



Innovative Monitoring and Predictive Maintenance Solutions on Lightweight Wagon

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Executive Summary

The objective of this report is to document the activities that were delivered as part of deliverable D6.3 of the INNOWAG project, "Dissemination tools". Deliverable D6.3 includes tools such as the INNOWAG website, dissemination at events, scientific publications, newsletters, etc., and it is of the type "OTHER". The dissemination tools have been delivered continuously throughout the project duration, within Task 6.2 "INNOWAG website" and Task 6.3 "Tools for dissemination and communication".

The report summarises and briefly describe all the dissemination-related activities performed by the INNOWAG partners throughout the project duration and beyond. In particular, these activities can be classified in two categories:

- ***"Events, Conferences, Workshops, Meetings, Exhibitions"*** where INNOWAG partners had the opportunity to present and debate largely the project objectives, findings, outcomes and tested innovations in front of interested audiences of professionals coming from all fields of transport sector (i.e., IM, RU, operators, wagon keepers, terminal operators, International and National Agencies/Associations, Universities and Research Centres, EU Institutions, etc.);
- ***"Other Dissemination activities"*** including: posters, flyers, brochures, scientific papers, articles, website and "online" activities, press releases, newsletters, etc.

All these dissemination tools have been utilised throughout the project lifetime, mostly by the partners involved in the Dissemination WP, who selected the most appropriate tools that were identified to better fit the targeted audiences.

The dissemination of the INNOWAG project outcomes is a process continuing after the project completion, since some papers have been submitted and accepted for events taking place after the INNOWAG end date and additional dissemination activities will be continued through "online" channels (INNOWAG official website and partners' own channels) as deemed necessary.

In this report, the dissemination tools have been listed chronologically. A brief description is provided for each of the listed items, and a summary of all the activities has been included in a table after the first descriptive section.

It is important to note that the majority of the dissemination activities listed and presented in this report are related to WP6. In addition to these, some additional activities performed within other WPs have been indicated, since they contribute significantly to the dissemination of the project outcomes.

List of abbreviations

CER	The Community of European Railway and Infrastructure Companies
F&L	Freight and logistics
IM	Infrastructure Manager
LCC	Life cycle costs
RAMS	Reliability, availability, maintainability and safety
RU	Rail Undertaker
TRA	Transport Research Arena
VSD	Vehicle System Dynamics (International Journal of Vehicle Mechanics and Mobility)
WCRR	World Congress on Railway Research
WP	Work Package
WS	Work Stream

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1. EVENTS, CONGRESSES, WORKSHOPS, MEETINGS AND EXHIBITIONS

15-16/11/2016: INNOWAG PROJECT KICK OFF – Newcastle upon Tyne, United Kingdom

The INNOWAG project had its Kick Off meeting in Newcastle upon Tyne on November 15th and 16th. The coordinator of the project and all the WP leaders presented respectively the main objectives and goals foreseen in the short and long term, and a detailed description of each WP's objectives, aims and resources allocated. Deliverables and milestones have been also presented and discussed. The complementary project FR8RAIL was presented and illustrated in details by Jan Bergstrand of Trafikverket. Newcastle University also made an overview of contractual, administrative and financial issues, dedicating time to answer the questions raised by the audience.

A Steering Group was elected and a meeting was also organised in the afternoon of the 15th in order to agree on specific roles, discuss contractual issues, including the collaboration with FR8RAIL, discuss the "implementation of the Advisory Board" and about further logistic arrangements.

During the meeting, time was also dedicated to the WP1 kick off. The Work Package was introduced in details with UNEW making various presentations regarding the different tasks. The overall objectives of WP1 have been listed, presented, described and commented, with fruitful and constructive exchange of opinions among partners. The deliverables with their timing have been presented, together with the next activities and the steps to be done in the next months in order to be in line with the defined timetable.

07/02/2017: UNIFE FREIGHT COMMITTEE MEETING – Brussels, Belgium

The INNOWAG project objectives and goals have been presented during the UNIFE Freight Committee meeting held in Brussels on February 2nd 2017. The Freight Committee gathers companies active in the rail freight business and aims at strengthening the position of the industry in the policy framework of the European Union. The Committee offers its members the opportunity to gather information and get support on EU funding opportunities for their R&D projects, to raise awareness of EU policies dedicated to rail freight, to lobby on issues related to rail freight in Europe and to strengthen the discussion on ongoing and upcoming TSIs/Standards. During the meeting, UNIFE shared with the attendees the basic information regarding the project: the consortium, the goals, the structure and the expected results.

01-03/03/2017: INTERNATIONALEN SCHIENENFAHRZEUGTAGUNG DRESDEN – Dresden, Germany

The INNOWAG project was discussed during the 15th International rail conference that took place in Dresden from 1st March to 3rd March 2017. The attendance was about 600 participants from 11 countries. The main topics treated were "Rail-Wheel-contact", "Design, calculation and construction of railway vehicles" and "Production, maintenance and cost evaluation of rail vehicles". INNOWAG project objectives, concepts and ideas have been discussed during the event with professionals coming from industrial and academic world. Particularly relevant has been the interaction on condition monitoring, predictive maintenance and lightweight design issues.

15-16/03/ 2017: RAIL INDUSTRY ASSOCIATION INNOVATION CONFERENCE – Hinkley, UK

The INNOWAG project was presented during the "Rail Industry Innovation Conference" hold in Hinkley, UK, on March 15th and 16th 2017. The audience was composed mainly by experts coming from the UK rail industry. The project objectives and goals have been presented and discussed. INNOWAG was identified as a good example of how to finance innovation in the railway sector.

20-21/09/2017: WORKSHOP RAMS/LCC FUR SCHIENENFAHRZEUGE – Wiesbaden, Germany

The INNOWAG project was presented and discussed during the workshop “RAMS/LCC fur Schienenfahrzeuge”, hold by TÜV Rheinland on 20th – 21st September 2017. The workshop was aimed to sharing the actual information and techniques about RAMS and LCC analysis for railway vehicles. Participants were railway industrial experts. TUB shared the experience about performing RAMS and LCC analysis for railway freight wagons in the INNOWAG project.

10/10/2017: SMART MOBILITY CONFERENCE – Torino, Italy

The INNOWAG project objectives and goals have been discussed during the “Smart Mobility Conference” organised in Torino on October 10th 2017. The event was attended by about 80 people coming from different fields, in particular research centres, universities, associations involved in the fields of innovating the mobility in a greener and more efficient way.

People coming from the EU Commission DG RTD were present and the conference was a good opportunity to present INNOWAG objectives, goals and developments, in particular the ones related to the connectivity and the importance of sensors in order to monitor cargo and have precise statistics and information on the position, the energy consumption, the temperature and humidity conditions, the maintenance. This will help to prepare prompt responses and reduce accidents and inefficiencies, delivering a faster and punctual service to customers.

08/01/2018: EISENBAHN WESEN SEMINAR – Berlin. Germany

The INNOWAG project was object of analysis during the “Eisenbahnwesen-Seminar (EWS)”, that is a series of lectures, hold by Chair of Rail Vehicles and the Technical University of Berlin on January 8th 2018. The seminar is a tool through which students, researchers, railway industrial people and politicians can get insights on what is happening in the rail sector. During the EWS, TUB presented the status and the partial results of the INNOWAG project exchanging views and considerations with the professional audience attending the event, particularly about the topic “Cargo Condition Monitoring” and “Predictive Maintenance”, two INNOWAG Work Streams.

09/01/2018: RAIL INNOVATION WORKSHOP – London, UK

The INNOWAG project objectives and activities have been presented during the “Rail Innovation Workshop” held in London on January 9th 2018. The project was presented to an audience composed mainly by Rail Industry major operators (GTR, Virgin, Go-Ahead, etc.), universities/research centres, sectorial associations, governmental institutions and politicians. Members of the British Department for Transport and the Department for Business took part to the event.

26/01/2018: MEETING TORINO – Torino, Italy

The INNOWAG project objectives and activities were discussed in a meeting organised at the Environment Park, a scientific-technologic institution hosting innovative companies and start-ups on many fields, including transport. The event, attended by about 60 professionals coming from different fields, including new materials, smart transport, automotive industry, spatial planning, research institutions, academia, governmental institutions, was a very good occasion for disseminating the INNOWAG project. The first newsletter issued (“INNOWAG at a glance”) have been distributed and commented during formal and informal networking sessions, answering some questions asked by the people involved in the event and showing the latest innovations, with particular regards to the lightweight materials and the innovative design of the wagons under development within INNOWAG. Some potential further collaborations have also been considered

and discussed appropriately and some interesting contacts have been exchanged in order to have a follow up of the concepts discussed and share in the future the project outcomes to a wider audience.

16-19/04/2018: TRA 2018 – Vienna, Austria

On April 16th to 19th 2018, the INNOWAG project outcomes and progresses have been presented and discussed during the Transport Research Arena, TRA 2018 in Vienna (TRA is the largest European research and technology conference on transport and mobility). In addition to this, INNOWAG was presented within an event organised by Shift2Rail Joint Undertaking IP5. The event was dedicated to the presentation of the preliminary and final results of the Shift2Rail projects focused on innovating freight railways eco-system in Europe. A total of 8 innovative projects, involving more than 60 universities, institutions, associations, SMEs and large companies from all across Europe have been presented and discussed in detail. The SMART-RAIL, ARCC, FFL4E, FR8RAIL, DYNAPREIGHT, SMART and INNOWAG projects presented their outcomes in different areas such as: long trains, obstacle detection, wagon design, real time monitoring and management, and automated operations. The INNOWAG presentation was split into 4 parts: general presentation of the project (made by Cristian Ulianov, UNEW), Cargo condition monitoring (made by Markus Hecht, TUB), Wagon lightweight design (made by Cristian Ulianov) and Predictive maintenance (made by Daniele Regazzi of Lucchini RS). All the activities performed within the 3 work streams have been presented, as well as the activities under development. During the event, Q&A sessions helped the wide audience to get more in touch with the research made within the different projects, and the formal and informal networking sessions have been very helpful to exchange ideas and comments on the current state of the art, the gaps, the barriers and the way to overcome them. During the S2R event and throughout the TRA, the INNOWAG project was disseminated with the distribution of a flyer summarising the project most important information, and during the poster sessions, where the project partners could present and discuss with the interested visitors the two posters prepared for the event, one dedicated to “Integrated innovative concepts” and the other to “Market trends and drivers”. UNIFE, a project partner, also shared information to the visitors and disseminated INNOWAG material in their stand.

19/04/2018: INNOWAG PROJECT MEETING – Vienna, Austria

The INNOWAG project current status and next steps have been discussed and largely discussed by the project partners during the Midterm General Assembly held in Vienna in parallel with the TRA 2018 event. During the meeting, attended by all the project partners, INNOWAG outcomes have been presented and discussed by the WP leaders. Each Work Stream was presented, indicating the activities performed and the ones planned in the months to come. Intense and fruitful discussion on the different WS took place among the participants and the next deadlines for each WP have been illustrated.

25-26/06/2018: SKF ANWENDUNGSKONFERENZ – Bamberg, Germany

On 25th and 26th June 2018, INNOWAG’s condition monitoring and predictive maintenance concept for freight wagons have been largely presented and discussed in front of an interested audience of about 200 professionals from the industry and users in Bamberg, Germany.

03-06/09/2018: 4TH INTERNATIONAL CONFERENCE ON RAILWAY TECHNOLOGY – Sitges, Spain

On September 3rd to 6th 2018, the INNOWAG project has been presented and discussed during the “Fourth International Conference on Railway Technology: Research, development and maintenance – Railways 2018”. Project partner Politecnico di Milano presented to a large audience of interested rail related stakeholders a paper produced and submitted in the months

before. The title of the paper is "Cost-driven and reliability-driven analyses of the Y25 bogie to identify needs and opportunities for predictive maintenance". During Q&A session, and during formal and informal networking moments, the INNOWAG partners received direct feedback from rail professionals.

13/09/2018: FACHTAGUNG SCHIENENGÜTERVERKEHR MARITIME – Stralsund, Germany

On September 13th 2018, INNOWAG's condition monitoring and predictive maintenance concept for freight wagons have been presented and largely discussed in front of an audience of about 100 people mainly from industry during the conference "Fachtagung Schienengüterverkehr maritime" in Stralsund, Germany. This was a good occasion to spread the intermediate results obtained by the INNOWAG consortium with regards to predictive maintenance and cargo condition monitoring.

18-21/09/2018: INNOTRANS 2018 – Berlin, Germany

On September 18th to 21st, the INNOWAG project has been presented and its outcomes disseminated during INNOTRANS 2018, the rail industry's leading international trade fair held every two years in Berlin. 2.955 exhibitors from 60 countries were present, and attendance in terms of visitors reached the remarkable number of 137.391 spread in the 41 exhibition halls, the outdoor display and track area as well as the bus display. The project partners NewOpera, UNIFE, TU Berlin and Perpetuum had the opportunity to share INNOWAG objectives, solutions, goals, current activities to a wide number of interested visitors from both industry and academia. The INNOWAG flyer, summarising the basic information about the project and its goals, has been distributed to the interested visitors attending the event. Efficient dissemination was enabled by INNOWAG partners that had their own stands at INNOTRANS: UNIFE, TU Berlin and Perpetuum.

27/09/2018: MEETING ROME – Rome, Italy

On September 27th, the INNOWAG project have been presented and its outcomes disseminated during a meeting organised in the Tor Vergata University of Rome. During the meeting, held in the above mentioned university, NewOpera presented the project to people coming from the academic world, exchanging considerations about the future of the rail sector with particular focus on digitalisation and innovations to be applied to wagons. During formal and informal networking sessions, the INNOWAG leaflet has been distributed to the participants, in order to explain in detail what INNOWAG wants to achieve.

23/10/2018: WORKSHOP: WHEEL FLAT DETECTION FOR LOCOMOTIVE – Hamburg, Germany

On October 23rd 2018, a workshop dedicated to wheel flat detection for locomotive has been attended by INNOWAG partner TU Berlin. INNOWAG results regarding condition based maintenance have been presented to potential customers (in particular NorthRail/NRail), making the project outcomes visible to customers and industrial stakeholders. Q&A have been answered during a dedicated session.

05-07/11/2018: VSDIA 2018 Conference – Budapest, Hungary

On November 5th to 7th 2018, the INNOWAG project was presented and discussed during the "Vehicle system dynamics, identification and anomalies – VSDIA 2018" conference in Budapest. Project partner Politecnico di Milano presented a paper produced and submitted in the months before. The title of the paper is "Condition monitoring and fault detection of suspension components in freight wagons using acceleration measurements" Feedback from the interested audience have been collected and intense and fruitful discussion took place during the event.

15-16/11/2018: F&L CONFERENCE – Madrid, Spain

On November 15th and 16th, the INNOWAG project has been presented and discussed during the annual F&L – European Freight and Logistics Leaders' Forum organised in Madrid. In particular, the project was discussed during the session 2 dedicated to "Visibility and tools for management control" and particularly on the innovations that are under development in the logistic sector, such as the supply chain control tower and other digital solutions aimed at improving the efficiency reducing the risks in the supply chain. NewOpera showed the objectives and goals of INNOWAG project to a large and interested audience from both the market (shippers, operators, infrastructure managers, railway undertakings, and experts on logistics) and academia (universities, research centres, governmental institutions). The INNOWAG leaflets have been distributed to interested people.

13/02/2019: INNOWAG ADVISORY BOARD MEETING – Brussels, Belgium

On February 13th, the project pre-final outcomes have been discussed largely during a meeting organised in Brussels by UNIFE, with the project's Advisory Board. The participants had the opportunity to learn more about the outcomes achieved by the INNOWAG consortium up to January 2019, interacting with the INNOWAG partners and making comments and remarks on the ongoing initiatives and on the results already achieved within the project lifetime. Each of the WS was discussed in details through technical presentations followed by intense discussion. Next steps have been also discussed. Stimulating exchange of ideas coming from very high level profiles took place.

15/03/2019: MEETING MILANO – Milan, Italy

On March 15th, INNOWAG project have been discussed during a meeting organised in Milan by the company Fluidmesh Networks. Fluidmesh was founded in 2005 by a team of researchers and visionaries from the Massachusetts Institute of Technology (MIT) and the Politecnico of Milan. Its goal was to reliably deliver fiber-like performance via unlicensed wireless spectrum – providing connectivity for mission critical video, voice, and data. Fluidmesh is extremely active in the field of connectivity in the rail sector, providing wireless solutions to metro operators, railway undertakings and rail-related companies. During the meeting, the INNOWAG project was presented, particularly the solutions related to the "cargo condition monitoring" work stream. Information about the project and the partners have been provided and comments regarding the degree of technological development under performance in the transport sector (and particularly in the rail sector) with the advent of internet of things and physical internet tools. The INNOWAG brochure was provided to the guests.

19/03/2019: CER EVENT – Brussels, Belgium

On March 19th, the INNOWAG project has been discussed during formal and informal networking sessions within an event on EU Seamless Transport organised by CER in Brussels. The innovations developed in INNOWAG project, particularly those relating to cargo condition monitoring sensors and technologies enabling predictive maintenance, have been presented to interested audience composed by researchers and experts from associations and governmental institutions. INNOWAG dissemination material (brochure, link to website) have been shared and distributed. Contacts with people interested in knowing more about the solutions developed within the project have been exchanged and collected, in order to enlarge the physical and virtual audiences of the project outcomes.

14/05/2019: WORKSHOP: CONDITION BASED MAINTENANCE FOR RAILWAY CONSTRUCTION MACHINE – Berlin, Germany

On May 14th 2019, a workshop dedicated to condition based maintenance for railway construction machine has been attended by the INNOWAG partner TU Berlin. INNOWAG results regarding condition based maintenance have been presented to potential customers (in particular DB

Netze), making the project outcomes visible to customers and industrial stakeholders. Q&A have been answered during a dedicated session.

12-13/06/2019: UNIFE GENERAL ASSEMBLY – Dublin, Ireland

On June 12th and 13th, the INNOWAG project final outcomes have been presented during the UNIFE General Assembly that took place in Dublin, Ireland. An audience of professionals from the rail manufacturing industry had the opportunity to learn more about the INNOWAG findings, the activities performed within the project lifetime and final steps until the end of the project. Insights from each WS have been provided by UNIFE and the brochures summarising the project activities have been distributed to the participants. News and information about the final event in Munich have also been shared in order to enlarge the possible audience for the Munich event of June 18th.

16-20/06/2019: INTERNATIONAL WHEELSET CONGRESS 2019 – Venice, Italy

On June 16th to 20th, the INNOWAG project has been disseminated to a wide audience during the 18th International Wheelset Conference (IWC) that took place in Venice, Italy. INNOWAG project partners UNIFE and Lucchini were amongst the main organisers of this prestigious four days event, which was also attended by another partner, Politecnico di Milano. The event is held every three years and is the leading technology interchange event for the world railway industry. The International Wheelset Congress is the oldest railway technical conference in the world, and attracts engineers, experts, technicians, academia from the international rail community. Governmental institutions, research centres and national/international associations are also active participants. During the four days, INNOWAG project was disseminated through 2 posters displayed at the UNIFE stand, and through the distribution of the INNOWAG leaflet. Representatives of Lucchini, UNIFE and POLIMI provided information and assistance to those who wanted to know more about the project outcomes.

17/06/2019: INNOWAG PROJECT MEETING and ADVISORY BOARD MEETING – Munich, Germany

On June 17th, the INNOWAG project major outcomes and final steps have been presented and discussed during an internal project meeting, followed by a meeting with the Advisory Board. SNCF and UIP took part to the event, interacting with the INNOWAG consortium and making comments and observations on the project ongoing activities and on the results already achieved within the project lifetime. Each of the WS have been investigated in details through technical presentations followed by intense discussion.

18/06/2019: INNOWAG FINAL EVENT AT INNOVATION IN FREIGHT CONFERENCE – Munich, Germany

On June 18th 2019, INNOWAG project was presented and discussed during the Innovation in Freight Conference that was organised by seven Shift2Rail IP5 projects and took place in Munich. During the conference (anticipated by a focused project internal meeting and an Advisory Board meeting held on the 17th of June), the different Work Streams in which the project is divided (Cargo condition monitoring, Wagon design and Predictive maintenance) were presented to an audience of about 80 people from the rail sector (private companies, associations, universities, research centres, governmental institutions and agencies). The project results have been shared to the audience by the project coordinator Newcastle University and by the different Work Stream leaders. Particular focus was on the final tests that were carried out for validating the project innovations. During the Q&A session, questions have been answered and intense and fruitful discussions took place. Two INNOWAG posters, specifically prepared for the event, have been displayed and commented by the INNOWAG partners. In a dedicated area, dissemination material was available. In particular, the INNOWAG leaflet summarising the project objectives,

goals and achievements. During the meeting, INNOWAG gadgets prepared by UNIFE (who co-organised the event) have also been gifted to the participants.

All the activities presented in this section are summarised in Table 1.

Table 1: List of INNOWAG Dissemination Activities/Events

ACTIVITY and EVENT	DATE	PLACE	INVOLVED PARTNER
INNOWAG Kick Off	15-16/11/2016	Newcastle, UK	All Partners
INNOWAG presentation in UNIFE Freight Committee Meeting	07/02/2017	Brussels, Belgium	UNIFE
Discussion of INNOWAG with participants in Internationalen Schienenfahrzeugtagung conference, Dresden	01-03/03/2017	Dresden, Germany	TU Berlin
INNOWAG presentation in Rail Industry Association Innovation Conference	15-16/03/ 2017	Hinkley, United Kingdom	Perpetuum
Discussion of INNOWAG with participants in Transport&Logistics Exhibition	9-12/05/2017	Munich, Germany	UNIFE
WP1 Meeting	15-16/05/2017	Milan, Italy	All Partners
Discussion of INNOWAG with participants in F&L Conference and dissemination of newsletter	18-19/05/2019	Glasgow, Scotland	NewOpera
INNOWAG presentation and discussion with participants in Workshop RAMS/LCC Fur Schienenfahrzeuge	20-21/09/2017	Wiesbaden, Germany	TU Berlin
Discussion of INNOWAG with participants in Smart Mobility Conference	10/10/2017	Turin, Italy	NewOpera
Presentation and analysis of INNOWAG within the Eisenbahn Wesen Seminar	08/01/2018	Berlin, Germany	TU Berlin
INNOWAG presentation in Rail Innovation Workshop	09/01/2018	London, UK	Perpetuum
Discussion of INNOWAG with participants in Meeting at Environment Park Torino, and dissemination of newsletter	26/01/2018	Torino, Italy	NewOpera
Presentation and poster on results, and discussion of INNOWAG with participants in TRA 2018 Vienna	16-19/04/2018	Vienna, Austria	All Partners
TRA 2018 Vienna - INNOWAG Meeting	19/04/2018	Vienna, Austria	All Partners
INNOWAG presentation and discussion with participants in SKF Anwendungskonferenz	25-26/06/2018	Bamberg, Germany	TU Berlin
Presentation of INNOWAG specific results in 4 th International Conference on Railway Technology: Research, development and maintenance 2018	03-06/09/2018	Sitges, Spain	Politecnico di Milano
Presentation and discussion of INNOWAG specific results in	13/09/2018	Stralsund, Germany	TU Berlin

Fachtagung Schienengüterverkehr maritim			
Discussion of INNOWAG with participants in Innotrans Berlin, and dissemination of leaflet and newsletter	18-21/09/2018	Berlin, Germany	UNIFE, TU Berlin, Lucchini, Perpetuum and NewOpera
Discussion of INNOWAG with participants in Discussion of INNOWAG with participants in Meeting at Tor Vergata University of Rome	27/09/2018	Rome, Italy	NewOpera
Presentation of INNOWAG specific results in Workshop: wheel flat detection for locomotive	23/10/2018	Hamburg, Germany	TU Berlin
Presentation of INNOWAG specific results in VSDIA 2018 Conference	05-07/11/2018	Budapest, Hungary	Politecnico di Milano
INNOWAG presentation and discussion with participants in F&L Conference	15-16/11/2018	Madrid, Spain	NewOpera
INNOWAG Meeting with the Advisory Board	13/02/2019	Brussels, Belgium	All Partners and the Advisory Board
INNOWAG presentation and discussion with participants in Meeting with Fluidmesh in Milan	15/03/2019	Milan, Italy	NewOpera
Discussion of INNOWAG with participants in CER Event	19/03/2019	Brussels, Belgium	NewOpera
Discussion of specific INNOWAG results with participants in Workshop: condition based maintenance for railway construction machine	14/05/2019	Berlin, Germany	TU Berlin
Presentation of INNOWAG final results in UNIFE General Assembly	12-13/06/2019	Dublin, Ireland	UNIFE
Dissemination through posters, leaflet and newsletter, and discussion of INNOWAG with participants in International Wheelset Conference	16-20/06/2019	Venice, Italy	UNIFE, Lucchini, Politecnico di Milan
INNOWAG Meeting and Advisory Board	17/06/2019	Munich, Germany	All Partners and the Advisory Board
Presentation of INNOWAG overall results and discussion with participants in Final event at the "Innovation in Freight" conference	18/06/2019	Munich, Germany	All Partners

2. OTHER DISSEMINATION ACTIVITIES

November-December 2016

Preparation, revision and distribution of the INNOWAG project Logo. The logo design was produced by NewOpera and Newcastle University, and the shared with the partners, which accepted it as being appropriate for fulfilling in one single and simple image the project objectives. It satisfied the project idea of modern wagons in motion on a rail network, of optimisation of cargo loads, of technology communication devices capable of allowing both control of the position and the unit in motion as well as transmitting all data for the vehicle maintenance. The final version was prepared by Newcastle University for proper external internet and internal communications objectives.

November 2016

Drafting and issuing of the "INNOWAG at a glance" Newsletter. This brochure, prepared by NewOpera, underlines the project objectives to be communicated and disseminated to the market place. This first newsletter was circulated to all rail transport and logistics friendly associations and to the specialised press. This first Newsletter was also disseminated at the European Freight and Logistics Leaders Forum Conference organised in Glasgow in May 2017 where industry leaders from all over Europe convened for the first of their two annual events. All partners were invited to circulate "INNOWAG at a glance" newsletter within their own individual network, both physically and in electronic format.

January 2017

Preparation and submission to the European Commission of a detailed Dissemination and Communication Plan, a document summarising the dissemination strategy of the project. Target groups have been identified and specific dissemination and communication activities have been addressed to each of these groups. Specific indications about the type of tool (paper based, web based, voice based) have been given.

April 2017

Drafting and elaboration, up to finalisation, of a scientific article published in the Baltic Transport Journal, which is a major specialised transport magazine, distributed in thousands copies in the Baltic Countries and Northern Europe. The article, with the title "Rejuvenating Europe Rail Freight Sector", was published in the issue of 3rd April 2017. NewOpera took care of the drafting and the publication of this article. The editorial was very complete in two full pages encompassing both the project objectives, the wagons design together with the communication devices, deeply analysing all the three work streams in which the project is divided. After the publication, the article was circulated amongst the partners, and uploaded on the internet website. The article was also included in the "Transport News", which is a newsletter circulated weekly throughout Europe including all the transport news update and the EU Commission Transport and mobility news and issues. It was also shared with Rail transport and Logistics associations and uploaded on NewOpera website for consultation and download.

April 2018

Production of a second newsletter under the format of a "Flyer" folded in 4 quarter pages. This "Flyer" was conceived for communicating the project progresses and achievements according to the Dissemination and Communication plan to the targeted audience. The flyer, prepared by NewOpera, was thought to be very appropriate for being distributed both via internet but also in printed version at major events such as TRA 2018, INNOTRANS, INTERMODAL EUROPE, EUROPEAN FREIGHT AND LOGISTICS LEADERS FOIRUM (F&L) and any other international

events in order to continue the dissemination work throughout the project lifetime. The flyer in updating the project progress contains technical information, graphs, tables and charts. This flyer, similarly to the first newsletter, was circulated to all rail transport and logistics associations and to the specialised press. In addition to this, a printed version was issued and distributed at TRA 2018 and at INNOTRANS 2018 in September 2018 in Berlin.

April 2018

Preparation, submission and acceptance of two papers at TRA 2018. The papers were submitted by Newcastle University, and presented as two posters summarising the project outcomes and objectives, together with a specific explanation of the different WSs achievements and goals. These posters have been included in the “poster session” organised within the TRA 2018 in Vienna. A wide audience of people coming from all fields of transport could interact with the INNOWAG partners and get more insights on the project. Fruitful exchange of visions took place and valuable contacts have been exchanged. In addition, the papers have been published in the conference proceedings:

“Integrated concept of lightweight wagon with cargo condition monitoring capabilities and predictive maintenance solutions” – available at [10.5281/zenodo.1491331](https://zenodo.org/record/1491331);

“Rail freight research: How market trends and customers’ needs drive technology innovation” – available at [10.5281/zenodo.1491503](https://zenodo.org/record/1491503).

April 2018

Preparation and publication of a scientific article on the specialised review ZEV Rail. The title of the article is: "Cargo Condition Monitoring Based on an Autonomous Self-Powered Wireless Sensor Network". The article was prepared by TU Berlin, with inputs from WS leaders, and is available at <https://www.zevrail.de/artikel/ladegutueberwachung-durch-ein-autonomes-energieautarkes-drahtloses-sensornetzwerk>.

September 2018

Preparation and submission of a research paper whose title is “Cost-driven and reliability-driven analyses of the Y25 bogie to identify needs and opportunities for predictive maintenance” by Politecnico di Milano. The paper accepted for presentation at the Railways 2018 conference, which was held in September 2018 in Barcelona. The paper was presented during the event to a wide audience of rail related professionals, including International participants.

November 2018

Preparation and submission of a paper on "Condition monitoring and fault detection of suspension components in freight wagons using acceleration measurements" by Politecnico di Milano for the Vehicle System Dynamics, Identification And Anomalies conference, VSDIA 2018, which was held in Budapest.

May 2019

Preparation and publication of the scientific article "Experimental and numerical investigation of the possibilities for the structural health monitoring of railway axles based on acceleration measurements" by Politecnico di Milano. The article was published in Structural Health Monitoring, Vol 18, issue 3, p. 902-919 (by SAGE) and is available at <https://journals.sagepub.com/doi/epub/10.1177/1475921718786427>.

May 2019 (and further presentation in October 2019)

Preparation of the scientific paper "Experimental Study of Wireless Communication Technologies for a Novel Freight Monitoring, Tracking and Tracing System" for the 12th World Congress on Railway Research, WCRR 2019 in Tokyo (October-November 2019). The WCRR is one of the most important rail related events globally known for the high profile of the participants. Newcastle University submitted the paper, which was accepted for oral presentation, and will be presented after the project completion.

June 2019

Preparation of a poster summarising the outcomes of the project. The poster was prepared by Newcastle University with contribution from the WS leaders. It was printed by NewOpera, and displayed both at IWC in Venice and at the INNOWAG final event, on the occasion of the Innovation in Freight Conference in Munich.

June 2019

Preparation of two project brochure versions - a short one and a detailed one, summarising the project's main information, including its challenge, objectives, the WSs main characteristics and outcomes, and the project conclusions. The short version was made available at both IWC in Venice and at the Innovation in Freight Conference in Munich. The longer version has been made available online on NewOpera website.

November 2016 – June 2019

A press release was prepared by NewOpera and shared with interested press contacts in order to inform the rail and non-rail world about the project start and the project closure. These press releases have also been circulated to all NewOpera friendly associations. Each partner shared the document with their own contacts. Both the press releases have been included in the Transport News international newsletter. Both press releases have been published on the Transport News Newsletter, one of the most important EU-wide newsletters dedicated to transport and logistics issues.

June 2019

Preparation and publication of an article on the INNOWAG Final Event and S2R Conference in Munich uploaded on the Inertia Technology website.

INNOWAG Website (ongoing, since December 2016)

The project website was active since December 2016, and will be maintained by Newcastle University beyond the project end date. The aim is to update and maintain the website for one year, at least, after the project final reporting. The website has been continuously updated with the project deliverables, newsletters, links to important events, other publications, etc.

All the activities presented in this section are summarised in Table 2 Table 1.

Table 2: Other INNOWAG Dissemination Tools

DISSEMINATION TOOL	DATE	INVOLVED PARTNER
INNOWAG Kick Off Press Release	November 2016	NewOpera
INNOWAG Logo	November 2016	NewOpera and Newcastle University

INNOWAG Website	December 2016 to now	Newcastle University
"INNOWAG at a Glance" Brochure - Newsletter 1	November 2016	NewOpera
Dissemination Plan	January 2017	NewOpera and Newcastle University
Article on "Baltic Transport Journal"	May 2017	NewOpera
INNOWAG Flyer for TRA 2018	April 2018	Newcastle University and NewOpera
Posters for TRA 2018	April 2018	Newcastle University, TU Berlin and Politecnico di Milano
Online publication of Papers for TRA 2018	April 2018	Newcastle University, TU Berlin and Politecnico di Milano
Article published in ZEV Rail Journal	April 2018	TU Berlin, Newcastle University and Politecnico di Milano
Paper for Railways conference Barcelona 2018	September 2018	Politecnico di Milano
Paper for VSDIA 2018	November 2018	Politecnico di Milano
Article published in Structural Health Monitoring, SAGE	May 2019	Politecnico di Milano
Paper for WCRR 2019	May 2019	Newcastle University
Leaflet for INNOWAG Final Event	May-June 2019	Newcastle University and NewOpera
Poster for INNOWAG Final Event	May-June 2019	Newcastle University and NewOpera
INNOWAG Final Event Press Release	June 2019	NewOpera
News article on Inertia website on INNOWAG event/Shift2Rail conference	20 June 2019	Inertia Technology