

INtelligent solutions 2ward the Development of Railway Energy and Asset Management Systems in Europe

D7.4 - Dissemination and Exploitation activities report

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Executive Summary

This document provides a description of the IN2DREAMS dissemination, communication and exploitation activities carried out during the whole duration of the project. The aim of this report is to provide a detailed description of the dissemination strategy and how this was implemented during the 26 months of project implementation, including the materials and strategies that have been used to facilitate the wide-spread of information and knowledge of the results created by the project. The dissemination of IN2DREAMS was essential throughout the project's life and for this reason it needed to be carried out with the cooperation of all Work Packages.

In this respect, materials and strategies that were used for communicating and disseminating IN2DREAMS to the target audiences and the general public, as described in the dissemination plan (D7.3), are presented in this report. Those include: the creation of a project identity; the creation of a public website; the creation of a project brochure; the production of two newsletters; the organisation of dissemination events; the participation to conferences and the publication of results in relevant journals/conferences.

Moreover, this report also gives an overview of the Advisory Group (AG) that has been created during the life of the project.

Abbreviations and Acronyms

Abbreviation	Description
AG	Advisory Group
B2B	Business-to-business
CCA	Cross-Cutting Activities
CFM	Call For Members
EU	European Union
ICT	Information and communication technology
IN2DREAMS	INtelligent solutions 2ward the Development of Railway Energy and Asset Management Systems in Europe
IP	Innovation Programme
IT	Information Technologies
JU	Joint Undertaking
LiFi	Light Fidelity
MAAP	Multi Annual Action Plan
ODM	Open Data Management
S2R	Shift2Rail
TD	Technology Demonstrator
WP	Work Package
WS	Work Stream

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1 Introduction

The IN2DREAMS communication and dissemination strategy has been designed to provide the most extensive coverage, meeting the limitation of the scale of the project and ensuring an efficient and coordinated take-up by the Shift2Rail JU with their future R&D activities. The activities are also designed to ensure a solid communication of the project with actors outside of the Shift2Rail JU. The overall approach, which also reflects the way in which this document is structured, focuses on the following three elements:

1. Public dissemination of IN2DREAMS activities;
2. Targeted dissemination of IN2DREAMS through various events, conferences, publications etc.;
3. Advisory Group and interaction with Shift2Rail.

The first element focused on the wide dissemination of project results through several means like the creation of the public website which was kept up to date with relevant content and information, along with the publication of the project brochure and project newsletters.

The second element focused on the dissemination of the project through the publication of papers or through articles in magazines/journals, attendance and presentations in specific events etc.

The third element focused on the creation of the IN2DREAMS AG which focused on involving key stakeholders in order to receive input on topics related to standardisation.

All the above-mentioned elements will be described in more detail throughout this document.

1.1 Background

To support sustainable development of railway ecosystems novel data-driven ICT solutions are required. These will enable monitoring, analysis and exploitation of energy and asset information for the entire railway system including power grid, stations, rolling stock and infrastructure. IN2DREAMS addresses these challenges through two distinct work streams: WS1, focusing on the management of energy-related data and WS2, focusing on the management of asset-related data. IN2DREAMS developed and demonstrated a modular cloud-based open data management platform (ODM) facilitating ubiquitous support of both energy and asset services.

WS1 proposed a dynamically re-configurable ICT infrastructure to facilitate both the operation and the services supported by the railway network. Despite the recent progress in railway smart metering solutions, as well as several experimental trials, the optimality of the grid's ICT network infrastructure remains an unsolved challenge, even when limited to rolling stock monitoring. The same holds for the interoperability between the different heterogeneous segments of the network, which are currently static and unaware of each another. As a result, Railway System Operators are faced with a number of options for building their ICT networks, but no ability to dynamically reconfigure the network according to their operational and business needs and with no clear way to benchmark one solution against the other. Therefore, IN2DREAMS proposed a dynamically reconfigurable smart metering system that improves

reliability, eases monitoring and optimises the performance/cost trade-off on the fly. IN2DREAMS focuses on providing energy related information and data to the whole railway system through an advanced open platform.

WS2 developed the methodologies for extracting knowledge through visual and data analytics technologies applied to railway asset data, and for exchanging information, data and models, targeting B2B transactions, through smart contract protocols, in order to allow self-executing contractual clauses between interested partners.

The overall project structure is shown in the figure below, depicting the interrelation between the various Work Packages (WP), whilst clearly illustrating which of the two WS each technical WP is related to.

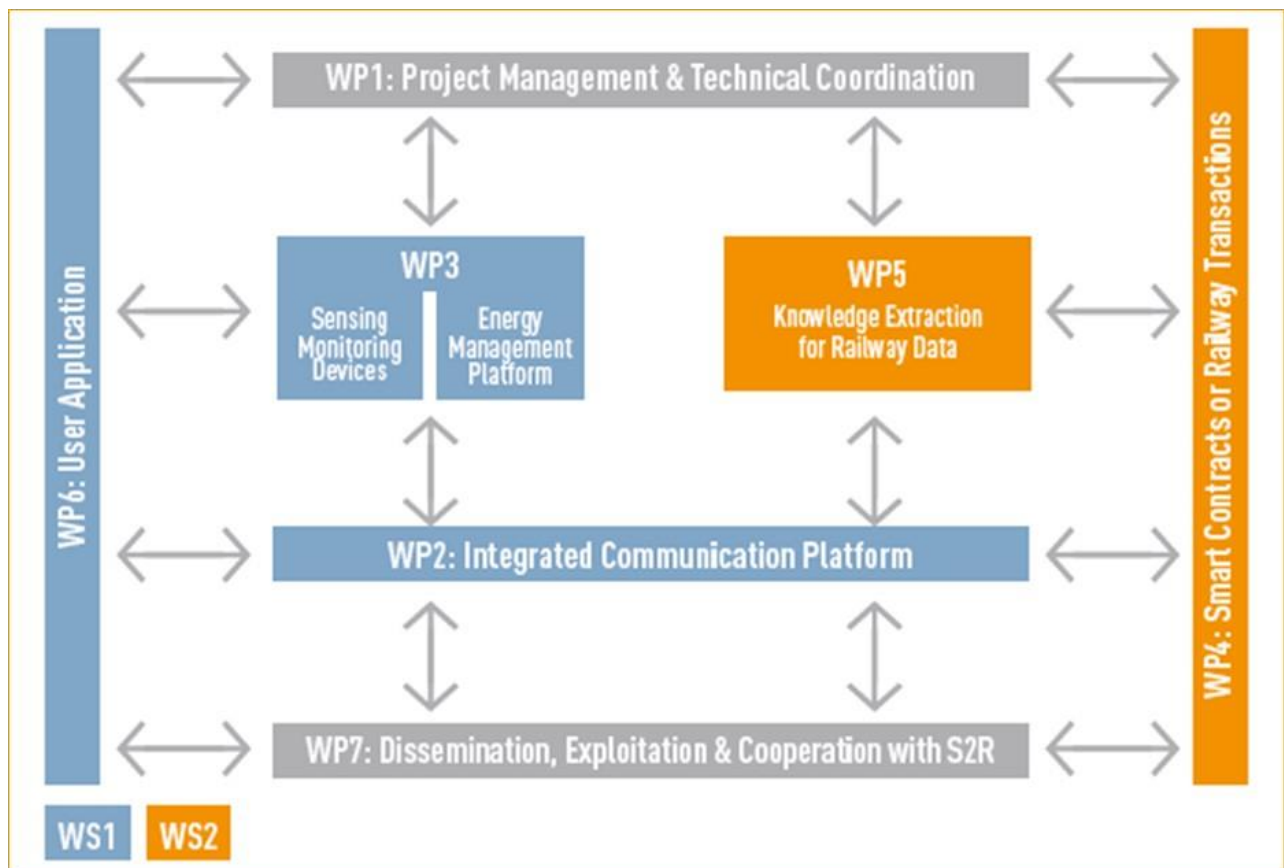


Figure 1 – Project structure of IN2DREAMS

1.2 Shift2Rail

S2R is the first public-private European rail technology partnership that aims at building the railway systems of tomorrow. This initiative is fully operational since 2016 and seeks focused research and innovation by accelerating the integration of new and advanced technologies into innovative rail product solutions.

The work of Shift2Rail is structured around five Innovation Programmes (IPs) that cover all of the different structural and functional areas of the rail system as well as five cross-cutting activities (CCA).

One of the S2R's main outcomes will be the demonstration activities, such as technology developments in lab to system prototype demonstrations in operational environments.

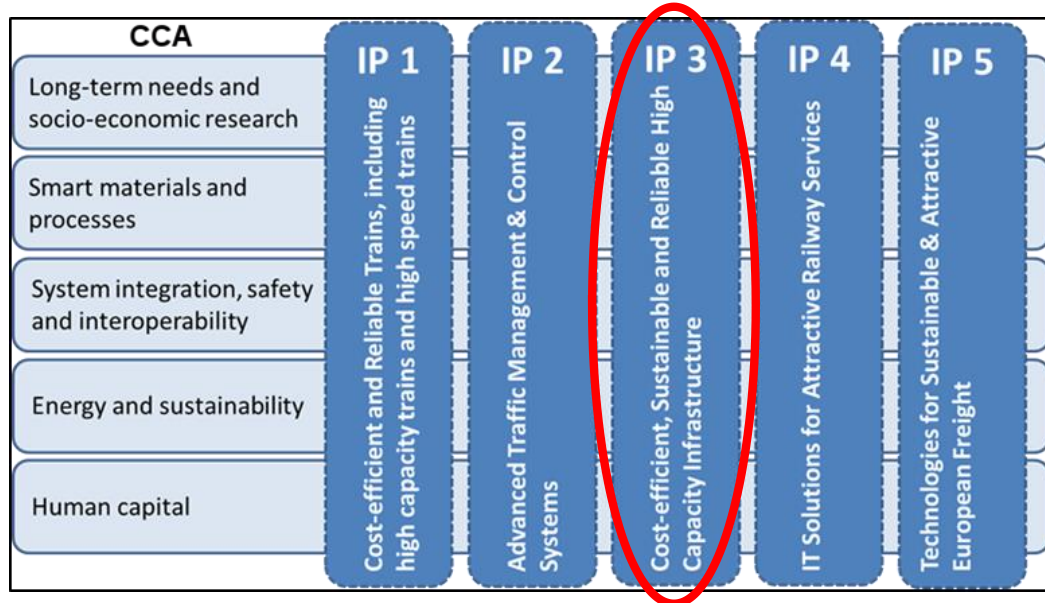


Figure 2 – Overall structure of the S2R JU programme (Source: S2R MAAP, 2015)

The IN2DREAMS project is directly linked with the 3rd Innovation Programme (IP3) of Shift2Rail, which focuses on aspects linked to the infrastructure of railways, as shown in Figure 2 above. Furthermore, IN2DREAMS was also closely linked with two S2R members' projects, IN2SMART and IN2Stempo. These two projects are feeding the Technology Demonstrators (TD) shown in Figure 3 below.

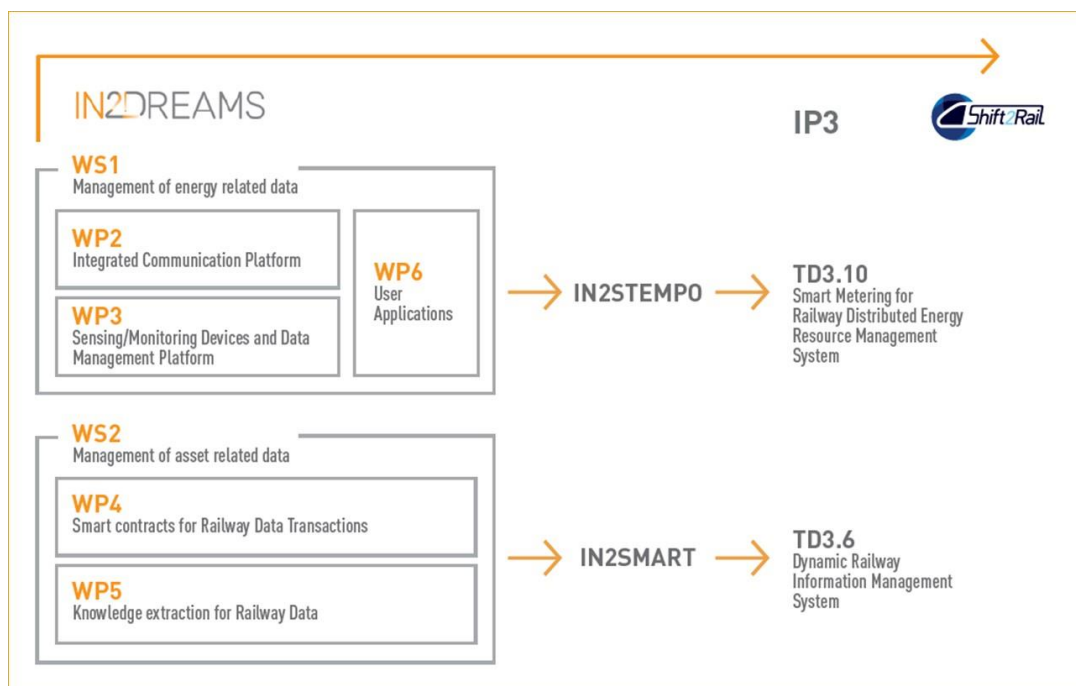


Figure 3 –IN2DREAMS links within IP3

2 External Communication

External communication was of key importance for maximising IN2DREAMS' impact and for disseminating the project results. Communication of the project research activities involved reaching relevant transport stakeholders, the scientific community and creating awareness among the general public. This has been achieved through creating a project identity and a public website, attending to conferences and relevant events and publishing papers and articles.

2.1 Project Identity

A project identity has been created at the beginning of the project including templates for presentations, reports, a project brochure as well as the IN2DREAMS logo. The project identity considerably helped dissemination activities and ensured a consistent communication of the project concept, objectives and results. The brochure has been distributed at project workshops and conferences, where project partners have participated, and it can also be downloaded from the IN2DREAMS public website.

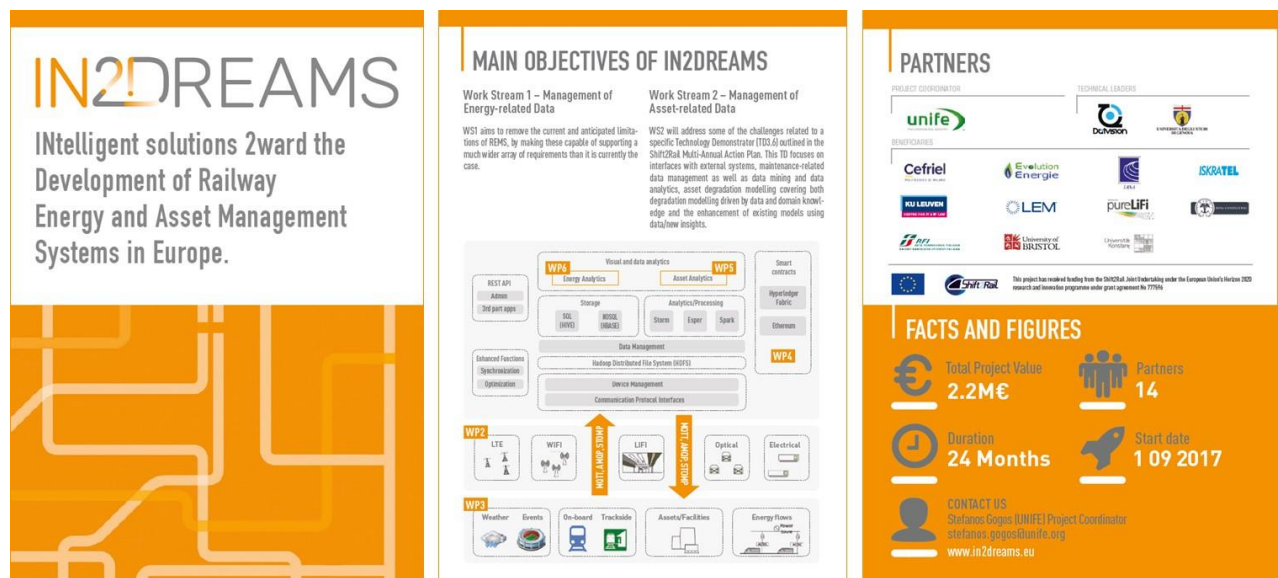


Figure 4 – Snapshots of the IN2DREAMS brochure

2.2 Website

A dedicated website was created at the beginning of the project and has been updated throughout the life of the project. The website (www.in2dreams.eu) is publicly accessible, with a section where visitors can register their interest. It is divided into two parts: the public portal and the cooperation tool (member's area), which acts as an exchange platform between the project partners.

The public portal is open to the public and displays the key project information, partners, results, news/events and links to the partners' websites. All the public deliverables are published on the website and are available for download.



Figure 5 – IN2DREAMS Public website homepage

The detailed analytics of the IN2DREAMS website, showing the amount of new and returning visitors throughout the life of the project, as well as the countries from which they connected can be seen in Figure 6.

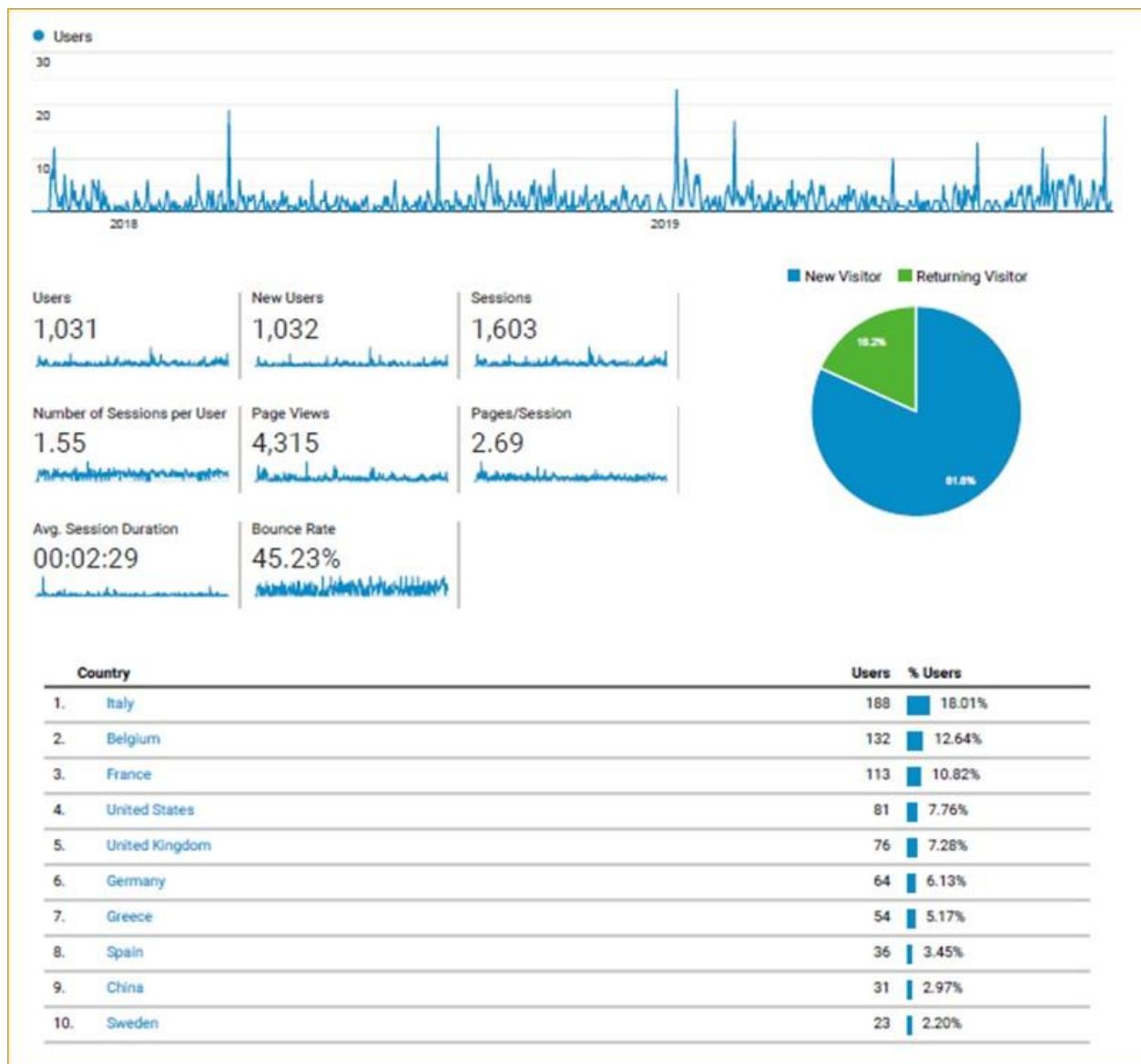


Figure 6 – Statistics of IN2DREAMS Public Website

2.3 Newsletters

The project has produced two newsletters, one towards the middle of the project and another one in the end of the project, providing up-to-date information on the status and achievements of the project at these particular times.

The first newsletter was released in August 2018 and the second one in August 2019. Both of the newsletters have been distributed during public events where the project was disseminated and have also been made available for download on the IN2DREAMS public website.

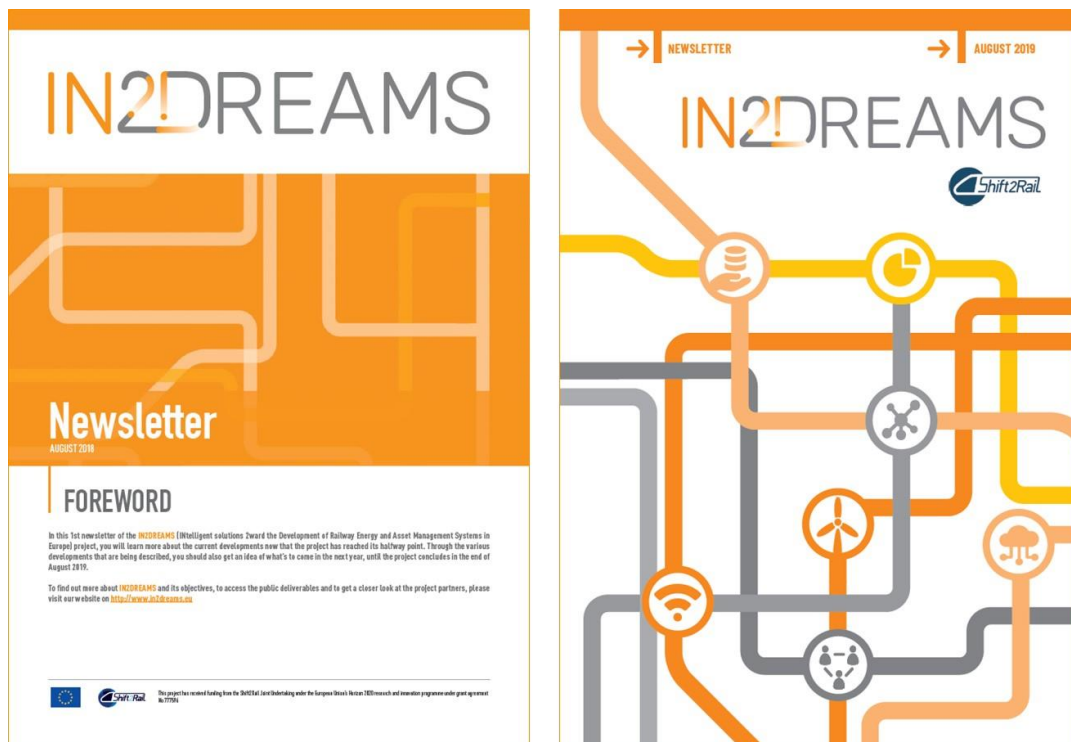


Figure 7 – Snapshots from the IN2DREAMS Newsletters

2.4 Events

The IN2DREAMS consortium has organised two major project events during the life of the project, a kick-off meeting on the 29th September 2017 and a Final Conference on the 2nd October 2019.

- The IN2DREAMS kick-off meeting was organised in Brussels. On top of the IN2DREAMS partners, it also brought together partners from the CFM projects of IN2SMART and In2Stempo, but also representatives of the Shift2Rail JU. The event was an opportunity to discover more about the project objectives of IN2DREAMS and to understand better the interactions with the corresponding CFM projects and the overall IP3 ecosystem.



Figure 8 – Picture from the IN2DREAMS kick-off meeting

- The final conference of IN2DREAMS was organised in Milan, in conjunction to the Expo Ferroviaria 2019 which was also taking place in Milan during the same period, to encourage maximum participation. Through the presentations and live demonstrations, the participants had the opportunity to learn more about the project results. The event was also attended by the corresponding CFM projects and members of the AG, together with representatives of the Shift2Rail JU. The presentations that were shown during the final conference are available for download on the IN2DREAMS public website. The event was also promoted through the UNIFE twitter account.



Figure 9 – Pictures from the IN2DREAMS final conference

2.5 Presentations & Publications

Project results have been published on several specialised magazines, papers and in relevant national and international conferences and workshops. IN2DREAMS partners have actively looked-out for high profile academic and industrial events that are within the domain of interest of the project. Throughout the life of the project, IN2DREAMS has been presented/published in the following events and press:

Table 1 - Targeted Publications and Conferences

Event/Publication	Title/Description	Partner(s)
TRA2018, 16-19 April 2018, Vienna	Dissemination through UNIFE stand	UNIFE
ONDM2018, 14-17 May 2018, Dublin	Paper titled: "Provisioning of 5G Services Employing Machine Learning Techniques"	UNIBRI
EuCNC 2018, 18-21 June 2018, Ljubljana	Paper titled: "Compute Resource Disaggregation: An Enabler for Efficient 5G RAN Softwarisation"	UNIBRI
InnoTrans 2018, 18-21 September 2018, Berlin	Dissemination through UNIFE stand and dedicated presentation.	DotVision, Cefriel, UNIFE
IEEE DSAA 2018, 1 October 2018, Turin	Paper titled: "Large-Scale Railway Networks Train Movements: a Dynamic, Interpretable, and Robust Hybrid Data Analytics System"	UNIGE
BDVA 2018, 1-4 October,	Poster and paper produced with the title	University of Konstanz

Konstanz	"Visualization For Train Management: Improving Overviews in Safety-critical Control Room Environments"	
INSS Big Data and Deep Learning Conference 2019, 16-18 April 2019, Genoa	Paper titled: "Restoration Time Prediction in Large Scale Railway Networks: Big Data and Interpretability"	UNIGE
INSS Big Data and Deep Learning Conference 2019, 16-18 April 2019, Genoa	Paper titled: "Improving Railway Maintenance Actions with Big Data and Distributed Ledger Technologies"	UNIGE
INSS Big Data and Deep Learning Conference 2019, 16-18 April 2019, Genoa	Paper titled: "Train Overtaking Prediction in Railway Networks: a Big Data Perspective"	UNIGE
INSS Big Data and Deep Learning Conference 2019, 16-18 April 2019, Genoa	Paper titled: "Visual Analytics for Supporting Conflict Resolution in Large Railway Networks"	UNIGE
ESANN 2019, 24 April 2019, Bruges	Paper titled: "Fairness and Accountability of Machine Learning Models in Railway Market: are Applicable Railway Laws Up to Regulate Them?"	UNIGE, KU Leuven
TILting Perspectives 2019, 15-17 May 2019, Tilburg	Paper titled: "How to regulate machine-learning algorithms that optimize the law-making itself?"	KU Leuven
FPDAPP 2019, 26 August 2019, Gottingen		Cefriel
ICT for RAILWAYS 2019, 12-13 September 2019, Naples	IN2DREAMS presentation during workshop	UNIFE, UNIBRI
EXPO FERROVIARIA 2019, 01-03 October 2019, Milan	Dissemination through UNIFE stand	UNIFE, Cefriel
IN2SMART Final conference, 01-03 October 2019, Naples	IN2DREAMS presentation during final conference	UNIGE
Article published in the "International Journal of Data Science and Analytics"	A Dynamic, Interpretable, and Robust Hybrid Data Analytics System for Train Movements in Large-Scale Railway Networks	UNIGE
Article published in the "Project Repository Journal"	IN2DREAMS: INtelligent solutions 2wards the Development of Railway Energy and Asset Management Systems in Europe	UNIFE

2.6 Social media

The IN2DREAMS project was also disseminated through social media, via the already established accounts of the project partners (i.e. twitter accounts). This way, whenever any major event or project development involving IN2DREAMS was taking place, its reach was maximised as much as possible.

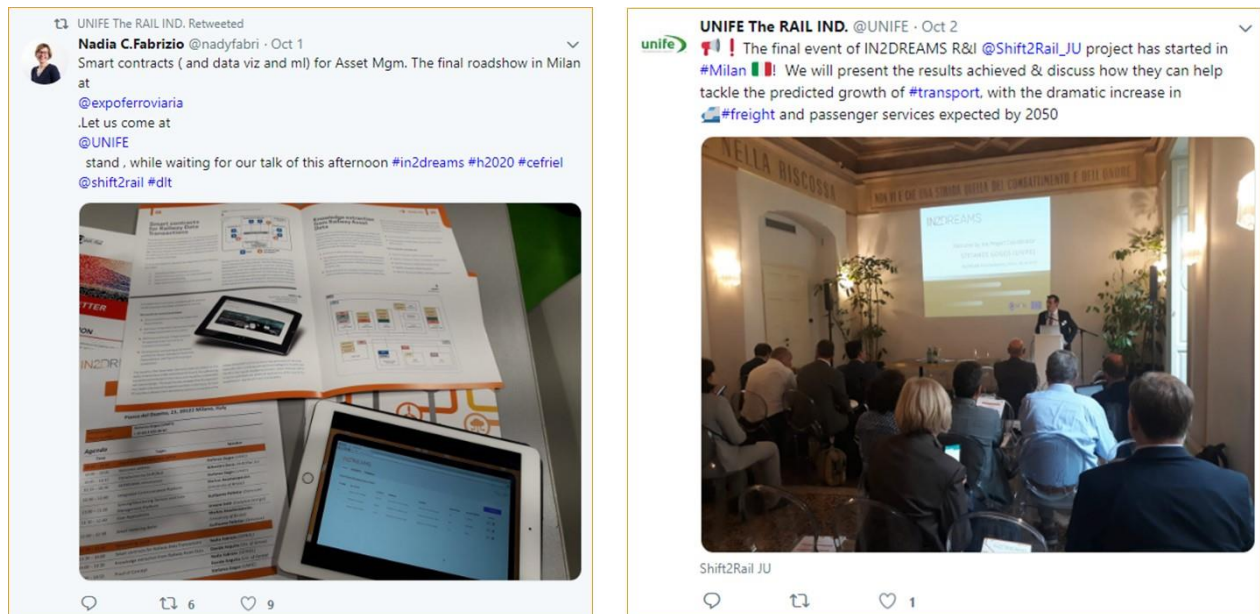


Figure 10 – Snapshots of tweets that were posted during the life of IN2DREAMS

3 Exploitation Activities

Exploitation activities have a broader timeframe in comparison to the dissemination activities, as they have started during the project implementation, i.e. through the transfer of results into the IN2SMART and In2Stempo projects, but may also continue after the conclusion of the project, i.e. through contributions of the IN2DREAMS results into the area of Standards and Regulation. Moreover, exploitation will continue through the interactions of IN2DREAMS partners with stakeholders outside of the consortium to improve the acceptance and recognition of IN2DREAMS results after the end of the project.

The exploitation strategy was technology and market oriented and has been based on three levels:

- i. Transfer of project results into IN2SMART and In2Stempo projects to ensure proper integration in the planned activities. The IN2DREAMS consortium has pursued an effective cooperation with the members of the JU involved in these two projects through constant cooperation throughout the life of IN2DREAMS. More details on the transfer of results are described in Deliverable D7.5;
- ii. Contribution to existing/future Standards and Regulation. IN2DREAMS established an Advisory Group whose main purpose has been the investigation of how the project could possibly be able to provide relevant input for the work of standardisation and regulation bodies such as CEN/CENELEC and ERA;
- iii. Exploitation of project results in other R&D activities and market uptake: The results of IN2DREAMS could be also relevant as input for future R&D activities and be marketable in the near future, as partners will be able to follow individual exploitation strategies as owners of the foreground developed in IN2DREAMS. These exploitation strategies are described further in Table 2.

3.1 Exploitation Measures

To ensure the good transfer of results between IN2DREAMS and Shift2Rail, the following steps have been taken:

- Developed and signed Collaboration Agreements with IN2SMART and In2Stempo projects;
- Established an Advisory Group;
- Ensured that standardisation bodies are aware of the project developments through the AG, which met twice during the life of the project;
- Ensured a smooth transfer of IN2DREAMS results to the corresponding CFM projects, through the organisation of technical workshops on specific subjects identified, whenever needed. These direct technical interactions have facilitated the knowledge transfer for the purpose of the Shift2Rail activities;
- Regular interaction with the S2R JU, through the IP3 Steering Committees, where possible issues have been identified and resolved in time between the relevant actors.

All this exchange of information enabled the IN2DREAMS project to provide feedback to the relevant stakeholders in Shift2Rail, but also to collect suggestions that have been relevant for the activities of the project.

The dissemination and exploitation measures of the project addressed the full range of potential users and uses. This includes Associations/Federations/Regulatory Bodies (initially: ERA and CEN/CENELEC), Railway Undertakings, Freight Operators and Infrastructure Managers, Research centres, actors in the railway supply industry, Regional/National and European Institutions, as described in Table 2. The project capitalised upon established contacts of the members, and those of all IN2DREAMS partners, networks and ways of working when trying to reach the most appropriate stakeholders to inform them on the project activities.

Table 2 - IN2DREAMS Consortium members' exploitation activities

Nr.	Partner name	Exploitation activities
1	UNIFE	UNIFE disseminated the results of IN2DREAMS through its internal Working Groups, raising awareness of the relevance of the outcomes of the projects among its members, promoting therefore the continuation of the work done in IN2DREAMS in future R&D activities.
2	UNIBRI	As a university, UNIBRI's interest in exploiting IN2DREAMS results is threefold: a) further enhance its knowledge and know-how in the field of experimental setup hosting IN2DREAMS ODM platform and providing HPN's communication platform facilities to support S2R JU demonstrations, b) spread this knowledge through educational courses and preparation of specialised teaching material (supplements) and c) improve further its industrial collaborations. This is of great importance in order to guarantee continuity in advanced research fields, educate the next generation of skilled engineers and foster a long-term, sustainable technological lead and excellence both in a national and international level. In addition to these, as a university, UNIBRI intends to enhance and promote its know-how and IPR portfolio

Nr.	Partner name	Exploitation activities
		through participation in IN2DREAMS and other European projects, which can result in foundation of start-up companies. The UNIBRI project will also support young PhD students and researchers who will take actively part in the related research activities. Additionally, students are expected to get a closer insight by completing small-scale related projects within the framework of Master theses or projects.
3	UNIGE	UNIGE targets the exploitation of IN2DREAMS results in the areas of: (a) research, both basic and applied, (2) education, and (3) technology transfer. The research activities carried out in IN2DREAMS will allow to target new challenges in the data analytics area and increase the applied knowledge in the transportation field. The developments of the IN2DREAMS project will impact the education activities in the field of engineering ranging from Master level to Doctorate level. Technology transfer activities will benefit from IN2DREAMS enhancing cooperation with industries, increase the patent portfolio and stimulate the creation of spin-offs from research labs.
4	DV	DotVision will use the IN2DREAMS project to enter the Rail Industry Monitoring market, and more specifically the IOT part of it. Key advancement an innovation will be pushed through journal publication (both in IOT and transport fields) in order to identify DotVision IOT solution as part of the Edge side of Transport and Railway industry. Alongside, DotVision will use the IN2DREAMS project to conduct further R&D projects and integration with LEM.
5	EE	Evolution Energie is an SME with a strong focus on innovation. The consortium results will enable to reach new markets, in Europe and overseas, relative to transportation facilities. This will expand its current offering for large infrastructure such as airports. Through licences or other commercial means, Evolution Energie will also liaise with its current Tier 1 partners, such as General Electric and Thales Transportation, to enable a worldwide deployment of the technologies developed in the program. It is expected to increase revenues and the local employment by 200% by 2020, in direct relationship with the IN2DREAMS program. Evolution Energie will also disseminate the results through standardisation, especially on smart grids and energy measurement, where transportation is much less developed than industry or building sectors.
6	CEF	The Cefriel consortium is the centre of the Politecnico di Milano for ICT innovation transfer and currently its portfolio of enterprises and public bodies includes all the most important ICT actors. The centre is also expanding its activities in the USA, UK and Germany, bringing its experience to international customers. Cefriel is actively performing several consultancy projects with some important enterprises in Italy (banking, public bodies, energy, ICT companies) in the area of IT technology of IN2DREAMS where it concentrates (smart-contracts). The aim of Cefriel is therefore to directly exploit and use the results of IN2DREAMS as an innovation instrument, using the know-how gained through the project to improve existing Cefriel's

Nr.	Partner name	Exploitation activities
		solutions and products.
7	RINA-C	RINA Consulting S.p.A. (formerly D'Appolonia S.p.A.) is interested to capitalise the small involvement within IN2DREAMS to further expand the application of their services related to energy efficiency in new domains such as in the railway sectors.
8	PURELIFI	PureLiFi has recently launched the fastest, smallest and most secure LiFi system called the LiFi-X, which is the evolution of the world's first LiFi system, the Li-Flame. The system offers partners the ability to deploy a fully networked LiFi solution. Unlike existing VLC products, the LiFi-X supports multiple access, roaming, complete mobility and ease of use – providing a level of user experience that is comparable and more secure than existing wireless technologies such as Wi-Fi. The transportation sector is especially attractive since LiFi provides three orders of magnitude increases wireless data density which unlocks new applications in an in-cabin environment. Commercially relevant scientific and technical know-how gained at pureLiFi during the project will be filed as new intellectual property right (IPR). PureLiFi, furthermore, will exploit innovations stemming from IN2DREAMS in new product releases. IN2DREAMS will enable the development of new applications especially exploiting the indoor positioning features of a LiFi attocellular network. The outputs of IN2DREAMS will help in cementing the international leadership in LiFi technologies, and its status as an European-led disruptive new wireless communications technology.
9	KUL	The Centre for IT & IP Law is an academic research centre at the KU Leuven aiming to further develop its existing knowledge at the crossroads of 'Law and ICT' and to deepen its research on the interaction of new technologies with existing European legal provisions and policies. The results from the work performed under the IN2DREAMS project will be published in peer-reviewed legal journals (e.g. Computers, Law and Security Review, Computerrecht, European Privacy and Data Protection Law Journal) and further disseminated by participating in high-level workshop and/or conferences. Moreover, the legal research of the IN2DREAMS project will be used as teaching material in master student classes (e.g. LLM in Intellectual Property Rights and ICT Law, KU Leuven-HUB).
10	UKON	The University of Konstanz is interested in exploiting IN2DREAMS in several ways. PhD research students advised by post-doctoral researchers will seek data analytics and visual analytics solutions for knowledge extraction. MSc and BSc projects will be issued to target specific, small-scaled problems in the domain. The results of this research will be published in journal and conference papers. Furthermore, the research and the specific solutions will contribute as milestones for technology transfers and research in different domains.

Nr.	Partner name	Exploitation activities
11	RFI	RFI purpose is to use the results of the project to improve functional specification for national TMS. WP4 output will be the basis for better defining the interface with TOC or railway industries to sell diagnostic data. WP5 could represent a starting point toward the definition of more effective workstations for TMS operators, by using data visual analytics and more explicit and reliable data and information representation.
12	ISK	Iskratel's research and development team focused on developing analytical framework for predicting real-time values, based on historic energy smart meter data. Results will offer methods and approach in using railways energy data of how to derive from historic inaccurate data, a useful real-time data portfolio. While Iskratel is focused on developing solutions in the field of industry IoT, the aim of Iskratel is to directly exploit and use analytical framework as an engine for smart application development. Data analytics framework will be harmonised with other data analytics portfolio, be used as an engine for further rapid development and deployment of smart application, such as fleet management, virtualisation of energy demand and demand side management.
13	IASA	Several PhD research students worked alongside the post-doctoral research staff employed to conduct IN2DREAMS tasks at IASA, thus helping to train the next generation of engineers in this field. Multiple MSc projects will also be aligned to the activities. Key advancements will be reported through journal and conference publications, in particular those of the IEEE. It is also envisaged that the part of the IN2DREAMS communications platform could be trialled at the Microelectronics lab facilities, with a view to further exploitation in terms of spin-off company activity or partnerships to see the technology implemented.
14	LEM	LEM is leading the innovation of all-purpose current and voltage transducers. The energy (sub-)metering is already well known at LEM with products such the WiLEM used for energy saving in large industrial or commercial sites. LEM, with its new design centre of LYON, wants to take the opportunity through the IN2DREAMS project, to go further in the development of this segment and can offer the support of many senior engineers (electronics, embedded software)

3.1 Advisory Group and interaction with Shift2Rail

As mentioned previously, IN2DREAMS established an Advisory Group, with the main purpose of:

- Identifying relevant regulations according to the IN2DREAMS scope;
- Identifying relevant standards according to the IN2DREAMS scope;
- Checking for compliance of project developments.

For this reason, members of ERA and CEN/CENELEC have been invited to join the Advisory Group, alongside the partners of the corresponding S2R CFM projects, IN2SMART and In2Stempo. The

participants therefore included a wide range of expertise, thus making sure that their advice and support was provided throughout the life of the project.

Two AG meetings were organised in the second half of IN2DREAMS (on the 02/04/2019 and the 03/07/2019), allowing the project research to mature before it can be analysed and discussed. A preparatory call was also organised on the 16/01/2019 in order to agree on the composition of the AG, which can be seen in table 3 below.

Furthermore, constant communication channels were established with the IN2SMART and In2Stempo projects, following the formal collaboration agreements that were signed between these projects and IN2DREAMS.

Table 3 – Composition of the IN2DREAMS Advisory Group

Name - Function	Organisation
Paolo Umiliacchi - S2R Users Requirements Working Group	CENELLEC
Stanislaw Lis	ERA
Carlo Crovetto - IN2SMART Coordinator	Hitachi Rail STS
Claudio Cavalletti - IN2SMART	Hitachi Rail STS
Aneta Tumilowicz - In2Stempo Coordinator	Network Rail
Garry Bosworth - In2Stempo Technical Leader	Network Rail
Marius Iordache – In2Stempo	Alstom
Olivier Langlois - In2Stempo	Alstom
Markos Anastasopoulos (IN2DREAMS WP2 Leader)	University of Bristol
Guillaume Pelletier (IN2DREAMS WP3 Leader)	DotVision
Nadia Fabrizio (IN2DREAMS WP4 Leader)	CEFRIEL
Davide Anguita (IN2DREAMS WP5 Leader)	University of Genoa
Josselin Bousquières (IN2DREAMS WP6 Leader)	Evolution Energie
Stefanos Gogos (IN2DREAMS coordinator+WP1+WP7 Leader)	UNIFE

The IN2DREAMS AG checked the viability and accuracy of the IN2DREAMS results with the developments in Regulation and Standardisation bodies in order to safeguard the project's services and conformance to modern standards and regulations and to ensure that the research is not conflicting with current standardisation activities or already established regulations.

Following the discussions that took place during the IN2DREAMS AG meetings, there was no conflicting information that has been highlighted in relation to current standardisation and regulation activities and the IN2DREAMS developments.

4 Conclusions

This report has provided an exhaustive list of all dissemination/communication activities carried out during the 26 months of project implementation. A large audience has been reached by IN2DREAMS messages, ensuring a proper dissemination of the project developments.

At the same time, the IN2DREAMS partners have shown their engagement towards the market uptake of the results and have ensured through their exploitation activities the smooth and effective transfer of results into the corresponding Shift2Rail projects, with a potential path for the Shift2Rail JU in terms of opportunities for future research.