



H2020-LCE-2016-2017

EUROPEAN COMMISSION

Innovation and Networks Executive Agency

Grant agreement no. 774392



**E-LOBSTER**

**Electric losses balancing through integrated storage and power electronics  
towards increased synergy between railways and electricity distribution  
networks**

### **Deliverable D6.5**

**First version of plan for use and dissemination of foreground, including the  
KER**

#### Document Details

<b>Due date</b>	31-10-2020
<b>Actual delivery date</b>	30-10-2020
<b>Lead Contractor</b>	RINA Consulting S.p.A.
<b>Version</b>	Final rev0
<b>Prepared by</b>	RINA Consulting S.p.A.
<b>Input from</b>	All partners
<b>Reviewed by</b>	All partners
<b>Dissemination Level</b>	Public

#### Project Contractual Details

<b>Project Title</b>	Electric losses balancing through integrated storage and power electronics towards increased synergy between railways and electricity distribution networks
<b>Project Acronym</b>	E-LOBSTER
<b>Grant Agreement No.</b>	774392
<b>Project Start Date</b>	01-06-2018
<b>Project End Date</b>	31-05-2021
<b>Duration</b>	48 months

The project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 774392.

**Disclaimer:** This document reflects only the author's view. The European Commission and the Innovation and Networks Executive Agency (INEA) are not responsible for any use that may be made of the information it contains.

## Table of Contents

---

Table of Contents .....	2
Executive Summary .....	3
1 Introduction.....	4
2 Activities framework .....	5
2.1 Project overview.....	5
2.2 Dissemination activities.....	7
2.2.1 Digital Communication at the core .....	7
2.2.2 Skyscraper Content as the main driver for stakeholders' engagement.....	12
2.2.3 The Editorial Plan as a key tool.....	13
2.2.4 KPIs to measure the communication and dissemination effectiveness.....	13
2.3 Exploitation and IPR management activities.....	14
2.3.1 Exploitation activities .....	14
2.3.1.1 Definition and identification of project results .....	14
2.3.1.2 Characterization of identified project results .....	15
2.3.1.3 Exploitation strategies.....	16
2.3.2 IPR management .....	16
3 Dissemination activities.....	17
3.1.1 Website and Social Media Management .....	17
3.1.2 Videos .....	19
3.1.3 Infographics and other relevant materials.....	24
3.1.4 GIFs and other remarkable actions on social media .....	26
3.1.5 Stakeholders Digital Booklet and Informational Sheet .....	27
3.1.6 First Stakeholder Workshop .....	28
3.1.7 Second Stakeholders Webinar .....	29
3.1.8 Conferences and Trade Fairs.....	33
3.1.9 Networking.....	36
3.1.10 Scientific Publications.....	37
4 Exploitation activities and IPR management.....	39
4.1 Exploitation activities .....	39
4.1.1 Project Exploitable results identification .....	39
4.1.2 Characterization of project results.....	40
4.1.2.1 Railway simulator .....	40
4.1.2.2 Smart grid controller toolbox.....	41
4.1.2.3 Integrated distribution losses monitoring and simulation tool .....	42
4.1.2.4 Smart Soft Open Point (Ssop).....	43
4.1.2.5 Energy storage system .....	44
4.1.2.6 R+G energy management system .....	45
4.1.3 Exploitation Strategies.....	46
4.1.3.1 Exploitation Strategy at project level .....	46
5 Conclusions and next steps .....	49

## Executive Summary

---

The overall scope of the H2020 E-LOBSTER project is to propose an innovative Railway to Grid Management system which, combined with advanced power electronics (Smart Soft Open point) and storage technologies will be able to reduce electricity losses in both the power distribution and the railway distribution networks. In particular, the system will be able to make the best use of the available energy on both the grids by increasing their mutual synergies and maximizing the consumption of local RES production through electric energy storages and at the same time by creating synergy with charging stations for electric vehicles.

More in detail, the main objective of the E-LOBSTER project is to develop and demonstrate up to TRL 6 in relevant environment (a real underground railway in Madrid connected to a local power distribution network with a high penetration of RES) an innovative, economically viable and easily replicable Electric Transport-Grid Inter-Connection System that properly managed will be able to establish mutual synergies between power distribution networks, electrified urban transport networks (metro, trams, light railways etc.) and charging stations for electric vehicles.

The scope of this public document is to provide an overview of the dissemination activities performed so far for raising the awareness on the project outcomes among all the stakeholders and to give a preliminary overview of the Key Exploitable Results (KERs) as well as common guidelines for the partners to undertake exploitation actions with a structured and well organized approach for the following years.

The report includes the following aspects:

- An overview of the project framework and status in order to provide the overall context in which project results have been developed and disseminated;
- Definition and description of the exploitation and dissemination methodological approach;
- Description of the dissemination actions
- Definition and identification of Key Project Exploitable Results (to be fine tuned and updated until the end of the project)
- Preliminary characterization of the identified Key Project Exploitable Results by illustrating the innovation brought by each result, potential customers, benefits brought to the customers and exploitation perspectives.
- Preliminary Exploitation Strategy, at project level (as the individual exploitation strategy at partner level will be included within the restricted version available only for the project partners and EC and named deliverable D6.12).
- Overview of the main principles related to the IPR management with respect to the E-LOBSTER project, underlining the potential strategies available for securing the IPR generated by the partners.

The final version of the report named D6.8 “Final version of plan for use and dissemination of foreground, including business models for the KER” is expected at the end of the project.

## 1 Introduction

---

The present document constitutes the “First version of plan for use and dissemination of foreground, including the KER” in the framework of the E-LOBSTER project and reports the public information related to the dissemination and exploitation activities aiming at raising the awareness on the project results as well as at paving the way for their commercial exploitation.

Looking at integrated solutions targeting: i) reduction of electricity losses; ii) increase the grid stability in a high local RES<sup>1</sup> penetration scenario; iii) the needs of new energy actors such as EVs, electrical storages and prosumers, the E-LOBSTER project intends to capture such potential through the development of an **innovative, economically viable and easily replicable electric Transport-Grid Inter-Connection System that will be able to establish synergies between power distribution networks, electrified transport networks (metro, trams, light railways etc.) and charging stations for EVs**. The proposed solution encompasses the integration of high-power flow Electric Storage with smart Soft Open Points providing flexible control. The system will be managed by an integrated Railway + Grid Management System which, starting from the analysis of energy losses, will be able to optimize the interexchange of electricity between the networks maximizing the self-consumption of local RES production. The hardware and software control platform will be demonstrated at TRL 6 in one substation owned by Metro de Madrid.

In this framework, the E-LOBSTER project thus represents a unique opportunity for the project partners to reinforce their market positions or enter into new markets, properly exploiting the results developed within the project. For this reason, a proper exploitation plan is crucial in order to maximize the potential benefits for each project partner.

Given the status of development of the project activities, **the aim of this preliminary public document is to provide an overview of the dissemination activities performed so far and, under the exploitation perspective, to give a preliminary overview of the Key Exploitable Results (KERs) as well as common guidelines for the partners to undertake exploitation actions with a structured and well organized approach for the following years**, as only in this way the widest communication and dissemination of the foreground generated by the project can be reached and the foreground can be adequately protected and exploited.

This document proposes thus a “First version of the plan for the use and dissemination of foreground”, which will be updated and further refined during the project in the Final Plan for Use and Dissemination of the Foreground due to the end of the project.

As such, the document has been mainly structured in the following sections (related chapters):

- **Section 1** (Chapter 2), providing the framework of the analysis and the main purposes of both dissemination and exploitation activities together with the main templates and instruments used for carrying on the activities;
- **Section 2** (Chapter 3), providing the main activities carried out for properly disseminating the main project's outcomes;
- **Section 3** (Chapter 4), providing the main activities carried out for introducing and securing both IPR management strategies and exploitation activities for each Project Result identified,

Finally, Chapter 5 draws the conclusions and next steps foreseen till the project end.

---

<sup>1</sup> Renewable Energy Sources

## 2 Activities framework

The following paragraphs aim at providing the big picture of the E-LOBSTER project and its main objectives and challenges in order to introduce and better evaluate the context and the methodological framework of the dissemination and exploitation activities carried on within the project.

### 2.1 Project overview

The E-LOBSTER project aims to develop an electric transport-grid inter-connection system that allows targeting synergies between power distribution networks, electrified urban transport networks, and charging stations for electric vehicles. At the same time, it tries to demonstrate tools and technologies for the assessment of the source of losses, the minimisation of electricity losses, maximisation of consumption of renewable energy sources production and electric energy storage.

To accomplish all these goals, E-LOBSTER proposes an **advanced railway to grid (Railway + Grid) management system (hereafter R+G management system)** that will be able to reduce electricity losses in both the networks, maximizing the use of local RES generators for both applications, and making them interact one each other in a mutual synergy strategy.

This system, based on power electronics, advanced control, and electrical storage systems, mainly relies on three areas of actions, which are the following:

- Railway and transport engineering expertise;
- Electrical engineering expertise;
- Information and communication technology (ICT) expertise.

Therefore, the diagram of functioning is set as it follows:

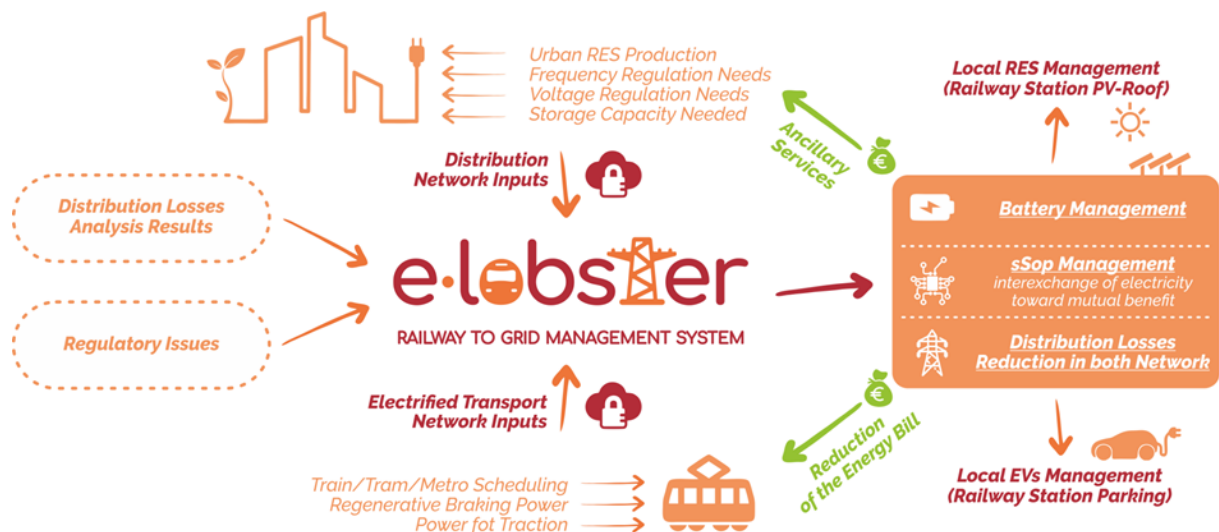
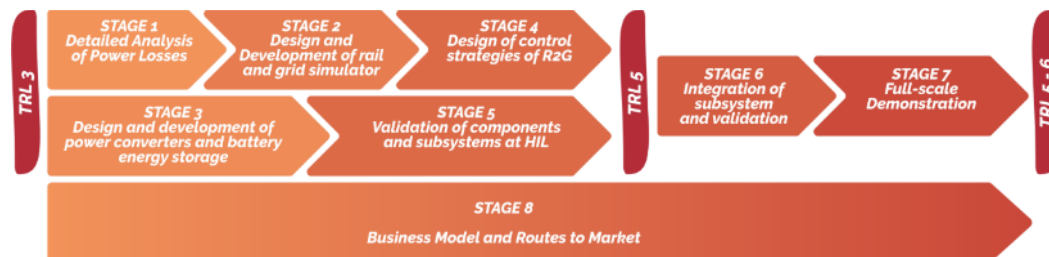


Figure 2.1: Diagram of E-LOBSTER functioning

Given the above system architecture, the following added values will be accomplished by E-LOBSTER:

- a. The control of the smart soft open point (sSOP), the battery, and the exchange of electricity between the distribution and the railway networks.
- b. The optimization of the available energy on both the rail and grid intended as mutual key points of interest through a holistic approach.

- c. The engagement of all the energy players (consumers, producers, and storage) not as isolated elements, but as a whole.
- d. The improvement of energy savings, together with the reduction of electrical losses, and the demonstration of the business case of the new technologies according to the steps provided in figure below.



**Figure 2.2: Technology readiness levels of E-LOBSTER**

Once the management system and the goals are set, to provide the whole framework of the project activities it is also important to underline the drivers and solutions that will allow the project to tackle the challenges, which are mainly:

- Energy losses savings in the railway and power grids.
- To fill the requirements set by the European standards and regulations.
- Real-time parameters from local energy grids.
- Environmental constraints.
- Suitable new business models to foster the E-LOBSTER replication all around Europe.

The proposed solution to these challenges from E-LOBSTER technology lies in:

- The untapped potential of the inter-connection of the grids through high-efficiency power electronics.
- The maximization of local production (RES and regenerative braking).
- Time optimal shift management thanks to EES and electrical vehicles.
- The reduction of losses due to the transportation of electricity in both the networks.

#### **E-LOBSTER at a glance:**

The main objective of the E-LOBSTER project is to develop and demonstrate up to TRL 6 in relevant environment (a real underground railway in Madrid connected to a local power distribution network with a high penetration of RES) an innovative, economically viable and easily replicable Electric Transport-Grid Inter-Connection System that properly managed will be able to establish mutual synergies between power distribution networks, electrified urban transport networks (metro, trams, light railways etc.) and charging stations for electric vehicles.

In particular, E-LOBSTER is demonstrating tools and technologies, software and hardware to assess the source of losses of both the networks (transport and electricity distribution networks) prioritising techniques for their minimisation via a coordinated control of the power supply for electrified transport and recharge stations for electric cars and towards the maximisation of the local consumption of Renewable Energy Sources (RES) production thanks to the use of Electrical Energy Storage (EES) and advanced power electronics devices.

In its concept, E-LOBSTER project is proposing an innovative Railway to Grid Management system which, combined with advanced power electronics, will be able to reduce electricity losses in both the power distribution network and the railway distribution network. The system will be able to make the best use of the available energy on both the grids by increasing their mutual synergies and maximizing the consumption of local Renewable Energy Sources (RES) production through electric energy storages.

## 2.2 Dissemination activities

As stated in the public report D6.3 “E-LOBSTER Dissemination Plan”<sup>2</sup>, a specific communication and dissemination strategy has been developed to maximize the impact of the innovative technologies that are being developed in the framework of E-LOBSTER.

In particular, E-LOBSTER Communication & Dissemination strategy effectiveness focused on the following main pillars:

- A special focus on digital communication;
- Creation of valuable contents as the main driver to engage project stakeholders;
- A planning approach to ensure the regular publication of updates about the project;
- Networking activities with other projects to enlarge E-LOBSTER community;
- Participation in all relevant trade fairs and conferences as the place where to meet and engage new stakeholders;
- The constant monitoring of KPIs to measure the efficiency of the project communication and dissemination actions;

### 2.2.1 Digital Communication at the core

According to “Digital 2020 – Global Digital Overview”<sup>3</sup>, digital, mobile, and social media have become an indispensable part of everyday life for people all over the world. In particular, more than 4.5 billion people now use the internet, while social media users have passed the 3.8 billion mark. Moreover, the world’s internet users will spend a cumulative 1.25 billion years online in 2020, with more than one-third of that time spent using social media.

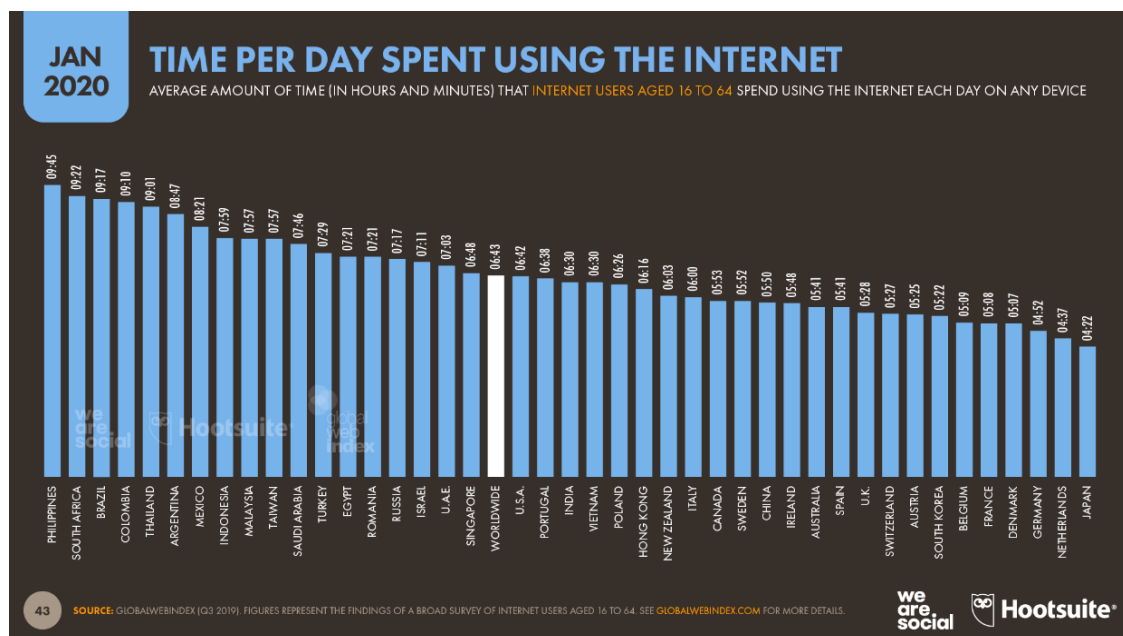


Figure 2.3: Time per Day spent using the internet

<sup>2</sup> <https://cordis.europa.eu/project/id/774392/results>

<sup>3</sup> <https://wearesocial.com/blog/2020/01/digital-2020-3-8-billion-people-use-social-media>



Nowadays it is therefore essential to have a strong digital presence, and this is why the main communication channels of E-LOBSTER are represented by the project website and social media. Moreover, all the best practices to maximise the effectiveness of E-LOBSTER communication strategy are carried out by the Project Consortium.

Concerning the project website, the main **SEO (Search Engine Optimization) techniques** are adopted in order to be sure that E-LOBSTER has a good positioning on the Google SERP and project stakeholders can easily find information online.

SEO is a method of optimizing contents for the search engines, in order to help a website rank higher than content from other sites that target the same search terms.



Figure 2.4: the SEO Process applied also to E-LOBSTER website (Image Source: Moz.com blog)

This is very important because the number of daily searches on Google is over 4 billion, the top five results get 65% of the clicks (<https://ignitevisibility.com/google-ctr-by-ranking-position/>) and views to our project website is more and more as an essential asset. The SERPs have become a vicious battleground, and it is crucial, now more than ever, to focus on SEO to raise awareness about the results of E-LOBSTER project.

Specifically, the following techniques are implemented by E-LOBSTER Project Consortium:

- **Headlines, subtitles and keywords:** SEO copywriting means creating useful, compelling and valuable content that targets specific keywords, so that project stakeholders will gladly promote it on social media platforms. Headlines and subtitles play a key role, so E-LOBSTER headlines and subtitles attract people's attention and are written in a way to encourage them to click and read further. In particular, E-LOBSTER headlines and subtitles are created according to the best practices shown in Figure 2.5. Also keywords are used as they help search engines and searchers understand what the topic is and why your targeted keywords and



phrases keep appearing in E-LOBSTER content, such as “Electric losses balancing”, “integrated storage and power electronics”, “Railway to Grid Management System” and many others.

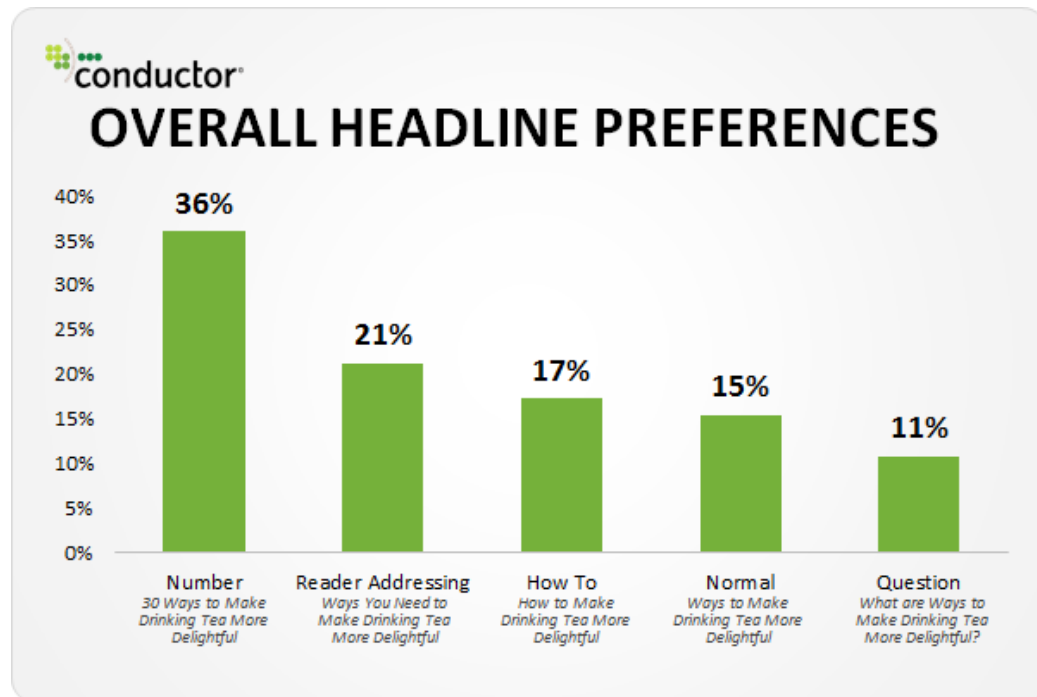


Figure 2.5: Best practices followed to write headlines for E-LOBSTER project website (Image Source: Lead Champion Blog | Set 28, 2017)

- **Creation of skyscraper contents:** more detailed provided in subchapter 2.2.2.
- **Backlink building:** E-LOBSTER Project Consortium publishes contents about the project on their own communication channels, including also the link to E-LOBSTER website. In this way, more traffic is driven to the project traffic and a higher ranking of the main search engines is ensured. In fact, Google focuses on the authority of the website linking to your domain and measures authority by the number of links pointing to a specific page and how trustworthy those links are. If high quality websites (such as the project partners’ website) link to E-LOBSTER website, it automatically gained better authority and, consequently, views.
- **Use of infographics:** images are easier to remember and help to convey complex concepts in easy-to-understand ways. For this reason, a series of infographics have been created for E-LOBSTER website using the same colour palette of the project logo in order to be consistent with the project brand identity.

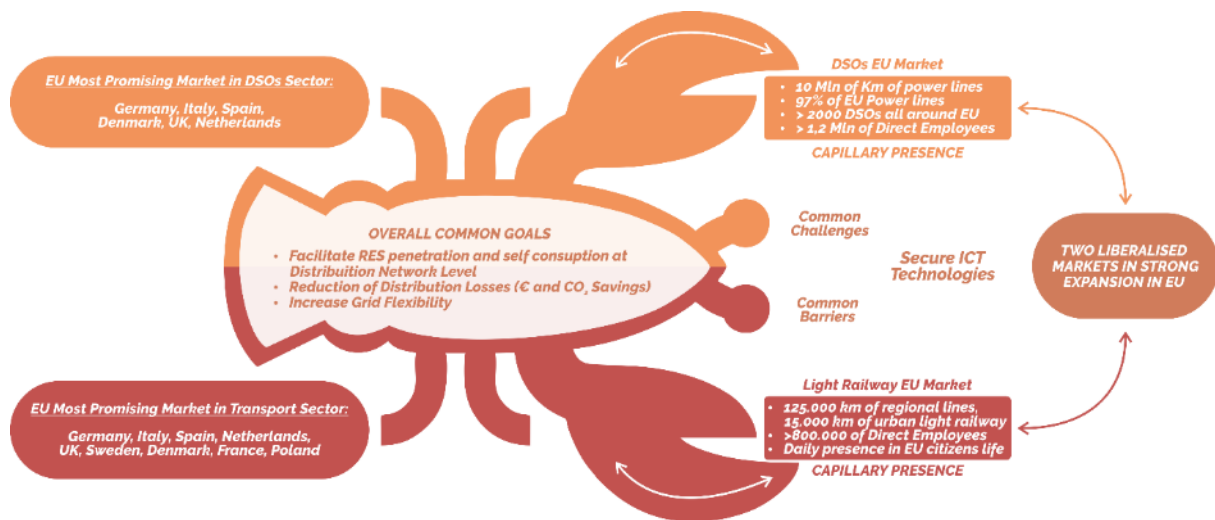


Figure 2.6: E-LOBSTER infographic for website

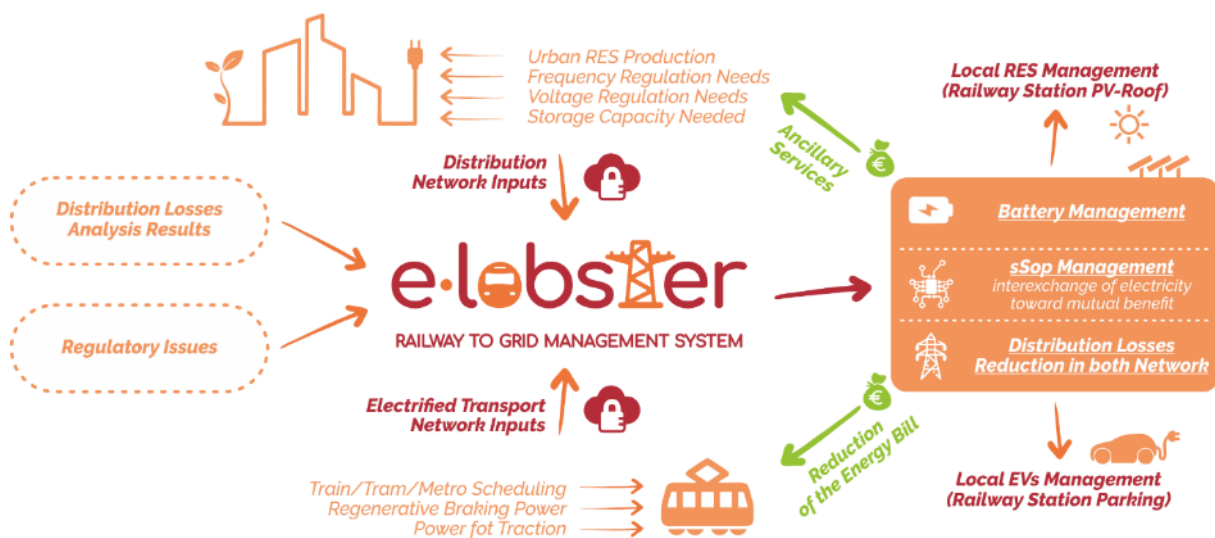


Figure 2.7: E-LOBSTER infographic for website

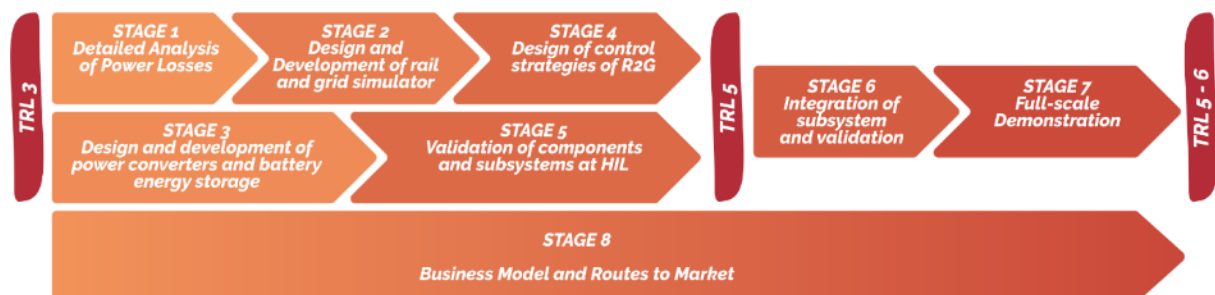


Figure 2.8: E-LOBSTER infographic for website

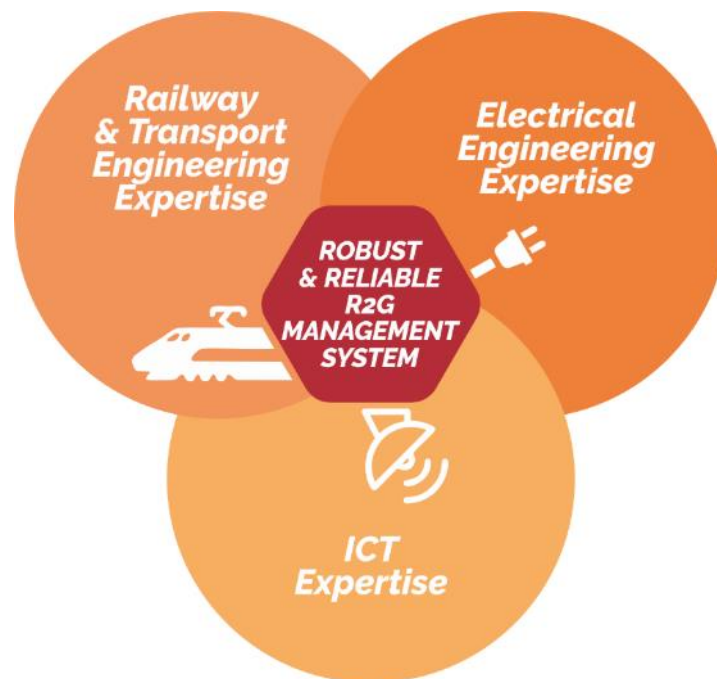


Figure 2.9: E-LOBSTER infographic for website

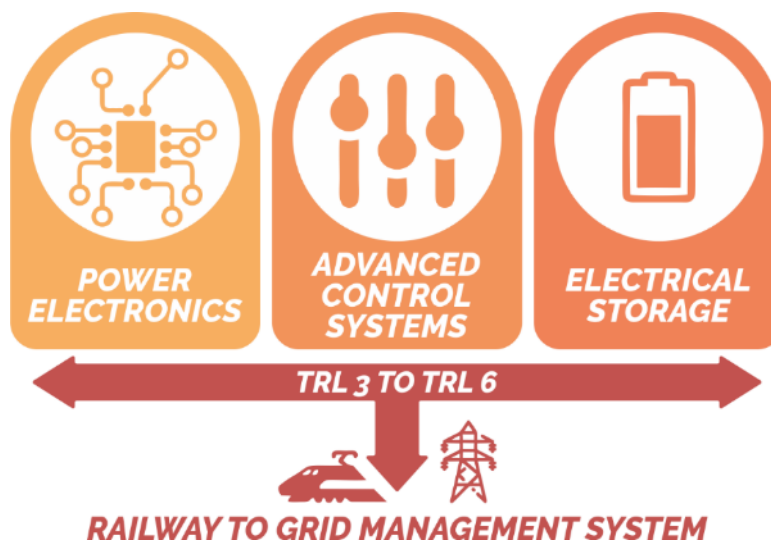


Figure 2.10. E-LOBSTER infographic for website

Concerning social media, the best practices to engage as many followers as possible have been performed.

In particular, to promote engagement on Twitter (<https://twitter.com/H2020ELOBSTER>):

- **Strategic hashtags** have been identified and included in the project's tweets, such as #H2020, #EnergyEfficiency and #investEUresearch;
- **Trending hashtags of the day** have been exploited to raise awareness about the project;
- Several **questions** have been asked to the project's followers in order to create online debates;
- **Strategic Twitter accounts** (such as partners, events' account, h2020 accounts, journalists etc...) have been mentioned in all E-LOBSTER tweets;

- **Captivating images and videos** have been included in all the project's tweets in order to catch the users' attention.

Moreover, **E-LOBSTER LinkedIn page** (<https://www.linkedin.com/company/e-lobster/>) has been created and will be used to inform and engage the (business) stakeholders such as Railways and electric public transports managers and relevant associations representing the interest of DSOs, TSOs, Energy Retailers, Aggregators and ESCOs.

To promote engagement on LinkedIn, rich content has been shared regularly.

## 2.2.2 Skyscraper Content as the main driver for stakeholders' engagement

---

The term "Skyscraper content" was coined by Brian Dean and it involves **finding high performing content in your specific niche of stakeholders** and creating something valuable for the, rather than just promoting the project.

For this reason, E-LOBSTER Project Consortium carefully identified the target audiences in order to maximise the impacts of E-LOBSTER because **knowing the audience is fundamental for the stage of content creation**:

- Railways and electric public transports managers;
- Relevant associations representing the interest of DSOs, TSOs, Energy Retailers, Aggregators and ESCOs;
- Relevant associations representing the interest of technology providers (such as storage, advanced power electronics, control systems developers, ...);
- Relevant associations representing the interest of EV producers;
- Local, regional and national government;
- EU Bodies;
- R&D institutes & universities;
- General Public;
- Journalists and media;

Only understanding the informational needs, the preferred content formats and the most used channels by our target audiences it was possible to create valuable contents for E-LOBSTER stakeholders.

**Several content formats** (article, post, short video etc.) have been developed and, in particular, after analysing the content's needs and preferences of E-LOBSTER target audiences, the following content ideas have been included in E-LOBSTER editorial plan:

- **Project Partners' Interviews:** interviews to E-LOBSTER partners have been published on the website and shared on social media. The aim was to inform potential stakeholders and the general public about the role of each partner in the project, underlining how they will contribute to achieve the expected impacts listed in the project's call and how they managed COVID-19 outbreak;
- **Short video animations:** 78% of people watch online videos every week, and 55% view online videos every day and social video generates 1200% more shares than text and image content combined<sup>4</sup>. Therefore, short, funny and easy-to-understand animation have been developed

---

<sup>4</sup><https://biteable.com/blog/tips/video-marketing-statistics>

- **Digital guidebooks and infographics for project stakeholders**, highlighting project milestones and public documents that may be more interesting for them

### 2.2.3 The Editorial Plan as a key tool

It is divided into four parts:

- Performed and planned events
- Digital activities
- Scientific Publication
- Other

[illegible]

Thanks to E-LOBSTER Communication and Dissemination Tracking Tool, it is possible to have an editorial plan which is:

- planned in advance;
- regularly up-to-dated by all project's partners with new content ideas;
- customised according to target audiences.

#### 2.2.4 KPIs to measure the communication and dissemination effectiveness

- Project Awareness: Website traffic, page views, video views, etc...;
- Engagement: Social media metrics, rate of attendance to the project's event;
- Lead generation: Newsletter subscription;
- Target loyalty: Percentage of content consumed by target groups.

## 2.3 Exploitation and IPR management activities

This chapter is aimed at providing the methodological framework and main approaches followed (templates developed) to carry on both Exploitation and IPR management activities. Hereafter, the main approaches and related templates developed and used are properly described, while within Chapter 4 these have been properly filled in and evaluated in the context of the project. **It is important to underline that some of the information provided by partners, in particular those related to IP ownership and detailed exploitation plans, will be included in a confidential version of this report (D6.12) available only for members of the E-LOBSTER consortium (including the Commission Services).**

### 2.3.1 Exploitation activities

#### 2.3.1.1 Definition and identification of project results

As the first step towards exploitation, a definition of Project Results has been provided in order to help the consortium in their clear identification. These Project Results have been preliminarily identified and properly characterized, according to the actual activities' status, with the aim to evaluate their readiness towards the market. Then, a detailed analysis of the main expectations of project partners with respect to their main developments has been done with the aim of evaluating roles and single or joint market intentions.

The final goal of this analysis is the identification of the exploitation framework, towards the definition of proper strategies for market penetration including all aspects related to the IPR management.

Firstly, a definition of Project Result as defined by the European Commission<sup>5</sup> is provided:

*“A Project Result is defined as any tangible or intangible output of the action, such as data, knowledge and information whatever their form or nature, whether or not they can be protected.”\**

Thus, PR are the outputs generated during the project which can be used and create impact, either by the project partners or by other stakeholders. Project results can be reusable and exploitable (e.g. inventions, prototypes, services) as such, or elements (knowledge, technology, processes, networks) that have potential to contribute for further work on research or innovation. Dealing with exploitation of results means to evaluate the utilization of results in developing, creating and marketing a product or process, or in creating and providing a service, or in standardization activities.

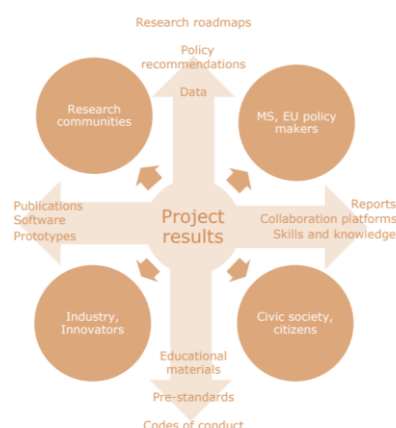


Figure 2.12: Project Results' definition

<sup>5</sup> [https://ec.europa.eu/research/participants/data/ref/h2020/other/events/2018-09-21/9\\_dissemination-exploitation-activities\\_en.pdf](https://ec.europa.eu/research/participants/data/ref/h2020/other/events/2018-09-21/9_dissemination-exploitation-activities_en.pdf)

As explained by mean of an extract from the European Commission sources on Dissemination and Exploitation activities<sup>6</sup> in figure below, it is important to:



**Figure 2.13: Dissemination and Exploitation of Project Results**

- Make use of the results for scientific, societal and economic purposes, or for improving public knowledge and action (e.g. recommendations for policy making); recognizing exploitable results and their stakeholders, as group of entities that are making concrete use of results;
- Concretize the value and impact of the Research & Innovation activity for societal challenges; with this respect, partners shall make best efforts to exploit the results it owns, or to have them exploited by another legal entity (e.g. through making results available under open licenses).

Given this definition, the list of Key Exploitable Results (KERs) has been identified (see Chapter 4) and confirmed by the Consortium partners (Firstly, at the preliminary Exploitation Strategy Seminar held during the General Assembly in Madrid at M12 organized by RINA and then during the project development). **Nevertheless, changes would be considered over time until the end of the project and a duly update will be performed where needed. Indeed, since this document serves as the first version of the Exploitation Plan, the KERs may still change in the final version of the document.**

### 2.3.1.2 Characterization of identified project results

Once agreed on the list of project results, **their preliminary characterization has been carried on** in order to evaluate the following relevant elements:

- Main innovation proposed, that will thus guarantee advantages against potential competitors and thus a good positioning in the market;
- Main owner of the result together with the identification of other partners involved, that will be of the utmost importance when dealing with IPR management;
- Main customers, to circumscribe the market and to tailor the development of the result to potential customers' needs.

The table below provides the template used for gathering the main information related to project results and to properly characterize them and identify potential exploitation strategies after the end

<sup>6</sup> Coordinators' Day on Grant Agreement Preparation , 19 September 2019, Ioannis SAGIAS  
[https://ec.europa.eu/research/participants/data/ref/h2020/other/events/2019-09-19/9\\_dissemination-exploitation-activities\\_en.pdf](https://ec.europa.eu/research/participants/data/ref/h2020/other/events/2019-09-19/9_dissemination-exploitation-activities_en.pdf)



of the project. Some of that information has been included as mentioned earlier only in the confidential version of this document (D6.12) restricted to the partners.

**Table 2.1: Info gathering table template**

Project Result name	
Exploitable Result description	
Innovation introduced with respect to already existing Products/Services.	
Owner and other partners involved (please mention the contribution of each partner)	
When is the expected date of achievement in the project (M?)	
Possible customers	
Benefits brought to the customers	
Sector(s) of application	
Alternative sectors	
Product/Service Market Size (if available at this stage)	Included in D6.12
Time to market	Included in D6.12
Who will be the competitors for this result?	Included in D6.12
Who are the industrial/technological partners interested in the result (partners, sponsors, etc.)?	Included in D6.12
IPR Protection	Included in D6.12
Approximate price range of this result / price of licences (if available at this stage)	Included in D6.12
Exploitation Claims and Plan	Included in D6.12

### 2.3.1.3 Exploitation strategies

The above info gathering table will allow the identification of the potential exploitation strategies for the partners involved in each result development as a base also for investigating their intention to exploit and further use the results after the end of the project. Exploitation perspectives have been also defined with the support of the project partners.

### 2.3.2 IPR management

Effective exploitation of the Key Exploitable Results depends, among others, on the proper management of the intellectual property. There are several activities related to IPR, namely, the assessment of pre-existing knowledge of the project partners, their potential contribution to the foreground project IP, and the potential overlapping of IP to develop and prepare the shaping of the IP strategy of the consortium. The main results of patent mapping studies will be specified and delivered in order to raise the IPR protection scheme. The overall IPR strategy of the project is to ensure that partners are free to benefit from their complementarities and are able to fully exploit their market position.

### 3 Dissemination activities

#### 3.1.1 Website and Social Media Management

The Project Website is regularly updated with relevant news items about the project. Thanks to the communication and dissemination strategy described in chapter 2, E-LOBSTER website has already been **viewed more than 11.000 times**, as shown in the following website analytics.

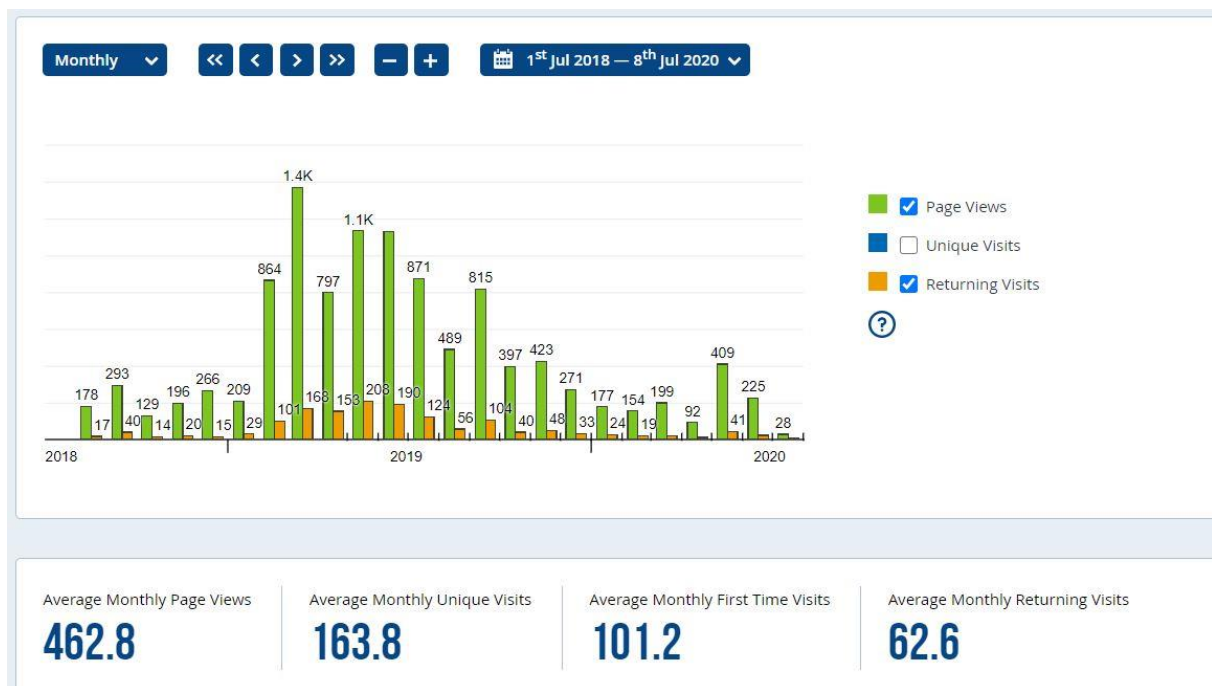


Figure 3.1: E-LOBSTER Website Analytics

The project has also achieved very good results on Twitter: currently the account has **182 followers** and **284 tweets were published**.

More details are provided by the following Twitter analytics.

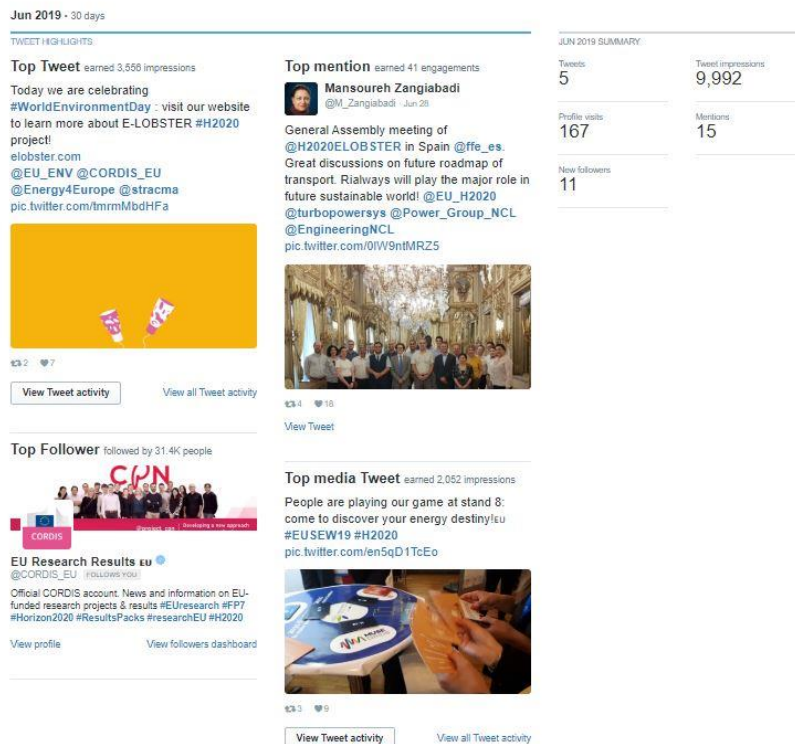


Figure 3.2: Twitter Analytics – June 2019

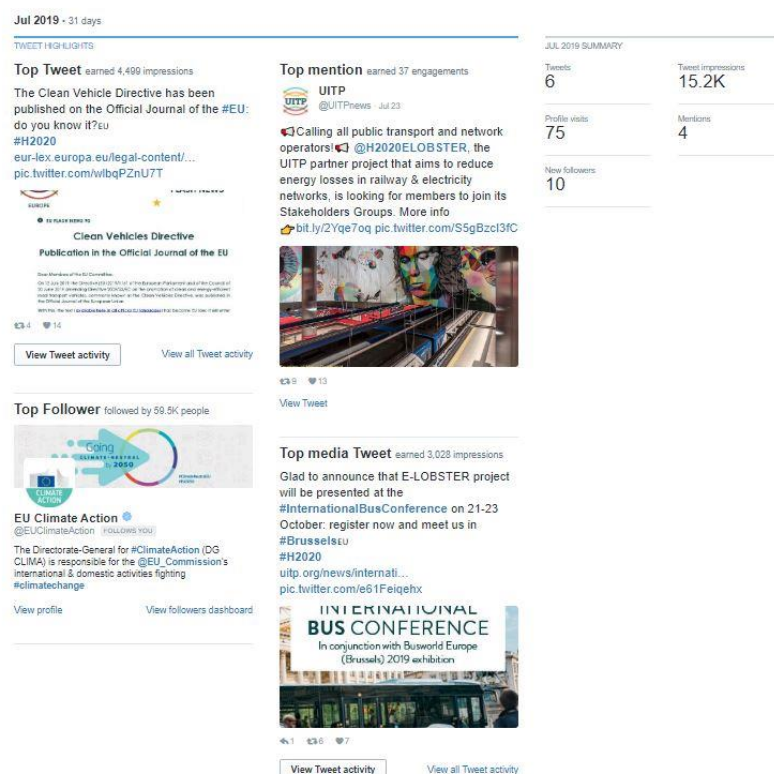


Figure 3.3: Twitter Analytics – July 2019

### 3.1.2 Videos

---

The Project Consortium decided to make a **project promotional video** (<https://vimeo.com/339554718>) because:

- 78% of people watch online videos every week, and 55% view online videos every day (HubSpot);
- 55% of people pay close attention when consuming videos, more than all other types of content (HubSpot);
- Social video generates 1200% more shares than text and image content combined (Wordstream);
- 52% of marketers say video is the type of content with the best ROI (Return of Investment) (HubSpot);

E-LOBSTER video follows the principles of the so called “**Consumer Processing Model**”, which is a basic psychological model that explains how people process information and how they use logic and reason to buy a product based on the features or solving a problem.

The video therefore presents the project’s challenges proved by data and it gained **more than 700 views** just on the project social media.

Moreover, the video has also been showed during trade fairs.



**Figure 3.4: E-LOBSTER Project Video**

Also other short videos have been created to engage a wider audience on E-LOBSTER social media as shown in the following figures.



Figure 3.5 :Video for Summer Break 2018



Figure 3.6: Live video of a General Assembly



Figure 3.7: Video for Christmas Greetings 2018



Figure 3.8: Video to celebrate Europe Day 2019





Figure 3.9: Video to celebrate World Environment Day 2019



Figure 3.10: Video to promote the participation at EUSEW 2019





Figure 3.11: Summer Break 2019 video



Figure 3.12: Video for Christmas Greetings 2019

### 3.1.3 Infographics and other relevant materials

To promote the project, infographics are uniquely positioned to give consumers and decision-makers a deep understanding of that project.

Infographics help people learn information or understand complex concepts and visuals have been known to improve learning and retention by 400%<sup>7</sup>.

For this reason, the Project Consortium developed the following infographic, mainly targeting the general public in order to convey E-LOBSTER Project Concept in a simple and easy to understand way.



E-LOBSTER is a EU funded project started in June 2018 to develop an Innovative R+G (Railway to Grid) Management system which, combined with advanced power electronics, will be able to reduce electricity losses in both the power distribution network and the light railway network.

The system will be able to make the best use of the available energy on both the grids by increasing their mutual synergies and maximizing the consumption of local Renewable Energy Sources (RES) production through electric energy storages.

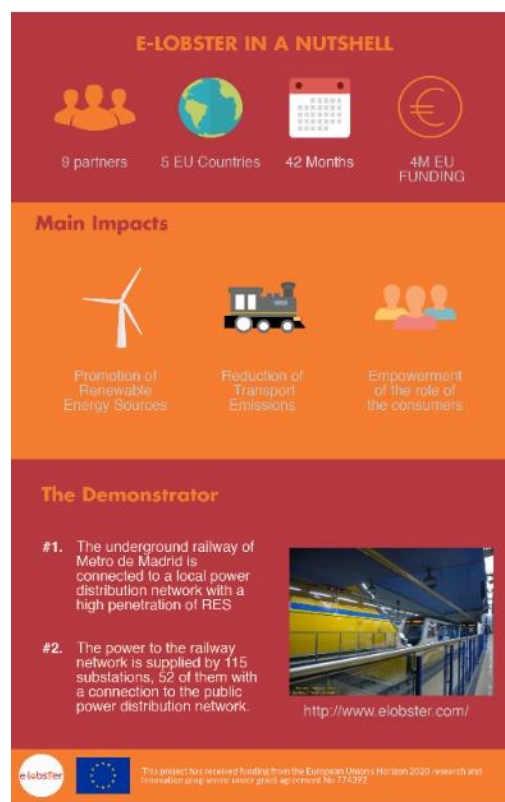


Figure 3.13: E-LOBSTER infographic

<sup>7</sup> <http://172yv5uzmfx1i8apy2vvn3vs-wpengine.netdna-ssl.com/wp-content/uploads/2017/10/Report-State-Of-Infographics.pdf>

Moreover, “E-LOBSTER boarding game” has been created for the event “EUSEW 2019” and used also in other occasions: players have to answer questions about the project through the cards representing E-LOBSTER assets. The award for the winner is a specific project bookmark.



Figure 3.14: E-LOBSTER asset cards



Figure 3.15: E-LOBSTER bookmark

### 3.1.4 GIFs and other remarkable actions on social media

During COVID-19 outbreak, the Project Consortium took part in the communication campaign **#StayAtHome** launched on social media and developed a specific GIF made up of all the pictures of project partners while they were doing smart working at home.

The GIF was also used to convey the positive message that, despite all the difficulties caused by the emergency, E-LOBSTER Project Consortium did not give up and kept working to achieve the project goals.



Figure 3.16: E-LOBSTER GIF

Moreover, E-LOBSTER supported the **“#EUnite Campaign”** launched on social media in the framework of Europe Day 2020 (9 May 2020).



Figure 3.17: Let's #EUNITE Campaign



### 3.1.5 Stakeholders Digital Booklet and Informational Sheet

RINA created the E-LOBSTER project booklet in collaboration with UITP.

The E-LOBSTER booklet<sup>8</sup> highlights the **project background**, the **concept**, **project main enabling technologies**, the **most interesting public documents for the stakeholders**, the **main project milestones**, the **main impacts of E-LOBSTER** and the **quotes of the project coordinators**.

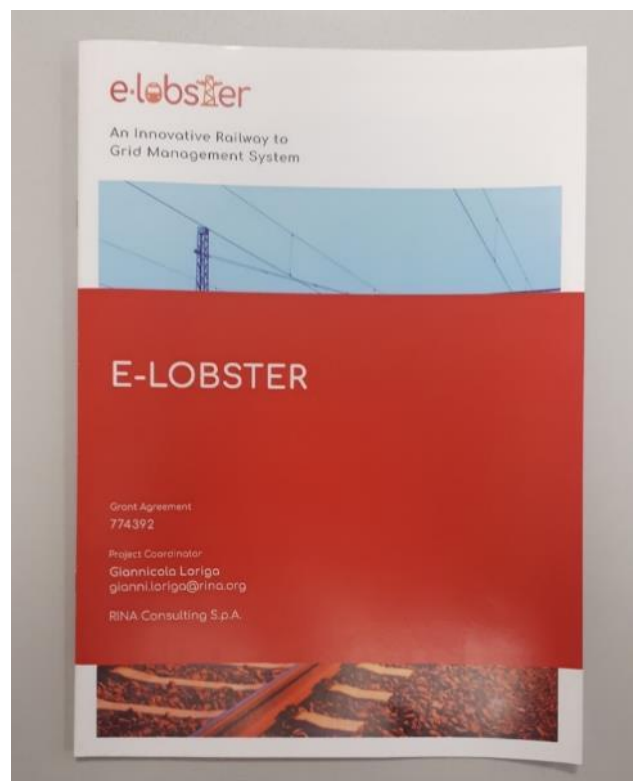


Figure 3.18: Stakeholders Digital Booklet Cover

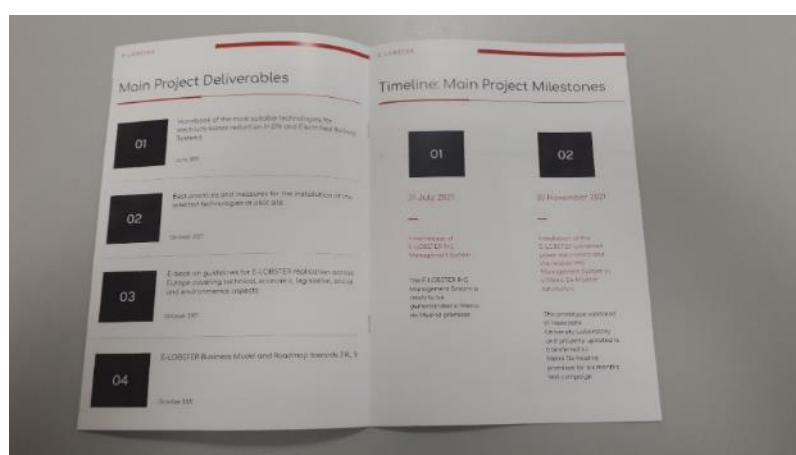


Figure 3.19: Stakeholders Digital Booklet

<sup>8</sup>available here <https://shared.rina.org/SCresources/Documents/elobster-stakeholders-v3.pdf>

Moreover, in order to promote the E-LOBSTER stakeholders' groups, RINA and UITP worked on the communicational materials targeted to E-LOBSTER Stakeholders for the recruitment of the members.



Figure 3.20: Stakeholders Group Informational Sheet

### 3.1.6 First Stakeholder Workshop

The E-LOBSTER Public Transport Stakeholder Group meeting was aligned to UITP's Electrical Installations and Safety Systems Subcommittee (EISS) under UITP's Metro Assembly, which took place between **20th-22th November 2019 in Madrid** (Spain). Thanks to good collaboration with EISS body of UITP, the E-LOBSTER's Stakeholder Meeting was made a part of their working agenda.

This opportunity immensely helped E-LOBSTER consortium members to have a group of experts across globe albeit mainly European and receive their feedback in terms of technics, operations, business and legislative aspects during the discussions held in the meeting.

The meeting gathered the E-LOBSTER partners (RSSB, University of Birmingham, University of Newcastle, FFE, RINA Consulting, Metro de Madrid and UITP) as well as PT Operators.

**The workshop gathered 36 participants among which 15 were E-LOBSTER project partners and 21 were Public Transport Stakeholders. The nationality of the companies represented at the meeting cover Italian, Spanish, Finnish, Czech, French, British, Austrian, Russian, Canadian, Brazilian and Belgian.**

During the session, the E-LOBSTER consortium made a series of presentations with an overview of the project, its concepts, objectives, an overview of the European regulatory framework and the viability of the project from the users' point of view. The presentations triggered the discussions with the PT Operators, which gave their feedback on the aim and objectives of the E-LOBSTER concept. In particular, the online tool Mentimeter (<https://www.mentimeter.com/>) was used to break the ice with the workshop attendees and engage them more easily in the debates.

In this sense, the agenda content was as follows:

- Overview and objectives of the project and technical discussions;
- Policy developments and business opportunities for the E-LOBSTER project;
- Technical discussions (Technical scenarios and challenges).

After the workshop, a project questionnaire was sent to E-LOBSTER stakeholders in order to ask them feedbacks and suggestions about the project.

As background information for the stakeholders, the E-LOBSTER digital booklet was distributed.

### 3.1.7 Second Stakeholders Webinar

Due to COVID-19 outbreak, E-LOBSTER second stakeholders' workshop was organised in a digital format.

In particular, "E-LOBSTER DSO and Technology Provider Stakeholders' Webinar" took place on 22 September 2020 from 10.00 to 12.30 CEST on RINA GoToWebinar platform.

A massive communication campaign has been launched to promote the webinar and engage as many stakeholders as possible:

- Project website: <http://www.e-lobster.eu/webinar-e-lobster-dso-and-technology-provider-stakeholders/>
- Project social media
- RINA website: <https://www.rina.org/en/media/events/2020/09/22/elobster-project-webinar>
- Partners social media and newsletters.

Specific promotional banners were designed to promote the event.



Figure 3.21: Webinar promotional banner





**Figure 3.22: Webinar promotional banner**



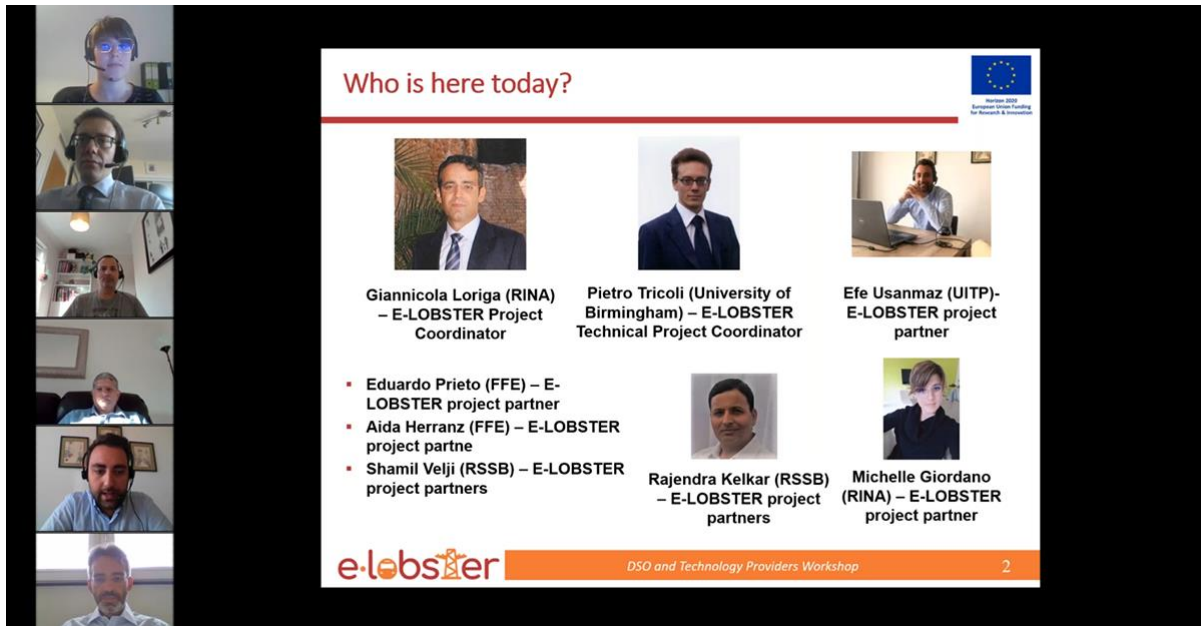
**Figure 3.23: Webinar promotional banner**

During the event, project partners discussed specific research and technical results of the E-LOBSTER system and exchanged a lot feedback and opportunities with the stakeholders.

In particular, the agenda of the event included:

- Welcome & Opening of the Meeting
- Presentation about project overview and objectives
- Get to know each other: Online polls and Tour de table: Brief introductions by participants and interests in participating E-LOBSTER project stakeholder group
- E-LOBSTER's latest technical, regulatory and business achievements
- Interactive Session I: Technical Discussions. Roundtable discussions on technical results: Integration of renewable resources; synergies between metro and electric buses/EVs charging to develop smart transport solutions guided by online polls and questions
- Interactive Session II: Policy, Regulation and Business Discussions. Discussions on the link between the future legislative framework and the business opportunities for the future replication of the E-LOBSTER solution guided by online polls and questions. Collection of needs, challenges and opportunities identified by DSO and technology provider stakeholders point of view. Q&A, discussions and feedback.
- End of the meeting & Next Steps

Two short videos and 20 live polls were created to engage stakeholders during the webinar and encourage interaction and debates around the project.



**Who is here today?**

Giannicola Loriga (RINA) – E-LOBSTER Project Coordinator

Pietro Tricoli (University of Birmingham) – E-LOBSTER Technical Project Coordinator

Efe Usanmaz (UITP)- E-LOBSTER project partner

Eduardo Prieto (FFE) – E-LOBSTER project partner

Aida Herranz (FFE) – E-LOBSTER project partner

Shamil Velji (RSSB) – E-LOBSTER project partners

Rajendra Kelkar (RSSB) – E-LOBSTER project partners

Michelle Giordano (RINA) – E-LOBSTER project partner

e-lobster DSO and Technology Providers Workshop 2

Figure 3.24: E-LOBSTER webinar



**Let's get to know each other**

1. Raise your hand on GoToWebinar panel when you would like to speak
2. We are going to activate your microphone and you can introduce yourself

e-lobster 22.09.2020, DSO and Technology provider Stakeholder Workshop 14

Figure 3.25: E-LOBSTER webinar

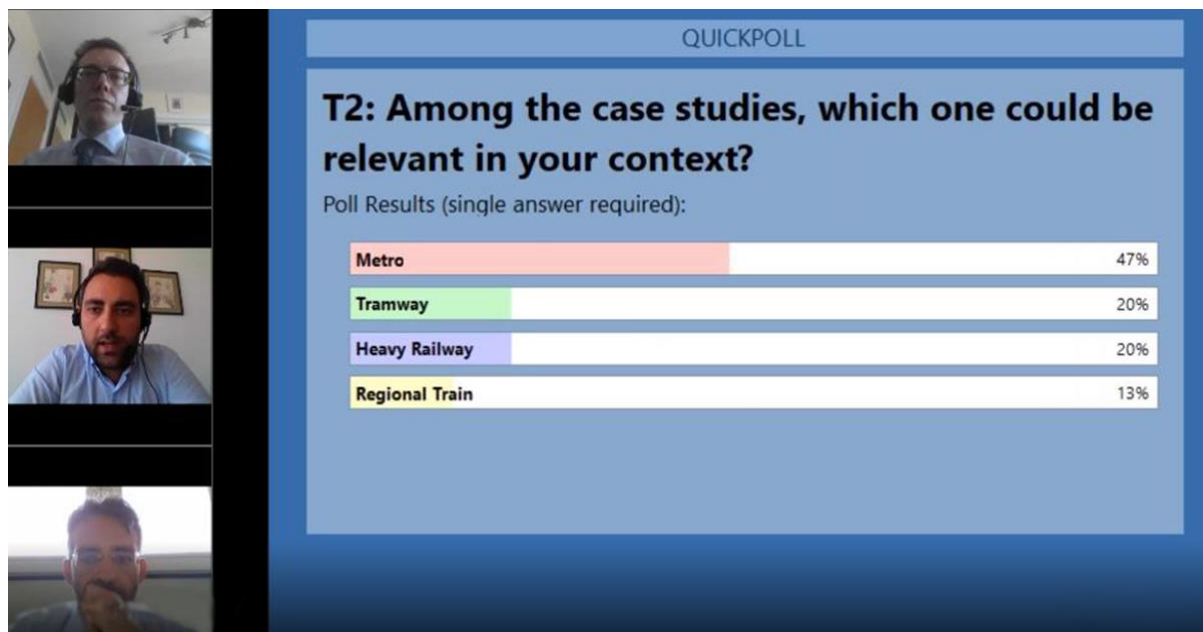


Figure 3.26: E-LOBSTER webinar



Figure 3.27: E-LOBSTER webinar video



Figure 3.28: E-LOBSTER webinar video

Last but not least, to be compliant with GDPR, a specific privacy policy was developed and accepted by project stakeholders during the registration for the webinar, which is available on the project website: <http://www.e-lobster.eu/wp/wp-content/uploads/2020/08/E-LOBSTER-DSO-technology-provider-webinar-privacy-policy.pdf>

### 3.1.8 Conferences and Trade Fairs

The Project Consortium took part in many conferences and trade fairs to disseminate E-LOBSTER results.

Below, there is the list of the main ones:

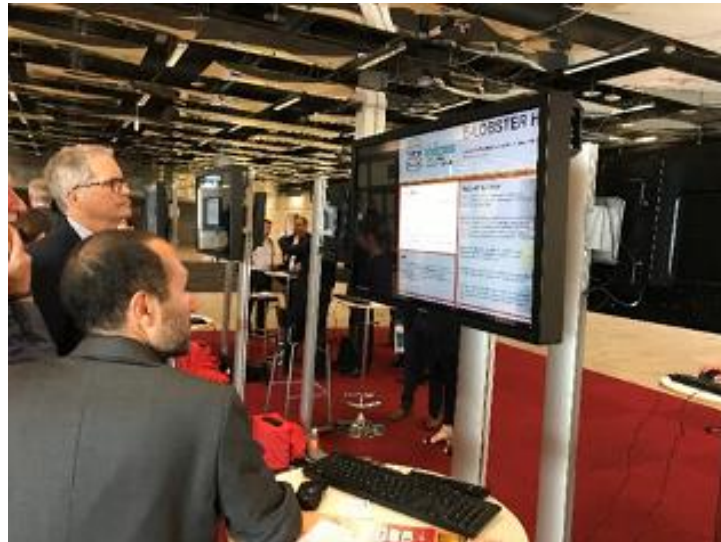
- **EU Light Rail Conference in Brussels** (<http://www.eulightrail.com/>): UITP's Rail Director, Mr. Laurent Dauby presented UITP's Urban Rail Statistics and mentioned the opportunity to attend the E-LOBSTER Stakeholder Groups to the stakeholders who were attending to the event. Some stakeholders contact was acquired through the attendance to this event on 16 and 17 May 2019.



Figure 3.29: EU Light Rail Conference



- **UITP Global Public Transport 2019:** E-LOBSTER Poster Session “Supporting E-Bus Large Scale Deployment” was attended by more than 50 stakeholders and the project was disseminated also at the UITP Stand



**Figure 3.30: UITP Global Public Transport 2019**

- **EUSEW 2019:** E-LOBSTER had a stand in the framework of EUSEW Networking Village together with SMILE and MUSE GRIDS H2020 projects<sup>9</sup>. A massive Social Media Campaign “What is your energy destiny?” was launched to promote the project participation to the EU Sustainable Energy Week 2019. Then, a specific experience was created for stand visitors: the first step consisted in watching a video uploaded on E-LOBSTER Twitter Account and take a screenshot. Stand visitors who took a screenshot of E-LOBSTER logo had to answer questions about the project through the cards representing E-LOBSTER assets. Finally, all stand visitors who took part in E-LOBSTER gamification experience won a special gadget: a bookmark representing their energy destiny. **More than 250 stakeholders visited the stand and 40 took part in E-LOBSTER experience.** The project also gained a special Remark from INEA Official Twitter Account.

---

<sup>9</sup> [https://eusew.eu/2030-eu-energy-grids-%E2%80%93-how-manage-them-towards-maximisation-use-renewable-energy-sources?fbclid=IwAR2V3BM08fPQcptz1nGnj23-i5I-FrTfnuXnH8O9d5KDBwSyh-zB\\_2Dp4j8](https://eusew.eu/2030-eu-energy-grids-%E2%80%93-how-manage-them-towards-maximisation-use-renewable-energy-sources?fbclid=IwAR2V3BM08fPQcptz1nGnj23-i5I-FrTfnuXnH8O9d5KDBwSyh-zB_2Dp4j8)



Figure 3.31: EUSEW 2019

- **UITP Bus Conference 2019** (<https://www.busconference.com/about/>): E-LOBSTER project leaflets, booklets and invitation material targeted at the E-LOBSTER Stakeholder Groups were displayed and disseminated at the UITP Stand on 21 October 2019



Figure 3.32: UITP Bus Conference 2019

- **European Utility Week 2019**: Distribution of E-LOBSTER Promotional Material at EU Project Zone Stand, which was **visited by more than 500 stakeholders**.



Figure 3.33: European Utility Week 2019

### 3.1.9 Networking

In the framework Shift2Rail Info Day, E-LOBSTER project has been introduced to Shift2Rail IP3 (asset-specific Innovation Programmes), where energy issues are being developed.

Shift2Rail is a joint undertaking composed by the EU Commission and the major rail stakeholders in order to “The vision of the Shift2Rail Joint Undertaking is “to deliver, through railway research and innovation, the capabilities to bring about the most sustainable, cost-efficient, high-performing, time driven, digital and competitive customer-centred transport mode for Europe”. It was born as part of Horizon2020 Framework Program.



Figure 3.34: Shift2Rail Joint Undertaking

Moreover, E-LOBSTER has organised **several communication and dissemination activities jointly with other H2020 projects** such as SMILE and MUSE GRIDS.



### 3.1.10 Scientific Publications

The Project Consortium published 2 open-access publications and 1 is going to be published in December 2020:

- “Comparative Analysis of Topologies to Integrate Photovoltaic Sources in the Feeder Stations of AC Railways”, S. D’Arco, L. Piegari, and P. Tricoli, IEEE Transactions on Transportation Electrification. It is available at the following link: [https://research.birmingham.ac.uk/portal/files/88541157/PLS\\_2col\\_mod.pdf](https://research.birmingham.ac.uk/portal/files/88541157/PLS_2col_mod.pdf)



#### Comparative analysis of topologies to integrate photovoltaic sources in the feeder stations of AC railways

D’Arco, S.; Piegari, L.; Tricoli, P.

DOI:  
10.1109/TTE.2018.2867279

License:  
Other (please specify with Rights Statement)

Document Version  
Peer reviewed version

Citation for published version (Harvard):  
D’Arco, S, Piegari, L & Tricoli, P 2018, ‘Comparative analysis of topologies to integrate photovoltaic sources in the feeder stations of AC railways’, *IEEE Transactions on Transportation Electrification*, vol. 4, no. 4, pp. 951-960. <https://doi.org/10.1109/TTE.2018.2867279>

Figure 3.35: E-LOBSTER paper

- “A study to design the locations of reversible traction substations for minimizing power losses of DC railways”, Zhongbei Tian, Tamer Kamel, Pietro Tricoli, University of Birmingham. It is available for download at the following link: [https://research.birmingham.ac.uk/portal/files/90944218/190531\\_writing.docx](https://research.birmingham.ac.uk/portal/files/90944218/190531_writing.docx)

## A study to design the locations of reversible traction substations for minimizing power losses of DC railways

Zhongbei Tian, Tamer Kamel, Pietro Tricoli  
Department of Electric, Electrical and Systems Engineering,  
University of Birmingham  
Birmingham, United Kingdom  
Tel.: +44 / (0) 121 414 7522  
E-Mail: z.tian@bham.ac.uk

### Acknowledgements

This work has been developed a part of the project E-LOBSTER. This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 774392

**Figure 3.36: E-LOBSTER paper**

- Smart sop architectures and power control managements between light DC railway and LV distribution network, Kamel, Tamer; Tian, Zhongbei; Tricoli, Pietro. It will be published in December 2020, the pre-print version is available at the following link: [https://research.birmingham.ac.uk/portal/files/90981962/PEMD2020\\_Submission\\_Ref\\_0101\\_Paper.pdf](https://research.birmingham.ac.uk/portal/files/90981962/PEMD2020_Submission_Ref_0101_Paper.pdf)

**UNIVERSITY OF  
BIRMINGHAM**  
University of Birmingham  
Research at Birmingham

## Smart sop architectures and power control managements between light DC railway and LV distribution network

Kamel, Tamer; Tian, Zhongbei; Tricoli, Pietro

*License:*  
Unspecified

*Document Version*  
Peer reviewed version

*Citation for published version (Harvard):*  
Kamel, T, Tian, Z & Tricoli, P 2020, Smart sop architectures and power control managements between light DC railway and LV distribution network. in *The 10th International Conference on Power Electronics, Machines and Drives*.

**Figure 3.37: E-LOBSTER paper**

## 4 Exploitation activities and IPR management

The plan for exploiting the foreground generated by the project includes several elements. Given the involvement in the project of industrial players as well as of academic partners, transportation companies, foundations and associations, an appropriate exploitation strategy, to be developed in line with the general rules outlined by the European Commission, must ensure that both industrial as well as academic interests are appropriately taken into account in the exploitation of the foreground generated by the project.

The exploitation plan at this stage of the project may not be complete, as the results of the project are not yet measurable and only a prevision of the expected outcomes is possible at this stage. Nevertheless, an appropriate exploitation strategy needs to be set up well before the availability of final results, as this will allow investigating the best exploitation routes and preparing for the set-up of appropriate agreements among the Partners on the use of the foreground after the project.

### 4.1 Exploitation activities

In the framework of exploitation activities, the following main activities have been carried on:

- The identification of the main Project Results;
- The characterization of the identified Project Results in terms of main innovations proposed, market perspectives and IPR management;
- The evaluation of the main strategies for securing IPR protection;
- The identification of the main exploitation strategies for the partners involved together with the preliminary identification of main business models to be further detailed and evaluated along the project.

The following paragraphs provide the main outcomes of the activities.

#### 4.1.1 Project Exploitable results identification

During the first reporting period, a **preliminary Exploitation Strategy Seminar was held during the General Assembly in Madrid at M12 organized by RINA-C** in order to carry out a preliminary fine tuning of the Key Exploitable Results by taking into account the first year of the project.

The list of the main refined commercial exploitable results is provided in table below.

Project Results	Partner/s responsible
Railway simulator	University of Birmingham
Smart grid controller tool	University of Newcastle
Integrated distribution losses monitoring and simulation tool (advanced simulator tool for rail electrification systems fully integrated with the power distribution system)	University of Birmingham University of Newcastle
innovative smart Soft Open Point (sSOP)	Turbo Power System Ltd
Energy storage system and Battery Management System	Lithium Balance
R+G energy management system	RINA Consulting

As long as the project goes on, **also activities of cybersecurity, standardization and scaling up** will start and thus, in the final release of the document, it will be agreed with the partners involved if other results related to those activities shall be included (e.g. **cybersecurity handbook, design of E-LOBSTER scaled-up system, new standards for interoperability between energy and light transport sectors**).

## 4.1.2 Characterization of project results

In the following paragraphs, each KER has been preliminarily characterized according to the information available, with particular focus on the innovation, potential customers and exploitation perspectives (including IPR management). Each Key Exploitable Result has been characterized, by describing it and by indicating the innovation introduced with respect to already existing Products/Services. The owner and other partners involved in the development of the results were identified. Furthermore, the characterization included the preliminary analysis of the benefits brought to potential customers, the identification of potential competitors and alternative solutions as well as the potential exploitation strategy. As already explained in Table 2.1, some of the information considered confidential will be included only into the restricted version, namely the D6.12.

### 4.1.2.1 Railway simulator

Railway Simulator (Multi-train Railway simulator)	
<b>Exploitable Result description</b>	This exploitable result is focused on a simulation software for the analysis of the railway network, taking into account the trains movement, the operations. Thanks to the traction power network analysis, the tool will predict the power consumption of the trains. Skilled people needed
<b>Innovation introduced with respect to already existing Products/Services.</b>	Numerical analysis of single /multiple trains movement, operation and traction power network simulation. Main innovations proposed are modularity and flexibility.
<b>Owner and other partners involved (please mention the contribution of each partner)</b>	University of Birmingham (100%)
<b>When is the expected date of achievement in the project (M?)</b>	M12
<b>Possible customers</b>	Railway Network Companies
<b>Benefits brought to the customers</b>	Simulation of the train movement, operation, power, energy consumption and traction power network performance
<b>Sector(s) of application</b>	Railway Network Companies
<b>Alternative sectors</b>	-

#### 4.1.2.2 Smart grid controller toolbox

Smart Grid Toolbox	
<b>Exploitable Result description</b>	The Smart Grid Toolbox is an Object based Smart Grid Toolbox relying on a numerical analysis of the power flow in the electrical railway network taking into account the impact on the Distribution System Operator network.
<b>Innovation introduced with respect to already existing Products/Services.</b>	Numerical analysis of power flow in Electrical Railway network and the impact on DSO supply providers the railway network
<b>Owner and other partners involved (please mention the contribution of each partner)</b>	University of Newcastle
<b>When is the expected date of achievement in the project (M?)</b>	M18
<b>Possible customers</b>	-Railway Network Companies -Electric Grid Operators, DSO, TSO, Utilities
<b>Benefits brought to the customers</b>	Simulation of Electrical Railway network and investigating the impact of Railway on DSO network and the services mutually interacting to optimize the interexchange between the networks
<b>Sector(s) of application</b>	DSO, TSO and utilities
<b>Alternative sectors</b>	

#### 4.1.2.3 Integrated distribution losses monitoring and simulation tool

The Integrated Distribution Losses Monitoring and Simulation	
<b>Exploitable Result description</b>	Advanced integrated simulator with railway and smart-grid toolbox This result is relevant to a software for the prediction of losses in the railway and electricity distribution grid. It is a tool for the evaluation and mapping of losses on distribution and transport networks based on a numerical analysis.
<b>Innovation introduced with respect to already existing Products/Services.</b>	Numerical analysis of single /multiple trains simulation integrated with the simulation of the DSO of the electrical grid supplying the railway network
<b>Owner and other partners involved (please mention the contribution of each partner)</b>	University of Birmingham University of Newcastle
<b>When is the expected date of achievement in the project (M?)</b>	M24
<b>Possible customers</b>	Railway Network Companies Electric Grid Provider
<b>Benefits brought to the customers</b>	Simulation of the trains loading power along with the interaction with simulation of the grid network in order to achieve the optimum approaches to minimizing the power losses in both networks. This module in combination with the R+G Management platform will represent an added value for clients operating in the energy and transport sectors.
<b>Sector(s) of application</b>	-Railway Network Companies -Electric Grid Provider
<b>Alternative sectors</b>	-



#### 4.1.2.4 Smart Soft Open Point (Ssop)

Ssop- Smart Soft Open Point	
Exploitable Result description	Smart Soft Open Point is a new 3-way smart Soft Open Point (sSOP) based on power converters to interface power distribution networks and railway electrification systems. This allows a unique management of the energy between traction substations and distribution network.
Innovation introduced with respect to already existing Products/Services.	Already existing Soft Open Point (SOP) solutions interconnect the distribution power feeders in two or three (2/3) terminals configuration to dynamically manage the power flow between a 2/3 electrically isolated areas of the distribution system. The innovation in E-Lobster is related to interconnecting different types of power sources with different electrical characteristics through functional SOP equipment. The SOP is not only handling the power profile synergies of the normally electrically isolated sources, but also manages the different dynamics related to the different types of these sources. New methods of ensuring the system stability will be developed. In addition, an innovative optimised sSOP structure will result to minimise standby losses yet ensure high dynamic performance.
Owner and other partners involved	Owner: <b>Turbo Power Systems (TPS)</b> Other partners involved: <b>University of Birmingham</b> – to specify the required behaviour of the sSOP to maximise its utilisation, impact on reducing the power losses and the economic benefits to the interconnected systems. <b>RSSB</b> – to specify the design standards especially those related to the rail traction system. <b>Lithium Balance</b> – to specify the requirements for the Energy Storage to be used to maximise the system benefits.
When is the expected date of achievement in the project (M?)	The new design was concluded at M24 (May 2020), the prototype was completed at M28
Possible customers	Rail System Operators, Rail Infrastructure Developers, Power Systems Operators, Third Party System Operators, Private Infrastructure Developers
Benefits brought to the customers	<ul style="list-style-type: none"> <li>• Maximising the utilisation of existing infrastructure.</li> <li>• Maximising the use of existing renewables' generation</li> <li>• Increasing the hosting capacity of existing infrastructure to renewables and intermittent loads (for instance Electric Vehicle charging infrastructure).</li> </ul>
Sector(s) of application	<ul style="list-style-type: none"> <li>• Public electric power systems distribution</li> <li>• Rail electric power system distribution</li> <li>• Private infrastructure power distribution</li> </ul>
Alternative sectors	Electric Vehicles charging infrastructure Private microgrids

#### 4.1.2.5 Energy storage system

Energy Storage System	
<b>Exploitable Result description</b>	Battery storage system able to be integrated with sSOP which integrates railway and distribution grids and provides flexible control.
<b>Innovation introduced with respect to already existing Products/Services.</b>	Battery storage system with advanced diagnostics features that include lifetime prediction and system monitoring and fully integrated with sSOP. Cloud based management.
<b>Owner and other partners involved (please mention the contribution of each partner)</b>	Lithium Balance
<b>When is the expected date of achievement in the project (M?)</b>	M24
<b>Possible customers</b>	Metro and railway system operators, EV Charging Station Owners, DSOs (under specific regulatory conditions), grid operators
<b>Benefits brought to the customers</b>	Storage of energy (energy buffer) between railway and distribution grids. It allows for better power management and losses minimisation in both electrical systems. Moreover, it allows for providing ancillary services to the grid and better integration of renewables.
<b>Sector(s) of application</b>	Railway, metro, distribution and low voltage grids;
<b>Alternative sectors</b>	

#### 4.1.2.6 R+G energy management system

R+G Management System	
Exploitable Result description	The E-LOBSTER R+G Management system will deal with a Multi-Input Multi-Output problem, handling a large amount of data. Actually, the R+G Management System provides a unique platform for real-time energy flow management between rail, grid and storage aiming at a multi-objective optimization of the two energy networks, increasing the self-consumption of RES locally connected to the distribution network and regenerative braking and investigating of proper charging/discharging strategies of EVs.
Innovation introduced with respect to already existing Products/Services.	The E-LOBSTER R+G Management System by providing a unique platform for real-time energy flow management between rail, grid and storage allows the optimization of the three energy networks with a substantial reduction of power losses (- 10%) and improved power quality. The role of the R+G Management system is to make best use of the available energy on both the grids in order to optimize a particular “mutual KPI” of the grids (typically reduce energy losses and therefore optimizing the cost) through a holistic approach. The aforementioned smart coordination is performed by the core component of R+G system, The E-LOBSTER a controller able to handle with its “two claws” the two networks governing the mutual benefit interexchange of electricity: The E-LOBSTER is the core of the R+G management system as it controls the interface between the two grids: it will act to optimize the management and the control of the smart Soft Open Point which allow both bidirectional transfer of power between networks maximizing the efficiency and reducing losses
Owner and other partners involved (please mention the contribution of each partner)	RINA Consulting S.p.A. is developer of the software platform. University of Birmingham and University of Newcastle defined the control strategies TPS and Lithium Balance support the integration of sSOP and Electrical Storage System
When is the expected date of achievement in the project (M?)	At M32, it is expected the Final Integrated R+G System Design for demonstration
Possible customers	Rail System Operators, EV Charging Station Owners, DSOs, Rail Infrastructure Developers, Power Systems Operators
Benefits brought to the customers	Real-time energy flow management between rail, grid and storage allowing the optimization of the three energy networks with a substantial reduction of power losses and improved power quality.
Sector(s) of application	Power Generation sector Railway sector RES sector
Alternative sectors	-

### 4.1.3 Exploitation Strategies

---

When dealing with exploitation strategies, generally both the perspective of the consortium as a whole as well as the individual partner intention are taken into consideration. **Within this public version of the document, only the general overview of the exploitation strategy at the project level is provided in order to give an idea of the perfect mix of knowledge, expertise and competitiveness of the consortium as a whole towards the final exploitation of the E-LOBSTER complete system.** Confidentiality related to the single partner business strategy after the end of the project is kept confidential and is provided in D6.12.

#### 4.1.3.1 Exploitation Strategy at project level

---

The E-LOBSTER consortium includes **9 partners from 5 countries** (Italy, Belgium, Denmark, Spain, UK) **each having specific and high value knowledge in all needed scientific and technological branches required for meeting the objectives of the project also representing very different electrical markets.** The consortium consists of:

- **Two top-level Academic Institutions** in the field of Smart Grids and Power Electronics, and Railway networks that benefit and complement each other in terms of knowledge in the proposed project:
  - **University of Birmingham** (RTO-UK) provided its know-how in the power electronics and electrical drive sector, with a special focus on Railway networks, implementing new modelling for monitoring distribution losses and it will exploit its industrial and academic network for the dissemination of the project.
  - **University of Newcastle** (RTO-UK) have already a large number of collaborations with industries, transport managers and energy utilities for strengthening and pushing research towards the market, in this project they are sharing their excellent know-how about Smart grid and their laboratory facilities for the validation of the E-LOBSTER solution.
- **Four industrial partners: two Large Enterprise (LE<sup>10</sup>) and two Small and Medium Enterprises (SME<sup>11</sup>s)** to ensure that a real industrial and commercial vision:
  - **RINA Consulting** (LE–Italy) has a comprehensive experience and a proven track in coordinating EU projects. The company has a wealth of knowledge in engineering and it has an impressive track record of projects in the field of energy and energy efficiency and specific skills in the innovation transfer process, transport engineering and ICT.
  - **Metro of Madrid** (LE–Spain) is providing expertise from the monitoring data of their underground network (the 7th longest metro in the world, having a total length of 293 km serving approximately the fiftieth most populous metropolitan area in the world) in order to study how to integrate the E-LOBSTER sSOP and R+G Management system with the operating constraints of light railway networks, reducing their energy consumption.
  - **TurboPowerSystem Ltd** (SME-UK) brings the expertise of designing and construction of power electronics. TPS leverages its expertise coming from other high-level research experience about the integration of RES and microgrid in the railway sector.

---

<sup>10</sup> Large Enterprise

<sup>11</sup> Small and Medium Enterprise

- **LITHIUM BALANCE** (SME-DK), an innovative SME founded in 2006, is in charge of developing an effective storage solution for E-LOBSTER concept.
- **Two stakeholders' related associations and one Foundation**, deeply oriented to research for new market opportunity for their members. Indeed, Standards, policy and regulation are being studied under the guidance of **RSSB** (Association, UK), a not for-profit leader organization whose purpose is to support rail industry in designing standards and policy towards the innovation of Railway transports, with the active support of two organization: **UITP** (Association, BE) which handle a wide network of transport and railway managers that could orientate the progress of the project and provide useful data and information Electrical Storage and its Battery Management System and **FFE** (ES) a public non-profit foundation, responsible for promoting the scientific and technological development of railways as well as the conservation of its historical and cultural heritage.

As depicted by this overview, E-LOBSTER partners have been carefully selected based on the added value they give to the project. All partners are highly committed to the approach and the objectives of E-LOBSTER and each of them are providing diverse skills and capabilities required for the implementation of the project. In this framework, the industrial partners represent global key actors in the value chain for the development and realization of the E-LOBSTER whole system, from the preliminary design of the power electronics of the ELOBSTER sSOP to the Management system while academic partners come from technology and business development oriented research groups, guaranteeing a proper exploitation of the project results.

Taking into account the project evolution, exploitation routes for exploiting the E-LOBSTER core system, relying on the R+G Management system, the sSOP and the Battery Energy Storage System, have been analyzed, to achieve by the closure of the project, the definition of the potential most appropriate commercialization strategy to reach the market as a consortium.

Given the collaborative nature of a European project, potential routes for Key Exploitable Results may foresee not only the cooperation of more than 2 partners but also the cooperation of the overall consortium.

There could be several possibilities to follow at consortium level towards the exploitation of E-LOBSTER project, leveraging on the experience and know-how gained within the project itself.

Regarding the 3 key E-LOBSTER components (R+G Management system, the sSOP and the Battery Energy Storage System), since the requirement phase, they have been conceived in order to maximize the integrability in the overall E-LOBSTER system. In this framework, each sub-system developers (RINA, TurboPowerSystem and Lithium Balance) could provide its components to be installed by a service provider according to developers' guidelines. This approach will allow the developers to provide their integrated solutions without managing directly the installation in site (by relying on a local installer for this task and by avoiding to maintain a fix "structure" for the site installation) and by focusing in particular on the commercialization and marketing aspects. This approach at least in the early commercialization phase will allow save fix structure costs. It is worth to mention that the ambition is to commercialize an enhanced version of the E-LOBSTER system which needs to be upscaled and demonstrated at TRL 8 (target 2023) for the complete commercialization of the layout since 2025.

Other preliminary business model that could be posed at the attention of the consortium in the next months could be:

- the commercialization of the new energy systems by a concessionary partner: the system could be provided as a turn-key solution to customers comprehensive of all the enabling technologies and the main concessionary partner may also provide full assistance to potential customers for the techno-economic assessment of the solution prior to any investment decision by the customer. The concessionary partner may moreover offer a full maintenance service to customers that will be covered by a full maintenance contract, which will thus also concur to generate revenues together with sales of the system.

Given the status of the project, the above mentioned potential routes shall be still discussed and properly evaluated at consortium level in order to define the roadmap towards their implementation as well as potential barriers that may occur.



## 5 Conclusions and next steps

---

This document constitutes the “First version of plan for use and dissemination of foreground, including the KER” in the framework of the E-LOBSTER project and refers to activities carried out by RINA with respect to exploitation and IPR management as well as dissemination activities. Indeed, it represents the public version of the “Plan for the Use and dissemination of foreground for the KER results” aimed at defining a proper exploitation and dissemination strategy, relying on the following activities:

- An overview of the project framework and status in order to provide the overall picture of the context in which project results have been developed and disseminated;
- Definition and description of the exploitation and dissemination methodological approach;
- Definition and identification of Project Results: totally 6 results have been identified with the related Responsible Partners;
- Preliminary characterization of the identified PRs: each result has been described in terms of innovation, potential customers and exploitation perspectives by mean of proper templates (some information will be included in the restricted version for confidential reasons);
- Preliminary Exploitation Strategy, at project level (as the individual exploitation strategy at partner level will be included within the restricted version). Concerning the overall E-LOBSTER exploitation strategy, at this stage of the project a very preliminary overview is provided, highlighting the consortium mix of knowledge and proper balance in terms of competences and competitiveness towards the creation of the market conditions for the deployment of the first commercial system.
- Overview of the main principles related to the IPR management with respect to the E-LOBSTER project, underlining the potential strategies available for securing the IPR generated by the partners.

At the end of the project a new release of the document will be released (“Final version of plan for use and dissemination of foreground, including business models for the KER results”) providing the results related to the following activities:

- Final update of the KER tables
- Final IP strategy
- Risk assessment analysis for exploitable results
- Exploitation strategies at partner and at project level
- Business model definition and development;