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Physical integration of hybrid and electric vehicle batteries at pack level aiming at increased energy density and efficiency

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GHOST

InteGrated and PHysically Optimised Battery System for Plug-in Vehicles Technologies

D9.2 Dissemination and communication plan

D9.2

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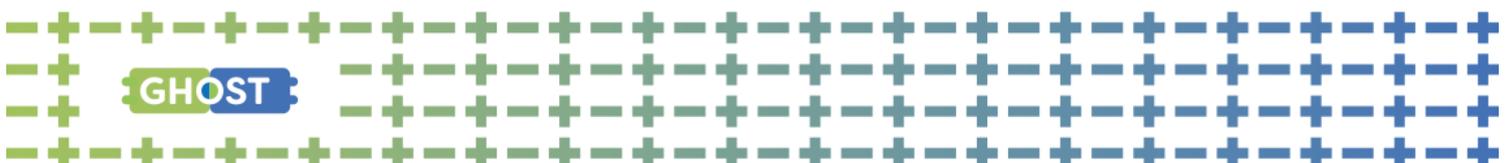
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1 The GHOST project

The main objectives GHOST InteGrated and PHysically Optimised Battery System for Plug-in Vehicles Technologies project are to:

- Design a novel and modular battery system with higher-energy density (in weight) up to 20%;
- Increase the energy density of the battery system up to 30%;
- Develop mass producible innovative and integrated design solutions to reduce the battery integration cost at least by 30% through smart design;
- Define new test methodologies and procedures to evaluate reliability, safety and lifetime of different BS;
- Design novel prototyping, manufacturing and dismantling techniques for next generation of lithium-ion BS;
- Demonstrate GHOST solutions in two demonstrators (BEV bus with ultrafast partial charge capability and P-HEV) and one lab demonstrator (module level) for the post Lithium Ion technology.

2 Introduction

The Dissemination and Communication Plan (DCP) aims to maximize the potential impact of the GHOST project by providing guidelines for the widespread dissemination of project information and results.

The DCP is intended to present a wide range of actions in order to ensure that the knowledge and results generated within the project are subsequently made available within and beyond the project consortium. It also identifies the relevant networks and dissemination channels as well as the dissemination mechanisms and tools to be exploited. The DCP sets a detailed time plan and a responsibilities' allocation matrix as well (see Annex I) for ensuring the successful implementation of each activity. The dissemination and communication plan also defines the key measurements/indicators to be used for the progress monitoring (see 3.7 Quantification of the proposed activities).

The DCP is considered to be a living document. Whereas this first version has the scope of setting the overall dissemination policy, two subsequent updates ie. the intermediate and final versions of the DCP, will also present the dissemination results along with possible updates of the initial plan.

During the first year, the planning and setting up of the infrastructure for communication and implementation will be performed, including the visual identity, project website, brochure, newsletter, etc.



In the second year the targeted actions will start, including workshops, publications, conference and event attendance, presentations as well as cooperation with other projects.

Near to the end of the project cycle, a final public workshop will take place in order to inform all interested stakeholders of the results while promoting the exploitation of the GHOST innovations and technological solutions following project completion.

2.1 Dissemination policy and IPR

The dissemination policy aims to spread information regarding the project while taking into account the intellectual property rights.

Article 29 of the Grant Agreement (GA) and Article 15 of the Consortium Agreement (CA) sets the framework and common project rules for communication and dissemination actions, including the obligation of disclosing results to the public by appropriate means while protecting results (Article 27, GA), respecting the confidentiality obligations (Article 36, GA), the security obligations (Article 37, GA) and the obligations to protect personal data (Article 39, GA).

The technical information generated within the project will be considered to be confidential; any publication of results will need to be submitted to all concerned partners for approval in compliance with the Consortium Agreement.

The DCP also takes into account the EU Guide on „Communicating EU research and innovation guidance for project participants¹ and aims to contribute to the effective dissemination of EU funded research and innovation actions by promoting activities carried out within the framework of the “Green Vehicles” Work Programme.

More precisely, the dissemination and communication activities of the GHOST project will “contribute to the promotion of innovative Dual Battery System architecture based on next generation of battery technologies combined with high power battery and its impact on the reduction of complexity of the electric and electronic architecture, improvement of energy density, energy efficiency, safety, scalability, modularity, and cost reduction. Achieving these key innovations at affordable cost will strengthen the European technical and technological leadership in the Battery System, enable a leading position in this crucial field for the electrified vehicles and increase the competitiveness of European road vehicle manufacturers.” The aim is that the technology devised within the GHOST project will have an important impact on the increase in performance (including range and related battery lifetime and reliability) of electrically chargeable vehicles (BEVs and P-HEVs).

¹ European Commission (09-2014): Communicating EU research and innovation: guidance for project participants



2.2 Objectives

The DCP aims to raise public awareness regarding the project objectives and its progress. In more detail, the objectives of the Dissemination and Communication Plan (DCP) are to:

- Ensure the information flow about the project and its results within and outside of the project by developing and implementing the dissemination and communication strategy;
- Disseminate project activities and results widely among relevant stakeholders by identifying, developing and using the relevant communication tools;
- Receive feedback on the project and its outcomes in order to improve the results from the relevant target groups;
- Exploit GHOST results appropriately and thereby secure improved business opportunities and value creation in the EU value chain, from design and manufacturing to dismantling and recycling;
- Promote active cooperation and knowledge exchange between experts involved in research and technical development, industrial stakeholders, policy makers and other key actors including:
 - EUCAR – The European Council for Automotive R&D (www.eucar.be);
 - ERTRAC - European Road Transport Research Advisory Council (www.ertrac.org);
 - EGVI – The European Green Vehicles Initiative PPP (www.egvi.eu/);
 - EARPA – The Association of Automotive R&D Organisations (www.earpa.eu);
 - EERA – The European Educational Research Association (www.eera-ecer.de);
 - EASE – The European Association for Storage of Energy (www.ease-storage.eu).
- Exchange experience with other European and International projects in order to maximize impact by exploiting synergies and minimize unnecessary duplication of efforts;
- Coordinate, support and encourage the communication and dissemination actions inside the consortium.
- Ensure wider visibility and spread information on the sustainable solutions in the transport field to the general public.

2.3 Approach and outreach

The goals of the dissemination and communication activities are to maximize the project impact and to support and pave the way for the potential exploitation activities that will be



implemented at a later stage of the project with the final aim of generating business opportunities. The DCP therefore serves as a guideline for each of the partners in relation to the dissemination and communication actions towards the general public and beyond, including specific target groups and stakeholders. The dissemination and communication efforts are also meant to ensure the continuity of the GHOST project and community, beyond the project's duration.

Partners already cover a very large part of the value chain for automotive battery systems. However to increase the outreach of the consortium, a GHOST Advisory Board consisting of high level management members of original equipment manufacturers and suppliers, representatives of authorities and associations will also be organised.

In addition, the GHOST project partners are members of the following European and International associations that could create further awareness and potential for dissemination of the project results, including:

- ERTRAC - The European Technology Platform (ETP) for Road Transport (www.ertrac.org);
- ACEA - The European Automobile Manufacturers' Association (www.acea.be);
- EUCAR - The European Council for Automotive R&D (www.eucar.be);
- EGVI - The European Green Vehicles Initiative Association (www.egvi.eu);
- IEE – Institute of Electrical and Electronics Engineers (<https://www.ieee.org/>);
- CLEPA - The European Association of Automotive Suppliers (<https://clepa.eu>);
- EARPA - The European Automotive Research Partners Association (<https://www.earpa.eu>);
- EARTO - The European Association of Research and Technology Organisations (www.earto.eu);
- EERA- The European Energy Research Alliance (EERA) (<https://www.eera-set.eu/>);
- SIG- The Sourcing Industry Group (<https://sig.org/>);
- EMIRI – The Energy Materials Industrial Research Initiative (www.emiri.eu);
- RECHARGE - The European Association for Advanced Rechargeable Batteries (www.rechargebatteries.org);
- EUROBAT- The Association of European Automotive and Industrial Battery Manufacturers (www.eurobat.org);
- AVERE - The European Association for Battery Hybrid and Fuel cell Electric Vehicles (www.averre.org);
- ERTICO - The Intelligent Transport Systems and Services for Europe (www.ertico.com);
- EASE - The European Association for Storage of Energy (www.ease-storage.eu);
- - ECPE European Center for Power Electronics (www.ecpe.org);
- - ITRS International Roadmap for Semiconductors (www.itrs2.net);



- VDE GMM Association for Microelectronics, Microsystems and Precision Engineering (www.vde.com/gmm);
- CARA - the European cluster for mobility solutions (<https://cara.eu/>);
- EPoSS e. V European Technology Platform on Smart Systems Integration (<https://www.smart-systems-integration.org/public>);
- ECSEL - European Technology Platform for Electronics (www.ecsel.eu);
- EPoSS – European Technology Platform on Smart Systems Integration (<https://www.smart-systems-integration.org>);
- JU FCH – European Technology Platform for Fuel Cell and Hydrogen (<http://www.fch.europa.eu/>);
- SWAFS AG – Advisory Group for Science With & For Society;
- BERA – Belgian Energy Research Alliance (<http://bera.ulb.ac.be/>);
- BiR&D – Belgian Industrial Research & Development association (<http://birdbelgium.com>);
- AGORIA – Energy Technology Club (<https://www.agoria.be/>);
- Climate-KIC (<http://www.climate-kic.org/>).

3 Dissemination and Communication Strategy

This section defines the dissemination strategy, including:

- Subject of dissemination and communication
- Internal and external communication
- Target groups
- Dissemination & Communication tools, materials and channels
- Quantification of the activities
- Internal/external dissemination
- Timing
- Roles and responsibilities
- Monitoring and reporting

3.1 Subject of dissemination

The general subjects identified for communication and dissemination are:

- Project (scope, coverage, objectives);
- Progress and results;
- Research and innovation, taking into account IPR issues.

Furthermore, the backbone of the dissemination activities will be the Deliverables containing relevant information and the outcomes of the different tasks which have contributed to those



deliverables and milestones. In this context, the most relevant deliverables and milestones include:

- D2.2 - Cells specification report for battery system prototype (M6);
- MS2 - Cell selection report (M6);
- D2.3 - Concept validation plan report (M8);
- MS6 - Electro-thermal and lifetime battery models available (M28);
- D3.3 - Prototyping, commissioning and functional verification of the designed battery systems (M28);
- D4.1 - Methodology test, characterization test and electro-thermal battery model report (M12);
- MS7 - Test specification and report for system safety validation (M29);
- D6.1 – PHEV demonstrator integration and battery system assembly/ vehicle testing report (M38);
- D6.2 – BEV demonstrator integration and battery system assembly/ vehicle testing report (M38); publishable summary;
- D7.2-Use cases description for second life, economic analysis of battery reuse in Europe and novel business model for reuse and recycling;
- D8.2 - Assembly, commissioning of the dual cell Li-ion, Li-S battery module system and validation & assessment of the dual battery system concept report (M40);
- MS10 - Dual Cell Hybrid battery prototype available (M40).

In addition, the two vehicle demonstrators (PHEV 500X, E-bus) and the use cases will provide information for dissemination actions towards the end of the project.

3.2 Internal dissemination

Within the consortium, communication is performed principally by email, via the Reporting Platform (EMDESK) and through regular telephone/webex conferences. More information regarding internal proceedings and quality assurance can be found in D1.1.

The wider network of the GHOST project partners is reached through webinars and other networking channels.

3.3 External dissemination

The external dissemination, as explained in the sections below, will address the pre-identified target groups at the national, European and International levels.



To ensure that the target audience is reached, the necessary dissemination and communication activities will be planned and undertaken. In addition, a continuous monitoring and evaluation will be conducted.

In detail, the DCP aims to:

- Maximise the dissemination of results and express them in such way that are readily understandable to industrial stakeholders, suppliers and governments in order to accelerate the implementation of the research findings;
- Promote the dissemination of the project findings through presentations at project workshops, technical conferences, scientific publications and the project website;
- Facilitate technology transfer and accelerate dissemination of the on-going project activities;
- Manage knowledge appropriately including the handling of IPR, and the implementation and exploitation of the obtained results;
- Organize training and know-how transfer between partners and to external parties in the format of internal and external workshops;
- Create synergies and seek clustering opportunities and cross-fertilisation with other relevant European projects in the same field and Plan common workshops together with such projects.

3.4 Target groups

The DCP, as the strategic document on disseminating the GHOST project and its partial and final results, identifies the target groups in order to spread information on the achievements in a planned and effective way, including customised information/messages to each specific group.

Communication and dissemination will be targeted at the following audiences:

- Transport industry and community, including SMEs and large, international companies;
- Energy industry and community, including SMEs and large, international companies;
- Scientific community and academia related to green vehicles and green energy production and distribution;
- The European Technology Platform (ETP):
 - Road Transport and its initiatives such as the European Green Vehicles Initiative (EGVI);
 - Related to Energy such as EDSO (Smart Grids ETP)
- Other EU and International projects;



- Policy makers from the International, European, regional, local level and special interest groups linked to the project's goals, such as cities;
- Standardisation bodies;
- Civil society;
- Potential customers;
- Investors;
- Media;
- General public.

Cost-effective ways have been identified in order to achieve maximum publicity for the project and its results.

Please see below an overview matrix on the main dissemination and communication channels/tools and their target groups:

Table 1

		Dissemination and communication channels tools					
Target audience		Project Id.	Website	Project materials	Workshops	Presentations	Articles
	GHOST consortium	X	X	X	X	X	X
	Projects		X				X
	Industry		X	X	X		X
	Scientific community		X	X	X	X	X
	Cities		X	X	X	X	
	Civil society		X	X	X	X	
	Costumers		X	X			
	Media	X	X	X			
	Policy makers		X	X	X	X	X
	Investors			X	X		
	General public		X	X	X		

3.5 Dissemination tools, materials and channels

In order to reach the identified target groups, both general and targeted actions will take place and different dissemination tools will be utilized. The tools will be developed with the active contribution of both the industrial and research partners.



The dissemination activities include but are not limited to the following tools and actions:

- **Project visual identity** which makes the GHOST project unique and easily identifiable. The **dedicated project logo** represents the main element of the project: a modular battery system: easy to compose and dismantle. The project visual identity will be used across every applicable dissemination channel, including the website and printed materials related to the project (brochures, documents and reports). This is a simple, effective way to ensure that a consistent identity of GHOST is used in every communication.
- **Supporting dissemination materials:** A **general presentation** on the GHOST project will be developed and approved by all partners which can be used by the consortium at meetings and events. **Project brochures** will be used to share information on the project at related events. The first issue of the brochure will present the project and its objectives and the final version will also provide information on the project results and achievements. **Newsletters** at each innovation cycle will be spread within the target groups and networks in order to provide up-to-date information.



- The **public website** (<http://h2020-ghost.eu/>) is the main dissemination tool and the central information point of the project. It provides information on the consortium and on the project and will include downloadable information such as project brochures, public deliverables, news and images in order to communicate towards the wide external audience during and beyond the project duration. It includes the GHOST **banner** which will be part of the project identity in all communications.
- **Social media campaigns** will be carried out to support the dissemination of the project results.
- **Project templates:** within GHOST 9 templates have been developed, including templates for:
 - documents (reports, deliverables)
 - presentations
 - newsletter
 - dissemination activities monitoring
 - meeting documents (agenda, participants list, minutes and actions)

GHOST Newsletter

December 2017 - GHOST Newsletter



Keep people involved by following up with a personal message or discount code. Start by replacing the full-width header with a different color or a higher image.

If you sell things, welcome new customers after a purchase, to repeat customers. Offer you miss them, or offer a deal to your best customers. If you've connected your store, by dragging in product or product recommendation blocks, too.

If you don't sell things, welcome new subscribers to your list. Thank people for attending an event, and let inactive subscribers know you miss them.



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If you don't sell things, welcome new subscribers to your list. Thank people for attending an event, and let inactive subscribers know you miss them.



The templates have pre-defined elements: layout, font, headlines, styles, colours, tables, etc.



- **Contact database** of relevant stakeholders, that will receive updates on the project in the form of regular electronic newsletters.
- The project will also be involved in **clustering activities** and liaising with other relevant projects under the H2020 programme of the EC.

The project consortium will endeavour to submit **scientific papers** to renowned journals and to present the project at **events** (presentations, papers, posters, stands, etc.) including:

- Participation in and co-organisation of (scientific and industrial) conferences including special workshops, tutorials or industry days where feasible:
 - **GHOST workshops:** two International Workshops involving the Stakeholders' Group regarding test protocols for high energy batteries will be organised.
 - **The final project workshop** at the end of the project will present the findings to a wider audience. It will be organized together with the final review meeting in Brussels with key stakeholders from research and academia, industrial actors, policy making organisations and relevant associations. The PHEV will be demonstrated at the event as well under specific test limitations, such as restricted test area and trained driver.
 - **Other conferences and events:** to increase the impact of the project results and to promote the debate to accelerate the implementation of the project results, the project coordinator and key partners will actively participate at relevant international conferences and exhibitions such as the EVS (International Electric Vehicle Symposium & Exhibition), selected conferences of the IEEE (Institute of Electrical and Electronics Engineers), TRA (Transport Research Arena Conference), CLEPA Technology day, EUCAR Conference, SAE (Annual world congress on Automotive Developments), IBA (International Battery Association), FISITA World Automotive Congress, Conferences of the Institute of Electrical and Electronics Engineers (IEEE), AABC (Advanced Automotive Battery Conferences), Achema (World Forum and Leading Show for the process Industries), VPPC (Vehicle Power Propulsion Conference), EEVC (European Electric Vehicle Congress), EGVA workshops, IBA (International Battery Association), ICS (International Society of Electrochemistry), Kraftwerk Batterie, Moveo (France), EVER conference (Monaco), ICEMS 2018 International Conference on Electrical Machines and Systems, FISITA World Automotive Congress 2018, IBA (International Battery Association), International Transport Forum, ITS European Congress, Annual Polis Conference, International Forum on Advanced Microsystems for





- Automotive Applications (AMAA), EVEX Electric Vehicle Development Technology Exhibition.
- **Scientific Publications in scientific journals** (once the IPR is protected) such as the IEEE Transactions on Vehicular Technology, IEEE Transactions on Power Electronics, IEEE Transactions on Energy Conversion, Journal of Power sources - The International Journal on the Science and Technology of Electrochemical Energy Systems (Elsevier), Energy - The International Journal (Elsevier), Energies (MDPI, Open access), Applied Energy (Elsevier), Applied Thermal Engineering (Elsevier), SAE International, MTZ Worldwide (Springer), ATZ Worldwide (Springer), Energy Policy.
- **Articles** in international conferences as mentioned above.
- **Notes** in special interest newsletters or magazines.
- Articles and features in local mass media.
- **Attendance, presence** at stands, poster presentations at relevant exhibitions and trade fairs.
- **(Invited) presentations at events by EC**, relevant working groups and key events organised by policy actors (national, regional) and/ or other stakeholders.
- Other dissemination activities to be potentially further exploited: employee placement schemes, inclusion of GHOST findings in EU documents, position papers, policy briefs, participation in networks, liaison with partners' networks and personal/professional contacts, press releases, tutoring at workshops, e-zine as well as the EU communication channels (i.e. CORDIS, TRIP, OPENAIRE, H2020 Magazine), etc.

A list of publications, presentations and other dissemination activities will be part of the updated DCP as well as the interim reports.

Table 2 - List of publications - Template

Publications	Main author	Title	Place of publication	Date
1				
2				
3				
4				



3.7 Roles and responsibilities

The Work Package on Dissemination and exploitation (WP9) inter-relates with all other Work Packages. The project partners are responsible for dissemination of results in their networks and shall contribute to all dissemination and communication activities actively.

Work Package Leaders are responsible to provide outcomes and results to be disseminated to the Dissemination manager.

The responsibilities related to the communication and dissemination activities of the members of the project consortium include:

- Keeping the project coordinator and WP9 leader up-to-date about all projects developments, outputs, results and connected communication and dissemination activities;
- Participation at relevant events and promotion of the project;
- Publications of scientific and peer-reviewed journal papers related to GHOST;
- Informing stakeholders belonging to their network on the project progress and results;
- Contribute to setting up a common GHOST database, including gathering relevant scientific, industry and policy contacts from the national, European and International levels.

The partners are entitled to publish research results obtained from the project in the usual scientific form. However, all concept publications must be put on the website and submitted to all partners together with a request for permission to publish. Details for the approval of concept publications are defined in the Consortium Agreement (CA).

3.8 Quantification of the proposed activities

All consortium partners are encouraged to report the results of each dissemination activity immediately after it has taken place via the project's reporting template on dissemination activities, specifying the action, the target audience reached, etc. (see Tables 2 and 3 in section 4.5).

WPLs are responsible for reminding the partners involved in their WPs to carry out and report on the communication and dissemination activities linked to their respective Work Packages.

The monitoring of the dissemination and communication actions will be done regularly on a 6-monthly basis, at each internal and external reporting period. The initial version of the DCP will be updated twice.

In addition, the following key performance indicators will be taken into account and respected while carrying out the actions.



Channel	Target	KPI
Project website	Everyone	# visitors > 300/month
Newsletter	Everyone	# subscribers > 1,000
Printed media	Key personnel & Experts	# 2 times 400 flyers
Scientific and other events	Scientists and Experts	# 15 events, lecture
Publications in scientific and other journals	Experts	# 10 publications
International workshops regarding test protocols for high energy batteries	Experts	# 1 at the end of the 2 nd year # 1 at the end of the project
Public workshop at the end of project	Everyone	# 1 at the end of the project

3.9 Acknowledgement

All content produced in the project will include the EU logo and the acknowledge of the EU funding, stating: „*This project has received funding from European Union’s Horizon2020 Programme for research and innovation under grant agreement No.770019*“.



4 ANNEX I: Dissemination and communication matrix

The actions and responsibilities matrix annex to the DCP provides information on the:

- Potential conference(s) for presenting the project results at relevant national, European and International events, eventually securing dedicated sessions.
- Planned publications of articles in national and International magazines, papers and other publications.
- Time plan on communication materials and actions, such as the project electronic newsletter and brochures.
- Other major external dissemination events (e.g. workshops) to be exploited for the project dissemination.
- Initiatives that provide further channels for the wide dissemination of results.
- Projects to maximize impact by exploiting synergies and minimize unnecessary duplication of efforts.
- The identified target groups.



GHOST_dissemination_matrix_March-2018.

