STREAM

STREAMING FLEXIBILITY TO THE POWER SYSTEM

D7.4 EXPLOITATION AND BUSINESS PLAN 2

Delivery Date: September 2026

STREAM

STREAMING FLEXIBILITY TO THE POWER SYSTEM

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Abstract

This deliverable presents the work carried out under the exploitation activities of the STREAM project. The applied exploitation strategy was split into four steps: Identification of Key Exploitable Results (KER), market analysis, business plan development, and the go-to-market strategy (G2M).

This deliverable represents the second version of the exploitation report and extends the first version by presenting the final exploitation roadmap for each KER including a detailed analysis of the market (competitors, size), an indicative financial plan, a risk assessment as well as a G2M strategy for each STREAM KER.

Keywords

Key Exploitable Results, KER, Value proposition, Customer segments, Market analysis, Business plan

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EXECUTIVE SUMMARY

This document presents the second and final version of the Exploitation and Business Plan. The aim of this deliverable is to promote a successful and wide uptake of the project outcomes and moving the STREAM key exploitable results (KERs) as close to commercialisation as possible.

In addition to Deliverable D7.3, which presented the exploitation strategy, value proposition, and an initial competitor analysis, this deliverable provides comprehensive business plans for each identified KER. These plans include a detailed market assessment covering market size and competitors, a financial plan extending beyond the project's five-year timeframe, a risk assessment, and a roadmap outlining the steps required to further develop each product and bring it closer to market readiness.

Building on the first exploitation session (October 2023), which focused on intellectual property rights, two further bilateral sessions were held. The first took place in winter 2026 and addressed the key elements of the business model canvas (BMC). The second session took place in June 2026 and focused on the market analysis, financial plan, risk assessment, and G2M strategy.

In total, **12 KERs by 7 partners** have been defined, which are all individually exploited:

- sDATA/sFLEX – OPT
- sDATA - IND
- sMART – UL
- sGRID – ETRA
- sGRID – UL
- sGRID - COM
- sENC – ETRA
- sENC - COM
- sPLAN – UL
- sFLEX – KOL
- sFLEX – ETRA
- Device registry – CYG

The project partners have assessed the European dimension of the planned exploitation and management of project results, with particular attention to the possible transfer of ownership, IPRs, or exclusive licences outside the European Union or Horizon Europe Associated Countries. All KER owners (KOL, UL, ETRA, COM, OPT, IND, CYG) confirmed that such a transfer is not foreseen.

For each KER, a value proposition canvas as well as a BMC is presented, clarifying target customers, their needs, and how the solution creates value. Moreover, a market analysis quantifies the number of potential customers and provides insights into expansion opportunities in other EU countries, supporting a broad uptake of the project results. A five-year financial plan outlines expected revenues, cost structure, and investment needs, demonstrating the economic feasibility. A risk assessment identifies the main technical, market, and regulatory risks, and highlights priority areas where management attention and mitigation measures are most needed. Finally, the G2M strategy details the key steps to commercialise the solution, the timeline, and the team responsible for sales, partnerships, and market development.

Market analysis

The competitive landscape includes established global providers of advanced distribution management systems (ADMS), distributed energy resource management system (DERMS), enterprise software and flexibility platforms, as well as specialised local and emerging providers. While larger competitors benefit from mature products, broad portfolios and established customer bases, STREAM tools differentiate themselves through their focus on low-voltage grids, local flexibility market (LFM) integration, data sovereignty, energy community (EnC) participation and flexibility aware planning.

European expansion is envisaged once the tools have been technically and commercially validated. Initial expansion is expected to focus on countries with similar grid structures, regulatory frameworks and market conditions. Further deployment may require adaptation to national data availability, interoperability requirements, market rules and flexibility-procurement arrangements.

Financial plan

Economic feasibility is most promising for tools with direct and scalable revenue models, such as subscriptions, implementation fees and asset-based charges. In contrast, sPLAN - UL is not financially attractive under the current assumptions (IRR of -25%), sMART - UL depends on high upfront development costs and on the development of LFMs, and sGRID - UL depends on follow-up funding for further development.

The financial plans represent indicative estimations rather than robust values. Key assumptions, such as customer uptake, pricing, operating costs and market revenues must be validated through commercial engagement. Initial uptake is expected to be modest, reflecting distribution system operator (DSO) procurement processes, system-integration requirements and regulatory approval.

Risk assessment

Technical, partnership and financial risks are for most KERs manageable through further development, interoperability measures, clear exploitation responsibilities, partnerships and follow-up funding. Only for sDATA - IND action should be taken to ensure competitiveness with existing solutions. Market and regulatory risks are more significant, as several tools depend on sufficiently liquid LFMs and frameworks that enable DSOs to procure flexibility instead of conventional grid reinforcement. Where no coherent LFM framework exists, the tools may need to be adapted to national market arrangements, bilateral procurement models and country-specific regulatory requirements.

G2M strategy

Key activities are already underway, including real-world prototyping and engagement with DSOs, transmission system operators (TSOs), market operators and regulators. Further actions include the continuation of dissemination through the BRIDGE initiative and the EU Innovation Platform, exploration of public funding and development of commercial partnerships.

Most solutions are expected to require a further six to twelve months for final development and market preparation. Tools dependent on the establishment of LFMs may require a longer and less predictable timeline, while expansion to additional countries may require one to two further years for technical, commercial and regulatory adaptation.

Partners have defined exploitation pathways suited to their roles and KER maturity, including direct commercialisation, software as a service (SaaS) models, system-integrator partnerships, consultancy, knowledge transfer and dissemination through European networks.

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1 INTRODUCTION

1.1 PURPOSE OF THE DOCUMENT

The purpose of this document is to present the exploitation strategy, which was designed with the goal of promoting a successful and wide uptake of the project results and move the STREAM KERs as close to commercialisation as possible. This report presents the updated version of D7.3 [1] and contains the final exploitation roadmap for each identified KER.

The exploitation and business plan includes the results of the work done as part of T7.3, which has been running throughout the STREAM project. IPR related issues were tackled in accordance with T1.3 Ethics monitoring, IPR strategies and Responsible Research and Innovation.

JR was responsible for the creation of the exploitation strategy while each KER owner contributed to this report by providing the information in chapter 4.

1.2 SCOPE OF THE DOCUMENT

The document presents the exploitation strategy as well as a clear definition of the IPR for each tool. For each KER a value proposition canvas and a BMC is completed describing the characteristics of the STREAM tools. Furthermore, a market analysis is included, assessing the market size as well as potential competitors. An indicative financial plan for the 5 years after the project end is presented, highlighting costs and revenues related to the KER. Lastly, the needed steps for the KER to become market ready are described.

1.3 STRUCTURE OF THE DOCUMENT

Chapter 2 presents the exploitation strategy with a detailed description and templates for each of the four steps (KER identification, market analysis, business plan development, G2M strategy). Chapter 3 highlights the IPR for each STREAM KER and the exploitation strategy (individual / joint exploitation). Chapter 4 presents an overview of the main characteristics of each KER. Chapter 5 presents the conclusions of this deliverable.

2 EXPLOITATION STRATEGY

This chapter describes the exploitation strategy that was followed in STREAM. The goal of T7.3 was the successful and wide uptake of the project outcomes. Therefore, a focus was laid on moving the STREAM KERs as close to commercialisation as possible.

The exploitation strategy was based on four steps:

- KER identification
- Market analysis
- Business plan creation and
- Go-to-market (G2M) strategy

The timing of the different tasks is presented in Figure 1. One collective exploitation session was held where the IPR of the defined KERs were discussed, and the further exploitation process was introduced. One bilateral session with each KER owner was set up to discuss the BMC. In a second session the financial plan and G2M strategy were addressed. The four main steps of the exploitation process are further elaborated in the following sections.

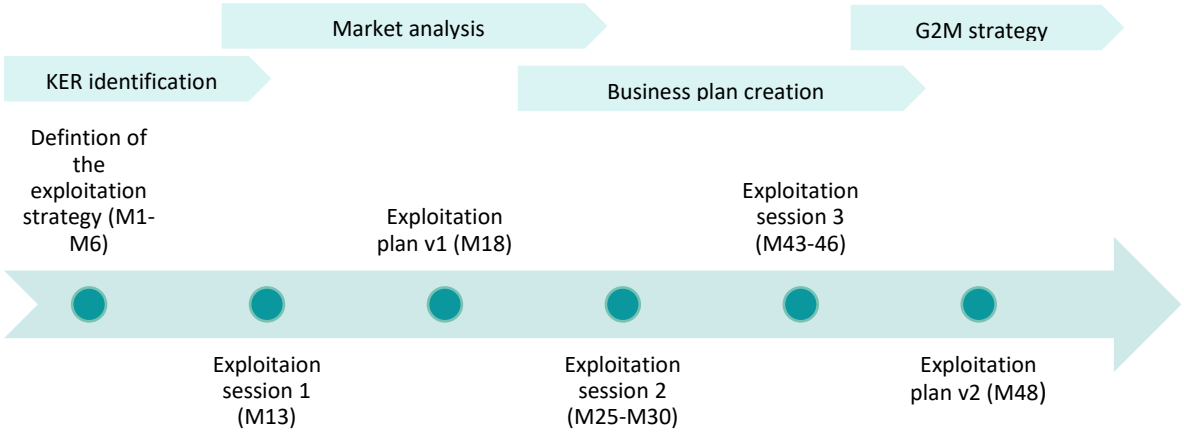


Figure 1: Exploitation process

2.1 KER IDENTIFICATION

This was the first step of the exploitation strategy in which STREAM key exploitable results were identified. This further entailed an assessment of the IPR for the specific KERs from different partners. As part of this task the first exploitation workshop was held in M13 (October 2023) where the entire exploitation strategy was introduced to the partners and KERs were identified.

2.2 MARKET ANALYSIS

The market analysis started at M8 and ran until the end of the project. The aim of the market analysis is to find opportunities for exploitation, assess the need for such solutions, and compare the STREAM KERs to other tools. In the first few months, developments in the general market for flexibility services were observed. With the identification of the STREAM KERs, the market analysis became more focused on the actual KERs, including the problem description, value proposition, analysis of target customers and competitors.

The value proposition was addressed by means of a value proposition canvas according to the template presented in Figure 2. On the one hand, the customer profile is created to identify the jobs the customer is trying to accomplish, and the gains and pains currently connected to these jobs. On the other hand, the product is described, highlighting how the current pains can be relieved and gains can be created.

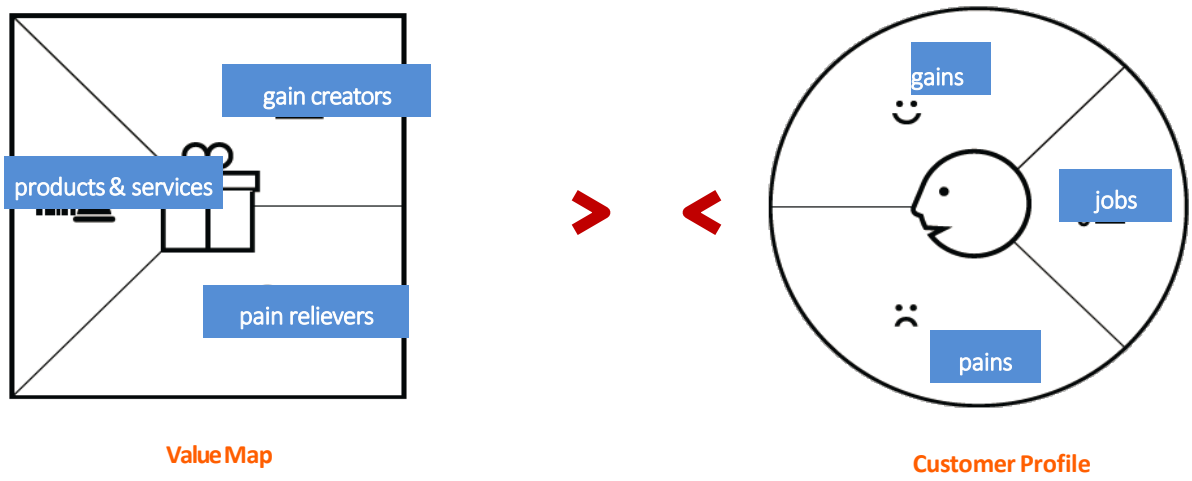


Figure 2: Value proposition canvas template

The benchmarking of competitive solutions was conducted following the template presented in Table 1.

Table 1: Benchmarking of competitive products

	STREAM KER	Competitive solution 1	Competitive solution 2	Competitive solution 3
Target customers				
Target markets				
Strengths				
Weaknesses				
Price structure				
Key advantage				
Market share				

The market size was assessed in detail following the TAM/SAM/SOM (total addressable/serviceable available/serviceable obtainable market) methodology as presented in Figure 3. The metric used for the analysis depended on the specific KER, such as number of DSOs or flexible load.

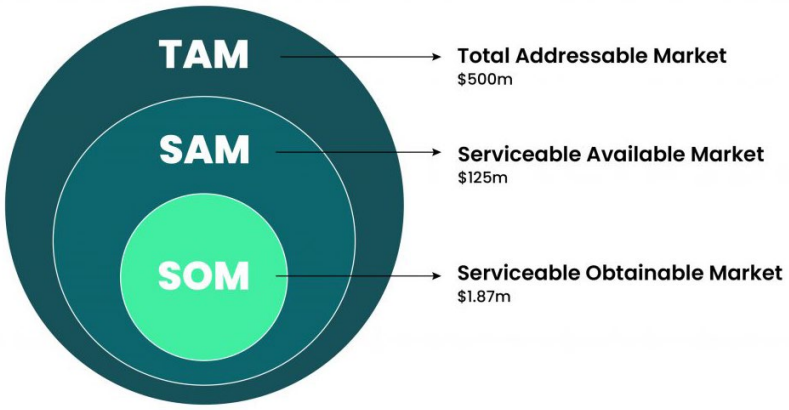


Figure 3: TAM/SAM/SOM methodology [2]

Within the market analysis the European perspective was also highlighted, elaborating how the individual tools can be applied beyond the specific pilot context to other DSOs and regulatory frameworks across Europe, considering e.g. differences in grid topology or market design.

2.3 BUSINESS PLAN DEVELOPMENT

The aim of the business plans for each KER is to support the actual commercialisation of the tools. In addition to the previously explained market analysis, this business plan includes a BMC (Table 2), as well as a financial feasibility assessment for the 5 years after the project end. This includes an estimation of the costs and revenues associated with the exploitation of the tools. The costs include development, marketing, operating expenditure (OPEX) costs as well as capital expenditure (CAPEX), whereas revenues come from the sale of licences, subscriptions and set-up fees as shown in Table 3. Based on the calculations the internal rate of return (IRR) is calculated.

Table 2: Template for the BMC

<table>
<tr><td>Key partners</td><td>Key activities</td><td colspan="2">Value proposition</td><td>Customer relationship</td><td>Customer segments</td></tr>
<tr><td rowspan="3"></td><td></td><td rowspan="3" colspan="2"></td><td></td><td rowspan="3"></td></tr>
<tr><td>Key resources</td><td>Channels</td></tr>
<tr><td></td><td></td></tr>
<tr><td colspan="3">Cost structure</td><td colspan="3">Revenue structure</td></tr>
<tr><td colspan="3"></td><td colspan="3"></td></tr>
</table>

Table 3: Financial analysis template

		2027	2028	2029	2030	2031
CAPEX						
OPEX						
Total Costs [€]						
Estimated revenues						
Total revenues [€]						
Cash Flow analysis						
Earnings before interest and taxes [€]						
Taxes [€]	XX%					
Cash flow [€]						
Discounted cash flow [€]	XX%					
IRR	XX%					

A risk assessment was carried out identifying potential risks preventing a smooth market uptake. Risks refer to partnership risks, technological risks, market risks, IPR/legal risks, financial/management risks and environmental/regulatory risks as shown in Table 4 and are rated from 1 (low) to 10 (high) regarding their degree of importance, the probability of the risk happening and the feasibility of an intervention. The degree of importance and the probability are multiplied to give the risk grade, which is assessed against the feasibility of the intervention. Based on this assessment, risks are categorized into risks that need no action, risks that are in control, risks where action is needed and risks with a warning, needing extra attention.

Table 4: Risk assessment template

Key Exploitable Results [1low - 10high]	Degree of importance of the risk related to the final achievement of KER	Probability of risk happening	Risk Grade	Scope and type of potential intervention	Feasibility/Success of Intervention
Partnership Risk Factors	0	0	0		0
Technological Risk Factors	0	0	0		0
Market Risk Factors	0	0	0		0
IPR/legal Risk Factors	0	0	0		0
Financial/management Risk Factors	0	0	0		0
Environmental/regulatory Risk Factors	0	0	0		0

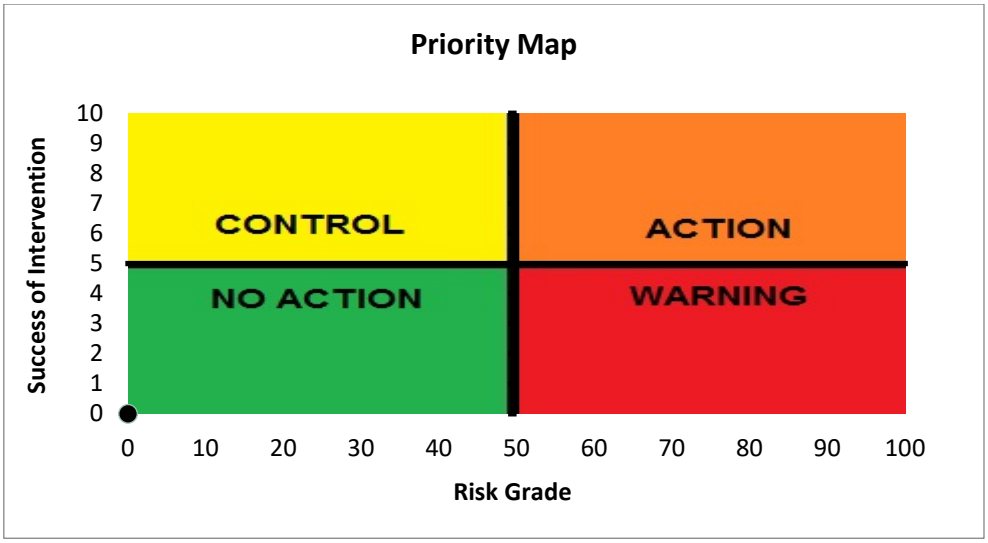


Figure 4: Priority Map of the risk assessment

Figure 4 visualizes the priority map that is used to assess the different risks. It classifies risks based on their risk grade and the success of intervention. Low-risk, low-success cases fall into the green "No Action" area, while low-risk, high-success cases are in the yellow "Control" area. High-risk, low-success cases are marked red as "Warning," and high-risk, high-success cases are shown in orange as "Action," indicating where active measures should be prioritised.

2.4 G2M STRATEGY

Finally, the required steps for the tool to become market-ready are highlighted. Required partners, such as investors or technical partners, are identified. To find suitable partners and widen outreach, KERs were uploaded on the EU Innovation Platform. This was carried out for all KERs for which the respective owners identified a clear benefit. Moreover, the internal team working on the exploitation was characterised. The above-mentioned methodology for the creation of business plans is developed based on the method proposed by the Horizon Booster.

3 TOOL ARCHITECTURE AND IPR MANAGEMENT

This chapter describes the tool architecture and IPR for the individual KER tools. All KERs will be exploited individually by the IPR owner (Table 5). While there may be some interconnection between the individual tools, as explained in detail in D5.1 Demonstration activities report, they will be exploited as stand-alone tools.

More than one tool is referred to as sDATA, sGRID, sFLEX, or sENC because they share core functionalities and contribute to common project objectives. However, each tool is tailored by the pilot partners to the specific needs and conditions of its demonstration site. This is necessary because the underlying data, operational procedures, and regulatory frameworks differ across countries. Consequently, the tools cannot be developed as plug-and-play solutions. Instead, each pilot addresses distinct local “micro-level” challenges while contributing to the broader objective of enabling and strengthening the flexibility ecosystem. STREAM was therefore not designed as a single universal tool, but as a set of adaptable core functionalities that can be developed and applied in different pilot contexts.

Contrary to the approach presented in Deliverable D7.3, it was decided that UL will exploit the tools independently rather than under joint ownership with EPR. Although the tool was co-designed by EPR, it was developed by UL. As EPR is a DSO, they are unable to participate in further commercial exploitation activities, and therefore UL will take the tool forward independently. Moreover, sMART – COM was disregarded as a KER because it was mainly designed by EMOTION and although STREAM contributed to underlying concepts and validation activities, the marketplace was largely developed outside the project scope.

Regarding the exploitation of sFLEX - ETRA, the main business plan is to exploit it together with sENC - ETRA. The main target groups would therefore be reached through the EnCs, retailers and aggregators already using sENC - ETRA, with sFLEX – ETRA providing more advanced functionalities for their medium- to large-size assets. Therefore, the main exploitation strategy is to offer sFLEX - ETRA together with sENC - ETRA, while also keeping the option of exploiting sFLEX - ETRA as a standalone solution in the wider market.

sFLEX - OPT and sDATA - OPT will be commercialised as a combined solution. They are therefore presented together in Chapter 4, reflecting their complementary roles in delivering flexibility services.

OMIE is developing a sMART tool, however this tool will not be marketed after STREAM as OMIE, as well as its markets, is a regulated entity and cannot profit from them. Therefore, this tool is not further included as part as the key exploitable results and no business plan will be created.

Table 5: IPR management of the STREAM KERs

STREAM tool	IPR owner	Exploitation strategy
sDATA/sFLEX - OPT	OPT	Individual exploitation / patent pending
sDATA - IND	IND	Individual exploitation
sMART - UL	UL	Individual exploitation
sGRID – UL	UL	Individual exploitation
sGRID – ETRA	ETRA	Individual exploitation
sGRID - COM	COM	Individual exploitation
sENC - ETRA	ETRA	Individual exploitation
sENC - COM	COM	Individual exploitation
sPLAN - UL	UL	Individual exploitation
sFLEX – KOL	KOL	Individual exploitation
sFLEX – ETRA	ETRA	Individual exploitation
Device registry	CYG	Individual exploitation

EU Dimension

The project partners have assessed the European dimension of the planned exploitation and management of project results, with particular attention to the possible transfer of ownership, IPRs, or exclusive licences outside the European Union or Horizon Europe Associated Countries. All KER owners (KOL, UL, ETRA, COM, OPT, IND, CYG) confirmed that such a transfer is not foreseen.

4 KEY EXPLOITABLE RESULTS

This chapter presents the identified key exploitable results at the end of the project, following the exploitation strategy described in Chapter 2. Table 6 presents an overview of the identified KERs, the target customers and a short description of the value proposition. The technology readiness level (TRL) of the tools at the beginning and after the development at the end of STREAM is highlighted.

Table 6: Overview of STREAM exploitable results

STREAM tool	Purpose of use	Target customers	Value proposition of the STREAM tool	TRL
sDATA/sFLEX - OPT	Data/flexibility platform	OptiWatti consumers	Facilitated data sharing and usage access control from end users for flexibility	5-7
sDATA - IND	Data platform	Local system integrators	Providing a comprehensive overview and a single, secure access point to various data streams (production, consumption, transmission)	6-9
sMART - UL	Local markets	Flexibility services providers, flexibility aggregators, DSOs	New, user-centric trading facilitation framework on the low-voltage side of power networks	5-8
sGRID - ETRA	Low-voltage (LV) grid state estimation and grid pre-qualification	DSOs	Enhanced management of power network operational risks and challenges by enabling DSOs to operate on LFM markets	6-8
sGRID - COM				6-8
sGRID - UL				6-8
sENC - COM	EnC management platform + end user mobile app	EnCs operators	User mobile app providing up-to-date information regarding the operational aspects of a given EnC	6-8
sENC - ETRA	EnC management platform	EnC operators	Aggregate and enable interoperable operation of all community-level energy assets	5-7
sPLAN - UL	Evaluation and planning tool	DSOs	Enhanced decision-making processes of DSOs through improved low-voltage grid operation planning activities and analytics	5-7
sFLEX - ETRA	Flexibility management system	Medium-to-large prosumers	Central flexibility management system	5-8
sFLEX - KOL				6-7
Device registry - CYG	Device registry	DSOs Local market operators	Central repository for flexibility devices	5-7

STREAM tools either create new tools from scratch or add additional functions and characteristics to existing tools as elaborated on in Table 7.

Table 7: Innovation of the STREAM tools

Tool	Innovation
sDATA/sFLEX - OPT	Extends its current characteristics of the data platform to include flexibility as well and make flexibility offers on energy markets.
sDATA – IND	It solves the issue of scattered and disconnected data across multiple sources by enabling users to securely connect, aggregate, and analyse data while ensuring data sovereignty and privacy through Open API protocols.
sMART - UL	MARKETFLEX, a previously defined tool as part of the H2020 project X-FLEX, served as a foundation for the sMART tool. It focuses on enabling DSOs to procure flexibility instead of or along the traditional grid investments. It enables it through a combination of long-term and short-term contracts, where long-term contract represents a first step in forming local markets, when there is still low liquidity. sMART will focus entirely on DSO ancillary services, which were defined in cooperation with Elektro Primorska, an actual end consumer to address real-world challenges.
sENC - COM	The main innovation of sENC - COM lies in converting cross-sector flexibility potential into feasible day-ahead operational schedules, particularly for the water pumping station, while respecting physical constraints such as reservoir limits, water demand and discrete pump operation. By using sFLEX flexibility estimates and sGRID transformer loading forecasts, sENC - COM demonstrates aggregator-level optimisation for different objectives, including cost minimisation, local PV self-consumption maximisation and congestion mitigation.
sENC - ETRA	sENC builds on the Compilot product developed as part of the COMPILE project and provides advanced functionalities for EnC managers to monitor EnC members and assets, offering analytics for aggregating prosumers and assets, allowing LFM participation capabilities. Additionally, sENC detects self-consumption surpluses within the EnC and coordinates P2P market sessions through sMART to optimise local energy sharing and self-consumption. Overall, these evolutions provide new revenue streams for the EnC and its members economic welfare and increases the use of locally generated energy.
sPLAN - UL	Quantifies the value of flexibility by comparing traditional grid investments with a combination of flexibility measures along grid reinforcements. It is calculated for scenarios that represent real possible future developments and were co-created with the DSO. The tool compares the cost of enabling new technologies in the grid by traditional and modern approaches and enhances the decision-making processes of DSOs through improved low-voltage grid operation planning activities and analytics.
sGRID - COM	The main innovation of sGRID - COM lies in combining measurement-based MV grid reconstruction with day-ahead transformer loading forecasts to support proactive congestion management in the Italian pilot. The tool reconstructs an equivalent feeder impedance matrix from voltage and power measurements and provides transformer-level loading forecasts that can be used by the DSO, sMART and sENC as an operational basis for flexibility planning and activation.
sGRID - UL	sGRID - UL is a grid management tool that forecasts grid conditions in advance to identify potential grid limit violations before they occur. It leverages grid topology data, historical smart meter measurements, and weather forecasts to forecast load across multiple horizons (day-ahead, 1-hour ahead, and 15-minute ahead). Forecasted loads feed power flow analyses that combine topology and operational parameters to identify network elements at risk of congestion. Detected violations, together with the required flexibility, are communicated to sMART, which opens auctions to procure the flexibility needed to resolve them.
sGRID - ETRA	Enhances the management of network risks and addresses challenges by enabling DSOs to operate in the local market. sGRID by ETRA further extends the features of the GRIDFLEX tools designed in X-FLEX by modelling the entire LV networks of the DSO and allows the DOS to operate on LFMs for congestion management and voltage control.
sFLEX - ETRA	sFLEX enhances the management of flexible assets with Internet of Things (IoT) capabilities to optimise their energy behaviour, enabling individual assets to participate in LFMs and access new revenue streams.
sFLEX - KOL	Enhances the management of energy portfolios with the integration of different markets, such as ancillary services (e.g., Manual frequency restoration reserve (mFRR)) and LFMs

	markets in the DSOs grid. The management of energy portfolios in these markets enables additional monetization of the existing energy assets.
Device registry - CYG	Enables the registration, monitoring, and prequalification of flexible energy assets for participation in LFMs. It provides a central repository of device information and operational data, improving the visibility of flexibility resources for DSOs, aggregators, and market operators.

4.1 SDATA/SFLEX - OPT

***sDATA/sFLEX – OPT** helps **aggregators to extract more revenue from existing customers** by **offering flexibility to TSOs with no compromise on customers' comfort and savings**.*

4.1.1 Value proposition and business model

Individual consumers and small and medium enterprises (SMEs) cannot participate in flexibility markets due to a lack of sufficient individual load. sDATA/sFLEX - OPT collects the load of thousands of individual customers, which makes the pooled load large enough to interest DSOs, TSOs, and market operators. The OptiWatti solution works within the home automation that already controls the heating (Figure 5). It estimates the flexible loads and creates bids to send to the TSO. Flexibility use is therefore built into the existing automation and is almost invisible to the customer. By doing this, customers can offer their flexible resources and support renewable energy. Moreover, issues arising from blind control, such as cold living conditions or the unavailability of hot water, are addressed with sDATA/sFLEX - OPT. At the same time, aggregators can extract additional revenues by using the load of existing customers thanks to the monetary compensation received from the TSO while customers get benefits which may or maybe not monetary (revenue sharing or bundled services).

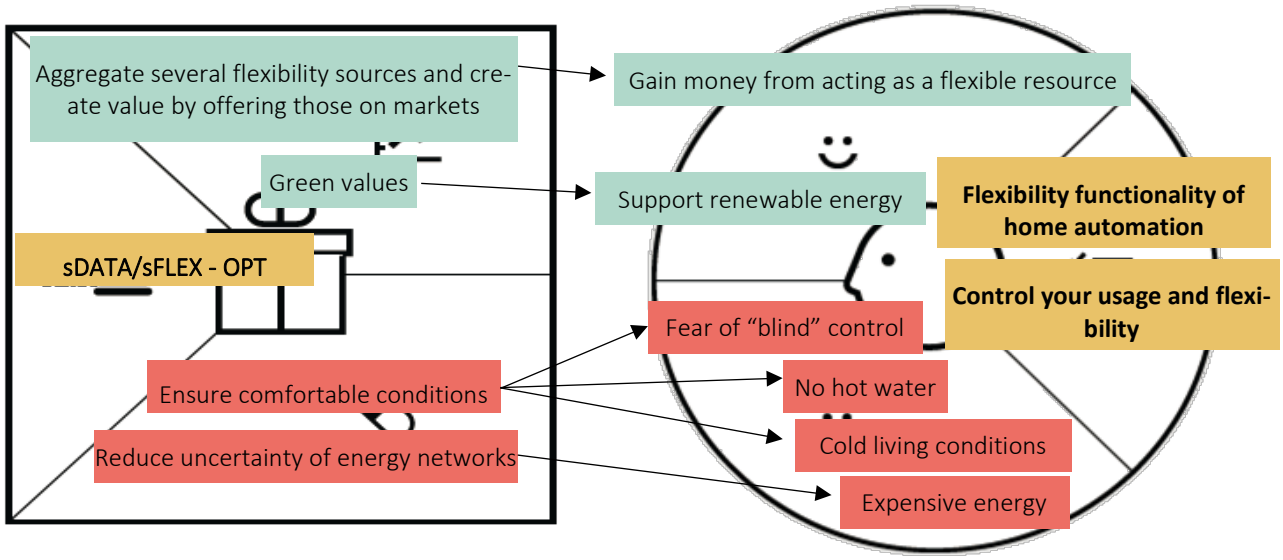


Figure 5: Value proposition canvas sDATA/sFLEX – OPT

sDATA/sFLEX - OPT collects real-time (RT) data from edge devices, continuously manages heating and cooling cycles while safeguarding end-user comfort, and generates frequency containment reserve (FCR) logs and bid data. It estimates available flexible load, creates and submits bids to the TSO, and autonomously activates or deactivates Frequency Containment Reserve for Disturbances (FCR-D) provision based on real-time grid-frequency measurements.

Its key value lies in secure, scalable time-series data management, automated data-quality assurance and seamless integration with IoT devices, aggregators and market systems. Revenues are generated through flexibility-market participation and potentially through SaaS fees paid by other flexibility service providers (FSPs) in the future, while costs primarily comprise software development, cloud infrastructure, data storage, maintenance and third-party licences (Table 8).

Table 8: BMC sDATA/sFLEX - OPT

<table>
<tr><th>Key partners</th><th>Key activities</th><th>Value proposition</th><th>Customer Relationships</th><th>Customer segments</th></tr>
<tr><td rowspan="3">- Cloud Hosting Providers: Essential for ensuring platform scalability, security, and uptime
- Hardware Manufacturers providing edge-computing devices, smart thermostats, and sensors that feed raw data into sDATA</td><td>- Process real-time load data from edge devices
- Securely manage FCR logs and bid data
- Optimise heating/cooling cycles
- Estimate and submit flexible load to the TSO
- Monitor grid frequency and activate or deactivate FCR-D accordingly</td><td rowspan="3">- Provides the backend infrastructure to aggregate small loads to meet TSO bid thresholds
- Offers secure time-series data management reducing data-loss risk
- Automatically generates and guarantees reliable data quality for TSO acceptance tests and auditing
- Ensuring end-user comfort
- Automatically, monitors/ controls electric heating assets in RT for grid balancing.
- Estimates flexibility, submits FCR bids, and improves forecast accuracy over time.</td><td>- Automated & Invisible integration into existing home automation and grid operator systems
- Strict Service Level Agreements to pass TSO acceptance and data quality audits</td><td rowspan="3">- FSPs/ Aggregators</td></tr>
<tr><td>Key Resources</td><td>Channels</td></tr>
<tr><td>- Amazon web services (AWS) Cloud (RDS instances)
- Timescale Cloud
- Flexibility aggregation algorithms and software architecture
- Necessary third-party software dependencies</td><td>- Business to business (B2B) software integration channels (APIs)
- IDS-Compliant Connectors: connecting the platform to TSO markets and third-party IoT hardware.
- Automated Backend Links</td></tr>
<tr><th colspan="3">Cost structure</th><th colspan="2">Revenue Structure</th></tr>
<tr><td colspan="3">- Fixed Costs (CAPEX): Initial and ongoing software development of the sDATA/sFLEX platform architecture, Installation of energy meters
- Variable Costs (OPEX): Ongoing platform maintenance, monthly cloud hosting fees, data storage costs, and API/software licensing fees</td><td colspan="2">- Revenue from the participation in TSO markets
- Future scenario: SaaS subscription fees, API access fees, or software licensing models charged to other FSPs utilizing the sDATA/sFLEX infrastructure</td></tr>
</table>

4.1.2 Market analysis

Market size

The TAM is the European demand-side flexibility market in 2030, estimated at 164 GW of upward flexibility and 130 GW of downward flexibility [3]. This represents the full long-term opportunity for solutions that can aggregate and control flexible electricity demand across Europe.

The SAM focuses on Finland, where the identified relevant market is FCR – D, which is split into FCR – D up and FCR – D down. This market is estimated at 300 MW each [4]. The initial SOM is estimated at 25–100 MW, representing a realistic target within the Finnish market. In the first year 12.5 MW are expected while in the following years 25 MW are realistic. The initial geographical focus is Finland, where the solution will be developed and deployed. Once the business model and technical solution have been validated in the Finnish market, expansion into other Nordic countries might be considered and would be supported by already established connections.

Competitors

Table 9 presents the closest competitors for sDATA/sFLEX – OPT. Comsel System Oy, Robustco/Enion and Synergi already have market experience, whereas sDATA/sFLEX - OPT has a potential advantage through its existing links to residential buildings but has not yet entered the reserve market. Most competitors are specialised, Robustco/Enion in batteries, Synergi in electric vehicle (EV) charging, and VIBECO in larger commercial or industrial buildings, which may limit direct competition for a broader residential flexibility offering. Fusebox adds Nordic reach and multi-TSO integration but has limited residential presence.

There are also other potential competitors, who compete for the same reserve revenues but with different resource pools. CheckWatt, Cactos and Elisa/Gridle focus on battery aggregation while Liikennevirta (Virta) taps EV charging infrastructure. Oomi combines reserve-market capability with a large retail customer base. Direct overlap with heating-based flexibility is therefore limited today, but several of these players, particularly Oomi and Elisa/Gridle, with their existing household relationships could extend into residential heating loads and scale quickly if they choose to. The technology and optimisation providers (Capalo AI, Intergrid, NSC EnergyOpti, Uccos, Volue) sit slightly apart as virtual power plant (VPP) and market-access platform enablers, making them as plausible partners as competitors.

Some companies are not yet active in reserve markets but could become future competitors. Themo and Kapacity.io/EnergyHub both control electric heating and have shown they can aggregate it while Voltalis has the European track record but no Finnish presence. Cozify and Ouman probably would not access the market themselves, but their smart home and heating, ventilation and air conditioning installed bases give them reach if they team up with an aggregator.

Table 9: Competitor analysis sDATA/sFLEX – OPT

	sDATA/sFLEX - OPT	Comsel System Oy	Robustco Oy / Enion	Synergi	VIBECO -Virtual building Ecosystem Oy	Fusebox OÜ
Target customers	Residential buildings	Residential buildings, EV charging	Battery	EV charging	Larger buildings / industrial facilities	Commercial/industrial facilities
Target markets	Finland (FCR)	Finland (FCR)	Finland (FCR)	Finland (FCR)	Finland (FCR)	Nordic markets
Strengths	Offers secure, high-performance time-series data management reducing data-loss risk Ensuring end-user comfort	Already operates on reserve market	Already operates on reserve market Also serves households	9 MW of flexible EV capacity	VPP Already operating on reserve market	VPP Focus on aggregation and market access
Weaknesses	Not yet operating on the market	Limited scale	Focused on battery only	EV focus only	Focused on larger buildings only, may be too expensive	Limited residential presence
Price structure	Not publicly available	Not publicly available	Not publicly available	Not publicly available	Not publicly available	Not publicly available
Key advantage	Already established contact with residential buildings	Already operating on reserve market	Already operating	Platform could be extended to heat pumps	Credibility due to Siemens brand	Multimarket TSO integration
Market share	None	Low/Medium (small but active)	Low	Low (but growing fast in its niche)	Medium in commercial buildings	Low

4.1.3 Financial plan

Table 10 presents the assumptions for the financial plan for sDATA/sFLEX – OPT. The financial model assumes 25 MW of installed flexible load and applies reduction factors to reflect operational constraints. These include spot-price optimisation, which may reduce the flexibility available for FCR-D participation, and customer comfort settings, under which certain rooms may be unavailable at specific times. In addition, a flexibility estimation factor is applied to ensure reliable delivery of the offered capacity, together with a Fingrid capacity reduction factor based on acceptance testing and validated operational data. This gives an actual flexible capacity of 13 MW. Revenues are based on average FCR-D capacity prices of €10.81/MW for downward regulation and €11.54/MW for upward regulation, with 720 available hours per month and seasonal power assumptions ranging from 2 MW to 10 MW. SaaS subscription revenues are excluded from this analysis, as this revenue stream is expected to become available only in the future. The assessment includes €985,020 initial investment for the demand response (DR) prototype and commercial development as well as energy meters for 2,508 apartments. OPEX is assumed to be higher in the first year (€164,200) to reflect the initial adjustment and optimisation of operational processes. In subsequent years, OPEX is expected to decrease to €116,360 annually. OPEX is expected to increase incrementally with an increase in MW as additional server capacity is required. However, this level of capacity expansion is assumed not to be reached by 25 MW. Economic performance is evaluated using a 2.25% discount rate, a 90% bid acceptance rate and a 3% overestimation allowance, as well as a tax rate of 20%.

Table 10: Assumptions for the financial plan sDATA/sFLEX - OPT

Parameters	Value
Installed flexible load [MW]	25
Spot price reduction factor	0.9
DR customer setting reduction factor	0.9
Scaling factor in flexibility estimation	0.7
TSO - provided capacity reduction factor	0.9
Actual flexible load [MW]	13
Average price FCR-D down [€/MW]	10.81
Average price FCR-D up [€/MW]	11.54
Average hours/month [h]	720
Average daily power up (Sept, Oct, Mar, April) [MW]	2
Average daily power up (Nov-Feb) [MW]	3
Average daily power down (May to Sept) [MW]	10
Average daily power down (Jan to Feb, Oct to Dec)	8
Average daily power down (March to April) [MW]	9
CAPEX DR prototype [€]	410,000
CAPEX DR commercial [€]	412,000
CAPEX energy meter [€]	163,020
OPEX 1st year [€/year]	164,200
OPEX after [€/year]	116,360
Discount rate [%]	2.25%
Bid acceptance rate [%]	90%
Overestimation [%]	3%
Taxes [%]	20%

Table 11 presents the financial plan for sDATA/sFLEX - OPT. The cash flow analysis indicates a high upfront investment for product development and metering equipment, followed by relatively low recurring OPEX. In the first year, the available flexible load is assumed to reach 50% of the total potential reflecting the expectation that full capacity cannot be offered immediately. Based on these assumptions the IRR is 39% over a 5-year horizon. This is a scaled deployment calculation for a 25 MW portfolio of about 2,500 apartments, whereas the pilot validated the FCR-D workflow with limited real loads, simulated loads of up to about 1 MW and a simulated TSO interface (D5.1). This relatively high value can be attributed to the bundled-service model, under which customers are compensated through additional services rather than direct financial payments. Moreover, the business case also assumes that the tool builds on existing infrastructure and initially targets the existing customer base.

Table 11: Financial plan sDATA/sFLEX - OPT

	2026	2027	2028	2029	2030	2031
Estimated costs						
CAPEX DR prototype [€]	410,000					
CAPEX DR commercial [€]	412,000					
CAPEX energy meter [€]	163,020					
Operational expenses [€]		164,200	116,360	116,360	116,360	116,360
Total Costs [€]	**985,020**	**164,200**	**116,360**	**116,360**	**116,360**	**116,360**
Estimated revenues						
Actual flexible load [MW]		6	13	13	13	13
Total revenues [€]		**453,043**	**878,903**	**878,903**	**878,903**	**878,903**
Cash Flow analysis						
Earnings before interest and taxes [€]	-985,020	288,843	762,543	762,543	762,543	762,543
Taxes [€]	**20%**	57,769	152,509	152,509	152,509	152,509
Cash flow [€]		231,074	610,034	610,034	610,034	610,034
Discounted cash flow [€]	**2.25%**	225,989	583,482	570,643	558,086	545,805
IRR	**39%**					

4.1.4 Risk assessment

Table 12 presents the risk assessment for sDATA/sFLEX – OPT. The highest ranked risk is low customer uptake without incentives and may require adapting the business model. Another risk is reduced bid acceptance caused by increased market participation, which can likely be countered through an adjustment in the bidding strategy. Dependence on TSO-led procurement is a moderate risk, which could be addressed through market-opening initiatives such as FlexFinland. For the identified risks no actions are needed, or the risks are controlled by the proposed interventions.

Table 12: Risk assessment sDATA/sFLEX - OPT

[1low – 10high]	Degree of importance of the risk related to the final achievement of KER	Probability of risk happening	Risk Grade	Scope and type of potential intervention	Feasibility/Success of Intervention
Market Risk Factors					
A key consideration is the market's strong reliance on TSO-led procurement and operation. This may affect the scope, timing, and commercial viability of aggregator participation (e.g. min load, standards), particularly where coordination mechanisms and roles are still evolving.	7	4	28	Activities to try to open the market like, FlexFinland. This is a task force whose scope is to promote DR in Finland by putting together difference stakeholders in order to help to open the market	4
Increased participation could reduce bid acceptance	5	7	35	Send more than 1 bid for the same service Bid creation strategy	8
A small percentage of customers signs up to flexibility scheme if there is no compensation/incentive	7	6	42	Modify the compensation model	7

4.1.5 G2M strategy

Commercialisation activities are already underway through engagement with internal and external partners, real-world prototyping, pilot and demonstration activities, compliance with relevant standards, and the identification of pitching events for potential investors. The next planned steps include raising public funding and potentially providing training related to the product, operational processes and organisational changes. The estimated time to market is 1 year. IPR for sDATA/sFLEX - OPT are held solely by OPT. The internal commercialisation structure has not yet been defined. OPT will also explore external support through public funding and strategic partnerships with other aggregators including potential opportunities available through the EU Innovation Platform.

4.2 SDATA – IND

***sDATA-IND** supports **local system integrators** by **providing a comprehensive overview of different data streams at a single point** and **ensuring data security**.*

4.2.1 Value proposition and business model

The key issue sDATA solves is the scatternets of data across different sources, which are not connected among themselves. Thus, interested parties that need comprehensive insight into different data streams, must spend significant resources to obtain the data necessary for complex analysis of independent processes of energy production, consumption, transmission and flexibility.

Users want to have all data accessible at a single access point, so that they can aggregate, predict and explain incidents with a broad view of relevant topics. Current solutions are offering only interfaces to some of the data sources, while our solution will be connected to the relevant data providers, will use Open API protocols to allow further extensions, reduces resources spent on obtaining complex analysis data and ensures data security and sovereignty (Figure 6).

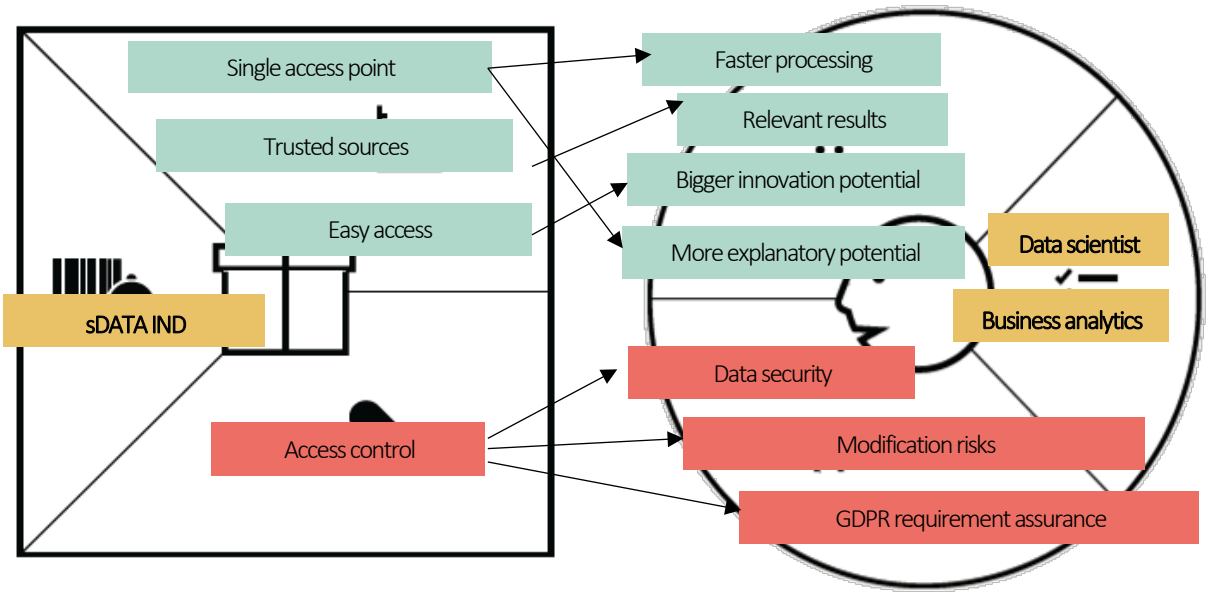


Figure 6: Value proposition canvas sDATA – IND

Key activities are the aggregation of data, API management and security maintenance. Key partners are cloud providers. INDEN reaches end users (DSOs, aggregators, charge point operators (CPOs)...) through software and engineering companies who will act as local integrators and will manage the day-to-day client communications. Direct engagement between INDEN and the end consumer will be limited to high-level strategic alignment (e.g., an annual joint review). Revenue is earned from implementation fees and monthly subscription fees, while costs relate to managing cloud services (Table 13).

Table 13: BMC sDATA - IND

<table>
<tr><th>Key partners</th><th>Key activities</th><th>Value proposition</th><th>Customer Relationships</th><th>Customer segments</th></tr>
<tr><td rowspan="3">– Cloud infrastructure providers (e.g. AWS, Azure)</td><td>– Data aggregation and normalization
– API management
– Security maintenance</td><td rowspan="3">– Single Access Point: Connects scattered data sources (production, consumption, transmission) into one view.
– Efficiency: Reduces resources spent on obtaining complex analysis data.
– Open API: Allows for extensions
– Ensures data security and sovereignty (General Data Protection Regulation (GDPR) compliance)</td><td>– Support of local integrators
– Direct engagement with end-consumers for strategic review (e.g. annual joint meetings)</td><td rowspan="3">– Local system integrators
– Software and engineering companies in energy management</td></tr>
<tr><td>Key Resources</td><td>Channels</td></tr>
<tr><td>– ESB (Enterprise Service Bus) capabilities.
– Master Data Management capacity
– Security protocols
– Network of local integrator partners</td><td>– Through system integrators
– Website
– Marketing events
– Industry conferences</td></tr>
<tr><td colspan="3">Cost structure</td><td colspan="2">Revenue Structure</td></tr>
<tr><td colspan="3">– Cloud infrastructure hosting
– Technical support
– Security maintenance
– Technical upgrades
– 24/7 round-the-clock technical monitoring</td><td colspan="2">– Integration/Implementation Fee: Charged directly by the local partner to the end consumer, with INDEN receiving a commission/share
– Subscription Model: A monthly recurring subscription fee collected by the partner, from which INDEN retains the majority share</td></tr>
</table>

4.2.2 Market analysis

Market size

The market size is estimated according to the number of DSOs, who will be the end-users of the solution but will be reached through local system integrators. The TAM comprises approximately 2,674 DSOs, which represents the number of DSOs in Europe [5]. The SAM is narrower, roughly 50–100 DSOs, reflecting those within the current geographical focus (Slovenia and Central/Western Europe). The SOM is at least 3 customers (Elektro Ljubljana, Petrol d.d., ELES, ASM) based on expected market share sufficient interest to be realistic targets. It is planned to expand into central and Western Europe to reach 18 customers after 5 years on the market.

Competitors

The competitors of sDATA - IND refer to three distinct segments: ESB platform providers, record management systems, and big data platforms. The strength of specialised ESB platforms is that they can adapt to many different data sources, while they lack the capacity to store data and handle master data.

Secondly, record management systems are good for master data management, while handling of large amount of data is impractical, and interfacing can be problematic. Big data platforms can integrate and process large volumes of heterogeneous data at scale, making them suitable for advanced analytics and storage needs that exceed the capabilities of ESB platforms and record management systems, but usually come with high implementation and maintenance complexity. Compared with these, sDATA - IND stands out as a more affordable all-in-one solution for a narrower market, but with lower market share and less maturity than the larger platforms (Table 14).

Table 14: Competitor analysis sDATA-IND

	sDATA - IND	Codeless platforms	DocSavy	Databricks	SAP
Target Customers	Software and engineering companies in energy management	Small and medium enterprises (SMEs) custom process needs	Businesses needing document management	Mid to large enterprises	Mid-market and enterprise buyers across industries
Target markets	Slovenia	Global	Global	Global	Global
Strengths	All in one solution, full access control	Central security, adaptability, standardization	Document handling, keywords, sharing of data according to access control	Integration with popular data spaces, scalable, easy to process data from different sources	Good for large, complex enterprise Strong integration between departments and data
Weaknesses	Responsiveness can be slow at times, some user specific features are not available yet	Heavy weight solution, cumbersome	Automation workflows are not available, not scalable	Security compliance is not at EU standard	Expensive to implement and maintain. Complex to set up/manage - too heavy for smaller businesses. Upgrade issues due to over-customization
Price structure	Low-cost	Mid-cost	Low-cost	Mid-cost	High-cost
Key advantage	All in one solution	Fast low-code/codeless process automation	Affordable cloud document search and organization	Unified lakehouse/data intelligence platform	Broad integrated enterprise suite and premium positioning
Market share	Low	Low/moderate	Low	Moderate	High

4.2.3 Financial plan

Table 15 summarizes the key assumptions behind the financial model. It defines the pricing structure for customers and assets, including a one-time setup fee (technical connection to sDATA, establishment of API/CIM interfaces, and security certificates) of €6,846 per customer, an annual SaaS fee (annual access to sDATA, basic analytics and maintenance of the core IDS infrastructure) of €6,000 per customer, and a fee of 12 EUR per asset per year. This variable part of the subscription is based on the number of integrated devices as this directly impacts the volume of the time series data.

It also shows the expected cost drivers, with cloud hosting costs (Hosting AWS/Azure, TimescaleDB or InfluxDB for time series, Elasticsearch, MS SQL) increasing by 25%/year. Development, maintenance, and support costs relate to a small technical team (1-2 full-time equivalent initially) for bug fixing, ensuring high availability, and developing new connectors, which increases by 5% per customer. Each customer is assumed to manage 250 assets. Security and compliance costs relate to regular penetration tests, maintenance of blockchain/distributed ledger technology nodes and the renewal of security certificates (GAIA-X, GDPR compliance). Taxes are included in the calculation at a rate of 19%, and the discount rate is 5%.

Table 15: Assumptions for the financial plan for sDATA - IND

Parameter	Value
Setup fee [€/customer]	6,846
SaaS Fee [€/year/customer]	6,000
Fee per asset [€/year/asset]	12
Cloud hosting cost increase [%/year]	25.00%
Increase in development, maintenance and support [%/customer]	5%
Number of assets per customer [#]	250
Taxes [%]	19%
Discount rate [%]	5%

Table 16 presents the financial plan for sDATA - IND, which shows an increase of costs steadily over time, while revenues grow faster as the number of consumers and assets increases, leading to losses in the early years and positive cash flow from 2030 onward. By 2031, the model shows a modest positive return, with an IRR of 9% after five years.

Table 16: Financial plan sDATA – IND

		2027	2028	2029	2030	2031
Estimated costs						
Cloud infrastructure and database [€]		15,000	18,750	22,500	26,250	30,000
Development, maintenance and support [€]		60,000	69,000	78,000	90,000	108,000
Security and compliance [€]		5,000	5,000	5,000	5,000	5,000
Total Costs [€]		**80,000**	**92,750**	**105,500**	**121,250**	**143,000**
Estimated revenues						
Total consumers [#]		2	5	8	12	18
Number of assets [#]		500	1,250	2,000	3,000	4,500
Total revenues [€]		**38,000**	**75,000**	**102,000**	**148,000**	**222,000**
Cash Flow analysis						
Earnings before interest and taxes [€]		-42,000	-17,750	-3,500	26,750	79,000
Taxes [€]	19%	0	0	0	5,083	15,010
Cash flow (€)		-42,000	-17,750	-3,500	21,668	63,990
Discounted cash flow [€]	5%	-40,000	-16,100	-3,023	17,826	50,138
Internal rate of return after 5 years	**9%**					

4.2.4 Risk assessment

Table 17 presents the risk assessment for sDATA – IND, highlighting the associated risks, their likelihood, and feasibility of an intervention. Technological risks relate to replacing existing and well entrenched technologies, which is likely to happen and can be countered by proving to consumers that sDATA – IND provides better service. The market risk (Nobody buys the product. Problems at the times of the first sale) relate to a quite similar issue and will be tackled by already approaching potential clients and raising interest. Lastly, management risks refer to a lack of resources (human/financial) to take the next step. This will be addressed by adequate resource planning, as described in sections 4.2.3 and 4.2.5. Based on the priority map this means that action should be taken for risk 1 and risk 2, while risk 3 is under control.

Table 17: Risk assessment sDATA - IND

Key Exploitable Results [1 low-10 high]	Degree of importance of the risk related to the final achievement of KER	Probability of risk happening	Risk Grade	Scope and type of potential intervention	Feasibility/Success of Intervention
Technological risks					
Result aiming at replacing existing and well entrenched technologies	7	10	70	Prove better service	9
Market Risk Factors					
Nobody buys the product. Problems at the time of the first sales.	7	9	63	Approach clients, raise interest	9
Management risks					
No resources (human and/or financial) secured to make the next step toward exploitation	4	4	16	Adequate resource planning	8

4.2.5 G2M strategy

Several activities are already done or ongoing, including partner engagement, real-world prototyping, piloting, standard compliance, and training, while others are planned such as licensing the innovation to a third party or raising public funding. A few items are not planned because they are either not desired, like launching a spin-off, contributing to standards, or raising capital, or not needed, such as legal advice. The estimated time for sDATA–IND to reach market readiness is approximately six months.

sDATA will be exploited individually by INDEN. While INDEN's internal sales department will drive the initial commercialisation, the company is actively seeking strategic partnerships to expand its market reach. They are specifically looking to collaborate with international system integrators that have strong utility and smart grid practices, such as CGI, Capgemini, Accenture, or IBM. These valuable collaborators will be actively pursued through direct engagement and the EU Innovation Platform.

4.3 SMART - UL

sMART** helps **DSOs** who want to **procure flexibility to solve grid issues and encourage proactivity from grid users.

4.3.1 Value proposition and business model

The unique value proposition of sMART is to address grid issues (line and transformer congestions) through a market-based mechanism that is aligned with the EU regulatory framework. Its core functions are to establish long-term contracts with DSOs and flexibility providers, procure flexibility, and manage the verification and settlement of the LFM.

Under sMART, DSOs enter long-term contracts with flexibility owners or aggregators to secure flexibility several months ahead. These contracts specify the maximum number of activations and the corresponding remuneration. Activation needs are derived from long-term forecasts (for example, anticipated congestion during summer peak hours) and from the cost of conventional grid reinforcements, allowing DSOs to value flexibility such that it becomes a cost-effective alternative to traditional investments (e.g. new lines).

Contracts can also support the installation of new generation units (such as photovoltaic (PV) systems) in grids without sufficient capacity to accommodate full-time operation. In such cases, consumers can install the units but accept curtailment during periods of excess generation. This approach increases renewable generation, reduces rejected connection applications, and preserves grid stability.

By establishing this market, grid constraints can be mitigated while deferring or reducing grid upgrade investments. Flexibility owners benefit from new revenue streams, and proactive engagement of grid users is encouraged. sMART is implemented via a transparent and intuitive platform that simplifies flexibility trading (see Figure 7).

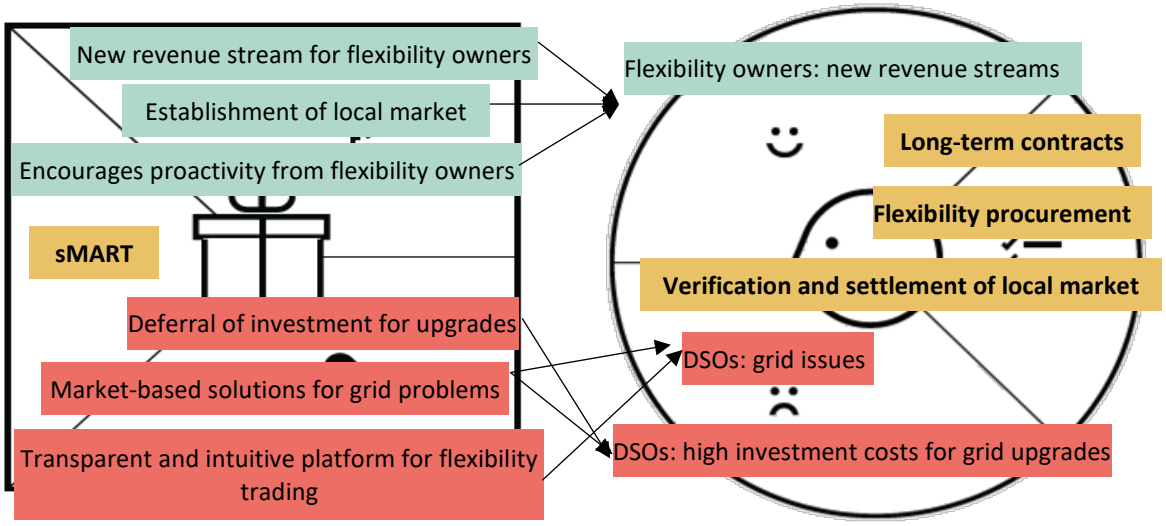


Figure 7: Value proposition canvas sMART – UL

The sMART platform enables DSOs to defer grid investments by resolving congestion through a transparent, local market following the traffic light system (TLS), in which flexibility owners can participate directly. Its primary customers are DSOs, while key partners include market operators, TSOs, and aggregators, who support market operation. Core resources centre on the integration of sGRID and the Device Registry within sMART, alongside a scalable cloud infrastructure that ensures reliable and secure operation.

Customers are targeted and acquired through public tenders and direct sales activities. The cost structure is driven by ongoing OPEX and platform development, whereas revenues are generated through annual subscription fees, initial setup charges, and potentially volume-based trading fees linked to the amount of flexibility transacted via the platform (Table 18).

Table 18: BMC sMART - UL

<table>
<tr><th>Key partners</th><th>Key activities</th><th>Value proposition</th><th>Customer Relationships</th><th>Customer segments</th></tr>
<tr><td rowspan="3">– Market Operators
– TSOs
– Aggregators</td><td>– Establishing long-term contracts
– Flexibility procurement
– Verification and settlement of the local market</td><td rowspan="3">– Investment Deferral: Solves grid issues (line/transformer congestion) cheaper than physical upgrades
– Encourages active participation from flexibility owners
– Transparent and intuitive platform for flexibility trading
– Works with Traffic Light System (TLS) for automated grid control</td><td>– Working closely with the DSO to build long-term partnerships and tailor the tool to their specific operational ecosystem.</td><td rowspan="3">– DSOs</td></tr>
<tr><td>Key Resources</td><td>Channels</td></tr>
<tr><td>– Integration with sGRID and with the Device Register (for pre-qualifying the assets)
– Dedicated development/technical team
– Cloud hosting infrastructure (essential for scaling up)</td><td>– Public tenders + regulatory approach (supporting LFM)
– Direct sales approaches to the DSOs</td></tr>
<tr><th colspan="3">Cost structure</th><th colspan="2">Revenue Structure</th></tr>
<tr><td colspan="3">– OPEX: Operation costs (platform maintenance, employee salaries)
– CAPEX: Development costs to bring the tool to a production-ready state
– Regulatory Upkeep: Costs to keep the tool up to date with the latest European and national regulatory changes</td><td colspan="2">– Subscription Fees: Yearly participation fees
– Set-up Fee: One-time initial deployment cost
– Trading Fee (Future/Exploratory): A fee based on the volume of flexibility cleared on the platform</td></tr>
</table>

4.3.2 Market analysis

Market size

The market size for sMART - UL is assessed according to the number of DSOs that could make use of the platform. Therefore, the TAM refers to the number of DSOs in Europe, which is 2,674 [5]. Based on the geographical location and current regulatory set-up of the tool, the SAM refers to the DSOs in Slovenia, which is 5. Considering the competitive landscape and the interest of DSOs the SOM for the first year is 2. However, expansion beyond Slovenia is also planned. Once the tool is technically ready, the first step will be entry into Croatia, which has a very similar grid and DSO structure and faces comparable challenges.

Competitors

Table 19 presents the competitor analysis between sMART, Piclo, and NODES. sMART is still in a pilot phase, linked to local grid control and developed closely with DSOs, but is currently not operational. Piclo is a well-established, international platform with lots of activity and many registered assets, giving it a strong market share. NODES sits somewhere in between, acting as an independent European market operator with a flexible trading interface and a solid, but not dominant, presence.

Table 19: Competitor analysis sMART - UL

	sMART	Piclo	NODES
Target customers	DSOs and flexibility asset owners	DSOs and TSOs and FSPs	DSOs and TSOs and flexibility providers
Target markets	Slovenia (pilot)	UK (market leader), also USA, Europe and Australia [6]	Norway-based, active across Europe including Norway, Sweden, Germany, Poland and the UK [7]
Strengths	Integration with TLS (automated grid controllability for the DSO), co-design with a DSO (EPR), focus on DSO ancillary services	Leading independent flexibility marketplace with high liquidity, over 250 flex sellers and 350,000+ registered assets [6]	Independent market operator with a single interface across DSO and TSO markets, enabling value stacking [7]
Weaknesses	Maturity (new tool)	Marketplace matching focus rather than integrated DSO grid control	Market-operation focus rather than integrated DSO grid control
Price structure	Defined based on the size of the grid in operation.	Not publicly disclosed (competitive auctions) [6]	Not publicly disclosed
Key advantage	TLS integration for automated grid control and DSO co-design (EPR)	Largest independent flexibility marketplace and liquidity [6]	Independent cross-level (DSO and TSO) marketplace [7]
Market share	Low (pilot stage)	High in the UK, exact share not disclosed [6]	Medium (established Nordic presence)

4.3.3 Financial plan

Table 20 summarises the estimated costs and revenues for sMART – UL. DSOs could pay a set-up fee of €150,000 covering initial deployment and a yearly participation fee of €100,000 for platform access, asset registration and qualification of assets. A success-based component based on the volume actually contracted could be envisioned, but due to the lack of an LFM, this is currently disregarded. OPEX, such as platform maintenance and employee salaries account for 300,000 €/year (or 4 full-time equivalents), which is assumed to increase by 3% per additional DSO. Initial CAPEX for developing the tool is set at €800,000 (or 10 full-time equivalents), and ongoing regulatory upkeep costs are estimated at 125,000 €/year.

Table 20: Assumptions for the financial plan sMART - UL

Parameter	Value
Set-up fee [€/DSO]	150,000
Yearly participation fees [€/year]	100,000
OPEX [€/year]	300,000
Increase in OPEX/DSO [%]	3%
CAPEX	800,000
Regulatory upkeep costs	125,000
Taxes [%]	19%
Discount rate [%]	5%
Time horizon [years]	5

Table 21 presents the financial plan for the next 5 years. There is no revenue in year 1 as the technical development of the platform still needs to be finalized. In year 2, two DSOs are expected to buy the platform. This number is expected to increase over the following years, as other European markets such as Croatia will be explored, raising revenues up to €1,450,000 in year 5. The resulting cash flows turn positive from 2028 onwards, yielding an IRR of 9% over five years.

Table 21: Financial plan sMART – UL

		2027	2028	2029	2030	2031
Estimated costs						
CAPEX [€]		800,000				
OPEX [€]		300,000	318,000	345,000	363,000	390,000
Regulatory upkeep costs [€]		125,000	125,000	125,000	125,000	125,000
Total Costs [€]		**1,225,000**	**443,000**	**470,000**	**488,000**	**515,000**
Estimated revenues						
Number of DSOs [#]		0	2	5	7	10
Total revenues [€]		**0**	**500,000**	**950,000**	**1,000,000**	**1,450,000**
Cash Flow analysis						
Earnings before interest and taxes [€]		-1,225,000	57,000	480,000	512,000	935,000
Taxes [€]	**19%**	0	10,830	91,200	97,280	177,650
Cash flow (€)		-1,225,000	46,170	388,800	414,720	757,350
Discounted cash flow [€]	**5%**	-1,166,667	41,878	335,860	341,191	593,404
IRR after 5 years	**9%**					

4.3.4 Risk assessment

Table 22 presents the risk assessment for sMART - UL. Partnership risks relate to partners disagreeing on further investment are rated moderately low (risk grade 18) and addressed through long-term co-development agreements with the pilot DSO. Technological risks arise from the dependency on other tools and can be tackled with stable interfaces. Market risks refer to the lack of standards to create a regulatory framework that incentivises or requires flexibility procurement when economically efficient. This risk is ranked high and will be addressed by engaging policy makers. The financial risk of lacking secured human and financial resources rated as high and is to be mitigated through individual exploitation via consultancy revenue and follow-up funding. The regulatory risk is addressed through regulatory-framework analysis and recommendations for policy makers. Based on the priority map all risks are under control, as the overall risk grades are quite low and the success of intervention is high.

Table 22: Risk assessment sMART - UL

Key Exploitable Results [1 low-10 high]	**Degree of importance of the risk related to the final achievement of KER**	**Probability of risk happening**	**Risk Grade**	**Scope and type of potential intervention**	**Feasibility/ Success of Intervention**
Partnership Risk Factors					
Disagreement on further investments: some partners may leave.	6	3	18	Long-term co-development agreement with the pilot DSO and clear exploitation roles	8
Technological Risk Factors					
Significant dependency on other technologies.	7	4	28	Stable interfaces to sGRID, sFLEX and the Device Register with fallback handling	7
Market Risk Factors					
Nobody buys the product. Standards to make it compulsory don't yet exist.	8	5	40	Engage the regulator (AGEN) and policy makers to support flexibility procurement	5
Financial/management Risk Factors					
No resources (human and/or financial) secured to make the next step toward exploitation	7	4	28	Individual exploitation through consultancy revenue and follow-up funding	6
Environmental/regulatory Risk Factors					
Influence of laws and regulations.	6	5	30	Regulatory-framework analysis and recommendations for policy makers, plus standards compliance	8

4.3.5 G2M strategy

This subchapter describes the required steps to bring the KER closer to the market. Already ongoing is partner engagement with SMEs and large companies, prototyping in a real-world environment, and piloting, as well as sharing insights in the BRIDGE initiative, and publishing the results on the EU Innovation Platform. Compliance with and contribution to standards are planned as the next step. Licensing the innovation to a third party, raising capital and public funding, training on the product and related organisational changes, and identifying relevant events for pitching to investors are seen as desirable, whereas launching a start-up or spin-off and dedicated legal advice on IPR are considered neither planned nor needed. As also indicated in the financial plan the time still needed until sMART – UL is market ready is at least 1 year, taking into account favourable regulatory changes.

sMART – UL will be individually exploited by UL. UL will use both the academic and commercial routes. Its main exploitation channels are high-skilled consultancy on flexibility markets and value analysis, knowledge exchange between industry and academia, and the enrichment of existing curricula with

the methods and results developed in the project. These activities are supported by the university's technology-transfer function, as UL does not maintain dedicated product development or marketing units. To broaden the impact of these results, cooperation with companies is actively to be sought. Therefore, the results will also be published on the EU Innovation Platform. Moreover, the BRIDGE initiative will be used for networking and regulators and policy makers such as the Energy Agency (AGEN) in Slovenia are engaged to secure regulatory support for the exploitation of the results.

4.4 SGRID - UL

sGRID** helps **DSOs** who want to **have real-time decision-making** by **enhancing load and generation forecasting, state estimation and overall grid observability.

4.4.1 Value proposition and business model

The value proposition for sGRID is to improve grid observability enabling real-time decision making (Figure 8). The tool allows for the detection of potential issues via forecasting and, if needed, supports DSO participation in an LFM. The operation of the LFM is done via the TLS. It therefore increases the grid observability and helps to keep the grid operation stable and secure. It further empowers the DSO by providing more options for congestion management.

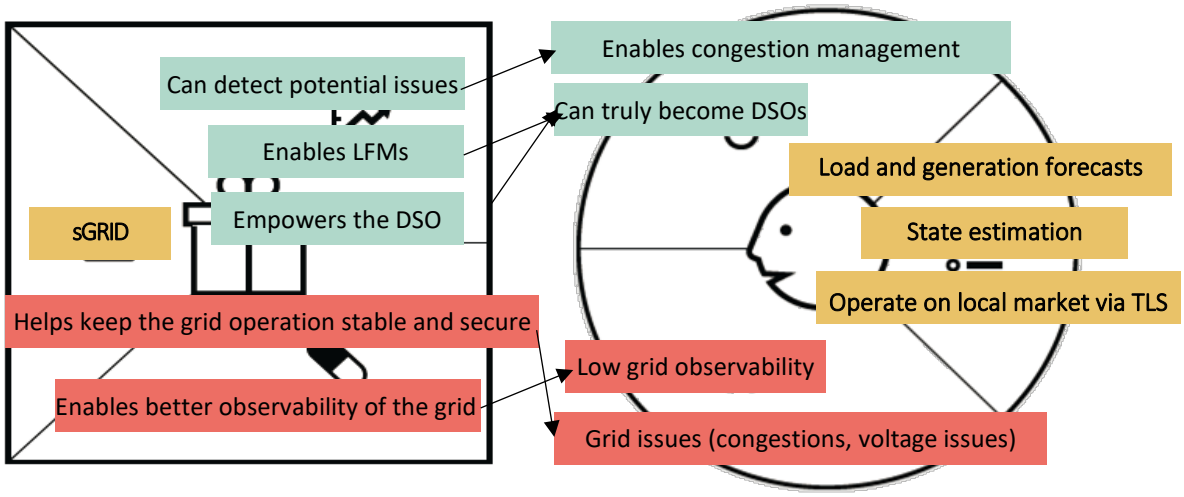


Figure 8: Value proposition canvas sGRID - UL

Customers are DSOs, especially those managing grids with high renewable energy source (RES) penetration. Activities relate to load and generation forecasting, accurate congestion detection, quantification of available flexibility, and operation on local markets via the TLS to prevent grid limit violations. Customers are addressed both passively through public tenders and regulatory processes and actively through direct sales. Key resources include state estimation and forecasting algorithms, continuous data integration with the physical grid, highly skilled personnel to directly work with the DSO to ensure smooth deployment, and secure hosting infrastructure. Costs arise from developing new forecasting models, adding loads and updating topologies, initial deployment and integration, and hosting and data processing, while revenues are generated through a one-time set-up fee and scalable pricing based on the size or number of grid sections covered (Table 23).

Table 23: BMC sGRID - UL

<table>
<tr><th>Key partners</th><th>Key activities</th><th>Value proposition</th><th>Customer Relationships</th><th>Customer segments</th></tr>
<tr><td rowspan="3">– Technology Integrators</td><td>– Forecasting (Load and Generation)
– Accurate congestion detection
– Accurate calculation of available flexibility amounts
– Operating on local markets via TLS to prevent grid limit violations</td><td rowspan="3">– RT Decision Making: Improves grid observability
– Keeps grid operation stable via the TLS
– Detects potential issues via load/generation forecasts
– Provides DSOs with actionable options for congestion management</td><td>– Highly tailored integration with the DSO due to grid topology</td><td rowspan="3">– DSOs (specifically those managing grids with high RES penetration)</td></tr>
<tr><td>Key Resources</td><td>Channels</td></tr>
<tr><td>– State estimation and forecasting algorithms
– Constant data integration and updates with the physical grid
– Highly skilled personnel
– Secure hosting infrastructure</td><td>– Public tenders + regulatory approach
– Direct sales approach to the DSOs</td></tr>
<tr><td colspan="3">– Cost structure</td><td colspan="2">– Revenue Structure</td></tr>
<tr><td colspan="3">– Developing new forecasting models, adding new loads in the grid, topology updates
– Deployment costs: Setting up the whole process and initial integrations with the DSO
– Hosting: Server and data processing costs</td><td colspan="2">– Set-up Fee: One-time initial integration cost
– Scalable Pricing: Dependent on the size or number of grid sections (nodes) concerned by the operation</td></tr>
</table>

4.4.2 Market analysis

Market size

The market size for sGRID – UL is assessed based on the number of DSOs that could make use of the tool. The TAM therefore corresponds to the total number of DSOs in Europe, estimated at 2,674 [5]. Given the tool's current geographical focus and regulatory setup, the SAM is limited to the five DSOs operating in Slovenia. Taking into account the competitive landscape and the level of interest expressed by DSOs, the SOM for the first year is estimated at one DSO.

The operational challenges that the tool addresses, namely rising RES and EV penetration, low-voltage (LV) and medium-voltage (MV) congestion, and the need to procure local flexibility rather than reinforce the grid, are shared by most of the European DSOs.

The EU regulatory framework, in particular Article 32 of the Electricity Market Directive (EU) 2019/944, requires Member States to provide a regulatory framework that allows and incentivises DSOs to procure flexibility services, so the operating context is converging across Europe. Because the tool is topology agnostic and interoperable with standard DSO systems (GIS, SCADA, AMI), replication in another country is mainly a matter of configuration, data integration, and adaptation to national market rules rather than redevelopment. Wider uptake would let DSOs defer or avoid grid reinforcement, integrate distributed resources faster, and support the emergence of local flexibility markets across the EU.

Competitors

Table 24 benchmarks sGRID against established grid-software vendors (GE Energy, Hitachi Energy, Schneider Electric, Siemens) and specialised newcomers (Plexigrid, Odit-e), all of which target DSOs as their main customers. The large vendors operate globally with mature, integrated ADMS/DERMS suites, broad portfolios, and high market shares, but are typically resource-intensive, costly for small and medium DSOs, and offer limited coverage of flexibility assets. The smaller players differentiate through low-voltage-focused digital twins, with Plexigrid tested in Iberian LV grids and Odit-e offering near real-time, smart-meter-driven operation without additional hardware, though both face integration limitations. sGRID, currently piloted in Slovenia, positions itself through integration into a real LFM, easy grid-topology definition, interoperability with DSO systems, improved observability and controllability via sMART, and co-design with a DSO (EPR). Its main weaknesses are its lower maturity, use only at pilot sites, and the absence of an established customer base. The market share is estimated based on the publicly available data and sources.

Table 24: Competitor analysis sGRID - UL [8]

	sGRID - UL	GE Energy	Hitachi Energy	Schneider Electric	Siemens	Plexigrid	Odit-e
Target customers	DSOs	DSOs	DSO	DSOs	DSOs	DSOs	DSOs
Target markets	Slovenia (pilot)	Global [8]	US / N. Europe / Croatia / Slovenia / Global	Global	Europe	Spain and Sweden, Europe [9]	France and Spain, Europe, incl. Slovenia pilot [10]
Strengths	Integrated in a real LFM, easy grid-topology definition, interoperable with DSO systems, improves observability/controllability, controllability via sMART, co-design with a DSO (EPR)	Large customer base (Power On), own GIS tool, a market leader for DSOs	Mature power-application suite, end-to-end utility needs	Integrated ADMS/DERMS suite, strong integration, proven at all sizes	Excellent client support, new microgrid module, good integration	Tested in an Iberian LV grid, easy integration with existing DSO systems	Near real-time operation, smart-meter driven, short-term predictions
Weaknesses	Still under development / less mature, used only in pilot sites, no customer base yet	Limited flexibility-asset coverage, compliance behind, low support outside UK	Resource needs across projects, no extreme-weather module, difficult maintenance	Resource needs across projects, high-end cost (barrier for small/medium DSOs)	Limited flexibility-asset coverage	No topology identification, hard integration for small DSOs	Platform-bound with limited integration options
Price structure	Set-up plus node-based scalable pricing	Not publicly disclosed	Not publicly disclosed	High	High	Not publicly disclosed	Not publicly disclosed
Key advantage	Integrated in a real LFM with DSO co-design and controllability via sMART	Market-leading ADMS (PowerOn) and GridOS DERMS, ranked first in the Guidehouse 2024 DERMS leaderboard [8] [9]	Mature end-to-end grid application suite	Integrated EcoStruxure ADMS and DERMS suite	Broad grid software portfolio with strong integration	LV-first digital twin built from the low-voltage grid [9]	Smart-meter-data digital twin of the LV grid without extra hardware [10]
Market share	Pilot	High	Medium (Not publicly disclosed)	High (Not publicly disclosed)	High (Not publicly disclosed)	Medium (Not publicly disclosed)	Low (Not publicly disclosed)

4.4.3 Financial plan

Table 25 summarises the key parameters for the financial plan. On the revenue side, each DSO pays a set-up fee of €25,000 plus a scalable fee of 20 € per unit, with a medium-sized DSO comprising approximately 2,500 units. On the cost side, 250,000 €/DSO/year are assumed for developing new forecasting models, adding new loads, and updating the grid topology, complemented by €15,000 of integration costs per DSO and annual hosting costs of €20,000 for servers and data processing, which increase by 10% for each additional DSO. The financial assessment is carried out over a lifetime of five years, applying a discount rate of 5% and a tax rate of 19%.

Table 25: Assumptions for the financial plan for sGRID - UL

Parameters	Value
Set-up fee [€/DSO]	25,000
Scalable fee [€/unit]	20
Units/medium-sized DSO [#]	2,500
CAPEX: developing new forecasting models, adding new loads, topology updates [€]	250,000
Integration costs [€/DSO]	15,000
Hosting (Server, data processing) [€/year]	20,000
Increase in server hosting costs/DSO [%]	10%
Discount rate [%]	5%
Time horizon [years]	5
Taxes [%]	19%

Table 26 presents the financial plan for the next five years. No revenue is generated in year 1, as the technical development of the tool still needs to be finalised. From 2028, DSOs are onboarded gradually, and the number increases over the following years as other markets such as Croatia are explored, raising revenues to €300,000 by 2031. The resulting cash flows turn positive from 2028 onwards, yielding an internal rate of return of 14% over five years. This indicates economic feasibility under the stated assumptions, but further development beyond the pilot depends on securing funding.

Table 26: Financial plan sGRID - UL

		2027	2028	2029	2030	2031
Estimated costs						
CAPEX [€]		250,000				
Integration costs [€/DSO]		0	15,000	15,000	15,000	30,000
Hosting [€/year]		20,000	22,000	24,000	26,000	30,000
Total Costs [€]		**270,000**	**37,000**	**39,000**	**41,000**	**60,000**
Estimated revenues						
Cumulative established [DSO/year]		0	1	2	3	5
Total revenues [€]		**0**	**75,000**	**125,000**	**175,000**	**300,000**
Cash Flow analysis						
Earnings before interest and taxes [€]		-270,000	38,000	86,000	134,000	240,000
Taxes [€]	**19%**	0	7,220	16,340	25,460	45,600
Cash flow (€)		-270,000	30,780	69,660	108,540	194,400
Discounted cash flow [€]	**5%**	-257,143	27,918	60,175	89,296	152,317
IRR after 5 years	**14%**					

4.4.4 Risk assessment

Table 27 provides the risk assessment for sGRID - UL. The market risk is identified as the most critical as the product may find no buyers, which can be mitigated by targeting DSOs that need local flexibility aware tools and pricing below incumbents. Technological risk from replacing well-established technologies is addressed through differentiation via flexibility-market integration and DSO co-design. Regulatory risk from changing laws can be tackled via regulatory-framework analysis, policy recommendations, and standards compliance. Financial risks related to unsecured human and financial resources can be covered by consultancy revenue and follow-up funding, while partnership risks from disagreement on further investments are addressed with a long-term co-development agreement with the pilot DSO and clearly defined exploitation roles. Based on the risk grade and the feasibility of the intervention all risks are controlled.

Table 27: Risk assessment sGRID - UL

Key Exploitable Results [1 low-10 high]	Degree of importance of the risk related to the final achievement of KER	Probability of risk happening	Risk Grade	Scope and type of potential intervention	Feasibility/ Success of Intervention
Partnership Risk Factors					
Disagreement on further investments: some partners may leave.	6	3	18	Long-term co-development agreement with the pilot DSO and clear exploitation roles	8
Technological Risk Factors					
Result aiming at replacing existing and well entrenched technologies	6	5	30	Differentiate through flexibility-market integration and DSO co-design	6
Market Risk Factors					
Nobody buys the product. The project hits against a monopoly.	7	5	35	Target DSOs needing local flexibility-aware tools and price below incumbents	6
Financial/management Risk Factors					
No resources (human and/or financial) secured to make the next step toward exploitation	7	4	28	Individual exploitation through consultancy revenue and follow-up funding	7
Environmental/regulatory Risk Factors					
Influence of laws and regulations.	6	5	30	Regulatory-framework analysis and recommendations for policy makers, plus standards compliance	6

4.4.5 G2M strategy

This subchapter presents the required steps to bring sGRID - UL closer to the market. Engaging internal partners including SMEs and large companies, prototyping in a real-world environment, and pilot, demonstration and testing activities as well as knowledge sharing through the BRIDGE initiative are already done or ongoing, while compliance with and contribution to standards are planned as the next steps. Licensing the innovation to a third party, raising capital and public funding, training on the product, processes and related organisational changes, and identifying relevant events for pitching to potential investors are considered desirable but are not currently planned. Launching a start-up or spin-off and dedicated legal advice on IPR are neither planned nor needed. Overall, technical maturation is well advanced, while key commercial steps remain outstanding, as reflected in the planned go-to-market timeline of one year. Further development beyond the pilot depends on funding. If additional funding is secured, the tool can be developed further towards a market-ready product.

sGRID – UL will be individually exploited by UL. UL will use both the academic and commercial routes. Its main exploitation channels are high-skilled consultancy on flexibility markets and value analysis, knowledge exchange between industry and academia, and the improvement of existing curricula with the methods and results developed in the project. These activities are supported by the university's technology-transfer function, as UL does not maintain dedicated product development or marketing units. To broaden the impact of these results, cooperation with companies is actively to be sought. Therefore, the results will also be published on the EU Innovation Platform. Moreover, the BRIDGE initiative will be used for networking and regulators, and policy makers are engaged to secure regulatory support for the exploitation of the results.

4.5 SGRID - ETRA

sGRID** helps **DSOs** who want to **smoothly integrate DERs and EVs into the grid** by **increasing real-time measurements/ forecasting and managing FSP resources.

4.5.1 Value proposition and business model

sGRID is an LV grid-management tool. This tool enables DSOs to manage and estimate the future state of the grid to tackle congestion and instability problems without limiting DERs (Figure 9). With the information provided by sGRID, DSOs will know when a flexibility service is required to avoid/solve such problems. This tool also integrates the visualization and analysis of real-time measurements and forecasting of the condition of the grid, which allows DSOs to anticipate grid congestion and instabilities by controlling and managing the FSP’s resources, automatically sending bids to the LFM when required. The implementation of the tool, together with the deployment of LFMs, will lower the needs for grid reinforcement, while increasing grid hosting capacity with a smart system management.

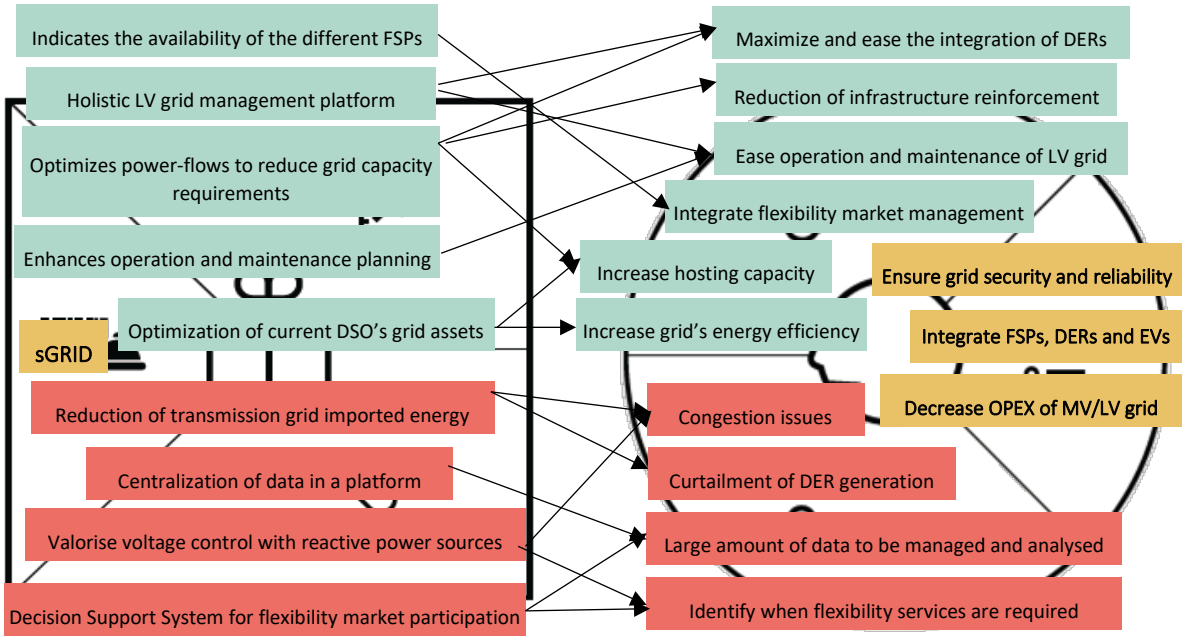


Figure 9: Value proposition canvas sGRID – ETRA

The value proposition combines RT instability detection, active voltage management, automated dispatch of flexibility requirements to a market platform, peak shaving to ease grid operation, machine learning (ML)-based detection of partners failing delivery obligations, and reduced grid reinforcement costs. Core activities are (pre)qualification of flexible assets, RT grid monitoring and status forecasting, sensitivity analysis aligned with evolving market regulation and customising the tool to each DSO's IT architecture. Customers are acquired through direct sales, industry events and research or innovation projects (HE projects, digital sandboxes), and retained via a dedicated Product Manager and after-sales support team offering proactive bilateral contact, newsletters and feedback-driven contract reviews. Key resources are the ML algorithms and grid parameter datasets, sMART integration APIs, cloud hosting and the dedicated commercial and support staff. Costs arise from tool adaptation, OPEX, cloud hosting fees, the development and IT maintenance team and sales personnel, while revenue comes from a yearly operating licence plus setup and onboarding fees (Table 28).

Table 28: BMC sGRID - ETRA

<table>
<tr><th>Key partners</th><th>Key activities</th><th>Value proposition</th><th>Customer Relationships</th><th>Customer segments</th></tr>
<tr><td rowspan="3">- Market Operators: For sMART (Market integration)
- Aggregators and EnCs: For sENC (sensitivity/flexibility analysis)
- Cloud hosting providers</td><td>- (Pre)qualification of flexible assets
- RT grid monitoring and grid status forecasting
- Sensitivity analysis and compliance with evolving market regulations
- Customising the tool to fit the specific IT architecture of different DSOs</td><td rowspan="3">- RT monitoring to detect instabilities
- Active management to prevent voltage limit violations
- Automatically sends requirements to a market platform on grid issues
- Peak Shaving: Active management to limit imported power and ease grid operation
- ML-based detection of partners failing delivery obligations
- Grid reinforcement costs reduction</td><td>- DSO engagement via research/innovation projects (e.g., HE projects, digital sandboxes)
- Dedicated support with proactive contacts and continuous system improvements
- Regular newsletters, emails, and contract update reviews based on continuous feedback</td><td rowspan="3">- DSOs</td></tr>
<tr><td>Key Resources</td><td>Channels</td></tr>
<tr><td>- ML algorithms & grid technical parameter datasets
- Integration APIs for sMART.
- Cloud hosting
- Dedicated Product Manager and After-Sales Support Team (formerly project manager)</td><td>- Direct sales, industry events, and trade shows related to energy.
- Support channels: Direct bilateral contact with the customer (emails with support team, proactive outreach)</td></tr>
<tr><td colspan="3">Cost structure</td><td colspan="2">Revenue Structure</td></tr>
<tr><td colspan="3">- Tool adaptation to different DSO systems
- OPEX
- Cloud hosting fees
- Dedicated development team and IT maintenance
- Commercial sales personnel</td><td colspan="2">- Yearly Operating Licence
- Setup/onboarding</td></tr>
</table>

4.5.2 Market analysis

Market size

sGRID - ETRA aims to provide small and medium DSOs (10,000 – 100,000 supply/generation points) with the required functionalities to optimize the operation and management of their grids.

The TAM represents the total market demand of all DSOs, which, encompasses 2,674 DSOs in Europe [5]. It represents the maximum potential market size if we could reach and serve all the utilities/DSOs in Europe.

The SAM represents the portion of the TAM that sGRID can realistically target and serve with its DSO grid flexibility solution. As previously mentioned, the target DSOs are DSOs with 10,000 to 100,000 supply and generation points. To identify SAM, we considered the following factors:

- **Geographical Limitations:** We have assessed the geographic areas where sGRID solution can be implemented effectively and considered factors such as grid infrastructure, regulatory frameworks, and the readiness of DSOs to adopt grid flexibility solutions.
- **Budget Constraints:** We also evaluated the financial capabilities of utilities/DSOs to invest in grid flexibility solutions, including ongoing flexibility projects funded by the EC and implemented by a sub-set of these DSOs. We have identified the DSOs that may have sufficient budgets allocated for grid modernization and renewable energy integration but have not yet started implementation.
- **Industry Requirements:** We analysed the specific needs and regulatory environment of DSOs in different regions in Europe, mainly DACH region, SEE and Scandinavia. We identified DSOs are actively seeking grid flexibility solutions to address challenges like grid congestion, renewable energy integration, DR, and optimizing asset utilization.
- **LFM establishment:** We have analysed the countries where LFMs are already established or where regulatory sandboxes or other funded projects are ongoing, since the deployment of sGRID relies on the existence of LFMs.

After considering these factors, we determined that our SAM consists of a subset of DSOs within Europe, around 10 medium-size DSOs and 300 small-size utilities/DSOs. The SOM represents the subset of the SAM that we could realistically capture as customers for sGRID. It takes into account the competitive landscape, ETRA's background, previous collaborations with DSOs, market penetration strategy, and market share aspirations. With these considerations, it is expected that in Year 2 two, in Year 3 three, in Year 4 six and in Year 5 ten customers are on board. These numbers assume an expansion to countries outside of Spain by Year 3, mainly those in which ETRA has participated in previous projects, including Portugal, Greece, the Balkan countries, Switzerland, and Italy.

Competitors

Table 24 benchmarks sGRID -ETRA against established grid-software vendors (GE Energy, Hitachi Energy, Schneider Electric, Siemens, AspenTech OSI) and specialised newcomers (Plexigrid, Odit-e), all of which target DSOs as their main customers. The large vendors operate globally with mature, integrated ADMS/DERMS suites, broad portfolios, and high market shares, but are typically resource-intensive, costly for small and medium DSOs, and offer limited coverage of flexibility assets. The smaller players differentiate through low-voltage-focused digital twins, with Plexigrid tested in Iberian LV grids and Odit-e offering near real-time, smart-meter-driven operation without additional hardware, though both face integration limitations. sGRID, currently piloted in Spain, positions itself through integration into a real LFM. Its main weaknesses are its lower maturity, use only at pilot sites, and the absence of an established customer base. The market share is estimated based on the publicly available data and sources.

Table 29: Competitor analysis sGRID - ETRA [8]

	sGRID - ETRA	GE Energy	Hitachi Energy	Schneider Electric	Siemens	Plexigrid	Odit-e	AspenTech OSI
Target customers	DSOs	DSOs	DSO	DSOs	DSOs	DSOs	DSOs	DSOs
Target markets	Spain	Global [8]	US / N. Europe / Croatia / Slovenia / Global	Global	Europe	Spain and Sweden, Europe [9]	France and Spain, Europe, incl. Slovenia pilot [10]	Global, especially North America and Europe.
Strengths	Sends grid-issue requirements to the market platform automatically. Peak Shaving: Limits imported power to ease grid operation	Large customer base (Power On), own GIS tool, a market leader for DSOs	Mature power-application suite, end-to-end utility needs	Integrated ADMS/DERMS suite, strong integration, proven at all sizes	Excellent client support, new microgrid module, good integration	Tested in an Iberian LV grid, easy integration with existing DSO systems	Near real-time operation, smart-meter driven, short-term predictions	Tool especially meant for efficient DER integration and orchestration.
Weaknesses	Still under development / less mature, used only in pilot sites, no customer base yet	Limited flexibility-asset coverage, compliance behind, low support outside UK	Resource needs across projects, no extreme-weather module, difficult maintenance	Resource needs across projects, high-end cost (barrier for small/medium DSOs)	Limited flexibility-asset coverage	No topology identification, hard integration for small DSOs	Platform-bound with limited integration options	Focused on DSOs that explicitly wants to operate the grid traditionally, no flexibility is assessed.
Price structure	Based on SaaS and set-up costs	Not publicly disclosed	Not publicly disclosed	High	High	Not publicly disclosed	Not publicly disclosed	Not publicly disclosed
Key advantage	Grid reinforcement costs reduction	Market-leading ADMS (PowerOn) & GridOS DERMS [8] [9]	Mature end-to-end grid application suite	Integrated EcoStruxure ADMS and DERMS suite	Broad grid software portfolio with strong integration	LV-first digital twin built from the low-voltage grid [9]	Smart-meter-data digital twin of the LV grid without extra hardware [10]	ADMS/ DERMS/ SCADA/EMS suite, RT grid model, DERs operation and control, scalable, integration with existing operation
Market share	Pilot	High	Medium (Not publicly disclosed)	High (Not publicly disclosed)	High (Not publicly disclosed)	Medium (Not publicly disclosed)	Low (Not publicly disclosed)	High (not publicly disclosed)

4.5.3 Financial plan

Table 30 presents the assumptions for the financial plan. Revenues stem from the operating licence paid by the DSO. The cost depends on the size of the DSO, with the following average costs depending on the number of supply and generation points connected to the grid. For the financial analysis, the share is assumed to be 50% small DSOs. 35% medium DSOs and 15% large DSOs. This results in an average licence price of €73,500. The setup and onboarding costs are also dependent on the DSO size as it requires an ad-hoc deployment to integrate the different systems, grid topology and assets. CAPEX includes personnel, equipment and other costs. Costs for the actual market operation are split into two stages. The first stage is meant to prepare the product for being commercially viable, fine tuning the functionalities and optimizing the algorithms with the lessons learnt from the demonstration activities of the project. This product preparation is expected to take 15 months. Since ETRA's sGRID has been deployed in the Spanish pilot, after this stage the product will be ready for commercialisation nationally. The costs for national G2M are estimated at 15% of the total development cost. After this stage, the plan is to develop an international adapter to be able to easily integrate different LFM platforms and specific national flexibility products from other member states. This will be developed within the second year after the project, being the product able to be implemented in other European countries by year 3 after the project ends. The cost of this development is estimated at 10% of the total development cost.

OPEX are split into fixed annual OPEX costs (maintenance, cloud hosting and marketing costs), that do not depend on the number of customers, and variable implementation OPEX costs, which depend on the number of customers. The average implementation cost, considering the expected distribution of DSO customer sizes, is €20,475. Implementation costs are intentionally higher than the corresponding setup fees to reduce the upfront cost for customers and facilitate adoption. The associated cost is expected to be recovered through recurring licence revenues over the customer lifetime. The considered discounted cash flow is 5%.

Table 30: Assumptions for the financial plan for sGRID - ETRA

Parameter		Value
Operating Licence [€/year]	Small (10,000-20,000 points)	55,000
	Medium (20,000 – 50,000 points)	80,000
	Large (50,000 – 100,000 points)	120,000
Customer share (small, medium, large)		50%, 35%, 15%
Average set-up price [€/year]	Small (10,000-20,000 points)	4,000
	Medium (20,000 – 50,000 points)	6,500
	Large (50,000 – 100,000 points)	9,000
Personnel costs [€]		231,795
Equipment costs [€]		3,500
Other [€]		58,823
Product development costs national [€]		44,118
Product development costs international [€]		29,412
Maintenance costs [€/year]		8,000
Cloud hosting [€/year]		4,000
Marketing costs [€/year]		7,727
Customer support [€/year]		10,302
Implementation OPEX small DSO [€]		15,453
Implementation OPEX medium DSO [€]		23,180
Implementation OPEX large DSO [€]		30,906
Discount rate [%]		5%

Table 31 presents the financial plan for sGRID - ETRA for the five years after the project ends. Sales begin in 2028 and grow from €158,250 to €757,500 by 2031 due to an increase in customers. On this basis, EBIT turns positive from the third year. The IRR is 24% after five years.

Table 31: Financial plan sGRID - ETRA

		2026	2027	2028	2029	2030	2031
Estimated costs							
CAPEX [€]		294,119					
Product development [€]			44,118	29,412			
Cloud hosting [€]			4,000	4,000	4,000	4,000	4,000
Marketing costs [€]			7,727	7,727	7,727	7,727	7,727
Maintenance [€]			8,000	8,000	8,000	8,000	8,000
Customer support [€]			10,302	10,302	10,302	10,302	10,302
Implementation costs [€]			20,475	20,475	20,475	20,475	20,475
Total Costs [€]		**294,119**	**63,844**	**110,693**	**71,108**	**142,965**	**204,648**
Estimated revenues							
Licensing fee [€]	73,500	0	0	2	3	6	10
Setup / onboarding [€]	5,625	0	0	2	1	3	4
Total revenues		**0**	**0**	**158,250**	**226,125**	**457,875**	**757,500**
Cash Flow analysis							
Earnings before interest and taxes		-294,119	-63,844	47,557	155,017	314,910	552,852
Taxes	**21%**	0	0	9,987	32,554	66,131	116,099
Cash flow (€)		-294,119	-63,844	37,570	122,464	248,779	436,753
Discounted cash flow	**5%**	-294,119	-60,804	34,077	105,789	204,671	342,207
IRR after 5 years	**24%**						

4.5.4 Risk assessment

Table 32 presents the risk assessment for sGRID – ETRA. The highest rated risks are related market and resource risks such as an unsuitable sales force and a lack of secured human or financial resources for the next exploitation step, the product perceived as too expensive, and an inadequate business plan. To counteract these risks, mitigation measures like the early and continuous involvement of the financial and sales departments and tailored, more affordable solutions are envisioned. Risks linked to the loss of a business partner, through market exit or bankruptcy, score low, as their probability is considered low and ETRA could take over the partner's role. Regulatory uncertainty falls in the middle range and are tackled by adaptations of the connectors to different LFM platforms. The feasibility of the interventions is consistently rated high indicating that the identified risks are considered manageable within the project's exploitation strategy and are therefore under control.

Table 32: Risk assessment sGRID – ETRA

[1low – 10high]	**Degree of importance of the risk related to the final achievement of KER**	**Probability of risk happening**	**Risk Grade**	**Scope and type of potential intervention**	**Feasibility/Success of Intervention**
Partnership risks					
Industrialization at risk: a business partner leaves the market.	5	2	10	ETRA takes the role of the business partner	9

Industrialization at risk: a partner declares bankruptcy.	5	2	10	ETRA would take the role of the partner	9
Technological risks					
Result aiming at replacing existing and well entrenched technologies	8	5	40	Analyse client needs and offer a more functional, more affordable tailored solution.	8
Market risks					
Nobody buys the product. Too expensive.	9	6	54	Analyse client needs and offer a more functional, more affordable tailored solution.	8
Nobody buys the product. Standards to make it compulsory don't yet exist.	5	5	25	The solution will be tailored to the customer needs.	6
Nobody buys the product. Unsuitable sales force.	7	8	56	The sales force will be involved from the start to ensure sales	7
Management risk					
Weak exploitation: Inadequate business plan	8	6	48	Financial and sales departments involved from start to provide an adequate business plan.	7
No resources (human and/or financial) secured to make the next step toward exploitation	8	7	56	Financial and sales departments involved from the beginning to provide an adequate exploitation plan.	7
Regulation risks					
Influence of laws and regulations.	6	7	42	Lack of common regulatory framework across Europe for LFMs: ETRA will adapt the connectors to different market platforms.	9

4.5.5 G2M strategy

Several key activities, such as prototyping in a real-world environment, piloting, demonstration and testing, compliance with existing standards, and raising funding from public sources are already under way. Legal advice and identification of relevant events for pitching to potential investors is planned. Training measures, contribution to standards and licencing the innovation to a 3rd party, are not yet planned but desired for the coming period. ETRA will commercialise the product through its product development and commercialisation departments. ETRA will individually exploit the tool and will use the EU Innovation Platform as an additional channel to support market uptake and reach potential customers. The estimated time for the product to become market ready is 15 months.

4.6 SGRID – COM

4.6.1 Value proposition and business model

The sGRID – COM tool aims to support the DSO grid management operations in the context of congestion management related either to power quality at the consumer location or thermal overload at the substation level. To assure secure and reliable operation within the regulated operational conditions as well as maximize assets lifetime, both of these problems must be eliminated or at least limited the greatest possible extent to assure. The value proposition of the proposed approach is in simplification of congestion assessment and independence from full operational context knowledge, enabling DSO to make informed and timely curative decisions. The method relies on anonymized smart meter data on the level of specific MV/LV substations and advanced data analytics for equivalent grid model reconstruction. The value proposition canvas of sGRID – COM is depicted in Figure 10.

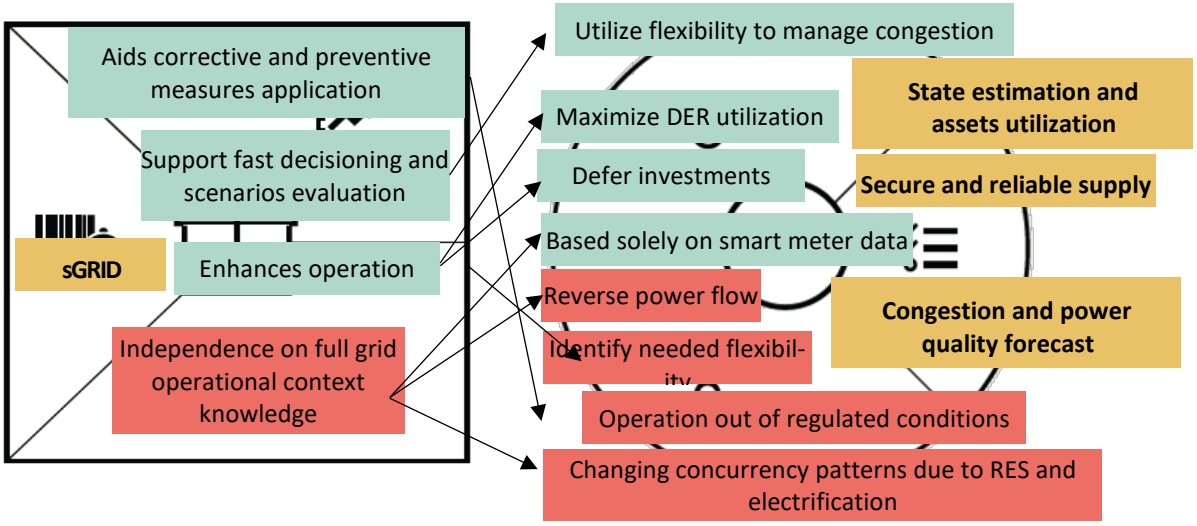


Figure 10: Value proposition canvas sGRID – COM

Table 33 presents the BMC for sGRID – COM. The value proposition is to give DSOs day-ahead visibility of the operational limits of the grid, without requiring a complete and up-to-date GIS model of the network. The tool forecasts the loading of MV/LV transformers and PV generation at 15-minute resolution, detects threshold violations before they occur and supports the DSO in defining flexibility requests via sMART, while its forecasts also feed the scheduling performed by sENC. A distinctive element is the reconstruction of an equivalent MV grid model (impedance matrix) directly from measurements, which enables voltage assessment and PV impact analysis where network data are incomplete or outdated. This supports better operational planning, fewer emergency interventions and the potential deferral of grid reinforcement.

Customers are primarily small and medium DSOs with rapidly growing PV and EV penetration, including multi-utilities operating their own grid, with engineering partners serving DSOs as a secondary segment. sGRID-COM is offered as a customised DSO solution, including data onboarding, grid reconstruction, on-premise installation and system integration, followed by annual support, monitoring and model updates. Running on-premise keeps grid data under DSO control. Customers are reached through direct B2B engagement and public tenders. Key resources are the reusable forecasting and reconstruction components and domain know-how.

Costs arise from engineering per project, toolkit maintenance and service delivery, while revenues come from project fees, annual service contracts and optional engineering studies.

Table 33: BMC sGRID - COM

<table>
<tr><th>Key partners</th><th>Key activities</th><th>Value proposition</th><th>Customer Relationships</th><th>Customer segments</th></tr>
<tr><td rowspan="3">-Data-platform providers for data cleaning and harmonisation (e.g. sDATA)
-Weather-data providers (e.g. Open-Meteo)
-Flexibility-market / optimisation tool providers (sMART, sENC) and system integrators</td><td>- Data onboarding, grid reconstruction, and model calibration
-Day-ahead forecasts of MV/LV transformer loading and PV generation
-Detection of threshold violations
-On-site deployment with API integration into SCADA/ADMS, sMART, and sENC
-Monitoring, retraining, and topology updates</td><td rowspan="3">- Day-ahead transformer loading and congestion forecasts at 15-minute resolution
- Supports proactive flexibility requests before congestion occurs
- Measurement-based grid reconstruction—no complete GIS model required
- Enables voltage assessment and PV impact analysis
DSO-specific, on-premise deployment; grid data remains with the DSO
-Improves planning, reduces emergency interventions, and may defer grid reinforcement</td><td>-Project-based engagement with dedicated engineering support during deployment
-Follow-up service and maintenance agreement after go-live
-Joint validation of results with DSO operators
-Reference relationship with ASM Terni, which has expressed interest in continued use</td><td rowspan="3">-DSOs – especially small/medium DSOs with high PV and EV penetration
-Multi-utilities operating their own distribution grid
-Secondary users: engineering or digitalisation partners supporting DSOs</td></tr>
<tr><td>Key Resources</td><td>Channels</td></tr>
<tr><td>-Historical and near-real-time grid and weather data
-XGBoost forecasting and threshold-violation logic
-Grid-reconstruction algorithm and domain expertise
-On-premise software with remote support
-Reusable toolkit to reduce project delivery effort</td><td>- Direct sales to DSOs and multi-utilities, including public tenders
- Reference STREAM pilot and BRIDGE dissemination
- Existing grid-operator and utility relationships
-Partnerships with system integrators and data-platform providers</td></tr>
<tr><th colspan="3">Cost structure</th><th colspan="2">Revenue Structure</th></tr>
<tr><td colspan="3">-Product finalisation (automated data onboarding, field-based grid reconstruction, UI/API)
-Engineering effort per project (onboarding, calibration, reconstruction, installation, integration)
-Maintenance and development of the reusable toolkit
-Service delivery (remote retraining, monitoring, support)
- Sales and marketing</td><td colspan="2">-Project fee per DSO deployment, scoped by grid size and data situation
-Annual service and maintenance contract (retraining, monitoring, topology updates, support)
-Optional: engineering studies (PV hosting capacity, voltage analysis, reinforcement assessment)</td></tr>
</table>

4.6.2 Market analysis

Market size

The market size for sGRID - COM is assessed based on the number of DSOs that could benefit from improved grid visibility, congestion forecasting, and proactive flexibility procurement. The TAM comprises approximately 2,674 DSOs across Europe [5]. The SAM initially covers around 125 DSOs in Italy (approximately 120 DSOs) and Slovenia (five DSOs). Based on the expected market uptake, the SOM is estimated at six DSOs by Year 5 after the project end.

The market entry strategy focuses first on Italy and Slovenia, building on the Italian pilot and the Slovenian home market. From Year 3 onward, the geographical scope can be extended to Austria, which includes more than 100 small and medium-sized DSOs, and to Croatia. As the solution can be replicated without fundamental redevelopment, expansion to additional DSOs and countries primarily requires data onboarding, grid-specific model calibration, and integration with the relevant operational systems.

Competitors

sGRID–COM competes with large grid-software providers, GE Energy, Hitachi Energy, Schneider Electric, and Siemens, as well as specialised LV digital-twin providers Plexigrid and Odit-e (Table 34). The established providers offer mature, integrated ADMS/DERMS portfolios and strong customer bases, but their solutions are typically costly and geared towards larger utilities. sGRID–COM targets small and medium DSOs and multi-utilities, initially in Italy and Slovenia. Its key differentiator is affordable, measurement-based grid observability: it reconstructs grid conditions without requiring a complete GIS model, provides day-ahead 15-minute forecasts, and can be deployed on-premise with integration into sMART and sENC. Its main limitations are its early-stage maturity, reliance on DSO measurement quality, and limited customer base beyond the ASM Terni pilot (Table 34).

Table 34: Competitor analysis sGRID - COM

	sGRID - COM	GE Energy	Hitachi Energy	Schneider Electric	Siemens	Plexigrid	Odit-e
Target Customers	Small and medium DSOs, multi-utilities	DSOs	DSOs	DSOs	DSOs	DSOs	DSOs
Target markets	Italy, Slovenia, from Year 3 Austria and Croatia	Global	US/Northern Europe/Croatia/Slovenia/Global	Global	Europe	Spain, Sweden, Europe	France, Spain, Europe
Strengths	Reconstructs grids from measurements —no full GIS model needed Forecasts next-day transformer loading/PV generation Runs on-premise, with all data retained by the DSO Affordable for smaller DSOs	Large existing customer base Own GIS tool – key for collecting data, one of the two market leaders for DSOs	Mature power applications suite proven in mid/large installations Capable to meet end-to-end needs of a utility with large suite applications	Integrated ADMS and DERMS product suite Proven at all market sizes.	Excellent client support. Microgrid module. Good integration	Already integrated in an Iberian LV grid Easy integration with existing DSOs' systems	Near real-time operation Driven by smart meter data Includes short-term predictions
Weaknesses	Lower maturity; Pilot only, no customer base yet Depends on DSO measurement data quality Project business scales with engineering capacity	Limited applications with flexibility. Compliance behind others. Low support outside of UK	Must support resource needs across multiple projects Extreme-weather module not yet fully developed Maintenance is challenging	High resource needs for multiple projects. Cost barrier for small/medium size DSOs	Limited suit of applications with flexibility asset types.	Lack of topology identification which making integration difficult	Available as part of platform with limited integration options
Price structure	~50 k€ + 12 k€/yr per DSO	Not publicly disclosed	Not publicly disclosed	High	High	Not publicly disclosed	Not publicly disclosed
Key advantage	Affordable measurement-based grid observability, tailored to each DSO and linked to LFM tools	Market-leading ADMS and DERMS	Mature end-to-end grid application suite	Integrated EcoStruxure ADMS and DERMS suite	Broad software portfolio/ strong integration	LV-first digital twin of the grid	Smart-meter-based digital twin of the LV grid
Market share	Pilot	High	Medium	High	High	Medium	Low

4.6.3 Financial plan

Table 35 presents the parameter for the financial plan for sGRID - COM. Revenues relate to a project fee of €50,000 for each new DSO, covering data preparation, grid reconstruction, calibration, on-premise installation and system integration. From the year after installation, each DSO pays €12,000 per year for support services, including monitoring, retraining and grid-topology updates. Additional engineering studies, such as PV hosting-capacity or voltage analyses, could provide extra revenue but are not included in the base plan. Costs include an upfront investment of €60,000 to finalise the toolkit, €25,000 for each new DSO deployment, and €5,000 per DSO per year for service delivery starting from the year after the set up. In addition, toolkit maintenance costs €8,000 per year from 2028, while sales and marketing require €10,000 per year. There are no central hosting costs because sGRID – COM runs directly at the DSO, weather-data costs are paid by the DSO or passed through at cost.

Table 35: Assumptions for the financial plan for sGRID - COM

Parameters	Value
Project fee [€/DSO]	50,000
Service contract [€/DSO/year]	12,000
CAPEX – toolkit finalisation [€]	60,000
Project delivery [€/new DSO]	25,000
Service delivery [€/DSO/year]	5,000
Toolkit maintenance [€/year]	8,000
Sales and marketing [€/year]	10,000
Taxes [%]	22%
Discount rate [%]	5%

The business plan requires an initial €70,000 investment in 2027, for toolkit finalisation and marketing. As the customer base grows to six DSOs by 2031, annual revenues rise to €148,000 reaching an IRR of 11% after 5 years (Table 36).

Table 36: Financial plan sGRID - COM

	2026	2027	2028	2029	2030	2031
Estimated costs						
CAPEX – toolkit finalisation [€]		60,000				
Project delivery [€]		0	25,000	25,000	50,000	50,000
Service delivery [€]		0	0	5,000	10,000	20,000
Toolkit maintenance [€]		0	8,000	8,000	8,000	8,000
Sales and marketing [€]		10,000	10,000	10,000	10,000	10,000
Total Costs [€]	**0**	**70,000**	**43,000**	**48,000**	**78,000**	**88,000**
Estimated revenues						
Cumulative DSOs [#]		0	1	2	4	6
Total revenues [€]		**0**	**50,000**	**62,000**	**124,000**	**148,000**
Cash Flow analysis						
Earnings before interest and taxes [€]	0	-70,000	7,000	14,000	46,000	60,000
Taxes [€]	**22%**	0	1,540	3,080	10,120	13,200
Cash flow [€]	0	-70,000	5,460	10,920	35,880	46,800
Discounted cash flow [€]	**5%**	-66,667	4,952	9,433	29,519	36,669
IRR	11%					

4.6.4 Risk assessment

Table 37 presents the risk assessment for sGRID-COM. The main market risk is that DSOs may not see a clear need for the product, especially where congestion is not yet visible. This is addressed by targeting DSOs with rapid PV and EV growth, offering additional planning applications such as PV hosting-capacity and voltage analysis, and keeping the entry price low. Competition from established ADMS providers and limited internal sales capacity are mitigated by positioning the solution as a lightweight add-on with an open API, using ASM Terni as a reference case, and working with system integrators as sales channels. The main technical risk is dependence on DSO data quality and IT systems. This is mitigated through onboarding checklists, data plausibility checks, standard CSV/CIM imports, and a containerised deployment package. The risk that competing forecasting solutions may be more advanced is addressed by differentiating the product through measurement-based grid reconstruction, tailoring to individual grids, and links with sMART and sENC tools. Financial and partnership risks concern the availability of follow-up funding and ASM Terni's continued engagement after STREAM. These are addressed through phased product development, follow-up funding applications, revenues from initial deployments, and efforts to convert ASM Terni's interest into a service agreement. Finally, regulatory and data-protection risks are reduced by ensuring that the tool also provides value without local flexibility markets, monitoring regulatory developments, supporting standards compliance, and keeping sensitive data on-premise at the DSO. Based on the risk grade and the success of the intervention all risks are controlled.

Table 37: Risk assessment sGRID - COM

[1low – 10high]	Degree of importance of the risk related to the final achievement of KER	Probability of risk happening	Risk Grade	Scope and type of potential intervention	Feasibility/Success of Intervention
Partnership Risk Factors					
Disagreement on further investments: pilot DSO does not continue after STREAM	6	3	**18**	Convert ASM Terni's interest into a service agreement; individual exploitation by COM	7
Technological Risk Factors					
Dependency on DSO data quality (MBT wiring, tap-changer data, GIS export) and DSO IT environment	7	5	**35**	Onboarding checklist, plausibility checks, CSV/CIM import; containerised deployment package	7
Better technology/methodology exists (load forecasting is well established)	6	5	**30**	Differentiate via measurement-based grid reconstruction, per-grid tailoring, sMART/sENC link	6
Market Risk Factors					
Nobody buys the product. Nobody needs it (no congestion	8	5	**40**	Target DSOs with fast PV/EV growth, add planning use (PV hosting capacity,	6

observed in the pilot grid)				voltage), low entry price	
Nobody buys the product: incumbent ADMS vendors; limited own sales capacity	6	5	**30**	Lightweight add-on with open API, ASM Terni reference, integrators as sales channels	6
IPR/legal Risk Factors					
Know-how risks: method is easy to replicate (open-source ML, published approach)	5	4	**20**	Toolkit know-how kept as trade secret, toolkit IP retained in project contracts	6
Legal problems: protection of smart meter / personal data (GDPR)	6	2	**12**	On-premise: data stays at the DSO, aggregated data; data-processing agreements	8
Financial/management Risk Factors					
No resources (human and/or financial) secured for the next step toward exploitation	7	4	**28**	Phased product development, Horizon Europe follow-ups, revenue from first deployments	7
Environmental/regulatory Risk Factors					
Influence of laws and regulations: DSO flexibility procurement rules (ARERA, AGEN-RS) still evolving	6	5	**30**	Tool also usable without LFM (forecasting, planning), regulatory monitoring, standards compliance	7

4.6.5 G2M strategy

Partnership building, real-world prototyping and pilot testing are already underway. Planned next steps include standards compliance, public funding, training, market outreach, and a follow-up agreement with ASM Terni. Licensing and legal advice are desired, while a spin-off, capital raising and contributions to standards are currently not needed.

COM will lead the commercialisation of the solution as the IPR owner, with its development (data science, software), product management, and business development teams. ASM Terni will act as a reference customer, with an interest in continuing to use the solution after the project. Data-platform and integration partners, such as the owners of sDATA, sMART and sENC, can support interoperability and integration with existing tools. The first commercial deployments will target additional DSOs in Italy and Slovenia, followed by Austria and Croatia from Year 3. System integrators and metering or AMI providers will be explored as sales channels and potential toolkit licensees. Further validation and market visibility may be supported through Horizon Europe follow-up projects and publication on the Horizon Results Platform.

4.7 SENC - ETRA

sENC** helps **EnC managers, electricity retailers and aggregators** who want to **better operate their assets and decrease the costs for the consumers.

4.7.1 Value proposition and business model

EnC managers and aggregators need a way to jointly operate the flexible resources that are available for flexibility services provision within their portfolio of members and/or customers. This one-stop-shop (OSS) operation need depends on many variables, such as individual consumption forecasts, self-generation and self-consumption forecasts, assets availability or cost of opportunity assessments. sENC offers advanced analytics backed with a decision support system for EnC managers to better operate their assets and optimize self-consumption and storage, minimizing the electricity cost for the consumer. Additionally, sENC is a one-stop-shop for aggregators to jointly manage the combined participation in LFMs with their entire pool of assets (Figure 11).

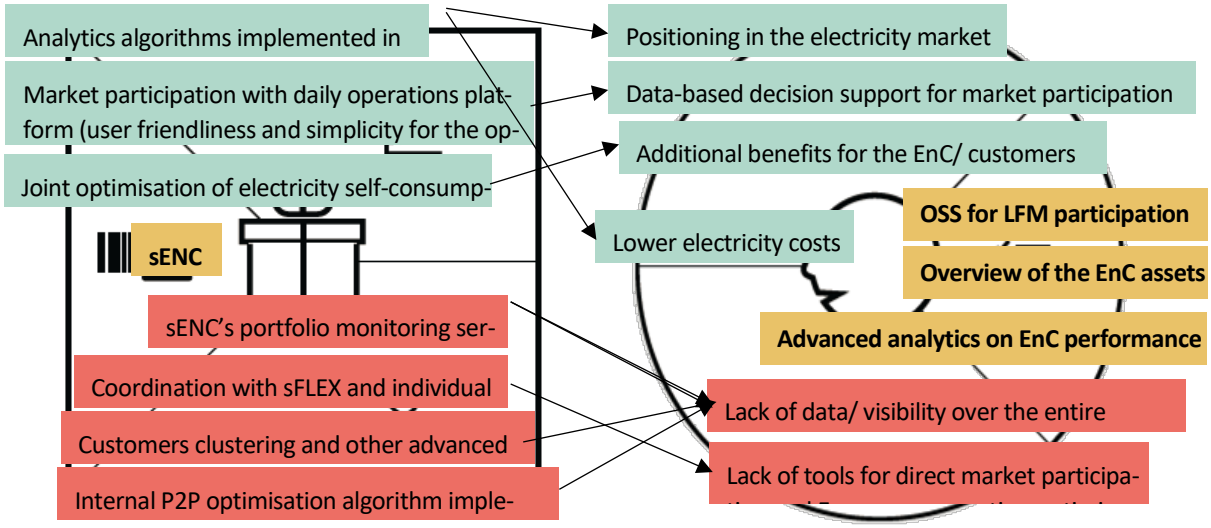


Figure 11: Value proposition canvas sENC – ETRA

Table 38 presents the BMC for sENC – ETRA. The value proposition centres on increasing prosumer revenues through flexibility services and P2P trading, providing decision support for self-consumption and storage optimisation, and clustering distributed resources so that smaller participants can access LFMs, effectively acting as a one-stop-shop that jointly operates a portfolio of members' flexible assets. Key activities are asset registration and qualification via sMART, continuous portfolio monitoring and aggregated bidding, algorithm optimisation that ensures end-user comfort, regulatory monitoring, and end-consumer workshops. Key resources are cloud infrastructure, a planned mobile app, and partnerships with market operators, DSOs, cloud providers and the end-consumers/EnCs themselves. Customers are reached through direct sales, industry events and commercial outreach, and retained via hands-on training, proactive bilateral support and feedback-driven improvement. On the financial side, costs are driven by development, implementation, OPEX and marketing, plus the effort of adapting the tool to different EnC typologies and national regulatory frameworks, while revenues come from a yearly operating licence paid by the EnC or aggregator, priced on a volume basis according to the number of customers and assets managed.

Table 38: BMC sENC - ETRA

<table>
<tr><th>Key partners</th><th>Key activities</th><th>Value proposition</th><th>Customer Relationships</th><th>Customer segments</th></tr>
<tr><td rowspan="3">– Market Operators
– DSOs
– End-consumer and EnCs
– Cloud hosting providers</td><td>– Asset registration and qualification via sMART
– Portfolio monitoring (consumption/production/EV) and sending aggregated bids to market platforms
– Ongoing algorithm optimisation without compromising user comfort
– Regulatory monitoring to capture new revenue streams
– End-consumer workshops on energy independence</td><td rowspan="3">– Increase revenues of prosumer through flexibility services and P2P trading
– Decision support for self-consumption and storage optimisation
– Aggregates flexibility for participation in LFMs
through clusters
– One-Stop-Shop: Jointly operates flexible resources for a portfolio of members</td><td>– Direct customer training to maximise use of the tool's services
– Acquisition via project leads, internal networks, and sandboxes
– Loyalty through proactive support, engagement workshops, and feedback-driven improvements</td><td rowspan="3">– EnC Managers
– Flexibility aggregators
– Energy Retailers</td></tr>
<tr><td>Key Resources</td><td>Channels</td></tr>
<tr><td>– Optimisation algorithms & portfolio monitoring tools
– Mobile app infrastructure (future rollout).
– Access to flexibility resources and the LFM
– Cloud hosting and Product/After-Sales Management team
– Connection to (sMART), with automatic bidding in LFM</td><td>– Direct sales, industry events, and trade shows
– Commercial outreach to EnCs, aggregators, and energy retailers
– Bilateral support channels</td></tr>
<tr><th colspan="3">Cost structure</th><th colspan="2">Revenue Structure</th></tr>
<tr><td colspan="3">– Development, Implementation, OPEX, and marketing expenses
– Adaptation of the tool to different EnCs typologies and regional/national regulations
– Cloud hosting and development team overhead</td><td colspan="2">– Yearly Operating Licence: Paid by the EnC/Aggregator
– Volume-Based Pricing: The exact price scales depending on the number of customers/assets managed within the EnC</td></tr>
</table>

4.7.2 Market analysis

Market size

sENC - ETRA is a tool for EnCs, retailers and aggregators to monitor their customers and assets portfolio, provide analytics such as consumption and generation forecasts, optimize the energy consumption and self-consumption share, and participate in LFMs. Therefore, the market analysis shall consider not only the total number of EnCs/retailers/aggregators but also should consider as constraint or barrier the operationalisation of LFMs. Considering this, the number of ENCs in Europe is around 8,000 according to [11], and the number of retailers is 4,085 according to [12], making up to approximately 12,000 customers in Europe. The number of aggregators is more difficult to estimate, as aggregation is an emerging market role and definitions vary across Member States.

From this TAM, it is expected that, since the tool has been developed in the Spanish pilot and in its current state can only be replicated in Spain, the SAM is the 837 EnCs established in Spain [13] and the 400 retailers [12] during the first two years of exploitation.

From these numbers, it is expected that large retailers and EnCs have technological capabilities to develop proprietary tools, a conservative assumption is made that approximately 60% of these organisations represent potential customers for sENC, resulting in a SAM of approximately 740 customers.

During year 1 after the project ends, the development team will work on fine tuning the product for national commercialisation. It is assumed that the necessary interoperability specifications and market interfaces will be sufficiently mature by Year 2 to enable the adaptation of sENC connectors to LFM platforms in other Member States. It is conservatively assumed that LFM deployment will progressively expand to Member States covering approximately half of the potential European market, making a final SAM of 6,000 potential customers.

The SOM is approximately 25 customers in Year 5 (starting from three in Year 2, seven in Year 3, and fourteen in Year 4). These expectations are related to ETRA's collaborations with Spanish EnCs (such as ENERCOOP and Vergy), and with European energy cooperative associations such as Rescoop, opening the market to countries such as the Netherlands, Belgium, Italy and Austria.

Competitors

The competitive landscape includes mature global energy management and flexibility platforms, alongside specialised EnC solutions. SAP benefits from strong enterprise integration and global reach, while ImpactE has growing visibility in the Spanish market (Table 39). Hive Power's FLEXO and GridX-XENON provide advanced flexibility orchestration, smart charging, multi-asset aggregation and optimisation capabilities, although they are less focused on EnC governance and LFMs. Maps-ROSE and KrekenFlex offer services tailored to EnCs, self-consumption and flexibility management, but have limited geographical coverage or functionality. Compared with these competitors, sENC - ETRA is still at an earlier stage of maturity and has limited market deployment. However, its integration of EnC management, LFM participation and P2P trading provides a differentiated position

Table 39: Competitor analysis sENC - ETRA

	sENC - ETRA	Software provider for energy retailers	ImpactE	Hive Power - FLEXO	GridX -XENON	Maps –ROSE Platform	KrekenFlex
Target Customers	EnC Managers Flexibility Aggregators, Energy Retailers	Retailers, utilities and BRPs	EnCs, ESCOs, energy managers and potentially retailers	Aggregators, retailers, utilities, EnCs, VPP operators, asset operators	Retailers, utilities, aggregators and DERs portfolio manager	EnCs, retailers and aggregators	Energy retailers, utilities, aggregators, VPP operators, asset owners, traders
Target markets	Spain	Global	Spain	Global	Global	Italian	UK and Europe
Strengths	Allows participants to be active players in the energy market	Very good current market penetration and positioning	Startup with great potential and penetration in the Spanish market	Specific focus on EnCs, hardware agnostic, aggregation and optimization, smart charging-	Huge set of services: P2P marketplace, EMS cloud, self-consumption optimization	Portfolio of complementary service modules, EnCs management and optimization modules	Real-time monitoring /control, aggregation, forecasting, multi-market optimisation, VPP operation, settlement
Weaknesses	Less mature than other tools, used only at pilot sites, limited customer base.	Lack of experience with the specific operation of LFM and the electricity distribution level	Focused on self-consumption and optimization Not integrated with the DSO system	No support for P2P marketplace creation, can require specific integrations per country	No integration with DSO operation and LFM participation	Limitation to Italian market	High integration complexity and cost; less focused on EnC governance and P2P; value depends on local market
Price structure	SaaS	Enterprise licence/subscription	SaaS/project-based	SaaS licence + integration	SaaS/B2B white-label + integration	SaaS project-based	Custom enterprise SaaS, subscription or usage-based pricing
Key advantage	Integration with LFMs, P2P trading capabilities.	Enterprise integration	Specialized in self-consumption, proximity to Spanish market	Flexibility orchestration and access to multiple markets	Scalable, established partners, control of heterogenous assets	Specific focus on EnCs	Scalable cloud platform combining DER connectivity, real-time control, optimisation and market access
Market share	Low	High in enterprise software; low/medium as direct LFM platform	Medium (growing)	Medium	High in Europe	Medium in Italy	High

4.7.3 Financial plan

Table 40 presents the parameters used for the financial calculations. Revenues relate to the yearly operating licence paid by the EnC/aggregator/retailer. The exact price depends on the number of customers/assets managed within the EnC. It is assumed that out of the 25 expected customers by Year 5, customer distribution by portfolio size would be as follows 60% small customers, 25% medium customers, 10% large customers and 5% very large customers. With this expected customer distribution, it is expected that the average licence fee would be 20,115 €/year. CAPEX refers to personnel costs, equipment costs and other costs. The costs for product development and investment on a national level are the 15% of the total development costs (€25,392). For international adaptations, it is expected that the cost would be 20% of this total cost (€33,857) for creating an international LFM adapter. Moreover, costs associated to the deployment of the tool for each customer (considering factors such as different EnCs, retailers and aggregators typologies, additional forecasting and flexibility calculation models for other DERs, installation, commissioning and training services, etc.) are estimated to be 2,575 € per additional customer (approximately 0.5 PMs). OPEX is split into two different categories: fixed annual OPEX costs (maintenance, cloud hosting, marketing costs), that do not depend on the number of customers, and variable OPEX costs (customer support, implementation costs), which depend on the number of customers. The considered discounted cash flow is 5%.

Table 40: Assumptions for the financial plan for sENC - ETRA

Parameter		Value
Operating Licence [€/year]	Small <200 customers	15,700
	Medium 200 -500 customers	21,600
	Large 500 - 1000	25,500
	Very Large (> 1,000]	33,300
Customer share (small, medium, large, very large) [%]		60%, 25%, 10%, 5%
Personnel costs [€]		133,926
Equipment costs [€]		1,500
Other [€]		33,856
Product development national [€]		25,392
Product development international [€]		33,857
Implementation costs [€/additional customer]		2,576
Maintenance costs [€/year]		4,100
Cloud hosting [€/year]		1,800
Marketing costs [€/year]		2,576
Customer support [€/year]		5,151
Implementation OPEX [€/additional customer]		2,576
Discount rate [%]		5%

The financial projections show a substantial upfront investment of €169,282 during the development phase, followed by increasing implementation, hosting, commercialisation, maintenance, and customer-support costs as the solution is scaled. Revenues from monitoring licence fees are expected to rise from €60,345 in 2029 to €502,875 by 2032, resulting in positive EBIT from 2030 onwards. An IRR of 22%, indicates an economically viable business case (Table 41).

Table 41: Financial plan sENC - ETRA

		2026	2027	2028	2029	2030	2031
Estimated costs							
CAPEX (Personnel, equipment and other costs) [€]		169,282					
Product development costs [€]			25,392	33,856			
Cloud hosting costs [€]			1,800	1,800	1,800	1,800	1,800
Marketing costs [€]			2,576	2,576	2,576	2,576	2,576
Maintenance [€]			4,100	4,100	4,100	4,100	4,100
Customer support [€]			5,151	5,151	5,151	5,151	5,151
Implementation costs (€/additional customer)			2,576	2,576	2,576	2,576	2,576
Total Costs [€]		**169,282**	**33,868**	**65,511**	**54,835**	**98,618**	**165,581**
Estimated revenues							
Licencing fees [€]	20,115	0	0	3	7	14	25
Total revenues [€]		**0**	**0**	**60,345**	**140,805**	**281,610**	**502,875**
Cash Flow analysis							
Earnings before interest and taxes		-169,282	-33,868	-5,166	85,971	182,992	337,294
Taxes	**21%**	0	0	0	18,054	38,428	70,832
Cash flow (€)		-169,282	-33,868	-5,166	67,917	144,564	266,462
Discounted cash flow	**5%**	-169,282	-32,255	-4,686	58,669	118,933	208,780
IRR after 5 years	**22%**						

4.7.4 Risk assessment

Table 42 presents the risk assessment for sENC – ETRA. The highest rated risks are related market and resource risks such as an unsuitable sales force and a lack of secured human or financial resources for the next exploitation step, the product perceived as too expensive, and an inadequate business plan. To counteract these risks, mitigation measures like the early and continuous involvement of the financial and sales departments and tailored, more affordable solutions are envisioned. Risks linked to the loss of a business partner, through market exit or bankruptcy, score low, as their probability is considered low and ETRA could take over the partner's role. Regulatory uncertainty falls in the middle range and are tackled by adaptations of the connectors to different LFM platforms. The feasibility of the interventions is consistently rated high indicating that the identified risks are considered manageable within the project's exploitation strategy and are therefore under control.

Table 42: Risk assessment sENC - ETRA

[1low – 10high]	**Degree of importance of the risk related to the final achievement of KER**	**Probability of risk happening**	**Risk Grade**	**Scope and type of potential intervention**	**Feasibility/Success of Intervention**
Partnership risks					
Industrialization at risk: a business partner leaves the market.	5	2	10	ETRA takes the role of the business partner	9
Industrialization at risk: a partner declares bankruptcy.	5	2	10	ETRA would take the role of the partner	9
Technological risks					
Result aiming at replacing existing and well entrenched technologies	8	5	40	Analyse client needs and offer a more functional, more affordable tailored solution.	8
Market risks					
Nobody buys the product. Too expensive.	9	6	54	Analyse client needs and offer a more functional, more affordable tailored solution.	8
Nobody buys the product. Standards to make it compulsory don't yet exist.	5	5	25	The solution will be tailored to the customer needs.	6
Nobody buys the product. Unsuitable sales force.	7	8	56	The sales force will be involved from the start to ensure sales	7
Management risk					
Weak exploitation: Inadequate business plan	8	6	48	Financial and sales departments involved from start to provide an adequate business plan.	7
No resources (human and/or financial) secured to make the next step toward exploitation	8	7	56	Financial and sales departments involved from the beginning to provide an adequate exploitation plan.	7
Regulation risks					
Influence of laws and regulations.	6	7	42	Lack of common regulatory framework across Europe for LFMs: ETRA will adapt the connectors to different market platforms.	9

4.7.5 G2M strategy

Several key activities such as prototyping in a real-world environment, piloting, demonstration and testing, compliance with existing standards, and raising funding from public sources are already underway. Legal advice is planned to be sought. Training measures, the identification of relevant events for pitching the product to potential investors and licencing the innovation to a 3rd party, are not yet planned but desired for the coming period. ETRA will commercialise the product through its product development and commercialisation departments. ETRA will individually exploit the tool and will use the EU Innovation Platform as an additional channel to support market uptake and reach potential customers.

The G2M strategy will be split into two stages. During year 1 after the project ends, the development team will work on fine tuning the product for national commercialisation. Afterwards, the target is to expand to other Member States after year 2, working within those first years in adapting the connectors to other international LFM platforms. The product is therefore already market ready with only minor fine tuning needed.

4.8 SENC – COM

4.8.1 Value proposition and business model

The sENC - COM is targeted at EnCs. From a technology perspective, the aims are to aggregate and enable interoperable operation of all community-level assets, while from a users' perspective, the objectives are to (i) empower community managers with tools allowing flexible energy management on intra- and inter-community level and (ii) engage community members via a market-based mechanism. Value proposition spins around providing EnCs and operators with an advanced flexibility management platform. That means pre-aggregating and abstracting the assets and data on the one side and integrating with markets and VPPs via open APIs on the other side. The overall management plan should support all community-level administration as well as integration with the DSO platform for receiving flexibility requests, offering (bidding) disaggregates, receiving control setpoints, and verifying service transactions.

In essence, sENC - COM aims at empowering communities to go beyond the use cases of collective generation and self-consumption, by providing tools and integration interfaces for (i) participation in local energy markets, (ii) service provisioning via an aggregator VPP, and (iii) collective demand side management, which is reflected also in value proposition canvas in Figure 12.

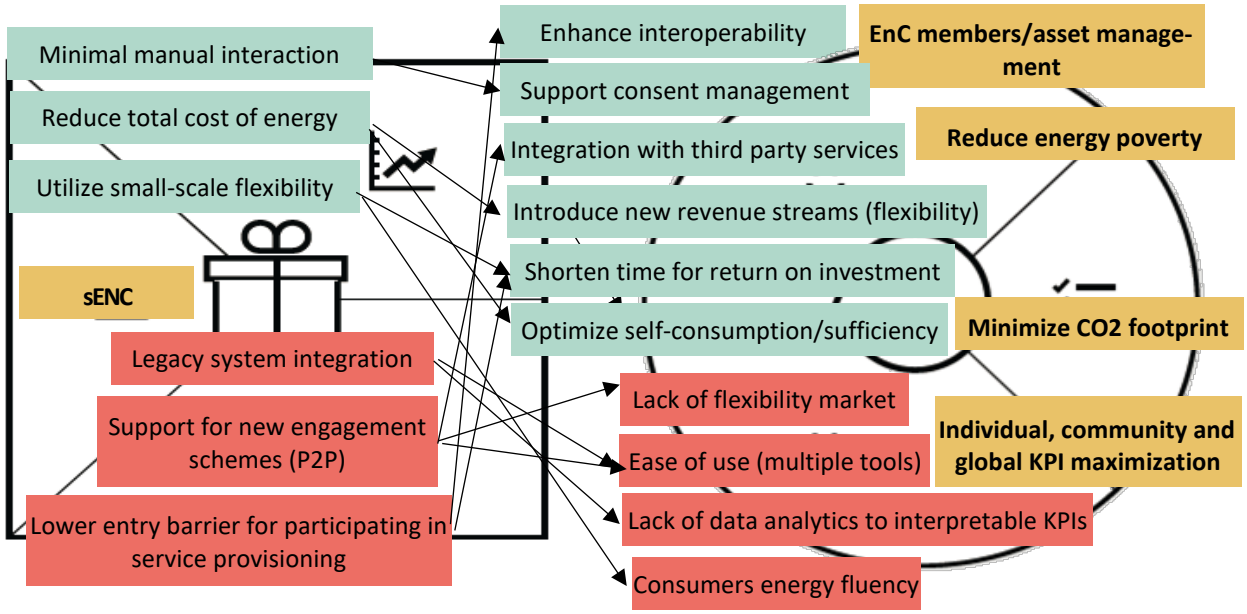


Figure 12: Value proposition canvas sENC - COM

Table 43 presents the BMC for sENC – COM, which is built on a cloud platform that helps EnCs manage and optimise flexible assets. It combines data from sGRID, sFLEX, ENTSO-E and sMART to monitor assets and energy flows, assess available flexibility, and create day-ahead schedules in 15-minute intervals. The platform can optimise for lower costs, higher PV self-consumption or reduced grid congestion. Operators remain in control, as they can confirm, adapt or reject the proposed schedules. The main customers are EnCs, aggregators, electricity retailers and water or municipal utilities with pumping stations. Key partners include DSOs, data and technical tool providers, notification-service providers and system integrators. Revenues stem from set-up and integration fees with annual software licences or SaaS subscriptions. Additional revenues can come from premium modules, such as digital twins, custom optimisation objectives and API integrations, as well as optional managed services. Costs include product finalisation, customer-specific integration, cloud hosting, cybersecurity, API and notification services, customer support, training, sales and marketing.

Table 43: BMC sENC-COM

<table>
<tr><th>Key partners</th><th>Key activities</th><th>Value proposition</th><th>Customer Relationships</th><th>Customer segments</th></tr>
<tr><td rowspan="2">-DSOs issuing flexibility requests via sMART
-Input tools and data providers: sGRID (grid/PV forecasts), sFLEX (flexibility, pump digital twin), ENTSO-E prices
-SMS / app notification providers and system integrators</td><td>-Monitors assets, energy flows and KPIs
-Integrates data from sGRID, sFLEX, ENTSO-E and sMART
-Optimises day-ahead operations and schedules
-Supports notifications, incentives and flexibility bidding</td><td rowspan="2">-One cloud platform to manage and optimise a EnC diverse flexible assets
-Converts forecasts and flexibility estimates into feasible schedules and behavioural signals
-Supports different objectives (cost, self-consumption,</td><td>-Co-design of customer objectives and asset constraints
-Asset, data-stream and notification onboarding
-Ongoing support and performance reviews
-Continuous licence-and-service relationship</td><td rowspan="2">-EnC managers
-Aggregators coordinating distributed flexibility portfolios
-Electricity retailers offering energy-management services
-Water utilities and municipal multi-utilities with pumping stations</td></tr>
<tr><td>Key Resources</td><td>Channels</td></tr>
</table>

	- Optimisation engine and control logic -EnC monitoring, reporting and member notifications -Open APIs and asset digital-twin integration -Cloud hosting and cybersecurity -EnC management and cross-sector coordination expertise	congestion mitigation) -Cross-sector flexibility: water reservoir used as storage without affecting water supply -Operator stays in control	Direct B2B sales to EnC managers, aggregators, retailers and multi-utilities Partnerships with DSOs and water operators API integration with EMS, VPP and community platforms Reference pilots and demonstration projects	

Cost structure	Revenue Structure
-Product finalisation and multi-site deployment -Integration and customisation per community or asset portfolio -Hosting, cybersecurity, APIs and notifications -Support, training, sales and marketing	-Set-up and integration fee per site -Annual platform licence or SaaS subscription -Premium modules and API integrations -Optional managed operational support

4.8.2 Market analysis

Market size

The market size for the solution is assessed by the number of energy communities (EnCs) and multi-utility sites that could benefit from optimising flexible assets and energy flows. The TAM comprises more than 8,000 EnCs in Europe [11], including around 3,630 in Italy. The initial SAM focuses on Italy and Slovenia and is estimated at around 370 EnCs, representing approximately 10% of the market considered. Based on the planned market uptake, the SOM is estimated at 15 customer sites by Year 5. Market entry will focus first on Italy and Slovenia, using the ASM Terni pilot as a reference case. From Year 3, the solution can expand to other EU countries with established EnC frameworks, such as Croatia and Austria. The water-utility application can also be transferred to other multi-utilities, extending the potential market beyond energy communities.

Competitors

Table 44 positions sENC-COM against established software providers, EnC platforms and flexibility aggregators. sENC-COM targets EnC managers, aggregators, retailers and multi-utilities, starting in Italy and Slovenia and expanding to Austria and Croatia from Year 3. Its main differentiator is the optimisation of diverse community assets across sectors, including water pumps, for cost savings, PV self-consumption and congestion management. Unlike many competitors, it links EnC optimisation with local flexibility markets and has demonstrated water–energy flexibility through an operator-approved activation at ASM Terni. The main limitation is its early stage: sENC-COM remains a pilot solution with no established customer base. By contrast, providers such as SAP-oriented retail software suppliers and Hive Power/FLEXO have stronger market positions in their core segments. ImpactE and Maps/ROSE focus more on EnCs, self-consumption or peer-to-peer markets, while Flexcity has experience aggregating industrial and water-utility flexibility, mainly for balancing markets. This leaves room for sENC-COM to differentiate through local, cross-sector flexibility optimisation for EnCs and multi-utilities.

Table 44: Competitors sENC - COM

	sENC - COM	Software provider for energy retailers (e.g. SAP)	ImpactE	Hive Power - FLEXO	GridX -XENON	Maps –ROSE Platform	Flexcity
Target Customers	EnC managers, aggregators, retailers, multi-utilities	Energy retailers, utilities	EnCs, self-consumption collectives	EnC managers, utilities, aggregators	Utilities, energy service providers	EnC (CER) managers	Industrial sites incl. water utilities
Target markets	Italy (pilot: ASM Terni), Slovenia; from Year 3 Austria and Croatia	Global	Spain	Europe	Germany, Europe	Italy	Western Europe
Strengths	Cloud platform for managing and optimising (cost, self-consumption, congestion) flexible assets Proven water–energy flexibility	Very good current market penetration and positioning	Startup with great potential and penetration in the Spanish market	Specific focus on energy communities	Huge set of services Possibility to form a P2P marketplace	Portfolio of complementary service modules	Experience aggregating industrial and water-utility flexibility for balancing markets
Weaknesses	Pilot only, no customer base yet Savings based on ex-post optimisation of pilot data Schedules need operator confirmation (automated dispatch planned)	Lack of experience with LFM and the electricity distribution level	Focused on self-consumption and optimization Not integrated with the DSO system	No support for P2P marketplace creation	Generic EMS platform; limited focus on DSO-level LFM and cross-sector assets	Limitation to Italian market	Focus on TSO/balancing markets, not on EnC or LV level
Price structure	Set-up fee + annual SaaS (~8 k€ + 8 k€/yr per site)	High	Not publicly disclosed	Not publicly disclosed	Not publicly disclosed	Not publicly disclosed	Revenue sharing (not disclosed)
Key advantage	Cross-sector optimisation of EnC assets linked to LFM	Strong market penetration with retailers	Strong position in Spanish EnC market	Dedicated EnC flexibility platform	Broad service set, P2P marketplace	Complementary service modules for Italian CER	Large flexibility portfolio incl. water assets
Market share	Pilot	High	Low	Low	Medium	Low	Medium

4.8.3 Financial plan

The business model for sENC – COM combines a set-up fee of €8,000 per site with recurring annual revenues of €6,000 for the platform licence and €2,000 for premium modules, such as digital twins, custom optimisation objectives, API integrations and reporting. Optional managed services may provide additional revenue but are not included in the base plan. The main upfront cost is €70,000 for product finalisation, including the option for automated SCADA dispatch. Each new customer site requires €5,000 for integration and customisation. Ongoing costs include €5,000 per year for hosting, cybersecurity, APIs and SMS services, plus €600 per site per year, €1,800 per site per year for customer support and updates, and €10,000 per year for sales and marketing (Table 45).

Table 45: Assumptions for the financial plan sENC - COM

Parameters	Value
Set-up fee [€/site]	8,000
SaaS subscription [€/site/year]	6,000
Premium model (digital twins, custom objectives, API integrations reporting) [€/site/year]	2,000
Product finalisation [€]	70,000
Integration and customisation [€/new site]	5,000
Hosting, cybersecurity, API and SMS [€/year]	5,000
Hosting, cybersecurity, API and SMS [€/site/year]	600
Customer support [€/site/year]	1,800
Sales and marketing [€/year]	10,000
Taxes [%]	22%
Discount rate [%]	5%

The business case requires an initial investment of €85,000 in 2027, mainly for product finalisation, hosting and sales. As the customer base grows from two sites in 2028 to 15 sites by 2031, annual revenues increase from €32,000 to €168,000. The model becomes profitable in 2028, with cash flow rising to €67,860 in 2031. Based on a 5% discount rate, the business case achieves an estimated IRR of 12% (Table 46).

Table 46: Financial plan sENC-COM

	2027	2028	2029	2030	2031
Estimated costs					
Product finalisation [€]	70,000				
Integration and customisation [€/new site]	0	10,000	15,000	20,000	30,000
Hosting, cybersecurity, API and SMS [€/year]	5,000	6,200	8,000	10,400	14,000
Customer support [€/site/year]	0	3,600	9,000	16,200	27,000
Sales and marketing [€]	10,000	10,000	10,000	10,000	10,000
Total Costs [€]	**85,000**	**29,800**	**42,000**	**56,600**	**81,000**
Estimated revenues					
Cumulative EnCs [#]	0	2	5	9	15
Total revenues [€]	**0**	**32,000**	**64,000**	**104,000**	**168,000**

Cash Flow analysis						
Earnings before interest and taxes [€]		-85,000	2,200	22,000	47,400	87,000
Taxes [€]	22%	0	484	4,840	10,428	19,140
Cash flow [€]		-85,000	1,716	17,160	36,972	67,860
Discounted cash flow [€]	5%	-80,952	1,556	14,823	30,417	53,170
IRR	12%					

4.8.4 Risk assessment

Table 47 presents the risk assessment for sENC - COM. The main risks for exploiting the solution relate to market demand, technical dependencies and actual flexibility performance. The highest risk is limited willingness to pay if energy communities cannot yet earn sufficient flexibility revenues. This is addressed by demonstrating value beyond flexibility markets, including lower pumping costs and higher PV self-consumption. Technical and performance risks arise from dependence on external data inputs, the need for operator confirmation, and uncertain voluntary residential participation. These are mitigated through standard APIs, fallback control logic, optional SCADA dispatch, and a focus on controllable assets such as pumps, batteries and EVs. Other risks, including continued engagement by ASM Terni, competition from established platforms, funding constraints, GDPR compliance and changing regulation, are addressed through a follow-up agreement, clear water–energy differentiation, phased product development, secure data handling and continuous regulatory monitoring. Based on the risk grade and the success of the intervention all risks are controlled.

Table 47: Risk assessment sENC-COM

Key Exploitable Results [1 low – 10 high]	**Degree of importance of the risk related to the final achievement of KER**	**Probability of risk happening**	**Risk Grade**	**Scope and type of potential intervention**	**Feasibility/Success of Intervention**
Partnership Risk Factors					
Pilot water operator does not continue after STREAM; overlap with sENC – ETRA	6	3	18	Convert ASM Terni interest into agreement; differentiate from ETRA (water–energy vs. P2P)	7
Technological Risk Factors					
Dependency on sGRID, sFLEX, ENTSO-E inputs; schedules need operator confirmation	7	5	35	Standard APIs; default pump logic fallback; operator-in-the-loop; optional SCADA dispatch	7
Market Risk Factors					
Performance lower than market needs: residential response voluntary, pump	7	5	35	Prioritise controllable, verifiable assets (pumps, batteries,	6

flexibility limited by reservoir				EVs); conservative bids	
Nobody buys the product. Nobody needs it (no flexibility revenue for EnCs yet)	8	5	40	Value without LFM: ex-post pilot estimates −24 % pumping cost, +36 % PV use	6
Nobody buys the product: established EMS / EnC platforms; limited own sales capacity	6	5	30	Niche in water–energy flexibility; API integration; retailers/aggregators as channels	6
IPR/legal Risk Factors					
Know-how risks: optimisation approach easy to replicate	5	4	20	Keep know-how as trade secret; asset templates and domain expertise; fast iteration	6
Legal problems: personal data of EnC members (smart meters, SMS)	6	3	18	Consent management, aggregated data, DPAs (GDPR); secured hosting	8
Financial/management Risk Factors					
No resources (human and/or financial) secured for the next step toward exploitation	7	4	28	Phased product development, Horizon Europe follow-ups; revenue from first sites	7
Environmental/regulatory Risk Factors					
Influence of laws and regulations: EnC (CER) and flexibility rules still evolving; water-supply obligations	6	5	30	Modes usable without LFM; reservoir limits as hard constraints; regulatory monitoring	7

4.8.5 G2M strategy

Partnership building, real-world prototyping and pilot testing are already underway. Planned activities include standards compliance, public funding, training, market outreach and a follow-up agreement with ASM Terni. Licensing and legal advice are desired, while a spin-off, capital raising and contributions to standards are not currently needed.

COM will lead commercialisation as the IPR owner, using its expertise in optimisation, software development, cloud operations, product management, business development and sales. ASM Terni will serve as a reference customer, based on its interest in continued use. The owners of sFLEX, sGRID and sMART will support interoperability, while SMS, app and system integration partners can support deployment and user communication. Partnerships with water utilities and multi utilities will support further cross sector pilots. Horizon Europe follow up projects and publication on the Horizon Results Platform can provide further validation and market visibility.

4.9 SPLAN - UL

*sPLAN helps **DSOs** who want to enhance their **decision-making processes by considering flexibility** thereby reducing the **burden of including a large number of new devices and deferring grid investment.***

4.9.1 Value proposition and business model

The value proposition for sPLAN is that in addition to current grid planning tools, flexibility is considered thus enabling investment deferral. The tool is moreover able to perform impact assessment of newly connected devices such as PVs, EVs, heat pumps, battery energy storage system (BESS). Currently, the alternative solution is to use conventional upgrades such as new cables and transformers, which could be the more costly option (Figure 13).

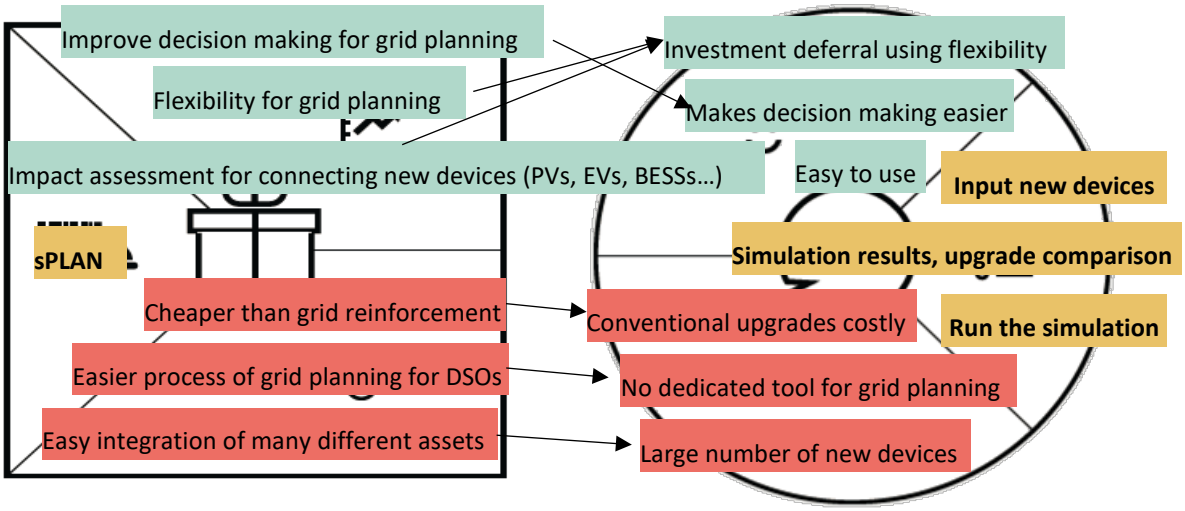


Figure 13: Value proposition canvas sPLAN

DSOs are the customers, served through a tailored and consultative implementation and reached via public tenders and regulatory processes as well as direct sales. The core activities are running simulations, comparing physical network upgrade scenarios against flexibility-based alternatives, and integrating new device and asset data into the models. Key resources comprise the simulation engine, grid topology data, and specialised personnel ensuring correct modelling and scenario setup. Key partners are technology integrators. Costs consist of CAPEX for designing and finalising a production-ready tool and OPEX for software maintenance, upkeep and hosting, while revenues are generated through recurring SaaS licence fees and a one-time set-up fee covering initial grid configuration and data ingestion (Table 48).

Table 48: BMC sPLAN

<table>
<tr><th>Key partners</th><th>Key activities</th><th>Value proposition</th><th>Customer Relationships</th><th>Customer segments</th></tr>
<tr><td rowspan="3">– Technology Integrators</td><td>– Running simulations
– Comparing network upgrade scenarios (physical vs. flexibility)
– Integrating new device/asset data into the models</td><td rowspan="3">– Incorporates flexibility into grid planning
– Simulates the impact of new devices (PV, EV, BESS) before connection
– Cost reduction for grid upgrades by identifying non-wire alternatives</td><td>– Highly tailored and consultative implementation with the DSO</td><td rowspan="3">– DSOs</td></tr>
<tr><td>Key Resources</td><td>Channels</td></tr>
<tr><td>– Simulation engine
– Grid topology data
– Specialized personnel to work with the DSO to ensure correct modelling and scenario setup</td><td>– Public tenders + regulatory approach
– Direct sales approach to the DSOs</td></tr>
<tr><td colspan="3">Cost structure</td><td colspan="2">Revenue Structure</td></tr>
<tr><td colspan="3">– CAPEX: Costs for the design and finalizing the tool to be production-ready
– OPEX: Ongoing upkeep of the tool, software maintenance, and hosting costs</td><td colspan="2">– SaaS: Recurring software licence fees
– Set-up Fee: One-time initial grid setup and data ingestion fee</td></tr>
</table>

4.9.2 Market analysis

Market size

The market size for sPLAN – UL is evaluated based on the number of DSOs that could use the tool. The TAM is the estimated 2,674 DSOs across Europe [5]. Given the tool's current geographical focus and regulatory framework, the SAM is reduced to the five DSOs operating in Slovenia. Considering the competitive environment and the level of interest expressed by DSOs, the SOM for the first year is estimated at three DSOs.

The G2M strategy foresees an initial rollout in Slovenia, building on the existing regulatory framework and established stakeholder relationships. Once the solution is validated and adopted by Slovenian DSOs, the platform will be extended to neighbouring countries, prioritising those with similar regulatory conditions and market structures to facilitate replication.

Competitors

sPLAN focuses on the Slovenian market and offers planning based on real grid data and flexibility options, enabling the assessment of the network capacity. It is currently limited to upgrades without the possibility to add new lines at different locations and currently has a low market share. GREDDOS, also focused on Slovenian DSOs, is relatively easy to use and already widely implemented, but it relies on older software, does not consider flexibility, and performs calculations that are not based on real data.

IQGEO Adaptive Grid, targets DSOs globally and provides an integrative, highly automated solution that combines outage history, analytics, meter, network and population data for tasks such as EV siting and long-term power-system planning, but its comprehensive functionality comes at a high price. GREDOS entries are retained from internal project knowledge and were not independently verified online (Table 49).

Table 49: Competitor analysis sPLAN - UL

	sPLAN	GREDDOS	IQGEO Adaptive Grid [14]
Target customers	DSOs	DSOs	DSO
Target markets	Slovenia	Slovenia	Globally
Strengths	Takes flexibility into account, easy network-capacity assessment, uses real data	Relatively easy to use	Automated network/capacity planning, integrates outage history and analytics, integrates meter, network and population data for EV siting, power-system analysis for long-term planning
Weaknesses	No option yet to add new lines (different location) - upgrades only	Old software, ignores flexibility, calculation not based on real data	Expensive
Price structure	SaaS plus set-up fee	Not publicly disclosed	High
Key advantage	Flexibility-aware planning using real grid data	Already implemented, DSOs are used to it	Integrative solution
Market share	Low	High	Low/medium

4.9.3 Financial plan

Table 50 presents the parameters for the calculation of the financial plan over the next five years. An initial set-up fee of 15,000 €/DSO covers grid configuration and data ingestion, after which a SaaS licence of 60,000 €/DSO/year is applied. CAPEX is estimated at €350,000, complemented by OPEX of 250,000 €/year for software upkeep, maintenance and hosting. Taxes are included with 19% and a discount rate of 5% is used.

Table 50: Assumption for the financial plan for sPLAN - UL

Parameters	Value
Set-up fee (initial grid set up and data ingestion) [€/DSO]	15,000
SaaS [€/DSO/year]	60,000
CAPEX [€]	350,000
OPEX (upkeep of software, software maintenance and hosting) [€/year]	250,000
Taxes [%]	19%
Discount rate [%]	5%
Time horizon [years]	5

Table 51 presents the financial plan for the 2027–2031 period. Revenues gradually increase as the number of DSOs using sPLAN rise of up to 7 in 2031, with total annual revenues reaching €450,000 in 2031. Despite this increase, earnings remain negative until 2030, which is also highlighted with a negative IRR of -25% after five years, indicating that the investment is not financially attractive under the given assumptions. The investment would break even in year 7, with revenue from 11 DSOs. This can be explained by the fact that sPLAN – UL is a highly specialised tool only applicable to a niche customer segment, which limits revenue.

Table 51: Financial plan for sPLAN – UL

		2027	2028	2029	2030	2031
Estimated costs						
CAPEX [€]		350,000				
OPEX [€]		0	250,000	250,000	250,000	250,000
Total Costs [€]		350,000	250,000	250,000	250,000	250,000
Estimated revenues						
Number of DSOs [#]		0	1	3	5	7
Total revenues [€]		0	75,000	210,000	330,000	450,000
Cash Flow analysis						
Earnings before interest and taxes [€]		-350,000	-175,000	-40,000	80,000	200,000
Taxes [€]	19%	0	0	0	15,200	38,000
Cash flow (€)		-350,000	-175,000	-40,000	64,800	162,000
Discounted cash flow [€]	5%	-333,333	-158,730	-34,554	53,311	126,931
IRR after 5 years	-25%					

4.9.4 Risk assessment

Table 52 presents the risk assessment for sPLAN. A partnership risk is the disagreements on further investments and potential partner exit, which will be mitigated through long-term co-development agreements and clear exploitation roles. Technological risk is addressed through DSO co-design, while regulatory risks are tackled via regulatory-framework analysis, policy recommendations and standards compliance. Market and financial/management risks are the possibility that end-users may reject the product or that no resources are secured for further exploitation. Mitigation strategies include DSO co-design, continuous alignment with regulation, and individual exploitation through consultancy revenues and follow-up funding. Based on the risk grade and the estimated success of the proposed intervention all risks are controlled.

Table 52: Risk assessment sPLAN - UL

Key Exploitable Results [1 low-10 high]	**Degree of importance of the risk related to the final achievement of KER**	**Probability of risk happening**	**Risk Grade**	**Scope and type of potential intervention**	**Feasibility/ Success of Intervention**
Partnership Risk Factors					
Disagreement on further investments: some partners may leave.	6	3	18	Long-term co-development agreement with the pilot DSO and clear exploitation roles	8
Technological Risk Factors					
Result aiming at replacing existing and well entrenched technologies	6	5	30	Differentiate through DSO co-design	6
Market Risk Factors					

Nobody buys the product. Rejected by end-users.	7	5	35	DSO co-design and upkeep with latest changes in regulation and legislation	6
Financial/management Risk Factors					
No resources (human and/or financial) secured to make the next step toward exploitation	7	4	28	Individual exploitation through consultancy revenue and follow-up funding	7
Environmental/regulatory Risk Factors					
Influence of laws and regulations.	6	5	30	Regulatory-framework analysis and recommendations for policy makers, plus standards compliance	6

4.9.5 G2M strategy

This subchapter summarises the current and planned exploitation activities for sPLAN - UL. Activities already done or ongoing include engaging partners, real-world prototyping, piloting/testing, complying with existing standards, contributing to standards, training, identifying pitching events, and seeking legal advice. Raising public funding is planned, while raising capital is not yet planned but desired. By contrast, launching a start-up/spin-off and licensing the innovation to a third party are considered not needed, and additional support actions such as BRIDGE knowledge sharing or EU Innovation Platform are noted as potentially relevant. The tool will be market-ready within one year, pending on additional funding. If additional funding is secured, the tool can be developed further towards a market-ready product.

sPLAN - UL will be individually exploited by UL. UL will use both the academic and commercial route. Its main exploitation channels are high-skilled consultancy on flexibility markets and value analysis, knowledge exchange between industry and academia, and the improvement of existing curricula with the methods and results developed in the project. These activities are supported by the university's technology-transfer function, as UL does not maintain dedicated product development or marketing units. To broaden the impact of these results, cooperation with companies is actively to be sought. Therefore, the results will also be published on the EU Innovation Platform. Moreover, the BRIDGE initiative will be used for networking and regulators, and policy makers are engaged to secure regulatory support for the exploitation of the results.

4.10 SFLEX - KOLEKTOR

sFLEX** enables **companies with flexible assets** who want **to receive additional revenue by offering flexibility on different ancillary markets** and thus simultaneously **helps stabilising the power network.

4.10.1 Value proposition and business model

sFLEX – KOL aims to aggregate several medium- and large-sized flexibility assets of different kinds (e.g. cold storage rooms, mill, ice bank). This enables prosumers, who possess any kind of flexibility asset to participate in the flexibility markets (DSO or TSO) and thus generate additional monetization stream and enable better optimization of their operation.

The aggregator will use the tool to optimally utilize the flexibility assets as part of the aggregator pool or on their own and thus ensure maximum utilization of each individual asset, which could not be offered to the system operator on its own, providing higher return on investment. sFLEX offers a new innovative approach to the optimal selection of available flexibility, which aims to aggregate the optimum set of assets to generate revenue for their owners and simultaneously helps stabilising the power network. Companies with smaller flexibility devices are not participating in the ancillary services market. This service can however get them new revenue streams, while optimizing their operation (Figure 14).

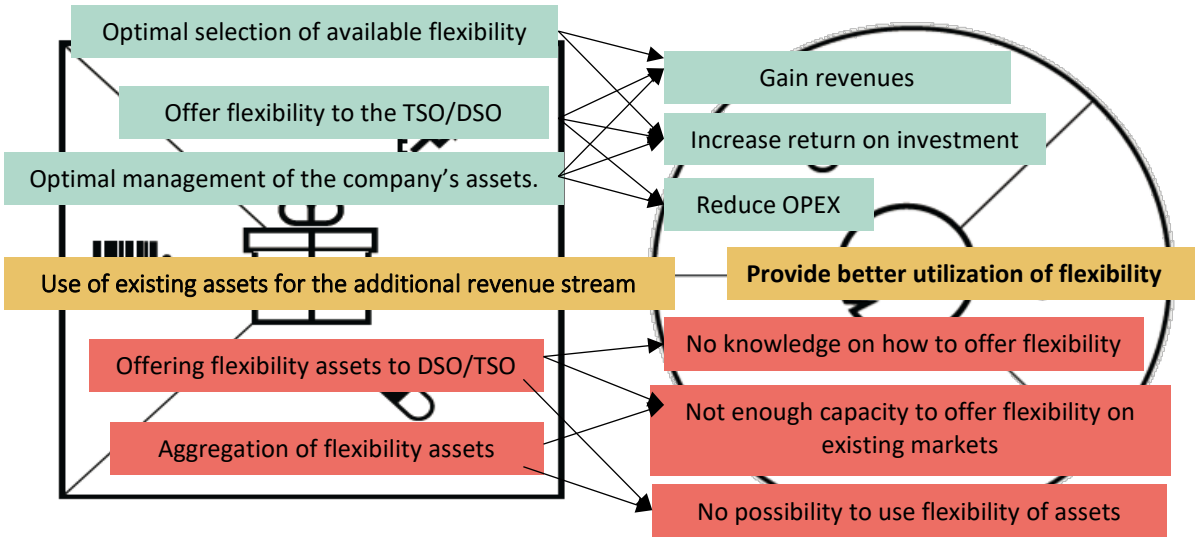


Figure 14: Value proposition canvas sFLEX – KOL

Key partners include organizations that can help communicate the value of flexibility to potential customers. Key resources include the flexibility pool, as well as advanced optimization and forecasting algorithms used for baseline creation and market participation. Internally, the company focuses on recruiting prosumers, identifying and mapping assets, forecasting and bidding into markets, controlling assets, and aggregating them into a unified flexibility pool and recruiting prosumers. Customer relationships are built through direct, data-driven engagement, with ongoing performance reviews and contract renewals tied to customer satisfaction and operational results. Customers are reached through both direct channels (industrial clients and portfolio owners) and indirectly via ancillary services. On the cost side, expenses come from maintaining forecasting and optimization systems, cloud infrastructure, routine testing of assets, and overall asset management operations. Revenue is generated through shared profits with asset owners from ancillary services markets, based on activated capacity and energy. While LFMs are not yet generating revenue, future models are expected to mirror ancillary market structures (Table 53).

Table 53: BMC sFLEX KOL

Key partners	Key activities	Value proposition	Customer Relationships	Customer segments
– Partners capable of disseminating potential value information to consumers	– Recruiting prosumers – Asset identification, mapping, onboarding of asset owners	– Aggregation of small, medium, and large assets – Revenue generation via participation in ancillary markets	– Data-driven, direct engagement with customers – Retention through regular performance reviews	– Medium-to-large industrial prosumers – DSOs and TSOs as flexibility buyers – Energy portfolio owners

<table>
<tr><td></td><td>– Forecasting and bidding
– Asset control</td><td rowspan="3">– Optimization of flexibility to support grid stability
– Improved ROI for asset owners</td><td>– Contract renewals tied to high satisfaction with asset management operation</td><td></td></tr>
<tr><td>Key Resources</td><td>Channels</td></tr>
<tr><td></td><td>– Flexibility pool
– Optimization algorithms
– Forecasting algorithms for baseline creation</td><td>– Direct channels: industrial players and portfolio owners
– Indirect channels: Acquisition through different auxiliary services</td></tr>
<tr><td colspan="2">Cost structure</td><td colspan="3">Revenue Structure</td></tr>
<tr><td colspan="2">– Maintenance of baseline and forecasting algorithms
– Cloud computing infrastructure costs
– Routine activation testing (classified under maintenance) for asset reliability
– Overarching asset management expenses</td><td colspan="3">– Ancillary Services Market: Shared profit per activated MWh (capacity and energy)
– LFMs: Currently no revenue (not yet established). However, future models will follow ancillary market pricing structure</td></tr>
</table>

4.10.2 Market analysis

Market size

By 2030, the market for demand-side flexibility (DSF) is expected to reach 164 GW of upward flexibility and 130 GW of downward flexibility. This corresponds to an annual activation volume of approximately 397 TWh of upward DSF and 340.5 TWh of downward DSF. Compared to a scenario without demand-side flexibility, the activation of DSF is estimated to reduce electricity generation costs by approximately €4.6 billion, representing a 5% cost saving across the power system [3]. These numbers represent the TAM.

The SAM is taking the geographical location of KOL and their established business relationships into account. As no dedicated estimate for Slovenia's demand-side flexibility potential is currently available, total electricity demand is used as a proxy for market sizing. With an annual electricity demand of approximately 14 TWh [15], Slovenia accounts for roughly 0.5% of total EU electricity demand (approximately 2,755 TWh) [16]. Applying this share to the European demand-side flexibility market yields an estimated Slovenian market potential of approximately 1.46 GW of flexible power capacity. This figure represents the SAM within the initial geographic scope of KOLEKTOR SETUP.

Considering the competitive landscape and assuming a targeted market share of approximately 30% within the Slovenian serviceable market, the achievable capacity (SOM) within the next 5 years for sFLEX - KOL is estimated at around 30 MW of flexible power. This represents the realistically capturable portion of the SAM under expected market penetration and competitive conditions.

The initial focus of the business is Slovenia. While there are considerations for potential expansion into additional markets within the next year, no specific country or timeline has been disclosed at this stage. As a result, potential international expansion is not included in the current market assumptions and has been excluded from the TAM/SAM/SOM analysis.

Competitors

sFLEX - KOL differentiates itself through multi-market optimization across electricity markets (including day-ahead, automated Frequency Restoration Reserve (aFRR), and mFRR)) and an innovative approach to selecting available flexibility but is limited to larger industrial prosumers and excludes smaller participants. NGEN is a strong European aggregator with a dominant position in current aFRR markets but is focused on storage-based flexibility. GEN-I and Petrol benefit from strong customer access through their electricity retail businesses, giving them an advantage in scaling low-voltage flexibility solutions, although their current participation in advanced flexibility markets remains limited. Energis.cloud operates primarily as an energy management software platform that integrates data from multiple sources, enabling flexibility coordination but not directly participating in energy market trading. Overall, the competitive landscape is characterized by a mix of specialized flexibility aggregators and large incumbent energy suppliers (Table 54).

Table 54: Competitor analysis sFLEX KOLEKTOR

	sFLEX KOLEKTOR	N.GEN	GEN-i	Petrol	Energis.cloud
Target Customers	Medium-to-large industrial prosumers Energy portfolio owners	Commercial and industrial partners	Commercial and industrial partners	Commercial and industrial partners	Commercial and industrial partners
Target markets	Slovenia	Europe	Global	Slovenia	Europe
Strengths	Innovative approach to the optimal selection of available flexibility. Participation in several markets (e.g., aFRR, mFRR, low-voltage flexibility market).	Very strong player on the aFRR market (a lot of battery energy storage system capacity).	Has direct contact with a lot of customers as an electricity supplier. Could be important for flexibility markets on the LV level.	Has direct contact with a lot of customers as an electricity supplier. Could be important for flexibility markets on the LV level. Comprehensive solution for customers	Connects data from any source, easing the integration of the tool
Weaknesses	Excludes small and medium consumers without flexibility assets	Aggregating only battery energy storage	Limited number of customers	Limited number of customers Not pushing for aFRR markets	Not focused on energy markets participation
Price structure	Very similar for all				
Key advantage	Offer a good multi-market optimization (combination of DA, aFRR, mFRR…)	Very strong player on the aFRR market	Great penetration in the Slovenian energy market	Largest electricity company in Slovenia with strong presence in south-east Europe	Easy integration
Market share	30% aFRR, 25% mFRR	High market share (50%-60% aFRR) in SLO	10% of aFRR	N/A	N/A

4.10.3 Financial plan

Table 55 summarizes the assumptions used for the financial plan. Costs are based on implementation effort for new assets and operational costs based on IT technician rates. Moreover, the costs for the development of the flexibility platform, more precisely the sFLEX module as part of STREAM, are regarded. On the revenue side, it assumes €20,000/MW/year from both capacity and energy markets, with 50% of revenues paid to asset owners. The share between KOLEKTOR and the asset owner is an assumption as the actual split is confidential. Taxes are included in the calculation with 19%.

Table 55: Assumptions for the financial plan for sFLEX-KOLEKTOR

Parameter	Value
IT technician costs [€/day]	400
Implementation costs (sFLEX module as part of STREAM) [person days]	15
OPEX – maintaining baseline and forecasting algorithms [person days]	6
Revenues from capacity market [€/MW/year]	20,000
Revenues from energy market [€/MW/year]	20,000
Flexibility platform costs (sFLEX module as part of STREAM) [€]	500,000
% of revenues to asset owner	50%

Table 56 presents the financial plan over the next 5 years**.** It includes a substantial upfront investment driven mainly by the sFLEX module implementation and initial setup costs. Cumulative established capacity grows from 5 MW to 30 MW, leading to steadily increasing annual revenues from €100,000 to €600,000, reflecting the share of KOL after distributing 50% of the overall market revenue to the asset owners. As a result, earnings before interest and taxes turn positive from 2028. Discounted at 5%, the cash flows yield an IRR of 31% over five years, indicating an attractive investment under the assumed conditions. Financial viability is highly dependent on the assumed share of revenues for the asset owner.

Table 56: Financial plan sFLEX KOLEKTOR

		2027	2028	2029	2030	2031
Estimated costs						
Implementation costs [€/new MW]		30,000	30,000	30,000	30,000	60,000
OPEX [€]		12,000	24,000	36,000	48,000	72,000
Flexibility platform [€]		500,000				
Total Costs [€]		**542,000**	**54,000**	**66,000**	**78,000**	**132,000**
Estimated revenues						
Cumulative established [MW/year]		5	10	15	20	30
Total revenues [€]		**100,000**	**200,000**	**300,000**	**400,000**	**600,000**
Cash Flow analysis						
Earnings before interest and taxes [€]		-442,000	146,000	234,000	322,000	468,000
Taxes [€]	**19%**	0	27,740	44,460	61,180	88,920
Cash flow (€)		-442,000	118,260	189,540	260,820	379,080
Discounted cash flow [€]	**5%**	-420,952	107,265	163,732	214,577	297,019
IRR after 5 years	**31%**					

4.10.4 Risk assessment

Table 57 presents the risk assessment for sFLEX – KOL. Partnership risk is considered low, with a small probability that frequent asset activation could void warranties. This is mitigated by limiting activations to rare occasions during the pilot phase.

By contrast, market risks are rated as very significant: there is a high likelihood that no market will be established or that the DSO may simply reinforce lines and thereby remove the need for a flexibility market. Proposed interventions focus on engaging with policy makers and key stakeholders such as DSOs, regulatory agencies and the TSO, but these are assessed as having only moderate feasibility, underscoring the importance of continuous dialogue and advocacy to reduce these risks. Therefore, these risks are flagged with a warning.

Table 57: Risk assessment sFLEX - KOLEKTOR

Key Exploitable Results	Degree of importance of the risk related to the final achievement of KER	Probability of risk happening	Risk Grade	Scope and type of potential intervention	Feasibility/Success of Intervention
Partnership Risk Factors					
Warranty is lost due to often switching assets on/off	1	5	5	The activations of assets are within demo period limited to rare occasions.	10
Market Risk Factors					
No market is established	8	10	80	Engage with policy makers.	3
DSO reinforces lines and eliminates need for market	10	10	100	Engage with DSOs, agency, TSO, etc.	3

4.10.5 G2M strategy

This subchapter presents the required steps to bring sFLEX - KOL closer to the market. As indicated the product is essentially market-ready, with the main dependency being the establishment of functional LFMs. Once such markets are in place, only limited adaptation (higher degree of automation) is required to ensure economic feasibility even with lower revenues (as expected on an LFM). Based on this, it is difficult to estimate when the product can be brought to market, as its commercialisation is dependent on the establishment of LFMs rather than technical readiness.

The solution will be commercialised by the relevant internal units, including development, product management, business development, marketing as well as the recruitment of prosumers. External partners may also be involved, particularly those that can help disseminate information about the solution's value to consumers. This KER will be exploited individually by KOLEKTOR. At this stage, no additional partners are actively sought, although energy system providers could be considered relevant collaborators.

4.11 SFLEX - ETRA

***sFLEX** helps **medium and large prosumers with flexible assets as well as EV owners** who **seek to become an active participant in energy markets** by **better energy monitoring and analysis and reducing energy costs**.*

4.11.1 Value proposition and business models

sFLEX – ETRA provides prosumers with the flexibility management system required to become smarter energy players. By means of energy usage monitoring and analysis, proper information can be given to its users helping them to reduce energy costs and environmental impact. It will feature proper retrieval and analysis of energy usage data (including flexibility calculation), and visualization of extracted information. Furthermore, its algorithms and synchronization with other tools (such as sGRID) will automate the participation of battery storage systems and EVs in LFMs (Figure 15).

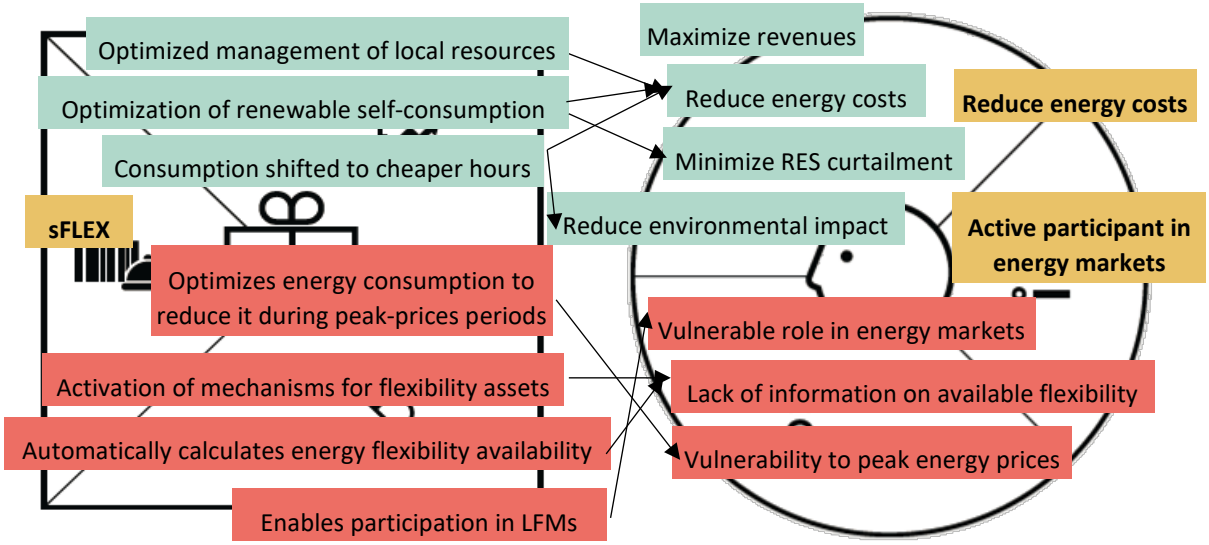


Figure 15: Value proposition canvas sFLEX - ETRA

Table 58 presents the BMC for sFLEX- ETRA. Value is created by helping customers cut peak-price imports and earn additional revenue through LFM participation. Moreover, predictive maintenance helps detect asset failure in real-time and allows automation based on user preferences to reduce complexity. It relies on IoT integration, data analytics and DSO/market-operator partnerships, reaching customers both directly and through aggregators who already hold them in their portfolios (e.g., ENERCOOP acting as an aggregator). Revenue comes from a modular yearly licence that scales with asset size, plus an onboarding fee, against costs driven mainly by development, regional adaptation and cloud infrastructure.

Table 58: BMC sFLEX ETRA

<table>
<tr><th>Key partners</th><th>Key activities</th><th>Value proposition</th><th>Customer Relationships</th><th>Customer segments</th></tr>
<tr><td rowspan="3">– Market Operators and DSOs
– IoT Device Manufacturers to ensure seamless hardware/software communication
– Industrial group organisations and cloud hosting providers</td><td>– Retrieval and analysis of usage data, and bidding assets on a market
– Peak shaving optimisation.
– Close contact with industrial prosumers to align algorithms with their operational processes without disrupting core business
– Guaranteeing end-user comfort
– Automatic asset actuation</td><td rowspan="3">– Helps prosumers become smarter energy players through active monitoring.
– Reduces energy imports during peak-price periods.
– Allows access to the LFM for additional revenue
– PV + Hybrid + Battery Analytics: Optimises systems and provides flexibility services to DSOs.
– Predictive Maintenance: ML algorithms to detect asset failures in real-time
– Automatic actuation based on user preferences to minimize operational complexity</td><td>– Close, direct interaction and training with large prosumers
– Acquisition via research projects and indirect partner portfolios.
– Customer loyalty through proactive support, regular updates, and continuous algorithmic improvements</td><td rowspan="3">– Medium-to-Large Prosumers (>100 kW)
– EV Owners (individual and fleet)
– PV + Battery installation owners</td></tr>
<tr><td>Key Resources</td><td>Channels</td></tr>
<tr><td>– Data analytics engines/ fault detection models (EV, PV)
– Real-time IoT synchronisation protocols and communication links
– Cloud hosting & Product/After-Sales Management team
– LFM platform connector</td><td>– Direct commercial sales to EV fleet owners, large prosumers, and PV+Battery owners
– Indirect Contact: Reaching prosumers indirectly through partners who already have them in their portfolios</td></tr>
<tr><td colspan="3">Cost structure</td><td colspan="2">Revenue Structure</td></tr>
<tr><td colspan="3">– Tool adaptation to different industrial consumer typologies, assets, and regional regulations
– Development, Implementation, OPEX, and marketing expenses
– Cloud hosting, IT development team, and procurement/integration of IoT devices</td><td colspan="2">– Modular licence fee: an annual fee paid by the prosumer, scaling with the size and number of assets, split into a Base Module (sFLEX monitoring) and a Premium Module (intelligence/optimisation).
– Setup/onboarding cost: Deploying the tool on the assets since an ad-hoc installation is required.</td></tr>
</table>

4.11.2 Market analysis

Market size:

The expected customers for sFLEX are derived from sENC. Considering this, the number of EnCs in Europe is around 8,000 according to [11], and the number of retailers is 4,085 according to [12], making up to approximately 12,000 customers in Europe, which represents the TAM. The number of aggregators is more difficult to estimate, as aggregation is an emerging market role and definitions vary across Member States. From this TAM, it is expected that, since the tool has been developed in the Spanish pilot and in its current state can only be replicated in Spain, the SAM are the 837 EnCs established in Spain [13] and the 400 retailers [12] during the first two years of exploitation. From these numbers, it is expected that large retailers and EnCs have technological capabilities to develop proprietary tools, a conservative assumption is made that approximately 60% of these organisations represent potential customers for sENC, resulting in a SAM of approximately 740 customers.

During year 1 after the project ends, the development team will work on fine tuning the product for national commercialisation. Afterwards, the target is to expand to other Member States after year 2, It is assumed that the necessary interoperability specifications and market interfaces will be sufficiently mature by year 2 to enable the adaptation of sENC connectors to LFM platforms in other Member States. It is conservatively assumed that LFM deployment will progressively expand to Member States covering approximately half of the potential European market, making a final SAM of 6,000 potential customers.

The SOM of sENC is approximately 25 customers.

To estimate the number of target assets for sFLEX - ETRA, the following assumptions have been considered:

- 60% of the sENC clients have at least one installation with IoT capabilities.
- Each community with at least one large-enough installation has 1.8 installations in average.
- 75% of the installations are interested in sFLEX.
- 25% of these installations acquire the Base licence.
- 75% of these installations acquire the Premium licence. The higher Premium licence price reflects the additional value generated through energy optimisation, fault detection and flexibility-market participation.
- 1 installation can have more than one asset (e.g., industrial facilities and hybrid PV+BESS installations).

Based on these numbers it is estimated that in Year 2, one base and one premium subscription is bought. Numbers are expected to rise until Year 5, where 5 base and 15 premium subscriptions are expected, representing the SOM for sFLEX – ETRA.

Competitors

The analysed solutions serve different customer segments and geographical markets, ranging from medium-to-large industrial consumers to EV, battery and PV owners across Europe and globally. sFLEX – ETRA is distinguished by its potential to reduce peak-period energy imports and enable participation in LFMs. N.GEN benefits from strong aFRR market capabilities, while GEN-I profits from its established customer relationships as an electricity supplier. Energis.cloud offers relatively easy integration through its ability to connect data from multiple sources. Bamboo Energy complements this

competitive landscape with a modular, AI-based SaaS platform for forecasting, optimisation, market bidding and real-time control of distributed flexibility assets. Its end-to-end functionality and focus on aggregators, retailers and industrial customers make it a strong competitor, particularly in Spain and other emerging European flexibility markets (Table 59).

Table 59: Competitor analysis sFLEX

	sFLEX - ETRA	N.GEN	GEN-i	Energis.cloud	Bamboo energy
Target Customers	Medium-to-large industrial prosumers EV/battery/PV owners	Commercial and industrial partners	Commercial and industrial partners	Commercial and industrial partners	Energy retailers, independent aggregators, BRPs, VPP operators, ESCOs, EnCs and large industrial/tertiary consumers
Target markets	Spain	Europe	Global	Europe	Spain + potential expansion in Europe
Strengths	Reduces energy imports during peak-price periods. Automatic actuation based on user preferences to minimize operational complexity	Very strong player on the aFRR market (a lot of battery energy storage system capacity).	Has direct contact with a lot of customers as an electricity supplier. Could be important for flexibility markets on the LV level.	Connects data from any source, easing the integration of the tool	Modular AI-based SaaS platform; consumption, generation and flexibility forecasting; bidding strategy and intraday optimisation; real-time dispatch and automated management of industrial loads, tertiary buildings, EV fleets and BESS; peak shaving and price arbitrage; prequalification, settlement; adaptable to local regulations
Weaknesses	Not yet on operating on the market	Aggregating only battery energy storage	Limited number of customers	Not focused on energy markets participation	Limited installed base compared to established European aggregators; value depends on regulatory maturity and actual opening of flexibility markets; limited international presence outside Spain.
Price structure	Very similar for all				SaaS
Key advantage	Allows access to LFMs for additional revenue	Very strong player on the aFRR market	Established customer relationship	Easy integration	End-to-end SaaS solution for managing and monetising distributed flexibility, from forecasting to trading and real-time operation, specifically designed for aggregators and retailers in Iberian and European markets
Market share	N/A	N/A	N/A	N/A	High (Spain)

4.11.3 Financial plan

Table 60 presents the assumptions for the financial plan for sFLEX - ETRA. Revenue is generated by yearly operating licences paid by the asset owners. Two different kinds of licences are offered.

- Base licence: this licence includes only the monitoring of the assets and IoT devices. The price of this licence is 12,000€/year and does not scale with the number of devices and with the installed capacity.
- Premium licence: this licence includes all the functionalities (optimizations, fault detection, participation in LFMs, etc.). The base price of this licence is 18,000€/year, with a variable component of 5€/year and kW. This increased price is due to the fact that optimizations and participation in LFMs will report savings and revenues

Setup costs relate to the deployment to integrate the different IoT devices and optimizations, and an additional charge is made for the integration of different assets in the same installation/facility. The setup price also depends on the licence type as follows: The base licence setup price is established at €3,000, +100€/additional asset. The premium licence setup price is established at €5,200, +150€/additional assets.

For the business plan, it is assumed that customers acquiring the base licence have just one asset, while customers acquiring the premium licence have on average two assets as it is expected that most of the installations will be hybrid BESS+PV, being the average setup cost €5,350. Additionally, for the licence price it is assumed that premium customers have on average 200kW of installed capacity. The CAPEX relates to personnel, equipment and other costs. The costs for development for market readiness are estimated at 10% of the total development cost (€13,065). It should be noted that the services for market participation are shared with sENC. Therefore, the G2M costs are lower, and no international connector deployment is necessary for this product.

OPEX is split into fixed (maintenance, cloud hosting, marketing), and variable (customer support, implementation) OPEX costs, which depend on the number of customers. The implementation costs include the integration of IoT devices, optimization rules and algorithms, connection to the LFM, user training and project management. Implementation costs are intentionally higher than the corresponding setup fees in order to reduce the upfront cost for customers and facilitate adoption. The associated cost is expected to be recovered through recurring licence revenues over the customer lifetime. The discount rate is 5%.

Table 60: Assumptions for the financial plan for sFLEX - ETRA

Parameter	Value
Base licence [€/year]	12,000
Premium licence [€/year]	18,000
Variable component of premium licence [€/kW/year]	5
Set-up price fixed: base licence [€]	3,000
Set-up price variable: base licence [€/additional asset]	100
Set-up price fixed: premium licence [€]	5,200
Set-up price variable: premium licence [€/additional asset]	150
Average installed capacity premium customer [kW]	200
Personnel costs [€]	103,020
Equipment [€]	1,500
Other [€]	26,130
Cloud hosting [€/year]	1,800
Product development for market deployment [€]	13,065
Maintenance [€/year]	4,100

Marketing costs [€/year]	1,030
Customer support [€/year]	5,151
Implementation OPEX base fixed + variable per additional device [€/additional customer]	4,900 +200
Implementation OPEX premium fixed + variable per additional device [€/additional customer]	7,426 +300
Discount rate [%]	5%

Table 61 presents the financial plan for the 5 years after the end of STREAM. CAPEX occurs in the first year for product development followed by recurring hosting, maintenance, support and commercialisation expenses that rise as customer numbers grow. Revenues begin in 2028, driven by base and premium licence fees plus setup charges. The cash flow turns positive in 2029 and delivers an IRR of 19% after 5 years.

Table 61: Financial plan sFLEX - ETRA

		2026	2027	2028	2029	2030	2031
Estimated costs							
CAPEX [€]		130,650					
Product development [€]			13,065				
Cloud hosting costs [€]			1,800	1,800	1,800	1,800	1,800
Marketing costs [€]			1,030	1,030	1,030	1,030	1,030
Maintenance [€]			4,100	4,100	4,100	4,100	4,100
Customer support [€]			5,151	5,151	5,151	5,151	5,151
Implementation costs (€/additional base customer)			5,100	5,100	5,100	5,100	5,100
Implementation costs (€/additional premium customer)			7,727	7,727	7,727	7,727	7,727
Total Costs [€]		**130,650**	**19,995**	**30,059**	**66,116**	**99,597**	**174,236**
Estimated revenues (€)							
Licensing fees (base)	12,000	0	0	1	2	3	5
Licensing fees (premium)	19,000	0	0	1	4	8	15
Setup / onboarding Base	3,000	0	0	1	1	1	2
Setup / onboarding Premium	5,350	0	0	1	3	4	7
Total revenues [€]		**0**	**0**	**39,350**	**119,050**	**212,400**	**388,450**
Cash Flow analysis							
Earnings before interest and taxes		-130,650	-19,995	9,291	52,934	112,803	214,214
Taxes	**21%**	0	0	1,951	11,116	23,689	44,985
Cash flow (€)		-130,650	-19,995	7,340	41,818	89,114	169,229
Discounted cash flow	**5%**	-130,650	-19,043	6,658	36,124	73,314	132,596
IRR after 5 years	**19%**						

4.11.4 Risk assessment

Table 62 presents the risk assessment for sFLEX– ETRA. The highest rated risks are market and resource risks such as an unsuitable sales force and a lack of secured human or financial resources for the next exploitation step, the product perceived as too expensive, and an inadequate business plan.

To counteract these risks, mitigation measures like the early and continuous involvement of the financial and sales departments and tailored, more affordable solutions are envisioned. Risks linked to the loss of a business partner, through market exit or bankruptcy, score low, as their probability is considered low and ETRA could take over the partner's role. Regulatory uncertainty falls in the middle range and are tackled by adaptations of the connectors to different LFM platforms. The feasibility of the interventions is consistently rated high indicating that the identified risks are considered manageable within the project's exploitation strategy and are therefore under control.

Table 62: Risk assessment sFLEX – ETRA

[1low – 10high]	**Degree of importance of the risk related to the final achievement of KER**	**Probability of risk happening**	**Risk Grade**	**Scope and type of potential intervention**	**Feasibility/Success of Intervention**
Partnership risks					
Industrialization at risk: a business partner leaves the market.	5	2	10	ETRA takes the role of the business partner	9
Industrialization at risk: a partner declares bankruptcy.	5	2	10	ETRA would take the role of the partner	9
Technological risks					
Result aiming at replacing existing and well entrenched technologies	8	5	40	Analyse client needs and offer a more functional, more affordable tailored solution.	8
Market risks					
Nobody buys the product. Too expensive.	9	6	54	Analyse client needs and offer a more functional, more affordable tailored solution.	8
Nobody buys the product. Standards to make it compulsory don't yet exist.	5	5	25	The solution will be tailored to the customer needs.	6
Nobody buys the product. Unsuitable sales force.	7	8	56	The sales force will be involved from the start to ensure sales	7
Management risk					
Weak exploitation: Inadequate business plan	8	6	48	Financial and sales departments involved from start to provide an adequate business plan.	7
No resources (human and/or financial) secured to make the next step toward exploitation	8	7	56	Financial and sales departments involved from the beginning to provide an adequate exploitation plan.	7
Regulation risks					
Influence of laws and regulations.	6	7	42	Lack of common regulatory framework across Europe for LFMs: ETRA	9

				will adapt the connectors to different market platforms.	

4.11.5 G2M strategy

Several key activities are already underway: prototyping in a real-world environment, piloting, demonstration and testing, compliance with existing standards, and raising funding from public sources. Legal advice is planned. Training measures, the identification of relevant events for pitching the product to potential investors and licencing the innovation to a 3rd party, are not yet planned but desired for the coming period. ETRA will commercialise the product through its product development and commercialisation departments. ETRA will individually exploit the tool and will use the EU Innovation Platform as an additional channel to support market uptake and reach potential customers. The main business plan is to exploit it together with sENC - ETRA. The main target groups would therefore be reached through the EnCs, retailers and aggregators already using sENC - ETRA, with sFLEX – ETRA providing more advanced functionalities for their medium- to large-size assets. However, the market can be expanded to any medium- to large-size asset/consumer/generator. Therefore, the main exploitation strategy is to offer sFLEX - ETRA together with sENC - ETRA, while also keeping the option of exploiting sFLEX - ETRA as a standalone solution in the wider market.

The G2M strategy will be split into two stages. During year 1 after the project ends, the development team will work on fine tuning the product for national commercialisation. Afterwards, the target is to expand to other Member States after year 2, working within those first years in adapting the connectors to other international LFM platforms. The product is therefore already market ready with only minor fine tuning needed.

4.12 DEVICE REGISTRY - CYG

*The **device registry** helps **DSOs/local market operators** who want to **procure flexibility services** by **creating a central repository for flexibility device owners/aggregators**, in exchange for remuneration and thus aid the creation of an LFM.*

4.12.1 Value proposition and business model

DSOs have no single source/platform to have an overview of potential sources of flexibility on their grid and consequently no comprehensive, coordinated, central way to procure potential flexibility services. The value proposition for the device registry - CYG is to, on the one hand, offer DSOs an overview of potential flexibility resources that will help in short-term and long-term planning. On the other hand, it allows flexibility device owners and aggregators to monetize and save costs or gain revenue by offering flexibility (Figure 16). Overall, on a system level, an efficient use of available resources is enabled. Through the registration of flexible devices, the awareness of the grid and potential flexibility resources is increased and dynamic limits for new connections during grid expansion are enabled. The device registry can be further used for the prequalification of flexible assets before actual flexibility procurement is allowed. The device registry aids the creation of LFMs and products potentially leading to investment deferral.

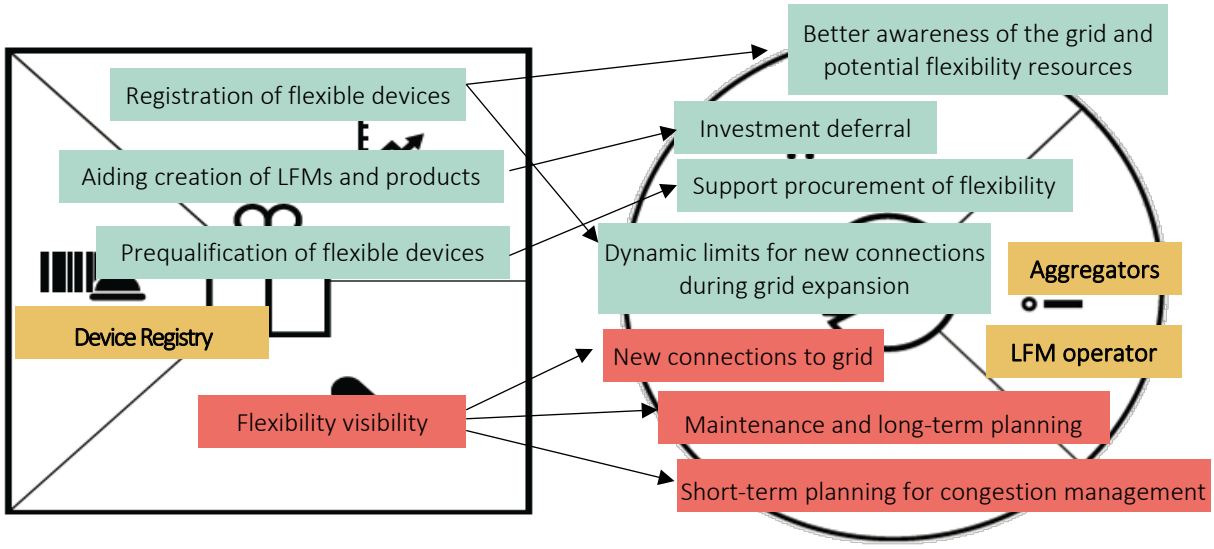


Figure 16: Value proposition canvas: Device registry

Key partners include DSOs and market operators, who can support the validation of the device registry, and the sMART local market platform. The main activities include database maintenance, integration with flexibility assets, and prequalification of assets. Customer relationships are built through direct B2B contact, such as emails and meetings. The key resources are the code, database structure, and prequalification algorithms. The cost structure covers cloud hosting, ongoing development, technical support, and maintenance, while the revenue comes from a subscription fee paid by the DSO or market operator for access to the SaaS platform (Table 63).

Table 63: BMC Device registry

<table>
<tr><th>Key partners</th><th>Key activities</th><th>Value proposition</th><th>Customer Relationships</th><th>Customer segments</th></tr>
<tr><td rowspan="3">– Market operators
– sMART local market platform</td><td>– Database maintenance
– Integration with flexibility assets</td><td rowspan="3">– Prequalification of assets
– Central repository for DSOs/market operator
– Investment deferral
– Flexibility utilization</td><td>– Direct B2B contact (e-mails, meetings)</td><td rowspan="3">– DSOs
– Local market operators</td></tr>
<tr><td>Key Resources</td><td>Channels</td></tr>
<tr><td>– Code
– Database structure
– Prequalification algorithms
– AWS</td><td>- Direct B2B engagement (existing partners)</td></tr>
<tr><td colspan="3">Cost structure</td><td colspan="2">Revenue Structure</td></tr>
<tr><td colspan="3">– Cloud hosting
– Ongoing development
– Technical support
– Maintenance</td><td colspan="2">– Subscription fee paid by the DSO/market operator for the SaaS platform</td></tr>
</table>

4.12.2 Market analysis

Market size

The market analysis focuses on the number of DSOs that could use the Device registry. The TAM takes all European DSOs into consideration (around 2,674) [5].

Considering the current geographic focus on Slovenia gives a more realistic SAM of 5 DSOs [17]. Based on an envisioned market share of 20-25%, given alternative procurement approaches and the possibility of in-house solutions, the target would be to secure one DSO in the Slovenian market. The choice of the actual customer will depend on future market developments and stakeholder interest. This indicates considerable market potential, but the initial commercial ambition is concentrated on a small, achievable entry point.

While the initial focus is on Slovenia, the Device Registry concept is also relevant for other European markets introducing local flexibility mechanisms. However, expansion to other countries would require adaptations to local regulatory frameworks, market rules, and prequalification procedures, and is therefore considered a longer-term growth opportunity.

Competitors

There are no competitors with similar solutions identified in Slovenia. Alternatively, DSOs in other countries have established their own procurement platform Table 64.

Table 64: Competitor analysis Device registry

	STREAM KER	Grid operator's own procurement platform
Target Customers	DSOs, local market operators	DSOs, TSOs
Target markets	Slovenia	EU
Strengths	Already established contacts Adapted for local markets	Already established and qualification workflows
Weaknesses	Costly customization for other markets	Not a dedicated DSO-side registry/prequalification layer for local LV services
Price structure	Low Risk for customers due to monthly subscription fee	Likely more expensive as more features are offered
Key advantage	Localized solution for Slovenian market	Already established on the market
Market share	Low	High

4.12.3 Financial plan

Table 65 outlines the assumptions for the financial plan. It assumes an annual subscription fee of €150,000 per device registry, technical support priced at €180 per hour, and 20 hours of support per customer per year. In addition, cloud hosting costs are €54,000 per year, with an assumed 2% annual increase in hosting costs due to rising cloud infrastructure and server operating costs as well as 35,000 €/year for software maintenance and updates.

Table 65: Assumptions for the financial plan for the Device Registry

Parameter	Value
Subscription fee per device registry [€/year]	150,000 €
Technical support [€/h]	180
Hours of technical support/customer/year [€/year]	20
Software maintenance and updates [€/year]	35,000 €
Cloud hosting [€/year]	54,000 €
Cloud hosting cost increase [%/year]	2%
Taxes [%]	19%
Discount rate [%]	5%

Table 66 shows a five-year financial outlook with one DSO from 2028 onward. Costs rise slightly over time, due to increasing cloud hosting and a fixed level of technical support, while revenues stay

constant at €150,000 per year after the first year. As a result, the model generates positive cash flow from 2028 onward and leads to an IRR of 35% rate of return over the five-year period. The relatively high IRR is driven by the fact that the core development of the Device Registry has already been completed within STREAM, while only operational, hosting, and support costs are considered during commercialization.

Table 66: Financial plan Device Registry

		2027	2028	2029	2030	2031
Estimated costs						
Technical support [€]		0	3,600	3,600	3,600	3,600
Cloud hosting [€]		54,000	55,080	56,182	57,305	58,451
Software maintenance and updates [€]		35,000	35,000	35,000	35,000	35,000
Total Costs [€]		**89,000**	**93,680**	**94,782**	**95,905**	**97,051**
Estimated revenues						
Number of DSOs [#]		0	1	1	1	1
Total revenues [€]		**0**	**150,000**	**150,000**	**150,000**	**150,000**
Cash Flow analysis						
Earnings before interest and taxes		-89,000	56,320	55,218	54,095	52,949
Taxes	**19%**	0	10,701	10,491	10,278	10,060
Cash flow (€)		-89,000	45,619	44,727	43,817	42,888
Discounted cash flow	**5%**	-84,762	41,378	38,637	36,048	33,604
IRR after 5 years	**35%**					

4.12.4 Risk assessment

Table 67 presents the risk assessment for the device registry. The first identified risk is that nobody buys the product or that problems arise at the time of initial sales and secondly, that no flexibility markets are formed because DSOs continue to rely on grid reinforcement. To address the first risk, the strategy foresees demonstration activities, stakeholder engagement, pilot references, and targeted marketing. The second, more severe risk is to be mitigated through active engagement with DSOs, market operators and regulators, and by adapting the solution to evolving flexibility market requirements and use cases, though the feasibility of these measures is assessed as moderate. The first risk is under control while for the second risk action should be taken to minimize the chances of the risk from happening.

Table 67: Risk assessment Device Registry

Key Exploitable Results [1low - 10 high]	Degree of importance of the risk related to the final achievement of KER	Probability of risk happening	Risk Grade	Scope and type of potential intervention	Feasibility/Success of Intervention
Market Risk Factors					
Nobody buys the product. Problems at the time of the first sales.	7	4	28	Demonstration activities, stakeholder engagement, pilot references, and targeted marketing activities.	8
No markets are formed – DSOs stick to grid reinforcement	9	6	54	Active engagement with DSOs, market operators, and regulators. Adapt the	6

				solution to emerging flexibility market requirements and use cases.	

4.12.5 G2M strategy

This subchapter describes the steps to bring the Device Registry closer to the market. Engagement with relevant stakeholders, including DSOs, market operators and system operators, such as ELES and Borzen is ongoing. Pilot and demonstration activities, as well as compliance with applicable standards is already achieved or in progress. Public funding, pitching opportunities, and training activities are identified as potential next steps. The Device Registry will require an additional year to reach production and market readiness, as also indicated in the financial plan.

The Device Registry will continue to be presented and discussed with relevant stakeholders in Slovenia, including DSOs and market operators such as Borzen. The code will remain the property of CYG. The tool will be commercialised by the internal sales and marketing department of CYG.

5 CONCLUSIONS

The second version of the Exploitation and Business Plan for the STREAM project presents the exploitation roadmap to move the STREAM KERs for each of the identified KERs as close to commercialisation as possible. The exploitation strategy was based on four steps: KER identification, market analysis, business plan development, and G2M strategy.

Throughout the project, three exploitation sessions were held with the KER owners to review the status of the KERs. The first session took place in October 2023 and introduced the exploitation strategy while addressing the intellectual property rights (IPR) associated with the individual KERs. Bilateral follow-up sessions were held during winter 2026 to create the BMC and finalize the work of the market analysis, followed by a final session in June 2026 dealing with the financial plan the G2M strategy.

12 KERs by 7 partners have been identified. For these KERs, the IPR were assigned and a value proposition canvas as well as a BMC highlighting the main characteristics of the tools were created. For the market analysis, the market size was estimated based on the TAM/SAM/SOM approach. Additionally, a market screening provides insights into similar tools, facilitating a comparative analysis of strengths and weaknesses of STREAM tools. A financial plan for 5 years after the project end was created, analysing the economic profitability of the tools. A risk assessment was conducted to highlight potential risks and mitigation measures. Lastly, the required steps and commercialisation route to bring the KERs to the market are described.

Market analysis

The competitive landscape ranges from established global providers of ADMS, DERMS, enterprise software and flexibility platforms to specialised local and emerging market participants. Large vendors generally have stronger market positions, broader portfolios, established customer bases and higher technical maturity. STREAM tools are differentiated by their focus on low-voltage grids, LFM integration, data sovereignty, EnC participation and flexibility aware planning.

Particular emphasis was placed on the potential for European market expansion once the tools have been technically and commercially validated. Initial expansion is expected to focus on neighbouring countries with similar grid structures, regulatory frameworks and market conditions. Expansion may require adaptation to country-specific grid structures, data availability, regulatory frameworks, market rules, interoperability requirements and local flexibility-procurement arrangements.

Financial plan

Economic feasibility is most promising for solutions with direct and scalable revenue models. These tools can generate revenues through subscriptions, implementation fees, asset-based charges. In contrast, other KERs require further commercial validation, longer investment horizons or additional public and private funding because their business cases depend on high upfront development costs and the gradual development of LFMs. The financial plans should be interpreted as initial indicative assessments rather than robust investment cases, as several assumptions, including customer uptake, pricing, operating costs, flexibility-market revenues require validation through real commercial engagements.

Initial market uptake is expected to be modest. The financial plans generally assume only a small number of early customers, reflecting realistic adoption patterns, particularly where DSOs require procurement processes, system integration and regulatory approval.

Risks assessment

The risk assessment shows that technological, partnership and financial risks are generally manageable through continued technical development, interoperability measures, clear exploitation responsibilities, strategic partnerships and follow-up funding. The most significant risks are market and regulatory risks. The commercial viability of several tools depends on the development of sufficiently liquid LFMs and on regulatory frameworks that allow and incentivise DSOs to procure flexibility as an alternative to conventional grid reinforcement. If no coherent LFM framework exists, the tools will need to be adapted to national market arrangements, bilateral procurement models and country-specific regulatory requirements.

G2M strategy

The G2M strategies indicate that many necessary preparatory activities are already underway. These include real-world/pilot testing and stakeholder engagement with DSOs, TSOs, market operators and regulators. Moreover, dissemination through the BRIDGE initiative and the EU Innovation Platform as well as exploration of public funding and commercial partnerships will be done. Most solutions are expected to require approximately six to twelve additional months for final development and market preparation. However, tools dependent on the establishment of LFM may require a longer and less predictable timeframe because market readiness depends on external regulatory and market developments. Expansion to other countries may require one to two additional years to ensure adequate adaptations.

The project partners have defined individual exploitation pathways suited to their organisational roles and KER maturity. These include direct commercialisation by industrial partners, software-as-a-service models, strategic partnerships with system integrators, consultancy and knowledge-transfer activities led by academic partners, and dissemination through the EU Innovation Platform and relevant European networks.

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6 ACRONYMS

Acronyms list	
ADMS	Advanced Distribution Monitoring System
aFRR	Automatic Frequency Restoration Reserve
AWS	Amazon Web Services
B2B	Business to business
BESS	Battery energy storage system
BMC	Business Model Canvas
CAPEX	Capital expenditure
DER	Distributed energy resource
DERMS	Distributed Energy Resource Management System
DR	Demand response
DSO	Distribution system operator
EnC	Energy community
ESB	Enterprise Service Bus
EV	Electric vehicle
FCR	Frequency containment reserve
FSP	Flexibility service provider
GDPR	General Data Protection Regulation
G2M	Go-to-market
IoT	Internet of Things
IPR	Intellectual property rights
IRR	Internal rate of return
KER	Key exploitable result
LFM	Local flexibility market
LV	Low voltage
mFRR	Manual frequency restoration reserve
OPEX	Operating expenditure
OSS	One-stop-shop
PV	Photovoltaic
RES	Renewable energy source
RT	Real-time
SaaS	Software as a service
SAM	Serviceable available market

SME	Small and medium enterprise
SOM	Serviceable obtainable market
TAM	Total addressable market
TLS	Traffic light system
TRL	Technology Readiness Level
TSO	Transmission system operator
VPP	Virtual power plant