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Exploitation Plan Update

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Disclaimer

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[1] https://ev4eu.eu

Executive Summary

This document, **D10.6 Exploitation Plan – Update**, presents an updated strategy for the exploitation of results achieved within the EV4EU project, further refining the premises established in **D10.5**. It presents the final considerations on the project's exploitation activities, outlining a clear and structured vision to ensure the long-term use of EV4EU's outcomes beyond the project's lifetime.

Aligned with Horizon Europe's definition of exploitation, **D10.6** addresses how partners intend to transform project knowledge into tangible impact, either through further Research & Development (R&D) activities, commercialisation, product and service development and deployment, or creation of standards and policies. To achieve this, business development activities were carried out within **Task 10.3,** leveraging on the support from the Horizon Results Booster initiative, which provided guidance on defining exploitation plans and standardising procedures across partners. All partners identified the Key Exploitable Results (KERs) they plan to exploit in a post-project horizon, as well as developed detailed future pathways covering market challenges and needs, target users, competition positioning, Intellectual Property (IP) ownership, protection and management, and post-project activities to achieve exploitation goals.

EV4EU results address diverse market segments within the rapidly evolving electric vehicle (EV) ecosystem, and partners plan to use them mainly in future R&D and EU-funded initiatives, new products' development, commercialisation, knowledge sharing and services provision. Although the solutions demonstrate intermediate to high maturity, the main challenges partners will face eventually are related to regulatory frameworks for Vehicle-to-Everything (V2X) and flexibility markets still being under development, and hence, some markets are yet to be established.

Overall, **D10.6** presents project partners' exploitation strategies, which aim at ensuring the sustainability and continued impact of project outcomes. While most plans are within a medium to high level of maturity, it is recommended to make further efforts in refining specific business models, validating market assumptions, and strengthening IP protection strategies and business plan concretisation. The collective engagement of partners and the strategic support from Horizon Results Booster were essential for achieving the goals of this deliverable, ensuring that EV4EU solutions continue to generate value and are leveraged on to accelerate mass adoption of EVs across Europe.

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Keywords, Acronym

BEOF	*Bornholms Energi & Forsyning*
BM	Business Model
BUCs	Business Use Cases
CB	Campus Bornholm
CPO	Charging Point Operator
DTU	*Danmarks Tekniske Universitet*
D10.6	Deliverable 10.6
DR	Demand Response
DRE	*Direção Regional da Educação*
DER	Distributed Energy Resource
DMS	Distribution Management System
DSO	Distribution System Operator
eMSPs	Electric Mobility Service Providers
EV	Electric Vehicle
EVSE	Electric Vehicle Supply Equipment
EDP	*Eletricidade de Portugal*
EDA	*Eletricidade dos Açores*
EU	European Union
G2M	Go-to-Market
HW	Hardware
HEDNO	Hellenic Electricity Distribution Network Operator
HRB	Horizon Results Booster
INESC-ID	*Instituto de Engenharia de Sistemas e Computadores - Investigação e Desenvolvimento*
IP	Intellectual Property
IPR	Intellectual Property Rights
KER	Key Exploitable Result
LREC	*Laboratório Regional de Engenharia Civil*
LV	Low Voltage
OEMs	Original Equipment Manufacturers
PV	Photovoltaic
PPC	Public Power Corporation
RES	Renewable Energy Sources
R&D	Research and Development
SEL	Smart Energy Lab
SME	Small and Medium-sized Enterprises
SW	Software
TRL	Technological Readiness Level
TSO	Transmission System Operator
UVP	Unique Value Proposition
UL	University of Ljubljana
UC	Use Case
V2X	Vehicle-to-Everything
V2G	Vehicle-to-Grid
VPPs	Virtual Power Plants
WP	Work Package

1 Introduction

1.1 Scope and Objectives

This deliverable, **D10.6 – Exploitation Plan Update**, aims to propose a clear and updated exploitation plan for the project results and solutions developed by the partners during the EV4EU project, presenting a more mature and KER-focused version of the ideas included in **D10.5**. As an extension and update of **D10.5**, this deliverable was based on the previously developed work – in fact, since the beginning of the project that the exploitation strategy started to be elaborated and this deliverable aims to integrate all final considerations.

According to Horizon Europe [1], exploitation refers to the actions required for the knowledge to be transferred and the results used or commercialised into new products and services. Exploitation includes the use of project results in further activities other than the ones planned in the project, for benefit of the partners and to generate long-term impact in sustainability. Examples of such activities can be research, commercialisation, product development and marketing, services creation and provision, policy and standards creation, and participation in other EU-funded projects.

During the course of the EV4EU project, several results emerged that entail potential for further use and exploitation, adding value to the partners' portfolio and ensuring the return of investment of the partners and stakeholders involved. At the same time, the vision lies in perpetuating the learnings and developments from the project into an after-project timeline.

The value of **D10.6** is intrinsically tied to a setting up of a clear and structured vision on where EV4EU entities see their businesses in the future that stemmed from EV4EU's developments, and their goals. If, on the one hand, it may enlighten partners with similar market activities to promote and establish new partnerships, on the other hand, it may identify the differences between entities for a specific project result. Overall, **D10.6** aims at highlighting the value produced under the project.

Hence, defining practical objectives, steps and guidelines becomes important for the partners' exploitation plans, and for the project as a whole, as a way to achieve the maximum potential and maximise the impact of EV4EU results, in a post-project horizon. This deliverable aims to present this definition developed by the partners during the activities carried out within the scope of **Task 10.3** and supported by Horizon Results Booster (HRB) [2], along with the establishment of Intellectual Property (IP) strategies and knowledge ownership. It also highlights the business opportunities EV4EU has unlocked, tied to a deep understanding of the project market, target users, early adopters, and the competitive environment, which provide a solid base for exploitation actions and future partnerships.

1.2 Structure

This document is divided into four main sections. Section 1 introduces and provides context for the deliverable, stating its main objectives and scope. Section 2 presents the developed methodology to achieve an exploitation plan, highlighting the activities carried out during **Task 10.3**, as well as EV4EU's participation in Horizon Results Booster [2], that led to the definition of exploitation plans for each Key Exploitable Result. Section 3 presents EV4EU's exploitation strategy, the KERs (new ones, and those defined previously in **D10.1** and Grant Agreement) that will be exploited after the project, how they will be exploited, by which entities and other exploitation related aspects. It presents the results of **Task 10.3** activities and its critical analysis. Section 4 presents the main conclusions, challenges and limitations.

1.3 Relationship with other deliverables

The exploitation strategy presented in this document was developed based on inputs previously presented in **D1.4**, **D10.1**, **D10.5**, and the Grant Agreement.

D1.4 (**Business models centred in the V2X value chain**, [3]) provided some insights on previously defined business models (BMs) and business use cases (BUCs) – to help understand which KERs were applied to which demonstrators –, main stakeholders involved and target groups.

D10.1 (**Plan for the dissemination and exploitation of results including communication activities,** [4]) and **D10.5** (**Exploitation Plan,** [5]) supported the identification of EV4EU Key Exploitable Results and respective entities involved, ownership and target users, although some information may have changed since, which **D10.6** may reflect.

Other aspects collected during the development of **D10.6** were matched with the information defined at proposal stage on the Grant Agreement, such as KER descriptions, ownership and expected TRL (Technological Readiness Level) by the end of the project, which may also have changed.

2 Methodology

The definition of the Exploitation Plan for EV4EU results followed a few steps and activities that counted with the participation of the partners and the support of the Horizon Results Booster service [2] – an initiative from the European Commission aiming to provide EU-funded projects support on exploitation and dissemination of results, boosting the transformation of project results into concrete benefits for society.

The methodology for this definition was developed in alignment with the scope of **Task 10.3**, which, as defined initially in the Grant Agreement, aimed at managing "the process of preparing and collecting the exploitation plans of the partners". As stated, the goal was for each partner to produce detailed exploitation plans for their results, describing how they would benefit from the project's developments and how they would contribute to the project's overall sustainability, especially in a post-project horizon. Hence, all EV4EU partners contributed to design their exploitation plans and, ultimately, the overall strategy for EV4EU results.

Additionally, this methodology was envisioned to address **WP10** goal of standardising procedures needed for the exploitation of project results. In fact, the developed activities with support of the Horizon Results Booster [2] aimed at following a standardised rationale that ensured every partner followed similar guidelines when defining their future exploitation strategies. This idea was materialised into a template-filling exercise, embedded with learnings from Horizon Results Booster [2], as a way to collect information of the partners' future plans for their results, as much standardised as possible.

The adopted methodology took also into account the initial work developed and presented in **D10.5 Exploitation Plan** [5], as deliverable **D10.6** represents its extension and update. The focus, however, lied in detailing all KERs that will be exploited after the project, which was important to guarantee that the results are effectively exploited after project completion and beyond the scope and duration of the consortium.

2.1 Initial Approach

The initial path toward an updated version of EV4EU's exploitation strategy involved listing all Key Exploitable Results defined at the beginning of the project (in the Grant Agreement, **D10.1** [4] and **D10.5** [5], and **D1.4** [3]), per demonstrator, and validating with all partners which results were still being explored during the project at the time and by whom.

This validation consisted in brief and interactive activities with the partners, using Miro, during small workshop sessions carried out in **WP10** meetings. Additionally, during the Exploitation Workshop in the Azores General Assembly (July 2024), the partners contributed with additional inputs on the potential exploitation plans of each KER, and these inputs were assessed, comprehending topics such as potential competitors, customers, TRL, risks and barriers, and others.

After these interactive exercises, some KERs were excluded (no longer being explored in some demos), and other new results, not defined at the beginning of the project, emerged as KERs. Hence, to reach a final KER listing draft to be validated by demo leaders, a match between all previously stated sources (Grant Agreement, **D10.1** [4], **D10.5** [5], workshop sessions) was done.

From the final list of KERs being explored in the demos, the ones planned to be exploited post-project were identified. An Excel file was created for this, in which all partners were able to indicate which results they intended to exploit after EV4EU's completion, along with by which partners (single or joint exploitation), respective roles and responsibilities within a common exploitation goal, and the

leader/responsible for defining the intended exploitation path – the leader definition was critical for the cases with joint exploitation by various partners.

The latter exercise was key, as several project results were developed in the demos under the same pre-defined KER. In fact, for a specific KER, different solutions with specific use cases (UCs) were developed by different clusters of partners, and, hence, different exploitation intentions would be expected. For this reason, and because **D10.6** intends to provide further and clearer details on actionable exploitation paths and practical future steps and opportunities for the developed solutions, it was essential to discern this aspect, also as a way to move forward with the subsequent activities derived from EV4EU's participation on the Horizon Results Booster [2].

2.2 Horizon Results Booster Participation

EV4EU's participation on Horizon Results Booster [2] had the intent to boost the definition of exploitation plans to maximise the usefulness of results in a post-project horizon.

The provided service acted as training sessions for the participants (INESC-ID and SEL), supporting in the development of an exploitation strategy for three main EV4EU KERs; the identification of opportunities for further exploitation and use of results; and in advancing them toward market readiness. The three selected KERs were **V2X Station – EDGE** by SEL, **Decision Support Tool for Municipality Infrastructure Plan** and **Integrated Mobility Management for SMEs** (Small and Medium-sized Enterprises) by INESC-ID.

The Go-to-Market (G2M) support service included three modules (Module A, B and C), which covered contents such as the definition of:

- Exploitation intention and use model of the solution;
- Partners and entities involved and respective responsibilities;
- Target market, end-users and early adopters;
- Adopter's needs, problems and pains;
- Competitors, alternative solutions, competitive advantage and Unique Value Proposition (UVP);
- Activities planned to secure adoption of results, and timings to market;
- Business plan revenues and costs;
- Risk assessment and mitigation;
- Ownership and IPR management strategies.

The topics were developed for the three selected KERs, with support of materials and tools such as the Market Definition Canvas, Value Proposition Canvas and Template, and the Lean Canvas. These were the starting point for creating an adapted and overarching template to be further used in **Task 10.3** activities and applied to all other EV4EU KERs.

Based on the methodologies from Horizon Results Booster [2], the template presented in Figure 1 was designed, aiming to transpose the learnings from the service to the remaining project results and respective exploiting entities. Project partners participated in filling in the template for their project results, consolidating their exploitation plans in a single one-pager. For this, the previously explained (Section 2.1) definition of which KERs are planned to be further exploited and by which cluster of partners was essential.

KER:	(Write here)	**Category:**	(Write here)
Partners:	(Write here)	**Leader/Responsible:**	(Write here)

1. KER Characterisation

A. Description	**B. Exploitation Intention and Use Model**	**C. Responsibilities/roles of involved entities**
Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs. (Write here)	Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.) (Write here)	After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together. (Write here)

2. Market Definition

A. Customers & End users	**B. Target market**	**C. Adopter's problems/needs**
Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done. (Write here)	Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**. (Write here)	Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact). (Write here)

3. Competition and UVP

A. Competitors	**B. Unique Value Proposition**
Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses. (Write here)	Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions? (Write here)

4. Timings, TRL & Go-to-market

A. TRL	**B. Time to market**	**C. Planned Activities**
Indicate the current level of maturity of your solution and expected at the end of the project. (Write here)	Specify the time until your solution reaches a higher TRL and is ready for the market. (Write here)	Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan. (Write here)

5. Intellectual Property Rights

A. IPR Background	**B. IPR Foreground**
Are there any background IPR? Specify them by type and partner. (Write here)	Are there any foreground IPR? Specify them by type and partner. (Write here)

6. Business Plan Definition (if applicable)

A. Revenue Streams	**B. Costs**
Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time. (Write here)	What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.) (Write here)

Figure 1: KER template for the exercise developed by partners in Task 10.3, prompted by Horizon Results Booster service [2].

KER Template Activity

Each cluster of partners planning to exploit a specific KER filled in the template regarding their plans for exploiting that result after the end of the EV4EU project.

After identifying the KER name, category, involved partners and the leader/responsible for defining the exploitation path (previously done in preceding **Task 10.3** activities), the exercise consisted in providing information on six different topics:

1. **KER Characterisation**

   A. Description: In this field, partners were asked to provide a brief description of the developed solution they intended to exploit post-project, explaining its purpose and what it consists of.

   B. Exploitation Intention/Use Model: The goal was to identify the intended exploitation pathway(s), way(s) of further utilising the result, and how it will be made available by the leader. A result can be used through:
      - Commercialisation (deployment of a novel product offered to the target markets);
      - Manufacturing of a new product/Integration of KER in a new product;
      - Provision and implementation of a service (consulting, service to end-user, etc.);
      - Research & Development (future funded R&D projects, publications, etc.);
      - Academia application (university courses, etc.);
      - Technology transfer;
      - Knowledge sharing (workshops, trainings, etc.);
      - Internal use;
      - Licensing;
      - Development of new legislations/standards.

   C. Responsibilities/roles of involved entities: This field aimed at defining the contribution and role each partner would have to ensure the exploitation path is met.

2. **Market Definition**

   A. Customers & End-users: Partners were asked to define the customers for their result, usually entities that will use the solution to satisfy a need.

   B. Target market: In this field, it was intended for the partners to take a broader view at the group of people/entities identified in field 2A and place them in a wider category, resulting in the identification of the target market (market in which the solution can be used in and compete in).

   C. Adopter's problems/needs: The goal was to pinpoint the problems, pains, and needs the end-users have, which the solution aims to address (direct or indirectly).

3. **Competition and UVP**

   A. Competitors: Partners were asked to share whether they had already identified their competition (direct or indirect), and to specify some examples along with their strengths and weaknesses.

B. Unique Value Proposition (UVP): This field aimed at defining how much better the developed solution solves the adopter's problems/addresses their needs in comparison to competitors' solutions, i.e., how is the developed solution distinguished from the competition.

4. Timings, TRL & Go-to-market

A. Technology Readiness Level (TRL): The goal was to indicate the current level of technology maturity of the KER and expected at the end of the EV4EU project.

B. Time to market: This field aimed at assessing the time the partners expect it can take for their solution to be market ready, i.e., to reach a higher TRL.

C. Planned Activities: Partners identified which activities they plan to undertake after the end of the project to ensure the developed solution reaches a higher TRL and becomes market ready.

5. Intellectual Property Rights

A. IPR Background: In this field, partners were asked to indicate pre-existing IP (knowledge, software, algorithms, etc.), prior to EV4EU, that helped them or was used to develop the solution.

B. IPR Foreground: This field aimed at defining who owns the different components developed within the KER – ownership division between the partners of the IP generated during the project, specifically related to the KER at scope.

6. Business Plan Definition

A. Revenue Streams: Partners were asked to detail what would be the streams of revenue for the exploitation intention (e.g. for commercialisation, the revenue streams could be from direct sale, from subscriptions, etc.).

B. Costs: Similarly, this field aimed at mapping what costs the partners would have for further developing and exploiting the solution. Costs and investments with planned activities were also considered essential here.

2.3 KER Template Analysis

After the gathering of information from the partners with the proposed KER template, the inputs were reviewed, and clusters were created to facilitate the mapping of EV4EU solutions and future exploitation pathways.

The Key Exploitable Results were clustered by category (initially defined in the Grant Agreement: Business Models and Services, Technologies, and Tools) and sub-category:

- Business Models and Services:
  - Grid services: Services or business models mainly addressing grid or network needs.
  - User-focused services: Services or business models mainly addressing end-user's needs.
- Technologies:
  - EV-focused: Hardware-based solutions mainly tailored to managing EVs.

    - Grid-focused: Hardware-based solutions mainly applied to the grid.
    - Multi-asset: Hardware-based solutions tailored to managing multiple assets, along with EVs.
- Tools:
    - Operation-focused: Tools, algorithms, or models developed to assist at operation level.
    - Decision-focused: Tools, algorithms, or models developed to assist at decision-making level.

After the clustering, each KER template was processed, focusing on eight questions which are thoroughly addressed in Section 3:

- *What are the exploitation pathways and use models of the solutions?*
- *Which entities are involved in the exploitation?*
- *What target market problems and needs do the solutions address?*
- *What is the UVP of the solutions?*
- *Which type of competition, and examples, is related to the solutions?*
- *How is the market and technology readiness of the solutions classified?*
- *Which activities and actions have the partners planned to undertake to ensure the exploitation intention is followed?*
- *Who owns what was developed within the KER scope and is there any IPR?*

3 Exploitation Strategy – Update

Considering the framework detailed in Section 2, this section presents the results of the activities by mapping EV4EU's Key Exploitable Results and the answers to the proposed questions. Additionally, some main takeaways based on the KER exploitation plans analysis are discussed.

3.1 Key Exploitable Results

Table 1 presents EV4EU's Key Exploitable Results that are planned to be exploited after the end of the project. These are clustered by category and sub-category and divided by KER owners and leaders of the groups of partners planning to exploit. The developed template-exercise is included in full detail in the Appendix section for each group[1]. Figure 2 to Figure 4 portray all KERs, organised by category and sub-category.

The following sub-sections (3.1.1, 3.1.2, 3.1.3) focus on answering the proposed questions in Section 2 for all grouped KERs, while presenting more details of the developed solutions.

Table 1: EV4EU's Key Exploitable Results by category, sub-category and KER owner/leader, linked to KER Templates.

Category	*Sub-category*	*KER name*	*Owner(s) & Leader(s)*	*KER Template (Appendix)*
Business Models & Services	**Grid services**	**1. Demand Response for V2X**	INESC-ID	KER 1A
			Circle, DTU	KER 1B
			Elektro Celje	KER 1C
	Grid services	**2. Participation of V2X in markets and** services	INESC-ID	KER 2A
			GEN-I	KER 2B
	User-focused services	**3. EV Fleet Management Services**	INESC-ID	KER 3A
			GEN-I	KER 3B
	Grid services	**4. Green charging**	INESC-ID	KER 4A
			HEDNO, PPC	KER 4B
			DTU, Circle	KER 4C
			GEN-I	KER 4D
	User-focused services	**5. Sharing charging**	INESC-ID	KER 5A
			DTU	KER 5B
			GEN-I	KER 5C
	Grid services	**6. Flexible capacity contracts for V2X**	PPC	KER 6A
			GEN-I	KER 6B

[1] Identified by: 1 – KER number, A – group ID.

	Grid services	**7. Flexible services for local market (New)**	DTU	KER 7A
			GEN-I	KER 7B
Technologies	**Multi-asset**	**8. Houses/Building/Parking Lot energy management system**	INESC-ID	KER 8A
			DTU	KER 8B
	EV-focused	**9. V2X Station**	SEL	KER 9A
			Circle	KER 9B
			ABB	KER 9C
	EV-focused	**10. Load balancing smart charger (New)**	Circle	KER 10A
	Grid-focused	**11. LV monitoring (HW and SW) (New)**	HEDNO	KER 11A
Tools	**Operation-focused**	**12. Open V2X management platform**	PPC	KER 12A
			GEN-I	KER 12B
	Decision-focused	**13. Co-simulation platform for V2X**	INESC-ID	KER 13A
			UL	KER 13B
	Decision-focused	**14. V2X management strategies: high-level coordination tool**	GEN-I	KER 14A
	Operation-focused	**15. Integration of V2X management in DMS**	HEDNO	KER 15A
			GEN-I	KER 15B
	Decision-focused	**16. Decision Support Tools for VPPs and CPOs**	PPC	KER 16A
			GEN-I	KER 16B
			UL	KER 16C

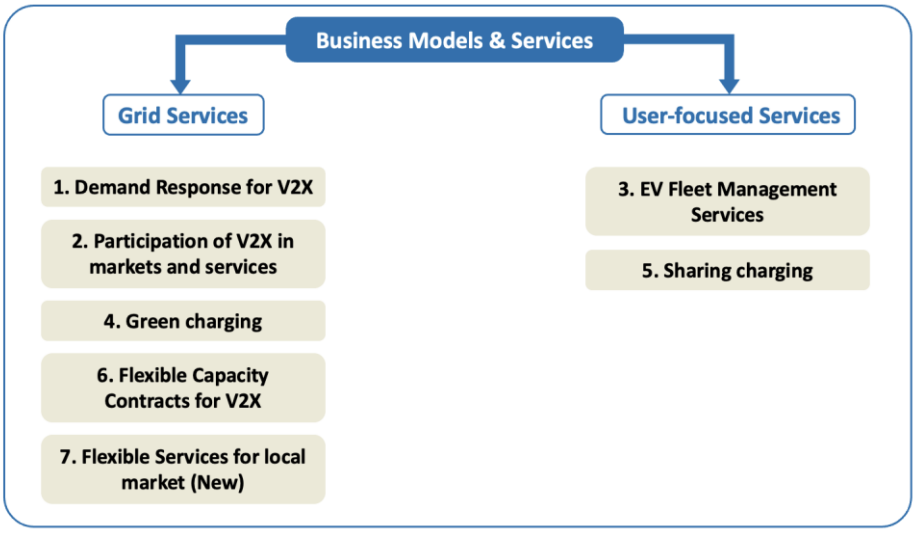

Figure 2: KERs categorised as Business Models & Services, and sub-category division.

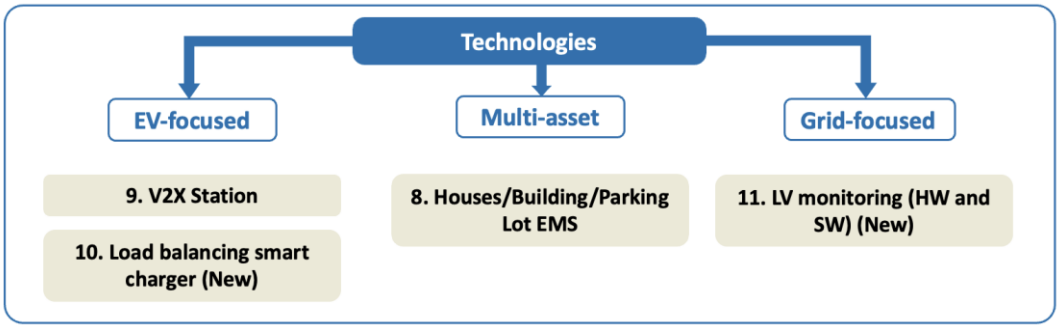

Figure 3: KERs categorised as Technologies, and sub-category division.

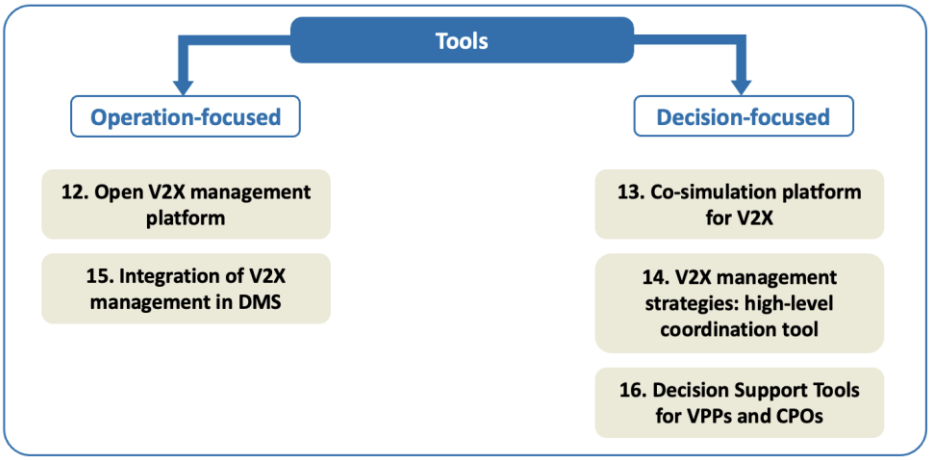

Figure 4: KERs categorised as Tools, and sub-category division.

3.1.1 Business Models & Services

1. Demand Response for V2X

Business model in which the Distribution System Operator (DSO) establishes a demand response (DR) market, where it procures flexibility capacity from V2X/V2G technology aggregation. To enable their participation, the DSO implements appropriate technical and market mechanisms that allow end-users to engage in the market through an aggregator in accordance with the constraints of the local distribution network. The solution fosters large-scale EV integration while supporting power system flexibility, and leverages on advanced strategies to enable EVs to actively contribute as distributed energy resources, engaging end-users, fleet operators, and aggregators in new flexibility services. This aims to reduce peak demand, ease grid constraints, and facilitate higher renewable integration, all while preserving user comfort and long-term system sustainability.

In Table 2 are the main gathered considerations on this KER. Further details are presented in the Appendix section (templates KER 1A, KER 1B, and KER 1C).

Table 2: KER 1 (Demand Response for V2X) main considerations.

Category & Sub-category	**Business Models & Services: Grid services**		
Owner(s)/Leader(s)	**INESC-ID**	**Circle, DTU**	**Elektro Celje**
Entities involved in the exploitation	• R&D Centre/University/CoL AB (INESC-ID, SEL) • DSO (EDA) • Regional government (DRE) • Utility (EDP New)	• R&D Centre/University/CoL AB (Circle, DTU) • DSO (BEOF)	• DSO (Elektro Celje) • Aggregator (GEN-I) • Technology provider (ABB) • R&D Centre/University/CoL AB (UL)
Exploitation pathways and use models	• Research & Development (future projects, publications) • Academia (university courses, etc.) • Others (Knowledge sharing; Technology transfer)	(Still in definition) • Provision of a service (consulting)	• Flexibility services (provision or procurement)
Ownership and IP within the KER	INESC-ID holds copyright software, database rights, and trade secrets over components of the KER. Owner of the models is INESC-ID.	Joint ownership of the technology from Circle and DTU.	Elektro Celje holds copyright over a specific component involved in the KER (FlexIS platform).
Target market problems & needs the solution addresses	**Problems/Constraints:** • Costly and slow grid upgrades • Uncertainty in energy availability and user behaviour • Lack of regulatory clarity **Needs:** • Need for scalable, automated, and standardized solutions that ensure grid stability, cost-efficiency, and user convenience. • Grid resilience and stability (voltage regulation, etc) • DSO quality of supply		
Competition	Competition, depending on the exploitation perspective of this KER, can include CPOs such as Spirii, Monta, Clever, and Aggregators such as NGEN, KOLEKTOR Setup, HSE.		
Market and technology readiness	• TRL range: 6-7. • Market readiness dependent mainly on external factors, such as regulation, certifications, etc. • Time to market may be around 1-3 years. • Expected final TRL in the Grant Agreement: 6		
Planned activities and actions	• Business plan finalisation and IP protection process development. • R&D and market support activities.		

2. Participation of V2X in markets and services

Service in which aggregators allow the participation of V2X in energy markets and services (ancillary services and services procured by DSOs). Consumers, producers, and storage owners can adjust energy use/supply to support the grid, while the aggregator forms pools of EVs and batteries to offer flexibility to DSOs, helping balance demand, reduce congestion, and avoid grid upgrades. Users earn incentives and TSOs (Transmission System Operators) and DSOs gain stability and more renewables penetration.

In Table 3 are the main gathered considerations on this KER. Further details are presented in the Appendix section (templates KER 2A and KER 2B).

Table 3: KER 2 (Participation of V2X in markets and services) main considerations.

Category & Sub-category	**Business Models & Services: Grid services**	
Owner(s)/Leader(s)	**INESC-ID**	**GEN-I**
Entities involved in the exploitation	• R&D Centre/University/CoLAB (INESC-ID, SEL) • DSO (EDA) • Regional government (DRE) • Utility (EDP New)	• DSO (Elektro Celje) • Aggregator (GEN-I) • Technology provider (ABB) • R&D Centre/University/CoLAB (UL)
Exploitation pathways and use models	• Provision of a service (consulting) • Research & Development (future projects, publications) • Others (Knowledge sharing)	• Flexibility services (provision or procurement) • Others (Knowledge sharing)
Ownership and IP within the KER	INESC-ID is the owner. Both INESC-ID and EDP New hold background and foreground IPR on software.	IPR owned by GEN-I, except for the V2X charging stations, which are owned by ABB.
Target market problems & needs the solution addresses	**Problems/Constraints:** • Difficulties aligning EV services with building RES production. • Limited tools for safe, scalable activation of grid services through V2X • Aggregator has low awareness of V2X capacity available for flexibility. There is the need for transparency and control. **Needs:** • Grid resilience and stability (voltage regulation, etc) • Enabling EVs to provide flexibility services through aggregation • Need for scalable, automated, and standardised solutions that ensure grid stability, cost-efficiency, and user convenience.	
Competition	Competition, depending on the exploitation perspective of this KER, can include aggregators such as Nuvve, Jedlix, Octopus Energy.	
Market and technology readiness	• TRL 8 • Market readiness dependent mainly on external factors (regulation) • Timeline may be around 1-2 years • Technology is mature, market under development • Expected final TRL in the Grant Agreement: 8	

Planned activities and actions	• Business plan finalisation and IP protection process development • Development of regulatory frameworks • Launch of aggregator platform • R&D and market support activities

3. EV Fleet Management Services

Business model in which companies benefit from the developed algorithms, allowing the optimal management of EVs considering travel and charging needs. The digital solution coordinates SMEs EV fleet usage and charging across facilities. It aligns mobility needs with site electrical capabilities to boost vehicle availability while reducing infrastructure spend and contracted power.

In Table 4 are the main gathered considerations on this KER. Further details are presented in the Appendix section (templates KER 3A and KER 3B).

Table 4: KER 3 (EV Fleet Management Services) main considerations.

Category & Sub-category	**Business Models & Services: User-focused services**	
Owner(s)/Leader(s)	**INESC-ID**	**GEN-I**
Entities involved in the exploitation	• R&D Centre/University/CoLAB (INESC-ID) • Utility (EDP New)	• Aggregator (GEN-I) • Technology provider (ABB) • DSO (Elektro Celje) • R&D Centre/University/CoLAB (UL)
Exploitation pathways and use models	• Others (Licensing and Knowledge transfer) • Academia	• Flexibility services (provision or procurement) • Service provision to end-user
Ownership and IP within the KER	INESC-ID holds domain know-how on specific components of the KER and foreground IP on software. Owner of the technology enabling the service is INESC-ID.	The IPR is owned by GEN-I.
Target market problems & needs the solution addresses	**Problems/Constraints:** • Costly and slow grid upgrades **Needs:** • Scalability: Growing fleets need flexible tools that adapt to changing • Fair demand across organisations while meeting operational needs • Reduce end-user dissatisfaction and anxieties • Need for a unified tool to stagger charging across brands and models	
Competition	Competition, depending on the exploitation perspective of this KER, can include Fleet Complete, Verizon Connect, Teletrac Navman, ChargePoint, Samsara, Vulog.	
Market and technology readiness	• TRL 7 • Timeline to reach higher TRL and market readiness may be around 9-18 months (dependent mainly on planned activities by partners)	

Planned activities and actions	• Validation and piloting activities • Business plan finalisation and IP protection process development • Development of regulatory frameworks • Launch of aggregator platform • R&D and market support activities

4. Green charging

Service aiming at maximising, ensuring and incentivising the coordination between EV charging and discharging (V2X) and the RES curtailment, specifically wind curtailment, at a distribution level. DSOs (or TSOs) identify abundant power generation from distributed RES and provide incentives for EVs to adjust their charging decisions to make use of this green energy, based on dynamic pricing.

In Table 5 are the main gathered considerations on this KER. Further details are presented in the Appendix section (templates KER 4A, KER 4B, KER 4C and KER 4D).

Table 5: KER 4 (Green charging) main considerations.

Category & Sub-category	**Business Models & Services: Grid services**			
Owner(s)/Leader(s)	**INESC-ID**	**HEDNO, PPC**	**DTU, Circle**	**GEN-I**
Entities involved in the exploitation	• R&D Centre/University/CoLAB (INESC-ID, SEL) • DSO (EDA) • Regional government (DRE) • Utility (EDP New)	• Utility (PPC) • DSO (HEDNO)	• R&D Centre/University/CoLAB (Circle, DTU, CB) • DSO (BEOF)	• Aggregator (GEN-I) • Technology provider (ABB) • DSO (Elektro Celje) • R&D Centre/University/CoLAB (UL)
Exploitation pathways and use models	• Provision of a service (consulting) • Research & Development (future projects, publications) • Others (Knowledge sharing)	• Commercialisation • Flexibility services (provision or procurement)	(Unable to conclude. Still in definition)	• Provision of a service (consulting) • Flexibility services (provision or procurement) • Research & Development (future projects, publications)
Ownership and IP within the KER	INESC-ID holds background and foreground IP over software tied to this KER.	Ownership of KER components is divided between PPC and HEDNO.	Joint ownership by DTU and Circle regarding technology.	The IPR is owned by GEN-I.

Target market problems & needs the solution addresses	**Problems/Constraints:** • Difficulties aligning EV services with building RES production • Costly and slow grid upgrades • Imprevisibility of renewable generation **Needs:** • Need to maximise renewable energy uptake and higher RES hosting capacity to improve grid stability, with no reinforcements. • Grid resilience and stability (voltage regulation, etc) • Postpone or reduce grid reinforcement costs under high RES deployment by exploiting EV storage capacity
Competition	Competition, depending on the exploitation perspective of this KER, can include Clever, EON, Zaptec, Easee, Monta, Spirii, Fronius, ChargePoint, Shell Recharge, Electrify America, GRIDSERVE, BP Pulse, Camus Energy.
Market and technology readiness	• TRL 5-7 • Market readiness dependent mainly on external factors (regulation), besides the activities planned by the partners to ensure higher TRL • Timeline may be around 1-2 years, or more than 3 years, depending on the partners' exploitation perspectives/pathways • Technology is mature, market under development • Expected final TRL in the Grant Agreement: 5
Planned activities and actions	• Further technology developments • Market-understanding study • Up-scaling pilots • Business model definition • Feasibility study • R&D and market support activities.

5. Sharing charging

Business model based on a smart load management system that enables multiple EVs to charge simultaneously, even when local electrical capacity is limited. Instead of costly grid upgrades or restricting access, it dynamically allocates available power based on real-time factors like grid capacity, battery state of charge, departure time, electricity pricing, and safety limits. It can be particularly suitable for companies operating EV fleets that also share V2X charging stations with employees and visitors, by incorporating a dynamic prioritisation hierarchy across fleet vehicles, employees, visitors and facility services. The system also enables energy redistribution among vehicles, to maximise the number of EVs simultaneously charging while optimising overall energy usage and user satisfaction. The charging system can provide power sharing and power scheduling functionalities to have the EVs modulating or pausing their charging sessions.

In Table 6 are the main gathered considerations on this KER. Further details are presented in the Appendix section (templates KER 5A, KER 5B and KER 5C).

Table 6: KER 5 (Sharing charging) main considerations.

Category & Sub-category	**Business Models & Services: Grid services**		
Owner(s)/Leader(s)	**INESC-ID**	**DTU**	**GEN-I**
Entities involved in the exploitation	• R&D Centre/University/CoL AB (INESC-ID, SEL) • DSO (EDA) • Utility (EDP New)	• R&D Centre/University/CoL AB (Circle, DTU, CB)	• Aggregator (GEN-I) • Technology provider (ABB)
Exploitation pathways and use models	• Others (Licensing and Knowledge transfer) • Academia • Service provision to end-user	(Unable to conclude. Still in definition)	• Service provision to end-user • Research & Development (future projects, publications, etc.)
Ownership and IP within the KER	INESC-ID holds background and foreground IP over software related to this KER.	Joint ownership between DTU and Circle.	The IPR is owned by GEN-I.
Target market problems & needs the solution addresses	**Problems/Constraints:** • Restricting grid capacity • Costly grid updates **Needs:** • Need to maximise EVs charging simultaneously across varied user types (fleet, employees, visitors) without big infrastructure investment • Optimise building load with PV and EVs • EV users need charger availability to maintain their charging routines (energy reliability) • User-centric, smooth and simplified digital experience		
Competition	Competition, depending on the exploitation perspective of this KER, can include Clever, EON, Zaptec, Easee, Siemens, Wallbox, EVBox, Alpitronic, Petrol, Ionity.		
Market and technology readiness	• TRL 5-8 • Market readiness dependent mainly on external factors (regulation; availability of V2X vehicles), but also dependent on investment • Timeline may be around 1-4 years • Technology is mature, market under development • Expected final TRL in the Grant Agreement: 5		
Planned activities and actions	• Further technology developments • Market-understanding study • Business Plan finalisation • Investment plan • Marketing campaigns • Business model definition		

6. Flexible capacity contracts for V2X

The business model enables DSOs or aggregators to procure defined amounts of flexibility from EV owners and fleet operators. These contracts specify the available capacity that can be activated on demand to support grid balancing, congestion management, or ancillary services, while avoiding, reducing or delaying investments in the distribution infrastructures. Such contracts are primarily established with key stakeholders including aggregators, CPOs (Charging Point Operators), and large fleet operators. The contracts define conditions under which V2X-enabled assets, such as EVs or stationary storage, adjust their charging or discharging behavior in response to grid capacity constraints or flexibility requests.

In Table 7 are the main gathered considerations on this KER. Further details are presented in the Appendix section (templates KER 6A and KER 6B).

Table 7: KER 6 (Flexible Capacity Contracts for V2X) main considerations.

Category & Sub-category	**Business Models & Services: Grid services**	
Owner(s)/Leader(s)	**PPC**	**GEN-I**
Entities involved in the exploitation	• Utility (PPC) • DSO (HEDNO)	• Aggregator (GEN-I) • Technology provider (ABB) • DSO (Elektro Celje) • R&D Centre/University/CoLAB (UL)
Exploitation pathways and use models	• Commercialisation • Flexibility services (provision or procurement)	• Flexibility services (provision or procurement)
Ownership and IP within the KER	The IPR is owned by PPC.	The IPR is owned by GEN-I.
Target market problems & needs the solution addresses	**Problems/Constraints:** • Aggregators face complexity in managing diverse assets • Lack of standardised platforms, clear policies, and fair incentives **Needs:** • Need for market-ready solution for formal flexible capacity contracts between CPOs/Aggregators and DSOs • DSOs need to manage grid constraints cost-effectively	
Competition	Competition, depending on the exploitation perspective of this KER, can include NRG, JOLTIE, FORTIZO, BLK, WAV, Next Kraftwerke, E.ON, Enel X, Tiko, Nuvve, Petrol, NGEN, KOLEKTOR Setup, HSE.	
Market and technology readiness	• TRL 6-8 • Market readiness dependent mainly on external factors (regulation) • Timeline may be around 1-5 years • Technology is mature, market under development • Expected final TRL in the Grant Agreement: 5	
Planned activities and actions	• Pilot analysis • Up-scaling pilots	

	• Business model and pricing definition • R&D and market support activities • Development of regulatory frameworks • Further development of Aggregator platform

7. Flexible services for local market (New)

Business model in which the aggregator can coordinate different parking lots to access flexibility services markets and bid flexibility services. The larger flexibility coming from aggregation of parking lots could be marketed and provide revenue streams.

In Table 8 are the main gathered considerations on this KER. Further details are presented in the Appendix section (templates KER 7A and KER 7B).

Table 8: KER 7 (Flexible services for local market – New) main considerations.

Category & Sub-category	**Business Models & Services: Grid services**	
Owner(s)/Leader(s)	**DTU**	**GEN-I**
Entities involved in the exploitation	• R&D Centre/University/CoLAB (DTU)	• Aggregator (GEN-I) • Technology provider (ABB) • DSO (Elektro Celje) • R&D Centre/University/CoLAB (UL)
Exploitation pathways and use models	• Commercialisation • Research & Development (future projects, publications, etc.)	• Flexibility services (provision or procurement) • Research & Development (future projects, publications, etc.)
Ownership and IP within the KER	Ownership by DTU.	The IPR is owned by GEN-I.
Target market problems & needs the solution addresses	**Problems/Constraints:** • Imprevisibility of renewable generation **Needs:** • Need for market-ready solutions and standardised products for local flexibility markets • Need to maximise renewable energy uptake to improve grid stability • Grid resilience and stability (voltage regulation, etc) • Reliable and scalable flexibility resources	
Competition	Competition, depending on the exploitation perspective of this KER, can include Clever, EON, Zaptec, Easee, Petrol, NGEN, KOLEKTOR Setup, HSE.	
Market and technology readiness	• TRL 8 • Market readiness dependent mainly on external factors (regulation; availability of V2X vehicles) • Timeline may be around 1-3 years • Technology is mature, market under development	

Planned activities and actions	• Further technology developments • Pilot projects • R&D and market support activities • Development of regulatory frameworks • Definition of grid-related requirements for flexibility activation • Validation and testing

3.1.2 Technologies

8. Houses/Building/Parking Lot energy management system

Energy management system which can monitor and adapt the EV charger consumption depending on the demand of the building, with inputs from building/house energy meter. This allows to setup EV chargers, even if in peak periods building/house consumption is close to fuse limit. It aligns energy flows between EVs, building loads, and the grid to improve self-consumption and overall value, enabling bidirectional operation where supported. This solution can also be applicable and scalable to parking lots.

In Table 9 are the main gathered considerations on this KER. Further details are presented in the Appendix section (templates KER 8A and KER 8B).

Table 9: KER 8 (Houses/Building/Parking Lot Energy Management System) main considerations.

Category & Sub-category	**Technologies: Multi-asset**	
Owner(s)/Leader(s)	**INESC-ID**	**DTU**
Entities involved in the exploitation	• R&D Centre/University/CoLAB (INESC-ID, SEL) • Utility (EDP New)	• R&D Centre/University/CoLAB (Circle, DTU, CB)
Exploitation pathways and use models	• Commercialisation • Others (Technology transfer; Licensing; Contract research) • Service provision to end-user	• Provision of a service (consulting; implementation) • Research & Development (future projects, publications, etc.)
Ownership and IP within the KER	INESC-ID holds background and foreground IP over components of this KER (copyright, know-how, pre-existing patents, trade secrets, potential future patents and trademarks). SEL and EDP New also own foreground IP over some components of the KER.	DTU owns and will hold foreground IP over algorithms, methodologies, data. Circle will hold foreground IP over software, hardware and design.
Target market problems & needs the solution addresses	**Problems/Constraints:** • Fear of voiding battery warranty • High EV adoption costs and building integration **Needs:** • Homeowners/prosumers need a single app consolidating all managed assets in the home/building	

	• Need to save money through smart energy management • Building managers want to avoid costly transformer upgrades to ensure reliable energy to all assets • Retailers and utilities need accurate forecast of charging routines
Competition	Competition, depending on the exploitation perspective of this KER, can include EON, Easee, Zaptec.
Market and technology readiness	• TRL 7 • Market readiness dependent mainly on investment, availability of technologies and the planned activities from the partners • To reach a higher TRL, timeline may be around 9-12 months after project end, or 1-5 years, depending on the partners' exploitation perspectives/pathways • Expected final TRL in the Grant Agreement: 7/8
Planned activities and actions	• Validation with standards • Pilots • Business plan finalisation • IP protection process • Further technology developments

9. V2X Station

Charging station equipped with V2X technology, which enables EV charging and discharging for grid enhancing and local flexibility tasks. It also allows to charge multiple EVs simultaneously.

In Table 10 are the main gathered considerations on this KER. Further details are presented in the Appendix section (templates KER 9A, KER 9B and KER 9C).

Table 10: KER 9 (V2X Station) main considerations.

Category & Sub-category	**Technologies: EV-focused**		
Owner(s)/Leader(s)	**SEL**	**Circle**	**ABB**
Entities involved in the exploitation	• R&D Centre/University/CoL AB (INESC-ID, SEL)	• R&D Centre/University/CoL AB (Circle)	• Aggregator (GEN-I) • Technology provider (ABB)
Exploitation pathways and use models	• Commercialisation • Integration of technology into an existing product • Service provision to end-user	(Unable to conclude. Still in definition)	• Manufacturing of a new product • Commercialisation
Ownership and IP within the KER	Current product is patented by SEL. Future V2X version will be owned by SEL, and INESC-ID will	Circle owns all components of the KER.	ABB holds foreground IP over components of the KER (technology, software, etc.). ABB is the owner. GEN-I owns its

	also hold foreground IPR over the algorithms.		integration into their systems.
Target market problems & needs the solution addresses	**Problems/Constraints:** • Building residents and EV owners have lack of control over electricity bills • Building not having enough contracted power to ensure typical charging routines • Property managers deal with limitations of building common energy uses that are comprised due to EV charging **Needs:** • Parking lot owners need more plugs than they have power available, and want to do smart charging with coordinated approaches • Participate in DR services • EV users require clear financial incentives (savings from grid services, optimized self-consumption, etc.) • Need to avoid higher grid prices to save money while charging		
Competition	Competition, depending on the exploitation perspective of this KER, can include Nuvve, Wallbox, Enel X, Fermata Energy, Delta Electronics, Siemens, Schneider Electric, EVBox, ChargePoint, Tesla, Ionity, Allego, Zaptec, Clever, Easee, ChargeGuru.		
Market and technology readiness	• TRL 5-9 • Market readiness dependent mainly on the activities planned by the partners (technology developments) and regulation • Timeline may be around 1-2 years		
Planned activities and actions	• Prototype testing • Further technology developments • Market launch plan • Investment plan • Market understanding research/validation • Business plan definition • IP strategy development		

10. Load balancing smart charger (New)

Smart charging station with the opportunity to perform load balancing, this means that, if one of the phases is heavily loaded in the grid, the algorithm can compensate for this and choose to reduce or increase the consumption. The algorithms enable receiving local signals about grid loading, similar to demand response but on local level to allow charging operators to reduce current on selected phases (it may be required for EV owners to have their EV charging on a phase different from the grid locally).

In Table 11 are the main gathered considerations on this KER. Further details are presented in the Appendix section (template KER 10A).

Table 11: KER 10 (Load balancing smart charger – New) main considerations.

Category & Sub-category	**Technologies: EV-focused**
Owner(s)/Leader(s)	**Circle**

Entities involved in the exploitation	• R&D Centre/University/CoLAB (Circle, DTU, CB)
Exploitation pathways and use models	(Unable to conclude. Still in definition)
Ownership and IP within the KER	Circle owns complete IPR.
Target market problems & needs the solution addresses	**Problems/Constraints:** • Unbalanced local grid due to EV chargers operating on the same phase **Needs:** • Household owners want to avoid risks of penalties for unbalancing the grid, with single phase chargers • Grid resilience and stability (voltage regulation, etc)
Competition	Competition can include Spirii, Monta, Clever, Easee, Zaptec.
Market and technology readiness	• TRL unable to conclude • Time to market may be around 1-2 years.
Planned activities and actions	(Unable to conclude. Still in definition)

11. LV monitoring (HW and SW) (New)

A LV (Low-Voltage) Monitoring System for a DSO is an integrated solution that continuously measures, collects and analyses electrical parameters at the low-voltage level (typically up to 1 kV) on the distribution network. Its primary goal is to give the DSO real-time visibility into what is happening at the "last mile" of their grid. The LV monitoring system consists of the field measurement devices (hardware) and all the technologies (software) that cooperate to seamlessly transfer and store the data from the field to the databases and platforms.

In Table 12 are the main gathered considerations on this KER. Further details are presented in the Appendix section (template KER 11A).

Table 12: KER 11 (LV monitoring HW and SW – New) main considerations.

Category & Sub-category	**Technologies: Grid-focused**
Owner(s)/Leader(s)	**HEDNO**
Entities involved in the exploitation	• DSO (HEDNO)
Exploitation pathways and use models	• Research & Development (future projects, publications, etc.) • Others (Internal use) • Commercialisation (selling data)
Ownership and IP within the KER	HEDNO owns complete IPR.

Target market problems & needs the solution addresses	**Problems/Constraints:** • Inaccurate Flex-Capacity Forecasts from DSO • Aggregators lack LV-feeder records, leading to inaccurate flexibility capacity estimates/forecasts
Competition type and examples	Not applicable. Monopoly.
Market and technology readiness	• TRL 8 • Time to market may be around 5 years
Planned activities and actions	• Testing and validation for further improvements • Up-scaling

3.1.3 Tools

12. Open V2X management platform

Platform to support the next generation of V2X, supplying the user's needs and increasing their engagement with the V2X service, allowing the information exchange between end-users, operators, and systems.

In Table 13 are the main gathered considerations on this KER. Further details are presented in the Appendix section (templates KER 12A and KER 12B).

Table 13: KER 12 (Open V2X management platform) main considerations.

Category & Sub-category	**Tools: Operation-focused**	
Owner(s)/Leader(s)	**PPC**	**GEN-I**
Entities involved in the exploitation	• Utility (PPC)	• Aggregator (GEN-I) • Technology provider (ABB) • DSO (Elektro Celje) • R&D Centre/University/CoLAB (UL)
Exploitation pathways and use models	• Flexibility services (provision or procurement)	• Flexibility services (provision or procurement) • Research & Development (future projects, publications, etc.) • Others (Licensing)
Ownership and IP within the KER	PPC owns all IPR.	The IPR is owned by GEN-I.
Target market problems & needs the solution addresses	**Problems/Constraints:** • Limited availability of V2X interfaces to monitor and control flexible capacity • Limited user engagement with V2G services in public charging • Limited data access **Needs:** • Need for strong incentives for the EV users	

	• Need for interoperable platforms and advanced forecasting tools
Competition	Competition, depending on the exploitation perspective of this KER, can include OpenEVSE - Electric Vehicle Charging Solutions, Nuvve, The Mobility House, Kaluza, Jedlix.
Market and technology readiness	• TRL 7-8 • Already publicly available (by PPC). Otherwise, market readiness dependent on external factors (regulation, hardware availability) and technical upgrades. • Timeline may be around 1-2 years. • Expected final TRL in the Grant Agreement: 8
Planned activities and actions	• Further technical upgrades • Regulatory alignment and compliance • Testing and validation • Business model definition • Further upgrades for new market opportunities

13. Co-simulation platform for V2X

Tools designed to assist experts in planning a municipality's electric infrastructure, specifically focusing on the optimal locations and characteristics of EV chargers, and also allowing for the simulation of V2X management strategies – simulating and evaluating V2G EVs flexibility potential and their capability for participation in local flexibility services, while also ensuring that user requirements are met. It enables simulation of energy grid and road traffic, as EVs and V2G technology are in mass use.

In Table 14 are the main gathered considerations on this KER. Further details are presented in the Appendix section (templates KER 13A and KER 13B).

Table 14: KER 13 (Co-simulation platform for V2X) main considerations.

Category & Sub-category	**Tools: Decision-focused**	
Owner(s)/Leader(s)	**INESC-ID**	**UL**
Entities involved in the exploitation	• R&D Centre/University/CoLAB (INESC-ID, SEL) • DSO (EDA)	• R&D Centre/University/CoLAB (UL) • Aggregator (GEN-I) • DSO (Elektro Celje)
Exploitation pathways and use models	• Others (Licensing) • Service provision to end-user	• Provision of a service (consulting) • Others (Knowledge sharing) • Research & Development (future projects, publications, etc.)
Ownership and IP within the KER	INESC-ID holds background and foreground IP over software. SEL also holds foreground IP over the interface component.	UL owns all IPR of the solution (V2GFlex Tool).
Target market problems & needs	**Problems/Constraints:** • Current EV chargers location is planned manually	

the solution addresses	• Incorrect placement of EV chargers leads to financial loss and user dissatisfaction • Limited data access • Difficult to estimate V2X EVs flexibility potential **Needs:** • Municipalities need more accurate planning of EV chargers location and automatically • Need for advanced forecasting tools
Competition	(No particular competition defined. Still in definition)
Market and technology readiness	• TRL 5 • Market readiness dependent mainly on planned activities by the partners • Timeline may be around 2 years • Expected final TRL in the Grant Agreement: 5
Planned activities and actions	• Further technical developments • Adaptation to similar demonstrators • Validation and testing • Further technical upgrades/developments • Market-understanding study • Business plan finalization • IP protection process

14. V2X management strategies: high-level coordination tool

Decision support tool helping in the identification of the needs of new V2X stations and the characteristics of these stations (V2X capability, fast-charging, etc.).

In Table 15 are the main gathered considerations on this KER. Further details are presented in the Appendix section (template KER 14A).

Table 15: KER 14 (V2X management strategies: high-level coordination tool) main considerations.

Category & Sub-category	**Tools: Decision-focused**
Owner(s)/Leader(s)	**GEN-I**
Entities involved in the exploitation	• Aggregator (GEN-I) • Technology provider (ABB) • DSO (Elektro Celje) • R&D Centre/University/CoLAB (UL)
Exploitation pathways and use models	• Service provision to end-user • Research & Development (future projects, publications, etc.)
Ownership and IP within the KER	The IPR is owned by GEN-I.

Target market problems & needs the solution addresses	**Problems/Constraints:** • Limited data access • Limited user engagement **Needs:** • Need for interoperable platforms • Need for strong incentives • Need for advanced forecasting tools
Competition	Competition, depending on the exploitation perspective of this KER, can include aggregators such as Petrol, NGEN, KOLEKTOR Setup, HSE.
Market and technology readiness	• TRL 8 • Timeline for market readiness may be around 1-2 years • Expected final TRL in the Grant Agreement: 4
Planned activities and actions	• R&D and market support activities. • New business models definition

15. Integration of V2X management in DMS

Tools integrating V2X algorithms within a Distribution Management System (DMS) (integrated software suite) which embed EVs and their charging stations into the utility's real-time operational framework. The DMS can incentivise charging/discharging to stabilise voltage profiles, alleviate feeder congestion and provision/request ancillary services. Integrating V2X management into the DMS enables real-time coordination between EVs, charging infrastructure, and grid operations. It allows DSOs to monitor and activate flexibility from EVs, optimise local energy flows, and maintain grid stability.

In Table 16 are the main gathered considerations on this KER. Further details are presented in the Appendix section (templates KER 15A and KER 15B).

Table 16: KER 15 (Integration of V2X management in DMS) main considerations.

Category & Sub-category	**Tools: Operation-focused**	
Owner(s)/Leader(s)	**HEDNO**	**GEN-I**
Entities involved in the exploitation	• DSO (HEDNO)	• Aggregator (GEN-I) • DSO (Elektro Celje) • R&D Centre/University/CoLAB (UL)
Exploitation pathways and use models	• Flexibility services (provision or procurement) • Others (Internal use)	• Flexibility services (provision or procurement) • Others (Knowledge sharing) • Research & Development (future projects, publications, etc.)
Ownership and IP within the KER	HEDNO owns complete IPR.	The IPR is owned by GEN-I.

Target market problems & Needs the solution addresses	**Problems/Constraints:** • DSO experiences extreme demand peaks, voltage instability, network congestion, insufficient ancillary capacity, increased infrastructure investments • Costly and slow grid upgrades • Limited data access • Limited user engagement **Needs:** • Grid resilience and stability (voltage regulation, etc) • DSOs need to manage grid constraints cost-effectively • Need for interoperable platforms • Need for strong incentives
Competition	Competition, depending on the exploitation perspective of this KER, can include Qualcomm, LG Electronics, Nuvve, The Mobility House, Kaluza, Jedlix.
Market and technology readiness	• TRL 6-8 • Market readiness dependent on external factors (regulation, hardware availability) and technical upgrades • Timeline may be around 1-2 years or 5+ years, depending on the partners' exploitation perspectives/pathways • Expected final TRL in the Grant Agreement: 5
Planned activities and actions	• Upscale pilots • Business model definition • Development of regulatory frameworks • R&D and market support activities.

16. Decision Support Tools for VPPs and CPOs

Tools supporting directly or indirectly the decision-making for VPPs (Virtual Power Plants) and CPOs, allowing the activation of flexibilities available at each moment in the network, and supporting real-time EV charging coordination, charging network expansion and V2G services potential. The tools should be integrated into the management systems operated by the CPO or VPP.

In Table 17 are the main gathered considerations on this KER. Further details are presented in the Appendix section (templates KER 16A, KER 16B and KER 16C).

Table 17: KER 16 (Decision Support Tools for VPPs and CPOs) main considerations.

Category & Sub-category	**Tools: Decision-focused**		
Owner(s)/Leader(s)	**PPC**	**GEN-I**	**UL**
Entities involved in the exploitation	• Utility (PPC)	• Aggregator (GEN-I) • DSO (Elektro Celje) • R&D Centre/University/CoL AB (UL)	• R&D Centre/University/CoL AB (UL) • Aggregator (GEN-I) • DSO (Elektro Celje)

Exploitation pathways and use models	• Provision of a service (consulting) • Others (Internal use)	• Flexibility services (provision or procurement)	• Others (Internal use, Knowledge sharing) • Research & Development (future projects, publications, etc.)
Ownership and IP within the KER	PPC owns all IPR over the components of this KER.	The IPR is owned by GEN-I.	UL owns all IPR of the solution.
Target market problems & needs the solution addresses	**Problems/Constraints:** • Limited forecasting and optimization algorithms to predict energy demand, availability, and market prices • Limited automated bidding systems for flexibility and ancillary services • Limited data access • Limited user engagement **Needs:** • Need for proactive optimisation of charging strategies based on anticipated user future charging needs, grid conditions, and energy availability. • VPPs and CPOs need decision support tools to manage flexibility, optimize energy flows, and participate in energy markets • Need for real-time monitoring dashboards, grid conditions, and asset performance • Need for interoperable platforms • Need for strong incentives		
Competition	Competition, depending on the exploitation perspective of this KER, can include Nuvve, The Mobility House, Kaluza, Jedlix.		
Market and technology readiness	• TRL 5-8 • Market readiness dependent mainly on external factors (regulation), and also on technical upgrades (and planned activities) • Timeline may be around 1-3 years • Technology is mature, market under development • Expected final TRL in the Grant Agreement: 8		
Planned activities and actions	• Further technical upgrades/developments • R&D activities • Further technical upgrades/developments		

3.2 Exploitation Plan Analysis & Patterns

This section delves into the proposed questions identified in Section 2.3, including some main takeaways based on the KER exploitation plans' analysis detailed on the previous section. The main target groups of EV4EU market are identified, along with adopter's problems and needs that the developed solutions aim to address. Additionally, the main exploitation pathways envisioned by the partners, and stakeholders typically involved, are also discussed, as well as general competition of the solutions. Moreover, the general market readiness of the KERs and the IP strategy maturity are discussed.

3.2.1 EV4EU Target Market: Problems and Needs

EV4EU addresses a wide range of issues related to EVs and V2X capability. The developed solutions presented in Section 3.1 propose a set of concepts, business models, methodologies, services, and tools, which aim at facilitating the mass integration of EVs following three main ideas, defined at proposal stage:

- Solutions should be simple, secure, interoperable, scalable, affordable, and user-friendly;
- Solutions should be realistic, considering existing infrastructure (power networks, communication infrastructure, and home/building installation), and investments should consider the flexibility of V2X;
- Solutions should integrate and coordinate V2X and RES, create benefits to the end-users, increase interest in the technologies (V2X and RES), reduce the use of infrastructure, and contribute to the energy transition goals.

The main involved target groups and entities in EV4EU were identified to be **TSOs** and **DSOs**, **VPPs** and **Aggregators**, **CPOs**, **Building/Parking lot managers** and **Property owners**, **Companies** with EV fleets, **EV owners** and residents, and **Municipalities**. Figure 5, already presented in past deliverables, is a good representation of this division.

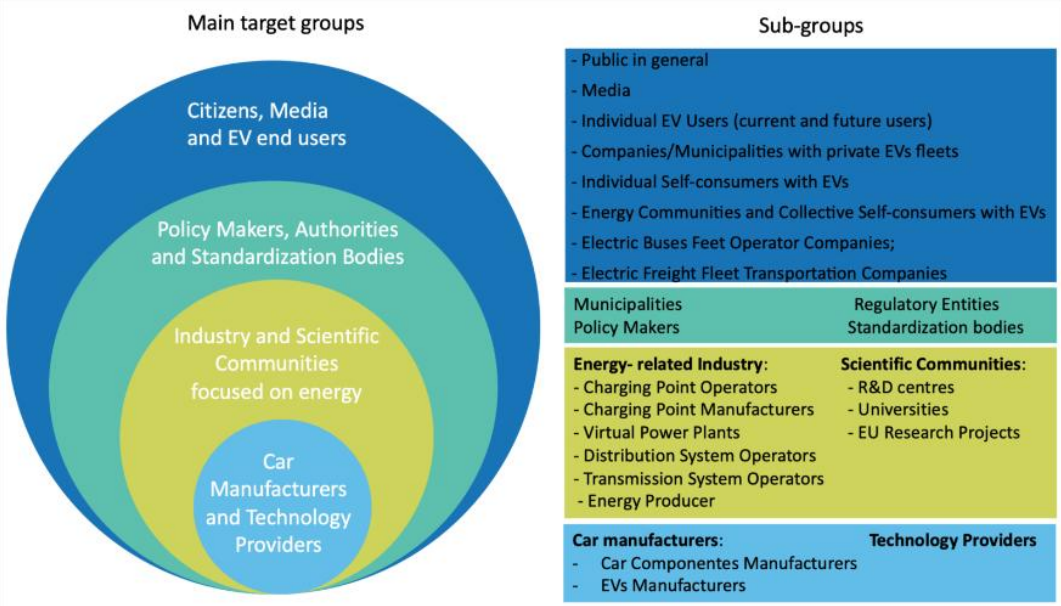

Figure 5: EV4EU main target groups and sub-groups [4] [5].

EV4EU solutions aim at addressing these entities' problems and needs related to EV adoption. These were highlighted by the partners in Section 3.1, and can be summarised into a structured overview by target group, presented in Table 18.

Table 18: EV4EU target market problems and needs the solutions address.

Entity/Target group	*Problems*	*Needs*
DSOs & TSOs	• Restricting or limited grid capacity • Demand peaks, voltage instability, and network congestion • Costly and slow grid upgrades	• Grid resilience and stability (voltage regulation, etc.) • Cost-effective management of grid constraints • Reliable and scalable flexibility resources • Market-ready solutions for flexible capacity contracts with CPOs/Aggregators • Standardised products for local flexibility markets • Real-time monitoring dashboards and forecasting tools
Aggregators & VPPs	• Low awareness and transparency of available V2X flexibility capacity and potential • Limited availability of V2X interfaces for monitoring and control • Limited user engagement with V2G/V2X services • Limited data access • Lack of standardised platforms, policies, and incentives • Complexity managing diverse assets • Limited forecasting and optimisation algorithms • Limited automated bidding systems for flexibility and ancillary services	• Advanced forecasting and optimisation tools • Interoperable and standardized platforms • Market-ready flexibility mechanisms • Decision-support tools for managing flexibility and market participation • Strong incentives to increase user engagement • Scalable and automated systems to coordinate diverse assets
CPOs	• Limited interoperability between systems and stakeholders • Costly infrastructure expansion requirements • Incorrect charger placement leading to financial loss and user dissatisfaction • Low awareness and transparency of available V2X flexibility capacity and potential • Limited user engagement with V2G/V2X services	• Unified and standardized solutions for scalable operation • Market-ready contracts for flexible capacity with DSOs/Aggregators • Tools for aggregated charging management across networks • Strong incentives to increase user engagement • Automated, data-driven tools for charger location planning
Building/Companies Managers & Property Owners	• Buildings lack sufficient contracted power for typical EV charging routines • Property managers face compromised building energy uses due to EV charging demand	• Smart charging coordination to maximize use of existing capacity • Optimisation of building load with PV and EV integration

	• High EV adoption costs and integration challenges • Risk of costly transformer upgrades • Difficulties aligning EV charging with on-site renewable generation (RES)	• Avoidance of costly infrastructure upgrades • Tools to manage charging schedules across brands and models • Unified app to manage all home/building energy assets • Reduce electricity bills
EV Owners & Residents	• Lack of control over electricity bills • Fear of voiding EV battery warranty • Uncertainty in energy availability based on user behaviour • Dissatisfaction from poor charger placement or availability	• Ability to avoid higher grid prices while charging (smart energy management to reduce electricity bills) • Smooth, user-centric digital charging experience • Clear financial incentives (e.g., savings from grid services or optimised self-consumption) • Protection against grid imbalance penalties • Reliable charger availability • Unified app to manage all home/building energy assets
Municipalities	• Manual and inaccurate planning of EV charger locations • Incorrect charger placement leading to financial loss and user dissatisfaction	• Automated, data-driven tools for charger location planning • Forecasting tools to estimate future charging demand and flexibility potential

3.2.2 Exploitation Pathways and Involved Stakeholders

EV4EU results will be mainly exploited through:

- R&D activities (such as application on future EU-funded projects, publications, etc.);
- Provision or procurement of flexibility services;
- Provision of consulting services;
- Service provision to end-users;
- Commercialisation;
- Knowledge sharing (trainings, workshops, university courses).

The identified exploitation pathways are in line with the project partners' current business activities and strategies. **R&D centres** and universities (INESC-ID, UL, SEL, Circle, DTU, CB) associate with exploitation pathways involving R&D activities, knowledge sharing, and even commercialisation, while **DSOs** (Elektro Celje, BEOF, EDA, HEDNO), **Aggregators** (GEN-I) and **Utilities** (EDP New, PPC) intend to provide services – either consulting, flexibility services, or energy services to end-users –, and **Technology providers** (ABB) lean towards commercialisation.

3.2.3 EV4EU Competition

The main highlighted competitors of the developed EV4EU solutions were found to be significantly **1) Charging Point Operators (CPOs)**, or network operators, **2) Aggregators** and **eMobility Service Providers** (eMSPs), **3) Hardware manufacturers and OEMs** (Original Equipment Manufacturers), and **4) Utilities and energy retailers**. In fact, depending on the profile of the entity exploiting the solution, their lines of action, and intention of exploitation, competition may differ. The majority of the entities are Europe-focused, based or operating in EU countries. Examples include Monta, which is originally Danish, Octopus Energy from the UK and Petrol from Slovenia. In addition, some disruptive companies are expanding their businesses to the US and, also, China and Asia, reflecting the overarching reality of the EV market, and thus, the opportunities arising for EV4EU solutions. Table 19 presents a list of all entities that represent competition highlighted by the project partners, divided by category.

Table 19: Main competition identified for EV4EU solutions by category.

1. CPOs and Network Operators	*2. Aggregators and eMSPs*	*3. Hardware manufacturers and OEMs*	*4. Utilities and Energy Retailers*
• Spirii (present in PT, DK) • Monta (present in DK) • Clever (present in DK) • BP Pulse • NGEN (present in PT, SL) • Shell Recharge • GRIDSERVE • Allego (present in PT) • Ionity (present in PT, DK) • EVBox (present in PT, DK) • KOLEKTOR Setup (present in SL) • Joltie (present in GR) • FORTIZO (present in GR) • WAV Industries • Blink Charging Co. (BLK) • Verizon Connect • ChargePoint • Electrify America • Tesla (present in PT, DK, GR)	• Nuvve • Jedlix • Octopus Energy • The Mobility House • Kaluza • Qualcomm • LG Electronics • Tiko • WAV Industries • Blink Charging Co. (BLK) • Samsara • Fleet Complete • Teletrac Navman • Vulog • Camus Energy • ChargeGuru	• Siemens • Schneider Electric • Delta Electronics • Alpitronic • Wallbox • Fronius • EVBox (present in PT, DK) • OpenEVSE – Electric Vehicle Charging Solutions • Joltie (present in GR) • WAV Industries • Blink Charging Co. (BLK) • Zaptec • Easee • Tesla (present in PT, DK, GR)	• E.ON • Enel X • Next Kraftwerke • Petrol (present in SL) • HSE (present in SL) • NRG

3.2.4 Technology and Market Readiness of EV4EU solutions

The solutions developed in EV4EU are within a Technology Readiness Level range of 4 to 9, most commonly within the range of 5 to 8, and with a higher prevalence of TRL 7 specifically, which is aligned with the general expectation for EV4EU results.

Most developments are in the demonstration to pre-commercial stage, indicating they are nearing market readiness, although validation and regulatory alignment are still required. The planned activities and actions identified by the partners have this in consideration and are well aligned with ensuring higher maturity levels and that the solutions reach full market readiness in the upcoming years post-project. In fact, some of the activities planned by the partners include upscaling pilots and testing environments, further technical upgrades, validation with standards, and assisting in the development of regulatory frameworks.

However, although project partners are committed to further define and carry out activities post-project to advance solutions towards higher maturity levels, the dominant dependency for reaching full market readiness lies in regulation concerning V2X technology availability and implementation, and participation in flexibility markets, as well as, consequently, the inexistence of some markets at this moment. In fact, market readiness can be lower even though solutions are at higher TRLs. Regulatory frameworks on the mentioned topics are still under development in EU countries, creating uncertainty and impact in the timeline for market deployment of EV4EU solutions. In fact, the general timeline appointed by the partners can be around 5 or plus years, while 1 to 3 years is expected given a favourable regulatory landscape.

3.2.5 IPR and IP Strategy Maturity of EV4EU solutions

EV4EU has generated IP for most partners, with INESC-ID, SEL, GEN-I, ABB, Elektro Celje, UL, DTU, Circle, HEDNO and PPC being the main holders of IP related to their KERs. Also, some partners have developed IPR during the project, as is the example of INESC-ID, SEL and Elektro Celje, which have patents and other types of IPR associated to some of their KERs. INESC-ID has copyrights and trade secrets over components of their Demand Response for V2X models, and copyrights, trade secrets, trademarks, and patents (under development) over their Houses/Building energy management system. SEL has a patent developed for their V2X charging station, EDGE. Additionally, Elektro Celje holds copyright over a component of the KER Demand Response for V2X, their FlexIS platform.

In general, the IP strategy maturity of the solutions is still at an intermediate level, with most consortium's IP framework under development. Partners are aware of ownership, but consistent, formalised IP governance across all KERs is incentivised.

While some solutions have an explicit ownership division (about a third), others still require a clearer definition for the partners to move forward with the exploitation of the results post-project. However, in the majority of these cases, partners demonstrate commitment and willingness to further develop their IP strategy, despite it not being yet fully defined at this stage.

4 Conclusion

This deliverable, **D10.6**, presents an update to the exploitation plan and strategy presented in **D10.5**, submitted at M12. While in some instances **D10.6** presents a revision of the definitions that had been made until M12, most of its focus lies in add-on information on the partners' detailed exploitation plans for their respective results. **It consolidates the final considerations regarding the exploitation strategy initiated at the beginning of the project**.

Throughout the project's duration, several Key Exploitable Results emerged, each demonstrating significant potential for further use in a post-project context. **This document presents 16 KERs, and 35 pathways for future exploitation, showcasing the value created within the project and the diverse business models and opportunities identified by the partners** – whether it is new products' development and manufacturing, commercialisation, new partnerships, participation in further R&D initiatives and EU-funded projects, or provision of services to end-users and grid operators.

As the EV market continues to expand, the **EV4EU solutions address a wide range of its challenges and needs, targeting different segments and stakeholders in the value chain, with the goal of accelerating EV mass adoption**. However, while the solutions are approaching market readiness, the regulatory frameworks regarding V2X and flexibility are still in early stages, and some markets are still under establishment – there is a clear need for the EU to promote the cooperation between Member States in addressing V2X regulatory frameworks, ensuring their adequacy not only at the European level but considering the Member States different national contexts. Yet, in what concerns the project partners, defining targeted post-project activities will therefore be essential to fully accomplish the exploitation potential of the project's outcomes.

Overall, **partners have developed clear strategies for exploiting their results, with most exploitation plans demonstrating an intermediate to high level of maturity**. Continued efforts post-project, sustained in joint collaboration between partners, are encouraged to continue the development of the solutions, and refine remaining exploitation aspects – such as concrete exploitation pathways and activities, revenue and cost structures of the business plan, IP protection, and market validation –, to ensure the long-term sustainability of the results. EV4EU results confirm the pertinence of the objectives defined by the European Union, nevertheless further development is needed at a larger scale. This emphasizes the relevance of Horizon Europe program, as a driver to promote conditions to facilitate the continuity of actions to further innovate and find the right answers within the V2X scope.

EV4EU's participation on Horizon Results Booster played a key role in supporting the work carried out under Task 10.3, providing essential guidance and complementing partners' efforts in defining and refining exploitation pathways. The active engagement of all partners ensured that the purpose of **D10.6** was accomplished, reflecting a shared commitment to maximising the project's impact.

5 References

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APPENDIX: KER Templates

KER 1A

KER:	1. Demand Response (DR) for V2X	**Category:**	Business Models and Services
Partners:	A) INESC ID, EDA, DRE, NEW, SEL	**Leader/Responsible:**	INESC ID

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

This KER introduces innovative and user-centric Demand Response models designed for V2X applications, fostering large-scale EV integration while supporting power system flexibility and decarbonisation. The solution leverages advanced strategies to enable EVs to actively contribute as distributed energy resources, engaging end-users, fleet operators, and aggregators in new flexibility services. These programs aim to reduce peak demand, ease grid constraints, and facilitate higher renewable integration, all while preserving user comfort and long-term system sustainability.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

INESC-ID aims to position the KER for impact in either industry or academia, selecting the primary route per context:
- If industry-led: License DR-V2X software modules/APIs (non-exclusive), targeted technology transfer and contract research, integration support for pilots, and contributions to standards/certification to de-risk adoption.
- If academia-led: non-commercial research licenses, curated anonymised datasets/testbed access, peer-reviewed publications and thesis supervision, plus inputs to standards.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

INESC ID: Crafted and validated the DR-V2X optimisation engine; in a post-project, keeps its roadmap current and feeds quantitative input to standards.
EDA: Supplied grid data and KPIs; in a post-project runs the engine in-house, sets interoperability rules and returns operational feedback.
DRE: Ensured policy alignment; in a post-project leads the regional standard, oversees deployment and tracks socio-economic impact.
NEW: Assembled multi-country datasets and distilled KPIs; post-project, produces FlexGateway units and hosts the cloud optimisation service.
SEL: Built the real-time testbed; in a post-project offers living-lab prototyping and device/software certification.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

Distribution System Operators (DSOs)
Aggregators and Energy-Service Companies
Fleet Operators and Depot Managers
Charge-Point and Parking-Facility Operators
Energy Retailers and Balance-Responsible Parties

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

The KER competes in the EV flexibility and smart-charging area, addressing DSOs, aggregators, fleet & depot managers, charge-point or parking operators, and energy retailers or BRPs. Use cases span local grid flexibility (congestion, voltage control, peak shaving), market bidding and settlement, fleet availability guarantees, and site capacity management with OCPP interoperability and V2X readiness. Across segments, adoption hinges on proven peak and cost reductions, grid-safe and auditable control, multi-vendor interoperability and open APIs, preservation of user comfort and battery health, and solid unit economics.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).
DSO: Costly and slow grid reinforcements, risk of reverse power flow and overvoltage/undervoltage during sunny/windy hours.
Aggregators and Energy-Service Companies: non-standard data interfaces; uncertainty in driver availability and battery state; hard to forecast bids that satisfy both user comfort and market rules.
Fleet and Depot Managers: Demand-charge spikes, limited on-site connection capacity, manual scheduling spreadsheets can't track hundreds of EVs, fear of premature battery ageing when exporting power back to the grid.
Charge-Point and Parking-Facility Operators: Grid connection upgrades are expensive and slow, little control over driver plug-in, regulatory uncertainty around V2G remuneration.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Existing developed solutions show early proof of V2X value through utility-integrated pilots and consumer-centric apps. However, gaps persist in bidirectional scale-up, broad protocol coverage, and robust aggregator/wholesale participation, leaving room for differentiated DR approaches.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

We combine DSO-grade grid safety, true V2X capability, open standards and policy know-how in one package, delivering measurably higher peak-reduction, faster integration and lower total cost of ownership than any single-focus competitor.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

TRL 5 (current level), laboratory validation in a relevant environment. Optimisation code proven with historical data sets. By project close it will be a field-proven, standards-aligned product/service ready for pre-commercial deployment (TRL 7)

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

Baseline plan assumes current TRL 5. We target TRL 7 in 12 months post-project (multi-vendor conformance + two live pilots across seasons). Timing depends on pilot site availability, regulatory/connection approvals, and certification slots.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.
Finalization of business plan and start of IP protection process.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.
INESC-ID: Demand response models; IPR: Software copyrights database rights, know-how/trade secrets.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.
Copyright software: DR/V2X orchestration modules and APIs, Owner: INESC-ID (100%).
Database right: Anonymised pilot datasets and trained models, Owner: INESC-ID; licensed to consortium partners under the CA.
Trade secrets: Scheduling/valuation heuristics and parameterisation workflows, Holder: INESC-ID.
No patents or trademarks are planned at this stage.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

TBD

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

TBD

KER:	1. Demand Response (DR) for V2X	**Category:**	Business Models and Services
Partners:	B) CIRCLE, DTU, BEOF	**Leader/Responsible:**	Circle & DTU

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

EV Charging stations which are Demand Response ready to, when receiving a signal, completely shut down the charging or quickly adapt and decrease the charging power. The technology will enable the chargers to be ready for future market grid enhancing tasks - which gives it a technical advantage compared to other chargers on the market.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

Cooperate with local DSO and energy providers to offer demand response programs/services, and be able to adapt the chargers power when needed. This needs to be financially rewarded on the charging operator level, which in turn shall give the user incentives to allow their EVs to participate in such programs.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

Circle is responsible for the development and deployment of the charger. DTU is handling the algorithms for the chargers to receive data from the DSO and coordinate when and how much for the chargers to reduce or increase the available power. BEOF is assisting with knowledge of structures and grid development into understanding and defining the demand response programs locally.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

Public parking lots where advanced coordination technologies are possible, such as universities, open municipality parking lots, shopping centers and similar. But also between clusters, so a large sample of different clusters can participate in programs and offer more "energy resource" in the demand response.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

EV charging market and charging operator market and grid development.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

For the chargers to participate in demand response programs, and for charge operators to make their clusters available for demand response programs - the needed energy amount has to be lower, and the flexibility to participate along with a standardisation of the market is needed. Currently it is too difficult to assess and offer flexibility due to lack of technology development of services.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Spirii, Monta and other large charge point operators, such as Clever. These have already a huge market of ev chargers available to in future participate in demand response programs, when users allow them to, and the programs becomes easier to participate.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

Demand response programs will eventually become mandatory for chargers to be part of the larger charge point operators - therefore the charging station can become a part of already established operators. Moreover Demand Response Program are likely to be remunerated by grid operators

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

The market is not yet ready, and is not very mature for charge point operators to easily participate. Therefore the technology is still under development, with every charging point operator making their version of it. TRL 5-6

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

The solution can in theory offer demand response, in 1-3 years, but the Demand Response progams may be more than 3 years out before being market ready.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

The prototype is ready, but as the market is not yet mature, more investment is not planned.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

There are no background IPR.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

There are no foreground IPR.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

There are no clear schemes in the market for demand response, therefore the revenue streams are still unclear.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

The costs of developing this solution are related to the development of a robust communication architecture and the operation of the parking lots.

KER:	1. Demand Response (DR) for V2X	**Category:**	Business Models and Services
Partners:	C) GEN-I, Elektro Celje, UL, ABB	**Leader/Responsible:**	Elektro Celje

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

The DSO establishes a DR market where it procures flexibility capacity from V2X (V2G) technology aggregation. To enable their participation, the DSO implements appropriate technical and market mechanisms that allow end-users to engage in the market through an aggregator, in accordance with the constraints of the local distribution network.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

Provision/procurement of a service. R&D.
The project establishes a local flexibility market where the DSO (Elektro Celje) procures flexibility services from end-users with V2G technology via aggregators. This is enabled by the FlexIS platform, which automates and manages flexibility services at the distribution grid level and integrates with grid management and market systems. After the project, the business model will be exploited by the DSO through the procurement of flexibility services via FlexIS, ensuring a transparent and competitive local market in which aggregators and V2X owners can offer their services.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

Elektro Celje - DSO (needs),
GEN-I - aggregator and provider of the services,
ABB – charging stations protocols,
UL – research on related field and training.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

From Elektro Celje's (DSO) point of view, the customers in the local flexibility market are the flexibility providers – aggregators and charging station/EV owners – who offer their flexibility via the FlexIS platform. Aggregators bundle flexibility from end-users and provide it to the DSO, while EV owners receive compensation for their availability and successful activations. In this way, the DSO ensures secure and efficient grid operation by procuring flexibility services from the market.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

The target market from Elektro Celje's (DSO) perspective is its distribution area, which covers approximately 22% of Slovenia's territory. This includes residential, commercial, and industrial end-users connected to the low- and medium-voltage network within this geographic area. Flexibility services will be procured from these end-users (through aggregators) in order to support secure and efficient grid operation. In the longer term, once the model is proven, the approach can be replicated across other Slovenian DSOs.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

The growing share of renewables, especially solar PV, together with rising electrification (e.g. heat pumps), is increasing grid stress, peak loads, and voltage fluctuations. This creates major challenges for the DSO in maintaining stability and quality of supply, particularly in low-voltage networks, and drives the need for local flexibility services.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

The Transmission System Operator (TSO) represents indirect competition to the DSO in the context of flexibility markets. By procuring flexibility from lower voltage levels, the TSO may interfere with local grid management and reduce the DSO's control over local flexibility resources. This overlap can undermine the effectiveness of localized market mechanisms led by the DSO.
Aggregators in Slovenia: Petrol, NGEN, KOLEKTOR Setup and HSE.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

The introduction of a local flexibility market provides a cost-effective and dynamic alternative to traditional grid reinforcement. It enables the DSO to defer or avoid costly infrastructure investments by leveraging flexible resources to manage grid constraints in real time. This approach allows for increased hosting capacity of the existing distribution network without physical upgrades. Additionally, it avoids unnecessary investment in parts of the grid that experience infrequent peak loads – such as those occurring only once every few years – making the overall operation more efficient and economically sustainable.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

The solution has been developed from an initial concept within this project. By the end of the project, it will reach TRL 6, meaning it will be demonstrated and validated in a relevant environment. No further upscaling or commercial deployment (TRL 7-8) is foreseen within the project scope.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

Within the EV4EU project, technical platforms and V2X-capable charging stations have been deployed. The market now depends on 3 factors: a regulatory framework, availability of V2X vehicles, and the organization of a local market in Slovenia. With adequate progress and support, the market could be ready in 1–2 years.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

The DSO aims to enhance its FlexIS platform to support advanced flexibility features, integrate more aggregators, and improve system coordination with the TSO through a shared data and operational interface. It will also organize a local flexibility market, aligning national rules with the upcoming EU Network Code for Demand Response. Key future activities include: Developing regulatory frameworks and incentives for EV owners; Supporting V2X integration through collaboration with EV providers and launching V2X chargers; Creating a business model for flexibility services; Enabling data sharing on flexibility sources within the distribution network; Engaging research partners for technical support, training, and flexibility potential estimation.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

Through past R&D activities, projects, and market-driven initiatives, the partners have developed and enhanced their own background IPR both prior to and during the project. Each partner holds intellectual property in distinct, specific areas, and this separation of IPR will remain in place after the project's completion. After the project's conclusion, the partners will continue collaborating and will develop further IP.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

The FlexIS platform, including its core modules for flexibility management, ADMS integration, and market interfacing, constitutes foreground IPR brought into the project by Elektro Celje. The platform and its associated software components are protected by copyright and internal documentation.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

As a DSO, Elektro Celje will benefit primarily from the establishment of a local flexibility market, which will enable us to procure flexibility services and ensure secure and efficient grid operation.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

Establishing the flexibility market will require significant investments. For the DSO, key costs include upgrading the FlexIS platform to integrate more aggregators, developing interoperable interfaces with the TSO and the national data hub, enhancing the LAMBDA platform with forecasting and settlement tools, and procuring flexibility services on the local market.

KER:	2. Participation of V2X in markets and services	**Category:**	Business Models and Services
Partners:	A) INESC ID, EDA, DRE, NEW, SEL	**Leader/Responsible:**	INESC ID

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

Provide consultancy services with decision-making models that can integrate V2X technology, which are essential for optimizing energy management in homes, buildings, parking lots, companies, and energy communities. These services include forecasting models for EV demand and RES production, as well as planning modules. Furthermore, they include optimization models that aim to minimise various options, such as energy costs, activation of grid services, and peak power demand, among others. Each configuration is tailored to meet the specific characteristics of the adopters.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

INESC ID: Provision of a service (consulting) in relevant fields (e.g., coordination between aggregated EV activation and DSO needs, identification of distribution grid congestion (service to EDA), emissions reduction, aligment with policy targets (service to DRE)); Participation in workshops and training sessions (along with NEW and SEL); The solution serve as a foundation for similar future research projects (R&D) and publications (along with NEW and SEL). The focus on exploitation aligns with the scope of INESC ID.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

INESC ID: Responsible for the provision of the service, keeping its roadmap current and feeding quantitative input to standards.
EDA: Supply new validation regional grid data and KPIs, utilising the service and returning operational feedback.
DRE: Ensure policy alignment, leading the regional standard. Oversees deployment and tracks socio-economic impact.
NEW: Supply new validation global grid data and KPIs, utilising the service and returning operational feedback.
SEL: Research & support for business model and market definition.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

Energy-conscious consumers (home) - end users; Sustainability-focused businesses (public charging users); Fleet operators (logistics, public transport, company fleets); Commercial property owners (hotels, shopping centers, parking garages); Municipalities and public infrastructure managers; DSOs.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

The solution operates within the rapidly evolving market of smart electric mobility and distributed energy management, targeting end users such as energy-conscious consumers (home), and customers such as sustainability-focused businesses, fleet operators, commercial property owners, along with municipalities and DSOs. This market is driven by the global energy transition, the electrification of transport, and the increasing demand for sustainable and cost-effective energy solutions.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

Energy-conscious consumers: Limited ability to optimize EV charging with self-produced RES; Difficulty reducing costs during peak hours. Sustainability-focused businesses: High energy costs from public EV charging; Inefficiencies from unmanaged EV chargers. Fleet operators: Inability to coordinate fleet charging with operational schedules and grid conditions; Risk of overloading facilities during simultaneous EV charging. Commercial property owners: Underuse or overload of charging infrastructure based on inconsistent demand; Lack of integrated EM across building operations and EV infrastructure; Difficulties aligning EV services with building RES production. Municipalities & public infrastructure managers: Insufficient tools to manage EV infrastructure based on real-world usage patterns. DSOs: Grid congestion due to unpredictable EV charging energy flows; Growing need to support new market actors; Limited tools for scalable activation of grid services.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Companies dedicated to developing smart charging solutions for EVs, focusing on Vehicle-to-Grid (V2G) technology, and offering solutions that enable users to monetise their EVs when not in use, with direct financial returns. Some services enable buildings or communities to respond to grid signals, participate in demand response programs, or provide flexibility services. However, many offerings follow a one-size-fits-all model, lacking adaptability to specific building types, user behaviors, or local energy regulations.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

Integrates EV charging into broader energy systems, optimizing loads across several scenarios and using RES intelligently to enhance service, reduce end user's energy and operational costs.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

TRL 8 currently and at the end of project, as expected

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

Not defined. It depends on:
- the establishment of a regulatory framework for V2X integration.
- the availability of vehicles equipped with V2X technology.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

Finalisation of business plan and start of IP protection process.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.
INESC ID: Software is background IP.
NEW: Software is background IP.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.
INESC ID: Software is foreground IP.
NEW: Software is foreground IP.
Other aspects of IP strategy are still being evaluated.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

To be defined.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

To be defined.

KER 2B

KER:	2. Participation of V2X in markets and services	**Category:**	Business Models and Services
Partners:	B) GEN-I, Elektro Celje, UL, ABB	**Leader/Responsible:**	GEN-I

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

Aggregators allowing the participation of V2X in energy markets and services (ancillary services and services procured by DSOs)

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

Provision of a service: Consumers, producers, and storage owners can adjust energy use/supply to support the grid. Aggregator pool EVs and batteries to offer flexibility to DSOs, helping balance demand, reduce congestion, and avoid grid upgrades. Users earn incentives, and TSOs and DSOs gain stability and more renewables.
GEN-I as Aggregator: Pool V2X assets into a virtual power plant; Manage charging/discharging based on grid, market, and user needs; Interface with DSOs/TSOs and bid into markets; Optimize revenue via smart algorithms; and Provide users with control, data, and rewards.
GEN-I as CPO: Install and operate V2X chargers; Ensure grid-compliant behavior; Manage smart charging via software; Enable secure data exchange; and Serve EV owners, fleets, and site hosts.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

GEN-I aggregator and business model development, service provider;
Elektro Celje - DSO, development of software and market platform;
UL - knowledge transfer, organization of workshops, dissemination of proposed methodologies;
ABB - V2X charging stations provider

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

GEN-I aggregates distributed flexibility from a wide range of participants: EV Owners; Fleet Operators; Building and Facility Managers; Energy Communities/Microgrid Participants; and EV Leasing Companies/Mobility Providers. GEN-I as CPO provides charging services and infrastructure to: Private EV Owners; Fleet Operators; Commercial Property Owners; Municipalities/Public Infrastructure Operators; and Businesses. End Users: System Users (DSO, TSO): Indirect users of flexibility to improve grid operation and reduce system costs; Asset Owners: Direct participants who provide flexibility and receive compensation.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

The primary target market includes: TSOs and DSOs; CPOs; B2B Customers; B2C Customers (Individual EV Owners); Public Sector & Municipalities; Investors in Charging Infrastructure. The EV market in Slovenia is growing steadily, with increasing numbers of electric vehicles and expanding charging infrastructure. The flexibility market is emerging, driven by the need to integrate renewables and optimize grid operations. Estimated annual growth rates for flexibility and V2X services between 20% and 30%. Market opportunities include: Flexibility services for TSOs and DSOs to reduce grid congestion and investment costs; V2X charging solutions for residential and commercial EV owners; Aggregator services linking flexible assets with grid needs.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).
As Aggregator
Challenges: Low awareness, battery concerns, mobility fears, unclear profits, tech limits, trust issues
Needs: Clear benefits, user control, battery guarantees, transparency, easy setup, compatibility, incentives
As CPO
Challenges: Charger downtime, high costs, slow speeds, billing issues, lack of smart tools, grid limits
Needs: Reliable service, clear pricing, fast charging, smart features, easy use, V2X value, energy integration

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Notable foreign aggregators:
- Nuvve (US/EU): A pioneer in V2G aggregation and grid services.
- Jedlix (Netherlands): Specializes in smart charging and energy optimization.
- Octopus Energy (UK): Runs vehicle-to-grid programs focused on home energy balancing.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

The EV4EU project's strength lies in strategic collaboration, knowledge sharing, and joint development. Advanced analyses and demonstrations led to cutting-edge models benefiting all stakeholders. International practice comparisons and expert engagement further enhanced the solution. Partner Contributions: Elektro Celje (DSO): Local flexibility markets offer a cost-effective alternative to grid upgrades, increasing hosting capacity and avoiding unnecessary investments. GEN-I (Aggregator): Leverages dispersed flexibility sources, automation tools, EU-wide market presence, expert teams, and strong trading capabilities. ABB: Advanced CS. UL: Provides specialized expertise.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

The technical solution on the DSO side is at Technology Readiness Level 8 (TRL 8). The solution has been completed and qualified through testing and demonstration in a relevant operational environment.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

Within EV4EU necessary technical have been developed (also V2X CS). The development of the flexibility market depends on: a regulatory framework, the availability of vehicles equipped (V2X), and the organization of a local flexibility market in Slovenia. The market is expected to be ready within 1 to 2 years.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.
Key Future Activities: Development of the business models; Develop regulatory frameworks; Enable V2X flexibility via agencies and regulators; Collaborate with EV providers for V2X testing; Launch aggregator platform; Market and sell V2X chargers; Define EV owner incentives and business models; Launch products; market activities; and future R&D activities.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.
We see opportunities to generate revenue through co-funded R&D projects, but especially through market activities once the market is established. For ABB by increasing revenue through the provision of advanced charging infrastructure, and GEN-I in the roles of aggregator and CPO. The new market will also present opportunities for further development, as well as for professional training, where we particularly see potential for UL. EV owners themselves will be able to reduce their charging costs or receive other incentives for participation. The establishment of a local flexibility market brings financial and operational benefits for the DSO. By enabling targeted activation of flexible resources, the DSO can prevent major outages, thereby avoiding compensation payments and improving key indicators.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.
Partners retain ownership of their IPR in the areas they have independently developed. Where materials from other partners have been used, such materials must not be utilized without the permission of both the respective partners and the WP coordinator. GEN-I and ABB, as companies, also follow their own internal policies regarding IP assignment and the protection of trade secrets. GEN-I: agregation processes; advenced algoritms; Busines models; VPP.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

Revenue Source for aggregator: Grid Services Payments (From TSOs/DSOs for frequency regulation, peak shaving, etc.); Energy Market Arbitrage (Profit from buying low and selling high via V2G); Fleet Service Fees (Subscription or commission-based model for fleet operators); Utility Partnerships (Co-funded flexibility projects or shared savings agreements) and Data Monetization (Providing energy usage data or analytics to third parties).
The new market will also present opportunities for further development, R&D activities, Co-financed projects and analyses, as well as for professional training. EV owners themselves will be able to reduce their charging costs or receive other incentives for participation.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

The establishment of the market/market entry and additional in-depth research and analyses will also entail significant costs and investments, as initial investments are crucial for long-term success in such a demanding market.

KER:	3. EV Fleet Management Services	**Category:**	Business Models and Services
Partners:	A) INESC ID, NEW	**Leader/Responsible:**	INESC ID

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

A digital solution that coordinates SME EV fleet usage and charging across facilities. It aligns mobility needs with site electrical capabilities to boost vehicle availability while reducing infrastructure spend and contracted power. Designed for seamless integration and scalable rollout.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

INESC ID: As a research institution, we will exploit the KER through a mixed licensing-and-knowledge-transfer strategy. The core optimisation code and reference edge controller design will be released under a dual license, royalty-free for academic collaborations, fee-based for commercial OEMs and software integrators, allowing charger and EMS manufacturers to embed the algorithm in their products.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

INESC ID: keeps the technology cutting-edge and standards-aligned
NEW: turns it into a market-ready product-and-service offering

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

SME fleet and facility operators
Charging point operators
Energy-management service providers and, aggregators

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

This solution plays in the booming smart-charging/V2X market, serving business users, SMEs, parking operators, energy-service firms and charger OEMs, who need to keep EV fleets running, avoid grid-upgrade costs and earn from bidirectional power. They want a turnkey tool that unifies fleet scheduling, site-load coordination and grid-service participation in one easy package.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

SME fleet and facility operators: Reduce end-user friction through role-aware energy-use policies that align charging opportunities with operational needs. This encourages conscious use of e-mobility assets and supports balanced, fair demand across the organisation.
Charging point operators: Many simultaneous plug-ins overwhelm transformer capacity, expensive, slow grid-upgrade process, no unified tool to stagger charging across brands and models.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

First-mover IP and a proven V2G platform with live utility pilots that interface with market control systems, including public-fleet demonstrations. Constraints include reliance on subsidised pilots, limited protocol coverage, and capital constraints that slow large-scale EU roll-outs.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

A differentiated SME-oriented platform that coordinates fair access to charging, aligns onsite generation and loads, and supports standards-aligned V2X interoperability, delivered in a resilient, rapid-rollout package.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

This solution is now a lab-validated prototype (TRL 5) and will exit the project as a field-proven, pre-commercial system ready for scaled deployments (TRL 7).

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

Aprox 9-12 months with real-world adoption considering software development and validation

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

After the project, we will package the solution for deployment (spec freeze, reliability/cybersecurity hardening), validate interoperability with key vendors, and run a small set of SME pilots with KPI tracking to create references and rollout playbooks. Finalization of business plan and start of IP protection process.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

We already possessed domain know-how in EV fleet optimisation and grid integration, interoperability with charging/EMS stacks; edge, cloud integration and telemetry patterns; and reusable optimisation/forecasting assets. These pre-existing materials underpinned the KER; specific methods and code remain confidential and are shared only under NDA.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

INESC ID: Software is foreground IP.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

TBD

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

TBD

KER:	3. EV Fleet Management Services	**Category:**	Business Models and Services
Partners:	B) GEN-I, Elektro Celje, UL, ABB	**Leader/Responsible:**	GEN-I as CPO

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

Companies using the developed algorithms allowing the optimal management of EVs considering travel and charging needs

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

EV Fleet Management Services aim to ensure flexibility in the operation and management of EV fleets. By providing real-time monitoring, adaptive route planning, and dynamic charging management, these services allow fleet operators to respond quickly to changing conditions such as demand fluctuations, vehicle availability, and charging infrastructure status. This flexibility helps businesses optimize vehicle utilization, reduce downtime, and maintain seamless service delivery, even as variables shift throughout the day. Ultimately, EV fleet management empowers organizations to adapt their electric mobility strategies efficiently, supporting both operational goals and sustainability commitments.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

GEN-I - CPO and aggregator;
ABB - Provider of the charging stations;
Elektro Celje - Define flexibility needs, enable market access, ensure grid security, and validate service performance;
UL - Research on related field and training.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

Customers of EV Fleet Management Services include logistics, delivery, rental, and public transport companies managing fleets. Businesses with employee or service vehicles, municipalities with public service fleets, charging infrastructure providers, and EV manufacturers or leasing companies also use these services to optimize operations.
End users are drivers and technicians who depend on the system for navigation, charging, and maintenance, while fleet managers and sustainability officers use it to improve efficiency and track environmental impact.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

Target Market for EV Fleet Management Services includes logistics and delivery companies, public transport providers, and corporate fleets transitioning to EVs. Municipal governments, rental and leasing firms, energy providers, and shared mobility operators also rely on these services to manage vehicle performance, charging, and operational efficiency.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).
Adopters' Problems and Needs: Charging Management: Limited access to chargers causes delays; efficient scheduling is needed to reduce downtime; Route Optimization: Range anxiety disrupts routes; real-time planning tools help ensure smooth operations; Vehicle Health: Poor visibility into battery and system issues leads to breakdowns; predictive maintenance is essential; Cost & Energy Control: Inefficient charging raises costs; analytics can optimize energy use and extend battery life; Data Integration: Fragmented systems hinder oversight; centralized platforms improve decision-making; Scalability: Growing fleets need flexible tools that adapt to changing needs; Driver Behavior: Inexperienced EV drivers reduce efficiency; training and monitoring tools improve performance; Compliance: Sustainability and regulations require accurate tracking and automated reporting.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Leading competitors in EV fleet management include Geotab, Fleet Complete, Verizon Connect, and Teletrac Navman, all offering EV-specific tools such as battery monitoring and route optimization. ChargePoint and ABB combine charging infrastructure with fleet software, while Samsara adds IoT-based diagnostics and smart charging. Vulog focuses on managing shared electric mobility services like car-sharing and ride-hailing.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

The EV4EU project stands out for its collaborative and international approach, combining expert knowledge, real-world demonstrations, and advanced analytics to develop innovative EV fleet management models. GEN-I unique value as a CPO by integrating smart charging infrastructure with advanced energy services, ensuring seamless coordination between EV fleets and grid needs.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

The technical solution has reached Technology Readiness Level 7 (TRL 7), indicating that it has been demonstrated in an operational environment and is close to full commercial deployment.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

The EV4EU technical solution, currently at Technology Readiness Level 7 (TRL 7), is nearing full commercialization. Based on development milestones and pilot demonstrations, the anticipated time to market is approximately 12 to 18 months, allowing for final validation, certification, and scaling efforts.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.
Key Future Activities: Development of the business models; Develop regulatory frameworks; Enable V2X flexibility via agencies and regulators; Collaborate with EV providers for V2X testing; Launch aggregator platform; Market and sell V2X chargers; Define EV owner incentives and business models; Launch products; market activities; and future R&D activities.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.
Through past R&D activities, projects, and market-driven initiatives, the partners have developed and enhanced their own background IPR both prior to and during the project. Each partner holds intellectual property in distinct, specific areas, and this separation of IPR will remain in place after the project's completion. After the project's conclusion, the partners will continue collaborating and will develop further IP.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.
Partners retain ownership of their IPR in the areas they have independently developed. Where materials from other partners have been used, such materials must not be utilized without the permission of both the respective partners and the WP coordinator. GEN-I and ABB, as companies, also follow their own internal policies regarding IP assignment and the protection of trade secrets. GEN-I: agregation processes; advanced algorithms; Business models; VPP.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

EV Fleet Management Monetization Model includes subscription-based SaaS fees (monthly or annual, per vehicle/user/site), setup and integration charges, and revenue from managing charging infrastructure. Additional income streams come from energy optimization, participation in flexibility markets, advanced analytics packages, maintenance plans, licensing deals, and optional advertising or consulting services.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

Market entry and research require significant upfront investment, essential for long-term success in the EV fleet management space. Cost structure includes software development, hardware (telematics, charging stations), operations, sales, legal, partnerships, personnel, R&D, and infrastructure.

KER:	4. Green Charging	**Category:**	Business Models and Services
Partners:	A) INESC ID, EDA, DRE, NEW, SEL	**Leader/Responsible:**	INESC ID

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

This service intends to increase the coordination between EV charging and discharging (V2X) and the RES curtailment, specifically wind curtailment, at a distribution level. DSOs should identify abundant power generation from distributed RES and provide incentives for EVs to adjust their charging decisions to make use of this green energy. This service will help DSOs with this process, providing consultancy regarding the definition of the incentives and identification of available RES.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

INESC ID:
- Provision of services in relevant fields (e.g., coordination between V2X and RES at distribution level, identification of abundant power generation from distributed RES to stabilize the grid (service to EDA and EDP), holistic infrastructure management, alignment with policy targets and recommendations for tariff design (service to DRE).
- Participation in workshops and training sessions (along with NEW and SEL).
- The solution serve as a foundation for academic dissemination (publications, conferences, etc.) and similar future research projects (R&D) (along with NEW and SEL).

The focus on exploitation aligns with the scope of INESC ID.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

INESC ID: Software developer, responsible for increasing the TRL and for the provision of the service, keeping its roadmap current and feeding quantitative input to standards.
EDA: Supply new validation, regional grid data and KPIs, utilising the service and returning operational feedback.
DRE: Ensure policy alignment, leading the regional standard. Oversees tariff design and tracks socio-economic impact.
NEW: Supply new validation global grid data and KPIs, turning it into a market-ready product-and-service offering.
SEL: Research & support for business model definition.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

TSOs and DSOs;
Energy aggregators;
Municipalities;
EVSE manufacturers;
Energy retailers.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

This service operates within the growing market of smart grid coordination and distributed renewable energy integration, where TSOs, DSOs, energy aggregators, municipalities, and EVSE providers want to align V2X with periods of renewable energy surplus, particularly wind curtailment at the distribution level. This market is particularly relevant in isolated networks or regions with excess renewable production (e.g. Azores, islands, rural zones), where intelligent charging coordination can unlock operational savings, improve user experience, and support broader energy transition objectives.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).
TSOs and DSOs – need to reduce renewable loss and improve grid balancing.
Energy Aggregators – need to monetize EV flexibility and build new DR products.
Municipalities – need to integrate mobility with sustainability goals.
EVSE Providers – need to enable new charging business models.
Energy Retailers – need to build dynamic tariffs and DR bundles around curtailment periods. EV owners currently have no incentives to charge during off-peak or oversupply periods.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Focus Area: Companies operate at the intersection of electric mobility, RES integration, and grid flexibility. Core Offerings: Consultancy and digital tools for coordinating V2G with RES surplus; Smart control systems and forecasting tools; Platforms integrating real-time data from EVs, RES, and grid signals to optimize energy flows. Strengths: Robust platforms for dynamic charging/discharging optimization; Strong alignment of DERs with grid needs. Gaps: Some lack tailored consultancy for DSOs; Limited support in designing incentive schemes or identifying RES availability.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

- Proven through simulation and field data in Portugal, showing up to full curtailment mitigation with high enough EV adoption.
- Enables new market-based incentives (tariffs) and localized DR designs tailored to EV profiles.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

TRL 5 currently and at the end of project, as expected.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

Not defined. It depends on external factors such as: the establishment of a regulatory framework for V2X integration; the availability of vehicles equipped with V2X technology.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.
Increase TRL: Develop additional software (backend) following new findings from direct conversations with potential end users to ensure a comprehensive understanding of their current problems and enable the creation of customised solutions. Update the back-end to ensure compliance with new V2X regulatory frameworks that may be established.
Finalise the business plan and begin the intellectual property protection process.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.
INESC ID: Software is background IP.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.
INESC ID: Software is foreground IP.
Other aspects of IP strategy are still being evaluated.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

To be defined.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

To be defined.

KER:	4. Green Charging	**Category:**	Business Models and Services
Partners:	B) HEDNO, PPC	**Leader/Responsible:**	HEDNO as DSO, PPC as CPO

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

EV/RES Coordination for minimizing RES curtailment at distribution network, based on dynamic network usage pricing. Implemented in the Greek pilot by PPC and HEDNO, it enhances greener energy use by incentivizing EV charging during renewable surplus periods.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

Commercialization: PPC will try to commercialize the Green Charging technologies tested in the Greek demo through its e-mobility network (DEI Blue). Provision of a service: HEDNO will Integrate the Green Charging into the grid-management platform to offer time-of-use charging incentives.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

PPC: Facilitator for communicating DSO's network price incentives to EV users
HEDNO: Operator of the MV/LV grid responsible for designing the price incentives and communicating them to CPOs.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

EV users, DSOs, Municipalities and National CPOs/eMSPs.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

Local grid-oriented services to DSOs for distribution grids with high-RES deployment level.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

Increasing the hosting capacity for RES in distribution grids requires the deployment and integration of flexible DERs. By aligning EV charging demand with local RES generation, it is possible to enhance the utilization of RES within existing grid infrastructures. This coordination not only increases the achievable RES penetration but also mitigates the need for costly grid reinforcements. This coordination reduces power flows across the distribution network, thereby lowering network losses, improving voltage profiles, and contributing to overall system stability; Lack of regulatory framework to allow implementation of dynamic network tariffs, allowing EV users/eMSPs to actively participating in grid-oriented services and offering a flexibility request framework to DSOs.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Other eMSPs offering EV/RES coordination services, Aggregators.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

PPC and HEDNO's solution uniquely integrates an end-to-end solution for green charging with real RES curtailment events and provides a public infrastructure-driven testing ground comprising the electricity grid and the charging network. Introducing new business opportunities.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

From TRL 2 to TRL 5.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

>3 years after project end

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

PPC: Service deployment by DEI Blue; upscaling piloting; selection of sustainable business model to enter the green charging market.
HEDNO: Service Tuning (Incentives); Upscale pilots

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

Charging Network and Services (PPC).
LV monitoring System (HEDNO).

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

PPC-HEDNO communication interfaces (PPC owner).
O-V2X-MP platform (PPC owner).

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

To be defined in later stages.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

To be defined.

KER:	4. Green Charging	**Category:**	Business Models and Services
Partners:	C) CIRCLE, DTU, CB, BEOF	**Leader/Responsible:**	DTU & Circle

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

EV charging control architecture aiming at adapting the power consumption of the EVs to the RES production of the grid, through power scheduling and power sharing functionalities. That is to ensure that the EVs connected can modulate their charging according to the quality of the energy production from the grid. This will in turn reduce the charging price for the users and the charging point operator, which gives the product a market advantage.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

The intention is to have a higher advanced control platform, which may have a higher complexity than competitors. But the higher complexity of the technology is justified with opportunity for users to have cheaper charging during higher production of RES and green energy. The technology offers CPOs to make a green charging service, which can follow RES, and offer cheaper charging for the customers.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

DTU is defining and designing optimal methods to utilize RES production as well as testing and verifying best coordination strategies and queue systems for the EV charging platforms. Circle is developing the charging platform.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

Companies managing private parking lots in residential buildings, workplace parking lots, who wants to install EV charging stations or just wanting to lower their charging cost. Also companies wanting to optimize the savings from their distributed energy resources, such as building integrated PV.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

EV charging infrastructure market, EV charging management markets.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

The installers of charging infastructures often face high installation costs related to the upgrade of their grid connection capacity. Our solution will reduce the need for such upgrade and at the same time lower operation costs due to the cheaper prices of energy.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

The Danish EV charger market consits of a large variety of organizations, such as Clever, EON, Zaptec, Easee, Monta, Spirii and Fronius.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

Our charging system gives the possibility to indirectly give price incentives to provide flexibility to the charging point operator. The EV charging system can therefore coordinate the charging sessions based on their urgency and flexibility and follow an external setpoint given by the DSO or according to the conditions of the grid.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

The algorithms to perform green charging are market ready and can be adapted onto existing chargers. TRL 4-6

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

Ready to use.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

Investigate the feasibility and how the algorithms can be used as part of an ev charging station infrastructure package.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

There are no background IPR.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

DTU and Circle.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

It is unclear at the moment what the costs or the revenue streams would be for the business plan.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

It is unclear at the moment what the costs or the revenue streams would be for the business plan.

KER:	4. Green Charging	**Category:**	Business Models and Services
Partners:	D) GEN-I, Elektro Celje, UL, ABB	**Leader/Responsible:**	GEN-I

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

Ensuring the charging of the EVs from the green energy.
Coordination between EV charging and discharging (V2X) and the RED curtailment, where the incentive is done by the DSO or TSO.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

GEN-I will provide additional payment or motivate users to behave in accordance with the needs of the DSO or TSO. At the same time, the aggregator will manage connected EVs in line with grid needs.
Green charging also aims to reduce the carbon footprint of charging by integrating renewable energy sources, improving grid efficiency, and minimizing waste.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

GEN-I - aggregator and provider of the product to EV owners;
Elektro Celje - DSO [provide grid status data, define operational constraints, support validation activities, and ensure safe integration of green charging into the distribution network];
UL - research on related fields and training;
ABB – provider of the V2X charging station.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

End users: EVs owners, DSOs or TSOs; Customers: EVs owners, CPO; Aggregator, DSOs or TSOs; While the primary users of Green Charging solutions are aggregators, mobility service providers, and EV users, DSOs are indirect end users who benefit from the system-level effects of coordinated charging.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

The target market on the one hand is the EV owners market and on the other DSOs or TSOs, with their network needs. The target market for the DSO includes low- and medium-voltage distribution areas with high penetration of rooftop solar PV and increasing adoption of electric vehicles. Specifically, this applies to regions within the DSO's service area, such as Elektro Celje's network, where local grid constraints and reverse power flows due to excess daytime solar generation are becoming more common. In these areas, Green Charging can serve as a strategic flexibility solution, enabling better integration of renewables while maintaining grid stability without immediate infrastructure upgrades.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

Needs:
- Green charging powered by renewables, supported by smart grids.
- Energy storage and V2G integration to balance supply and demand.
- Smart charging tech using AI and IoT for load management.
- Supportive policies, incentives, and standardized systems.

Problems: Unstable renewable supply and high infrastructure costs; Battery disposal, grid strain, and limited charging access; Low consumer awareness, slow regulation, and knowledge gaps.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Types of Competition include EV charging providers like ChargePoint, Shell Recharge, and Electrify America, competing on speed, coverage, and integration with renewable energy. Shell Recharge alone offers access to over 700k public chargers across 33 countries. Renewable energy companies such as GRIDSERVE and BP Pulse bundle solar, BESS, and EV charging to deliver end-to-end clean energy solutions. System service providers like Camus Energy offer grid-aware fleet charging tools that help optimize site selection and reduce grid connection timelines by up to 18 months.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

GEN-I as an aggregator: dispersed sources of flexibility, advanced expertise and developed equipment for automatic flexibility offering, presence in markets across the entire EU, collaboration with experts from around the world, advanced personnel, market recognition, trading, and more.
UL - specific professional knowledge

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

TRL 7. While full market deployment still depends on regulatory and market developments, the technical foundation is ready for real-world use in grid-support applications.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

Within the EV4EU project, all necessary technical platforms have been developed, along with the deployment of V2X-capable charging stations. Green Charging could be integrated into grid-support strategies within 1 to 2 years, provided that progress continues on these enabling conditions.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

Elektro Celje: Plans to continue participating in pilot projects that demonstrate the impact of Green Charging on local grid conditions, particularly in areas with high solar PV penetration. Activities include providing grid constraint data, defining technical requirements for effective integration, and collaborating with aggregator GEN-I to evaluate how coordinated EV charging can reduce reverse power flows and curtailment. UL - Research on relevant field and training, support to Gen-I and EC, and on the combination of green charging with V2X, development of prediction tools for the forecast of RES excess production and EVs behaviour.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

Through past R&D activities, projects, and market-driven initiatives, the partners have developed and enhanced their own background IPR both prior to and during the project. Each partner holds intellectual property in distinct, specific areas, and this separation of IPR will remain in place after the project's completion. After the project's conclusion, the partners will continue collaborating and will develop further IP.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

Partners retain ownership of their IPR in the areas they have independently developed. Where materials from other partners have been used, such materials must not be utilized without the permission of both the respective partners and the WP coordinator. GEN-I and ABB, as companies, also follow their own internal policies regarding IP assignment and the protection of trade secrets. GEN-I: aggregation processes; advanced algorithms; Business models; VPP.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

In the future, we see opportunities to generate revenue through co-funded research and development projects, paid research and analyses, but especially through market activities once the market is established. For the company GEN-I, this represents a new business opportunity. The new market will also present new opportunities. EV owners themselves will be able to reduce their charging costs or receive other incentives for participation.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

The establishment of the market/market entry and additional in-depth research and analyses will also entail significant costs and investments, as initial investments are crucial for long-term success in such a demanding market. Additional costs may include staff training, collaboration with aggregators, and the development of internal procedures to support the operationalization of flexibility from EVs. While not capital-intensive, these costs require coordination and planning but are expected to be offset by long-term benefits.

KER:	5. Sharing Charging	**Category:**	Business Models and Services
Partners:	A) INESC ID, EDA, NEW, SEL	**Leader/Responsible:**	INESC ID

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

Business model for companies operating EV fleets that also share V2X charging stations with employees and visitors. The model incorporates a dynamic prioritization hierarchy across fleet vehicles, employees, visitors and facility services. The developed algorithm allocates charging and discharging in real time, based on PV generation, building energy demand, and charger power limits. The system also enables energy redistribution among vehicles, to maximize the number of EVs simultaneously charging while optimizing overall energy usage and user satisfaction.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

INESC ID and NEW - This model is being exploited with KER 3A, following the same exploitation as KER 3A.
EDA - Utilisation of the service for onsite EV charging management.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

INESC ID: Software developer, responsible for increasing the TRL and for the provision of the service, keeping the technology cutting-edge and standards aligned.
EDA: Supply new validation regional grid data and KPIs, utilizing the service and returning operational feedback.
NEW: Supply new KPIs, turning it into a market-ready product-and-service offering.
SEL: Research & support for business model and market definition.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

Private companies with electrified fleets and onsite PV production or EVSEs;
Corporate campuses and business parks offering EV charging to employees and visitors;
EVSE manufacturers and smart charging software providers;
Building energy managers needing smart coordination across limited chargers and high demand with building energy dynamics.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

This business model targets commercial/industrial sites (particularly those that also provide shared access to V2X-compatible charging infrastructure for employees, visitors, and facility operations), EVSE manufacturers, or even building energy managers. The market includes entities with increasing EV adoption and a need to optimize energy usage across multiple user groups, while integrating on-site renewable generation and responding to infrastructure constraints. This market is particularly relevant in regions with limited grid capacity, high energy costs, or strong sustainability mandates, where intelligent charging coordination can unlock operational savings, improve user experience, and support broader energy transition objectives.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

The need to maximize simultaneous EV charging across varied user types (fleet vs. employees vs. visitors), without big infrastructure investments;
Building energy managers struggle to balance EV loads with local PV generation and local demand;
Fleet operations face charger constraints and energy inefficiencies when sharing infrastructure.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Solution providers developing smart charging coordination systems for EV fleets, particularly those integrating V2X capabilities and RES. Some providers offer mature V2G/V2X systems tailored for fleet operations, however with only proven deployments in schools, utilities, and corporate campuses. Additionally, most existing systems focus on fleet-only optimization, lacking dynamic prioritization across employees, visitors, and facility services. While technically advanced, many offerings lack robust BM frameworks that support shared infrastructure.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

Combines real-time PV generation and building load data with user-type prioritization and EV charger constraints;
Enables energy redistribution among EVs, increasing overall charging satisfaction and minimizing wasted capacity.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

TRL 4. TRL 5 at the end of the project

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

Not defined. It depends on external factors such as: the establishment of a regulatory framework for V2X integration; the availability of vehicles equipped with V2X technology.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

Increase TRL: Develop additional software (backend) following new findings from direct conversations with potential end users to ensure a comprehensive understanding of their current problems and enable the creation of customised solutions. Update the back-end to ensure compliance with new V2X regulatory frameworks that may be established. Finalise the business plan and begin the intellectual property protection process.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.
INESC ID: Software is background IP.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.
INESC ID: Software is foreground IP.
Other aspects of IP strategy are still being evaluated.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

To be defined.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

To be defined.

KER:	5. Sharing Charging	**Category:**	Business Models and Services
Partners:	B) CIRCLE, DTU, CB, BEOF	**Leader/Responsible:**	DTU

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

The charging system can provide power sharing and power scheduling functionalities to have the EVs modulating or pausing their charging sessions - this technology will enable the chargers to perform advanced shared charging services to be utllized by CPOs.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

These functionalities allow the control of the overall charging consumption of the EVs in a parking lot. Such consumption could even controlled dynamically, to provide different flexibility services such as RES power matching.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

DTU is handling development of algorithms, Circle are implementing them.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

Companies managing private parking lots in residential buildings, workplace parking lots, who wants to install EV charging stations or just wanting to lower their charging cost. Also companies wanting to optimize the savings from their distributed energy resources, such as building integrated PV.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

EV charging infrastructure market, EV charging management markets.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

The installers of charging infastructures often face high installation costs related to the upgrade of their grid connection capacity. Our solution will reduce the need for such upgrade and at the same time lower operation costs due to the cheaper prices of energy.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

The Danish EV charger market consits of a large variety of organizations such as Clever, EON, Zaptec and Easee.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

Our charging system gives the possibility to indirectly give price incentives to provide flexibility to the charging point operator. The EV charging system can therefore coordinate the charging sessions based on their urgency and flexibility and follow an external setpoint given by the DSO or according to the conditions of the grid.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

Investments needed to penetrate the market at a competetive price - and due to ISO15118 not being developed or ready on the market, a market ready product is waiting on standardization of this.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

3-4 years depending on the investment and business use case.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

Finalize business plan along with an investment plan to fund the needed actions.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

There are no background IPR.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

There no foreground IPR.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

It is unclear at the moment what the costs or the revenue streams would be for the business plan.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

It is unclear at the moment what the costs or the revenue streams would be for the business plan.

KER:	5. Sharing Charging	**Category:**	Business Models and Services
Partners:	C) GEN-I, ABB	**Leader/Responsible:**	GEN-I

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

Maximizing the number of EVs charging simultaneously while using the local grid capacity to its maximum but in a safe and cost-effective way.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

Shared Charging is a smart load management system that enables multiple EVs to charge simultaneously, even when local electrical capacity is limited. Instead of costly grid upgrades or restricting access, it dynamically allocates available power based on real-time factors like grid capacity, battery state of charge, departure time, electricity pricing, and safety limits.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

GEN-I - agregator and CPO, ABB - provider of the charging stations

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

EV owners want convenient, transparent charging. Fleets need fast, reliable, centrally managed charging. Businesses use charging to attract people. Cities aim for public access and sustainability. MSPs enable roaming across networks.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

The European EV charging infrastructure market is booming, with revenue expected to grow from around USD 5 billion in 2024 to over USD 100 billion by 2032. Public charging points surpassed 1 million in 2024. ABB supports this growth with hardware, while CPOs like GEN-I manage services—representing 30–40% of market revenue and growing at 20–25% annually.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

EV users prioritize charger availability, reliability, and convenient locations—ideally where they already go, like home, work, or shopping areas. They expect appropriate charging speeds, easy access through a single app or card, and transparent pricing. A smooth digital experience with monitoring, navigation, and usage history is key, along with fair access, affordability, safety, and the option to use green energy. Responsive customer support is essential when issues arise.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Europe's EV charging market features key players like ABB, Siemens, Wallbox, EVBox, and Alpitronic, offering scalable AC/DC solutions for public and private use. In Slovenia, major CPOs include Petrol d.d., Elektro Ljubljana, Tesla, and Ionity, with roaming access enabled by MSPs like PlugSurfing and Gireve.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

GEN-I excels as a CPO through its integration with energy markets, offering dynamic pricing, green energy, and smart charging via its GEN-I Charge platform. It provides turnkey solutions, solar compatibility, and roaming access. ABB complements this with industry-leading DC fast chargers like the Terra series, known for speed, scalability, and global reliability, backed by smart grid integration and remote diagnostics via ABB Ability.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

ABB – Charging Station: TRL 8 (for V2X functionality), otherwise TRL 9; GEN-I as CPO: TRL 8 (for V2X integration), otherwise TRL 9

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

1-2 years: ABB plans to introduce V2X infrastructure once compatible vehicles are available. GEN-I will roll out as soon as market and technology readiness align.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

ABB – Charging Station: Upgrade of V2X chargers with advanced hardware platforms, product launch, and marketing campaigns. GEN-I as CPO: System upgrade, business model for shared charging infrastructure, V2X service offering, marketing campaign, and bundled offering.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

ABB owns the intellectual property for its charging infrastructure, including hardware, software, and market-facing technologies. GEN-I holds IPR related to its CPO systems and operations, including smart charging, energy integration, and digital platforms.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

Partners retain ownership of their IPR in the areas they have independently developed. Where materials from other partners have been used, such materials must not be utilized without the permission of both the respective partners and the WP coordinator. GEN-I and ABB, as companies, also follow their own internal policies regarding IP assignment and the protection of trade secrets. GEN-I: aggregation processes; advanced algorithms; Business models; VPP.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

We see opportunities to generate revenue through co-funded R&D projects, paid research and analyses, but especially through market activities once the market is established. For the companies ABB and GEN-I, this represents a new business opportunity. ABB – Charging Station: ABB generates revenue through sales.
GEN-I as CPO: Revenue from customers for EV charging or revenue from charging infrastructure management.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

The establishment of the market, market entry, and additional in-depth research and analyses will also involve significant costs and investments, as initial investments are crucial for long-term success in such a demanding market. ABB – CS: Development costs, material costs, maintenance/warranty costs, marketing and sales costs. GEN-I as CPO: Costs of developing the system for shared charging infrastructure, billing costs, contractual documentation costs, hardware costs, maintenance costs, marketing and sales costs, billing.

KER:	6. Flexible capacity contracts for V2X	**Category:**	Business Models and Services
Partners:	A) HEDNO, PPC	**Leader/Responsible:**	HEDNO as DSO, PPC as CPO

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

The Flexible Capacity Contract mechanism developed and tested in the Greek demonstrator enables dynamic, grid-responsive agreements between the Distribution System Operator (DSO), CPOs, and large fleet operators. The contracts define conditions under which V2X-enabled assets, such as EVs or stationary storage, adjust their charging or discharging behavior in response to grid capacity constraints or flexibility requests. The solution includes contract templates, communication protocols, and control rules that are integrated into the Open V2X Management Platform and aligned with HEDNO's operational requirements.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

Commercialisation: PPC will try to commercialize the smart charging algorithms serving Flexible Capacity Contracts for V2G through its e-mobility network (DEI Blue).

Provision of a service: HEDNO will sign and activate the flexible capacity contracts in order to manage the grid optimally and reduce investment costs.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

PPC developed a suite of smart algorithms, serving the functional needs of BUC-5. Flexible capacity contracts for V2X: The V1G smart charging under "First come first served" context; Additional V1G smart charging services developed serving "equal allocation of available power" and "prioritisation of higher charging energy needs"; Finally, the V2G smart charging service has been developed to allow energy injection from EVs to the grid during peak consumption hours. HEDNO is responsible to develop technologies that activate flexible capacity contracts and communicate the activation to PPC.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

DSOs, Aggregators, Municipal CPOs, Fleet Operators.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

EV users/PPC's customers exploiting charging infrastructure located in congested grid areas or areas with high RES penetration. Local flexibility market, which will be a monopsony market where HEDNO (DSO) will be the only buyer of flexibility services offered from aggregators. This market does not exist yet.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

- Lack of V2G regulatory framework in Greece;
- Remuneration of battery degradation from V2G services;
- Lack of limited availability of V2G enabled EV/EVSE market solutions;
- Limited user engagement for V2G services at public charging places;
- No market-ready solution exists for formal flexible capacity contracts between CPOs/aggregators and DSOs

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

E-mobility service providers, e.g: NRG, JOLTIE, FORTIZO, BLK, WAV.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

This KER is the first DSO-CPOs collaboration validated in a live national pilot. The coordination with PPC's Open V2X platform offers operational readiness for future market introduction. Facilitating the market-based provision of EV flexibility capacity offers to System Operator.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

From TRL 2 to TRL 5.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

< 5 years after project end

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

PPC: Post-pilot analysis for commercial contracts under DEI Blue; coordination with regulatory authorities; upscaling piloting; design of pricing incentives to engage users. HEDNO: Investigate flexible capacity contracts procurement and activation strategies; Upscale pilots; coordination with regulatory authorities for the regulatory framework of the flexibility market.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

CPO and eMSP operational experience from PPC.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

PPC is the developer of "O-V2X-MP" platform and the owner of "Smart charging algorithms" for the Greek pilot. No foreground IPR for HEDNO.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

Participation in future ancillary services markets for local grid support.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

Platform cost; Remuneration of battery degradation.

KER:	6. Flexible capacity contracts for V2X	**Category:**	Business Models and Services
Partners:	B) GEN-I, Elektro Celje, UL, ABB	**Leader/Responsible:**	GEN-I

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

Contracts to avoid, reduce or delay investments in the distribution systems. These contracts can be established, mainly among aggregators, CPOs, and large fleet operators

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

Flexibility capacity contracts for V2X enable DSOs or aggregators to procure defined amounts of flexibility from EV owners and fleet operators. These contracts specify the available capacity that can be activated on demand to support grid balancing, congestion management, or ancillary services. Such contracts are primarily established with key stakeholders including aggregators, CPOs, and large fleet operators.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

GEN-I - development of the services, aggregator and business model development, service provider;
ABB - development of the V2X charging station;
Elektro Celje - DSO, development of software and market platform;
UL - research on related field and training

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

Customers are entities that contract services, such as DSOs, EV owners, fleet operators, and charging station owners. For aggregators, customers include DSOs and TSOs who buy flexibility, as well as EV owners and CPOs who provide it.
End users are primarily EV owners who directly participate by offering their vehicle's battery for charging, flexibility, and energy exchange.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

The target market consists of stakeholders involved in the energy flexibility ecosystem, including:
- DSOs aiming to manage grid constraints cost-effectively;
- Aggregators coordinating distributed flexibility resources;
- EV owners offering their vehicles' battery capacity for grid services;
- CPO) deploying and managing V2X charging infrastructure;
- Large fleet operators providing aggregated flexibility through their EV fleets;
- TSOs requiring system balancing services.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

Problems:
Aggregators face complexity in managing diverse assets, integrating real-time data, and navigating fragmented markets and unclear regulations. Technical interoperability, customer engagement, and limited knowledge further hinder scalability.
Needs:
Standardized platforms, clear policies, secure data sharing, fair incentives, and advanced forecasting tools are essential. Strong partnerships with DSOs, CPOs, and EV providers support seamless service delivery.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

GEN-I, in its role as aggregator and market operator, competes with major European players like Next Kraftwerke, E.ON, Enel X, Tiko, and Nuvve, all active in flexibility and V2X services. In Slovenia, key competitors include Petrol, NGEN, KOLEKTOR Setup, and HSE. These companies offer flexibility services, VPPs, and V2X technologies across Europe.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

GEN-I plays a key role as an aggregator in the flexibility market, leveraging its wide portfolio of distributed energy resources, advanced automation systems, and strong EU market presence. With deep expertise, a skilled team, and proven trading capabilities, GEN-I is well-positioned to deliver reliable flexibility services and drive innovation in smart energy solutions.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

The technical solution is at TRL 8. The solution has been completed and qualified through testing and demonstration in a relevant operational environment.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

As part of the EV4EU project, all necessary technical platforms have been successfully developed, including the deployment of V2X-capable charging infrastructure. The market is projected to become operational within the next 1 to 2 years, contingent on timely progress in these areas.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

The project partners plan to continue activities in the field of KERs beyond the conclusion of the project. We see strong potential for continued research and development, as well as for support and market-oriented initiatives in this and related domains. uture Activities will focus on advancing V2X flexibility, developing regulatory frameworks, launching V2X-compatible chargers, and building a market platform with more aggregators. GEN-I will play a central role as an aggregator and CPO, helping shape business models and incentives for EV owners.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

Through previous R&D activities, collaborative projects, and market-driven initiatives, the partners have developed and strengthened their respective background iIPR, both prior to and during the course of the project. Each partner holds IPR in distinct, well-defined areas, and this separation of ownership will remain in effect after the project concludes. Following the project's completion, the partners intend to continue their collaboration, with the expectation of developing additional intellectual property. The business concept and market-related knowledge are the proprietary assets of GEN-I.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

We value and respect the intellectual IPR of our partners. Accordingly, we operate in full alignment with established policies for the protection and preservation of intellectual property in this domain. Each partner retains ownership of any intellectual property they have independently developed. When utilizing materials developed by other partners, such use is strictly prohibited without the prior consent of both the originating partner and the WP coordinator. GEN-I and ABB also adhere to their respective internal policies regarding IPR ownership, IP assignment, and the safeguarding of trade secrets, ensuring that proprietary knowledge and innovations are adequately protected throughout the collaboration.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

Acting as both an aggregator and a CPO, GEN-I enables smart charging and flexibility services that support grid stability while offering benefits to EV users, such as free charging or financial incentives for participating in flexibility programs. This dual role allows GEN-I to coordinate energy flows between EVs and the grid, helping DSOs manage local congestion and avoid costly infrastructure upgrades. As the market matures, GEN-I's expertise in energy services and digital platforms will be key to scaling flexible EV solutions and contributing to a more resilient, efficient energy system.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

The establishment of the market and additional research and analyses will also entail significant costs and investments, as initial investments are crucial for long-term success in such a demanding market. Key costs will arise from the upgrade of the FlexIS platform to support advanced flexibility functionalities and to integrate a greater number of aggregators for broader market participation. Additional costs include the development of interoperable interfaces to enable technical connectivity with the TSO, and the upgrade of the national data hub. Significant investment will also be required for the development of services within the LAMBDA platform, including tools for forecasting electricity consumption and production, flexibility settlement, and message exchange services between backend systems and the FlexIS platform. Finally, a major cost component will be the procurement of services on the local market.

KER:	7. Flexible services for local market (New)	**Category:**	Business Models and Services
Partners:	A) DTU	**Leader/Responsible:**	DTU

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

Our solution can provide external control from an Aggregator, who can coordinate different parking lots with our system to access flexibility services markets and bid flexibility services. The larger flexibility coming from an aggregation of parking lots could be marketed and provide revenue streams.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

The control system can be both commercialised or be further developed for research purposes.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

DTU is developing the algorithm for the provision of flexibility services.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

The solution can be useful for charging point operators (CPOs) and aggregators, who are looking to future-proof their charging technologies and integrate it better in the grid.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

Charging point operators, aggregators, EV charging infrastructure market, EV charging management markets.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

CPOs have limited options when it comes to smart charging technologies. They mostly focus on operating charging technologies in the most robust ways with limited resources for research and development. Local flexibility markets are still not ready and don't have standardized products and price schemes. For such reasons aggregators are also not focusing on charging technologies for their provision of global flexibility services.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

The Danish EV charger market consits of a large variety of organizations, such as Clever, EON, Zaptec and Easee. Some of them are already collaborating with some grid operators for the provision of controllability for their chargers.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

Our system provides the capacity to coordinate the consumption of different parking lots as a single unit, providing larger bidding potential for services in flexibility markets

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

The control system has currently only research purpose. Although ready and running, it would need some improvements in robustness before marketization.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

3 years.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

After the end of the project the system will be further developed and improved. It will be used as building ground for future projects.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

No background IPR.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

No foreground IPR.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

The revenue stream and cost of the system is still unclear.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

The revenue stream and cost of the system is still unclear.

KER:	7. Flexible services for local market (New)	**Category:**	Business Models and Services
Partners:	B) GEN-I, Elektro Celje, UL, ABB	**Leader/Responsible:**	GEN-I

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

Flexibility services enable energy consumers, producers, and storage systems to adjust their electricity consumption or generation in response to specific signals, such as price fluctuations, grid demand, or network constraints. These services are essential for creating a more responsive and efficient energy system. Key Benefits: Reduce congestion on local electricity networks; Avoid or defer costly infrastructure upgrades by optimizing existing assets; Balance supply and demand at a local level in real time; Support the integration of renewable energy by managing variability and intermittency.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

Flexibility services enable energy consumers, producers, and storage owners to adjust their electricity use or supply based on grid needs. Through an aggregator, flexible resources like EVs and batteries are pooled and offered to the DSO to help balance supply and demand, reduce network congestion, and avoid costly infrastructure upgrades.
Operational Flow: Flexibility Need Identified - DSO forecasts network constraints or peak demand periods. Flexibility Call Issued - A market signal is sent to aggregators. Offer Submission - Aggregators submit offers from their portfolio of assets. Market Clearing - The platform selects the most cost-effective offers based on location, timing, and amount of flexibility. Activation - Upon acceptance, assets adjust load or generation (e.g., an EV discharges energy to the grid or delays charging). Verification and Settlement.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

GEN-I - development of the services, aggregator and business model development, service provider;
Elektro Celje - DSO (needs), Enable access to flexibility markets, define technical requirements and grid constraints, provide grid status data, validate flexibility activation, and ensure alignment with regulatory obligations and operational safety;
UL - research on related field and training;
ABB - development of the V2X charging station.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

Key Stakeholders: DSOs buy flexibility to manage grid constraints; Aggregators coordinate distributed assets like EVs and batteries; Flexibility Providers include EV owners, CPOs, battery owners, and demand-side participants; Market Platform Operators run local flexibility platforms.
Customers: DSOs, aggregators, fleets, and CPOs invest in or purchase flexibility services.
End Users: EV owners, homeowners, and facility managers interact directly with the technology, offering flexibility and benefiting from incentives or reduced energy costs.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

Local DSOs are key customers for flexibility services in the local market. They require flexible resources to:
- Manage grid congestion and maintain network stability;
- Balance supply and demand at a local level;
- Defer or avoid costly grid infrastructure investments;
- Integrate increasing shares of renewable energy effectively.

Slovenia has 5 DSOs managing local electricity distribution networks. Estimated annual growth: 20% and 30%.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).
Problems: Managing grid congestion and avoiding costly infrastructure upgrades; Balancing variable renewable energy generation with demand fluctuations; Maintaining grid stability with increasing EV penetration.
Needs: Reliable and scalable flexibility resources; Real-time control and visibility of distributed energy assets; Seamless integration with existing grid management systems.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Flexibility from distributed energy resources is also sought by TSOs, energy retailers, and balancing service providers, which can lead to competition for the same assets, especially during peak demand or system stress. Additionally, alternative solutions, such as grid-scale batteries, traditional demand-side management programs, or infrastructure reinforcement, can compete with market-based flexibility in terms of effectiveness, cost, and implementation speed. Aggregators in Slovenia: Petrol, NGEN, KOLEKTOR Setup, and HSE.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

The EV4EU project – its key business advantage lies in collaboration, knowledge transfer, joint development, and the networking of strategic players. Through detailed, in-depth, and advanced analyses and demonstrations, we have developed state-of-the-art models that represent a winning combination for all involved stakeholders. Additionally, the project enabled the transfer and analysis of practices from abroad, allowing for an improved comparison between the needs of specific networks and the analysis of the performance. GEN-I dispersed sources of flexibility, advanced expertise and developed equipment for automatic flexibility offering, presence in markets across the entire EU, collaboration with experts from around the world, advanced personnel, market recognition, trading.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

The technical solution is at Technology Readiness Level 8 (TRL 8). The solution has been completed and qualified through testing and demonstration in a relevant operational environment.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

The successful development of the flexibility market now depends on three key milestones: the establishment of a regulatory framework for integration, the availability of vehicles equipped with V2X, and the organization of a local flexibility market in Slovenia. The market is expected to be ready within 1 to 2 years.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.
The project partners plan to continue activities in the field of KER even after the project concludes. We see opportunities both in continuing research and development in this and related areas, as well as in support and market activities. The DSO plans to support the implementation of local flexibility markets by participating in pilot projects, defining grid-related requirements for flexibility activation, and contributing to the development of standardized market and technical procedures. Planned activities also include setting up secure data exchange interfaces, collaborating with aggregator GEN-I to test flexibility dispatch in real-world conditions, and engaging with regulatory bodies to help shape a supportive legal framework.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.
Through past R&D activities, projects, and market-driven initiatives, the partners have developed and enhanced their own background IPR both prior to and during the project. Each partner holds intellectual property in distinct, specific areas, and this separation of IPR will remain in place after the project's completion. After the project's conclusion, the partners will continue collaborating and will develop further IP.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.
Partners retain ownership of their IPR in the areas they have independently developed. Where materials from other partners have been used, such materials must not be utilized without the permission of both the respective partners and the WP coordinator. GEN-I and ABB, as companies, also follow their own internal policies regarding IP assignment and the protection of trade secrets. GEN-I: aggregation processes; advanced algorithms; Business models; VPP.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

In the future, we see opportunities to generate revenue through co-funded research and development projects, paid research and analyses, but especially through market activities once the market is established. For Aggregators: Monetize flexibility services and Bridge between end users and grid operators.
For End Users: Earn revenue or reduce energy costs; Use assets (EV battery, flexible loads) more efficiently; Support local energy sustainability.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

The establishment of the market/market entry and additional in-depth research and analyses will also entail significant costs and investments, as initial investments are crucial for long-term success in such a demanding market.
As a regulated entity, the DSO (Elektro Celje) does not generate direct commercial revenue from flexibility services. However, participating in a local flexibility market brings significant indirect economic benefits, such as reduced operational costs, deferred infrastructure investments, and improved grid efficiency. These benefits support the DSO's financial performance within the regulated revenue model and contribute to long-term sustainability and resilience objectives.

KER:	8. Houses/Building/Parking Lot energy management system	**Category:**	Technologies
Partners:	A) INESC ID, NEW, SEL	**Leader/Responsible:**	INESC ID

1. KER Characterisation

A. Description
Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

A site-level orchestration platform for homes and small buildings that coordinates bidirectional EV charging with rooftop PV. It aligns energy flows between EVs, building loads, and the grid to improve self-consumption and overall value, enabling bidirectional operation where supported. Specific methods for prediction, prioritisation, and dispatch remain confidential and are shared only under NDA.

B. Exploitation Intention and Use Model
Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

INESC ID:
- Provision of a software-only site-level orchestration solution for homes/small buildings;
- Licensing of the core optimiser under NDA to charger/PV vendors, aggregators and energy retailers;
- Technology-transfer pilots with utilities/installers;
- Contract research for bespoke integrations.

C. Responsibilities/roles of involved entities
After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

INESC ID: Maintains the algorithm roadmap and releases updates under a dual licence (free academic / paid commercial), provides quantitative evidence and expert input to emerging residential-V2X standards.
NEW: Manufactures the plug-and-play gateway at scale and runs the cloud optimisation/dashboard service on a subscription basis.
SEL: Leads interoperability testbeds and coordinates field pilots with utilities and green-tariff suppliers.

2. Market Definition

A. Customers & End users
Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

Homeowners/prosumers
Energy retailers and utilities
Building managers

B. Target market
Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

Targets the fast-growing residential "solar-EV-smart-home" market, millions of prosumers, energy retailers, aggregators who need a single brain that synchronises rooftop PV, bidirectional chargers and household loads. These end-users and service providers form a converging ecosystem where cutting energy bills, boosting self-consumption and unlocking V2X flexibility are the key purchasing drivers, and where openness to standard protocols and easy retrofit differentiate the winning solution.

C. Adopter's problems/needs
Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).
Homeowners / prosumers: Three or more separate apps (PV inverter, charger, utility) that don't talk to each other, hard to know when discharging the car will really save money, Fear of voiding battery warranty.
Energy retailers and utilities: Fragmented device landscape, costly to onboard and maintain. Low forecast accuracy on when cars are plugged in and how much energy is available. Customer churn if range anxiety isn't addressed.
Building managers: Static load calculations force expensive transformer upgrades. No off-the-shelf controller that ties PV, EVs and common-area loads together.

3. Competition and UVP

A. Competitors
Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Residential battery aggregator with a proven track record in grid services and strong utility partnerships (Germany/US). Limitations: battery-centric design, no native EV-charger control, no fairness-aware scheduling, and no clear ISO 15118 roadmap.

B. Unique Value Proposition
Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

A residential platform that combines open-hardware freedom, full PV-EV-load optimisation, fail-safe edge control and warranty-safe V2X in one affordable package, delivering bigger savings, simpler installs and higher user confidence than any current competitor.

4. Timings, TRL & Go-to-market

A. TRL
Indicate the current level of maturity of your solution and expected at the end of the project.

Sits at TRL7 now and to the end of the project.

B. Time to market
Specify the time until your solution reaches a higher TRL and is ready for the market.

Target TRL 9 in 9 to 12 months after end of the project.

C. Planned Activities
Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.
Post-project, we will package the solution for deployment (spec freeze, reliability/cybersecurity hardening), validate interoperability with standards and target vendors, and run a small set of reference pilots with KPI tracking and rollout playbooks. Finalization of business plan and start of IP protection process.

5. Intellectual Property Rights

A. IPR Background
Are there any background IPR? Specify them by type and partner.
INESC-ID: know-how, copyrighted code, prior pubs/datasets, any pre-existing patents.

B. IPR Foreground
Are there any foreground IPR? Specify them by type and partner.
INESC-ID: copyrighted optimisation/forecasting software, APIs/SDKs, technical docs and trade secrets (potential patent filings under assessment); cloud/portal software, gateway firmware and manufacturing files, ops/support materials, and new trademarks; SEL: interoperability/conformance test suites, lab scripts, and pilot training/commissioning packs; Joint (INESC-ID & NEW): interface specs/data models, reference integration-kit designs, and curated anonymised pilot datasets. Ownership follows the Consortium Agreement (sole vs. joint), access on fair and reasonable terms; technical methods shared only under NDA.

6. Business Plan Definition (if applicable)

A. Revenue Streams
Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

TBD

B. Costs
What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

TBD

KER:	8. Houses/Building/Parking Lot energy management system	**Category:**	Technologies
Partners:	B) CIRCLE, DTU, CB	**Leader/Responsible:**	DTU

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

Energy management system which with inputs from building/house energy meter (and also building parking lots) can monitor and adapt the EV charger consumption depending on the consumption of the building. This allows to setup EV chargers, even if in peak periods building/house consumption is close to fuse limit.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

After the EV4EU project, Circle Consult plans to make direct use of the developed energy management tools by offering consultancy and implementation services to EV charger manufacturers, installers, and building owners. Thus bringing this into real-world charging solutions and building energy systems. DTU will continue to use the results indirectly through further research and development, exploring new projects focused on standardisation, interoperability, and advanced control of energy flexibility in buildings and EV charging.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

Circle Consult will use the developed tools and methods to provide consultancy and implementation services to EV charger manufacturers, building (parking lots) owners , and installers. DTU will continue as a research and development partner, building on the project results through new research activities, standardisation efforts, and collaboration with industry to refine the control algorithms and interoperability of household and building energy systems and continue to operate the EV chargers on RIsø site. Campus Bornholm (CB) will act as a demonstration and reference site, maintaining the installed infrastructure for continued testing, validation, and public engagement.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

Private building (and household owners) with EV charging need, but needs a coordinated method to allow charging, even if the electricity grid is either not prepared for it - or the households fuse limits are below that of which the EV chargers demand.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

EV charging market in especially markets with high cost for upgrading electricity grid locally, or with own production of electricity.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

Many houses and buildings are in need of EV chargers to support their residents and users of the buildings, but may not be able to due to high cost of EV adaption. By having a automated system controlling the charge power dependent on the building consumption, they may install EV chargers without added costs.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Currently on the market there are not EV chargers which can be used on any household / building metering, but a long range of EV charger manufacturers offer integration with specific meters, PV panels, inverters etc. This can be EON, Easee, zaptec.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

If an ev charger can be made which can integrate with standardized building and household meters - it is a unique option to have coordination with the buildings.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

Current technology is mature when coordination strategies and charging technology is available. Scalability and integration into a market is challenging. TRL 7.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

Depending on available technologies and investments made, can be within 1-2 years, but can also be further in future, 4-5 years.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

Assess and understand the actual timelines of technology development of household consumption meters and data to be accessible to charging stations, I.E a common standard.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

There are no IPR.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

DTU will own and manage the foreground IPR related to algorithms, methodologies, and research data.CC will have IPR of the Software, hardware and mechnical design of the chargers used in the project.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

The revenue stream would come from the sale and installation of the product as well as from the operation of the chargers. As the building will reduce its energy price, there is possibility to retain a percentage of such savings. Aswell as consultancy services.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

The cost of the solution would be mostly the implementation of the system, the manufacturing of the chargers and cost of operations.

KER:	9. V2X Station	**Category:**	Technologies
Partners:	A) SEL, INESC-ID	**Leader/Responsible:**	SEL

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

A solution for managing multi-outlet EV charging points by adding bi-directional energy management (V2X functionalities) between buildings and EVs. It includes a local controller and a could platform. Building residents and EV owners are provided with smart energy management, reducing their energy bills and ensuring reliable and less-grid dependent energy in the building.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

The intention is to commercialise a new version of SEL's current product EDGE. Hence, the plan is to use this KER as a gateway for integrating technology (V2X algorithms) into the existing product and for providing a service.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

SEL - Support algorithm development and integration; commercialization of product; operation and provision of energy management services.
INESC-ID - Provide and develop V2X algorithms.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

Energy users in buildings that own bi-directional Evs (EV owners as a building resident). Property managers are seen as adopters rather than end users.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

Energy consumers and traders in buildings equipped with EV charging stations.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).
EV owners (and simultaneously building residents): lack of control over electricity bills - no way to avoid higher grid prices to save money while charging; building not having enough contracted power to ensure typical charging routines.
Property managers: Dealing with limitations of common energy uses (lighting; ventilation; etc.) that are comprised due to EV charging. Anxiety over the building not having enough contracted power.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

1) EVSEs V2G Wallboxes - Wallbox (Strengths: manufacturing of the V2G wallbox and communication with EV; Weaknesses: less contact with end client). 2) Mobility Operators - ChargeGuru (Strengths: experts in electric mobility in private buildings, contact with end client; Weaknesses: less technical expertise in V2X)

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

Agnostic solution that can manage multiple assets in a garage and leverage on that to provide local energy management/flexibility within the building, due to V2X capacity. This solution will also have the ability to pre-schedule charging sessions and integrate with other on-site energy sources.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

Current TRL: 6 (V2X version); 9 (current EDGE product)
Expected TRL: 7 (V2X version)

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

2027 (V2X version). Current EDGE product already being commercialized.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.
V2X version: Market needs research/validation; Business plan definition; Agreement with INESC-ID; Prototyping

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.
EDGE product (HW + Firmware) patent - SEL

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.
V2X algorithms - INESC-ID and SEL
User interface and Platform cloud and EDGE - SEL

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

Direct sale of EDGE controller device; Service provision (to normal EV user and V2X user)

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

FTE costs (SW team, HW engineer, UX/UI designer, Data engineer); Commercial and sales costs; O&M costs.

KER:	9. V2X Station	**Category:**	Technologies
Partners:	B) CIRCLE	**Leader/Responsible:**	CIRCLE

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

A V2X ready charging station which can adapt and use ISO15118 and other protocols to communicate with the EV, backend systems, perform grid enhancing tasks and adaptability to price changes, priorities, participate in DR services and similar.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

The EV charging stations are a key point in the future smart grid market, to ensure EVs are not consuming power in periods with high grid loading - or to ensure EV chargers can be installed even wil fuse limits.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

Circle is developing the charging stations.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

EV owners, parking lot owners.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

EV charging market, public parking lots.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

Solving issues for customers where they need more plugs than they have power available, want to do smart charging with coordinated approches.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Zaptec, Clever, and Easee.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

Advanced scheduling and queue systems on board the charger, which allow very simple communication but still managing to allow EV users to receive their needed energy.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

The product is not yet mature, as large capital investments are needed to make the hardware platform market ready, along with updated Installation procedures and app design to enhance and expedite the installation time. TRL 5-6.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

1-2 years

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

Understand and figure out to find financial injection.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

Circle ApS - to have complete intellectual property rights.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

Circle ApS - to have complete intellectual property rights.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

Sell of EV chargers.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

Financial injections into manufacturing and making the ev chargers market ready. That means both advanced development into APP that allows any electrical to setup the charger, and make it perform self test, before connecting to the grid. The chaging station need to be financially competitive, which means a complete overhaul of the hardware platform. That means investments in the size of a team of 3-4 full time engineers for the duration of 2 years.

KER:	9. V2X Station	**Category:**	Technologies
Partners:	C) ABB, GEN-I	**Leader/Responsible:**	ABB

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

Advanced V2X charging stations enabling simultaneous charging and discharging of multiple vehicles.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

Manufacturing of a new product and Commercialization: Development and sales of advanced V2X chargers in the e-mobility market - targeting B2C, B2B, other charging infrastructure providers, integrators of large charging parks, and CPOs.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

ABB – Developer and provider of advanced V2X charging infrastructure in the market. GEN-I – CPO and provider of comprehensive advanced V2X package offers. GEN-I also serves as the aggregator.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

Customers: B2B and B2C clients, CPOs, and investors in charging parks.
End Users: EV owners charging at our stations and operators of V2X chargers (CPOs).

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

The European EV charging station market is experiencing rapid growth, with 2024 revenue estimates ranging from USD 4.7 billion to over USD 30 billion, depending on methodology. Forecasts project strong expansion, with compound annual growth rates (CAGR) between 21.5% and 36.23% through 2030–2034. This growth is driven by rising EV adoption, infrastructure expansion, and increasing demand for fast, accessible charging solutions.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

V2X adopters face several early-stage challenges and needs. They require compatible vehicles and chargers, along with clear financial incentives such as savings from grid services or optimized self-consumption. Integration with energy systems, secure data exchange, and user-friendly control platforms are essential. Additionally, regulatory clarity and support for interoperability will be key to enabling broader adoption and unlocking the full potential of V2X technology.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Leading V2X charging providers include Nuvve, Wallbox, Enel X, Fermata Energy, Greevolt, and Delta Electronics, offering bidirectional solutions for grid integration, home energy use, and commercial applications. In the broader EV charging market, major players such as Siemens, Schneider Electric, EVBox, ChargePoint, Tesla, Ionity, Allego, and Enel X provide a wide range of AC/DC chargers, smart energy integration, and extensive public networks across Europe.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

V2X charging stations enable bidirectional energy flow, allowing EVs to not only charge but also supply power back to the grid or home. This enhances energy flexibility, reduces costs, and supports grid stability, renewable integration, and energy independence. Key benefits include smart energy use, backup power during outages, and lower emissions. Based on the CCS protocol, V2X is gaining traction in Europe, with ABB actively developing and deploying its first prototypes across Slovenia and the EU.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

V2X Charging Station – Technology Readiness Level (TRL) 7
Next Steps - Production scaling, cost optimization, and minor feature enhancements to prepare for full commercialization.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

Planed commercialization is for 2027-28 highly depend of car OEM, DSO/CPO and later demand for these stations.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

Prototype Testing and Market Launch Plan:
- Conduct thorough testing of the prototype charging station to ensure performance, reliability, and compliance;
- Upgrade and refine the prototype based on market feedback and evolving customer needs;
- Prepare and execute product launch activities to introduce the charging station to the market successfully.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

ABB IPR Background: Strong Patent Portfolio; Investment in R&D and Innovation; Collaborations & Licensing; IP Strategy in EV Charging; and Legal and IP Enforcement.
GEN-I IPR Background: Focus on Energy Trading & Smart Energy Solutions; and Software & Platform IP.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

ABB's Foreground IP in EV Charging and Related Fields: Innovative Charging Technologies; Software and Control Algorithms; Integration and Interoperability Solutions; and User Experience Enhancements.
GEN-I's Foreground IP in the E-mobility Field: Charging Management Software; Billing Integration. GEN-I actively protects its intellectual property through:
Copyrights: GEN-I holds copyrights over all content published on its websites and applications, including text, graphics, photographs, and other multimedia elements.
GEN-I safeguards proprietary algorithms and software solutions related to EV charging and energy management as trade secrets.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

ABB earns from selling V2X chargers, offering integration and software services, sharing grid service revenues, providing maintenance, and partnering on funded projects. GEN-I, as aggregator, profits from grid flexibility, energy trading, service fees, data analytics, and incentives. As a CPO, GEN-I adds charging fees, energy resale, subscriptions, maintenance, and data monetization.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

ABB's V2X costs include R&D for hardware/software, manufacturing, installation, operations and maintenance, sales and marketing, and general overhead. For CPOs, costs span CapEx (chargers, installation, networking), OpEx (electricity, maintenance, software, customer service, site leasing), transaction fees, marketing, and compliance.

KER:	10. Load balancing smart charger (New)	**Category:**	Technologies
Partners:	A) CIRCLE, DTU, CB, BEOF	**Leader/Responsible:**	Circle

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

Smart charging station with the opportunity to perform load balancing, meaning if one of the phases is heavily loaded in the grid the algorithm can compensate for this, and choose to reduce or increase the consumption.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

Make use of algorithms which can receive local signals about grid loading, similar to demand response but on local level to allow charging operators to reduce current on selected phases.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

DTU is handling the algorithms, Circle is providing the technology.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

Especially local household owners who want to avoid risks of penalties for unbalancing the grid, with single phase chargers.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

EV charging market for public parking lots.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

Especially in households with heat pumps, or areas with heavy use of heats pumps the users or owners of buildings may be required to have their EV charge on a phase different from the one running the heat pump. This can be done my manually choosing phase1 on the charger to be different from the heat pump when installing - and allow the charger start charging on only 1 phase to compensate.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Spirii, monta, clever, Easee and Zaptec.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

The unique value proposition has changed since the start of the project, where today most EV chargers offer these solutions. Making it a criteria that they offer it, more than unique proposition.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

Load balancing on a manual level is tested by rotating the phases of each charger locally.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

1 to 2 years.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

No planned activities.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

N/A

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

Circle APS - has complete IPR.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

No revenue stream, but a selling point for the EV charging station.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

N/A

KER:	11. LV monitoring (New) (Hardware and Software)	**Category:**	Technologies
Partners:	A) HEDNO	**Leader/Responsible:**	HEDNO

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

An LV (Low-Voltage) Monitoring System for a DSO is an integrated solution that continuously measures, collects and analyzes electrical parameters at the low-voltage level (typically up to 1 kV) on the distribution network. Its primary goal is to give the DSO real-time visibility into what's happening at the "last mile" of their grid. The LV monitoring system consists of the field measurement devices (hardware) and all the technologies (software) that cooperate to seamlessly transfer and store the data from the field to the databases and platforms.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

Exploitation Intention: Internal use and operations; Research & Publications; Selling Data. Use: Scale up the LV-monitoring system across feeders to power real-time dashboards for fault detection, load balancing and outage prediction; Share anonymized network metrics with university partners and joint-lab consortia, co-authoring peer-reviewed papers; Internal Operations for optimization; Embed the platform into our maintenance workflows, reliability KPIs and meet regulatory targets; CapEx & OpEx Optimization; Data Offering; Package and license aggregated, anonymized LV-grid datasets to energy aggregators; Peer-reviewed publications, enhancing our reputation and increasing funded research grants.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

Only HEDNO is involved. HEDNO is responsible for developing this solution and improving HW and SW features. HEDNO has installed the sofware and hardware required for LV monitoring.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

HEDNO is the adopter of this solution based on its unique requirements. However this solution will create data that can be sold to aggregators for Improving their participation in the future flexibility markets.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

Regarding the offer of data, this market would be a monopoly for HEDNO (DSO) since HEDNO is the only entity who can aqcuire LV data in Greece, since HEDNO is the only DSO.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

Inaccurate Flex-Capacity Forecasts

Aggregators lack LV-feeder records, so their flexibility estimates are off. Our datasets can help improving their participation in the future flexibility market.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Regarding the Data offering again there are no competitors. Only HEDNO has access to this data as the only DSO.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

There are no competitors. Monopoly.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

The final solution targets a TRL 7-8.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

> 5 years

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

The implementation results of this solution are constantly disseminated with the operations departments of HEDNO, constantly analyzing the impact on the grid monitoring and the further services that can be provided. These results will assist on the further upscaling of the solution on the distribution grid. HEDNO intends to upscale the LV monitoring solution to every urban secondary substation of its distribution network.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

N/A

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

Technologies implementing the tool are owned by HEDNO.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

Revenues from selling the data gathered from the LV monitoring System. It is too early to quantify these revenues.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

Field measuring devices costs, telecomunication costs, platform costs, supervision software costs.

KER:	12. Open V2X management platform	**Category:**	Tools
Partners:	A) PPC	**Leader/Responsible:**	PPC

1. KER Characterisation

A. Description	**B. Exploitation Intention and Use Model**	**C. Responsibilities/roles of involved entities**
Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs. Platform to support the next generation of V2X, supplying the user's needs and increasing their engagement with the V2X service, allowing the information exchange between end-users, operators, and systems.	Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.) PPC will try to commercialize the V2G service through its e-mobility network (DEI Blue).	After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together. PPC: Lead designer, developer, integrator, and future exploiter of the O-V2X Management Platform.

2. Market Definition

A. Customers & End users	**B. Target market**	**C. Adopter's problems/needs**
Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done. EV users, CPOs, Municipalities, DSOs, Aggregators, Service providers, and Energy Communities.	Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**. Whole sale and ancillary service energy markets.	Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact). - Lack or limited availability of V2G interfaces to monitor and control V2G charging stations - The OV2X-Platform offers the V2G interfaces unlocking the deployment of advaced V2G services; - Limited user engagement for V2G services at public charging places, which can be overcome by designing and offering incentives communicated to the EV users by the OV2X-Platform.

3. Competition and UVP

A. Competitors	**B. Unique Value Proposition**
Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses. Other open-source platforms (OpenEVSE - Electric Vehicle Charging Solutions).	Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions? Facilitating quick market uptake of V2G services for CPOs/eMSPs.

4. Timings, TRL & Go-to-market

A. TRL	**B. Time to market**	**C. Planned Activities**
Indicate the current level of maturity of your solution and expected at the end of the project. From TRL 5 to TRL 8.	Specify the time until your solution reaches a higher TRL and is ready for the market. Already publicly available.	Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan. Building new advance services for new market opportunities.

5. Intellectual Property Rights

A. IPR Background	**B. IPR Foreground**
Are there any background IPR? Specify them by type and partner. PPC's testing EVSE platform.	Are there any foreground IPR? Specify them by type and partner. O-V2X-MP platform.

6. Business Plan Definition (if applicable)

A. Revenue Streams	**B. Costs**
Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time. Open-Source.	What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.) N/A

KER 12B

KER:	12. Open V2X management platform	**Category:**	Tools
Partners:	B) GEN-I, Elektro Celje, UL, ABB	**Leader/Responsible:**	GEN-I

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

Platform to support the next generation of V2X, supplying the user's needs and increasing their engagement with the V2X service, allowing the information exchange between end-users, operators, and systems. Platform is owned by GEN-I.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

The O-V2X-MP is a digital solution designed to manage and optimize two-way energy flows between EVs and energy systems. It performs real-time monitoring of EV SOC and charging behavior, schedules flexibility based on grid or market signals, and communicates with DSOs, TSOs, aggregators, and CPOs using standardized protocols. The platform also provides user interfaces for EV owners and fleet managers to set preferences. Its benefits include enabling automated flexibility from EVs, supporting grid stability without requiring infrastructure upgrades, and creating new revenue opportunities for EV users. It also facilitates integration into energy markets and ensures cybersecurity and data privacy. Although the DSO does not operate the platform directly, it benefits from improved access to standardized and reliable flexibility services from V2X-capable assets.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

GEN-I – V2X Platform Management and Aggregation:
- Develops and operates a platform to manage V2X charging stations.
- Aggregates available flexibility capacities from EVs and charging infrastructure.
- Coordinates flexibility offerings to DSOs/TSOs based on market and system needs.
- Ensures seamless integration of end-user participation and financial settlement.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

Customers are entities that contract flexibility services, including DSOs, TSOs, aggregators, fleets, and CPOs. Aggregators act as both buyers and sellers, connecting distributed assets with system operators. End Users are EV owners, fleet managers, CPOs, and building operators who provide flexibility through their vehicles, batteries, or energy systems—benefiting from incentives like reduced charging costs or direct payments.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

The V2X Management Platform is designed to serve a growing ecosystem of stakeholders engaged in electric mobility, grid flexibility, and energy system optimization. The V2X Management Platform serves aggregators, CPOs, fleet operators, DSOs, TSOs, EV manufacturers, and market operators—enabling real-time coordination, flexibility activation, and grid optimization. The platform supports scalable V2X integration to improve grid stability amid rising EV and renewable adoption.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

Key Problems: Regulatory uncertainty, fragmented markets, limited data access, low user engagement, unclear revenue models, and technical complexity hinder V2X flexibility adoption. Key Needs: Clear regulations, interoperable platforms, real-time data access, strong incentives, advanced forecasting tools, and collaboration across DSOs, CPOs, and OEMs.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Key V2X Platform Competitors include: Nuvve – Offers a full-stack V2G platform with charger integration and grid services; The Mobility House – Provides smart charging and energy management, including V2G pilots; Kaluza – Delivers cloud-based smart charging and flexibility coordination; Jedlix – Focuses on V2G monetization and energy market integration for EV drivers. These platforms compete by enabling real-time control, flexibility activation, and seamless integration with EVs, chargers, and grid operators.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

A fully integrated V2X flexibility solution that combines advanced platform management, technical grid validation, cutting-edge hardware, and scientific research—designed to accelerate local flexibility markets and enable cost-effective, reliable grid optimization. GEN-I, a leading energy trader and aggregator with strong EU market presence, manages the platform and aggregates flexibility across EVs, fleets, and infrastructure. Its deep market expertise, automated systems, and strategic partnerships ensure seamless coordination between energy assets and grid operators—delivering scalable, real-time flexibility with measurable impact.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

At TRL 7, the V2X flexibility solution has been successfully demonstrated in real-world grid conditions. The platform, hardware, and services operate reliably, validating scalability, interoperability, and regulatory compliance—bringing the system close to commercial readiness.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

The V2X flexibility platform is expected to launch within 1–2 years, depending on regulatory progress, hardware availability, stakeholder coordination, and technical upgrades. With strong collaboration and government support, commercialization can align with rising EV adoption and flexibility demand.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

Main Activities focus on advancing Key Exploitable Results (KER) through platform upgrades, regulatory alignment, technical validation, and stakeholder engagement. This includes integrating more aggregators and V2X chargers, enhancing interoperability, and aligning with EU demand response rules. Real-world testing will validate performance under grid conditions, while business models and market entry strategies will prepare the solution for commercial deployment. These efforts aim to accelerate the development of local flexibility markets and ensure reliable, scalable grid optimization.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

Partners retain ownership of their IPR in the areas they have independently developed. Where materials from other partners have been used, such materials must not be utilized without the permission of both the respective partners and the WP coordinator. GEN-I and ABB, as companies, also follow their own internal policies regarding IP assignment and the protection of trade secrets. GEN-I: aggregation processes; advanced algorithms; Business models; VPP.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

Partners retain ownership of their IPR in the areas they have independently developed. Where materials from other partners have been used, such materials must not be utilized without the permission of both the respective partners and the WP coordinator. GEN-I and ABB, as companies, also follow their own internal policies regarding IP assignment and the protection of trade secrets. GEN-I: aggregation processes; advanced algorithms; Business models; VPP.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

We see opportunities to generate revenue through co-funded R&D projects, paid research and analyses, but especially through market activities once the market is established. For ABB this is an opportunity by increasing revenue through the provision of advanced charging infrastructure, and GEN-I in the roles of aggregator and CPO. The new market will also present opportunities for further development and analyses, as well as for professional training, where we see potential for UL. EV owners themselves will be able to reduce their charging costs or receive other incentives for participation. The establishment of a local flexibility market brings multiple financial and operational benefits for the DSO.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

Market entry and platform deployment will require significant upfront investment to ensure long-term success. Key cost areas include: Platform Development – Upgrading FlexIS, integrating aggregators and chargers, and ensuring cybersecurity; Hardware & Infrastructure – Installing V2X-capable chargers (e.g., ABB), IoT devices, and maintaining assets; R&D – Scenario modeling, forecasting tools, and collaboration with research partners like the University of Ljubljana; Regulatory & Legal – Supporting compliance, contract development, and regulatory engagement; Customer Engagement – Outreach, training, and incentive programs for EV owners and fleet operators; Operations – Staff, administration, and ongoing monitoring.

KER:	13. Co-simulation platform for V2X	**Category:**	Tools
Partners:	A) INESC ID, EDA, SEL	**Leader/Responsible:**	INESC ID

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

The tool consists of a platform designed to assist experts in planning a municipality's electric infrastructure, specifically focusing on the optimal locations and characteristics of EV chargers. It is structured in two main stages: vehicle traffic simulation and EV charging grid impact simulation. Both stages rely on empirical data, ensuring that the results are relevant and functional for customers. The tool also allows for the simulation of V2X management strategies.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

INESC-ID: The tool can be licensed to transport and mobility consultancy company, that will provide access to end-users.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

INESC ID: Software is background IP and foreground IP; Platform code development; Tool maintenance and updates; Organization of exploitation related to point B
EDA: Empirical grid data provider; output results validation
SEL: Development of User Interface

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

Officers from mobility and transport department of municipalities;
Officers of planning department of DSOs;
Inter-municipality energy agencies;
Transport and mobility consultants;
Electric mobility network managing entities.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

Exponentially growing market of EVSE deployment and sizing, targeting the needs of municipality infrastructure planners, DSOs planning department, and inter-municipality energy agencies in charge of electric mobility, along with transport/mobility consultants and electric mobility network managing entities. These adopters need to plan the location of and characterize the EVSEs within a region, seeking to obtain data-driven decision support, enabling smarter, more sustainable, and cost-effective deployment of EV charging infrastructure across urban and regional contexts.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

The end-users need to plan the location of and characterise the EV chargers in the municipality territory.
This is a complex task, currently done by hand. It requires information from different sources (grid characteristics, behaviour and needs of EV users, etc). If done incorrectly, may lead to drivers' unsatisfaction due to poor coverage of public EV chargers, low use of existing infrastructure due to poor placement (Low ROI), and unnecessary allocation of limited resources (space) for unused chargers.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Mainly companies that provide decision support in city traffic planning. The available competitors consist of highly advanced simulation software, primarily focused on vehicle traffic, which is their main objective. These existing tools do not include functionalities for simulating the power grid considering the vehicle traffic and user needs, which is essential for determining the ideal charger characteristics (our tool does exactly this).

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

The tool will facilitate the definition of the optimal location of charging stations, define the characteristics of the charging stations and plan the distribution grid. With a facilitated access to data collection, understanding, and simulation of results, it enables a faster and less error-prone planning/design, and an easier decision-making for the location of new charging stations.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

TRL 5 currently and at the end of project, as expected

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

Approximately 2 years.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

Increase TRL: Development of additional software (back-end) following the findings of a direct conversation with potential end-users, to ensure a comprehensive understanding of their current problems and allow for the creation of tailored solutions. Design of a more improved and effective front-end ready for commercial use. Finalization of business plan and start of IP protection process.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.
INESC ID: Software is background IP.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.
INESC ID: Software is foreground IP.
SEL: User interface is foreground IP.
Other aspects of IP strategy are still being evaluated.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

To be defined.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

To be defined.

KER:	13. Co-simulation platform for V2X	**Category:**	Tools
Partners:	B) UL, GEN-I, Elektro Celje	**Leader/Responsible:**	UL

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

V2GFlex tool simulates and evaluates V2G EVs flexibility potential and their capability for participation in local flexibility services for a selected model, while also ensuring that user requirements are met. The tool is only demonstrator-based tool, meaning that simulations are done for the selected case that is in line with Slovenian demonstrator of the EV4EU project. It enables simulation of energy grid and road traffic for Slovenian demonstrator as EVs and V2G technology are in mass use. Results of the tool are based on real input data, meaning that the simulation and results are realistic.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

UL: The research tool is suitable for the consulting in relevant fields, participation in workshops/trainings, and use in similar future research projects. Exploitation is focused on the UL scope.
Elektro Celje: The V2GFelx tool enables Elektro Celje to assess and validate the impact of V2X strategies on the selected distribution network (selected model that is in the scope of the tool development) in combination with urban traffic dynamics.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

UL -Development of the tool (software development etc.), tool customization, maintenance of the tool, organization of exploitation related to point B; Elektro Celje - Provide network models and operational data, define relevant grid constraints, participate in scenario development, validate simulation outputs; GEN-I - CS information/data provider, expert consulting.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

UL - Companies, DSOs, Aggregators (energy sector actors), CPOs…
Elektro Celje – DSO: DSO is an important end user of the V2GFlex tool, using it to assess the impact of V2X strategies on the selected distribution network in the context of urban mobility and energy demand (taking into account scope of the tool defined in point 1A).

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

Energy sector, mobility sector, departments of sustainability in companies etc.
Elektro Celje: The target market for this solution includes urban and peri-urban areas within selected Elektro Celje's distribution grid where the interplay between traffic , EV adoption, and grid capacity presents planning and operational challenges. However, the target market is limited by the tool's scope in point 1A.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

Arduous to estimate the flexibility potential of V2G EVs and its impact on the energy grid, while estimation of potential for EVs participation in flexibility services also presents an obstacle. This is due to unavailability of the data, lack of knowledge and lack of mass deployment of the V2G technology and local flexibility markets. Elektro Celje requires a platform to manage rising network uncertainties by simulating multi-domain scenarios and assessing V2X strategies (taking into account scope in point 1A).

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

We have not identified exact competitor tools, reason is that our tool is demonstrator based so it is unique.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

The tool is specific to the SI demo, adaptability for similar demos is possible. Our tool connects the energy and traffic layer of the simulated model. By linking mentioned layers, the tool estimates flexibility potential of V2G EVs and their potential for the participation in flexibility services, and consequently potential to mitigate grid issues. By using real data, the tool generates realistic, tangible simulations and can offer actionable insights.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

Current and expected at the end of the project is TRL 5.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

The tool will remain at the TRL defined in point 4A and may need adjustments once the SI demonstrator is complete. Expected use is specified in point 1B.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

It is expected that certain modifications of the tool will be needed when the Slovenian demonstrator will be fully developed. Adaptability of the tool to similar demonstrators. Planned activities in the future that will allow exploitation of our tool are consulting, use in workshops and participation in future research projects.
Elektro Celje – DSO: Elektro Celje plans to collaborate on the further development and validation of the V2GFlex tool by contributing realistic grid models, operational data, and use-case scenarios relevant to its distribution area.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

We previously had knowledge in the relevant field and with the development of tools in the related field.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

There is no intention of patenting it, but it is still our intellectual property. It represents the result of cooperation between partners and knowledge sharing, therefore offering it on the market without involving/informing the Slovenian Demo coordinator is not permitted.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

UL - In the future, we will also try to monetize the developed tool financially. e.g. through further research projects.
Elektro Celje: As a regulated entity, Elektro Celje does not generate direct revenue from the use of the V2GFlex tool. However, the tool could contribute to indirect economic values by identifying optimal strategies for integrating V2X-based flexibility (for the selected model that is in the scope of the tool development).

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

UL - Further tool upgrades after project completion, costs of applying the tool to new models/areas.
Elektro Celje – DSO: The main costs for Elektro Celje associated with the V2GFlex tool include provision of network models and measurement data, preparation and maintenance of data inputs, participation in validation processes and cooperation in simulation scenarios planning activities.

KER:	14. V2X management strategies: high-level coordination tool	**Category:**	Tools
Partners:	A) GEN-I, Elektro Celje, UL	**Leader/Responsible:**	GEN-I

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

Decision support tool helping in the identification of the needs of new V2X stations, and the characteristics of these stations (V2X capability, fast-charging, etc.)

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

A V2X management strategy coordinates energy and data flows between EVs, infrastructure, and grid operators. To ensure revenue for EV and battery owners, it must include smart tools for real-time data analysis, energy optimization, and automated incentives. V2X is evolving from mobility tech into a key part of the energy market, enabling vehicles and storage systems to actively support grid stability and efficiency.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

Preparation of different users' profiles and scenarios of V2X flexibility.
GEN-I - Provider of the service to EV and BHEE owners.
Elektro Celje - Provide input on grid capacity, local constraints, and future load projections; evaluate proposed V2X station locations and configurations; collaborate with stakeholders during planning; and ensure that recommended strategies align with distribution network limitations and long-term infrastructure development goals.
UL - research on related field and training.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

Customers are DSOs, TSOs, aggregators, fleet operators, and CPOs who contract V2X flexibility services. End users are EV owners, fleet managers, and building operators who provide flexibility and benefit from incentives like reduced charging costs.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

The target market includes DSOs, aggregators, CPOs, fleet operators, and EV owners - all key players in the energy flexibility ecosystem. These stakeholders benefit from V2X solutions that support grid stability, optimize energy use, and enable participation in local flexibility markets.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

Problems: Adopters face regulatory uncertainty, fragmented markets, limited data access, technical complexity, and low user engagement. These challenges slow down scalability and reliable service delivery.
Needs: They require clear regulations, interoperable platforms, real-time data, strong incentives, and advanced forecasting tools, alongside collaboration to ensure smooth integration and market readiness.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Aggregators in Slovenia: Petrol, NGEN, KOLEKTOR Setup and HSE.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

GEN-I as an Aggregator: dispersed sources of flexibility, advanced expertise and developed equipment for automatic flexibility offering, presence in markets across the entire EU, collaboration with experts from around the world, advanced personnel, market recognition, trading, and more.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

The technical solution is at Technology Readiness Level 8 (TRL 8). The solution has been completed and qualified through testing and demonstration in a relevant operational environment.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

All key technical components, including the V2X platform and charging stations, have been deployed. The market could be ready in 1-2 years.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

The project partners plan to continue activities in the field of KER even after the project concludes. We see opportunities both in continuing research and development in this and related areas, as well as in support and market activities. The developed models are owned by GEN-I. So the rewsalts of the models will be used in the development of newly bussines models.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

Through past R&D activities, projects, and market-driven initiatives, the partners have developed and enhanced their own background IPR both prior to and during the project. Each partner holds intellectual property in distinct, specific areas, and this separation of IPR will remain in place after the project's completion. After the project's conclusion, the partners will continue collaborating and will develop further IP.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

We value and respect the IPR of our partners, which is why we operate in accordance with policies for the preservation and protection of intellectual property in this area. Partners retain ownership of their IPR in the areas they have independently developed. Where materials from other partners have been used, such materials must not be utilized without the permission of both the respective partners and the WP coordinator. GEN-I also follow their own internal policies regarding IP assignment and the protection of trade secrets.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

Once the flexibility market is established, GEN-I can generate revenue as both an aggregator and CPO, while ABB benefits from supplying advanced charging infrastructure. Additional income may come from co-funded R&D and paid analysis. EV owners will gain incentives like reduced charging costs for participating in flexibility services.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

The establishment of the market/market entry and additional in-depth research and analyses will also entail significant costs and investments, as initial investments are crucial for long-term success in such a demanding market.

KER:	15. Integration of V2X management in DMS	**Category:**	Tools
Partners:	A) HEDNO	**Leader/Responsible:**	HEDNO

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

Integrating V2X within a Distribution Management System (integrated software suite) embeds EVs and their charging stations into the utility's real-time operational framework. By treating EVs as bidirectional, grid-interactive resources rather than passive loads, the DMS can incentivize charging/discharging to stabilize voltage profiles, alleviate feeder congestion and provision/request ancillary services.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

Exploitation intention: Request Services from aggregators. Use: Stabilize Grid; Decrease Maintainance Costs; Postpone infrastructure investments.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

Only HEDNO is involved. HEDNO has developed in small scale the technologies that will enable the integration of V2X in DMS. Such as LV monitoring and communication chanel (via DSS) with CPO in order to communicate V2X services.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

HEDNO will use this system to request (buy) services from aggregators. In a monopsony market as the only buyer.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

In the future flexibility market this system will request for services. The market consists of all participants (e-mobility aggregators) who can offer flexibility services to HEDNO.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

HEDNO is the end user of V2X management. Some of the issues that HEDNO plans to solve (for itsefl) using this system are: Extreme demand peaks; Voltage instability; Network congestion; Insufficient ancillary capacity; Increased infrastructure investments.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

HEDNO intends only to use this system not to sell it to anyone. Regarding the request of services: HEDNO is the only buyer in this monopsony flexibility market. So there is no competition for HEDNO. Meaning none else can buy the requested services.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

There are no competitors. Monopsony.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

TRL 4-6.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

> 5 years.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

Upscale pilots, outline complete business model, co-operate with regulatory entities to create a regulatory framework.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

N/A

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

Technologies implementing the tool are owned by HEDNO.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

N/A

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

N/A

KER:	15. Integration of V2X management in DMS	**Category:**	Tools
Partners:	B) GEN-I, Elektro Celje, UL	**Leader/Responsible:**	GEN-I

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

Algorithms for management flexibility from V2X or BESS sources (integrated in the VPP). VPP is owned by GEN-I.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

Integrating V2X management into the DMS enables real-time coordination between EVs, charging infrastructure, and grid operations. It allows DSOs to monitor and activate flexibility from EVs, optimize local energy flows, and maintain grid stability. Key components include interoperable interfaces, secure data exchange, and automated control systems—ensuring V2X assets support grid needs without disrupting user mobility.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

GEN-I - development and automation tool; owner of the V2X management platform and VPP.
Elektro Celje - Define operational requirements and grid constraints, support the integration of V2X algorithms into DMS architecture, validate algorithm performance under real-world network conditions, and ensure secure and compliant operation of DMS with V2X-capable assets at the residential, building, and community level.
UL - research on the related field, preparation of scenarios for testing and training.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

Customers are entities that invest in or contract V2X flexibility services. These include: DSOs – to manage grid constraints and optimize local energy flows; TSOs – for system balancing and ancillary services; Aggregators – who buy flexibility from EVs and resell it to grid operators; Fleet Operators & CPOs – to monetize EV assets and participate in flexibility markets. End users are EV owners, fleet managers, and building operators who provide flexibility through their assets and benefit from incentives like reduced charging costs or direct payments.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

The target market includes DSOs, aggregators, CPOs, fleet operators, and EV owners—all involved in energy flexibility and smart mobility. These stakeholders benefit from V2X solutions that support grid stability, optimize energy use, and enable participation in local flexibility markets. CAGR: 25% annual growth rate.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

Problems: Adopters face regulatory uncertainty, fragmented systems, limited data access, technical complexity, and low user engagement.
Needs: They require clear rules, interoperable platforms, real-time data, strong incentives, and collaboration with DSOs, CPOs, and OEMs to ensure smooth integration and market readiness.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Established Leaders: Qualcomm – Dominates V2X with advanced chipsets and platforms supporting C-V2X and 5G integration. greyb and LG Electronics – Offers V2X modules and collaborates with Qualcomm on 5G-based vehicle connectivity. Key competitors in the V2X management space include Nuvve, The Mobility House, Kaluza, and Jedlix. These companies offer smart charging platforms, V2G integration, and flexibility services, competing on real-time control, energy optimization, and seamless grid interaction.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

GEN-I stands out as a leading energy trader and aggregator with deep expertise in EU energy markets. By combining its roles as aggregator and CPO, GEN-I delivers a fully integrated V2X solution - coordinating EVs, fleets, and infrastructure to unlock flexibility, optimize grid operations, and generate new revenue streams for all stakeholders.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

The technical solution is at Technology Readiness Level 8 (TRL 8). The solution has been completed and qualified through testing and demonstration in a relevant operational environment.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

The V2X flexibility platform is expected to launch within 1–2 years, depending on regulatory progress, hardware availability, stakeholder coordination, and technical upgrades. With strong collaboration and government support, commercialization can align with rising EV adoption and flexibility demand.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

We see opportunities both in continuing R&D in this and related areas, as well as in support and market activities. The DSO plans to upgrade the existing FlexIS platform to support advanced flexibility functionalities and integrate a greater number of aggregators to enable broader market participation and development of interoperable interfaces for technical connectivity. A key activity will also be the establishment of a data and operational interface between the DSO and TSO to ensure coordinated system operation. In parallel, they will organize the market by designing both marketing and technical processes.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

Through past R&D activities, projects, and market-driven initiatives, the partners have developed and enhanced their own background IPR both prior to and during the project. Each partner holds intellectual property in distinct, specific areas, and this separation of IPR will remain in place after the project's completion. After the project's conclusion, the partners will continue collaborating and will develop further IP.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

We value and respect the IPR of our partners, which is why we operate in accordance with policies for the preservation and protection of intellectual property in this area. Partners retain ownership of their IPR in the areas they have independently developed. Where materials from other partners have been used, such materials must not be utilized without the permission of both the respective partners and the WP coordinator. GEN-I also follow their own internal policies regarding IP assignment and the protection of trade secrets.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

In the future, we see opportunities to generate revenue through co-funded research and development projects, paid research and analyses, but especially through market activities once the market is established. For the companies ABB and GEN-I, this represents a new business opportunity: ABB by increasing revenue through the provision of advanced charging infrastructure, and GEN-I in the roles of aggregator and CPO (Charge Point Operator). EV owners themselves will be able to reduce their charging costs or receive other incentives for participation.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

The establishment of the market/market entry and additional in-depth research and analyses will also entail significant costs and investments, as initial investments are crucial for long-term success in such a demanding market.

KER:	16. Decision Support tools for VPP s and CPOs	**Category:**	Tools
Partners:	A) PPC	**Leader/Responsible:**	PPC

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

EV demand forecasting tool to support real-time EV charging coordination in the Greek demo of the O-V2X platform and CP location planning.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

Demand forecasting will be exploited to support the mobility departement of PPC for expanding their charging network and defining the potentials of V2G services.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

PPC developed the EV charging demand forecasting tool.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

CPOs/eMSPs, Aggregators, Service Providers.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

- Consulting services for planning CP charging network;
- Required tool for model-predictive e-mobility management services.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

Charging network planners require a forecasting tool to identify the most commercially viable locations for expanding or developing new charging infrastructure that effectively meets the charging needs of EV users. Model predictive e-mobility management services requires proactive optimisation of charging strategies based on anticipated user future charging needs, grid conditions, and energy availability.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Commercial forecasting tools.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

Open source forecasting tool for facilitating the development of planning and management e-mobility services.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

From TRL 2 to TRL 5.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

< 3 years after project end.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

Include traffic flows for more accurate forecasting services for planning purposes.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

Experience from RES forcasting.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

Forecasting tool.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

Increasing PPCs EV-User attractiveness by expanding or developening new EV charging infrastructures at the most commercially viable locations (minimising cost of investment, maximising PPCs profits and user satisfaction). Creating new buisness streams by offering the demand forecasting as software as a service to other e-mobility stakeholders.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

N/A

KER:	16. Decision Support tools for VPP s and CPOs	**Category:**	Tools
Partners:	B) GEN-I, Elektro Celje, UL	**Leader/Responsible:**	GEN-I

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

Tools allowing the activation of flexibilities available at each moment in the network. The tools should be integrated into the management systems operated by CPO or VPP operater. The tool is owned by GEN-I.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

VPPs and CPOs need decision support tools to manage flexibility, optimize energy flows, and participate in energy markets. Include: Real-time monitoring dashboards, grid conditions, and asset performance; Forecasting and optimization algorithms to predict energy demand, availability, and market prices; Automated bidding systems for flexibility and ancillary services; Data analytics platforms for performance tracking, reporting, and strategic planning; Interoperability interfaces to integrate.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

GEN-I – Automation tool for activations, advanced algorithms, decision support tool.
Elektro Celje – Defines technical and operational criteria for flexibility activation, ensures secure and reliable integration of the tools into the DMS, provides real-time grid status data, evaluates the impact of proposed flexibility activations, and coordinates with VPPs and CPOs to ensure that activations support, rather than disrupt, network operations.
UL – Research in related fields and training.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

Customers are organizations that invest in or contract V2X services, such as DSOs, TSOs, aggregators, fleet operators, and CPOs, to manage grid flexibility and optimize energy use. End users are individuals or entities who directly interact with the technology, including EV owners, fleet managers, and building operators, contributing flexibility and benefiting from incentives like reduced charging costs or payments.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

The target market includes DSOs, aggregators, CPOs, fleet operators, and EV owners, all involved in energy flexibility and smart mobility. These stakeholders benefit from V2X solutions that improve grid stability, enable participation in local flexibility markets, and support the transition to clean energy.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

Problems: Adopters face regulatory uncertainty, fragmented systems, limited access to real-time data, technical complexity, and low user engagement.
Needs: They require clear regulations, interoperable platforms, secure data exchange, strong incentives, and collaboration with DSOs, CPOs, and OEMs to ensure smooth integration and market participation.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

Key competitors include Nuvve, The Mobility House, Kaluza, and Jedlix, offering smart charging platforms, V2G integration, and flexibility services. They compete on real-time energy coordination, grid interaction, and platform interoperability.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

GEN-I combines deep energy market expertise with advanced digital capabilities, acting as both aggregator and CPO. Its integrated V2X platform enables smart coordination of EVs, fleets, and infrastructure, delivering reliable flexibility services, optimizing grid operations, and creating new value for all stakeholders.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

The technical solution is at Technology Readiness Level 8 (TRL 8). The solution has been completed and qualified through testing and demonstration in a relevant operational environment.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

Within the EV4EU project, all necessary technical platforms have been developed. The market with V2X is expected to be ready within 1 to 2 years, depending on the timely progress in these areas and political and governmental support.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

GEN-I develope decision support tool to optimize the operation of VPPs and CPOs. The tool enables smarter forecasting, flexibility management, and market participation. For VPPs, it supports real-time monitoring, dispatch optimization, and bidding strategies for energy and balancing markets. For CPOs, it forecasts EV charging demand, recommends dynamic pricing, and integrates charging infrastructure into flexibility services. The tool also provides scenario modeling, investment analysis, and regulatory tracking, empowering GEN-I to lead in the energy transition.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

Through past R&D activities, projects, and market-driven initiatives, the partners have developed and enhanced their own background IPR both prior to and during the project. Each partner holds intellectual property in distinct, specific areas, and this separation of IPR will remain in place after the project's completion. After the project's conclusion, the partners will continue collaborating and will develop further IP.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

We value and respect the IPR of our partners, which is why we operate in accordance with policies for the preservation and protection of intellectual property in this area. Partners retain ownership of their IPR in the areas they have independently developed. Where materials from other partners have been used, such materials must not be utilized without the permission of both the respective partners and the WP coordinator.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

The decision support tool helps GEN-I unlock new revenue streams by optimizing energy and flexibility trading, improving EV charging economics, and supporting strategic asset deployment. For VPPs, it enables monetization through participation in energy and balancing markets, provision of ancillary services, and efficient use of battery storage. For CPOs, it supports dynamic pricing, load management, and integration into flexibility markets, turning EV infrastructure into a profitable grid asset.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

The establishment of the market/market entry and additional in-depth research and analyses will also entail significant costs and investments, as initial investments are crucial for long-term success in such a demanding market. The main costs for DSO involve system integration with the existing DMS, customization of decision logic, and collaboration with external stakeholders (such as VPPs and CPOs). Additional costs include scenario testing, training of operational staff, and ongoing maintenance or updates. While these represent a moderate investment, they are justified by the increased grid visibility, operational safety, and flexibility value capture enabled by the tools.

KER:	16. Decision Support tools for VPPs and CPOs - BESS KPI analysis	**Category:**	Tools
Partners:	C) UL, GEN-I, Elektro Celje	**Leader/Responsible:**	UL

1. KER Characterisation

A. Description

Describe in a few lines the solution/KER you are planning to exploit after the project. Make sure you explain what your solution consists of and how it solves adopters' problems/needs.

The BESS demonstrator KPI analysis support tool is an Excel-based tool for the analysis of KPIs defined in D7.1. The tool was developed to estimate and evaluate the performance of the Slovenian demonstrator with BESS. It enables the automatic calculation, analysis and visualization of Slovenian demonstrator KPI results based on real measurement data from secondary substation, VPP and BESS. It imports and prepares real operational data for KPI calculations, which can provide valuable insights for stakeholders, in evaluating technical, environmental, economic and service-related performance indicators.

B. Exploitation Intention and Use Model

Describe how you intend to make use of the KER (E.g.: Manufacturing of a new product, provision of a service, technology transfer, licensing, contract research, publications, standards, etc.) and what is your exploitation intention (E.g.: Commercialisation, Research, etc.)

The tool is suitable to be used internally for the calculation of KPIs for Slovenian demonstrator. Additionally, tool can be used in workshops/trainings at UL for students or for the similar use in the future research projects. Exploitation is focused on the UL scope.

C. Responsibilities/roles of involved entities

After identifying all partners willing to exploit the KER after the end of the project, specify the contribution of each one for the generation/development of the KER and how you will work together.

UL: Development of the tool (software development etc.), tool customization, maintenance of the tool, deployment in project, organization of exploitations related to point 1B. GEN-I, Elektro Celje: providing input measurements and data, expert consulting.

2. Market Definition

A. Customers & End users

Identify your customers – they are the adopters that will use the result to satisfy a need/solve a problem they have when trying to get a job done.

DSOs, Aggregators (energy sector actors), CPOs (mobility sector), research institutions, etc.

B. Target market

Describe the market in which your product/service will be used in/can "compete" in. The market is composed by a general group of people referring to the ones identified in **2A**.

Energy sector, sustainability departments in companies, academic and research institutions.

C. Adopter's problems/needs

Describe the problem(s) your end users have when trying to get a job done, which you are willing to solve. Potential adopters are the people, companies, organizations, etc. that you expect will use the result (and generate an impact).

There is still lack of tools to evaluate V2G services performance from perspectives of all included actors using real operational data, based on KPIs. Even if there are data available, the process for calculating and preparing operation measurements is still difficult and time consuming. Moreover, there is still lack of standardized methodology for the analysis and interpretation of KPI results related to e-mobility project demonstrators. The KPI tool can help to optimize the process of converting measurements into insightful data and serves as a support for the KPI analysis for the evaluation of developed business models.

3. Competition and UVP

A. Competitors

Have you identified your potential competitors (the ones offering the alternative solutions to your solution)? Specify them and their strengths and weaknesses.

We have not identified direct competitor tools, as ours is a unique demonstrator-based solution. Some EU projects (e.g., INCIT, USER-CHI's CLICK) developed research tools for scenario planning or charging station location, but not for KPI calculation, and mostly focused on methodologies rather than functional tools. Maybe there are some tools that companies use for their internal use, but we don't have access to or insight into them as they are proprietary right of the companies. Therefore, we are not able to identify their strengths and weaknesses.

B. Unique Value Proposition

Describe your competitive advantages: how much better does your solution solve the adopters' needs/problems compared to alternative solutions? What distinguishes the KER from the competition/current solutions?

UL developed a user-friendly Excel-based BESS demonstrator KPI analysis support tool, building on methodologies from previous EU projects. The tool is specific to the Slovenian demonstrator in Velenje. The tool is fully open and developed in Excel, it does not require any complex software environment. All the KPI calculations are performed based on the real measurements directly from VPP, secondary substation and BESS, which ensures transparency and relevancy of results. The calculated KPIs can inform about what values or benefits a tested BM can bring to each participating actor.. The tool guides users through data import, calculation, and visualization with interactive features.

4. Timings, TRL & Go-to-market

A. TRL

Indicate the current level of maturity of your solution and expected at the end of the project.

Current and expected at the end of the project is TRL 5.

B. Time to market

Specify the time until your solution reaches a higher TRL and is ready for the market.

The tool won't reach higher TRL than described in point 4A. It is expected that certain modifications of the tool will be needed when the SI demonstrator will be fully developed. It is planned that the tool together with the developed methodology will be used by UL in workshops, and future research projects.

C. Planned Activities

Which activities have you planned (after the end of the project) to secure use/adoption of your result? These can be technical activities (prototypes, etc.) but also consider the finalization of a business plan, protection of IP, collection of authorizations, all you need to start implementing your exploitation plan.

Improvement of the visualization of results, It is expected that certain modifications of the tool will be needed when the Slovenian demonstrator will be fully developed. Planned activities in the future that will allow exploitation of our tool. Furthermore, the modified tool can be used on future research projects.

5. Intellectual Property Rights

A. IPR Background

Are there any background IPR? Specify them by type and partner.

We previously had knowledge in the relevant field.

B. IPR Foreground

Are there any foreground IPR? Specify them by type and partner.

There is no intention of patenting it, but it is still our intellectual property. It represents the result of cooperation between partners and knowledge sharing, therefore offering it on the market without involving/informing the Slovenian Demo coordinator is not permitted.

6. Business Plan Definition (if applicable)

A. Revenue Streams

Have you already identified potential revenue streams? If yes, identify them. Projected revenues and eventual profits once the solution is in the market, that will make the use of the result sustainable over time.

UL - In the future, we will also try to monetize the developed tool financially. e.g. through further research projects.

B. Costs

What are the main costs you can identify for developing this solution? Costs/investments needed to bridge the end of the project to the next steps planned and increase TRL or go to market (you may invest in a patent, a prototype, etc.)

UL - Further tool upgrades after project completion, costs of applying the tool to new models/areas.