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Glossary

ETSI	The European Telecommunications Standards Institute
GA	Grant Agreement
IM	Infrastructure Manager
KPI	Key Performance Indicator
MNO	Mobile Network Operator
T2W	Train to wayside
WP	Work package
RU	Railway Undertaking

Table 1 - Glossary

1. Summary

The final MISTRAL dissemination report outlines in the dissemination activities implemented over the project's execution period. MISTRAL dissemination actions aimed to communicate project activities and results to a wide audience, which includes industry, academia, standard development organizations, complementary Shift2Rail projects and the public.

The following list of dissemination tools and activities is detailed in the present report:

- Project website and social media,
- Project leaflet,
- Conference posters and presentations,
- Journal articles,
- Attendance at non-academic events,
- MISTRAL workshops,
- Interaction with other projects and forums,
- Dissemination KPIs.

Furthermore, the MISTRAL provides possibilities for spreading of its results beyond the project duration, to support further investigation and development of the topics related to next generation train-to-ground radio communications. MISTRAL project believes that its results can be very relevant for future works in the area of railway radio communications, so there is a clear need of making them available even after the project's end. Therefore, this deliverable also provides an overview of MISTRAL partners' future dissemination activities including, but not limited to, using of own partners resources (e.g. partner's websites) to publish and distribute the outcomes.

This deliverable continues to adapt the approaches for reporting, quantifying and evaluating KPIs for dissemination activities and updates the records with the actions taken up to end of the project (November 2018). These indicators serve to validate the project performance against the pre-defined roadmap and KPIs for dissemination.

With reference to all above stated, the main conclusions regarding the project performance in terms of dissemination as well as lessons learnt over it are presented.

2. Introduction

A key objective of the MISTRAL dissemination strategy is to spread project findings as widely as possible and to ensure that Stakeholders and Communities take account of these findings when considering emerging technological trends to address them regarding new communication systems. The dissemination strategy provides means and platforms for stakeholders to interact and discuss the project's findings and recommendations, and the interaction between the stakeholders is encouraged to enhance uptake of the project's results.

The MISTRAL dissemination process consists of two parts: the first, strategy and assessment, and the second, implementation. The strategy and assessment have two key elements - the dissemination strategy and plan, and the efficacy of dissemination. Implementation covers two aspects: execution, measurement and tracking of the progress of the dissemination.

At the start of MISTRAL, the initial dissemination strategy and plan was elaborated (D5.2) and agreed with other Consortium partners. This strategy and plan are continually monitored, updated and reported during the course of the project. This monitoring is based on key performance indicators.

In this sense, it is a living strategy that evolves over the course of the project, learning from the MISTRAL dissemination experiences and adapting to its changing needs. The final dissemination deliverable (the present report) will present the results of all the dissemination activities during the lifecycle of the project.

2.1 Purpose of the deliverable

This deliverable is a follow-up to deliverable D5.2 MISTRAL Dissemination Plan. Deliverable D5.2 was initially submitted in M3 providing details on the approach for compilation of dissemination activities and outcomes, as well as, details of some of the early activities in Year 1. Following recommendations received after the revision of the MISTRAL first periodic report, and adjusting the project dissemination policy, some changes have been introduced in the preliminary dissemination plan, as well as, some additional activities have been undertaken to improve the KPIs.

This deliverable aims to describe the main results of the work carried out as a part of the tasks 5.1 External Stakeholder Committee and 5.2 Dissemination & Communication.

On the other hand, these results need to be assessed against chosen KPIs, to conclude about the efficiency of the dissemination strategy and its execution. This validation and the final conclusions with lessons learnt are shown in the present report.

2.2 Scope of the deliverable

The deliverable D5.3 is organised as following:

- Sections 3 - 5 outline the final dissemination report including the review of dissemination activities across the different dissemination channels of the project.
- Section 6 evaluates the dissemination activities against previously defined dissemination plan, roadmap outlined in GA and KPIs.
- Finally, conclusions and future directions are discussed in Section 7.

3. Dissemination channel overview

3.1 Social media

Online social networks have become truly significant in communication and interaction patterns and may have a very good impact in the dissemination of project processes and results, as well as provide a platform for discussion of project outcomes for all engaged parts.

These Social networks are motivating forms of social interaction, dialogue, exchange and collaboration. Social networking sites enable users to exchange ideas, to post updates and comments, or to participate in activities and events, while sharing their wider interests.

MISTRAL active¹ social media include:

- LinkedIn

by creating a MISTRAL LinkedIn profile, building connections and keeping MISTRAL account updated, it will be possible to get the attention of stakeholders and end-users:

<https://www.linkedin.com/groups/8581665>

- Twitter

Mistral project will use Twitter to find like-minded projects, customers and influencers/media by searching keywords that relate to railway communication industry:

<https://twitter.com/MistralProject>

Social media channels have been useful for the project in several ways. This includes pushing instant updates (e.g. project news, multimedia content, announcements on upcoming project events etc.) from the project to external contacts (in different stakeholder groups) and on different platforms. Furthermore, social media has enabled the project to interact with the contacts through messaging features in the channels, monitor the feedback and sentiments of each update and leveraging the social connectedness of the contacts to amplify the dissemination of the updates, as the contacts would share MISTRAL updates within their own professional or social networks.

Twitter has been used to update project followers with brief news, links and notifications about planned project activities, while LinkedIn provided the suitable platform to diffuse relevant project achievements in a adapted to wide audience ways (blog posts, presentations, video, etc.).

¹ Initially MISTRAL Facebook page has been created but over the duration of the project it has been considered of low utility for the MISTRAL dissemination purposes.

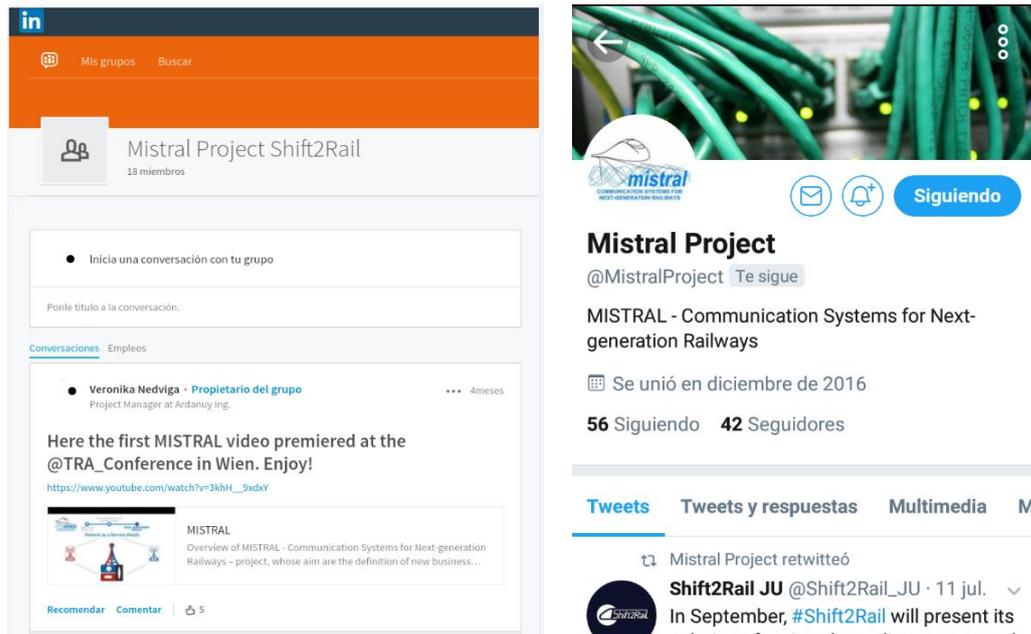


Figure 1 MISTRAL social media

In the 'Annex I MISTRAL social media posts', the list of the publication and tweets diffused through MISTRAL social media tools can be consulted.

3.2 Project communication material

A softcopy of the leaflet describing MISTRAL project (see Figure 2) was prepared and published on the publicly accessible 'Dissemination' area of the project's website. The hardcopy versions were printed and distributed in various events, including those organised by the project. Additionally, the project's introductory presentation slides were developed and placed in the same 'Dissemination' page of the website. The slides introduced the MISTRAL vision on future communication systems for next-generation railways, key developments undertaken in the project, and the preliminary results and conclusions where available.



Figure 2 MISTRAL project leaflet

3.3 Publications

The MISTRAL project consortium includes partners from both a research-focused and industry-oriented organisations. Being MISTRAL results of interest of railway industry members and railway authorities, the need has been detected to share with them the presentations, blog posts and papers presented in conferences and published through easily accessible dissemination platforms in the areas relevant to the project.

Among the MISTRAL partners the publication strategy has been defined as oriented to the stakeholders in railway industry rather than scientifically-oriented, for this reason it has been decided to present the project on the conferences with main topics related to transportation in form of papers, posters or presentations.

In the section 4.1, the conferences where MISTRAL has participated are listed.

In addition to already published or submitted works, further research outputs are expected to be published beyond the project lifetime.

All MISTRAL publications are in accordance with the Open Access principals stated in Article 29.2 of the GA, "Each beneficiary must ensure open access (free of charge online access for any user) to all peer-reviewed scientific publications relating to its results".

4. Participation in events

4.1 External events participation

MISTRAL took advantage of the externally organised events targeting those transport, and particularly, railway focused with the aim to get acknowledgement of MISTRAL work among the most relevant stakeholders.

Among the events in which MISTRAL has participated until the date of the present report are:

1. Event:		9th Railway Innovation Congress in Cadiz							
Short Description:	The Congress brings together the most recent experiences of railway innovation in all areas: infrastructure, railway installations, rolling stock, auxiliary material, operation, maintenance and safety. The objective of this call is to publicize the most relevant contributions and the most innovative initiatives in the railway sector.								
Date:	22 th -24 th of November, 2017	Place:	Cadis (Spain)						
MISTRAL partners participation:	ISMB	No	SIRTI	No	TUD	No	ARD	Yes	
Form of MISTRAL participation	Poster	No	Paper	Yes	Presentation	Yes	Other	No	
Relevance to the project:	High		x	Medium	Low				
Feedback from participants	Positive		x	Neutral	Regular				
2. Event:		Transport Research Arena 2018 in Vienna							
Short Description:	Digitisation, Automatisation and Decarbonisation are major trends that will drastically change the way we live, work and use mobility and transport in the future. Under the heading of "A digital Era for Transport", the Transport Research Arena 2018 (TRA 2018) explores, discusses and demonstrates these major paradigm shifts specifically directed at important areas of our life, such as transport, mobility, logistics and industrial production.								
Date:	16 th -19 th of April, 2018	Place:	Vienna (Austria)						
MISTRAL partners participation:	ISMB	Yes	SIRTI	No	TUD	No	ARD	Yes	
Form of MISTRAL participation	Poster	Yes	Paper	Yes	Presentation	Yes	Other	Video	
Relevance to the project:	High			Medium	x	Low			
Feedback from participants	Positive		x	Neutral	Regular				
3. Event:		Expo Ferroviaria in Milan							
Short Description:	EXPO Ferroviaria is the only trade fair for the railway industry that takes place regularly in Italy, and it represents a unique opportunity for companies that wish								

	<p>to penetrate the domestic market and for companies looking for foreign customers.</p> <p>The event is devoted to all sectors in railway technology. Besides producers from the leading technological fields in rolling stock, rails and infrastructures, signage and communications, the fair also represents a showcase for the suppliers of many other specialized products, including equipment for vehicle maintenance, ticketing systems, electronics and cabling for railway applications.</p>							
Date:	3 th -5 th of October, 2017	Place:	Milan (Italy)					
MISTRAL partners participation:	ISMB	Yes	SIRTI	Yes	TUD	No	ARD	No
Form of MISTRAL participation	Poster	No	Paper	No	Presentation	No	Other	Interaction with Stakeholders
Relevance to the project:	High		x		Medium	Low		
Feedback from participants	Positive		x		Neutral	Regular		
4. Event:	UNIFE UNITEL Committee meetings in Brussels							
Short Description:	UNIFE UNITEL Committee, bringing together the biggest actors of railway communication, is a platform for information and consensus-building on aspects related to the development and implementation of the future interoperable railway communication system (FRMCS), the inherent successor of GSM-R, as part of the future ERTMS. SIRTI is vice-chair of UNITEL Committee.							
Date:	3 th of July, 2018	Place:	Brussels (Belgium)					
MISTRAL partners participation:	ISMB	No	SIRTI	Yes	TUD	No	ARD	No
Form of MISTRAL participation	Poster	No	Paper	No	Presentation	No	Other	Interaction with Stakeholders
Relevance to the project:	High		x		Medium	Low		
Feedback from participants	Positive		x		Neutral	Regular		
5. Event:	ETSI Workshop "Developing the Future Radio for Rail Transport" in Sophia Antipolis							
Short Description:	ETSI held its first workshop on next generation radio for rail in November 2016. This second ETSI workshop intends to give an update on the activities related to the future radio for rail transport worldwide. ETSI Technical Committee for Rail Telecommunications (TC RT) is working on the definition of a FRMCS system architecture (reference model) in coordination with relevant organizations such as							

	UIC (International Union of Railways), Shift2Rail and ERA (EU Agency for Railways). ETSI continues to work on the Future Railway Mobile Communication System (FRMCS) use cases and related potential requirements in coordination with 3GPP. https://www.etsi.org/news-events/events/1292-developing-the-future-radio-for-rail-transport							
Date:	4 th -5 th of July, 2018	Place:	Sophia Antipolis (France)					
MISTRAL partners participation:	ISMB	Yes	SIRTI	No	TUD	No	ARD	No
Form of MISTRAL participation	Poster	No	Paper	No	Presentation	No	Other	Interaction with Stakeholders
Relevance to the project:	High		x	Medium		Low		
Feedback from participants	Positive		x	Neutral		Regular		
6. Event:	Innotrans 2018 in Berlin							
Short Description:	InnoTrans is the leading international trade fair for transport technology and takes place every two years in Berlin. Sub-divided into the five trade fair segments Railway Technology, Railway Infrastructure, Public Transport, Interiors and Tunnel Construction, InnoTrans occupies all 41 halls available at Berlin Exhibition Grounds. The InnoTrans Convention, the event's top-level supporting programme, complements the trade fair.							
Date:	18 th -21 st of September, 2018	Place:	Berlin (Germany)					
MISTRAL partners participation:	ISMB	No	SIRTI	Yes	TUD	Yes	ARD	Yes
Form of MISTRAL participation	Poster	No	Paper	No	Presentation	No	Other	Interaction with Stakeholders
Relevance to the project:	High			Medium	x	Low		
Feedback from participants	Positive		x	Neutral		Regular		

Table 2- Participation in external events

4.2 Events organized by MISTRAL (workshops)

The dissemination of project activities and results was also pursued in events organized individually or jointly by the MISTRAL partners with an agenda specifically targeting the MISTRAL project.

Some of them were including all MISTRAL partners and entire MISTRAL External Stakeholders Committee, while the other notable events were those events organized by partners for specific interest groups.

Among the jointly organized events, the following can be outlined:

1. Event:		1st MISTRAL Workshop: Trends on future train-to-wayside communications							
Date:	7 th of July, 2017	Place:	Barcelona (Spain)						
MISTRAL partners participation:	ISMB	Yes	SIRTI	Yes	TUD	Yes	ARD	Yes	
External Stakeholders:	<i>Name:</i>	Kapsch CarrierCom AG		<i>Country:</i>	Germany				
	<i>Name:</i>	DeutchBahn		<i>Country:</i>	Germany				
	<i>Name:</i>	WindTre		<i>Country:</i>	Italy				
	<i>Name:</i>	InfraTo		<i>Country:</i>	Italy				
	<i>Name:</i>	3GPP		<i>Country:</i>	N/A				
Relevance to the project:		High	x	Medium		Low			
Feedback from participants		Positive	x	Neutral		Regular			
2. Event:		2nd MISTRAL Workshop. Future Communication Scenarios for Next-generation Railways: a technical and economic analysis by the MISTRAL project							
Date:	6 th of February, 2018	Place:	Dresden (Germany)						
MISTRAL partners participation:	ISMB	Yes	SIRTI	Yes	TUD	Yes	ARD	Yes	
External Stakeholders:	<i>Name:</i>	Kapsch CarrierCom AG		<i>Country:</i>	Germany				
	<i>Name:</i>	DeutchBahn		<i>Country:</i>	Germany				
	<i>Name:</i>	InfraTo		<i>Country:</i>	Italy				
	<i>Name:</i>	3GPP		<i>Country:</i>	N/A				
Relevance to the project:		High	x	Medium		Low			
Feedback from participants		Positive	x	Neutral		Regular			
3. Event:		2nd MISTRAL Workshop follow-up with 3GPP: Technical and QoS viability for future IP-based Railway Communications and Methodology for the Techno-Economic Proposition							
Date:	22 nd of February, 2018	Place:	Teleconference						

MISTRAL partners participation:	ISMB	Yes	SIRTI	Yes	TUD	Yes	ARD	Yes
External Stakeholders:	<i>Name:</i>	3GPP		<i>Country:</i>	N/A			
	<i>Name:</i>			<i>Country:</i>				
	<i>Name:</i>			<i>Country:</i>				
	<i>Name:</i>			<i>Country:</i>				
Relevance to the project:	High	x	Medium		Low			
Feedback from participants	Positive	x	Neutral		Regular			

Table 3- MISTRAL jointly organized internal events

Among the meeting organized by one or more MISTRAL partners for specific interest groups are:

4. Event:	Meeting with WIND-TRE (MNO): future railway telecommunication scenarios and the new paradigm 'Network as a Service'.							
Date:	18 th of January, 2018	Place:	Torino (Italy)					
MISTRAL partners participation:	ISMB	Yes	SIRTI	Yes	TUD	No	ARD	No
External Stakeholders:	<i>Name:</i>	Wind TRE S.p.A		<i>Country:</i>	Italy			
	<i>Name:</i>			<i>Country:</i>				
	<i>Name:</i>			<i>Country:</i>				
	<i>Name:</i>			<i>Country:</i>				
Relevance to the project:	High	x	Medium		Low			
Feedback from participants	Positive	x	Neutral		Regular			

Table 4- MISTRAL specific internal events

Additional information can be found in the 'Annex II '.

5. Knowledge exchange

MISTRAL actively sought to link and interact with other projects, organisation and actors working with innovative technologies for railways, where possible linked to radio communications. The considered stakeholders were selected based on their relevance to MISTRAL and linkage possibilities.

5.1 Interaction with X2Rail-1

MISTRAL is complementary to X2Rail-1 project, so the building of the strong link between both projects has been encouraged by means of the following collaborative schemes:

- Interchange of the commentaries and observations for the relevant deliverables;
- Interchange of the resources and literature used for the preparation of the deliverables;
- X2Rail-1 representatives were aggregated to MISTRAL project group in LinkedIn;
- X2Rail-1 representatives participated in MISTRAL workshops actively interchanging the opinions, results, advice for both projects.
- X2Rail-1 provided accurate comment on MISTRAL deliverables which was answered by MISTRAL and helped to improve the quality of deliverables.

5.2 Interaction with MISTRAL *External Stakeholders Committee*

MISTRAL has established an External Stakeholder Committee (ESC) i.e. a group of external, independent experts of recognized knowledge in different kinds of background and areas of expertise including market, technological trends and standards to collect feedback about proposed concepts and generated results.

At the beginning of the project, three participants have formed MISTRAL ESC:

- Wind Telecomunicazioni SpA, is an Italian Mobile Network Operator (MNO) which offers integrated mobile, fixed and Internet services.
- Stasy (Urban Rail Transport S.A.), that incorporated the three rail companies of public transport of Athens: AMEL S.A (metro system operation), ISAP S.A (urban rail), and TRAM S.A. (tramway).
- Infra.to (Infratrasporti.To S.r.l.) is a company owned exclusively by the City of Turin to own and manage existing infrastructure; and to plan and construct new infrastructure, including railways for passenger and freight transportation (both public and private) in accordance with legislation governing the operation of state-owned companies.

Nevertheless, during the course of the project, partners have detected the necessity to incorporate one more member to this Committee, targeting the body working on the standardisation of railway communications. After searching for the collaboration with such a body, 3GPP has been selected to establish regular interactions and knowledge interchanges:

- The 3rd Generation Partnership Project (3GPP) unites seven telecommunications standard development organizations (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC), known as "Organizational Partners" and provides their members with a stable environment to produce the Reports and Specifications that define 3GPP technologies.
The project covers cellular telecommunications network technologies, including radio access, the core transport network, and service capabilities - including work on codecs, security, quality of service - and thus provides complete system specifications. The specifications also provide hooks for non-radio access to the core network, and for interworking with Wi-Fi networks.

See Annex II .

5.3 Interaction with external stakeholders

The interaction with relevant stakeholders, external to MISTRAL, have been achieved in two different ways:

- ***Interactions in person***

Presentation of MISTRAL activities and results on different conferences, where the relevancy of the topic, main barriers to achieve results, main interested actors, and solutions proposed by the project have been discussed.

These discussions were helpful for the partner to understand better the necessities ("pains") of the stakeholders and adjust the project activities to find solutions to them ("pain relievers").

See Annex II .

- ***Non-personal interactions***

Non-personal interactions have been conducted through MISTRAL social media, where open access news, posts, blogs and downloadable presentations have been shared.

The interests in the shared material have been measured using diagnostic tools available at LinkedIn, Google and Twitter (the quantity of "Likes", shares, views, downloads, etc.).

Shared material can be consulted in the Annex I MISTRAL social media posts.

6. Assessment against Dissemination plan

6.1 Assessment criteria

The interdisciplinary nature of MISTRAL consortium required a dissemination and exploitation strategy that takes advantage of the different strengths of the partners in respective areas. While research-oriented partners (TUD and ISMB) focus on covering the scientific dissemination channels, other partners (SIRTI and ADN) exploit their strengths in domain specific channels or industry contacts. The heterogeneity in dissemination plans and priorities underlined the need of definition of appropriate assessment methodologies, enabling planning and validation of the level of success of the dissemination activities at partner or consortium level.

For this purpose, the dissemination activity assessment is based on the following processes:

- Template-based activity recording (see Chapter 4). This template was created and shared to report individual dissemination actions taken by MISTRAL partners.
- Aggregation of results and creation of KPIs (lead by WP5 leader with contribution from partners and updated monthly during progress meetings).
- KPI assessment against specified success criteria and interpretation.
- Reporting to consortium and to EC.

The above processes and some of the interim checks were intended to help the consortium to achieve the desired targets. Partners were encouraged to enter planned dissemination activities as soon as possible, at least quarterly, into the reporting document (QMR). The status of the activities against KPIs was occasionally reported in plenary meetings to initiate proactive measures when targets were far from being met.

6.2 Assessment against initial roadmap and evaluation of KPIs

In the following table the assessment of the actions taken during the project are assessed against the actions planned (GA and D5.2 Dissemination Plan).

Evaluation is performed in the following qualitative way:

- **OK: action successfully implemented**
- **POK: action partially implemented**
- **N/R: has been found not relevant/ not useful for the project**
- **NOK: action relevant but not implemented**

Timeline	Action planned	Action performed	Evaluation
M1	Website visibility. Design, development and usage of a fully-functional and user-friendly standalone website available from the kick-off of the Project.	Website created (Report D5.1 Mistral website)	OK
M1-M3	Social media presence: Set up, community building, on a constellation of social media platforms (e.g., Facebook, Twitter, LinkedIn).	Twitter setup	OK
		LinkedIn setup	OK
		Facebook setup	OK
M3-M24	Social media presence: Message posting and interaction with users on a constellation of social media platforms	Twitter setup	OK
		LinkedIn setup	OK
		Facebook setup	N/R

Timeline	Action planned	Action performed	Evaluation
M3-M24	Events targeted for MISTRAL participation	Transport Research Arena 2018	OK
	Transport Research Arena 2018	InnoTrans 2018	OK
	InnoTrans 2018	12th World Congress on Railway Research 2018	N/R
	12th World Congress on Railway Research 2018	X2Rail-1 mid-term conference has been suspended	NOK
M6- M24	X2Rail-1 mid-term conference March 2018		
	Workshops with External Stakeholders Committee:	1st Mistral Workshop: Trends on future train-to-wayside communications (M8)	OK
	Workshop MS1 – Completion of scenario design.	2nd MISTRAL Workshop (M16) Business scenarios for future train-to-wayside communication system	OK
M1-M18	Workshop MS2 – Completion of the investigation on techno-economic viability.	3rd MISTRAL Workshop	Pending (will be celebrated after the project's end)
	Workshop MS3 – Validation of the overall techno-economic proposition.		
M1-M18	Brand image. Design of Project logo and templates for leaflets, posters, banners, and brochures to be given away at events or via the Web. ~ 1K	Logo, templates for presentations, documents, web, project brochure, etc. have been designed. ~3.5K	OK
M3-M24	Web publications of public deliverables. Release of public deliverables by means of the Project website ~ 100	Not yet published, because of pending EC approval	Pending (will be published once approval is received)
M3-M24	Physical presence dissemination. Events (e.g., workshops, conferences) organised by the European Commission, sectoral bodies, members of the External Stakeholder Committee and Consortium Partners in their respective countries ~ 100	See Chapter 4 ~350	OK
M3-M24	Sectoral dissemination. MISTRAL knowledge base made available during events powered by global networks interested in train-to-wayside communication systems ~ 100	See Chapter 4 ~80	POK

Timeline	Action planned	Action performed	Evaluation
M3-M24	Educational dissemination. Distribution of the knowledge base to students and academic instructors for educational purposes ~ 100	TUD has used MISTRAL results for educational purposes ~ 100	OK
M20-M24	Academic dissemination of Project results. Dissemination of Project results through various literary outlets (e.g., academic journals, conference proceedings, book chapters) in accordance with Open Access policies ~ 100	TRA2018 paper published in Open Access source Zenodo.org	POK
M18- M20	Press releases. Media coverage at EU and national levels targeting both sectoral outlets and business newspapers/websites ~ 1K	Articles about MISTRAL are published on CORDIS' Research*EU Results Magazine.	OK
M21	Website visibility ~ 1K	~ 3,5K	OK
M21	Social media presence ~ 100	Direct followers: ~60 Indirect followers (not in the groups but regularly following updates): ~350	OK

Table 5 – Assessment of dissemination results and KPIs against initial roadmap

7. Conclusions and future actions

In the present chapter the conclusions about the work done and the future actions to assure mid-term and long-term sustainability of the project results are presented.

7.1 Conclusions and lessons learnt

The dissemination has noted increase in the scope and scale of activities after the first half of the project. This is attributed to the fact that the gradual realisation of the MISTRAL aims and objectives produced a body of results which was considered worthy contributions to various dissemination events and publications.

The LinkedIn based tools has been considered an appropriate one to share the presentations and blogs containing MISTRAL results, the increase of interest in the project has been measured by the quantity and peaks of visits to MISTRAL website.

Another driver that provided impetus to the dissemination actions was the specification of dissemination roadmap and definition of a set of KPIs for different activities. These measures enhanced coordination and timely planning. Moreover, it allowed for internal action calls for the cases where KPI targets were not being met in quarterly periodic checks.

The railway and radio communication domains remained the most prominent areas for sharing of MISTRAL results, where the main targeted audience consisted in railway authorities (IMs and RUs), industrial stakeholders in railway domain, mobile network operators. For this reason, the participation in the major events in transportation has been targeted (TRA2018, InnoTrans2018) and an External Stakeholders Committee (MISTRAL ESC) was created.

The relevant data coming from ESC has been considered by the project partners and included in the deliverables, as well as results have been validated by ESC and X2Rail-1.

The results of assessment (6.2) are considered satisfactory, with the following activities that will be concluded after the project's end:

- To held Workshop MS3 – Validation of the overall techno-economic proposition (planned for the December'18);
- Web publications of public deliverables. Release of public deliverables by means of the Project website. All the deliverables will be submitted once the official approval is received.
- Further academic dissemination of Project results. TUD and ISMB are planning to prepare and publish scientific papers based on final MISTRAL results.

The change of the paradigm from owning of railway assets to the usage of assets as a service without losing the quality, requires a careful approach to the dissemination and analysis of stakeholders' position to overcome the existing barriers and adopt a new vision of the railway market possibilities and relationships.

MISTRAL understands that this change needs gradual and persistent steps towards the consciousness of the most interested and relevant actors (IMs, Rus, MNOs), and will keep spreading projects findings and insights. The activities foreseen by the partners in relation to the dissemination after the project's end are explained in the next section.

7.2 Dissemination actions beyond the project lifetime

MISTRAL partners are willing to continue keeping on with dissemination of project results even beyond the project lifetime to assure better sustainability and usability of the project results. For this reason, each partner will individually undertake dissemination activities according to their possibilities and profile.

In the present section the main future activities planned by partners so far are underlined:

Partner:	ISMB	
Action	Yes/No	Remark
Publication of MISTRAL deliverables on own web sources (e.g. company's web page)	<i>No</i>	
Maintenance of MISTRAL website beyond the project lifetime	<i>No</i>	The MISTRAL website will be maintained by ARDANUY. Any content to be added to it will be forwarded to ARDANUY.
Publication of relevant to MISTRAL information on company webpage	<i>Yes</i>	Also social networks (e. g., Twitter) will be used to this purpose
Presentation of MISTRAL to partners, clients, collaborators, etc.	<i>Yes</i>	The first occasion will be during the "Innovation and Networking Days" organized in Turin November 21 – 22, 2018.
Educational dissemination. Distribution of the knowledge base to students and academic instructors	<i>No</i>	
Academic dissemination of Project results. Dissemination of Project results through various literary outlets (e.g., academic journals, conference proceedings, book chapters)	<i>Yes</i>	After the end of the project, ISMB is interested to write a paper for an academic journal.
Physical presence dissemination. Events (e.g., workshops, conferences)	<i>Yes</i>	Considering that ISMB participates in a number of such events throughout the year and that ISMB is active in other S2R on-going projects, it is very likely that also MISTRAL will be further disseminated after its end. Refer also to the above mentioned "Innovation and Networking Days" event.
Other	<i>No</i>	

Table 6 – ISMB dissemination activities beyond the project lifetime

Partner:	SIRTI	
Action	Yes/No	Remark
Publication of MISTRAL deliverables on own web sources (e.g. company's web page)	<i>Yes</i>	
Maintenance of MISTRAL website beyond the project lifetime	<i>No</i>	The MISTRAL website will be maintained by ARDANUY. Any content to be added to it will be forwarded to ARDANUY.
Publication of relevant to MISTRAL information on company webpage	<i>Yes</i>	
Presentation of MISTRAL to partners, clients, collaborators, etc.	<i>Yes</i>	Mistral results will be reported in meetings of UNIFE UNITEL Committee, where stakeholders (main Railway actors like Alstom, Siemens, ...) showed interest for the project results.

Partner:	SIRTI	
Educational dissemination. Distribution of the knowledge base to students and academic instructors	<i>No</i>	
Academic dissemination of Project results. Dissemination of Project results through various literary outlets (e.g., academic journals, conference proceedings, book chapters)	<i>No</i>	
Physical presence dissemination. Events (e.g., workshops, conferences)	<i>Yes</i>	Mistral Project will be presented in the conferences where SIRTI will participate (e.g. InnoTrans 2020)
Other	<i>No</i>	

Table 7 – SIRTI dissemination activities beyond the project lifetime

Partner:	TUD	
<i>Action</i>	<i>Yes/No</i>	<i>Remark</i>
Publication of MISTRAL deliverables on own web sources (e.g. company's web page)	No	
Maintenance of MISTRAL website beyond the project lifetime	No	The MISTRAL website will be maintained by ARDANUY. Any content to be added to it will be forwarded to ARDANUY.
Publication of relevant to MISTRAL information on company webpage	<i>Yes</i>	Information about the MISTRAL project will be published on the chair's website of research activities.
Presentation of MISTRAL to partners, clients, collaborators, etc.	<i>Yes</i>	
Educational dissemination. Distribution of the knowledge base to students and academic instructors	<i>Yes</i>	The results of the MISTRAL project will be used and exploited scientifically in a variety of ways. The chairs lectures will be enriched with the projects content. A basis for student theses (e.g. Master or Diploma Thesis) will be provided, as well as a platform for further scientific work in this field.
Academic dissemination of Project results. Dissemination of Project results through various literary outlets (e.g., academic journals, conference proceedings, book chapters)	<i>Yes</i>	Further publication of the results is planned. The analysis results will be presented and disseminated, especially in expert and scientific journals (e.g. "Signal und Draht") and conferences (e.g. WCRR 2019).
Physical presence dissemination. Events (e.g., workshops, conferences)	No	

Partner:	TUD	
Other	No	

Table 8 – TUD dissemination activities beyond the project lifetime

Partner:	ADN	
Action	Yes/No	Remark
Publication of MISTRAL deliverables on own web sources (e.g. company's web page)	No	
Maintenance of MISTRAL website beyond the project lifetime	Yes	1,5 years beyond the end of the project
Publication of relevant to MISTRAL information on company webpage	Yes	Project short description and brand
Presentation of MISTRAL to partners, clients, collaborators, etc.	Yes	
Educational dissemination. Distribution of the knowledge base to students and academic instructors	No	
Academic dissemination of Project results. Dissemination of Project results through various literary outlets (e.g., academic journals, conference proceedings, book chapters)	No	
Physical presence dissemination. Events (e.g., workshops, conferences)	Yes	Project will be presented in the conferences where ADN will participate (e.g. InnoTrans 2020)
Other	No	

Table 9 – ADN dissemination activities beyond the project lifetime

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8.3 References

- [1] European Commission (2018), H2020 Programme, Guidance, Social media guide for EU funded R&I projects.
- [2] Shift2Rail Joint Undertaking (2015), Multi - Annual Action Plan http://www.shift2rail.org/wp-content/uploads/2013/07/MAAP-final_final.pdf (last access: 15 March 2016)

Annex I MISTRAL social media posts

In this Annex the basic information about the most relevant MISTRAL social media posts are included.

1.						
Date:	28 June 2017		Source:	LinkedIn SlideShare		
Name:	MISTRAL project Workshop 1					
Type	<i>Presentation</i>	X	<i>Blog post</i>		<i>Other</i>	
Issue						
KPIs:	<i>Views:</i>	392	<i>Downloads:</i>		<i>Shares:</i>	
Attachment:	https://www.slideshare.net/VeronikaNedviga/mistral-project-workshop-1-trends-on-future-traintowayside-communications					
2.						
Date:	4 December 2017		Source:	LinkedIn SlideShare		
Name:	MISTRAL project Milestone 1					
Type	<i>Presentation</i>	X	<i>Blog post</i>		<i>Other</i>	
Issue						
KPIs:	<i>Views:</i>	182	<i>Downloads:</i>		<i>Shares:</i>	
Attachment:	https://www.slideshare.net/AriadnaCartanyaHueso1/future-communication-scenarios-for-nextgeneration-railways-83316223					
3.						
Date:	8 January 2018		Source:	LinkedIn		
Name:	Technological trends and innovative services					
Type	<i>Presentation</i>		<i>Blog post</i>	X	<i>Other</i>	
Issue						
KPIs:	<i>Views:</i>	946	<i>Downloads:</i>		<i>Shares:</i>	10
Attachment:	https://www.linkedin.com/pulse/mistral-project-technological-trends-innovative-services-nedviga/?trackingId=MyHEWRLVqOCoHt88Az04RA%3D%3D					
4.						
Date:	8 January 2018		Source:	LinkedIn		
Name:	Business scenarios					
Type	<i>Presentation</i>		<i>Blog post</i>	X	<i>Other</i>	
Issue						
KPIs:	<i>Views:</i>	483	<i>Downloads:</i>		<i>Shares:</i>	6
Attachment:	https://www.linkedin.com/pulse/mistral-project-business-scenarios-new-t2w-system-veronika-nedviga/?trackingId=yOUJjU4IHxNv7BWOd5KPIA%3D%3D					
5.						
Date:	18 April 2018		Source:	YouTube, LinkedIn		
Name:	Video: overview of MISTRAL project					

Type	<i>Presentation</i>		<i>Blog post</i>		<i>Other</i>	X (video)
Issue						
KPIs:	<i>Views:</i>	579	<i>Downloads:</i>		<i>Shares:</i>	6
Attachment:	https://www.youtube.com/watch?v=3khH_9xdxY					
6.						
Date:	27 April 2018		Source:	Cordis, LinkedIn		
Name:	CORDIS Article: Project puts rail communication networks on right track					
Type	<i>Presentation</i>		<i>Blog post</i>		<i>Other</i>	X (article)
Issue						
KPIs:	<i>Views:</i>	357 (LinkedIn)	<i>Downloads:</i>		<i>Shares:</i>	
Attachment:	https://cordis.europa.eu/result/rcn/226582_en.html					
7.						
Date:	22 May 2018		Source:	Research EU magazine, LinkedIn		
Name:	Research*eu EU magazine special issue on rail features three 'enlightening' #Shift2Rail projects: Project puts rail communication networks on right track					
Type	<i>Presentation</i>		<i>Blog post</i>		<i>Other</i>	X (article)
Issue						
KPIs:	<i>Views:</i>	375 (LinkedIn)	<i>Downloads:</i>		<i>Shares:</i>	
Attachment:	https://publications.europa.eu/en/publication-detail/-/publication/b6278116-5e35-11e8-ab9c-01aa75ed71a1/language-en/format-PDF/source-71305579 (page 9-10)					

Annex II Agendas of MISTRAL internal events

In the present Annex the agendas corresponding to the events internally organized by MISTRAL partners are attached.

1) 1st Mistral Workshop: Trends on future train-to-wayside communications

Meeting Subject:	MISTRAL External Stakeholder Committee ESC Workshop
Venue:	Catalonia Industrial Engineers Association, Via Laietana str.,39, 3 rd floor, Sala Polivalent, Barcelona, Spain
Date:	The 7 th of July, 2017
Chair:	Dr. Maurizio Spirito (ISMB - Istituto Superiore Mario Boella)
Distribution:	External Stakeholders: Wind Tre, INFRA.TO ESC Guests: 3GPP X2Rail-1 representatives: Deutsch Bahn (DB), Kapsch CarrierCom (KCC) MISTRAL Consortium: ISMB, SIRTI, TUD, Ardanuy

Time	Subject Topics to be covered	Time (mins)	Lead participant
9:00	Round table of introductions	20	Maurizio Spirito (ISMB)
9:20	Mistral Description	15	Maurizio Spirito (ISMB)
9:35	X2Rail-1 presentation	15	Benedikt Eschbach (DB)
9:50	ESC Members (only) presentation about: <ul style="list-style-type: none"> main role/interests, expected outcomes from the workshop and, more in general, from MISTRAL (15 mins/member)	30	Maria Rita Spada (WINDTRE) Felice Calamusa (INFRATO)
10:20	ESC Workshop Guests Presentation about: <ul style="list-style-type: none"> main role/interests, expected outcomes from the workshop and, more in general, from MISTRAL 	15	3GPP (Juergen Merkel)

Time	Subject Topics to be covered	Time (mins)	Lead participant
10:35	Technical overview of Network as a Service paradigm (NaaS): <ul style="list-style-type: none"> • Status quo analysis – present issues (10 min) • Technical characterization of next generation (10 min) • Current technical solution overview and round table (30 min.) 	50	Alexander Wolf (Technical University Dresden)
11:25	<i>Coffee break</i>	20	-
11:45	Innovative Service section: <ul style="list-style-type: none"> • Presentation of Mistral solution (15 min.) • Round table (30 min.) 	45	Andrea Piattino (SIRTI)
12:30	Techno-Economic Proposition: <ul style="list-style-type: none"> • Description of Mistral economic approach (20 min.) • Round table (40 min.) 	60	Matteo Ferraris (ISMB)
13:30	Wrap-up, next steps and Conclusions	30	Maurizio Spirito (ISMB)
14:00	Close of the ESC Workshop	-	-

2) 2nd MISTRAL Workshop: Future Communication Scenarios for Next-generation Railways: a technical and economic analysis by the MISTRAL project

Meeting Subject: MISTRAL External Stakeholder Committee ESC Workshop #2

Venue: Technical University of Dresden (TUD), Hettnerstrasse 3, 01062 Dresden, Germany – Room: POT 161

Date: The 6th of February 2017, 13:30 -17:00 CET

Chair: Dr. Maurizio Spirito (ISMB - Istituto Superiore Mario Boella)

Distribution: External Stakeholders: Wind Tre, INFRA.TO
X2Rail-1 representatives: Deutsch Bahn (DB), Kapsch CarrierCom (KCC)
3GPP Representative: Juergen Merkel (Nokia)
MISTRAL Consortium: ISMB, SIRTI, TUD, Ardanuy

Time	Subject Topics to be covered	Time (mins)	Lead participant
13:30	Round table of introductions	10	Maurizio Spirito (ISMB)
13:40	MISTRAL Updates	20	Maurizio Spirito (ISMB)
14:00	X2Rail-1 Updates	20	Benedikt Eschbach (DB)
14:20	<p>Technical and QoS viability for future IP-based Railway Communications:</p> <p>Presentation (20 min)</p> <ul style="list-style-type: none"> • QoS status quo in Railway Communication Systems: requirements analysis – present issues • QoS within 4G/5G public mobile radio networks • QoS implementation requirements for NaaS paradigm in Railway Communications <p>Round table (20 min)</p>	40	Alexander Wolf (Technical University Dresden)
15:00	<p>Methodology for the Techno-Economic Proposition:</p> <p>Presentation (20 min)</p> <ul style="list-style-type: none"> • Innovative Services table and alignment with X2Rail-1 User Requirements • MISTRAL scenarios • Virtual Route Model: methodological approach and first release of the model <p>Round table (25 min.)</p>	45	Matteo Ferraris (ISMB), Daniele Trentini (SIRTI)
15:45	<i>Coffee break</i>	15	-
16:00	<p>Outreach & Networking overview:</p> <p>Presentation (20 min)</p> <ul style="list-style-type: none"> • Participation in TRA 2018 & other events • Dissemination tools • X2Rail-1/MISTRAL Collaboration on a joint event participation <p>Round table (20 min.)</p>	40	Veronika Nedviga (Ardanuy)
16:40	Wrap-up, next steps and Conclusions	20	Maurizio Spirito (ISMB)
17:00	Close of the ESC Workshop #2	-	-

3) 2nd MISTRAL workshop follow-up with 3GPP: Technical and QoS viability for future IP-based Railway Communications and Methodology for the Techno-Economic Proposition)

Meeting Subject:	Online follow-up of the MISTRAL External Stakeholder Committee (ESC) Workshop #2
Venue:	Online
Date:	The 22 nd of February, 2018, 14:00 -17:00 CET
Chair:	Dr. Maurizio Spirito (ISMB - Istituto Superiore Mario Boella)
Distribution:	External Stakeholders: Juergen Merkel (Nokia / 3GPP) MISTRAL Consortium: ISMB, SIRTl, TUD, Ardanuy

Time	Subject Topics to be covered	Time (mins)	Lead participant
14:00	Round table of introductions	10	Maurizio Spirito (ISMB)
14:10	MISTRAL Updates	20	Maurizio Spirito (ISMB)
14:30	3GPP Updates Presentation (35 min) Roundtable (15 min)	50	Juergen Merkel (Nokia / 3GPP)
15:20	Technical and QoS viability for future IP-based Railway Communications: Presentation (20 min) <ul style="list-style-type: none"> • QoS status quo in Railway Communication Systems: requirements analysis – present issues • QoS within 4G/5G public mobile radio networks • QoS implementation requirements for NaaS paradigm in Railway Communications Round table (20 min)	40	Alexander Wolf (Technical University Dresden)

Time	Subject Topics to be covered	Time (mins)	Lead participant
16:00	Methodology for the Techno-Economic Proposition: Presentation (20 min) <ul style="list-style-type: none"> • Innovative Services table and alignment with X2Rail-1 User Requirements • MISTRAL scenarios • Virtual Route Model: methodological approach and first release of the model Round table (25 min.)	45	Matteo Ferraris (ISMB), Laura Masullo (SIRTI)
16:45	Wrap-up, next steps and Conclusions	15	Maurizio Spirito (ISMB)
17:00	Close of the meeting	-	-

4) Meeting with WIND-TRE (MNO): future railway telecommunication scenarios and the new paradigm 'Network as a Service'

Meeting Subject: Meeting with WIND-TRE

Venue: Torino

Date: 18th of January, 2018

Distribution: SIRTI-ISMB-TUD-Ardanuy- WIND TRE

Prepared by/date: Luigi Bragagnini

Time	Subject Topics to be covered	Time (mins)	Lead participant
14:00	1 – Meeting with WIND-TRE <ul style="list-style-type: none"> • MISTRAL project results update • LTE Radio Planning discussion • 4G sites cost elements discussion 	150	ISMB WIND TRE WIND TRE

Time	Subject Topics to be covered	Time (mins)	Lead participant
	<ul style="list-style-type: none"> • Virtual Route Model • Railway Innovative Services of interest for MNO (ISMB). 		ISMB ISMB
16:30	2 – Conclusions and wrap-up	60	ALL
17:30	End of meeting		ALL