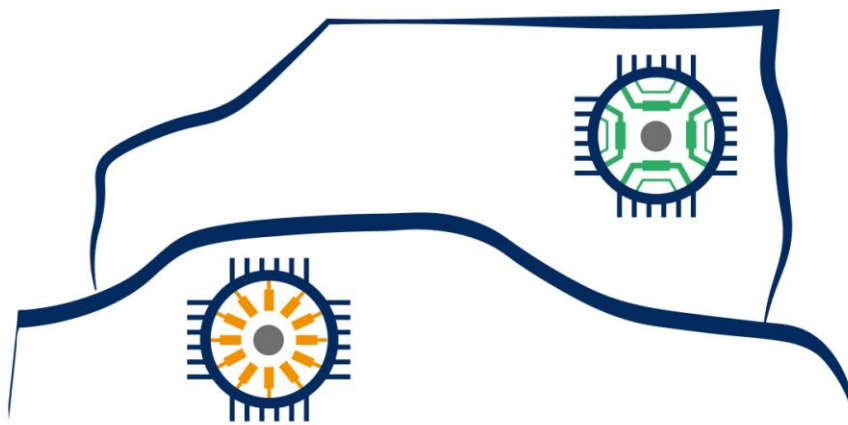




## Rare Earth Free e-Drives Featuring Low Cost Manufacturing



# ReFreeDrive

Collaborative Project

Grant Agreement Number 770143

Start date of the project: 1<sup>st</sup> October 2017, Duration: 36 months

This project has received funding from the European Union's Horizon 2020 research and innovation

**Work Package:** WP9 Dissemination and Communication

**Deliverable no.:** D 9.1

**Title of the deliverable:** Project Website

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Work package contributing to the deliverable:	WP9
Nature:	Other (Website)
Version:	03

REVISION TABLE		
Document version	Date	<i>Modified sections - Details</i>
V01	21.12.2017	First Full Section by CIDAUT
V01	21.12.2017	Quality Assessment by ECI
V02	21.12.2017	Feedback Implementation by CIDAUT
V03	24.04.2018	Reworked attending to the European Commission feedback.

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## Abbreviations

GA Grant Agreement

JLR Jaguar Land Rover

WP Work Package

## Executive Summary

This document shows the design and distribution of the ReFreeDrive website that is already prepared to open its access for all people with interest on the ReFreeDrive project. Its objective is to merely prove and document the existence of this website, its structure and contents. This objective has been fully accomplished and there have been no deviations in content or time from the deliverable objectives set out in the ReFreeDrive Grant Agreement.

ReFreeDrive website has two main purposes: the first and foremost is to act as a framework for all the dissemination and communication activities, linking to the relevant events or information of the project. A second purpose is to allocate the project's confidential information, by linking to a cloud folder where all partners can exchange information.

The URL of the website is: <http://www.refreedrive.eu/>

## 1 ReFreeDrive Website

The website of the ReFreeDrive project has been designed and updated with the information of the proposal, and the first steps that have been done into the project progress.

The web site has been distributed on 9 tabs or sections, which are explained hereafter in more detail. A screenshot is included to show the design that has been selected for each purpose.

A common framework has been designed for all the tabs, shown in Figure 1. This framework contains the Project logo, the structure of the content, the European Union emblem, and the Grant Agreement number, along the quotation acknowledging the funding received.

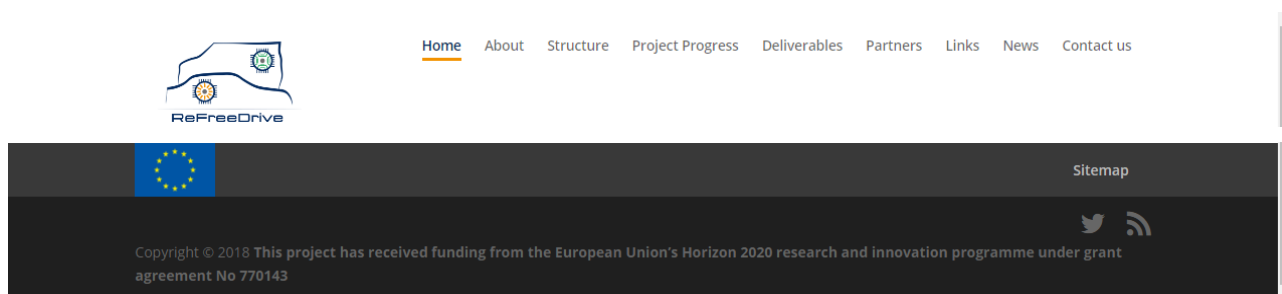


Figure 1: Page Header and Page footer of the website

On the header the logo and the menu for the several tabs appear.

On the footer the information about the funding of the project and the links to Twitter and the private cloud folder of the project are included.

### 1.1 Private folder

The private folder complies with the objective of allowing an easy and confidential communication exchange between the project partners.

When clicking on the icon at the page footer, the user will get redirected to the project folder. This folder, intended for internal use, is the site that project partners will use to exchange information. The general structure of this folder is shown in the following figure:

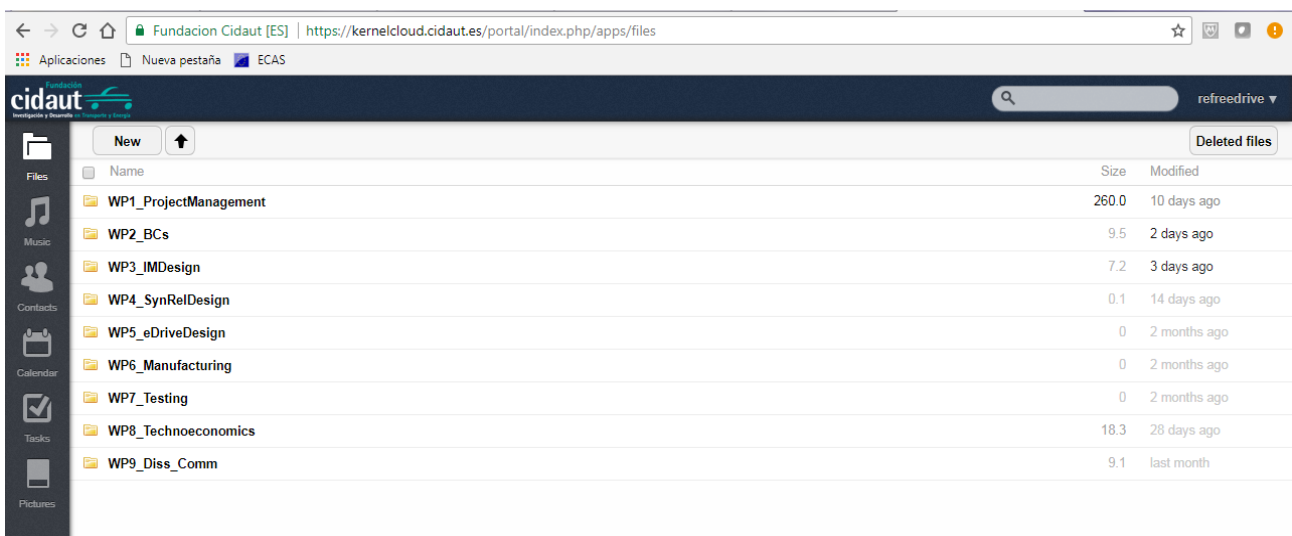


Figure 2. General structure of the private cloud folder

The Project Management folder stores the project’s general documents, such as the Grant Agreement, the Consortium Agreement, the contact lists, and the meetings and minutes of the meetings held, both face to face and monthly progress meetings. The structure of this work package is shown in the

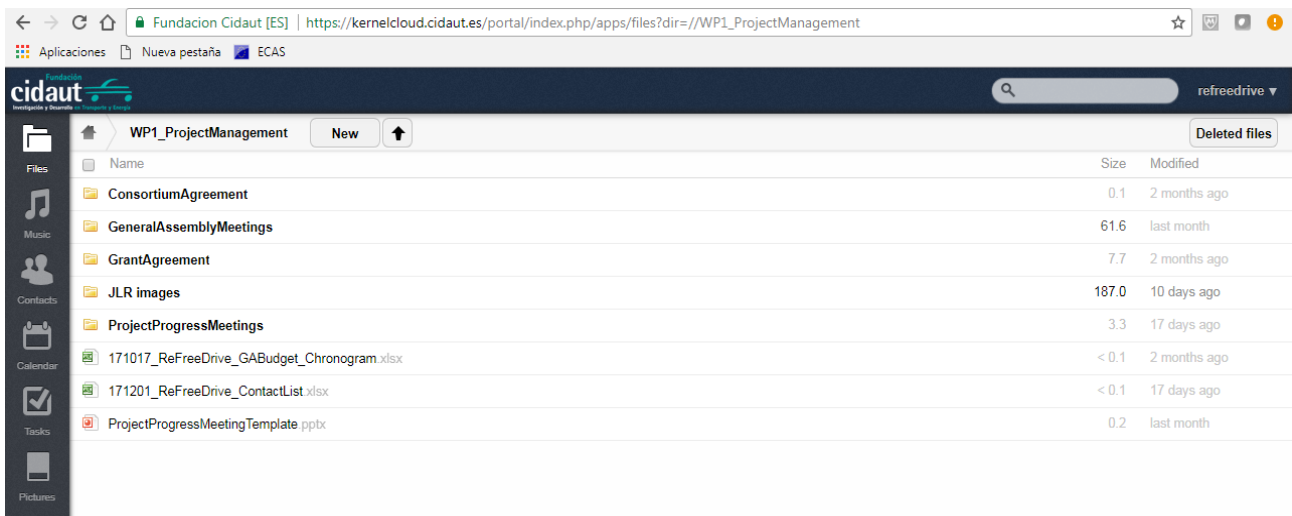


Figure 3. Structure of the Management work package

The rest of the work package folders follow a similar structure, with folders dedicated to Deliverables, Data and Planning. The use and content of each of these folders will evolve with the project progress and needs.

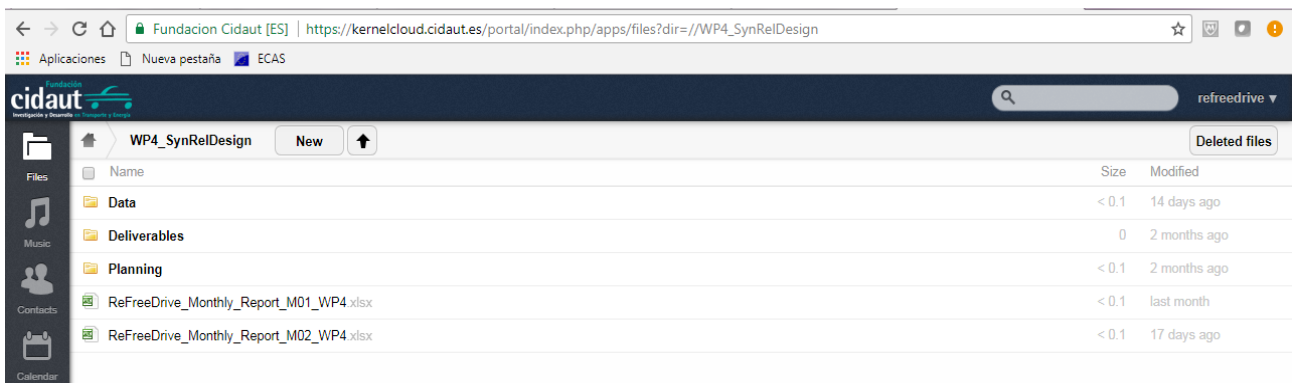


Figure 4. WP4 folder structure

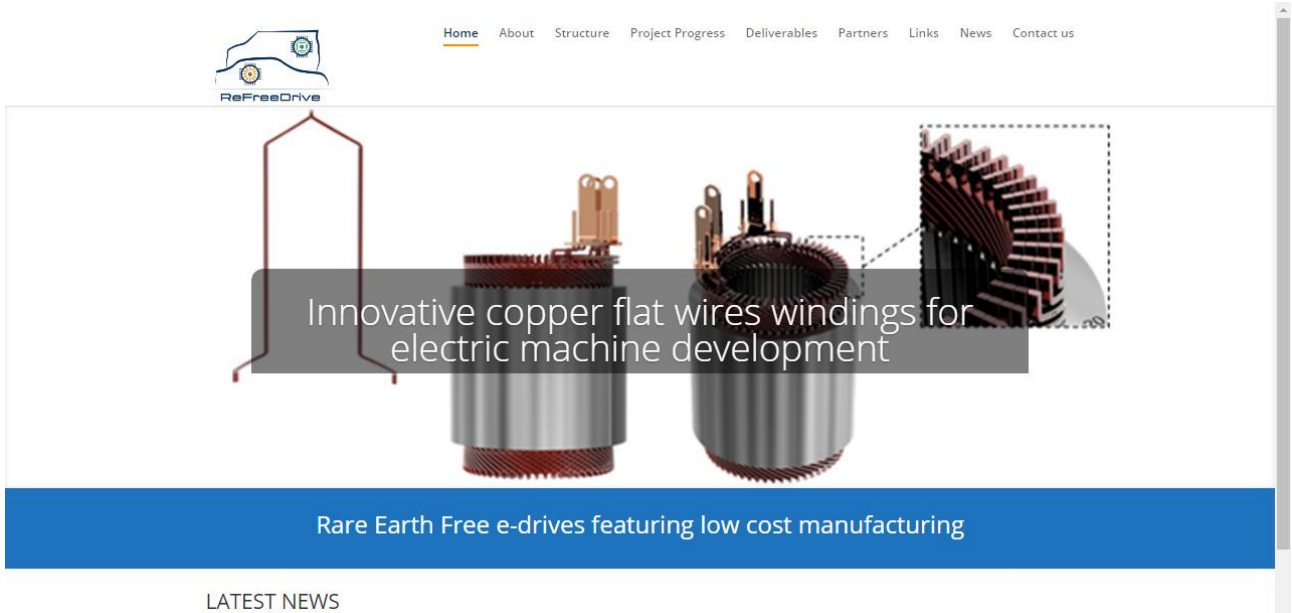
## 1.2 Public Website

The public website is meant to act as a framework for all the dissemination and communication activities.

### 1.2.1 Home

The main tab of the website is the Home. The URL <http://www.refreedrive.eu/> directly sends the reader to the home page.

Figure 2 shows the design of this tab.





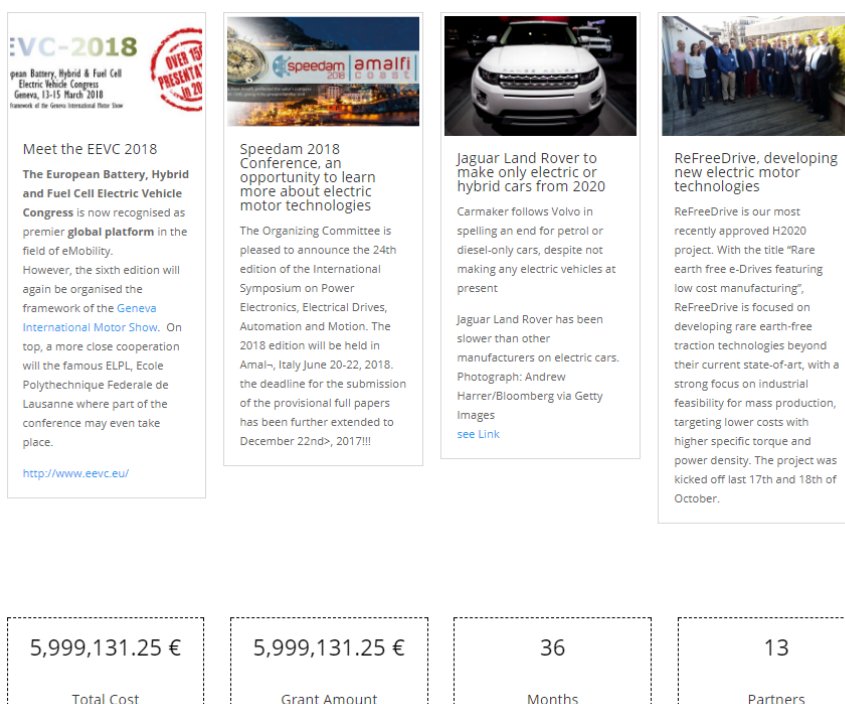


Figure 5: Home tab

On this tab, the title of the project appears, the key messages of the project are shown in a slide bar and the latest news included in the news section are also summarized. Finally, the most representative numbers of the project are shown: the total budget the commission grant amount the time for the development and the number of partners of the consortium.

### 1.2.2 About

A brief summary of the project has been included on the “about” tab, shown in Figure 6. Since ReFreeDrive is a Green Vehicle project, the EGVI logo has also been included here.



## About



**EGVI**  
European Green  
Vehicles Initiative

The ReFreeDrive project is focused on contributing to avoid the use of rare earth magnets through the development of a next generation of electric drivetrains, ensuring the industrial feasibility for mass production while focusing on the low cost of the manufacturing technologies.

This project will study and develop simultaneously two solutions for the power traction system of electrical vehicles. Both solutions are brushless AC electrical machines: induction machine with fabricated and copper die-cast rotor (IM) and synchronous reluctance (SynRel) machine. Through their configurations these machines not only are rare-earth magnet free, but also share common features that can be exploited during the design step, as well in the manufacturing process. These common features lead to a complex synergy between the two technologies, which justify the development of different topologies of electric machines in just one project.

The design of the ReFreeDrive motors will take as a premise the reduction of use of materials, as more than half of the final price is formed by raw materials cost. Also, a minimization of manufacturing costs will be ensured by an early involvement of manufacturers, from the design stage. ReFreeDrive motor topologies have good room for cost reduction by off-setting permanent magnet use. However, it is not feasible to change the commodity prices for copper and steel. Therefore, one of the key avenues for cost reduction is the reduction of size through different techniques (outer rotor, higher rotational speed, compact winding...). An optimized use of copper on the project provides technical design with a higher efficiency due to lower losses regards other alternatives, and more efficient heat management.

Beyond the motor design, ReFreeDrive also consider an integrated design of the power train that allows the optimization of the electric connections, the cooling systems and the housing.


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Figure 6: About tab

### 1.2.3 Structure

The structure tab contains information about the WP distribution into the project.

A diagram with the interaction between WP has been included followed by a summary of the work to be done. This is shown in Figure 7.

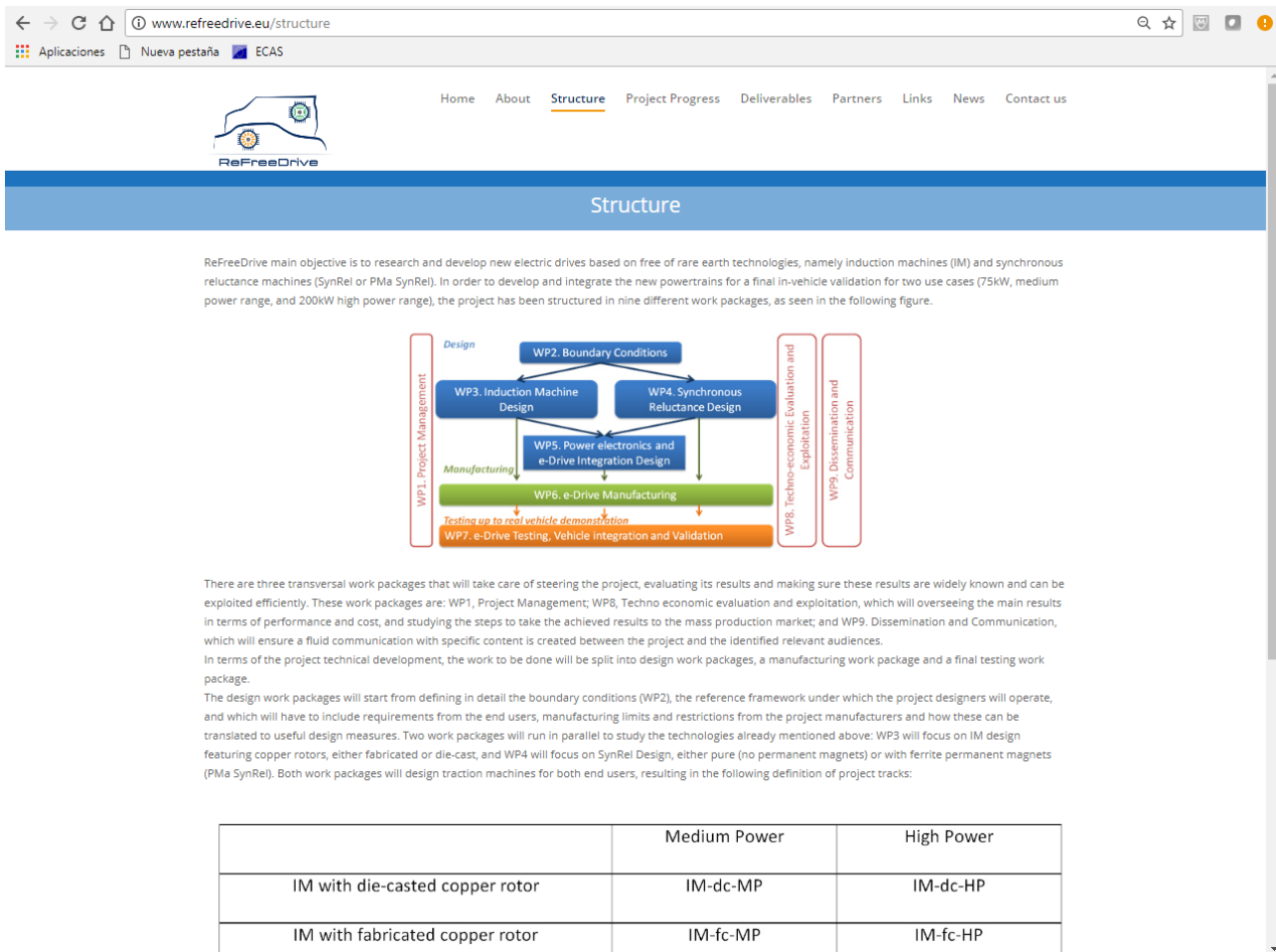


Figure 7: Structure tab. Diagram and information about the WP

## 1.2.4 Project Progress

This tab has been assigned to let the visitor have a quick impression of the progress of the project. The milestones and the most relevant achievements are shown on a temporal line, on each image the specific date is indicated too. This is shown in Figure 8.

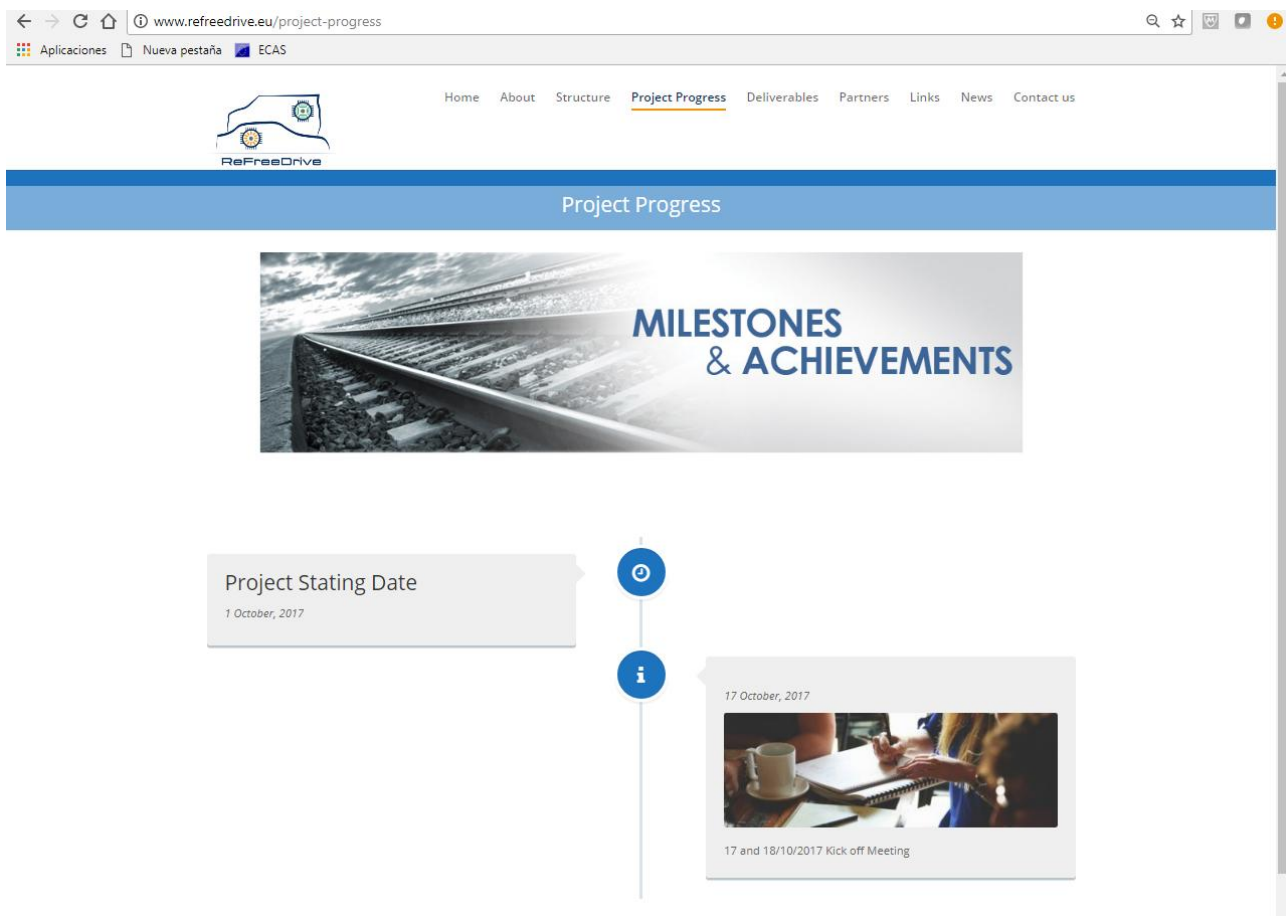


Figure 8: Project progress tab

### 1.2.5 Deliverables

A specific tab for the deliverables has been included.

The table shown on Figure 9 will be updated with the acceptance of the deliverable by the commission and those with a public status can be directly downloaded from this page using the link.



## Deliverables

Search:

WP	Deliverable	Description	Lead Beneficiary	Nature	Dissemination Level	Delivery Date
WP2	D2.1	KPI Key Performance Indicators Document	PRI	Report	Confidential	31/12/17
WP2	D2.2	ReFreeDrive testing vehicles: Driving Cycle	PRI	Report	Public	31/12/17
WP9	D9.1	Project Website	CID	Other	Public	31/12/17
WP2	D2.3	Functional subsystems Full Technical Specifications	PRI	Report	Confidential	28/02/18
WP9	D9.2	Open Data Management Plan	CID	ORDP: Open Research Data Pilot	Public	31/03/18
WP9	D9.3	Communication Plan	ECI	Report	Public	31/03/18
WP3	D3.1	Preliminary IM Design Analysis and Material Selection	MDL	Report	Confidential	20/04/18
WP1	D1.1	First Progress Report	CID	Report	Public	30/09/18
WP4	D4.1	SynRel Preliminary analysis	IFPEN	Report	Public	30/09/18
WP9	D9.4	Plan for the Dissemination of Results, First Release	UAQ	Report	Public	30/09/18
WP3	D3.2	CR-IM Electromagnetic Design Report for Inner and Outer Rotor	MDL	Report	Confidential	31/10/18
WP3	D3.3	CR-IM Thermal Design Report for Inner and Outer Rotor	MDL	Report	Confidential	31/03/19
WP4	D4.2	SynRel Electro Magnetic Design Track 1 / Track 2	UAQ	Report	Confidential	31/03/19
WP4	D4.3	PM SynRel Electro Magnetic Design Track 1 / Track 2	IFPEN	Report	Confidential	31/03/19
WP8	D8.3	Plan for the Exploitation of Results, first draft	MAV	Report	Confidential	31/03/19

Figure 9: Deliverable tab

### 1.2.6 Partners

The information about the consortium partners has been included on the partners tab, with a brief description of each partner. An example screenshot is shown in Figure 10.

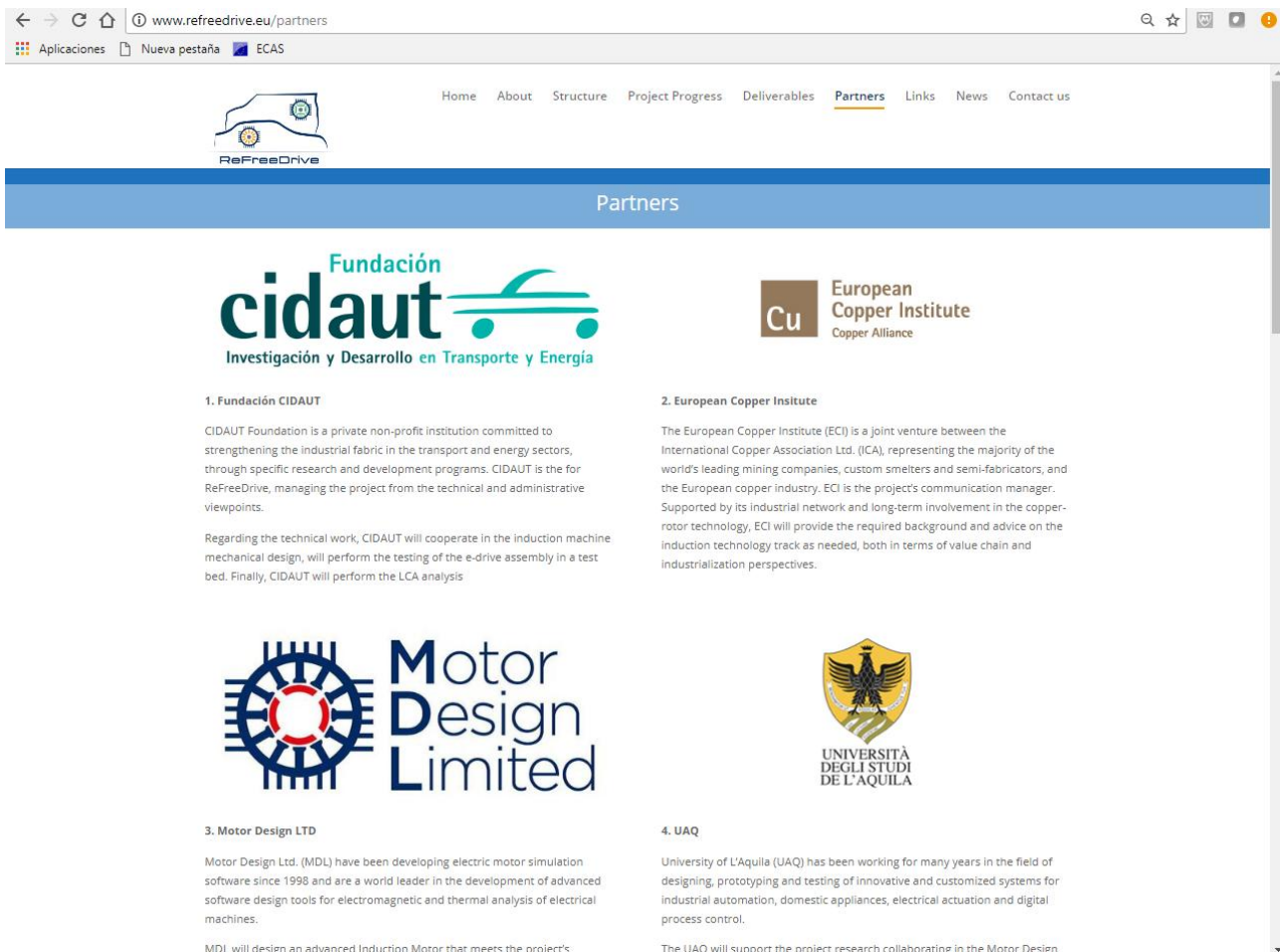


Figure 10: Partners tab

## 1.2.7 Links

To facilitate the visitor the access to more information related with this kind of project, a tab for links has been included into the website, as shown in Figure 11. Links to other projects that ReFreeDrive will network with will be included in this slide bar as contacts are made and collaborations planned.

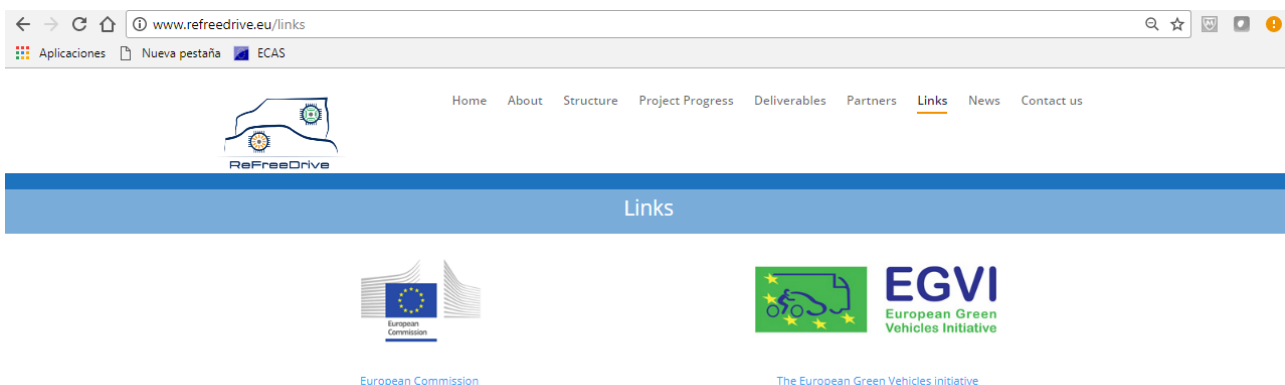


Figure 11: Links tab



## 1.2.8 News

To help on the dissemination of the results of the project and to provide updates of information for the visitor related to the research task or of relevant interest, a section with news has been included (Figure 12). The four latest included news are those presented in the Home section.

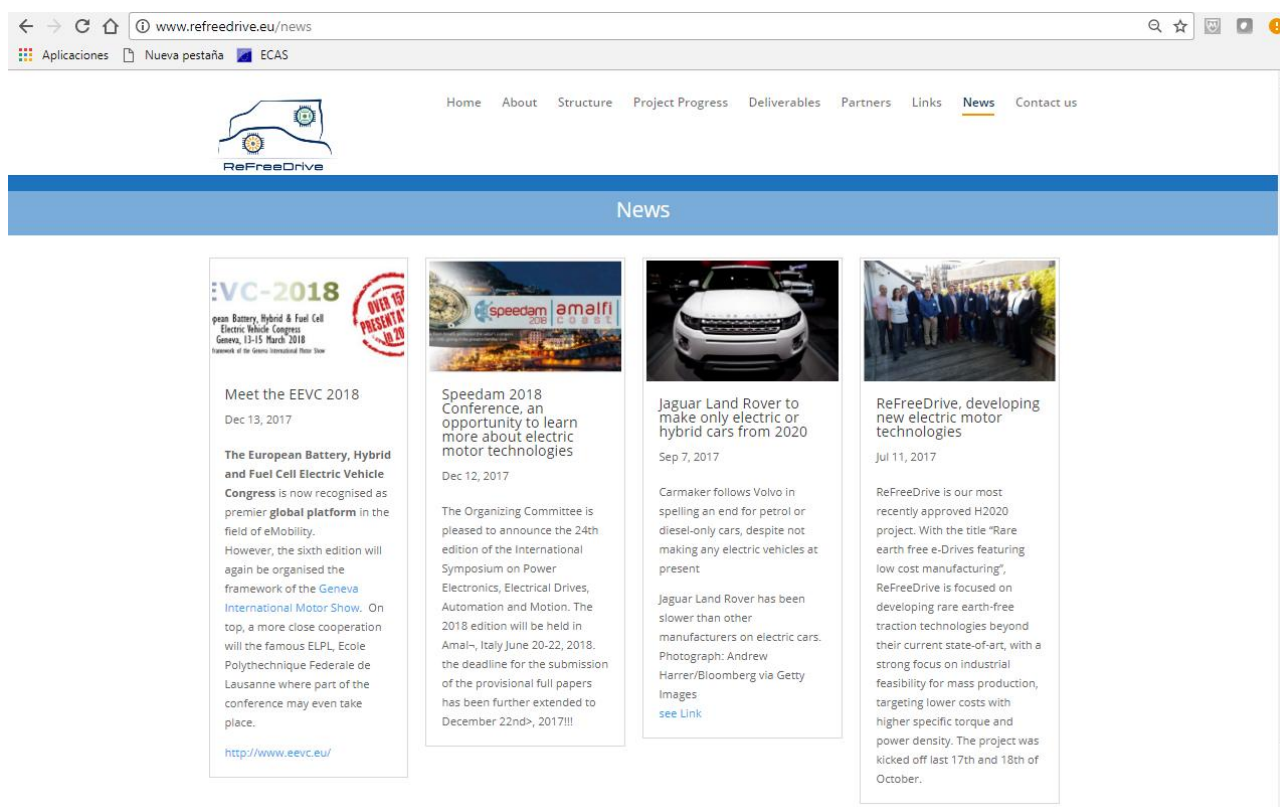


Figure 12: News tab

## 1.2.9 Contact us

On this tab the visitor will meet the Consortium members he can get in touch with to know more details about the ReFreeDrive project (the Project Coordinator, the Project Technical Manager and the Communication Manager). Figure 13 shows this tab.



## Contact us



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Figure 13: Contact us tab.

## 2 Next actions

The website will be under a continuous improvement. The contents will be regularly updated, and the design will be improved with the suggestions of the users.



### 3 Bibliography

No external references have been used for this deliverable.