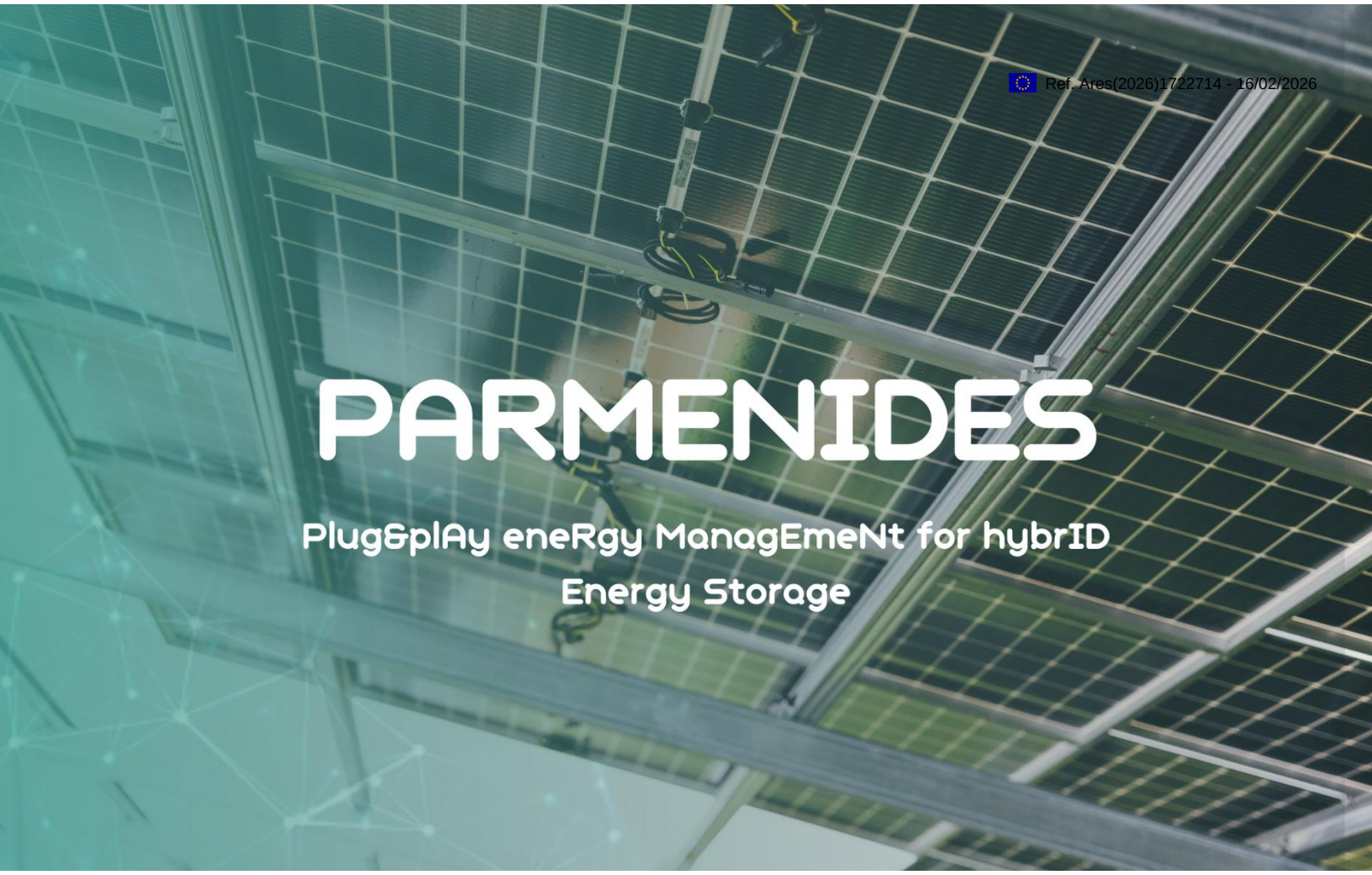

Deliverable D6.2

Final progress report on communication and dissemination activities

Work Package 6

Disclaimer

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Executive Summary

This deliverable provides a comprehensive overview of the communication, dissemination, and engagement activities carried out during the PARMENIDES project, highlighting the strategies, tools, and measurable outcomes achieved throughout its implementation. In alignment with Horizon Europe guidelines, all actions were designed to ensure that project results reached relevant stakeholders, supported community building, and contributed to the long-term uptake and exploitation of outcomes.

A key achievement of this period is the strong performance across all communication KPIs. PARMENIDES significantly overachieved its planned target.

Notable highlights include:

- Substantial growth in digital reach, such as a strong increase in LinkedIn followers and above-expected webpage visits.
- Production of high-quality communication materials, including the identity kit, newsletters, flyers for dissemination, and multilingual press releases.
- Strong engagement through interviews, events, webinars, and clustering activities with EU-funded initiatives.
- A positive response to the "Faces of PARMENIDES" campaign, which successfully humanised the project's work by showcasing the diverse expertise within the consortium. This approach improved relatability, increased engagement rates, and supported wider dissemination of results.

Throughout the project, PARMENIDES also delivered a robust set of stakeholder-oriented communication actions, including participation in more than 12 events, the organisation of three webinars with an average of 46 participants, and multiple meetings with regional, national, and EU-level stakeholders. These efforts strengthened collaboration, fostered knowledge exchange, and supported the project's broader contribution to the development of future-ready energy communities and grid management solutions. To ensure high-quality and coherent outreach, the consortium adopted a harmonised visual identity, established a strong online presence, and actively promoted project milestones such as pilot progress in Sweden and Austria, technical achievements, and key consortium meetings. These coordinated actions, together with strategic storytelling initiatives, enabled the project to reach both expert and non-expert audiences, helping communicate the potential impact of PARMENIDES solutions on the energy transition.

The deliverable also outlines the planned next steps such as expected publications to ensure sustained visibility and support the exploitation of results. The consortium remains committed to reinforcing collaboration opportunities and ensuring continuity of knowledge beyond the project's end.

Overall, the communication and dissemination efforts of PARMENIDES not only met but exceeded expectations, contributing meaningfully to the project's impact and paving the way for broader adoption of its innovative approaches for enhancing flexibility, resilience, and citizen participation in energy communities.

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Abbreviations

Acronym	Description
CELINE	Cross-sectorial integrated digital services Enabling energy Localized Innovatio N and community Empowerment
CEM16	Clean Energy Ministerial 16
CIRED	Congrès International des Réseaux Electriques de Distribution
DER	Distributed Energy Resources
DOI	Digital Object Identifier
DSO	Distribution System Operator
DSSE	Distribution System State Estimation
EC	Energy Community
EMS	Energy Management System
EMS4HESS	Energy Management System for Hybrid Energy Storage Systems
EU	European Union
EV	Electric Vehicle
FLEXCHESS	Flexibility services based on Connected and interoperable Hybrid Energy Storage System
FSC	Flexible Sector Coupling
GA	General Assembly / Grant Agreement
GCM	Grid Capacity Management
HESS	Hybrid Energy Storage System
HEU	Horizon Europe
HPC	Heat Pump Conference
ICT	Information and Communication Technology
IEA	International Energy Agency
IEEE	Institute of Electrical and Electronics Engineers
INFRADAPT	Climate change resilient energy infrastructure through AI-based adaptation
ISGAN	International Smart Grid Action Network
KPI	Key Performance Indicator
ML	Machine Learning
OA	Open Access
OSMSES	Open-Source Modelling and Simulation of Energy Systems
PECO	PARMENIDES Energy Community Ontology
PES	Power and Energy Society

Acronym	Description
PV	Photovoltaic
RL	Reinforcement Learning
SENDER	Sustainable Consumer Engagement and Demand Response
STUNNED	SisTemic mUltilevel optimized orchestratioN of energy maNagement sys-tEms for resiDential, industrial and tertiary energy flexibility services
TES	Thermal Energy Storage
WP	Work Package

1 Introduction

This document presents a comprehensive display of effective communicating and disseminating the activities and collaborations of the PARMENIDES project with various stakeholders that were carried out throughout the duration of the project. It outlines the objectives of the project's communication strategy and provides detailed explanations of the target groups it aimed to engage and the steps taking to fulfil this aim. Moving beyond the communication strategy, the document also focuses on the visual identity of the project and elaborates on the marketing materials and tools utilized for project promotion. Emphasizing the importance of maintaining a consistent visual identity, the provided marketing materials include press releases, technical factsheets, brochures, and a PowerPoint presentation template. Furthermore, the document highlights the tools and platforms employed in the project, such as the project website, newsletter, and social media.

In conclusion, the document underscores the strategic communication efforts focused on engaging the target audience in order to achieve the project's objectives. It emphasizes the collective efforts of the consortium to highlight significant joint efforts in communication, dissemination, and collaboration.

1.1 Scope and objectives of this document

This document serves as the final Communication and Dissemination report of the PARMENIDES project. It evaluates the implementation, effectiveness, and impact of the communication, dissemination, and engagement activities carried out throughout the project's lifecycle.

Building upon the initial strategy defined at the project's outset, this deliverable provides a comprehensive account of how the communication toolkit, materials, and channels were utilized to reach key target audiences, including researchers, industry stakeholders, policymakers, and the general public. It assesses the visibility, reach, and engagement achieved.

This final report demonstrates accountability regarding the project's external engagement, while offering guidance for future EU-funded initiatives aiming for impactful science communication and stakeholder involvement.

1.2 Structure of this document

This document has main pillars to explain our communication activities throughout the project. First, we will explain briefly the communication and dissemination plan's objectives and target audience. A coverage of the marketing activities is also laid out in details about newsletters, social media, press releases, etc, the last section of the deliverable serves as a view of the communication and dissemination numbers and KPIs and closing remarks.

2 Final progress for strategic communication and dissemination plan

2.1 Objectives

As outlined in the Grant Agreement and building upon the initial plan, this deliverable aims to:

- Assess the effectiveness and relevance of communication and dissemination activities in relation to the project's expected impacts, ensuring that all efforts have supported the visibility and potential exploitation of key results.
- Provide evidence of coordination across the consortium, highlighting how partners collaborated in a structured and strategic manner to ensure consistency, efficiency, and coverage across all activities and channels.
- Report on the KPIs and performance metrics defined in the initial plan, evaluating their achievement and lessons learned for future initiatives.
- Document tools, materials, and channels used, including digital platforms, events, and media coverage, to demonstrate the breadth and coherence of outreach efforts.
- Support long-term impact and legacy, by outlining how communication and dissemination practices established during the project will continue to benefit the visibility and relevance of PARMENIDES beyond its duration.

2.2 Target groups

In addition to engaging with stakeholders directly involved in the PARMENIDES project, the communication strategy also aimed to reach broader audiences who may find the project's outcomes relevant to daily life.

These include:

- Working groups, associations, and interest organizations interested in promoting PARMENIDES solutions as exemplary practices.
- Public institutions seeking to raise awareness within their communities.
- European citizens, with a particular focus on children and young adults as the next generation of policy shapers.
- Prospective users or clients who may benefit from the exploitable outcomes of PARMENIDES.
- Local and regional authorities across the EU - such as city officials, district energy coordinators, and agencies for economic development.
- Journalists and media representatives (non-specialist and non-industrial), operating at regional, national, and EU/international levels, both in English and in the native languages of the consortium partners.

3 Project Marketing

At the outset of the project, PARMENIDES established a suite of marketing materials and communication templates rooted in its visual identity, ensuring a coherent and systematic approach to outreach. These standardised tools helped audiences easily recognize the project and supported more effective promotion.

As Dissemination Manager, DERlab was responsible for creating and maintaining these materials, along with the communication tools and channels used across the project - both internally among partners and externally to stakeholders. All printed materials adhered closely to the project's branding guidelines to maintain visual and messaging consistency.

Given the diversity of the consortium, which included various types of organizations, effective coordination of communication and dissemination activities was essential. DERlab played a central role in planning, supervising, and organizing the partners' efforts, ensuring a unified and consistent communication strategy throughout the project's early phases.

The organisation of efforts and maintaining a communication flow was an essential task that DERlab managed throughout the duration of the project. In effort to keep information flow flawless and clear, several initiatives were employed by DERlab communication manager such as content calendars; where partners would plan their contribution to the communication and dissemination efforts, and consulting with the other partners, a six-month plan was initiated for the year 2024 for both the first half (see Figure 1) and the second half. This ensured a clear content overview especially amongst the partners which meant a transparent content circulation amongst the consortium enabling better collaboration and fostering great connections.

Figure 1: PARMENIDES content calendar.

A timeline detailed content planning (see Figure 2) was created with the help of the project coordinator to make sure to keep a holistic approach of the content published in liaison with our project milestones and updates.

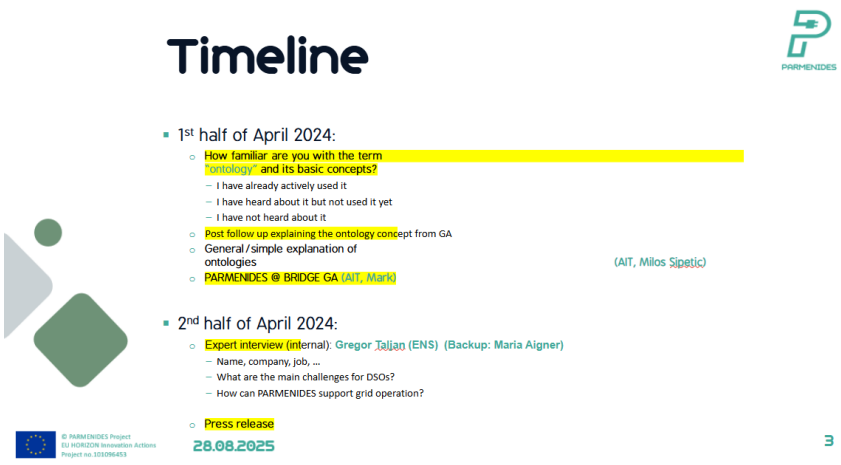

Figure 2: PARMENIDES planning sheets.

4 Visual identity

4.1 PARMENIDES logo

The PARMENIDES logo (Figure 3) was designed to reflect the project's identity, featuring the project name with the letter "P" stylized as a cable plug-in, symbolizing connectivity and innovation. A secondary version of the logo (Figure 4), with an inverted colour palette, was also developed to accommodate materials where a reversed colour scheme offered better visual integration.

Throughout the project, all official documents displayed the PARMENIDES logo prominently, alongside the EU emblem and funding acknowledgement, as well as the logos of participating partners. Furthermore, any material or output funded, wholly or partially, by the project budget had clearly referenced PARMENIDES and, where appropriate, included the project logo.

This logo is also used and shown in all social media accounts, as well as all marketing materials, online and offline.

Figure 3: PARMENIDES logo.

Figure 4: PARMENIDES logo inverted.

4.2 Visibility – European flag and funding statement

Figure 5: EU flog.

Funded by the European Union's Horizon Europe programme under Grant Agreement nº 101096453. The European flag was displayed on the website and the rollup and in certain presentations.

4.3 Website

The PARMENIDES project leverages its official website, available at https://parmenides-project.eu/, as a primary communication tool to reach a broad and diverse audience. The site serves as the central information hub, providing detailed insights into the project's objectives, ongoing activities, and key outcomes.

Designed to promote transparency and accessibility, the website ensures that all public documents and publications related to the project are easily available to visitors. As of the time of writing, the homepage (Figure 6) features a structure composed of five main sections, offering intuitive navigation and straightforward access to project information:

- The PARMENIDES homepage serves as a comprehensive entry point to the project's core vision with the latest news and updates such as the last General Assembly.
- Page 2 of the home page is full of recent project highlights, from the public energy dashboard in Gasen to presentations at CIRED 2025 and IRED*online*.
- Page 3 of the PARMENIDES website home page in the Events and News section, serves as both an introduction and a news hub for key project developments. The News & Events section keeps the community up to date, from the Heimschuh pilot site preparations and a successful second cluster webinar to expert interviews and the mid-term general assembly review. This dynamic blend of project strategy and ongoing achievements ensures the page is both informative and timely, reflecting PARMENIDES' commitment to transparency, coordination, and stakeholder engagement.
- Page 4 of the PARMENIDES website's home page news showcases a series of posts that chronicle significant milestones, from kick-off events to general assemblies, and reveal how the project has progressed over time. Headlines such as "PARMENIDES Pilots in Austria and Sweden," "General Assemblies," and our early "Kick-off Meeting" offer a clear update to our project milestones while keeping our stakeholders engaged and informed.
  Beyond historical updates, the page also features in-depth reflections like "Ask the expert! Advancing Energy System Transition", reinforcing our commitment to expert insight. This curated content not only builds transparency but also strengthens our community's connection to the project's progress.
- Overview: This section introduces the project and is divided into two subpages: Consortium, which provides details about the project partners, and Project Facts, which presents key information at a glance.
- Resources: Visitors can access tangible project outputs here, including two subpages: Deliverables and Newsletters, where official documents and updates are made available.
  - The Deliverables page contains all publicly available deliverables for the public sphere.
  - Newsletter page contains all our published newsletters, as well as the form to subscribe to our newsletters.
- Media Corner: This area features additional promotional materials such as the project brochure, factsheet, visual identity elements, and press releases available in five European languages.
- News and Events: Regularly updated, this section highlights the project's latest developments and participation in relevant events.

- Contact: This section offers contact information for the Project Coordinator, general project details, and includes a contact form for inquiries.

In addition, a Social Media area at the top right corner provides direct links to the project's LinkedIn and X (previously Twitter) profiles, supporting broader community engagement.

The website is more than an informational hub; it's a storytelling platform. Through regular posts, we maintain project visibility, attract new interest, and build trust with every update. Featuring our consortium meetings, pilot highlights, and expert dialogues ensures that partners, researchers, and stakeholders stay aligned with our evolving objectives.

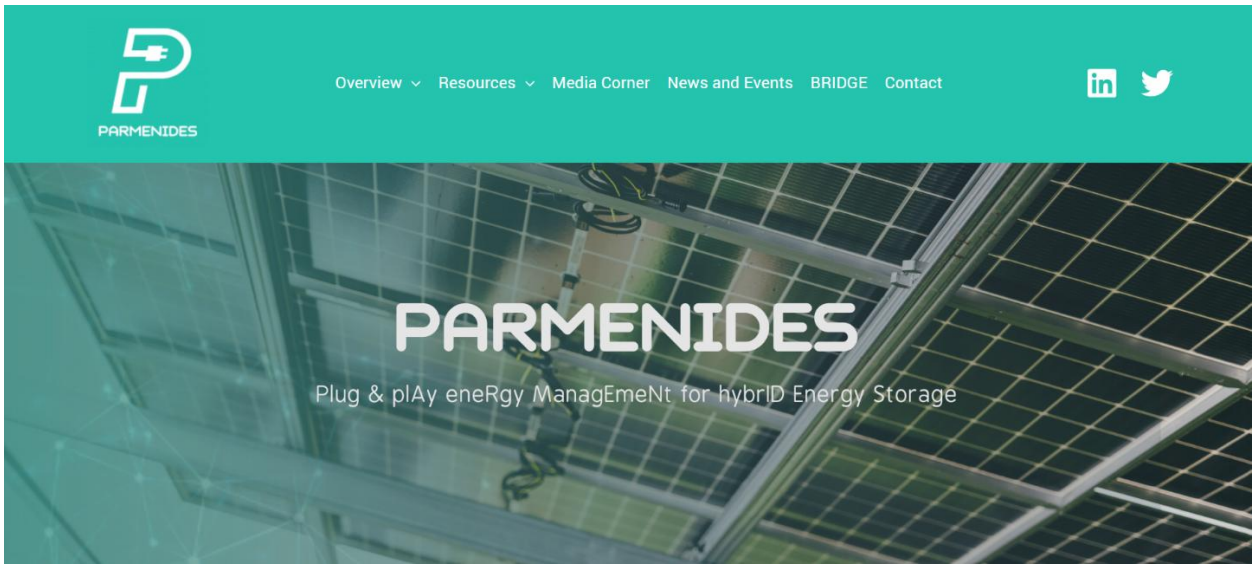

Figure 6: PARMENIDES Website Frontpage.

The website was updated with stories from the consortium members, General Assembly minutes, webinars, and contributions in diverse events and conferences. We have had more than 30 posts throughout the project duration to update our stakeholders with information about the progress of our project. The website will stay available after the end of the project for 3 years on the request of the project coordinator.

4.4 Social Media

Our **LinkedIn** was utilised as a platform to communicate and disseminate projects updates. The content was rich and diverse. LinkedIn serves as a platform for PARMENIDES to highlight ongoing announcements and engage with stakeholders. The project page has been active for most of the duration of the project and currently has 635 followers on LinkedIn[1]. We increased our frequency of posting halfway through the project to increase our visibility and exposure in parallel with our pilots' activities. Maintenance is done through the dissemination manager in DERlab with shared posts and material shared from the partners

[1] Number of followers by the finalisation of the Deliverable (30.12.2025).

and curated by the communication and dissemination lead. Our posts varied between blog posts, events announcement, webinar registration call-to-actions, pilots updates, and updates from our conferences contributions. We highlighted whenever our partners attended an event on behalf of PARMENIDES highlighting key information and takeaways.

There have been more than 55 posts on LinkedIn just in the last year alone. Diverse types of posts such as videos, blog posts and pictures have been shared (see examples in Figure 7, Figure 8, Figure 9, and Figure 10). We gained more than 300 followers in the last year, as of the time writing this deliverable, and this mounts to half of the original KPIs. Our diverse followers base is scattered all over the world, with concentration in Europe of course but our reach expanded outside of Europe as well.

To plan the communication content, the communication work package leader at DERlab created a content calendar with collaboration with all partners in order to align on content availability and chronological planning for 2024 in two phases. This way we ensured that there is available content throughout the year and planned ahead of time with enough notification for all partners.

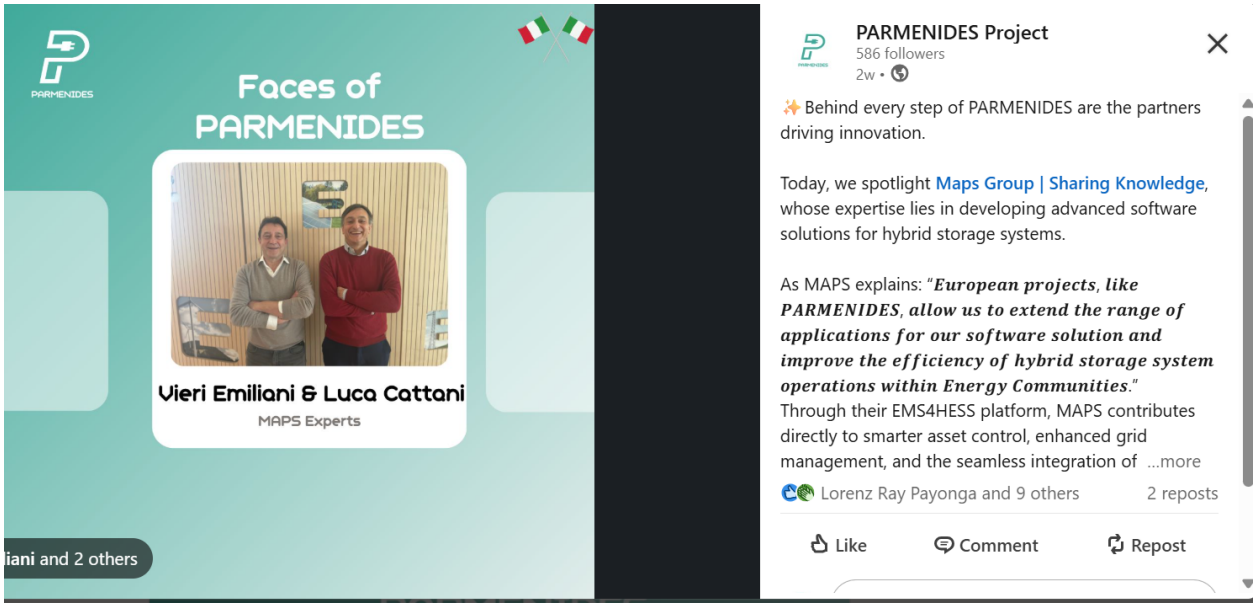

Figure 7:Example of PARMENIDES' posts on LinkedIn (Faces of PARMENIDES).

Figure 8: Example of PARMENIDES' posts on LinkedIn (Developer Dashboard).

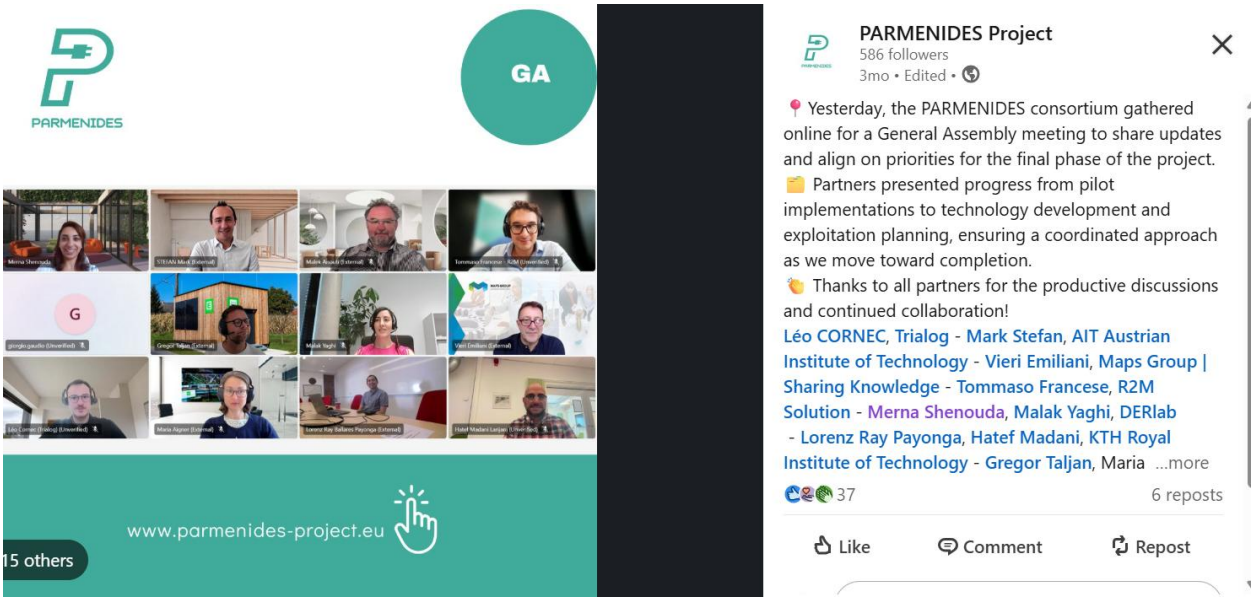

Figure 9: Example of PARMENIDES' posts on LinkedIn (General Assembly, online).

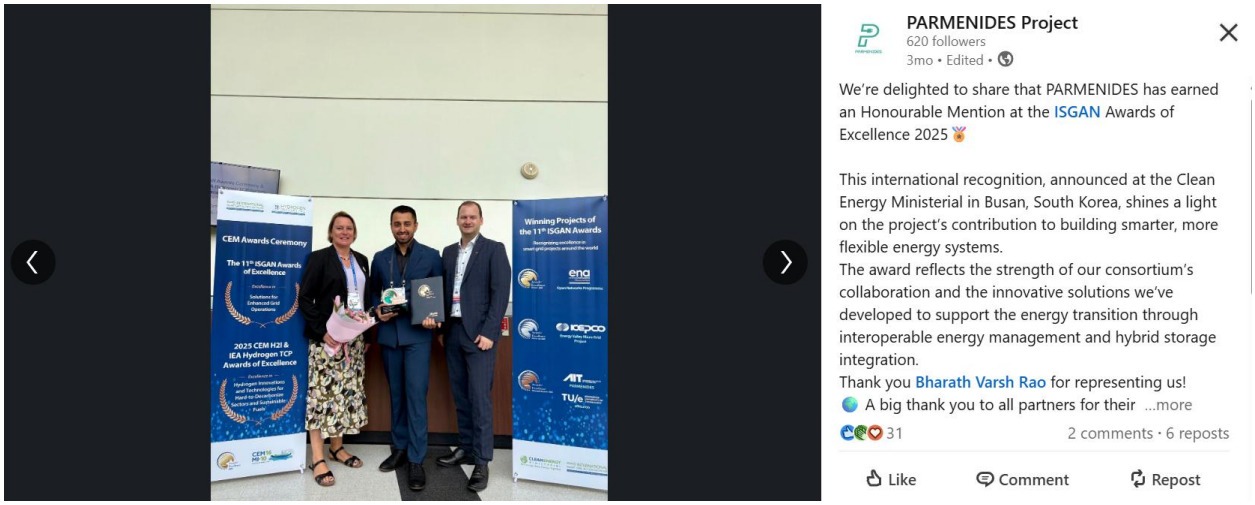

Figure 10: Example of PARMENIDES' posts on LinkedIn (ISGAN Award of Excellence).

Our follower amount has increased significantly in the last year due to the build-up of posting and activities by the project. We have created interesting segments and campaigns that were not initially in the Grant Agreement, such as a campaign inspired by the annual Spotify Wrapped and the Faces of PARMENIDES campaign.

At the end of each year, the music and podcast application Spotify creates a summary of music and most played songs and genres of its users. This was trending on LinkedIn in December last year with many corporates jumping on the trend. The Communication Manager at DERlab managing PARMENIDES followed the trend and created scientific based and insights based on our consortium throughout the last year to match the same energy.

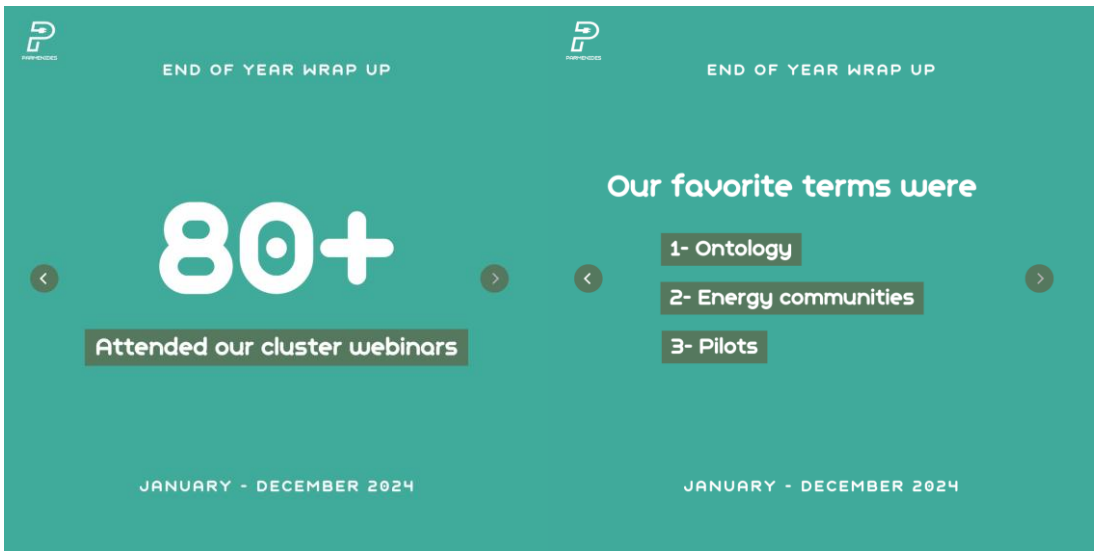

Figure 11: PARMENIDES Wrapped campaign.

During the last year of the project, the Communication Manager of the project decided to create “Faces of PARMENIDES” campaign. The campaign was developed as a people-focused communication action to highlight the human expertise behind the project’s technical achievements. While PARMENIDES delivers advanced solutions for grid flexibility, energy communities, and future grid operation, these innovations are made possible by the knowledge, dedication, and collaboration of the consortium partners. The campaign therefore aimed to make the project more relatable, transparent, and accessible to a wide audience by showing the individuals who contribute to its success. This format was selected because story-driven and human-cantered content performs significantly better than purely technical communication.

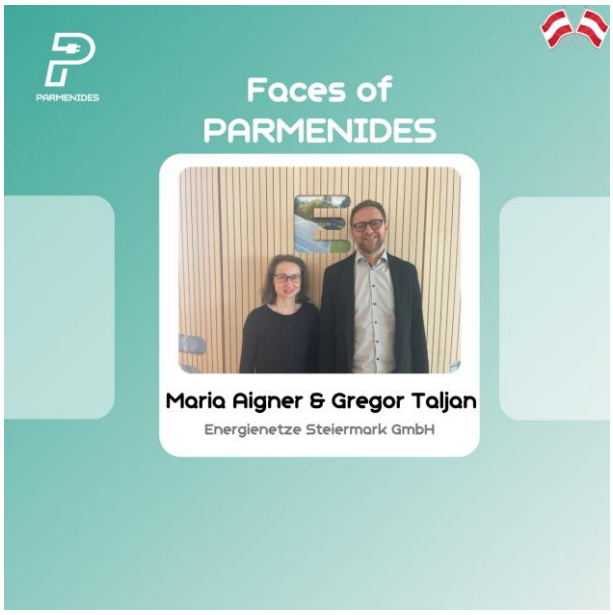

Figure 12: PARMENIDES Faces of PARMENIDES campaign

X (previously Twitter): The political scene shifts in the United States and the transition from Twitter to X has sparked a migration wave away from the platform, driving many users to abandon the platform, their accounts or switch to something else more politically aligned with them. Therefore, we see an incline of number of interactions on the platform, and we observe a small portion of followers: 35. We had already planned to have 500 followers, but it was quickly evident how the political change affected our target audience there. Similarly other projects reported having the same observation and therefore a decision was made to invest more content and time on LinkedIn where we can interact with diverse stakeholders, and for that reason our posting strategy increased on LinkedIn to compensate the lacking numbers on X.

Figure 13: PARMENIDES tweets on X platform.

YouTube: After careful consideration for the quantity of video production we have accumulated during the project, and with consultation with project coordinator, we decided to refrain from using the platform as there was not enough video material produced by the partners to populate the channel and maintain an engaged audience. Instead, we utilised the website and the LinkedIn page to advertise the few videos we have produced throughout the project.

Zenodo: In line with Horizon Europe's open access principles and the commitments defined in the Grant Agreement, the PARMENIDES consortium ensures that all public project outputs are openly available through the Zenodo repository. A dedicated community page has been created at https://zenodo.org/communities/parmenides, serving as a central platform for sharing and preserving the project's results.

To date, the following public deliverables have been deposited: D2.2, D3.1, D3.2, D3.3, D4.3, and D6.1. Each document is assigned a Digital Object Identifier (DOI), ensuring that results are permanently citable and easily discoverable. All uploaded materials are automatically indexed in OpenAIRE, supporting long-term accessibility and alignment with the European Commission's Open Science policy.

The consortium chose Zenodo as a trusted, EC-supported platform that guarantees transparency and open sharing of research results. Additional materials such as future deliverables, scientific publications, and datasets will be added as the project progresses. This approach reflects PARMENIDES's broader commitment to open science, ensuring that the knowledge generated within the project remains accessible, reusable, and beneficial to the wider research and innovation community.

4.5 Newsletters

6 newsletters were issued: December 2023, August 2024, February 2025, May 2025, October 2025, December 2025, highlighting project updates and news. The PARMENIDES newsletter has played a vital role in sharing updates about how these groundbreaking systems are shaping local energy communities. By featuring pilot activities, technology highlights, and tangible progress stories, it has built awareness among stakeholders and demonstrated the practical impact of the project's solutions.

Additionally, the newsletter has strengthened outreach efforts by clearly communicating the project's goals and achievements to a wider audience. By spotlighting partnerships, test results, and future plans, it has kept the community engaged and fostered dialogue with potential adopters and collaborators, ensuring that the message of sustainable, flexible energy reaches beyond technical circles. Currently we have 101 subscribers to the newsletter collected through the issuance of 5 newsletter throughout the project which highlights the value seen in the newsletters. Newsletters were shared on the website here.

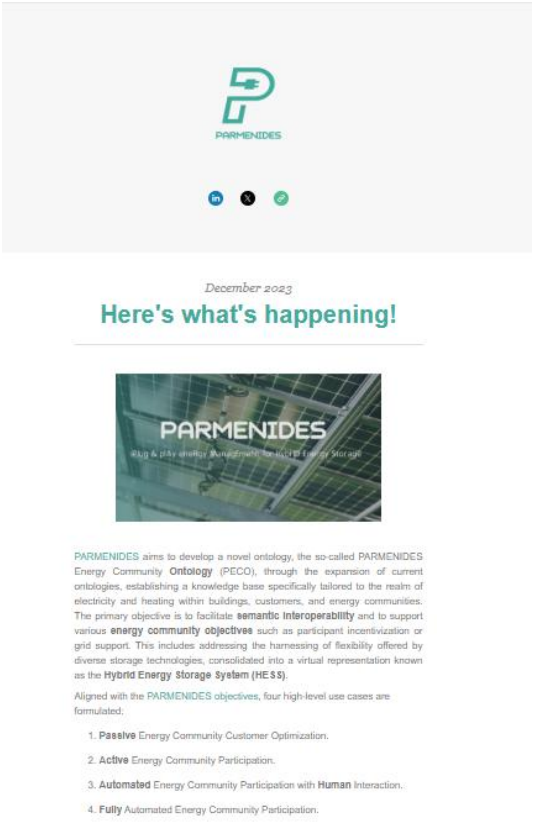

Figure 14: Screenshot, 1. PARMENIDES newsletter.

The **December 2023** issue of the PARMENIDES newsletter emphasizes the core technical developments and engagement plans underway. It starts by outlining the project's objective to build PECO, the PARMENIDES Energy Community Ontology, intended to enable semantic interoperability in the electricity and heating domains. The newsletter also describes how multiple storage technologies are abstracted into a unified model called HESS (Hybrid Energy Storage System). Four high-level use cases are defined, ranging from passive to fully automated community participation, with associated optimization strategies that balance energy supply, demand, and user preferences.

Beyond technical framing, the newsletter reports progress on identifying eight applicable use case scenarios, which will be implemented in the Austrian and Swedish pilots. It explains that optimization is considered along two dimensions: Supply-Demand Management (focusing on self-consumption and self-sufficiency) and Preference Optimization (tailoring outcomes to individual user preferences). The newsletter concludes with announcements of upcoming events where PARMENIDES plans to present and engage, including the consortium's next General Assembly, CIRED 2024 in Vienna, and the EU Sustainable Energy Week in Brussels.

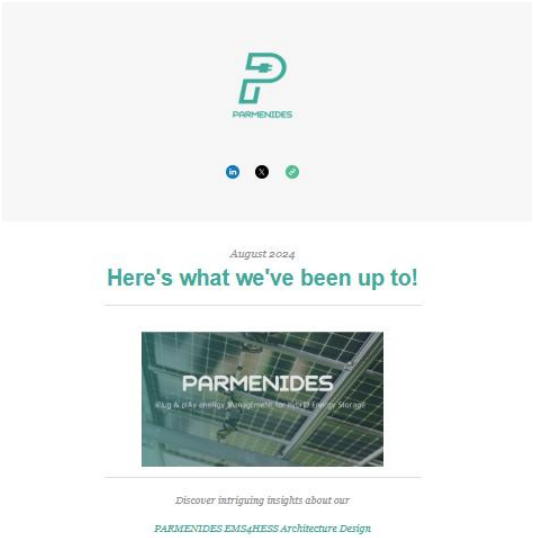

Figure 15: Screenshot, 2. PARMENIDES newsletter.

This edition of the PARMENIDES newsletter, issued in **August 2024**, showcases the design and architecture of EMS4HESS, the project's modular, ontology-driven energy management system for hybrid storage. It details how the platform integrates PECO (the PARMENIDES Energy Community Ontology) to standardize data across electricity and heating domains, enabling semantic interoperability and cross-domain integration.

The newsletter also highlights the logical structure of EMS4HESS, with EMS Core and EMS Node components, connectors, adapters, APIs, and identity/security layers, and previews its upcoming deployment in the Austrian and Swedish pilots. It closes with a reminder of the forthcoming General Assembly in Parma and invites readers to stay updated via the project website.

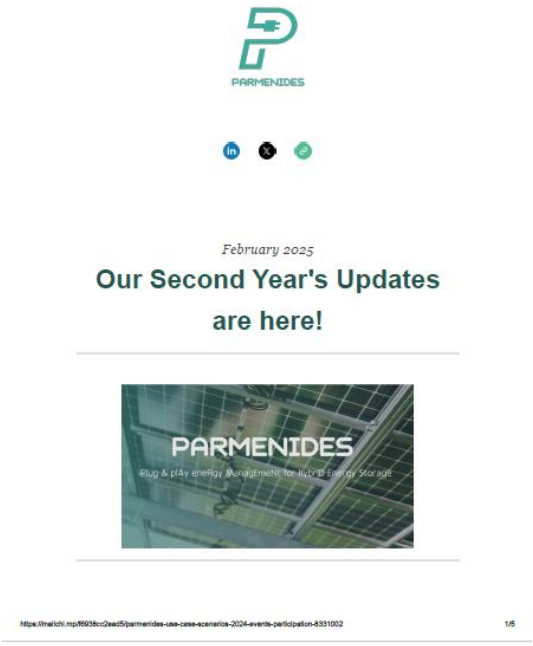

Figure 16: Screenshot, 3. PARMENIDES newsletter.

The 3rd newsletter (**February 2025**) presents the year-two progress of PARMENIDES, with a strong focus on technical advances and pilot preparations. It reaffirms the development of PECO, the PARMENIDES Energy Community Ontology, designed for cross-country applicability and grid support. The EMS4HESS platform is detailed, highlighting its modular architecture, connector/adaptor layers, and semantic transformations for interoperability with third-party systems.

Updates on pilot sites include infrastructure upgrades in Austria (Gasen & Heimschuh), such as optimal sensor placement, robust communication networks, and simulation model readiness for state estimation and grid capacity management. In Sweden (KTH), three sub-pilots are introduced: a building complex for behaviour analysis, a BMS-enabled section for interoperability testing, and a controlled lab setup for HESS experiments using hardware-in-the-loop. Use cases center on flexibility activation, ontology-driven optimization, and DSO support. Upcoming engagements listed include PARMENIDES' participation in BRIDGE GA, the "World Café with BRIDGE projects," and a General Assembly in Paris.

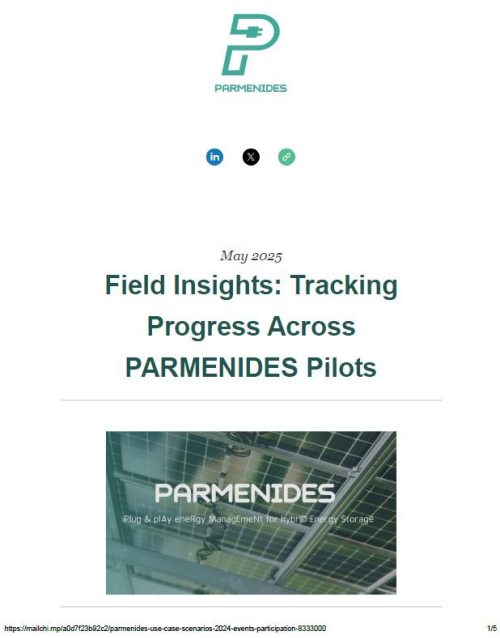

Figure 17: Screenshot, 4. PARMENIDES newsletter.

In **May 2025**, we issued the 4th newsletter. This issue presents field updates from the PARMENIDES pilots in Austria and Sweden, detailing how both sites have moved further into deployment and testing. In Gasen and Heimschuh, infrastructure upgrades are now complete, forecasting tools and grid-management modules are active, and systems are running in open-loop mode while preparations for closed-loop operation continue. A public dashboard in Gasen is set to bring transparency to local energy metrics, allowing citizens to see generation, storage, and usage in real time.

On the technical side, the newsletter highlights how AIT VLab has evolved into a more powerful framework. The newsletter also outlines how EMS4HESS is being stabilized data acquisition, anomaly detection, forecasting refinement, and previews stress-testing under larger loads using virtual assets self-registering via the PECO standard. Finally, the edition presents PARMENIDES' path toward commercialization through the mapping of Key Exploitable Results and the careful analysis of regulatory and market dynamics.

Figure 18: Screenshot, 5. PARMENIDES newsletter.

The 5th edition of PARMENIDES newsletters issued in **October 2025** offers updates on how the Swedish pilot has achieved bidirectional data exchange with EMS4HESS, enabling sensor, battery, heat pump, and actuator data to flow both ways. Integration with local demand profiles and the flexibility engine is expected to follow soon.

It also mentions that PARMENIDES was awarded an Honorable Mention in the ISGAN Awards of Excellence 2025, recognizing innovations in grid capacity management and AI-based distribution system state estimation.

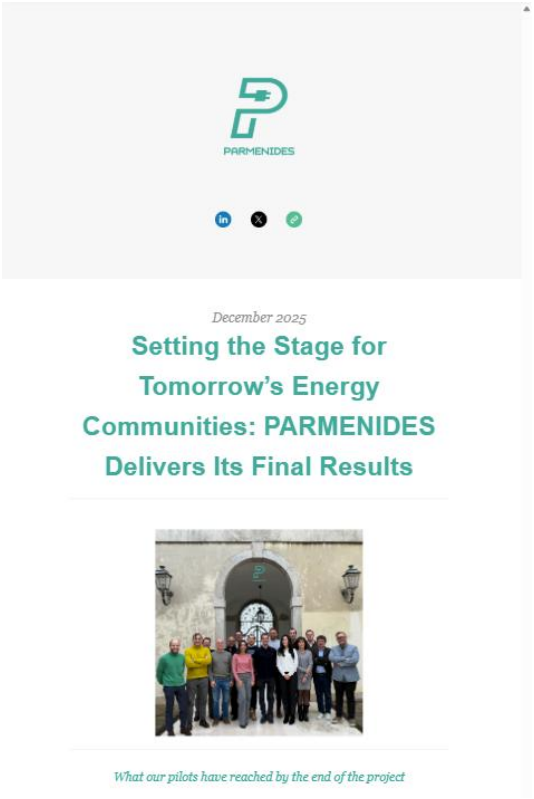

Figure 19: Screenshot, 6. PARMENIDES newsletter.

The 6th edition of the PARMENIDES newsletter issues in **December 2025** highlights the Swedish pilot at KTH, where our Flexibility Strategy using deep reinforcement learning was successfully tested for intraday energy management. Key innovations include the Energy Community Ontology (PECO), an advanced Energy Management System, AI-driven load flexibility, and a grid capacity management system, creating a fully interoperable platform for smarter, and resilient energy communities.

These updates provide subscribers with transparent and timely insights into PARMENIDES' tangible progress, keeping the community engaged with real developments on the ground. By presenting pilot activity, tool validation, and commercialization strategies together, the newsletter reinforces trust and highlights how the project is moving from research to real-world application. This visibility helps stakeholders align expectations, foster collaboration, and maintain momentum toward scalable energy community solutions. Sharing technical breakthroughs, recognitions, and event participation further strengthens transparency, credibility, and alignment with Europe's broader energy transition goals, paving the way for lasting impact and future adoption.

4.6 Press Release

Online and printable press releases in English at the EU level are planned to raise awareness about the PARMENIDES project - highlighting its challenges, objectives, and the partners involved. As stated in the PARMENIDES Project Proposal, more than four newsletters were expected to be released over the course of the project. Press releases are also translated into four EU languages spoken by project partners: German, Swedish, Italian, and French.

All press releases are made available to the public via the Media Corner section of the PARMENIDES website. As of now, four press releases have already been published and are accessible online. In addition, press release distribution is carried out through the project's established communication channels to maximize outreach.

Our press releases were released in April 2024, February 2025, and August 2025 and December 2025.

PRESS RELEASE

1st year recap!

Date: 20.04.2024

the PARMENIDES project's pilots

PARMENIDES tackles energy system challenges with interoperable solutions, centered on Hybrid Energy Storage Systems. A key advancement is the "PARMENIDES Energy Community Ontology" (PECO), optimizing energy flows for local utilization. PECO's development is well underway, with publication slated for autumn 2024.

The ICT framework, developed in the project's first year, ensures interoperability, dependability, and security for diverse use cases. Components include a Grid Capacity Management System, Monitoring Devices, Smart Meters, and an Information System, bolstered by the Energy Management System (EMS4HESS). Flexibility management is a focus, with development to conclude by 2024, followed by field trials in Austria and Sweden.

In the first project year, eight energy community use cases were identified, ranging from passive involvement to full automation. These scenarios vary in automation levels, optimization functionalities, and flexibility approaches. Pilots are underway in Sweden (KTH Royal Institute of Technology, Stockholm) and Austria (Energienetze Steiermark GmbH).

The Swedish pilot, conducted at KTH in a multi-apartment building, evaluates resident flexibility potential. Through EMS4HESS, it showcases electrical and thermal storage flexibility at various time scales, considering technology constraints, user preferences, and behavior. Direct engagement with users and building data enables feedback on flexibility strategies and digital tools.

The Austrian pilot, spanning two municipalities within Energienetze Steiermark GmbH's grid, prioritizes distribution grid requirements. It considers local feed-in, storage, and load conditions to adhere to grid constraints. The EMS4HESS calculates optimal HESS set-points, incorporating diverse optimization objectives.

In its first year, the PARMENIDES project laid essential foundations for interoperable energy community solutions. The development of PECO (PARMENIDES Energy Community Ontology) progressed with a publication slated for autumn 2024. The ICT framework—composed of grid capacity management, smart meters, monitoring devices, an information system, and EMS4HESS—was established to ensure dependability, security, and interoperability across use cases. Eight use case scenarios, spanning from passive energy community participation to full automation, were defined and are now being implemented in pilots in Austria and Sweden. In Sweden, the pilot at KTH explores flexibility potential with thermal and electrical storage in multi-apartment buildings, while in Austria, distributed pilot sites balance grid constraints with optimal HESS operation using EMS4HESS.

Figure 20: Screenshot, 1. PARMENIDES press release.

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PRESS RELEASE

Advancing PARMENIDES Pilots

Date:
12.02.2025

Innovative Energy Systems for a Sustainable Future: PARMENIDES Pilots Begin Deployment

PARMENIDES is revolutionizing the energy sector with its cutting-edge systems and innovative solutions. The project focuses on enabling flexibility provision in Renewable Energy Communities (RECs) and optimizing energy systems through advanced ontologies and hybrid energy storage solutions (HESS). By prioritizing grid-friendly approaches, PARMENIDES paves the way for sustainable and interoperable energy management across Europe.

The pilot projects in Austria and Sweden exemplify PARMENIDES' impact, addressing real-world challenges in energy communities. These pilots test innovative solutions, including an advanced Energy Management System (EMS4HESS), designed to utilize the PARMENIDES Energy Community Ontology (PECO) as a knowledge base and to optimize the utilization of various storage technologies, aggregated into a Hybrid Energy Storage System (HESS). With tailored use cases, such as enhancing energy flexibility and integrating diverse storage mediums, the pilots demonstrate the scalability and adaptability of PARMENIDES' solutions.

PARMENIDES' innovative technologies showcase its commitment to supporting the energy transition while fostering collaboration between research, industry, policymakers, energy communities, and its members.

Figure 3: Thermal energy storage subsystem of the HESS (Stockholm, Sweden)

In its second milestone release (12 February 2025), PARMENIDES announced that pilot deployment is underway in both Austria and Sweden. The project is actively testing its EMS4HESS platform, which leverages the PARMENIDES Energy Community Ontology (PECO) to coordinate hybrid energy storage (HESS) across diverse technologies. These pilots – structured around tailored use cases for flexibility, interoperability, and storage integration – are demonstrating the scalability and adaptability of the PARMENIDES approach in real energy communities. The announcement underscores the project's commitment to advancing grid-friendly, interoperable energy solutions through close collaboration among research, industry, policy, and local stakeholders.

Figure 21: Screenshot, 2. PARMENIDES press release.

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PRESS RELEASE

PARMENIDES Project Updates

Date:
13/08/2025

PARMENIDES from field and social science to the market

The Hybrid Energy Storage System (HESS), part of the Swedish PARMENIDES pilot, has already established communications with the developed Energy Management System EMS4HESS and will be ready for full data exchange in August. It is expected to emulate PARMENIDES' use cases and scenarios from actual apartment sensor data. It will also be used to test and demonstrate the algorithm also being developed to align with PARMENIDES's flexibility strategies, especially that of trade-off exploration/exploitation.

In Gasen, Austria, Experientia designed and conceptualized a public energy dashboard that, within the next few weeks, will show real-time data on local electricity use, generation, and storage. The display promotes transparency and highlights key sustainability metrics, such as self-sufficiency and CO_2 savings.

Figure 1: Dashboard from the Gasen site

The PARMENIDES project has identified 12 Exploitable Results (ERs), with R2M Solution tracking their commercial potential. Among them, three have been selected as Key Exploitable Results (KERs), the most market-ready innovations. These KERs tackle major challenges in hybrid energy storage through ontology-integrated platforms, advanced grid management, and automated optimization between energy communities and grid operators. Each is backed by a tailored business model and supported by R2M's strategic guidance on commercialization, IP protection, and market entry.

The PARMENIDES press release (13 August 2025) highlights three strategic milestones across technical, demonstrator, and exploitation domains. In Sweden, the Hybrid Energy Storage System (HESS) pilot has successfully integrated with EMS4HESS and will begin full data exchange using real apartment sensor inputs, serving to validate trade-off algorithms under real conditions. In Gasen, Austria, a public energy dashboard designed by Experientia will soon go live, delivering real-time visuals of electricity generation, storage, and usage, enhancing transparency and showcasing sustainability metrics such as self-sufficiency and CO_2 savings. On the commercial front, PARMENIDES has identified 12 Exploitable Results (ERs), with 3 elevated to Key Exploitable Results (KERs). These core innovations, focused on ontology integration, advanced grid management, and automated optimization, are now supported by tailored business models, IP strategies, and commercialization pathways driven by R2M Solution.

Figure 22: Screenshot, 3. PARMENIDES press release.

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PRESS RELEASE

PARMENIDES Project Updates
Date: 15/12/2025

PARMENIDES Concludes Three-Year Project

KTH's pilot demonstrated a new flexibility strategy using deep reinforcement learning to manage intraday flexibility requests. This strategy's early results show that buildings can autonomously provide flexibility with thermal storage while still respecting occupant comfort and balancing multiple objectives. This innovative approach has been accepted for presentation at the 2026 IEEE PES International Meeting in Hong Kong.

The PARMENIDES project has reached a key milestone, with the Gasen and Heimschuh pilots now running in closed-loop operation. Using Grid Capacity Management and an Energy Management System, the pilots ensure safe grid conditions while optimising the Hybrid Energy Storage System to improve self-sufficiency and reduce costs. These advancements are supported by the PARMENIDES Energy Community Ontology (PECO), which provides the unified framework behind all system configurations.

Figure 1 illustrates the overall interaction between the GCM and EMS in Austria's pilot

As PARMENIDES enters its final phase, the consortium is now focusing on a replication plan to bring the project's solutions to new locations beyond the original pilot sites. Using a structured assessment developed by R2M Solution, partners evaluated regulatory, technical, and market conditions to identify where the technologies can be most effectively deployed. This work aims to create a scalable blueprint that supports future rollouts and maximizes the project's impact across Europe.

Figure 23: Screenshot, 4. PARMENIDES press release.

The fourth press release covered news and updates from the pilots and our replication plan. The PARMENIDES project marks major milestones in energy community innovation. The Swedish pilot at KTH successfully demonstrated a flexibility strategy using deep reinforcement learning, enabling buildings to autonomously provide flexibility while balancing comfort and multiple objectives. In Austria, the Gasen and Heimschuh pilots now operate in closed-loop mode, with Grid Capacity Management and the Energy Management System optimising hybrid storage to enhance self-sufficiency and reduce costs, all powered by the PARMENIDES Energy Community Ontology (PECO). Looking ahead, the consortium is preparing a replication plan to scale these solutions to new locations, creating a blueprint for broader European impact.

4.7 Stakeholder Communication

Partners from Energienetze Steiermark GmbH (Austria) and Experientia (Switzerland) have created many activities to target stakeholder communication.

4.7.1 Energienetze Steiermark GmbH

Pilot customer events in Gasen and Heimschuh (early stage)

EnergienetzeT Steiermark GmbH has hosted an event to inform stakeholders about the PARMENIDES project.

An information event was held in the pilot regions of Gasen and Heimschuh to present the PARMENIDES project and inform participants about its objectives and scope. The event aimed to generate interest among customers and encourage their active participation in the project. The event targeted network customers in the local grids of Gasen and Heimschuh

An overview of the project content and key benefits were communicated to the audience such as individual advantages, positive environmental impact, contribution to the energy transition, and more.

Selected participants of the information event were successfully convinced to join the project.

The activity's impact has helped us reaching certain results such as the knowledge driven through the participation of selected network customers it was possible to implement and achieve the project objectives.

In Gasen, ongoing information was provided on-site by the KEM manager. Additionally, a screen was installed to inform customers.

Pilot customer event in Gasen (project finalisation)

On December 18, 2025, an information event was held in Gasen to strengthen the involvement of the pilot customers participating in the PARMENIDES project. The session, organized by Energienetze Steiermark GmbH and running from 18:00 to approximately 20:30 followed by an informal get-together, brought together representatives from Energienetze Steiermark, from the Almenland Climate and Energy Model Region, the Mayor, as well as twelve local pilot participants. The meeting began with a concise presentation of the European research project PARMENIDES and the national research project INNOnet, highlighting the substantial synergies between the two initiatives, particularly regarding digitalized network operation, local storage integration, and regional energy solutions.

After the introductory presentations, the project team addressed a wide range of questions from the pilot customers. The discussions covered several regionally relevant energy topics, including the development of charging infrastructure – especially the potential establishment of fast-charging facilities in Gasen – future energy projects planned for the municipality, and options for continued operation of the existing energy storage system beyond the formal project period. The open dialogue allowed technical, organizational, and local perspectives to be shared directly, enabling the project team to integrate community needs and expectations into the ongoing work. Overall, the event significantly contributed to increasing transparency, strengthening trust, and fostering active participation among the pilot customers involved in PARMENIDES.

A small survey among four pilot customers shows a consistently positive attitude toward the project's key topics. Most respondents (three out of four) expressed high or moderate willingness to consider grid-operator requirements, for example regarding EV charging. The importance of consuming locally generated energy was rated very high, with three participants selecting the strongest level of agreement. Likewise, the contribution of energy-sector research projects to sustainability was viewed overwhelmingly positively, with all respondents expressing high approval. Overall, the feedback indicates strong regional identification with local energy solutions and broad support for the project's research activities.

4.7.2 Experientia

Stakeholder communication constituted a core methodological component within the PARMENIDES project, reflecting the need to integrate technical system development with socio-behavioural understanding and participatory alignment. The project involves a heterogeneous constellation of actors, including energy community members, building occupants, local authorities, technology providers, distribution system operators, and academic and research institutions. Ensuring a shared comprehension of project objectives, constraints, roles, and expected contributions was therefore essential for establishing the basis upon which use cases, system requirements, and behavioral models were progressively developed.

In this regard, Experientia implemented a structured process combining collaborative workshops and qualitative data collection activities. The purpose was to capture the diversity of stakeholder drivers, expectations, and factors influencing participation in energy communities, while concurrently aligning the

harmonization of terminology and conceptual framing across partners. This integrated approach ensured that behavioral considerations were embedded from the early stages of specification, enabling subsequent phases to build upon evidence-based understanding rather than assumptions.

4.7.3 Co-Creation Workshop for Stakeholder Alignment (Basel, Switzerland, 13–14 March 2023)

A two-day co-creation workshop was conducted at Experientia's offices in Basel with participation from consortium partners.

The workshop served to:

- Establish a shared interpretative framework for defining use cases across pilots;
- Map relevant actor categories and stakeholder roles; and
- Identify operational, social, environmental, regulatory, and behavioural requirements affecting the implementation of energy community participation and flexibility mechanisms.

Objectives:

- Define and refine pilot-specific use cases within a common conceptual framework.
- Identify user needs, stakeholder expectations, and relevant contextual drivers and barriers.
- Establish methodological principles to guide subsequent behavioural modelling and interaction design activities.
- Ensure alignment regarding key terms, evaluation dimensions, and expected outcomes.
- Participants included pilot leaders, technology partners responsible for EMS and interface development, behavioural researchers, and stakeholders involved in local deployment and user engagement activities.

Workshop Structure and Resulting Outputs:

Day 1 – Use Case Definition and Requirements Analysis

The first day applied structured scenario analysis and facilitated group work to outline the operational characteristics and boundary conditions of each pilot use case. Discussions covered relationships between actors at local, community, and system levels; functional objectives; and enabling conditions required for adoption and sustained engagement.

Key outcomes:

- Consolidated set of use case definitions, including operational scopes and constraints.
- Interaction maps illustrating roles and interdependencies across households, communities, and grid-level actors.
- Preliminary definition of Key Performance Indicators (KPIs) linking behavioural engagement factors with system performance outcomes.
- Agreement on a unified methodological approach for cross-pilot assessment and comparison.

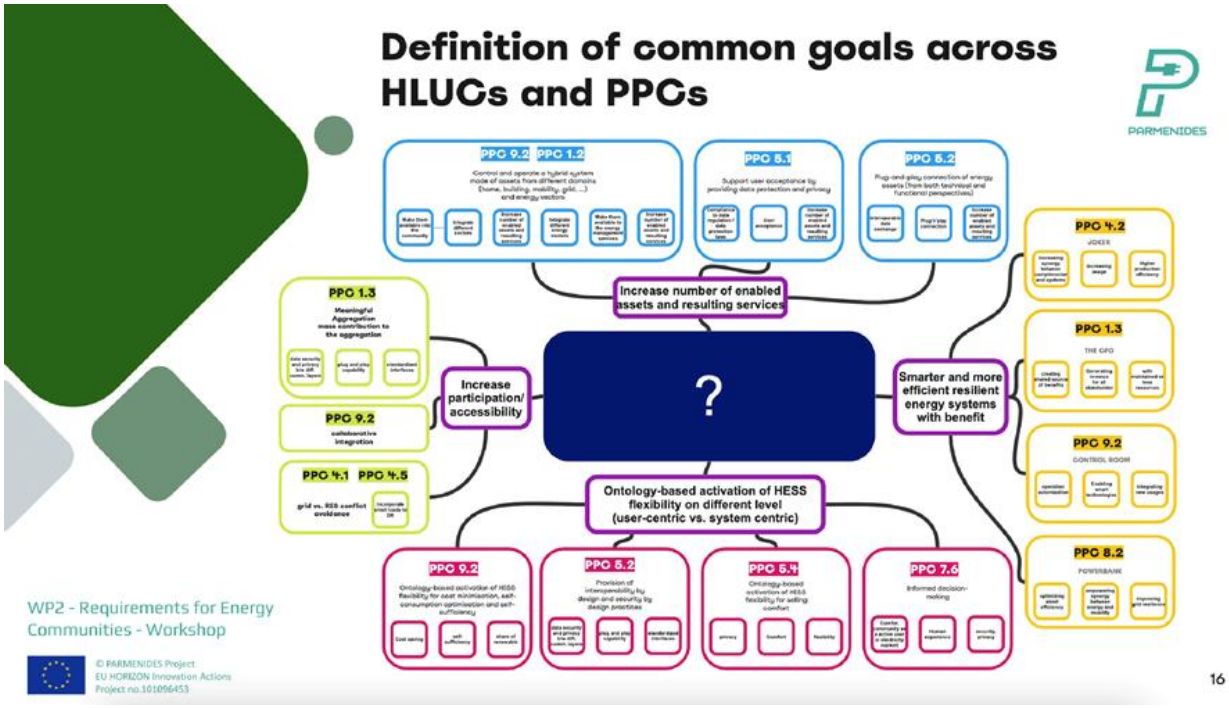

Figure 24: Definition of common goals across HLUCs and PPCs.

Day 2 – Stakeholder and End-User Profiling

The second day focused on characterizing different stakeholder and user categories to document their respective motivations, priorities, needs, and potential barriers to participation. Profiling exercises examined socio-behavioral distinctions between passive consumers, active prosumers, and more engaged community coordinators or influencers.

Key outcomes:

- Systematic classification of stakeholder and user types across pilots.
- Identification of drivers and barriers grouped into cultural, economic, regulatory, technological, and social domains.
- Mapping of behavioral touchpoints relevant for engagement strategies and flexibility scenarios.
- Establishing key research elements to inform behavioral modelling and communication strategies.

4.7.4 Survey-Based Data Collection and Limitations (KTH Live-in Lab Pilot, Sweden)

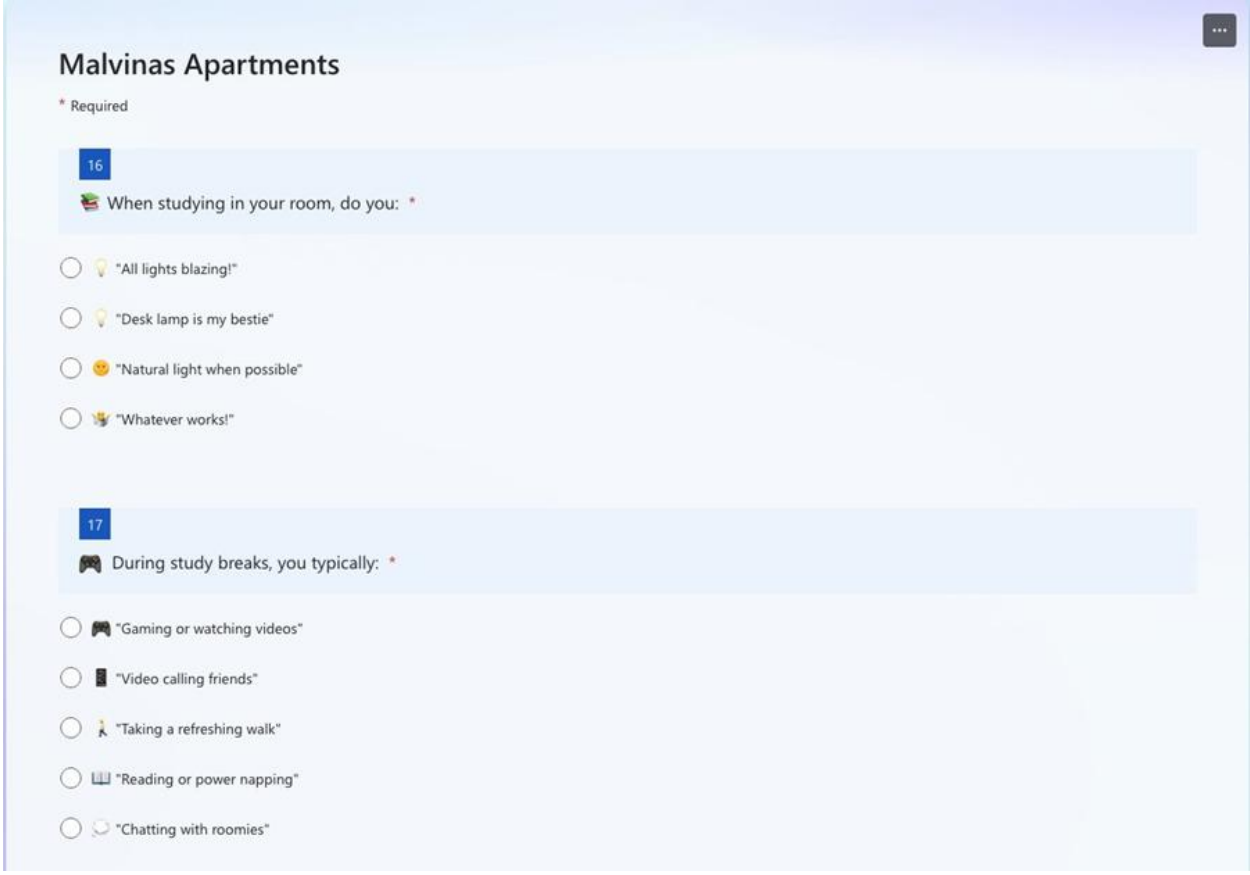

Figure 25: Questions from the survey.

A questionnaire was developed to characterize occupant behaviour and socio-behavioural archetypes in the KTH Live-in Lab context, with the objective of assessing the relationship between user profiles, attitudes toward automation, and patterns of energy-related behaviour. The survey included thematic sections related to daily routines, living situations, comfort preferences, sustainability attitudes, and decision-making heuristics influencing resource use.

Figure 26: Communication flyer to the students.

However, institutional regulations at the pilot site restricted direct dissemination via email to residents. Accordingly, recruitment could only be carried out through printed posters displayed in shared building areas. This constraint substantially limited outreach efficiency and resulted in lower than anticipated response rates.

In response, the consortium developed an alternative engagement strategy that emphasized direct interpersonal interaction and embedded participation within informal resident contact points. Planned adjustments for subsequent phases include micro-interviews, targeted engagement sessions, and the introduction of participation incentives as appropriate within the pilot context.

General Reflections

The workshop process successfully established a shared interpretative foundation among partners, aligning methodological and conceptual frameworks across the consortium. Conversely, the survey experience demonstrated the importance of context-specific engagement strategies when working with end-users in real residential environments. These findings underline the necessity of integrating behavioural, organizational, and contextual considerations into future phases of user modelling, interface development, and community engagement planning within PARMENIDES.

4.8 Technical factsheet

As outlined in the PARMENIDES Project Proposal, a technical factsheet was made available for outlining key information about the project and has been disseminated to the partners and made available on the website. The technical fact sheets serve as concise, visually engaging documents that distil complex project information into clear, digestible pieces. They act as quick references for stakeholders, such as funders, industry professionals, or policymakers, highlighting crucial project details like objectives, scope, technologies used, timelines, budget, and involved partners.

The PARMENIDES factsheet exemplifies a well-designed technical factsheet. It begins with an explanation of the project's vision: developing an ontology tailored to electricity and heating domains for buildings, energy communities, and Hybrid Energy Storage Systems (HESS). Explicitly stating the use of ontology within a next-generation Energy Management System (EMS) framework, it clarifies how interoperability, scalability, and replicability are central to the project.

Further down, the factsheet clearly presents logistical information such as project duration (January 2023 - December 2025), total budget, coordinating organization (AIT), and project coordinator (Dr. Mark Stefan). It also outlines the context, recognizing the fragmentation of platforms, protocols, and standards, and positions ontologies as the solution to cross-platform interoperability. Finally, it lists participating partners and provides institutional identifiers, including the Horizon Europe grant number, ensuring transparency and traceability for interested readers.

We have invested in other promotional material such as the flyers with their two versions, online communication and dissemination, live dashboard in the pilot, and the coasters which all served in spreading main information about the project to diverse interest groups.

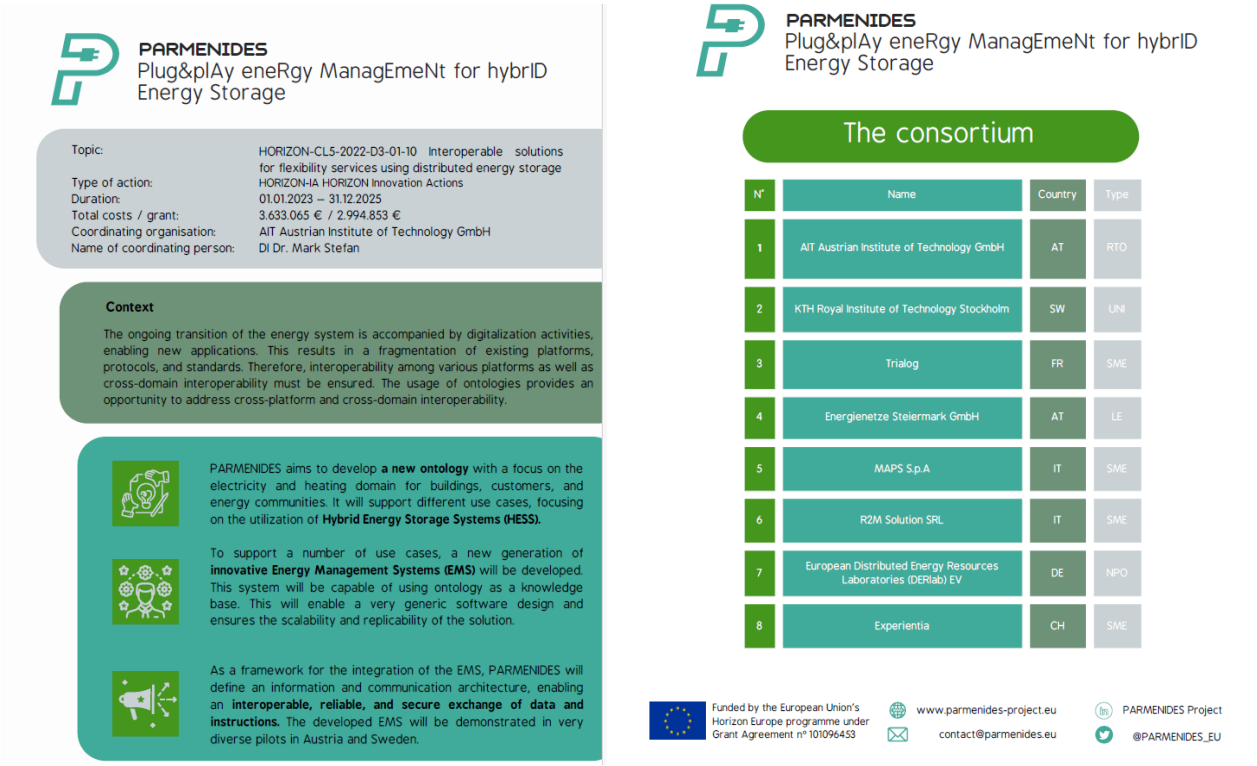

Figure 27: Screenshot of PARMENIDES' factsheet.

4.9 Brochure

2 designs were made to communicate the basic and important information about the project. Initially the first design was made, printed and distributed to all partners to be distributed in events, conferences and with relevant stakeholders. The design was simple to maintain engagement with the reader and highlighted key information about the objectives of the project and the Austrian and the Swedish pilots. A QR-code for subscribing to our newsletter was also added. On the 3rd year, the design was further improved and distributed at the BRIDGE General Assembly communicating more concrete information about the project and the pilots. A visual map of the partners location in Europe was added on the trifold design, with our objectives, and the website. A QR-code for subscribing into our newsletter was also added. More information and updates from the project and the pilots were included with visuals. 1.100 brochure were printed, using recyclable and environment friendly material. Distribution to consortium members took place during the General Assembly in March 2024 and the General Assembly in April 2025. An Italian adaptation of the last flyer was made based on the request of consortium partner R2M to distribute in a few conferences and events. The consortium members collectively agreed in the General Assembly that we should refrain from printing more for reasons of sustainability and savings of paper.

Figure 28: Screenshot of the first PARMENIDES brochure.

Figure 29: Screenshots of the second PARMENIDES brochure.

4.10 PowerPoint Presentation template

PARMENIDES has created a presentation template for various dissemination purposes throughout the project. This template was employed by all partners when delivering presentations related to PARMENIDES, ensuring consistency in the visual representation of project content. The power point templates were updated with a QR code on the last slide to directly take scanners to the newsletter page on the website making it easy for them to directly subscribe or to navigate through the existing newsletter and read them.

Figure 30: PARMENIDES power point template.

4.11 Contribution to the BRIDGE initiative

PARMENIDES actively contributes to the BRIDGE initiative as part of its communication and dissemination activities, with the objective of aligning project outcomes with broader European energy and digitalisation efforts. Project partners participate in BRIDGE onboarding events, thematic webinars organised by the BRIDGE Smart Grids and Energy Storage Working Groups (BSUG) and regularly review BRIDGE reports and workplans to ensure consistency and knowledge exchange.

In addition, PARMENIDES supports BRIDGE actions by contributing use cases to shared repositories, mapping the project architecture to common reference frameworks, and providing structured information on applied standards and solutions. Where relevant, the project also shares identified standardisation gaps, proposes improvements, and exchanges experience on topics such as AI-based energy management and smart home integration. Selected results, code components, and lessons learned are disseminated through BRIDGE channels to foster cross-project collaboration and reuse.

4.12 Conferences, presentations, and journal articles

The PARMENIDES consortium has contributed with many publications and events showcasing throughout the entire duration of the project as the publication of scientific methodologies and results from PARMENIDES are important elements of the PARMENIDES dissemination activities.

4.12.1 Project's publications:

Table 1: PARMENIDES publications.

#	Title / Author(s) / Event, Journal, etc.	Type	Link	Year	WP	Partner
1	**PARMENIDES – Enabling Flexibility Provision in Renewable Energy Communities through an Ontology-driven Interoperable ICT Architecture**					
	Mark Stefan, Miloš Šipetic, Fabrizia Giordano, Jawad Kazmi, Lorenz Payonga, Hatef Madani, Dune Sebilleau, Léo Cornec					
	CIRED 2024 Vienna Workshop, Vienna, Austria	Conference paper + poster	http://dx.doi.org/10.1049/icp.2024.2060	2024	3	AIT, KTH, TRI
2	**PARMENIDES – Ideal Voltage Sensory Placement for Battery Storage Operation Optimization**					
	David Fellner, Mark Stefan, Bharath-Varsh Rao, Sarah Reisenbauer, Maria Aigner, Gregor Taljan					
	CIRED 2024 Vienna Workshop, Vienna, Austria	Conference paper + poster	https://doi.org/10.1049/icp.2024.1878	2024	5	AIT, ENS
3	**Generic Definition and Information Model for Hybrid Energy Storage Systems (HESS)**					
	Lorenz Ray Payonga, Hatef Madani, Saman Nimali Gunasekara, Miloš Šipetić, Fabrizia Giordano, Mark Stefan					
	2024 Open-Source Modelling and Simulation of Energy Systems (OSMSES), Vienna, Austria	Conference paper	https://ieeexplore.ieee.org/document/10668987/	2024	5	KTH, AIT
4	**Optimizing renewable energy communities through ontology-driven energy management systems**					
	Mark Stefan, Miloš Šipetić, Fabrizia Giordano, Clemens Korner, Lorenz Ray Payonga, Vieri Emiliani, Lorenzo Niccolai, Maria Aigner					
	28th International Conference and Exhibition on Electricity Distribution (CIRED 2025), Geneva, Switzerland	Conference paper	https://doi.org/10.1049/icp.2025.1962	2025	5	AIT, KTH, MAPS
5	**Parmenides – Plug & plAy eneRgy ManagEmeNT for hybrID Energy Storage: Innovative Konzepte für die optimale Nutzung von hybriden Energiespeichersystemen**					
	Maria Aigner, Mark Stefan					
	e+i Elektrotechnik und Informationstechnik	Journal publication	https://doi.org/10.1007/s00502-025-01357-7	2025	5	ENS, AIT
6	**Evaluating heat pump-enabled building flexibility potential via deep reinforcement learning and trade-off analysis**					
	Lorenz Ray Payonga, Hatef Madani					
	15th IEA Heat Pump Conference (2026)	Journal publication *(submitted)*	-	2026	5	KTH
7	**Ontology-Based Energy Management for Hybrid Energy Storage Systems: Enhancing Interoperability and Optimisation**					
	Mark Stefan, Miloš Šipetić, Clemens Korner, Denis Vettoretti, Marc Dünser, Fabrizia Giordano, Lorenz Ray Payonga, Vieri Emiliani, Lorenzo Niccolai, Maria Aigner					

	IET Generation, Transmission & Distribution	Journal publication *(submitted, pre-published)*	-	2026	5	AIT, KTH, MAPS, ENS
8	**PLUG & PLAY ENERGY MANAGEMENT FOR HYBRID ENERGY STORAGE Innovative concepts for the optimal use of hybrid energy storage systems**					
	Maria Aigner, Mark Stefan					
	ISEC 2026 – 4th International Sustainable Energy Conference	Conference paper *(submitted)*	-	2026	5	ENS, AIT
9	**Applications of Machine-Learned State Estimation in Distribution Grids**					
	Marc Dünser, Denis Vettoretti, Clemens Korner					
	CIRED 2026 Brussels Workshop, Brussels, Belgium	Conference paper *(in preparation)*	-	2026	5	AIT
10	**Curriculum-based Reinforcement Learning for Flexibility Evaluation in Buildings**					
	Lorenz Ray Payonga, Hatef Madani, Marc Dünser, Mark Stefan					
	IEEE Power and Energy Society International Meeting (PES-IM) 2026	Journal publication *(accepted)*	-	2026	5	KTH, AIT

4.12.2 PARMENIDES events

Table 2: PARMENIDES events

#	Event	Date	Location	Partner
	Contribution to PARMENIDES	**Takeaways or summaries**		
1	**BRIDGE General Assembly 2023**	28.-30.03.2023	Brussels	AIT
	See Section 4.12.3	See Section 4.12.3		
2	**BRIDGE General Assembly 2024**	09.-10.04.2024	Brussels	AIT, TRI
	See Section 4.12.3	See Section 4.12.3		
3	**BRIDGE General Assembly 2025**	26.-26.03.2025	Brussels	AIT, TRI, DERlab
	See Section 4.12.3	See Section 4.12.3		
4	**3rd Expert Workshop on Design and Operation of Digitalized Sector-Coupled Energy Systems (DigiSect 2024)**	16.-17.05.2024	Stockholm	AIT
	A presentation of Grid-friendly energy communities in PARMENIDES took place.	Great discussions about the grid friendliness and expected results from the PARMENIDES project, PECO presentation for KTH Diggin Discussions organised (14.03.2025)		
5	**CIRED 2024 Vienna Workshop**	19.-20.06.2024	Vienna	AIT
	2 poster presentations (see #1 and #2 in Section 4.12.1)	Exploitation of PARMENIDES concept and ML-based sensor placement methodology as well as discussion with relevant stakeholders (DSO, standardisation bodies, etc.)		
6	**Open-Source Modelling and Simulation of Energy Systems (OSMSES) 2024**	03.-04.09.2024	Vienna	KTH
	Presentation of contribution to PARMENIDES Energy Community Ontology (PECO) with focus on HESS (see #3 in Section 4.12.1)	Synthesis of different HESS definitions and how it can be described in ontology. Helpful contribution to information modelling about HESS.		
7	**DERlab 17th Knowledge Day – Energy communities: Concepts and Applications**	09.10.2024	Online	AIT
	Presentation of PARMENIDES project and results	A specialized audience interested in the solution developed in the PARMENIDES project, and The PAMENIDES Energy Community Ontology (PECO) was explained.		
8	**Enlit Europe 2024**	22.-24.10.2024	Milan	TRI
	Communication, networking and creating synergies	Distribution of flyers and discussion about the project and possible synergies		
9	**IMH Energietage: Netze**	19.11.2024	Vienna	AIT
	Presentation about PARMENIDES and Innovations	A fruitful discussion about the digitalization and how it can help innovation in relation to PARMENIDES		
10	**IMH Energietage: Speicher**	20.11.2024	Vienna	ENS, AIT
	Presentation about PARMENIDES: Netzdienliche Speicher in Energiegemeinschaften	Specialized audience interested in the solution developed in PARMENIDES project. Focus on grid supporting storages		
11	**BRIDGE Knowledge Sharing Session on Market Design**	17.01.2025	Online	TRI, ENS
	Dissemination, knowledge sharing among projects	Presentation and workshop with other BRIDGE project on challenges DSOs face when operating battery		

		storage systems, focusing on European and Austrian legislation		
12	**KTH Diggin Discussions**	14.03.2025	Online	KTH, AIT
	Presentation of the PARMENIDES Energy Community Ontology (PECO)	Positive feedback from participants, constructive comments how PECO could be improved that were included in further developments		
13	**28th International Conference and Exhibition on Electricity Distribution (CIRED 2025)**	16.-19.06.2025	Geneva	AIT
	Presentation of PARMENIDES project and results	Showcasing its approach to optimizing Renewable Energy Communities (RECs) through an ontology-driven Energy Management System (EMS).		
14	**IREDonline 2025**	24.-25.06.2025	Online	AIT
	Presentation of PARMENIDES project and results	Showcasing our latest pilots results and interact with audience interested in the solution developed in PARMENIDES project.		
15	**Sustainable Places 2025**	08.-10.10.2025	Milan	KTH
	Presentation of PARMENIDES project results with focus on Swedish pilot and flexibility strategy	Audience found that an eventual problem in flexibility activation will be intra-day response, which the PARMENIDES Flexibility Strategy has potential to address		
16	**Green Building Conference & EXPO 2025**	15.-16.10.2025	Venice	R2M
	Presentation of PARMENIDES project and results	Specialized audience interested in the solution developed in PARMENIDES project. Takeaway: the idea, algorithms and results are top-notch and it has a great potential for commercial applications.		
17	**OVE-Energietechnik-Tagung 2025**	15.-16.10.2025	Kufstein	ENS
	Presentation of PARMENIDES project and results	Specialized audience interested in the solution developed in PARMENIDES project. Focus was on the Austrian pilots.		
18	**BRIDGE DMWG AI action meetings**		Online	TRI, MAPS
	Support BRIDGE AI Action	Contribution from PARMENIDES partners, point of view and results to BRIDGE AI action.		
19	**BRIDGE regulation WG action 3**	21.11.2025	Online	TRI
	Presentation of PARMENIDES project and results	Participation to the meeting as a representative of the PARMENIDES project. The aim of this meeting was to present to regulation survey outcomes of the participants and to review/validate them.		
20	**15th IEA Heat Pump Conference (2026)** ***(planned)***	26-29.05.2026	Vienna	KTH
	Presentation of PARMENIDES flexibility strategy - focus on trade-off analysis (see #6 in Section 4.12.1)	Focus will be on the overarching trade-offs, managing them, and the role of heat pumps as part of this system.		
21	**ISEC 2026 – 4th International Sustainable Energy Conference** ***(planned)***	14.-16.04.2026	Graz	ENS
	Presentation of PARMENIDES with a focus on Austrian pilots (see #8 in Section 4.12.1)	Presentation of PARMENIDES project and results in front of a specialized audience interested in the solution developed in PARMENIDES project. Focus will be on the Austrian pilots (operational envelopes)		

22	**IEEE Power and Energy Society International Meeting (PES-IM) 2026** ***(accepted)***	18.-21.01.2026	Hong Kong	KTH
	Presentation of PARMENIDES flexibility strategy - focus on model training concept) (see #10 in Section 4.12.1)	Reviewers found the approach of using "curriculum learning" to train an AI agent to respond to flexibility requests as a novel contribution.		
23	**EnInnov 2026 – 19. Symposium Energieinnovation** ***(accepted)***	11.-13.02.2026	Graz	AIT, ENS
	Presentation of PARMENIDES with a focus on Austrian pilots	Presentation of PARMENIDES project and presentation of insights of grid friendly energy communities and the interaction with the DSO.		
24	**CIRED 2026 Brussels Workshop** ***(planned)***	09-10.06.2026	Brussels	AIT
	Presentation of PARMENIDES project and results (see #9 in Section 4.12.1)	Presentation of the applications of Machine-Learned State Estimation in Distribution Grids and its application in and results from PARMENIDES.		

4.12.3 PARMENIDES at the BRIDGE General Assembly

BRIDGE GA 2023

As part of the PARMENIDES project's early-stage dissemination efforts, our project coordinator, Dr. Stefan Mark, actively participated in the BRIDGE General Assembly (GA) in 2023. During this event, PARMENIDES was introduced alongside other newly launched Horizon Europe projects. A dedicated project poster was prepared and displayed prominently, with Dr. Mark presenting PARMENIDES as the project's "poster showcase" (see Figure 31).

Figure 31: PARMENIDES Poster Showcase

The GA also served as a valuable platform for networking and strategic exchange. Dr. Mark engaged with fellow project coordinators, fostering inter-project dialogue and exploring potential synergies.

Furthermore, he contributed to several BRIDGE working group meetings, ensuring that PARMENIDES was represented in discussions shaping the future of energy research collaboration across Europe.

BRIDGE GA 2024

At the BRIDGE General Assembly (GA) 2024, PARMENIDES focused primarily on active participation in working group sessions and strategic discussions. The event provided a valuable opportunity for networking, fostering collaboration with other Horizon Europe projects and stakeholders. To support dissemination efforts, PARMENIDES also provided project flyers, which were distributed to participants to raise awareness and share key information about the project's objectives and activities.

Figure 32: PARMENIDES' presence at Bridge General Assembly 2024

BRIDGE GA 2025

The PARMENIDES project actively contributed to the BRIDGE General Assembly 2025, ensuring strong visibility within the European smart grids and energy communities' ecosystem. The consortium approached the event strategically, combining scientific contributions with dedicated communication and dissemination measures to maximize outreach and engagement.

In preparation for the BRIDGE GA, a special edition flyer was produced, highlighting the PARMENIDES Energy Community Ontology (PECO) and associated data-driven solutions. This material was designed to

provide stakeholders with a deeper understanding of how PECO supports interoperability, scalability, and transferability for the next generation of Energy Management Systems. By going beyond the standard project flyer, this publication emphasized the innovative core of PARMENIDES and provided concrete insights into its technical achievements.

Figure 33: PARMENIDES' special edition Bridge General Assembly's flyer in 2025

Additionally, the communication manager at DERlab created branded coasters to be distributed during the coffee breaks. These featured the project's logo, colour scheme, and partners' logos, together with a QR code and a thought-provoking question: "The future of energy communities is changing – scan to see what we uncovered." This unique approach successfully transformed an informal networking moment into an interactive opportunity for participants to connect with PARMENIDES results. The QR code linked directly to a dedicated project webpage that showcased videos and insights from consortium partners.

To strengthen the interactive element, all project partners were invited to contribute short video recordings, where they highlighted interesting discoveries and experiences from their work in PARMENIDES. These videos were curated and published on a dedicated page of the project website: Insights discovered by PARMENIDES members. The webpage served both as an engaging resource for BRIDGE GA attendees and as long-lasting content for external audiences.

Figure 34: PARMENIDES; special edition Bridge General Assembly coaster

This inter-collaborative effort ensured that the communication package extended beyond the event itself, providing stakeholders with a direct channel to explore project outcomes. It also fostered visibility for each partner's contribution and reinforced the collaborative nature of the consortium.

The project amplified its presence at the BRIDGE GA through teaser posts and multimedia content on LinkedIn. A teaser post was published prior to the event, raising awareness about the PARMENIDES participation and encouraging followers to stay tuned for updates. During and after the event, a dedicated video was released, capturing key moments and snippets of interactions from the GA. This was accompanied by a summary of key takeaways, ensuring that online audiences could access the project's insights even if they were not present at the event.

Together, these actions significantly increased the visibility of PARMENIDES within the BRIDGE community and beyond, ensuring that the project's innovations were highlighted in both professional and public contexts.

The participation in the BRIDGE GA also facilitated valuable exchanges with stakeholders, researchers, and other project representatives. Discussions highlighted the relevance of PARMENIDES's work on interoperability, community energy management, and hybrid storage solutions, aligning closely with the broader BRIDGE agenda. The event enabled the project to position its outcomes within the European innovation ecosystem, explore potential synergies with related initiatives, and gather feedback on exploitation pathways. The event highlights and results were also communicated in a video shared on our social media channel here.

The networking opportunities offered through the event were highly valuable for the PARMENIDES consortium, strengthening our communication and dissemination efforts. By engaging directly with a diverse network of innovative EU-funded projects and leading stakeholders, the consortium was able to exchange

knowledge, explore synergies, and identify potential clustering and collaboration actions—core objectives of Horizon Europe's dissemination and exploitation strategy. Connecting with forward-thinking practitioners and pioneering visionaries not only increased the project's visibility but also supported the transfer of PARMENIDES results toward wider adoption and long-term impact.

4.12.4 Project internal meetings

A key element in the PARMENIDES project's journey has been the series of consortium meetings, where all partners come together to exchange updates, align priorities, and map out the next steps. These gatherings serve not only as checkpoints for progress but also as opportunities to strengthen collaboration across technical, social science, and business development work packages. By bringing diverse expertise to the table, the meetings ensure that pilot progress, software deployment, and exploitation planning move forward in a coherent and strategic way.

Throughout the project, consortium meetings have offered valuable space to share detailed updates on the pilot sites. Partners presented progress on the Austrian and Swedish implementations, where technologies such as hybrid energy storage systems and community-oriented dashboards have been developed, deployed, and tested. These presentations have allowed the consortium to discuss lessons learned, troubleshoot challenges, and showcase tangible advancements, from grid-friendly community energy models to the rollout of user-facing innovations like the public screen in Gasen.

Another central topic of these meetings has been the deployment of the PARMENIDES software solutions. The discussions provided insight into how interoperability and ontology-driven approaches, such as the PARMENIDES Energy Community Ontology (PECO), are applied to real-world energy communities. Progress updates helped the partners to collectively assess the system's performance in open-loop operation, refine functionalities, and prepare for long-term exploitation. Each meeting concluded with a clear roadmap for upcoming steps, ensuring the project remains on track toward delivering scalable, transferable, and impactful results.

Finally, beyond the technical outcomes, these meetings highlighted the consortium's commitment to communication and dissemination. Updates were consistently shared with wider audiences through the project's website and social media channels, turning internal milestones into stories of innovation and collaboration. This approach not only strengthened visibility but also emphasized PARMENIDES' dedication to making its results accessible, transparent, and valuable to stakeholders across Europe's energy transition.

The first gathering was the **kick off meeting in Vienna 13th January 2022**. At the kick-off meeting, partners come together for the first time to officially launch the collaboration and set a shared foundation for the work ahead. The agenda included introductions to the consortium members, presentations of the project's objectives, and clarifications of each partner's role and responsibilities in various work packages. Alignment on timelines, deliverables, and communication channels, ensured that everyone had a clear understanding of the project's roadmap. Beyond the formal planning, the kick-off serves as an important opportunity to build trust, foster team spirit, and establish a common vision, setting the tone for productive cooperation throughout the project's duration.

Figure 35: PARMENIDES Kick-off meeting in Vienna.

Then the next physical meeting was the **General Assembly was on the 10th and 11th of July 2023**, in Stockholm, all partners successfully collaborated in the first general assembly of the PARMENIDES Project at KTH Royal Institute of Technology in Stockholm. Work package leaders presented their progress and discussed the coming challenges of the project. The energy communities-centric approach was the main point of discussion. During the General Assembly meeting in Stockholm, the PARMENIDES team had the opportunity to visit the very interesting and innovative Live-In lab at KTH Royal Institute of Technology in Stockholm. Jonas Anund Vogel, the Director of the KTH Live-In Lab, showed the partners around the buildings,

gave introductions to the installed hardware and software and they discussed the possible applications and use cases in PARMENIDES. All partners exchanged ideas and collaborated further.

Figure 36: PARMENIDES General Assembly July 2023

Online, the consortium met for a **General Assembly on the 29th of November 2023**. The PARMENIDES consortium has made strong progress in both technical development and pilot implementation. The system architecture has been successfully confirmed, and data exchange between partners is already operational through secure communication channels. First measurements are being received, demonstrating the robustness of the setup and laying the foundation for smooth pilot operations. In parallel, work on the project's ontology was advancing, ensuring that energy communities, participants, and assets can be clearly defined and interconnected. This structured approach allows flexibility: while the model covers complex use cases, it can also be adapted to simpler ones, supporting a wide range of energy community scenarios.

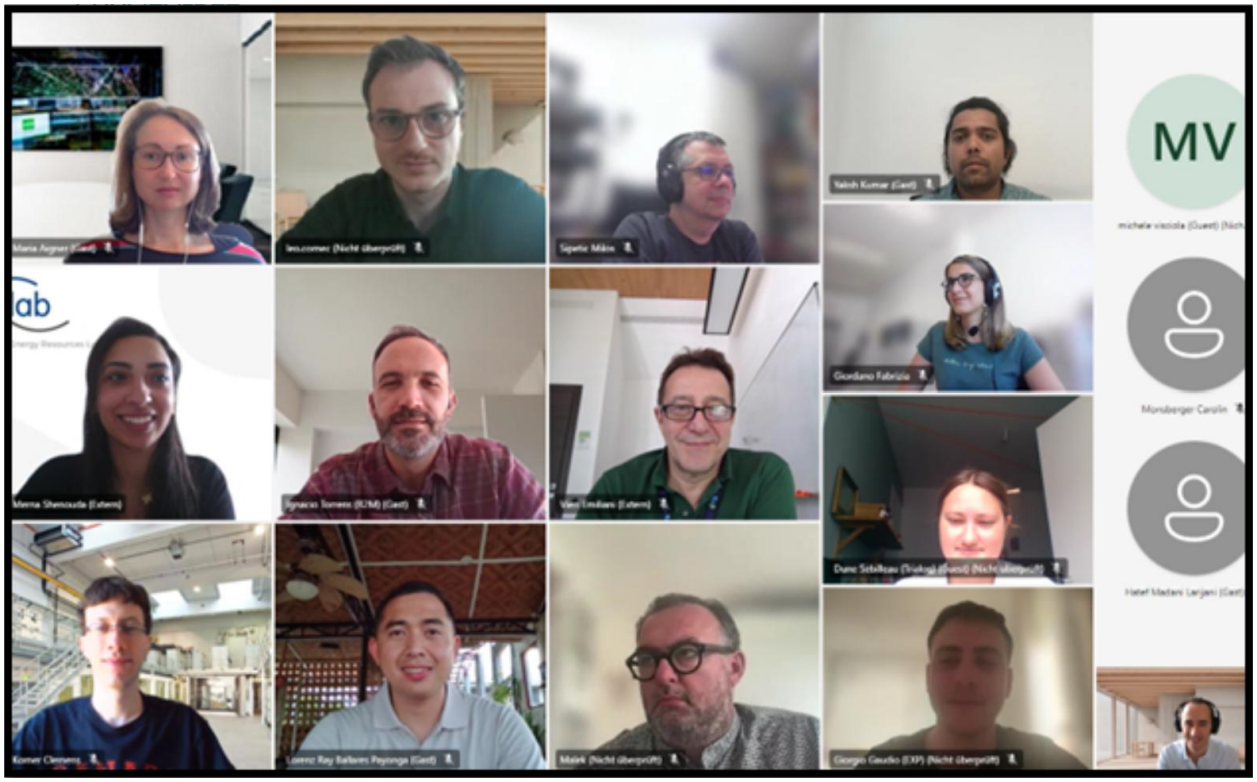

Figure 37:PARMENIDES General Assembly November 2023 (online)

These developments marked important milestones in creating interoperable solutions that bring together assets, optimization strategies, and real-world pilots, all contributing to smarter and more sustainable energy systems.

The following **General Assembly was in Graz, Austria on March 13th and 14th, 2024**, PARMENIDES General Assembly convened. Consortium members gathered to engage in technical discussions and share updates on the progress of certain topics such as ontology development, software architecture design, cybersecurity and trustworthiness, and the preparation of the pilots. The consortium also addressed relevant inquiries such as future business models of key exploitable results**.** All involved work packages presented their input and discussions were held throughout both days. During the assembly, partners paid a field visit to one of our pilots in Styria, Austria, gaining firsthand insight into operational processes. This hands-on experience provided a real-time demonstration of the functionality of various systems already implemented in our demo site.

Figure 38: PARMENIDES General Assembly March 2024 (Graz)

Afterwards, there was the online meetup as **the PARMENIDES General Assembly was successfully held online June 17th, 2024,** bringing together our dedicated team to discuss crucial updates and future activities. This virtual meeting provided a comprehensive overview of the status of various work packages and allowed us to align on the next steps for our innovative Energy Management System (EMS) and Hybrid Energy Storage Solutions (HESS). The General Assembly had fruitful discussions and important highlights such as:

- Work Package Updates: Each partner provided detailed status updates, showcasing significant progress and key milestones achieved in their respective areas. These updates are crucial for ensuring that all aspects of the project are on track and aligned with our overall objectives.

- Future Activities: We discussed and planned the next steps, discussing future events and webinars where PARMENIDES can take part in and actively contribute to the scientific society. This included setting timelines, arranging meetings, and outlining the deliverables for the upcoming months.
- PECO development: The development of the PARMENIDES Energy Community Ontology (PECO) is in its final phase and is planned to be published in July.

The project's consortium met for **the first review meeting at the mid-term of the project in Parma, Italy on the 23rd and 24th of September 2024.** This meeting marked an important milestone as we evaluated the progress made during the first half of the project, aligned our ongoing activities, and began discussing how our key results can transition into sustainable products for the future of energy management.

During the review, the consortium reflected on the significant strides made across several critical areas:

- PECO Framework Development: Our team has successfully developed the PECO framework, a cornerstone for the energy management systems we are building.
- ICT Architecture: The information and communications technology (ICT) architecture has advanced significantly, ensuring that all systems are designed for optimal functionality and security.
- Security and Privacy Aspects: The project has made considerable progress in addressing security and privacy concerns, critical for ensuring that our energy management solutions are both safe and reliable.

Figure 39: PARMENIDES General Assembly September 2024

On **the 28th of November 2024 the consortium met again for the online General Assembly**, to discuss budgetary topics and various updates from the members. The discussion of the dashboard in Graz, Austria was part of the conversation as well as checking deliverables, milestones and KPIs.

The project consortium managed to meet again in **physical format in Paris on the 9th and 10th of April 2025** for a status update and a collaboration check. Here are some of the highlights and key takeaways from the discussions:

- Pilot Milestones Reached: We have hit some exciting milestones in our pilot activities. Measurement data is now available, and the first software prototypes have been successfully deployed and are already operational in real-world settings.
- Final Steps Toward Closed-Loop Operation**:** With foundational systems in place, the consortium is now focused on finalizing the pilots and moving toward fully closed-loop system operation — a crucial phase that will demonstrate the full potential of our technologies.
- Business Models in Development: In parallel with technical advancements, we have begun exploring viable business models that will support the long-term impact and scalability of PARMENIDES innovations. These models will continue to evolve and take shape as we approach the project's conclusion.
- Collaboration Driving Success: Throughout the meeting, it was clear that the commitment and synergy across our consortium partners remain a defining strength. The shared motivation to shape a smarter, more sustainable energy future continues to drive us forward

Figure 40: PARMENIDES General Assembly April 2025

Online and for the **last online get-together**, the consortium met on **30th of June 2025** to assess the progress and understand the last needed steps in our project, bringing all partners into alignment as the project moves into its final phase. With the end of the project approaching, this meeting was a crucial opportunity to share updates and ensure coordination across all work packages.

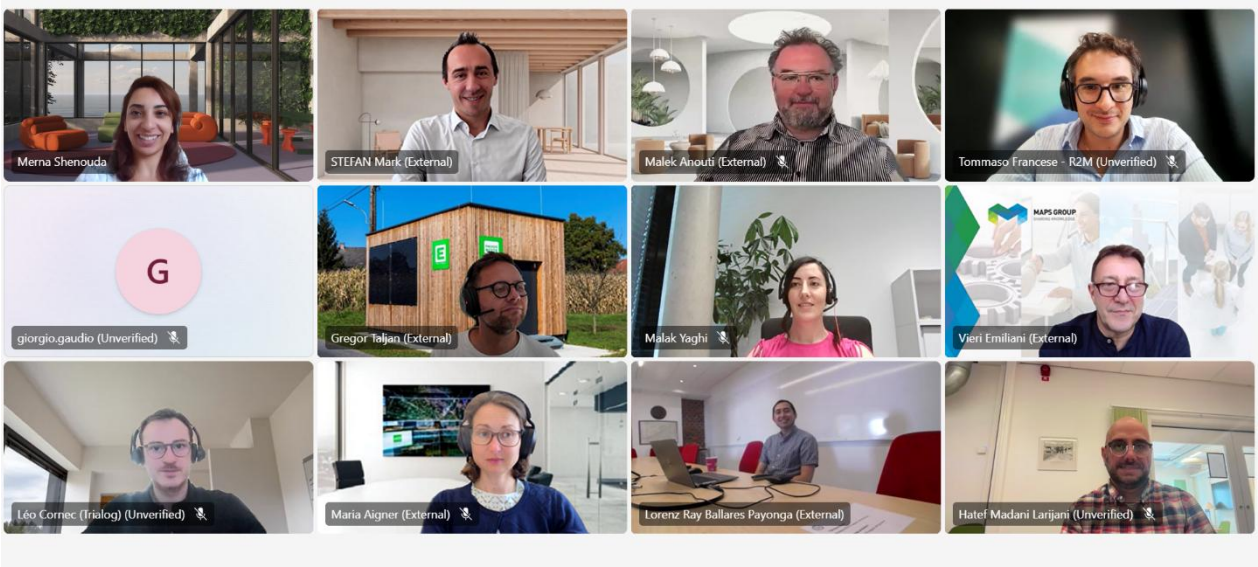

Figure 41: Screenshot of PARMENIDES General Assembly Online June 2025

The consortium met one last time for a **final general assembly** in Venice on the **23rd and 24th of November 2025**.

The discussions focused on the final stretch of work and the results we aim to deliver, the preparation for our upcoming review meeting with the project officer, and opportunities to continue collaborating beyond the project to build on the positive impact we have achieved. We also exchanged valuable insights from the technical progress made across the pilots.

Figure 42: PARMENIDES General Assembly November 2025

In February the consortium will get together for the official review meeting to showcase the results achieved within the project.

4.13 IREDonline Conferences

IREDonline 2025 titled “Resilience and Stability in Power Systems with Very High Shares of Renewable Energy Sources” took place on the 24th-25th of June 2025 online. The conference’s main sponsor was the PARMENIDES Project. The IREDonline conference addressed the pressing challenges and opportunities that come with integrating high shares of renewable energy and distributed resources into power grids worldwide. As the global energy transition accelerates, there is a growing need for innovative solutions to ensure flexibility, resilience, and security in increasingly decentralized energy systems.

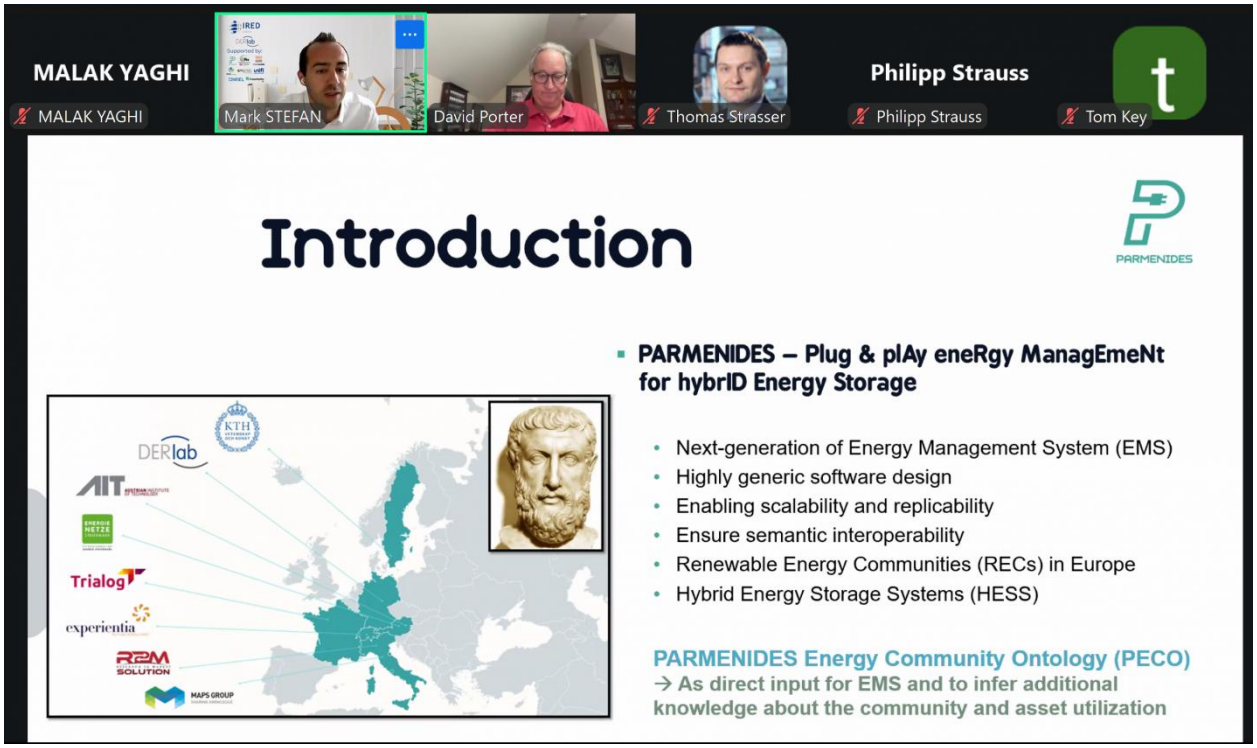

Figure 43: Mark STEFAN presenting PARMENIDES at IREDonline 2025.

Mark Stefan (AIT), PARMENIDES Project Coordinator, held a presentation “Plug & Play Energy Management for Hybrid Energy Storage – PARMENIDES” on the first day of the conference, during the 3rd session: Smart Solutions for Interoperable Energy Systems.

4.14 Webinars and workshops

PARMENIDES project successfully organized dedicated webinars to engage specific target groups. The objectives of these webinars were:

- Share with different stakeholders PARMENIDES objectives and results achieved.
- Develop business innovative models applicable to smart grids and energy storage management tools.
- Define potential supporting measures to extend the use of PARMENIDES platform and foster replication actions.
- Knowledge sharing between different projects.

The joint cluster with FlexCHESS and InterSTORE has qualified for many successful webinars where interesting topics to the diverse stakeholders were introduced. All the workshops exceeded the initial KPIs planned for them due to heavy advertising and cross- promotion. We have frequently posted about the webinars in our social media and within the networks, contributing to several other KPIs such as the LinkedIn followers' numbers due to consistent and frequent posting.

Cluster webinar 1 (link)

- Title: Interoperable concept for energy communities. Different perspectives from the InterSTORE-FLEXCHESS-PARMENIDES projects.
- Partners: InterSTORE and FLExCHESS
- Date: 16.10.2024 - online
- Attendance number: 45 participants

Agenda:

Table 3: Cluster webinar 1 – Agenda

Time	Topic	Speakers
10:00 – 10:10	Introduction of the webinar, overview of the projects	Moderator: Alexandre Lucas, INESC TEC, InterSTORE project
10:10 – 10:25	Parmenides project: Interoperable concept for energy communities	Mark Stefan, AIT Vieri Emiliani, MAPS
10:25 – 10:40	Flexchess project: Application for interoperability	Habib Nasser, RDIUP
10:40 – 10:55	InterSTORE project: Integration of the energy communities via new protocol IEEE2030.5	Nikolaj Candellari, CyberGRID
10:55 – 11:45	Panel Discussion on interoperability and energy communities, hybrid energy storage systems 40 min panel discussion + 10 min Q&A	Moderator: Ludwig Karg, BAUM Group, Int:net project
11:45 – 11:50	Closing Remarks	Alexandre Lucas, INESC TEC, InterSTORE project

Cluster webinar 2 (link):

- Title: "Implementation of Data space and interoperability for flexibility services using DES. Perspectives from the InterSTORE-FLEXCHESS-PARMENIDES projects."
- Partners: InterSTORE and FLExCHESS
- Date: 06.11.2024 - online
- Attendance number: 52 participants

Agenda:

Table 4: Cluster webinar 2 – Agenda

Time	Topic	Speakers
10:00 – 10:10	Introduction of the webinar *10 min introduction of the webinar, overview of the projects*	Moderator: Mark Stefan, AIT
10:10 – 10:25	InterSTORE project: Data space open-source framework for an interoperable and standardized energy data exchange *15 min presentation*	Ferdinando Bosco, Engineering Group
10:25 – 10:40	Parmenides project: Ontologies and semantic interoperability *15 min presentation*	Oliver Genest, Trialog
10:40 – 10:55	FlexCHESS project: Asset Administration Shell (AAS) and Battery Passport data models for cross-domain digital twin interoperability. Enabling new use cases and data-driven business models *15 min presentation*	Tim Farnham, TOSHIBA
10:55 – 11:45	Panel Discussion on interoperability and energy communities, hybrid energy storage systems 40 min panel discussion + 10 min Q&A	Moderator: Mark Stefan, AIT
11:45 – 11:50	Closing Remarks	Moderator: Mark Stefan, AIT

The online seminar aimed to provide a comprehensive understanding of data spaces, focusing on architecture, interoperability, ecosystem development, and standardization. It covered the importance of ontologies and semantic interoperability, particularly in smart energy systems, and showcased successful implementations.

Cluster Webinar in EUSEW (link)

- Title: Advancing Interoperability and Innovation in Distributed Energy Systems
- Partners: InterSTORE, int:net and FLExCHESS
- Date: 26.05.2025 - online
- Attendance number: 42 participants

Agenda:

Table 5: Cluster webinar in EUSEW - Agenda

Time	Topic	Speakers
16:00 -16:05	Welcome and Opening Remarks	Antonello Monti, RWTH
16:05 - 16:15	Keynote speech: "The Role of Interoperability and Standardisation in Advancing Europe's Energy Transition"	Mechthild Woersdoerfer, DG ENER, EC
16:15 – 16:45	Panel Discussion: Current and Future Use Cases Questions: • What are the key use cases for interoperability in energy systems where we currently agree? • How can software for energy communities support DERs and energy products? • How do EU-funded projects enable cross-domain interoperability exchange? • What role should DSOs play in standardisation and energy affordability efforts?	Moderator: Antonello Monti, RWTH Alexandre Lucas, INESCTEC Laia Guitart, E.DSO Habib Nasser, RDIUP Vieri Emiliani, MAPS Group
16:45 – 17:15	Panel Discussion: Collaborative Problem Solving Standardisation: • What interoperability standards should the EU prioritise? • Who will implement these standards, and how can we ensure widespread adoption? Ontologies and Maintenance: • How can we ensure the longevity and relevance of ontologies in energy domains? • How might the battery passport model contribute to cross-domain standardisation? Energy Affordability: • How can DERs and energy products reduce costs while ensuring equitable access?	Moderator: Alexandre Lucas, INESCTEC Laia Guitart, E.DSO Habib Nasser, RDIUP Vieri Emiliani, MAPS Group Elissaios Sarmas, Create Valley
17:15 – 17:30	Conclusions and Actions	Antonello Monti, RWTH

This session targets energy professionals, policymakers, and innovators, exploring practical solutions for decentralised energy systems in line with EU goals like the Green Deal, focusing on affordability, climate neutrality, interoperability, innovation. Featuring real-world use cases and EU project insights, it will highlight standards, tools like the battery passport, and best practices that support the EU Green Deal, Fit for 55, and a circular economy.

DERlab 17th Knowledge Day

- Title: DERlab 17th Knowledge Day - Energy communities: Concepts and Applications
- Partners: DERlab, eNeuron, PARMENIDES and an invited external expert from EEBUS
- Date: Wednesday 9th October 2024, 15:00 - 16:30h CEST online
- Attendance number: 19 participants
- This DERlab Knowledge Days edition will hold an interactive workshop on the topic of Energy Communities. In this WebCo the PARMENIDES Energy Community Ontology (PECO) will be presented by Sipetic Milos (AIT Austrian Institute of Technology GmbH) as part of the dissemination and knowledge exchange activities from our project.

Agenda:

- Introduction (DERlab)
- Presentation #1 "PAMENIDES Energy Community Ontology" - Sipetic Milos (AIT Austrian Institute of Technology GmbH)
- Q&A session
- Presentation #2 "Energy Communities and DSOs - Fostering a Synergistic Relationship" - Annike Abromeit (EEBus Initiative e.V.)
- Q&A session
- Presentation #3 "Energy Community Pilot - eNeuron Project" - Mosè Rossi (Marche Polytechnic University)
- Q&A session
- Closing words (DERlab)

Workshop with STUNNED project

On the 17th of February 2025, following BRIDGE Knowledge Sharing Session on Market Design a workshop was organised between PARMENIDES and the STUNNED projects. STUNNED is a project dedicated to demonstrating how multiple building and industrial energy management systems can be aggregated into energy communities and neighbourhoods to provide flexibility services. Their key areas of interest include Energy Flexibility & Aggregation Methods and Services, Interoperability & Data Exchanges.

The meeting between STUNNED and PARMENIDES was a great opportunity to have dedicated presentations of the projects, discuss about possible collaborations, and discuss about regulation.

5 Monitoring and Communication Activities

5.1 Communication Activities

The table below summarizes the target KPIs for communication and how did we perform in comparison to the planning phase.

Table 6: PARMENIDES Communication Activities.

Title	Target	Achieved
Number of public electronic newsletters	5	6
Number of newsletter subscriptions	> 100	101
Demo site visits	1 visit per pilot	1 visit per pilot
PARMENIDES identity kit	1	1
Public PARMENIDES webpage	> 80 visits a month	Sustained
PARMENIDES Brochure	> 1000 brochures	1100 brochures
Online/printed press releases	> 4 press releases in English and translated 4 languages	4
PARMENIDES videos	1 video with >500 viewers	1 video with 532 views
PARMENIDES Social Media accounts	> 500 followers for each platform	635 followers LinkedIn 36 followers X
Interview with internal and external experts	5	7

Newsletters: We issued 6 newsletters throughout the project with 2 newsletters in the last quarter during the last sprints of the project. These newsletters can impact the dissemination activities of the project as expanding the newsletter by publishing two additional issues and increasing the subscriber base to over 150 could enhance stakeholder engagement, improve project visibility, as well as support and exceed dissemination obligations under the Grant Agreement requirements. Regular and targeted communication fosters a sense of community among consortium partners and external stakeholders, while also increasing transparency and public awareness of the project's objectives and achievements. Reusing and repackaging existing content ensures efficient use of resources while reinforcing key messages and project impact.

Demo site visit Sweden: As part of the General Assembly in July 2023, the PARMENIDES partners visited the interesting and innovative facilities of the KTH Live-In lab at KTH Royal Institute of Technology in Stockholm. The consortium got the chance to learn about the planned Swedish pilot setup and discuss the planned use cases of the Swedish pilot.


Figure 44: PARMENIDES partners visiting KTH Live-In lab facilities.

Demo site visit Gasen: Within the GA in Graz in March 2024, the PARMENIDES partners went visit the Austrian pilot in Heimschuh. ENS provided insights into the battery energy storage system, the grid infrastructure, and pilot customers. Furthermore, opportunities for public screens and communication activities were discussed. Finally, the visit was used to update parts of the communication and information technology.


Figure 45: Pilot site visit in Heimschuh.

Public PARMENIDES webpage: throughout the project, we maintained a good viewership average of the website. In many months, we exceeded the KPIs as seen below. We constantly fed the website with new content and news pieces, added deliverables when made to public and created calls to action through our LinkedIn posts.

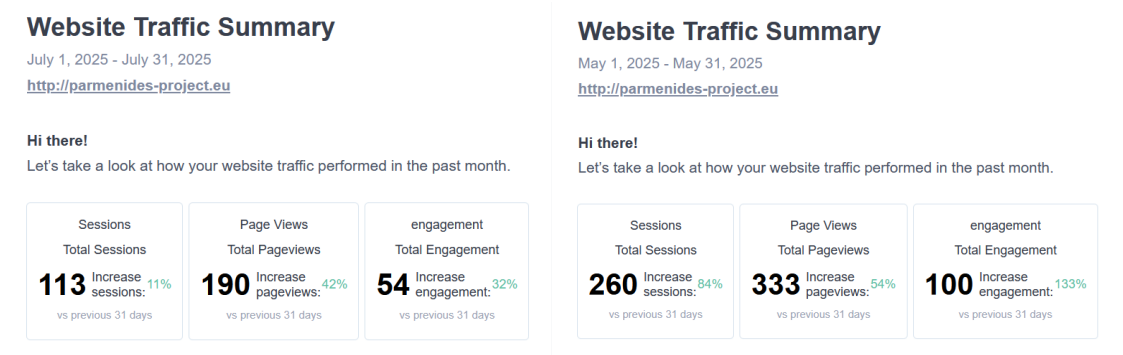

Figure 44, 45: Screenshot of PARMENIDES website visits reports

PARMENIDES identity kit: To support an effective and coherent dissemination strategy, PARMENIDES has developed a dedicated Visual Identity Kit that ensures a unified and professional representation of the project across all communication activities. The kit includes the project logo in multiple formats, a defined colour palette, typography guidelines, and branded templates for presentations, deliverables, posters, newsletters, and social media assets. By providing these ready-to-use materials, the Identity Kit enables all consortium partners to communicate about the project in a consistent manner, reinforcing the visibility and recognisability of PARMENIDES within the Horizon Europe community. This unified visual approach strengthens the project's branding, supports stakeholder engagement, and ensures compliance with European Commission communication requirements throughout the project's lifecycle.

Brochure: The consortium members collectively agreed in the General Assembly that we should refrain from printing more paper for reasons of sustainability and savings of paper, especially that we digitalized many of our outreach strategies.

Press release: We issued 4 press releases with translations in the 4 other project languages: German, Italian, French and Swedish.

LinkedIn: We planned the growth of the LinkedIn following and we exceeded 600 and maintained a regular posting schedule (1–2 posts per week) as we believe that this strengthens the project's digital presence and increase stakeholder engagement. Showcasing partner achievements and project milestones through concise posts and infographics supports ongoing dissemination efforts, promotes knowledge sharing, and boosts visibility among relevant industry, academic, and policy audiences. This proactive communication approach ensures that the project maintains momentum and continues to generate impact beyond its immediate network. We have already surpassed our original 500 follower KPIs and now at 635 followers until the time of writing this deliverable.

X followers: As previously explained, the nature of political changes that swept Twitter platform and its change to X, has contributed to a user's choosing to shift their time to other platforms. A change that we could not anticipate at the beginning of the program, however, we intensified our posting on LinkedIn, and we already have exceeded the original desired KPI on LinkedIn.

Interviews: We published extra 2 Q&A interviews which surpasses the original KPI of 5 interviews. Those interviews provided valuable insights into key topics related to the project while showcasing the expertise

within the consortium and broader stakeholder community. These interviews personalize the project, strengthen its thought leadership profile, and offer digestible, credible content for broader dissemination. They also foster trust and engagement among external audiences, supporting the project's overall impact and outreach.

Our interviews were with number of experts:

1- ***Interview with KTH internal expert Saman Nimali Gunasekara; Assistant Professor; KTH Royal Institute of Technology, Stockholm, Sweden***

a. *How does interoperability impact the economic viability of energy storage systems for smaller communities or individual households?*

I assume here interoperability means "the ability of systems and products to share resources and work together" applied to the context of Energy sector. In that case, interoperability can become the basis for the holistic optimization of energy systems employing different types of energy storages working towards the common goals of CO2 mitigation, efficiency enhancement and increasing the share of renewables. All these ambitions today can bring strong economic benefits in replacing fossil-dependent energy systems, with solutions available and feasible even for smaller communities or individual households.

b. *What are hybrid energy storage systems, and how do they differ from traditional storage methods?*

I would think the key difference is that they work together but not competing against each other. Optimal control and operation are fundamental for successful hybrid energy storage system operation, for effective and timely responding to demand and operational cost (often electricity price) signals.

c. *What advantages do hybrid energy storage systems offer compared to single-technology solutions?*

Multiple energy system services (storage, grid stability, black start, flexibility, etc.), value stacking, and also simply multiple means and forms of energy storage, in a single system (in hybrid energy storage systems).

d. *What are the most promising technologies being used in hybrid energy storage, and how do they complement each other?*

This is a very tricky question, and you will get very different answers based on who you ask J, but also what scales you mean (small, medium or large scale, short- medium or long-term etc.). Anyways, for the fact that 50% of the final energy use globally goes to heating and cooling, and so thermal energy sector needs significant decarbonization to meet the already challenging climate goals, I would pick that sector as an example.

A very simple yet effective hybrid energy storage system here would be backing e.g. pumped hydro energy storage systems with district heating and cooling (or even other

smaller-scale heating and cooling) systems and their various-scaled (per size and duration) thermal energy storages to also store surplus (often intermittent renewable) electricity in the power grids by charging the thermal energy storages using e.g. heat pumps and chillers, through holistic optimization of these energy sectors.

Then, in small-scale like in individual households that have e.g. a solar PV or solar PVT system, a simple hybrid energy storage system may be an electrical battery and a hot water storage (i.e., the most common type of thermal energy storage), while also using the power grid as a storage buffer acting as a prosumer, and maybe even additionally employing vehicle-to-grid of electricity storage through an electric vehicle (EV) as well.

e. *How do hybrid energy storage systems and interoperable solutions support the growth of energy communities?*

By harnessing the combined and synergized benefits of all different energy storage types towards the common goals of CO2 mitigation, efficiency enhancement, increasing the share of renewables and as a whole bringing strong economic benefits.

f. *What innovations do you foresee in the next five years that will revolutionize energy communities and storage solutions?*

Large, medium- and small- scale thermal energy storage (TES) solutions, including water as storage medium but also beyond (e.g. using phase change materials and or thermochemical heat storage as well) that will serve both thermal and surplus electricity storage through combined operation with heat pumps and chillers and like. This will enable flexible sector coupling (FSC) of thermal and electrical sectors, where the TES is the flexibility enabler.

2- Interview with an external expert Iván Aranda, Head of Energy at R2M Solution Spain

a. *What potential do energy communities have in reducing carbon emissions and enhancing local energy resilience?*

Energy communities (ECs) have significant potential to contribute in both aspects. Specifically the Renewable Energy Communities, which only operate with renewable energy. In this case, by collectively producing, managing, and consuming renewable energy, ECs reduce reliance on fossil fuels, thus cutting carbon emissions. These communities promote decentralized energy production, such as solar or wind, reducing transmission losses and increasing efficiency. Additionally, ECs are linked to territory, therefore can respond faster to local energy needs, improving grid resilience and enabling energy consumption from proximity renewable power sources. Engaging local stakeholders fosters a sense of ownership, encouraging energy-saving behaviors and further supporting sustainability efforts. In sum, energy communities empower regions to achieve greener, more reliable energy systems.

b. *How do energy communities enhance grid stability and manage local energy demand more effectively?*

Energy communities enhance grid stability by decentralizing energy generation from renewable sources like solar or wind. This reduces strain on the central grid and helps balance supply and demand locally. By generating, storing, and consuming energy within the community, these systems can mitigate fluctuations, reduce peak demand, and prevent overloading. They also enable demand response programs, allowing consumers to adjust usage based on grid conditions, improving efficiency. Furthermore, local energy storage solutions, such as batteries, provide backup power during outages, increasing resilience and stability. Overall, energy communities create more flexible, responsive energy management at the local level. Nevertheless, it is also fair to mention that all these potential features of energy communities are still far to be fully unlocked. There still exist many barriers to deploy the full potential of ECs.

c. *What technical challenges do energy communities encounter, particularly in integrating renewable sources?*

Energy communities face several technical challenges in this sense. One key issue is the intermittent nature of renewables like solar and wind, which can cause supply fluctuations and complicate demand balancing. Ensuring sufficient energy storage, such as batteries, to manage these fluctuations is both costly and technically complex. Additionally, integrating decentralized energy systems into the larger grid requires advanced grid management technologies and infrastructure upgrades. Maintaining grid stability and avoiding overloads can be difficult with multiple, smaller energy sources feeding in. Finally, coordinating energy generation, storage, and distribution in real time requires sophisticated, often expensive, control systems. On top of this, it is worthwhile mentioning that an additional complexity comes up from the regulatory side. Beyond the technical complexity, in many cases, even simpler solutions are blocked due to tight or undeveloped regulations, for instance connecting batteries or shared self-consumption plants to the distribution grid.

d. *What role do interoperable solutions play in enhancing the flexibility and scalability of energy communities?*

This is definitely a key issue for improving flexibility and scalability of energy communities. They allow different energy systems—such as solar panels, wind turbines, battery storage, and electric vehicles—to communicate and work together seamlessly. This integration enables more efficient energy management, balancing supply and demand across various sources. Interoperability also supports scalability by allowing new technologies or participants to be easily added without overhauling existing infrastructure. Furthermore, it facilitates better coordination with the broader grid, ensuring smooth energy flow and stability. By enabling flexible and adaptive operations, interoperable solutions help energy communities grow while maintaining reliability and efficiency. However, again, we are still far

from having interoperable systems. We see that there is a "fight" among suppliers to win the dominant design, for instance in terms of communication protocols, data management systems, etc. On its side, regulation on this topic -to move on the interoperability direction- is very limited. Therefore, the result is individual systems locked that cannot interact each other, thus acting as a barrier for ECs deployment on many technical aspects.

3- Interview with internal expert Dipl.-Ing. Dr. Maria Aigner, Energienetze Steiermark, technical expert / project manager

a. *What are the main challenges for DSOs related to the ongoing energy system transition?* Integration of a high number of renewables e.g. PV requires grid reinforcement and expansion of grid infrastructure. Besides the high investments it has to be taken into account that measures to support the energy system transition are time intensive and will not be realized on short notice. Smart use of flexibilities in the grid can delay grid reinforcement under certain circumstances.

b. Can PARMENIDES provide solutions to support DSOs to overcome these challenges?

Parmenides supports flexibilities in the grid and helps to integrate more renewables. *What is the most important outcome of the project for a DSO?*

Demonstration of the functionality of the hybrid energy management system (HESS) in the pilot regions. The results will also be used to demonstrate the potential benefits of using energy storages in combination with innovative energy management systems compared to conventional grid reinforcement and to further show the advantages of energy storages.

c. Do you see a potential to transfer the solutions to other countries or to scale them up to a wider geographical range?

We should wait for first results to answer this question. But the PECO approach supports the idea to use the concept also in other countries considering different infrastructures.

4- Interview with internal expert Gian Luca Cattani, Maps Group, Innovation and Development Director.

a. What is the main reason for maps to develop an EMS which is capable of using ontologies as knowledge base?

Maps Group is a Digital Energy Enabler. For companies like us, an innovative, intelligent and interoperable Energy Management System is a key asset to have. Parmenides Energy Community Ontology, PECO as we call it, is a formidable tool to describe energy systems along with the characteristics and constraints of their assets; it also builds on existing ontologies developed in previous European projects to facilitate interoperation among energy assets. The ability to use PECO by Maps Group Digital Energy Manager will be a crucial

skill to have to facilitate the configuration, the ability to communicate with external devices, and the adaptation to changing infrastructure, of each installation of our software.

b. *How can EMS support the energy transition?*

We reckon that the era of digital energy has just started. What we mean by this is that the role of software in the management of energy systems will become more and more crucial. Energy networks are much more complex now than in any previous period. At grid management level, we have that distributed production from intermittent renewable sources, electrification of mobility, that is electrical vehicles, and of heating, such as with heat pumps, is causing management issues to the distribution and transmission systems. Energy consumers, industrial, commercial and residential, need energy efficiency to reduce both the energy bill and the emission of greenhouse gas. New forms of collaboration among energy producers, energy distributors and energy consumers are needed to tackle these issues in a sustainable way. Energy Management Systems are tools that can help these collaborations across the energy value chain to make the overall system sustainable.

c. *What are the main challenges? Technical, economic or regulatory?*

Energy is a strategic domain for each European Country. Naturally enough the sector is a highly regulated one. Regulations are necessary but they can hinder innovation if Member States do not act efficiently and harmonically. In addition, the transition requires up-front high investments and companies and citizens alike need to be helped in facing the difficulties of financing them. Of course, technology and infrastructures are a must-have; having a technology background I am inclined to look at technology challenges with optimism and to fear them less than others.

d. *What do you expect from PARMENIDES? Will the project impact your organisation? How?*

We are convinced that thanks to the excellent R&D work that we are doing together with all the partners in PARMENIDES, we will get to the end of this project with a set of software tools of proven quality, and ready for industrialisation and transition into a commercial product to help the energy transition and decarbonization. We aim at growing internationally and become an established European player in the Digital Energy market; the successful completion of PARMENIDES will certainly be a boost towards this goal.

5- Interview with external partner Eva Dvorak, Head of Austrian Coordination Office for Energy Communities.

a. *Why are energy communities so important in times of the energy transition? how can they support the energy transition?*

Energy communities allow citizens to leave their role as clients behind, organize themselves and actively participate in the energy transition process. This can not only raise the acceptance for renewable energy projects but open a new space and can give people a

tool to actively shape their immediate environment and experience the positive effects of transformation for themselves.

b. *Why should every energy customer be part of an energy community? what is his/her advantage?*

   In the best case, an energy customer has a different experience within an energy community than in the typical relationship between customers and suppliers. He or she has a certain right to a say, knows where the energy comes from, how pricing is done (transparency), knows the involved people and benefits from additional information on energy efficiency, technological developments, …

c. *What are the biggest challenges (in Austria and in general)? are they technical challenges, economic framework conditions or missing or incorrect legal framework conditions?*

   Currently the biggest challenge for energy communities in Austria is the timely provision of accurate (energy) data from the DSO to the energy communities. The system is based on the measurement of Quarter-hourly values of all the community members and DSOs struggle to deliver accurate data in time.

   Another challenge are some regulatory requirements which are sometimes seen as strict or as a "risk" to the communities, for instance being open to all potential local members and not being orientated towards financial gain. Although the requirements have good intentions and the orientation towards the well-being of the members is positive, the regulations tend to put the Communities in a more difficult economic position than other market players. This harbours the risk of reducing the incentive to invest in community projects.

d. *What has Austria implemented particularly well? what can Austria learn from other countries?*

   In Austria ownership of renewable energy projects is not obligatory, this makes energy sharing within the community quite easy. Also, the threshold for founding a community in Austria is low, the Regulatory Authority has no role in the formation/registration process but can control the communities afterwards.

   Austria has a high amount of communities sharing energy but the number of communities with shared investment in new plants is still low, in this regard, we could possibly learn from other countries.

6- Interview with Edmund Widl on establishing the common European Energy Data Space / PARMENIDES & CELINE Project inputs

a. *What does a 'shared energy language' mean to you, and why is it important for Europe's digital and green transition?*

One of the most important enablers for the energy transition is the digitalization of the energy system. Ontologies are crucial for this digital transformation because they provide a shared, machine-readable framework for representing complex concepts like energy systems or power grid operation. In this sense, ontologies are "shared energy languages" that enable interoperability between diverse technologies, data sources, and stakeholders, allowing machines to integrate and analyse information consistently. Combined with the advances in artificial intelligence in the last years, this will improve the efficiency of many processes that used to involve painstaking and error-prone manual work from engineers.

For instance, in an energy community with solar panels, batteries, and smart appliances, PECO can enable machines to interpret concepts like energy flexibility, storage capacity, and consumption profiles uniformly. This allows automated coordination between households and the power grid, optimizing when to store, consume, or share energy. At the same time, they can enable interoperability across different vendors and platforms.

b. *What do you see as the biggest opportunities for European projects to support a common European Energy Data Space?*

The vision of a common European energy dataspace is so appealing because it has the potential to overcome many of the challenges that we are facing in the digital transformation of the energy system. Dataspaces are expected to become a ubiquitous digital resource, similar to clouds today but better suited to address challenges related to data access, data interoperability and data sovereignty.

However, we still need to prove that dataspaces can deliver on this promise. European projects provide the opportunity to demonstrate this in practice. I believe we can show that dataspaces can help with the technical challenges and at the same time unlock new sustainable business models and provide transparency to end users.

c. *Which types of energy actors—like local communities, DSOs, or tech providers—stand to benefit most from a standardized data model like the one PARMENIDES is building?*

The EU is thriving to steer the digital transformation in a direction that is fair and beneficial for all involved. One goal is to establish a data economy that enables new business models and at the same time respects the privacy of citizens. Ontologies and dataspaces are key enablers for such a data economy.

The goal is to have a win-win situation for all involved stakeholders, creating added value for communities, DSOs, and tech providers. From this perspective, end users will probably benefit the most, because they are also the ones who have the most to lose in an unregulated data economy.

d. *What are the main challenges in aligning diverse national data models under one European framework, and can an ontology like PECO help overcome them?*

A big challenge is the heterogeneity of legislation and regulatory frameworks across Europe, which translates into a high level of complexity and lack of interoperability on the technical level. This is partly unavoidable due to regional differences, but to some extend also an artifact of a lack of coordination and cooperation. Nevertheless, efforts are ongoing to improve the situation, and I am confident that this will be successful. Efforts like PECO help streamlining this process, for instance by highlighting what is already working well and showcasing best practices.

e. *As we move toward a more digital and decentralized energy system, how can projects like PARMENIDES/CELINE support long-term sustainability and innovation?*

Innovation in energy systems often require a system-level approach that involves multiple stakeholders. Research projects provide the setup to do so and make it possible to deploy and validate new ideas in real-world environments, based on the actual needs of the involved stakeholders. In most cases, the goal is not to come up with a market-ready solution, but to show what is working and what not. These are invaluable learnings that can later on be further developed into products. Access to the results (e.g., open-access publications, open-source software) is of course crucial.

f. *How do you see projects like PARMENIDES/CELINE fitting into bigger European efforts like GAIA-X or the Digital Europe Programme?*

As previously stated, interoperability will be crucial for success. Digital solutions for the energy sector cannot be developed in isolation; rather, they must be integrated into the larger picture of digitalization. Efforts such as GAIA-X and the Digital Europe Programme are critical in providing a more comprehensive background and broader context.

7- Interview with InterSTORE Project Coordinator, Alexandre Lucas, from Energy Storage Europe Association, on Interoperability and InterSTORE

a. *What challenges do you see today in getting different energy technologies to 'speak the same language', and how could PARMENIDES help address this?*

One of the main challenges is that energy technologies, from batteries to inverters, EV chargers, PV systems, and building management systems, often come with vendor-specific, proprietary protocols and data formats. As a result, integrating a heterogeneous mix of storages, generation units, loads and control systems becomes complex: every new system may need custom interfaces or middleware, increasing cost and reducing scalability. The PARMENIDES project helps by defining a common semantic framework (PECO) that offers a shared vocabulary and data model for those use cases that require interoperable reasoning that could be in energy communities assets, such as storage systems, community members consumption data, flexibility signals, and so on. By using such an ontology layer, different technologies and platforms can exchange data in a harmonized way, reducing ambiguity and enabling interoperability without bespoke adapters for every device.

b. *How can a shared energy ontology like PECO improve the way different energy storage systems and platforms work together in projects like InterSTORE?*

A shared ontology provides a semantic interoperability layer: rather than just agreeing on data format (syntax), systems agree on what data means. In the context of storage, energy assets, community members, and grid flexibility, PECO defines entities (e.g. "battery storage unit," "community member," "flexibility service") and their relationships. In InterSTORE we ensure the proper communication and syntax with the IEEE2030.5 as a common vocabulary for a common understanding. If there are cases in which reasoning capabilities exist, solutions such as PECO could be an option.

c. *How do you see standardized data structures and shared ontologies influencing the way we design and integrate energy storage solutions in the next decade?*

Over the next ten years, I expect standardized data structures and shared ontologies to become foundational for designing modular, interoperable storage solutions. Rather than building bespoke systems for each site or vendor, storage-plus-DER deployments will likely be conceived from the start as part of a plug-and-play ecosystem: storage, PV, EVs, thermal storage, building loads all defined under a common semantic framework. This will enable easier asset swapping, upgrades, and expansion. Moreover, it will facilitate data-driven services: predictive maintenance, aggregated flexibility markets, virtual storage pools, dynamic grid support — because all assets will report and behave according to shared definitions. As energy systems grow more complex (hybrid storage, multi-vector coupling, flexibility markets), this common language will reduce friction, speed up deployment, lower costs, and make integration more robust and scalable.

d. *What current interoperability gaps exist in the deployment of energy storage, and how could a project like InterSTORE or PARMENIDES help bridge those gaps?*

Existing gaps include: proprietary vendor protocols preventing seamless integration; legacy storage or distributed energy resources (DER) equipment lacking support for modern communication standards; heterogeneous data models across platforms (making centralized monitoring, analytics, or aggregated control difficult); and lack of common frameworks for hybrid storage systems combining different technologies (e.g. batteries, thermal storage, EVs). InterSTORE specifically addresses this by creating technology-agnostic middleware that abstracts away hardware differences, presenting all storage assets and DERs through a common interface, enabling hybridization, flexible use, and monetization of storage flexibility. Meanwhile, PARMENIDES with PECO provides the semantic "glue," allowing different systems, storage types, and data sources to be combined under a unified data model.

e. *What role do you think interoperability will play in making local energy communities or small-scale systems more resilient and cost-effective?*

Interoperability is crucial for local energy communities because it allows diverse resources, PV, batteries, EVs, thermal storage, flexible loads, to coordinate and be optimised collectively.

This enables more efficient self-consumption, local energy sharing, demand response, and flexibility provision to the wider grid. For consumers and communities, this means lower costs (less waste, better use of renewables), reduced reliance on centralized generation, and increased resilience against outages or grid stress. For small-scale systems, interoperability reduces vendor lock-in and lowers the technical barrier to participation. Communities can gradually add or change assets without redoing the entire IT/communication infrastructure. Also, open-source interoperable tools make it more accessible and economically viable for end-users, aggregation platforms, or third-party service providers to offer services, boosting adoption, scalability, and innovation. Projects like InterSTORE and PARMENIDES accelerate this by making hybrid storage, data-sharing, and flexibility accessible to all types of communities, boosting overall energy system resilience and cost-efficiency.

Videos: we aimed at producing 2-3 additional videos than initially planned, particularly using simple motion infographics, will enhance the accessibility and understanding of complex project concepts and outcomes. Videos are a highly engaging and shareable format that can broaden the project's reach across diverse audiences, including policymakers, industry stakeholders, and the general public.

Introductory video:

As mentioned in the GA, we were to produce a video about the PARMENIDES project to share information, engage stakeholders and to boost replication and market uptake. Non-technical and self-explicative to reach the widest audience. Here it was important to translate the complex energy concepts of the project into an accessible and easy to understand content. DERlab communication manager alongside the project coordinator has intensely worked on simplifying technical terms to make sure the message is clear and accessible. DERlab communication manager responsible for PARMENIDES has contacted 3 different video agencies to discuss their contribution to the video. The video was planned to be of a professional manner. Discussions were held with the different agencies. Budget, portfolio, expectations, management means were discussed. After careful comparison of cost/effect ratio. We decided on Media Trading, an agency where other EU projects have had a positive experience with.

A detailed briefing was prepared to the agency, with information about the project, target audience, our goal and the visual identity. In a series of planned meetings, DERlab's communication manager has worked with the agency on refining script, managing visuals, discuss duration of the video and key messages. The video was then available with subtitles and with a few video snippets that were utilised as a teaser campaign prepared by DERlab to prepare the audience and engage them. The video was published on LinkedIn and added to the website and the newsletter. It scored more than 500 views which was the initial KPI outlined in the grant agreement.

Bridge General Assembly video:

After attending the Bridge general assembly in 2025, PARMENIDES communication manager combined different pictures and videos taken on the day covering various aspects of PARMENIDES's contribution into one video and published in on LinkedIn to sum up the visit to Bridge.

Motion graphic video:

A motion graphic video was shared on PARMENIDES Project's social media accounts to highlight how the project is empowering communities through real-time energy insights. The video underlined how the work is done as a collaboration of the PARMENIDES Project and INNOnet (Austria), listed the initiative's goals and its focus on the town of Gasen, Austria.

Final General Assembly video:

During the general assembly in Venice, the Communication and Dissemination manager organized video shooting of all members to provide one last rounded up video about the project and the impact of the results. The video starts off with a question to Mark Stefan the project coordinator asking him what he had hoped to achieve in the PARMENIDES project, then the rest of the partners answer the question of: What is the impact of the project's results on a holistic/company level? The video is then uploaded to the website, and a teaser short video is uploaded to LinkedIn to incitive traffic to the website in addition to the fact that due to the long duration of the video, it is advised to keep videos shorter on social media.

5.2 Dissemination Activities

The table below summarizes the target KPIs for dissemination and how did we perform in comparison to the planning phase.

Table 7: PARMENIDES Dissemination Activities.

Title	Target	Achieved
Webinars & workshops	At least 2 webinars with 30+ participants each	3 webinars with 45, 52 and 42 participants
Conference and fairs	Participation in >12 events	24
Publications	>10 Scientific and industrial publication in green or gold access	10
Clustering with related HEU/H2020 & other initiatives	>2 Joint meetings per year	Examples: SENDER (VLab), CELINE (interoperability), close collaboration with INFRADAPT (national funded project, Austria) for general application of GCM and DSSE, STUNNED project meeting, HySTORE exchange, int:net on VLab and data spaces, etc.
Meetings with regional & EU stakeholders	>2 meetings	Examples: InterStore cluster meeting (with DG ENER representative); IRED Online, BRIDGE (presentation from ENS at regulation working group), ENS meeting with politicans from demo regions, KTH meeting with the building operator, etc.

We have excelled in our dissemination efforts as we managed to exceed almost all planned expectation on all efforts. Throughout the PARMENIDES project, we consistently exceeded the initial dissemination

KPIs set at the proposal stage, reflecting both the magnitude of our communication efforts and their tangible impact. We expanded our planned outreach activities by delivering additional workshops, producing high-quality multimedia content, and securing visibility across high-profile events and conferences. Our strategic use of social media, newsletters, and targeted stakeholder engagement broadened our audience reach well beyond expectations, while fostering strong connections with industry, research, and policy communities. These achievements underscore our commitment to maximising the project's visibility, relevance, and long-term influence. Our commitment to the project's success and exposure has enabled us to tick off many of our planned KPIs.

Throughout the project, PARMENIDES went beyond its initial commitments in terms of stakeholder engagement and knowledge exchange.

Webinars & workshops: in the GA, we have agreed to At least 2 webinars with 30+ participants each, with our clustering efforts and the usage of DERlab great network, we managed to organize 3 workshops with our cluster with an average of 46 participant and one with DERlab.

Conferences and fairs: We have successfully attended and participated in more than 20 event, nearly double of our initial KPI, where fruitful discussions took place with wide range of stakeholders and participants highlighting the great engagement of our consortium with the current energy scene showing our motivation and activeness as a group to advance the future of energy communities.

Publications: Our technical partners have published conference papers and journal articles during the project time and plan to build on our results and publish a few more in the following year of the project. In 2026, KTH intends to wrap up all the learnings from the PARMENIDES project in 2 journal articles. These will be extensions of the prior conference papers on the PARMENIDES Flexibility Strategy across the algorithm's development, control and optimization, flexibility evaluation and activation, and trade-off analysis/management perspectives.

Although the final structure is yet to be determined, these papers will discuss the following based on results from PARMENIDES, particularly from the Swedish pilot.

1. Application of Curriculum-based Reinforcement Learning (RL) in Flexibility Evaluation in Buildings with Hybrid Energy Storage Systems (HESS)
    - Will expand the findings from the PES-IM conference paper
    - Focus on the machine learning (ML) aspects and how the proposed method facilitates model convergence
    - Case application will be a hybrid energy storage system (compared to the PES-IM paper that uses a simple case and focuses on the proposed method)
    - Will elaborate on comparisons with other control and machine learning techniques
2. Trade-off Evaluation and Management in Flexibility Activation through Hybrid Energy Storage Systems

- Will expand the findings from the IEA-HPC conference paper
- Focus on the analysis of tangible trade-offs among comfort, economic, and environmental KPIs in the activation of flexibility with HESS
- Case application will be a hybrid energy storage system (compared to the IEA-HPC paper that uses a single storage system)
- Will discuss implications on the future flexibility demands on energy communities

3. Hardware-in-the-loop Implementation of a Hybrid Energy Storage System
    - Will present the development, operation, and control of the HESS testbench at the KTH Granryd Lab
    - Will discuss results of test cases

Clustering with related HEU/H2020 & other initiatives: we have collaborated with many Horizon Europe projects such as SENDER, CELINE, Close collaboration with INFRADAPT (national funded project, Austria) for general application of GCM and DSSE, STUNNED project meeting, and HySTORE exchange. In addition to clustering with InterSTORE and FlexCHESS.

For meetings with regional and EU stakeholders, we achieved five high-level interactions instead of the two originally planned. The EU stakeholders meetings were InterStore cluster meeting (with DG ENER representative); IRED*online*, BRIDGE (presentation from ENS at regulation working group), ENS meeting with politicians from demo regions, KTH meeting with the building operator These additional meetings allowed us to deepen relationships with policymakers, regulatory bodies, and energy community representatives, strengthening the project's relevance to real-world needs and ensuring alignment with European energy transition priorities. By surpassing this KPI, we maximized opportunities to transfer our findings into actionable insights for decision-makers at multiple levels.

Similarly, **our clustering activities** significantly outperformed expectations. The project engaged in four clustering initiatives with related Horizon Europe, Horizon 2020, and other relevant projects—double the number initially foreseen. Clustering like with SENDER, CELINE, Close collaboration with INFRADAPT (national funded project, Austria) for general application of GCM and DSSE, STUNNED project meeting, HySTORE exchange, and of course the clustering with FlexCHESS and InterSTORE projects where all the workshops were co-organized and co-advertised.

Collaboration with int:net on Interoperability: PARMENIDES established a strong collaboration with the int:net project, particularly in the domain of interoperability. A key element of this collaboration was the joint use and further development of the AIT VLab, which supports the interoperability-by-design principle. The VLab was employed for integration and interoperability testing, and its capabilities were significantly enhanced through synergies with int:net and complementary activities within ISGAN SIRFN, led by AIT. These joint efforts enabled the efficient extension of the tool, introducing new functionalities that were not originally foreseen in the PARMENIDES project. This cross-project cooperation exemplifies the added

value of coordinated European research initiatives in accelerating innovation and improving tool usability across domains.

These collaborations created valuable synergies, enabling us to share lessons learned, co-develop communication opportunities, and amplify the visibility of PARMENIDES results within the broader research and innovation community. Complementing this, we also exceeded targets in terms of knowledge-sharing events, hosting three webinars and workshops instead of the planned two. The three workshops were a clustering communication effort with FlexCHESS and InterSTORE projects where occasional meetings were taking place to share communication and disseminations efforts and align on projects' digital and offline presence. This additional effort expanded our outreach, attracted diverse audiences, and ensured that key messages around interoperability, energy communities, and hybrid storage systems reached wider groups of stakeholders. Collectively, these achievements reflect the consortium's strong commitment to dissemination, collaboration, and impact creation.

5.3 Awards

5.3.1 Honorable mention by ISGAN

the PARMENIDES Project has been awarded an Honorable Mention at the ISGAN Awards of Excellence 2025. This prestigious recognition was presented during the Clean Energy Ministerial 16 (CEM16), held in Busan, South Korea.

Figure 46: Honorable Mention at the ISGAN Award of Excellence 2025.

The ISGAN Awards of Excellence celebrate leading international initiatives that advance smart grid solutions and optimize grid operations for a more resilient and sustainable energy system. The Honorable

Mention awarded to PARMENIDES underscores the project's innovative contributions to interoperable Energy Management Systems, hybrid energy storage integration, and grid-friendly energy community models.

This achievement is the result of strong collaboration among our consortium partners, combining expertise from research, industry, and social science to deliver solutions that address the challenges of Europe's energy transition.

5.4 Houska Award 2026

PARMENIDES, led by AIT, applied for the national Houska Award 2026. Established in 2005 by the B&C Private Foundation, the Houska Award aims to strengthen the financial foundations of innovation and research in Austria and to express appreciation for the outstanding research carried out in the country. With a total endowment of EUR 760,000, the Houska Award is Austria's largest privately funded prize for applied research. In addition to scientific and innovative excellence, economic impact is a key criterion in the selection process. Through the Houska Award, the B&C Private Foundation pursues its mission of promoting Austrian entrepreneurship and strengthening Austria as a business and innovation location. At the time of project completion, the outcome of the application was not yet known.

6 Conclusion

The PARMENIDES project successfully reached its objectives, demonstrating impactful results across technical, social, and industrial dimensions. Recognition such as the Honorable Mention at the ISGAN Awards 2025 underscores the innovation and relevance of our solutions, highlighting the consortium's contributions to flexible, resilient, and sustainable energy communities.

Throughout the project, we achieved full coverage of planned KPIs, delivering high visibility within the scientific community through publications, conference presentations, and collaborative workshops. Feedback from industrial partners was consistently positive, confirming the practical applicability of the project's technologies and fostering confidence in their future exploitation.

Collaboration and dissemination efforts extended beyond the consortium, with strong engagement across related projects, initiatives, and networks. High visibility on social media, targeted newsletters, and public-facing materials ensured broad outreach, raising awareness among stakeholders and the public alike. Overall, PARMENIDES has established a solid foundation for future deployments and the wider adoption of energy community solutions across Europe.

7 Annex

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