- D7.1 – Dissemination, Communication and Exploitation plan-

- VERSION -

VERSION	*DATE*
1	17/03/2022

- PROJECT INFORMATION -

GRANT AGREEMENT NUMBER	955930
PROJECT FULL TITLE	INNOVATIVE PHYSICAL/VIRTUAL SENSOR PLATFORM FOR BATTERY CELL
PROJECT ACRONYM	INSTABAT
START DATE OF THE PROJECT	01/09/2020
DURATION	3 years
CALL TOPIC	H2020-LC-BAT-13-2020
PROJECT WEBSITE	www.instabat.eu

- DELIVERABLE INFORMATION -

WP NO.	7
WP LEADER	CEA
CONTRIBUTING PARTNERS	CEA
NATURE	Report
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CONTRACTUAL DEADLINE	30/09/2020
DELIVERY DATE TO EC	
DISSEMINATION LEVEL (PU/CO)	PU

- ACKNOWLEDGMENT -

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 955930.

CEA Deliverable reference	DEHT/LV/2022-031_ D7.1 – Dissemination, Communication and Exploitation plan

Deliverable Review

	Reviewer #1: Martin SCHMUCK		
	Answer	Comments	Type*
1. Is the deliverable in accordance with			
(i) The Description of actions?	☒ Yes ☐ No		☐ M ☐ m ☐ a
2. Is the quality of the deliverable in a status			
(i) That allows it to be sent to European Commission?	☒ Yes ☐ No		☐ M ☐ m ☐ a
(ii) That needs improvement of the writing by the originator of the deliverable?	☐ Yes ☒ No		☐ M ☐ m ☐ a
(iii)That needs further work by the Partners responsible for the deliverable?	☐ Yes ☒ No		☐ M ☐ m ☐ a

	Reviewer #2: Romain Franchi		
	Answer	Comments	Type*
1. Is the deliverable in accordance with			
(i) The Description of actions?	☒ Yes ☐ No		☐ M ☐ m ☐ a
2. Is the quality of the deliverable in a status			
(i) That allows it to be sent to European Commission?	☒ Yes ☐ No		☐ M ☐ m ☐ a
(ii) That needs improvement of the writing by the originator of the deliverable?	☐ Yes ☒ No		☐ M ☐ m ☐ a
(iii)That needs further work by the Partners responsible for the deliverable?	☐ Yes ☒ No		☐ M ☐ m ☐ a

* Type of comments: M = Major comment; m = minor comment; a = advice

- PUBLISHABLE ABSTRACT/SHORT SUMMARY -

The present deliverable gives the Dissemination, Communication and Exploitation plan of the results from INSTABAT project. INSATBAT consortium has adopted this plan during the Work Package 7.1. After a short introduction the deliverable give an overview of the dissemination and communication strategy. The second and third part of the report detail INSTABAT dissemination and communication plan respectively. The last part is focused on the exploitation plan including methodology and the preliminary business plan.

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1. Introduction

The Work Package 7 of INSTABAT aims to implement the dissemination, communication, and exploitation strategies. The work related to this WP will be carried out at two levels: (1) under the umbrella of the EU large-scale research initiative on Future Battery Technologies, led by LC-BAT-15 successful consortium and in cooperation with LC-BAT-12 and LC-BAT-14; (2) at INSTABAT individual level. WP7 will be divided into the following complementary activities:

• **Dissemination and communication activities** to show the attractiveness of the results achieved and their impact towards a target audience composed of already identified key stakeholders.

• **Exploitation actions** will establish the main pillars for a future market uptake plan of the most promising and mature results generated in the project, thus maximising the opportunities for innovation and business development.

• **Implementation of an IPR and Knowledge Management Plan** based on the background of each partner and the expected foreground produced in the project. This plan will bear in mind the progress of foreign IP by a continuous observatory of existing and new patents/utility models to ensure freedom to operate.

In the framework of WP7, the task 7.1 is dedicated to the implementation of dissemination (task 7.1.1) and communication strategy (task 7.1.2). At the beginning of the project the present deliverable D7.1 Dissemination, Communication and Exploitation plan was developed. The objective of this deliverable is to explicate and consolidate the communication and strategy plan of INSTABAT project.

1.1 The INSTABAT project

The ambition of INSTABAT is to monitor in operando key parameters of a Li-ion battery cell, in order to provide higher accuracy States of Charge, Health, Power, Energy and Safety (SoX) cell indicators, and thus allowing to improve the safety and the Quality, Reliability and Life (QRL) of batteries. To achieve this goal, INSTABAT will develop a proof of concept of smart sensing technologies and functionalities, integrated into a battery cell and able of:

- performing reliable in operando monitoring (time- and space-resolved) of key parameters (temperature and heat flow; pressure; strain; Li+ concentration and distribution; CO2 concentration; “absolute” impedance, potential and polarization) using: (i) four embedded physical sensors (optical fibers with Fiber Bragg Grating and luminescence probes, reference electrode and photo-acoustic gas sensor), (ii) two virtual sensors (based on electro-chemical and thermal reduced models),
- correlate the evolution of these parameters with the physico-chemical degradation phenomena occurring at the heart of the battery cell,
- improve the battery functional performance and safety, thanks to enhanced BMS algorithms that provide in real-time higher accuracy SoX cell indicators (by taking the measured and estimated parameters into consideration).

Main results will be:

(1) proof of concept of multi-sensor platform (cell prototype equipped with physical/virtual sensors, and associated BMS algorithms providing SoX cell indicators in real-time);
(2) demonstration of higher accuracy for SoX cell indicators;
(3) demonstration of improvement of cell functional performance and safety through two use cases for EV applications;
(4) techno-economic feasibility study (manufacturability, adaptability to other cell technologies...). INSTABAT smart cells will open new horizons to improve cell use and performances (e.g. by reducing ageing, allowing the decrease of safety margins, triggering self-healing, facilitating second life, etc.).

1.2 Deliverable structure

The deliverable is divided into three parts. The first part gives the global description of dissemination and communication strategy. The second part detail the dissemination plan and the third part the communication plan of the project. The last part detail the exploitation plan of the project.

2. Dissemination and communication strategy

Figure 1 show a global overview of the INSTABAT project's IP and knowledge management strategy plan. The objective of the dissemination and exploitation strategies is to generate a deep impact and spread the results achieved within INSTABAT. The first goal is to attract the interest of the main stakeholders related to activities of the project scope. This scope includes the fields of sensors, battery manufacturer, electrical storage systems for transportation and stationary application, electronic management suppliers, and so one.
In the frame of BATTERY 2030+ and the call H2020-LC-BAT-13-2020, INSTABAT will developing new promising emerging technolgies with a low TRL. That's why we will consider two stages for the INSTABAT exploitation and dissemination plan :

1- **The initial project phase**: based on the results achieved during INSTABAT project. In this phase, due to the low TRL of the research activity, the dissemination and communication are centered on the technical and scientific results. The audience targeted during is focused on the scientific community and the R&D entity.

2- **The INSTABAT expansion phase**: which will aim at planning exploitation of the results achieved with the first multi-sensor platform prototype until a commercial one would be ready. During this phase, outcome from the project will have increased the TRL of the studied solutions. This results can be communicated and promoted to a larger audience. Thus, we can communicate to the industrial actors in the field of batteries, sensors, and system integrators.

During both phases the key results of INSTABAT we will communicate and disseminate to a large audience: the scientific community (research entity, academia), industry, investors, European citizen, battery actors, etc… The dissemination target will be detailed in the next part.

This plan will articulate both dissemination and exploitation activities, increasing their intensity when the results become more consistent and closer to the market. INSTABAT project will setup a common framework for the exploitation and dissemination of the project results, covering all communities involved. Dissemination and exploitation activities will be consistent with the needs of each consortium member and will be focused on a unique strategy for the results exploitation. The aims to obtain a battery supply chain integrating the most valuable actors at EU level.

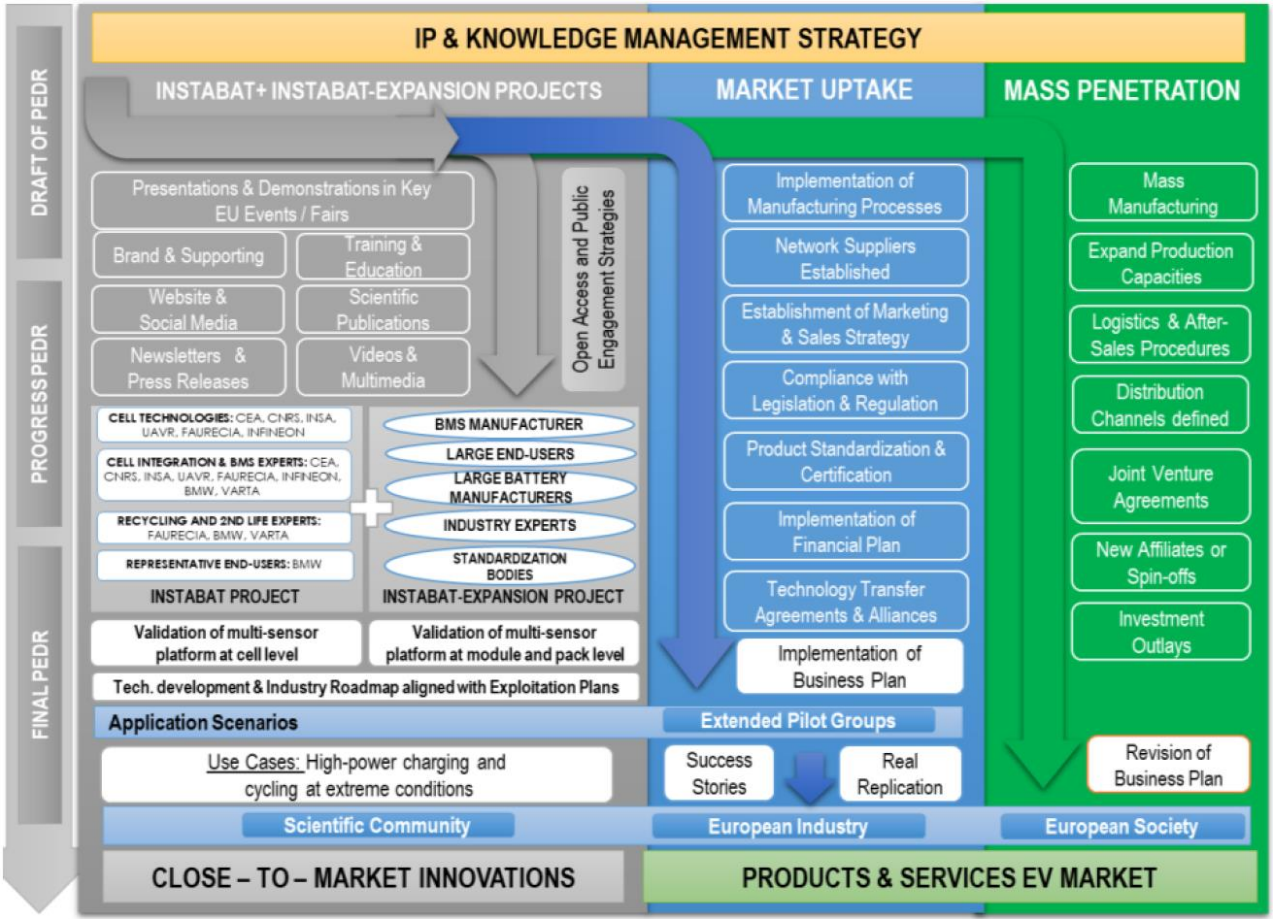

Figure 1: General overview of the IP and Knowledge strategy

3. Dissemination plan

The main objective of the dissemination activities is to use research results generated during the project to create value within the target communities/initiatives in the EU. This approach ensures that public funding will drive the progress and the positioning of EU industries as benchmark players within the global marketplace. To summarise, dissemination is the project communication ("raising awareness") and its results ("achievements") targeted to external audiences, scientific community and potential business users of the products developed. The project will promote research results and benefits for outreach and knowledge development within the targeted industry, end-users and academia communities around the EU battery secto.

The INSTABAT dissemination strategy will be defined and applied considering the type of partners involved in the tasks and the target audience for each dissemination action. The dissemination strategy will include: (1) a list of the scientific conferences and journals targeted by the consortium including the dates on which events are hed; (2) a list of EU events, trade fairs and strategic workshops with key stakeholders targeted by the consortium. The dissemination strategie that will be implemented in the project depend on the dissemination target.

3.1 Dissemination target

For the large industry partners of the project:
The aim of these entities will be to focus on identifying and engaging potential customers interested in INSTABAT platform that when it is generated at industrial level in the future: BMW will focus on EV customers; VMI will focus on the battery cell, module and pack customers; IFAG will focus on sensing technologies customers; FAURECIA will focus on EV manufacturers and OEMs. These dissemination activities will target the EV sector. Complementary industry-sectors part of the battery value chain including their client networks and commercialisation channels will be considered.

For academia and RTD partners of the project:
The aim of these entities is to engage the scientific and industrial communities across the EU to raise awareness of the project and contribute to knowledge generation. They will involve their research groups and communication departments in dissemination activities.

3.2 Dissemination channels

Given the type of partner involved in this task and the target audience of each dissemination action the dissemination channels are considering in the two different ways. Partners will disseminate the results through a set of dissemination channels fed on the Research and Innovation streams. The dissemination activities planned are organised as follows to address both ways:

Scientific Conference and International Journals. "Contribute to an excellence of science in EU".
INSTABAT, being a Research and Innovation Action (RIA), will result in a significant amount of research results that will be disseminated to key scientific communities working in the battery sector. Main academic partners will drive to publish scientific papers in internationally recognised scientific conferences and journals.

Table 1. *Scientific conferences target*

Partner	Conferences
CEA	Control Systems Conferences (IEEE CDC, ACC, IFAC World Congress); ECS, Battery Event, Sensors conferences, MRS, EMRS
CNRS	Materials Research Society (MRS) - Fall Meetings & Exhibits; International Society of electro-chemistry (ISE) – Conferences; The Electro-chemical Society (ECS) - Biannual Meetings;
UAVR	Advanced Automotive Battery Conference (AABC) Europe; Advanced lithium batteries for automobile applications (ABAA); European workshop on optical fiber sensors (EWOFS); International conference on optical fiber sensors (OFS);
INSA	IEEE Conference on Decision and Control, IFAC World Congress, American Control Conference, European Control Conference;
IFAG	Batterieforum Deutschland, Kraftwerk Batterie;
BMW	ECS (Meetings of the Electro-chemical Society), AABC (Advanced Automotive Battery Conferences), Hannover Messe International Fair, IMLB (International meeting on Lithium Batteries in 2022), Munich Battery Discussions, Kraftwerk Batterie, Batterieforum Deutschland;
VMI	Graz Battery Days 2020, Dresden Battery Days 2021, Munich Battery Discussions
FAURECIA	ECS (Meetings of the Electro-chemical Society), SIA ("Société des Ingénieurs de l'Automobile)

Table 1 show a non-exhaustive list of conference where the results from the project can be disseminate. This list was divided amog partners depending on their contribution on the project. This list may change during the course of the project depending on the results and the best impact on the conference audience.

Table 2 show the list of international journals, seminars and lectures targeted. This list may change during the project for the same reason than the conferences. The nature of the results may influence the choice of the most appropriate journal or seminars to maximize the impact of the dissemination. The scientific excellence of the target will be one of the major criteria in the choice for submission.

Table 2. *International reference journals, seminars and lectures targeted*

Partner	Conferences
CEA	Control Systems Journals (IEEE TCST, Control Engineering Practice), Journal of Power Sources, Sensors & Actuators;
CNRS	Nature Energy, Journal of the Electro-chemical Society, Journal of Power Sources, Energy Technology, IEEE Sensors Journal, Annual lectures at Collège de France linked to the Chair of Energy Storage and Conversion occupied by Prof. Jean-Marie Tarascon;
UAVR	Journal of Power Sources; Energy and Environmental Science; Electro-chemical Acta; Batteries; Sensors; Optics and Laser in Engineering; Journal of Lightwave Technology;
INSA	IEEE Transactions on Automatic Control, Automatica, Systems and Control Letters, IEEE Transactions on Control Systems Technology, IEEE Transactions on Industrial Electronics, Control Engineering Practice;
IFAG	Journal of Microelectromechanical Systems;
BMW	Peer-reviewed journals
VMI	
FAURECIA	

Interaction with key policy stakeholders and initiatives

The impact of marketing the disruptive technologies and their associated products/services will be analysed. The consortium will introduce the results into the initiatives and communities of the target sectors (such as actors from the whole battery supply chain, EVs customers and sensing technologies developers) by capitalizing on their of their strategic positioning. On this topic, efforts will also be combined with LC-BAT-12 and 14 consortia under the leadership of LC-BAT-15.

Table 3. *Positioning of the Consortium in European batteries, energy and industry initiatives:*

Partner	European batteries, energy and industry initiatives
CEA	InnoEnergy, EMIRI (Energy Materials Industrial Research Initiative), European Battery Alliance, BATTERY 2030+, EASE (European Association for Storage of Energy), EERA (European Energy Research Alliance), EARPA (European Automotive Research Partners Association), ALISTORE, LiPLANET network of pilot lines (LC-BAT-7);
CNRS	Member of the European Research Institute ALISTORE; BATTERY 2030+;
IFAG	BatteRIes Europe (Member of Working Groups 1, 4 & 5);
FAURECIA	European Green Vehicles Initiative (EGVI);
VMI	European Portable Battery Association, RECHARGE batteries;
BMW	ETIP European Technology & Innovation Platform (Industry Representative).

Several partners are extensively involved in battery initiatives at regional, national and EU level. They have been participating in roundtables, meetings and events with the EC, national bodies, and

other key stakeholders in order to implement a common strategy for a smooth transition to a clean economy, where energy storage will play a significant role. Thanks partners participation in key "battery initiatives" and "policy advisory committees", they will establish significant connections with ongoing projects. Table 3 lists the European batteries, energy and industry initiatives where each partner is involved.

Participation in European events, trade fairs and workshops

The project results and their main added value will be communicated and disseminated to potential customers / end-users at relevant European events/trade fairs. Moreover, the project partners will take part to strategic workshops to discuss with key stakeholders how best to introduce these results in different countries. Led by the industrial partners, the main technological results will be presented in EU events organised by EU Research Initiatives and in International Trade Fairs. The "multidisciplinary" background of INSTABAT partners will allow participating in wide variety of workshops. Harmonious cooperation actions will be developed with new and existing H2020 projects in order to align positions and share lessons learnt between them. Finally, the industrial partners will participate in prestigious trade fairs in order to establish synergies and further commercialise the results generated. The industrial partners of the consortium will participate in **trade fairs** such as: The Battery Experts Forum, Battery Tech Expo, The Battery Show Europe, Electric & Hybrid Vehicle Technology Expo Europe.

4. Communication plan

4.1 Objectives of the communication activities

INSTABAT communication covers all actions that will help to disseminate the results obtained beyond the consortium and the stakeholders involved. This maximizes the project's contribution to R&D industry and attract a large number of stakeholders who may adopt and benefit from the INSTABAT exploitable results. To support the dissemination activities, communications activities and tools will be put in place to promote objectives, activities and results to the scientific community and the civil society.
The consortium will:

- identify the target audiences and stakeholders;
- set up the variouscommunication channels and tools to reach the targeted audiences;
- monitor the impact of the communication strategy;

In order to apply corrective actions if necessary and identify opportunities that can maximize the impact and visibility of project results.

4.2 Identification of the target audience

The identification of the targeted audience is listed below by category. For each target audience we propose to use specific channels to maximize the impact and optimize the communication efficiency. The description of each target (A,B,C,D,E) are given below.

4.2.1 Industries operating in battery sector and sensing technologies (A)

The first target is the industrials actors operating in battery sector. This audience is not limited to the battery manufacturers but include the BMS suppliers, electronic component, raw chemical suppliers and distributors. INSTABAT project will develop new sensing solution for batteries, in addition the communication will also addressed to new industrial sector such as sensors and integrators industries. By covering the both areas, battery and sensing, INSTABAT communication aims to create new synergy and common strategy to enhance the future development of smart battery business.
Communication channels used to address this target group are: web, scientific journals and conferences, press releases, industry events (market fair) and dedicated workshop.
The objective of the communication activities with this target group is to generate interest in the project outcomes and results for commercial exploitation.

4.2.2 Circular economy players (B)

One of the objectives of INSTABAT project is to improve the recyclability and second life of cells thanks to the sum of information extracted by sensors throughout the life of along the battery life. The issue of recyclability of cells and sensors himself will be addressed in the context of INSTABAT. The circular economy players such as low energy market representatives, recyclers and consultancies are the second target group for INSTABAT communication.

Communication channels used for this target are: web, scientific journals and conferences.
The aim of the communication to this target group is project involvement and promotion of recycling potential of new technology and concept developed through INSTABAT for batteries.

4.2.3 INSTABAT stakeholders (C)

The third target group for communication activities are INSTABAT stakeholders such as industrial end-users, project partners and other relevant stakeholders. From this last category the BATTERY2030+ partners and sister projects of LC-BAT12, 14 and 15 are also considered. The communication toward these actors will be privileged in order to create synergy and cooperation.
Communication channels used for this target are: market and sector fairs, industry workshops and conferences.
The aim of the communication to this target group is project involvement and commercial exploitation.

4.2.4 Technology community (D)

The technology community such as EU initiatives, research communities, industrial association and platforms represent the fourth target for communication.
The channels used for this target are: web; scientific journals, conferences, dedicated workshops
The aim of the communication to this target group are project involvement, R&D cooperation and establishment of commercial networks.

4.2.5 Researchers and academics (E)

The research and academics actors are the fifth target group. Communication for this target will focus on the relevant factors such as research institutions actives in the scientific field related to INSTABAT activities: batteries, sensing, electronics, modeling, etc…
The channels used for this target are web, scientific journals and conferences with the objective to impulse new R&D cooperation.

4.2.6 Mass media (F)

The last target is the mass media such as specialized journalist in energy, materials, environment, economy, etc… The objective is to share the results and the INSATBAT concept with a large audience. This target is important to the societal impact and acceptation of the project.
The channels used for this target are: web, press release, articles and press conferences. The main objective is to raise public awareness.

4.3 Communication tools

4.3.1 Development of the INSTABAT website

The project website will be used as a meeting place for all stakeholders interested in the project. CEA will develop a website with general information about the project, as well as the obtained

results and project news/events. The web site will also be connected to the Battery2030+ initiative web site to link INSTABAT project to the others LC-BAT-12, 14 and 15 projects. Description of the web site content and architecture will be detailed in the deliverable D7.2.

4.3.2 Development of supporting communication means

Different supporting communication materials will be developed at the early stage of the project: logo, presentation templates as well as posters and flyers with general information about the project (with the main KPIs). This complementary material will reinforce the visual impact and summarize the project for diffusion at various events. Efforts will also be combined with LC-BAT-12 and 14 consortia under the leadership of LC-BAT-15. The visual identity of INSTABAT will be used to create the web site, the presentation, poster template, report and deliverable.

4.3.3 Maximizing the impact by the communication channels of the partners

CEA will build synergies with partners' marketing and communication departments in order to increase the impact of the dissemination and communication activities. These activities use tools such as press release to disseminate INSTABAT achievements to the large audience.

4.4 Communication activities

The communication measures within INSTABAT will be tightly coupled with the different dissemination activities (presented in the table below). It should be noted that during the first period of the project, activities will focus on creating awareness by presenting the project to the main communities. As soon as initial results are available, the measures will be focused on their dissemination.

Table 4. *Communication action related to target*

Measures	Description	TARGET
Logo and presentations	Logo and presentation templates for all partners.	All
Project website	Website, providing information about the project and the results, highlighting project news and acting as a communication channel with the stakeholders.	All
Supporting communication material	Posters presenting the project concept; flyers containing general project information.	All
Press releases, conferences, articles	Work will be carried out with specialised journalist associations.	F
Joint events and workshops. Networking with other projects	Events where INSTABAT will present its work and vision, in future battery developments (including links with other LC-BAT projects).	A,B,C,D,E

5. Exploitation plan

5.1 Methodology

Figure 2 show an overview of the INSTABAT exploitation plan. The exploitation strategy aims at progressing from an initial shared vision to a fully-fledged operational plan. This updated operating plan will be supported by a market analysis with the support of the industrial partners involved in the project.

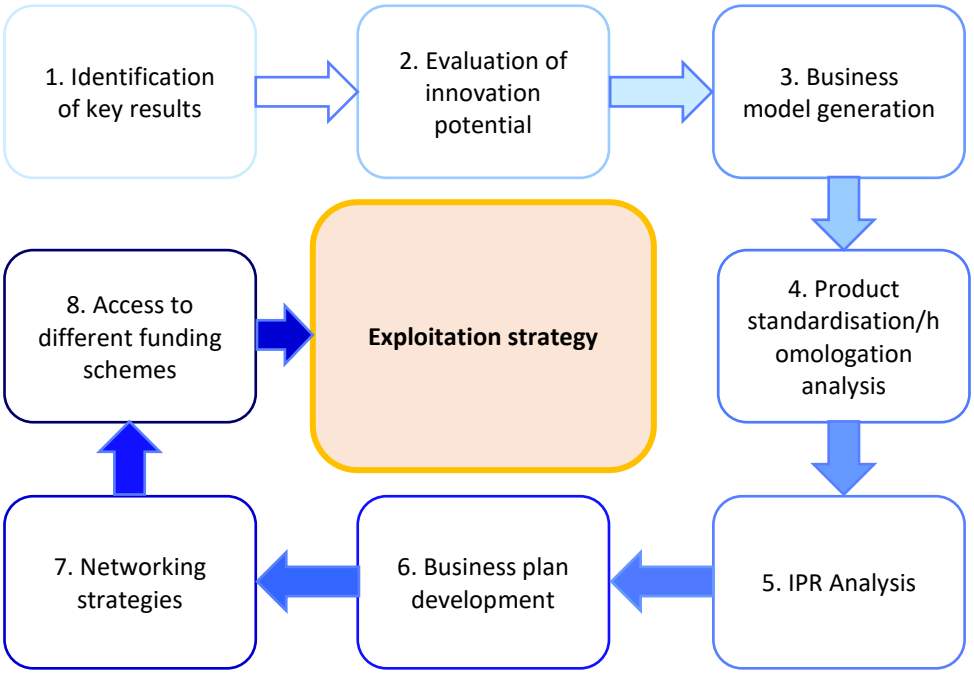

Figure 2 : Global overview of the INSTABAT exploitation plan

The exploitation strategy implemented in the project will be based on a step-by-step approach structured in the following activities:

(1) Identification of supply chain and evaluation of business potentials

Based on the outcome of T6.2 (Techno-economic analysis) a possible future supply chain will be described. This contains a survey of the existing supplier market to point out business opportunities for the INSTABAT partners. In addition, if gaps of the consortium in the value chain are identified, other industrial players interested in the INSTABAT results will be contacted to obtain full coverage.

(2) Evaluation of innovation potential

From the first phase the Key exploitation results will be evaluated for exploitation. This evaluation will be done by comparing them to the state of the art and the capability of this innovation with respect to an industrial application.

(3) Business model generation

Based on the competitive solutions, technically and economically, and on the earned acceptance from the industry, business models will be generated for each exploitable result.

(4) Product standardisation/homologation analysis

This step will be done together with the industrialization. It is expected that the innovations realized by in INSTABAT will have the potential to set new standards. This is important for the industrial partners to secure the technological lead and legal acceptance by authorities.

(5) Networking strategies

This step will be created to find all the markets that could be addressed by INSTABAT results.

(6) Access to different funding schemes:

In addition to H2020 funding, synergies with other funds, namely EU funding, regional, national programs, private funds or financial instruments will be aimed to support the project development during INSTABAT and INSTABAT-EXPANSION.

The implementation of the exploitation strategy will be coordinated by CEA, with collaboration of BMW acting as exploitation expert. INSTABAT will prepare of a multi-sensor platform ("lab-on-a-cell") exploitation for LIB cells in **D7.5**. Following the proof of concept, a prototype (TRL 3) will be validated at cell level at the end of the project. A study phase, based on the best trade-off between the physical measurements and the SoX indicators accuracy established during INSTABAT project, will be performed in order to decide which sensors should be integrated in the final "lab-on-a-cell" platform. Additional physical sensors, not currently part of INSTABAT project, could also be considered during INSTABAT-EXPANSION to improve the "lab-on-a-cell". Similarly, collaborations with other LC-BAT topics, in particular LC-BAT-14 about cell self-healing, could lead to the integration of additional capabilities (such as self-healing) within the "lab-on-a-cell". During the INSTABAT-EXPANSION, these batteries with innovative capabilities will be demonstrated, first as prototypes, and then at large-scale in pilot plants and manufacturing facilities, enabling the industry confidence as well as user acceptance.

A step-by-step methodology (see Figure 2) will allow defining the exploitation strategy based on the combination of the following typologies of exploitation plans:

• **Joint Exploitation Plan**: A common exploitation plan will be defined and implemented based on partner's positionwithin the value chain and the existing background and foreground generated. This exploitation plan will articulate key synergies between individual exploitation plans by defining an overall framework for action at marketing stage of commercialisation.

• **Individual Exploitation Plan**: Partners developing technologies susceptible to be exploited will build their individual exploitation plan according to their own exploitation strategy and capabilities.

Each partner will define its own market-oriented strategy so that all marketable results developed within the project count with a clear roadmap to reach a market entry phase.

Both documents will be part of the exploitation strategy (**D7.5**) and the starting point will be the key exploitable results identified in the table below along with the defined IP strategies. The main outcome of the project exploitation strategy will be a refined business plan taking into account the preliminary analysis conducted at project proposal stage. In addition, the exploitation will be completed by a technological development and industrial roadmap to define the next steps necessary for the continuation of INSTABAT-EXPANSION.

The actions proposed in the exploitation strategy will have an impact on sales and job creation for industrial partners, as this project will require additional research. Additional R&D staff will also need to be hired by the academia/RTD partners. As long as the INSTABAT TRL is low, the number of people that will be needed for further research is uncertain. The Table 5 gathers the most promising exploitable results that could be marketable in future products and services of the consortium's industrial partners.

Table 5. *Communication action related to target*

Partners	Key results	Potential clients and users
CEA	• OF/LumT and OF/LumL sensors • Electro-thermal and electro-chemical models • BMS algorithms (SoX indicators)	The users / potential customers of physical and virtual sensors, BMS algorithms and models will be the industries in charge of assembling the smart cell.
INSA	• E-Base electro-chemical virtual sensor algorithm	
UAVR	• OF/FBG sensor T-BASE thermal sensor algorithm	
IFAG	• RE sensor PA sensor Data logging methodology	IFAG's customers are TIER-1 automotive manufacturers and general battery manufacturers.
FAURECIA	• Thermal model	FAURECIA supplies the major EU vehicle manufacturers and is involved at early on in the vehicle design process.
BMW	• Cell with smart functionalities to be used in EVs	There are opportunities to integrate the smart cells in all EVs battery packs. The final end-users of the smart batteries will be the citizens who buy EVs
VMI	• Next generation of battery packs integrating smart functionalities • Next generation of batteries with new chemistries for various applications	There are opportunities to integrate the smart cells in all EVs battery packs. The final end-users of the smart batteries will be the citizens who buy EVs

5.2 Preliminary business plan

These paragraph form the basis of the preliminary business plan. This business plan should be updated throughout the project based on the key exploitation results and changes in the market

and actors. The objective of the business plan is to ensure a smooth future market penetration of the "Lab on cell solution" developed by INSTABAT. INSTABAT aims to pave the way for the commercialization of highly competitive Li-ion cells, particularly related to the requirements of the two use cases for EV applications that will be studied in the project (cycling at extreme conditions and high-power charging). The core business model will be based on the need for battery cell control solution (extending the cell lifetime and increasing its safety while still meeting the requirements of power density and energy) that will offset the additional costs incurred by the extra sensors.

Although the project has a very low TRL and the solutions developed in INSTABAT can be considered exploratory, the following solutions could be exploited in the future:

- **Sensors development** considering their integration in the cell and data pre-processing (Sensor manufacturers business plan)

- **Integration of sensors and their electronics in cells/modules:** casing design, communication to the BMS (Cell manufacturers business plan)

- **BMS considering the sensors data** optimised for mobility, stationary and other applications (Pack integrators business plan)

Battery users have a constant need for better performing batteries and less expensive costs. Battery manufacturers are therefore constantly trying to find new solutions to further improve their batteries and reduce costs. The multi-sensor platform developed in INSTABAT will meet both these needs. Direct customers will be battery manufacturers (represented by VMI in the consortium) while end-users will be their customers (here represented by BMW).

The expected solution will be particularly interesting for the automotive sector to increase battery life and safety while improving energy management. Therefore, it is expected battery manufacturers will adopt the solution in their LIB batteries to answer the needs of BEVs manufacturers. The automotive battery sensor market is forecast to be worth €2.11 billion by 2025. Once proven in the automotive sector, the solution will be adapted to different battery technologies to meet the needs of different sectors and markets (e.g. aeronautics, Industry 4.0, transmission/distribution system operators, etc.).

Collaboration with other LC-BAT calls has been identified essential to the successful market introduction of the "lab-on-a-cell". Communication with the network of pilot lines created in the framework of the LC-BAT-7 topic will accelerate the R&D necessary for the industrialization of the solution after INSTABAT. In addition, the collaboration with consortium in the LC-BAT-12 and LC-BAT-14 themes will lead to the development of an entirely new battery system with unprecedented capabilities. Such a battery will be considered as a whole with respect to industrialization and commercialization, as its impact on the market should be the most significant.