other experts in the field fosters collaboration and can lead to new partnerships. This kind of event presents interesting opportunities for networking and offers chances to exchange ideas and build professional and strategic relationships. In general, the research presented at the conferences has the potential to reshape the future of railway transportation landscape and trace the way of a new mobility concept. For all of these reasons, the results and outcomes within the MaDe4Rail project, in the last few months, have been presented in numerous conferences within Europe.

The first event, wherein the consortium participated, was the Transport Research Arena (TRA) 2024, which was held from the 15th to 18th of April 2024 in Dublin, Ireland. More specifically, the consortium presented and discussed the topic: "Disruptive Sustainable and Smart Guided Transport Solutions part of Europe's Future Mobility?" on the 18th of April 2024.

This event focused on the potential role of disruptive transport technologies, such as flying taxis, maglev trains, and hyperloop, in future mobility systems. The session explored the maturity of these technologies and whether they can be integrated, complement current transport networks, or enhance existing solutions.

The second event was the Middle East Rail 2024, which took place in Abu Dhabi from 30th of April to 1st of May 2024. This is one of the most important events in the sector and the largest rail conference in the Middle East and North Africa, which welcomed over 10,000 visitors.

The consortium, represented by RFI, presented the details of the MaDe4Rail Project, wherein the project vison, the MaDe4Rail consortium, the potential benefit of Maglev-Derived-System and the preliminary results were illustrated. Furthermore, the representative of the Consortium also participated in the panel discussions: "AI-powered operations: integrating digital intelligence into rail services" and "High-speed harmonization: bridging the gap between conventional trains and maglev technology" where the experts confronted about the advantages and disadvantages of applying new digital technologies to the railway sector, analysing specific case studies.

The third event was the 8th International Conference on Road and Rail Infrastructure, CETRA 2024, which was held from 15th to 17th of May 2024 in Cavtat, Croatia. The CETRA conference is recognised as a venue where scientific and professional information from the field of road and rail infrastructure is exchanged. In this regard, DITS, as representative of the MaDe4Rail Consortium, presented the paper entitled "Potential application of Maglev Derived system to improve railway performance" on the 16th of May in front of more than 30 participants with expertise on the railway facilities, vehicles design and operation optimization. During the presentation, the speaker focused on exploring Maglev-Derived Systems (MDS) for potential implementation in Europe's conventional rail network. The three MDS types: Full MDS, Hybrid MDS, and Conventional systems upgraded with MDS technologies have been discussed, considering the advantages produced by the introduction of Maglev-Derived Systems.

The fourth event was the 22nd Nordic Seminar on Railway Technology which took place in Stockholm, Sweden, at the KTH Royal Institute of Technology from 18th to 19th of June 2024. This seminar brought together members of the railway community, including researchers, institutes, authorities, and industrial partners in manufacturing, operations, infrastructure and maintenance. The conference topic reflected the diversity of the KTH Railway Group and includes seminars on vehicles, infrastructure, and network management. On the 19th of June, KTH and TRV presented their paper entitled "Benefits and drawbacks of integrating Maglev-Derived Systems in the design phase of new railway lines", which had its focus on the potential

of magnetic levitation systems to improve future transportation by addressing technical issues in current railways. The technical feasibility of maglev-derived systems, examining their technical performance and economic benefits, has been analysed and demonstrated during this occasion. Moreover, a specific use case on the "Swedish high-speed Gothenburg-Borås line", where maglev-derived traction boosters are studied to reduce construction costs and improve operational performance, has been illustrated.

The fifth congress, in which the consortium presented its outcomes and results, was the Maglev 2024 held in the city of Malmö, Sweden, from the 18th to 22nd of September 2024 (https://mkon.nu/maglev_2024). Such event is considered as a world leading conference on magnetically levitated system and linear drives. The 26th edition of the conference with focus on "Technological Advances and Future Impact Assessments" was hosted by Blekinge Tekniska Högskola (BTH). This event attracted about 200 – 250 researchers, professionals, and executives, to discuss about the future of the Maglev technology.

On the 19th of September, DLR, as a representative of the MaDe4Rail project team, demonstrated the first outcomes of the project, in a presentation entitled "Technological readiness and operational concepts in specific use cases of Maglev derived systems to improve railway performance" (more detailed information about the topic and the contents are available in the chapter 6.1) for the topic "Maglev projects and application of superconductivity".

The next day, on the 20th of September, DITS, representing the MaDe4Rail consortium, illustrated the paper "Applications of Maglev-Derived Systems into European interoperable railway network: compatibility challenges, required interfaces, potential benefits" for the topic "Maglev projects and application of superconductivity". During this occasion, the potential of Maglev-Derived Systems (MDS) into European rail networks has been described, thanks to the results that emerged from the MaDe4Rail project, as already specified in the paragraph 6.1.

Finally, the last convention was the 14th InnoTrans (InnoTrans2024) event, which took place from the 24th to 27th of September 2024 in Berlin, Germany. InnoTrans is the leading international trade fair for transport technology, which explores with particular attention the Railway Technology, Railway Infrastructure, Public Transport, Interiors and Tunnel Construction. The final event of the MaDe4Rail project took place in occasion of InnoTrans, in front of international railway community. This significative event is explained in detail in the 6.5 paragraph.

6.4 Workshop with the system pillar core group to ensure coordination between innovation and system pillar actions

During the execution of the MaDe4Rail project, a workshop on the MDS was carried out as a dissemination activity. The workshop was structured in two parts, which were held on different occasions:

- The first part on 5th of June 2024
- The second part on 10th of July 2024

The workshop was attended by about 45 participants. The group's heterogeneity was ensured, with the participation of the entire railway value chain, including representatives of the other FAs and the System Pillar.

The first workshop aimed to provide a general introduction concerning the MDS. The workshop provided a detailed overview of MaDe4Rail project. It started with an introduction to the context of the project, explaining the importance and main objectives. Afterwards, open points were discussed, with a cross-analysis against the technical specification of rolling stock interoperability. The presentation then covered various technical topics, including geometric and electromagnetic compatibility with EuroBalise and CCS, compatibility with existing railway infrastructure, impact on maintenance and speed in curves, among others. An overview of different use cases is illustrated, such as shunting automatization, incline pusher and regional lines activator. Furthermore, the connection with other FAs was described, specifying the functional and technical characteristics of the rolling stock subsystem. Finally, the workshop concluded with a question-and-answer session and an outline of next steps.

The second workshop aimed to answer some important questions from the European Commission, providing the point of view of the MaDe4Rail project. The discussion covered remote-controlled, automatic and autonomous operations, and whether these fall under Grade of Automation (GoA) 3 or 4, and how they interact with railway control systems. The change of voltage in the catenary when crossing borders, the economic feasibility of upgrading catenary-free tracks with the magnetic solution, and the interaction with axle counters and track circuits were also tackled. In addition, the measures required to deal with cable theft and vandalism, and the level of compliance with Technical Specifications for Interoperability (TSI) and vehicle authorisation procedures were addressed.

6.5 Final Event

The MaDe4Rail Final Event represents the closure of the MaDe4Rail project, which was organised by the consortium as part of the InnoTrans trade fair. On the 25th of September, the final event of the MaDe4Rail project took place, wherein the main results achieved were presented, with an outlook on future prospects. Invitations were sent out to the key players in the industry and relevant stakeholders to reach a wide range of audience. Over 90 attendees can be considered for the final event.

Figure 3: MaDe4Rail final event

Such event, through the showcasing of a demonstrator of the maglev technologies that were analysed within the project, an interactive module for the presentation of project results, conferences and presentations, feedback collection, networking with participants of the event, etc., aimed to carry out communications and knowledge sharing activities to promote widespread awareness on the project at the European level.

In addition, three different complementary panels took place tackling the following topics:

- Technological maturity and standardization needs for Maglev-derived Systems
- Technical Enablers and the industrialization roadmap to bring MDS forward
- The challenges and opportunities of integrating MDS in the railway system

The final event provided an opportunity to highlight achievements and recognise the contribution of all the members of the consortium. Furthermore, it granted a valuable opportunity to reflect on the lessons learned retrieved during the project. Documenting and sharing acquired knowledge can contribute to creating a learning and innovation-oriented culture. Another key aspect is the communication of the project results to the stakeholders. The final event provided a transparent presentation of the results obtained, demonstrating the value of the work done and building trust. This kind of open communication is crucial to maintain and strengthen relationships with stakeholders, facilitating support and creating synergy for future possible projects and initiatives. Finally, this event has been useful as an opportunity to discuss future prospects and development opportunities.

6.6 Interactive module

In occasion of InnoTrans, an interactive module was created in cooperation with a communications agency and was exhibited on both the FS and Europe's Rail stands. Everyone can navigate the module freely, through touch screens, being able to choose to follow either a logical or individual order. All the technical information contained within the module was taken directly from the deliverables produced within the project, restructuring and adapting them in order to make them more appropriate and akin to the communication method used in the interactive module.

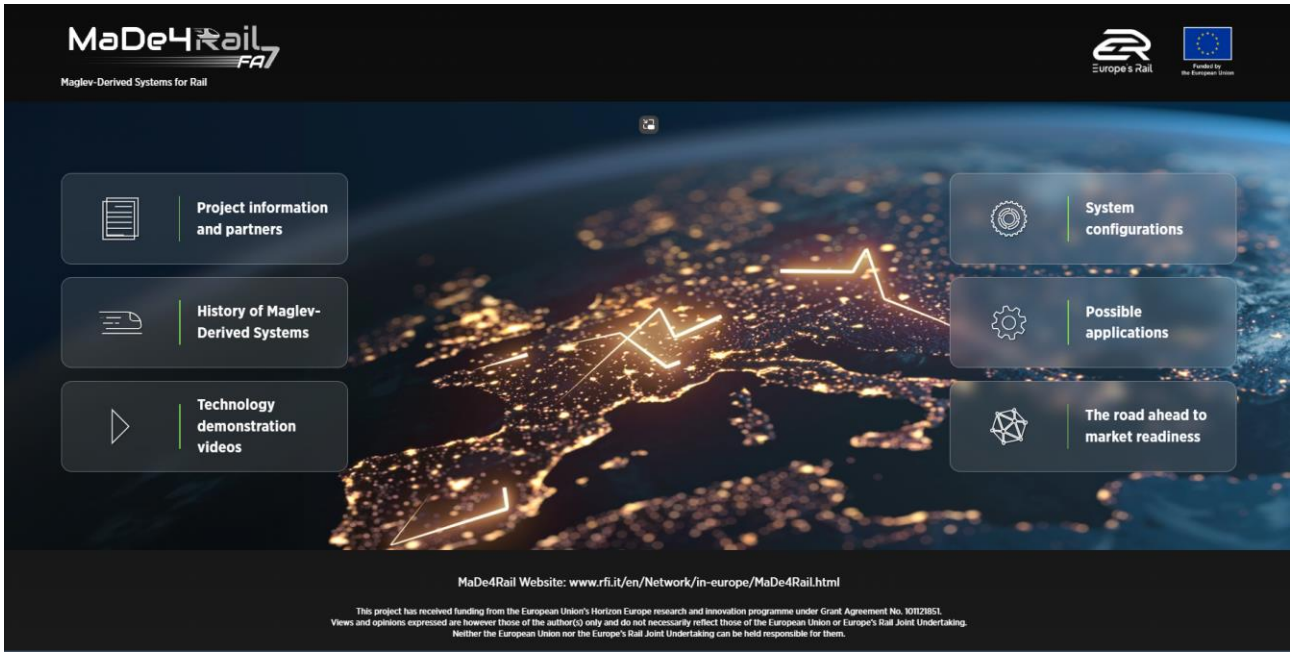

Figure 4: Initial Display of the Interactive Module

The interactive presentation is characterised by an initial homepage with graphical evidence of the rail links in Europe, with six clickable buttons representing the 6 main focuses of the project:

1. PROJECT INFORMATION AND PARTNERS:
   This is an initial section containing a description of the project objective, the main results to be achieved, the final TRL target, economic and technical project information, the main partners involved, specifying which are founders and which are external partners who participated, highlighting both their role within the market and their contribution within the project. Each company has been represented with its company logo together with the flag of its country of origin: clicking on either icon will show the geographical location of the company on the map together with a detailed description.

2. HISTORY OF MAGLEV – DERIVED SYSTEMS (MDS):
   Section encompassing the history of the Maglev-Derived System (MDS): points of interest have been represented within a world map that, when clicked, describe certain characteristics, such as length and operating speed, of the MDS within the specific country analysed.

3. TECHNOLOGY DEMONSTRATION VIDEOS:
   Section presenting illustrative videos made by partners outside the MaDe4Rail project, such as Ironlev and Nevomo: these videos represent some of several technological approaches being analysed within the MaDe4Rail project. The demonstrators were developed independently by two of the MaDe4Rail Consortium partners. The presence of these particular demonstrators should not be interpreted as an endorsement of any specific technological approach. They are showcased here, to illustrate the range of maglev-derived technologies being explored for potential future rail applications.

4. SYSTEM CONFIGURATIONS
   Section representing the configurations that were analysed and studied within the MaDe4Rail project. The four configurations that were most suitable to be implemented as upgrades on existing railway lines are shown.
   For each configuration, a fact sheet has been created, which can be accessed by clicking on the configuration of interest, containing the render (model) detailing the innovation linked to the Maglev - Derived System.

5. POSSIBLE APPLICATIONS
   Section describing all possible use cases i.e., all possible applications that were analysed during the project to study their potential benefits and technical-economic feasibility of implementation.
   The possible applications have been divided into 2 classes:
   - Applications analysed technically and economically (Incline Pusher, Regional Lines Activator – Airlev, Regional Lines Activator – Maglev, Shunting automatization);
   - Additional applications of interest (Airport Shuttle, High Speed Accelerator, Electrification).

   For each configuration, a fact sheet was created, which could be accessed by clicking on the application of interest, containing the reference to the configurational specification used, a brief description of the current situation in which the MDS would be inserted, the relative benefits after implementation and possible alternatives to the Maglev system. In addition, the specific application of the use case was indicated in the top right-hand corner of the detail sheet, choosing between passenger trains, goods trains, mainline or terminal. For the applications analysed within the project, an additional

sheet was created, starting from the fact sheet, containing the technical-economic feasibility analysis regarding the application on existing lines with certain characteristics. It was possible to access the technical-economic feasibility analysis through a clickable link in the fact sheet.

6. THE ROAD AHEAD TO MARKET READINESS
   Concluding section defining the implementation roadmap, which was divided into two parts:
   - Technical open points i.e., all the possible technological challenges that must be faced and overcome during the implementation of an MDS. In addition, all the various steps needed to solve the technological challenges in order to reach the maximum technological maturity of the MDS and its effective implementation were listed;
   - Technical enablers, that have been identified and need to be developed to facilitate the implementation of the MDS.

   For each step of the two roadmaps, a fact sheet has been created, which can be accessed by clicking on the step of interest, containing a brief description of the topic in question.

During the MaDe4Rail Final Event, the use of an interactive module was a significant benefit for the participants, facilitating their approach to the topics covered in a meaningful way. This innovative tool effectively stimulated their curiosity, making the overall experience not only more engaging, but also extremely informative and dynamic. Thanks to this interactive approach, participants were able to interact directly with the content presented, fostering a deeper understanding and lasting interest in the topics discussed. Furthermore, the use of the interactive module allowed for a more collaborative and participatory learning environment, where everyone had the opportunity to explore and delve deeper into the topics of their interest, thus contributing to an enriching and memorable learning experience. This approach also facilitated the creation of an open dialogue between participants and speakers, allowing for an exchange of ideas and opinions that further enriched the content of the conference.

6.7 Demonstrator

In occasion of InnoTrans, a demonstrator, produced independently by one of the MaDe4Rail Consortium Members, was showcased on Europe's Rail JU stand, giving the public the opportunity to observe the possible superposition of a Maglev technology on traditional railway tracks.

Figure 5: Demonstrator at EU-Rail JU's stand

The presence of the demonstrator has been extremely useful for the participants, as it proved the possibility of realising an MDS on traditional railway and facilitated the understanding of how a system works in a practical and direct way. This approach not only makes theoretical concepts clearer, but also stimulates participants' curiosity, encouraging them to further explore the functionality and potential of the system presented. This type of interactive approach not only increased the participants' interest and attention, but also fostered greater retention of the information presented, as learning occurs through direct experience and interaction.

7 Report on the Exploitation of Project Outcomes

The MaDe4Rail project is committed to disseminate its results for possible future exploitation. The results and outcomes of the project could be utilised in further research and innovation activities outside the action, such as “commercial exploitation such as developing, creating, manufacturing and marketing a product or process, creating and providing a service, or in standardisation activities”, as specified in the Grant Agreement (GA).

The MaDe4Rail project pursued the objective of advancing the development of MDS technologies and its subsystems. This has been achieved through successful exploitation of the results derived from the different deliverables which have been already published.

The first outcomes of the project have already been used for further analysis which will lead towards commercialisation and implementation of the MDS technology.

At the time of writing this deliverable, not all results from the MaDe4Rail project are available as they are currently being published. The exploitation activities carried out by the MaDe4Rail project have achieved the following:

- Interact with other EU-Rail projects and initiatives such as FP1: MOTIONAL, FP2: R2DATO, FP3: IAM4RAIL, FP5: TRANS4M-R, and FP6: FUTURE, and engage partners and stakeholders related to the System Pillar and the other FAs of the Innovation Pillar (e.g., Pods4Rail).
- Contribute to the creation of open-source projects providing access to the project’s results and framework.
- Build a community and raise awareness on the importance of MDS for the future of transportation and sustainability in the EU.
- Promote knowledge transfer from academia and technology developers to industry.

After the end of the project, the results of the MaDe4Rail activities could also be exploited in the following forms:

- Research and development activities for those technologies and subsystems that show low TRL and therefore, takes more time to arrive to commercialization.
- Design, preparation and construction of demonstrators to test technologies, subsystems and overall MDS.
- Additional and more detailed technical-economic feasibility studies to be developed in other territorial context of interest for new investments or as an alternative of already planned railway investments for MDS with high TRL.

Moreover, it is also stated in the GA that beneficiaries "must — up to four years after the end of the action — use their best efforts to exploit their results directly or to have them exploited indirectly by another entity, in particular through transfer or licensing. Therefore, exploitation activities would be monitored after the end of the project.

In any case that the results are not exploited within one year after the end of the action, the beneficiaries must (unless otherwise agreed in writing with the granting authority) use the Horizon Results Platform to find interested parties to exploit the results. If results are incorporated in a standard, the beneficiaries must (unless otherwise agreed with the granting authority or unless it is impossible) ask the standardisation body to include the funding statement (Article 17 of the GA) in (information related to) the standard.

Nevertheless, the contents of the last WPs have already been exploited in dissemination activities and have shown the interest of the different actors of the railway value chain in the topic of MDS technologies.

This gives reason to believe that, as soon as all project outcomes are made available, the exploitation plan will contribute more and more to the achievement and development of MDS.

Table 3: Key Exploitable Results for the MaDe4Rail project.

KER no.	Key Exploitable Result (KER)	Related WP	Lead Partner	Description/Background	Potential Users and Its Possible Use
1	Benchmark and description of traditional maglev in commercial operations or under development and innovative MDS	WP2	DITS	Provide calculation schemes, existing prototype test-results on performance indicators (e.g., force, acceleration, etc.) to be benchmarked with other existing or in development systems	• **Technology providers**: The KER can be used to plan specific research and development projects based on the state-of-the-art and comparison with other technologies under development. • **Industry**: The KER could be used to analyse possible technologies, systems and subsystems that could be produced to support the research and development of the MDS and provide specific solutions to the technology providers. • **Infrastructure Manager and Transport Operators and Administration**: The KER could provide an overview of the state of different technologies and define strategic planning scenarios for network and service development, considering the plausible deployment of new innovative transportation systems. • **Researchers**: The KER could be used as a reference of the state-of-the-art of traditional maglev and MDS,

KER no.	Key Exploitable Result (KER)	Related WP	Lead Partner	Description/Background	Potential Users and Its Possible Use
					including its subsystems and components, if available, for further research and development of MDS.
2	Specification of subsystems and technologies and their TRL	WP2	DITS	Existing prototype specification of magnetic levitation system in existing railways, that will be part of the to be assessed technologies. Contribution with extensive knowledge and experience in technology and subsystem specification.	• **Technology providers**: This KER could provide an overview of the different technologies available for a certain subsystem and its TRL. Therefore, this could support in the evaluating and selecting the most applicable and feasible technology/ies for the MDS or subsystems that it is developing. Tech providers could also use the KER to contribute to the definition of new standards for railways based on the development of MDS technologies that could be imported to enhance the existing railway transportation systems. • **Industry**: This KER could provide an overview of the different subsystems and technologies, which would need further development. Therefore, these could be studied and tested further by the industry to increase its TRL. • **Infrastructure Manager and Transport Operators and Administration**: This KER could provide an

KER no.	Key Exploitable Result (KER)	Related WP	Lead Partner	Description/Background	Potential Users and Its Possible Use
					overview of the possible subsystems and technologies of the MDS that could be compatible to the traditional railway system; therefore, could be imported back to the latter. The IM could thus also contribute to the definition of new standards for railways based on the development of the MDS subsystems/technologies that could be imported. • **Researchers**: This KER could provide an overview of the different subsystems and technologies, which would need further studies.
3	Risk analysis of MDS and identification of needs for standardisation on safety and security	WP3	Uni. Eiffel	Existing test track, full-scale on conventional rail and therefore already plenty considerations on risks. Cooperations with leading railways, e.g., RFI, DB Netz, SNCF analysing blockers for implementation of MDS within rails.	• **Technology providers and Industry**: The KER would provide an overview of the different risks relative to the different subsystems of MDS and therefore, would help facilitate their future certification and technical acceptance processes, considering the technological maturity of the solutions. The identification of safety requirements would also serve as an input for the design and construction of MDS and/or its subsystems.

KER no.	Key Exploitable Result (KER)	Related WP	Lead Partner	Description/Background	Potential Users and Its Possible Use
					• **Infrastructure Manager and Transport Operators and Administration**: The KER would provide an overview of the different hazardous scenarios and risk control measures, if available, and the identification of needs for standardisation would also give an idea on the system's time to market. Both would be necessary to evaluate its possible implementation and commercialisation in the network. In addition, this KER could provide support in working in different international standardisation bodies to accelerate the introduction of MDS in the market. • **Researchers**: The KER could provide a basis for further research and development regarding the safety aspects of the MDS and an overview of the standards needed to implement and commercialise MDS. Moreover, this KER could also support the researchers in evaluating different possible methodologies to assess the risks in transport systems. • **Public authorities**: This KER would provide an overview of the risks of different hazardous scenarios and the

KER no.	Key Exploitable Result (KER)	Related WP	Lead Partner	Description/Background	Potential Users and Its Possible Use
					control measures to manage them. These would help in evaluating whether to adopt such system or not in a certain city/town, taking into consideration its costs and benefits. • **Policy makers**: This KER would provide an overview of the standards and regulations necessary to be updated and to be created in order to implement and commercialise MDS. • **Civil society**: This KER would provide information and awareness to the society regarding the risks related to the MDS. Therefore, the public could evaluate their views and choices related to such MDS.
4	Definition of a common system architecture for MDS	WP2	DITS	Existing system architecture be able to propose a base for the MDS common system architecture, based on its functional building block architecture for MagRail.	• **Technology providers**: This KER could serve as a basis for its possible demonstration and consequently, future implementation, and for research and development activities based on the breakdown of technologies and subsystems. • **Industry**: The KER would provide a reference to understand the different components and subsystems

KER no.	Key Exploitable Result (KER)	Related WP	Lead Partner	Description/Background	Potential Users and Its Possible Use
					necessary for an MDS, wherein the industry could contribute to its development. • **Infrastructure Manager and Transport Operators and Administration:** This KER will provide an overview regarding the different interfaces between the different subsystems and components of MDS. Therefore, this would help in understanding and defining the responsible actors that would manage the responsibilities related to these subsystems and components. • **Researchers**: This KER would provide a baseline for the research regarding MDS, their technologies and subsystems, and could lead to new studies regarding the systems, subsystems and their interaction/interfaces.
5	Technical and economic feasibility studies of EU use cases	WP7	RFI	Technical and economic feasibility studies for specific railway use cases with RFI, Deutsche Bahn, Duisport, etc. – both on freight and passenger transport. The use case frameworks	• **Technology providers**: This KER could provide data on the feasibility of the MDS on certain use cases and could be used as a reference for further studies and analysis to assess the impact of the MDS on the areas of interest.

KER no.	Key Exploitable Result (KER)	Related WP	Lead Partner	Description/Background	Potential Users and Its Possible Use
				and workshop designs will be used within the project, as well as the intense railway network to be included in the joint railway industry use case workshops	Therefore, technology providers could evaluate the possible demonstration of the MDS in analysed areas. Moreover, using this KER, it would be possible to identify additional feasible projects in Europe, considering the characteristics of the use cases analysed in the feasibility study, which could also boost possible stakeholder engagement. • **Industry:** The KER could provide information regarding the technologies and subsystems that need further development to achieve higher TRL. • **Infrastructure Manager and Transport Operators and Administration:** This KER could be used as a basis for the possible demonstration and consequently, future implementation of the MDS. Moreover, these could also be used to support in defining strategic planning scenarios considering the plausible deployment of new innovative transportation systems. • **Researchers:** This KER could provide an input for the further studies and analysis of MDS to understand in which context they are more applicable and beneficial

KER no.	Key Exploitable Result (KER)	Related WP	Lead Partner	Description/Background	Potential Users and Its Possible Use
					to. Moreover, it could be used to identify the different aspects of the MDS that need improvement and further development. • **Public authorities**: This KER, considering the different use cases analysed, could be used to assess in which context it could be more applicable and beneficial. • **Policy makers**: This KER could be used as a basis/reference for the creation of new standards and updating of the relevant existing standards related to safety and security of the system and its users. • **Civil society**: This KER could provide information and awareness regarding the advantages and disadvantages that the MDS could bring to the society; therefore, these could influence the (modal) choices of the potential users.
6	Roadmap for implementation of MDS in the EU	WP7	RFI	Market knowledge already a database on applicable use cases and locations under development that will be used for the project.	• **Technology providers**: This KER could be used as a reference to further study and analyse the use cases of the MDS identified within the project and eventually,

KER no.	Key Exploitable Result (KER)	Related WP	Lead Partner	Description/Background	Potential Users and Its Possible Use
					collaborate with different stakeholders in a certain area for the future demonstration and implementation. • **Industry:** This KER could be used to define strategies and business plans related to the research and development of MDS and its subsystems that are planned to be introduced in Europe. • **Infrastructure Manager and Transport Operators and Administration:** The roadmap could be used as a reference to provide an overview of the possible implementation of the use cases of the MDS identified within the project, taking into consideration their feasibility and scalability, also considering the participation and engagement in the definition of strategic planning scenarios along with public authorities and other relevant stakeholders. • **Researchers:** This KER could be used by researchers to understand in which areas further research and development activities are to be performed in order to reach the foreseen developments at the expected times. The KER could also be used to research the impact of

KER no.	Key Exploitable Result (KER)	Related WP	Lead Partner	Description/Background	Potential Users and Its Possible Use
					transportation systems in terms of social, economic and environmental effects and other related externalities. • **Public authorities and Policy makers**: This KER could be used as a reference to provide an overview of the possible implementation of the use cases of the MDS identified within the project, which are of interest to a certain area of their jurisdiction. Therefore, considering the potential of the MDS as well as its feasibility and scalability, such project could be inserted in the strategic planning of a region/city/town, considering also the required evaluations in terms of financing, regulation, standardization and additional authorizations or permits from other relevant public bodies. The KER could also be used to research the impact of transportation systems in terms of social, economic and environmental effects and other related externalities. • **Civil society**: The roadmap could increase the awareness of the civil society related to the different innovative solutions that could be adopted in different regions/cities/towns in Europe.

KER no.	Key Exploitable Result (KER)	Related WP	Lead Partner	Description/Background	Potential Users and Its Possible Use
7	Design concept of the vehicle subsystem of a MDS and design of a prototype of a sample vehicle for a MDS use case	WP8	GESTE	Several prototypes of maglev-derived vehicles for their own testing and R&D purposes, the experience and know-how will contribute to the project vehicle design.	• **Technology providers**: This KER could be used to verify the different components that must be present in the vehicle and consequently, improve the proposed solution of the technology providers of MDS. Moreover, the results could also help in identifying the different components that need further demonstrations. Lastly, it could also be used as a basis for further research and development of MDS and its subsystems. • **Industry:** This KER could be used by to have an overview and to understand the different components of the vehicle subsystem. Therefore, the industry could develop and propose different solutions related to the vehicle subsystem. • **Infrastructure Manager and Transport Operators and Administration :** The KER could provide as a basis to the infrastructure managers and transport operators and administration if such solution could circulate in the existing railway infrastructure or if such solution could be adopted on its mobility network. Moreover, the KER

KER no.	Key Exploitable Result (KER)	Related WP	Lead Partner	Description/Background	Potential Users and Its Possible Use
					would provide an idea of the cost and magnitude of possible acquisition and/or retrofit of vehicles. • **Researchers:** This KER could be used to verify the different components that must be present in the vehicle and identify the components that still needs further study and development.
8	Technology readiness assessment and (generalised) use case analysis using IRONLEV levitation - results and data	WP6 WP7	UPM RFI	The performed several preliminary FEA analyses, cost impact evaluation and has already built prototypes and products based on magnetic levitation technology of IRONLEV could contribute to the technology readiness assessment of the different MDS in WP6 and eventually, if selected, these data could be used for further analysis of the use cases in WP7.	• **Technology providers**: This KER could be used to have an overview of the maturity level of the different MDS and its critical technologies. • **Industry**: This KER could identify the different MDS, which have high maturity level, wherein the industry could provide support in developing the different components and subsystems necessary for its future demonstration and eventually, implementation. • **Infrastructure Manager and Transport Operators and Administration:** This KER could be used as a reference to understand the different MDS in different stages of development. Therefore, these could help in

KER no.	Key Exploitable Result (KER)	Related WP	Lead Partner	Description/Background	Potential Users and Its Possible Use
					the evaluation of the MDS to be potentially adopted in a certain area, considering its maturity level. • **Researchers:** This KER could help the researchers identify the different components and subsystems that need further studies and analysis.

8 Conclusions

The MaDe4Rail project represents a significant step forward in exploring and developing maglev-derived technologies aimed at enhancing the efficiency, sustainability, and performance of Europe's railway systems. Through the efforts laid out in this Communication, Dissemination, and Exploitation Report (CDER), it represents the commitment that the entire working group has made to increase and solidify the interest shown by the railway sector towards new innovative solutions that are interoperable with the current railway system. Moreover, several key outcomes have been achieved and foundational strategies implemented that will support the broader adoption and application of these technologies.

1. **Communication and Dissemination Achievements**

The project successfully established a strong communication and dissemination strategy, ensuring that information about its objectives, progress, and outcomes reached a diverse array of stakeholders, including industry players, policymakers, and the general public. Tools such as a dedicated website, newsletters, social media engagement, and participation in international conferences have been crucial in spreading awareness and fostering engagement with the project. The project's communications not only promoted its technical findings but also underscored the potential societal and environmental benefits of maglev-derived systems.

2. **Exploitation of Key Results**

Several Key Exploitable Results (KERs) were identified, providing a roadmap for further research, development, and potential commercialization. These results will serve as a basis for future work, facilitating collaboration among partners and stakeholders to push forward the integration of innovative maglev technologies into the existing rail infrastructure. The exploitation plan ensures that the technical advancements achieved within the project are used to shape the future of rail transport in Europe.

3. **Collaboration and Stakeholder Engagement**

A critical factor in the success of MaDe4Rail has been its engagement with a broad spectrum of stakeholders across the European railway sector. The collaboration between research institutions, technology developers, and infrastructure managers has provided a fertile ground for innovative thinking and practical solutions. These relationships are expected to strengthen further as the project progresses toward the demonstration and implementation phases of the maglev-derived technologies.

In conclusion, the MaDe4Rail project has laid a solid foundation for the future of sustainable and efficient rail transport through the integration of advanced maglev-derived systems. With its well-defined communication and exploitation strategies, the project is poised to not only

meet its technical objectives but also to have a lasting impact on the European transportation sector. The continuous refinement of the CDEP, combined with active engagement from all project partners, ensures that MaDe4Rail will continue to drive innovation in railway transport long after the project's formal conclusion.

9 References

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