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DATAWEEK

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Odyssey of AI:

Navigating the Data Seas

27 - 28 May / Athens

IN COLLABORATION WITH

ATC ATHENS TECHNOLOGY CENTER

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NEUROPUBLIC Information Systems & Technologies

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InterPED

INTERoperable cloud-based solution for cross-vector planning and management of Positive Energy Districts

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IN COLLABORATION WITH ATC, CERTH/ITI, CORE|IC, FORTH, DEMOKRITOS, NEUROPUBLIC

SIMAVI
Software Imagination & Vision

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Responsible for leading SIMAVI's participation in numerous Horizon Europe and Horizon 2020 projects, as well as other initiatives under EDF, ISF, Eureka, ERASMUS, and other related programmes.

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SIMAVI is a Romanian software company with experience in the following fields of activity: Energy, Environment protection & Climate change, Mobility, Industry 4.0, Circular Economy, Security & Cybersecurity, eAgriculture, Immersive technologies for Training & Cultural Heritage, eHealth, ERP & BI, eCustoms, and Government. SIMAVI has strong experience in R&D projects, having been involved as technological partner & integrator, as well as coordinator in over 70 awarded projects within Horizon Europe, H2020, ERASMUS+, DEP, EDF, ISF, ERA-Net and EUROSTARS. R&D references: https://www.simavi.ro/en/rd-projects

InterPED project

Project Coordinator: R2M Solution Spain SL

Project number: 101138047

Project name: INTERoperable cloud-based solution for cross-vector planning and management of Positive Energy Districts

Start: 01/01/2024

Duration: 36 months

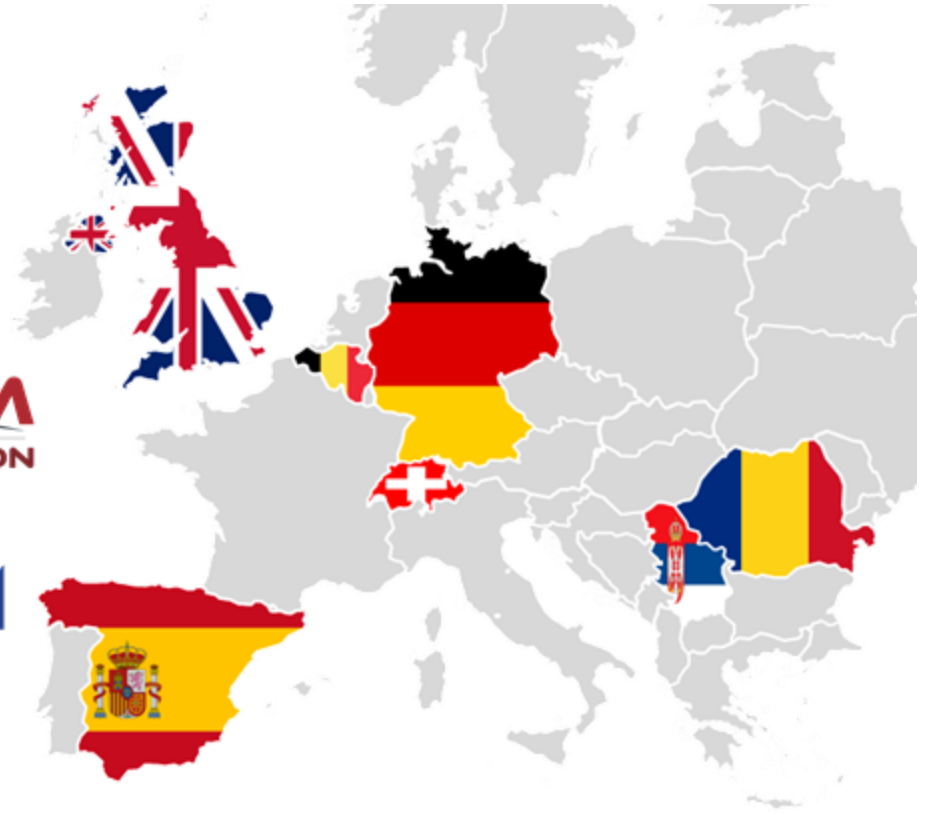
Start TRL: 4-6

End TRL: 6-8

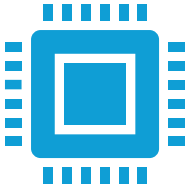
Number of Partners: 14

Countries: 7

Costs: €6,978,353 / **Funding:** €4.884.847



SOLUTION



Integrating ICT for PEDs

Deploy a cloud-based solution enhancing sector coupling and demand flexibility.

Large-Scale Validation

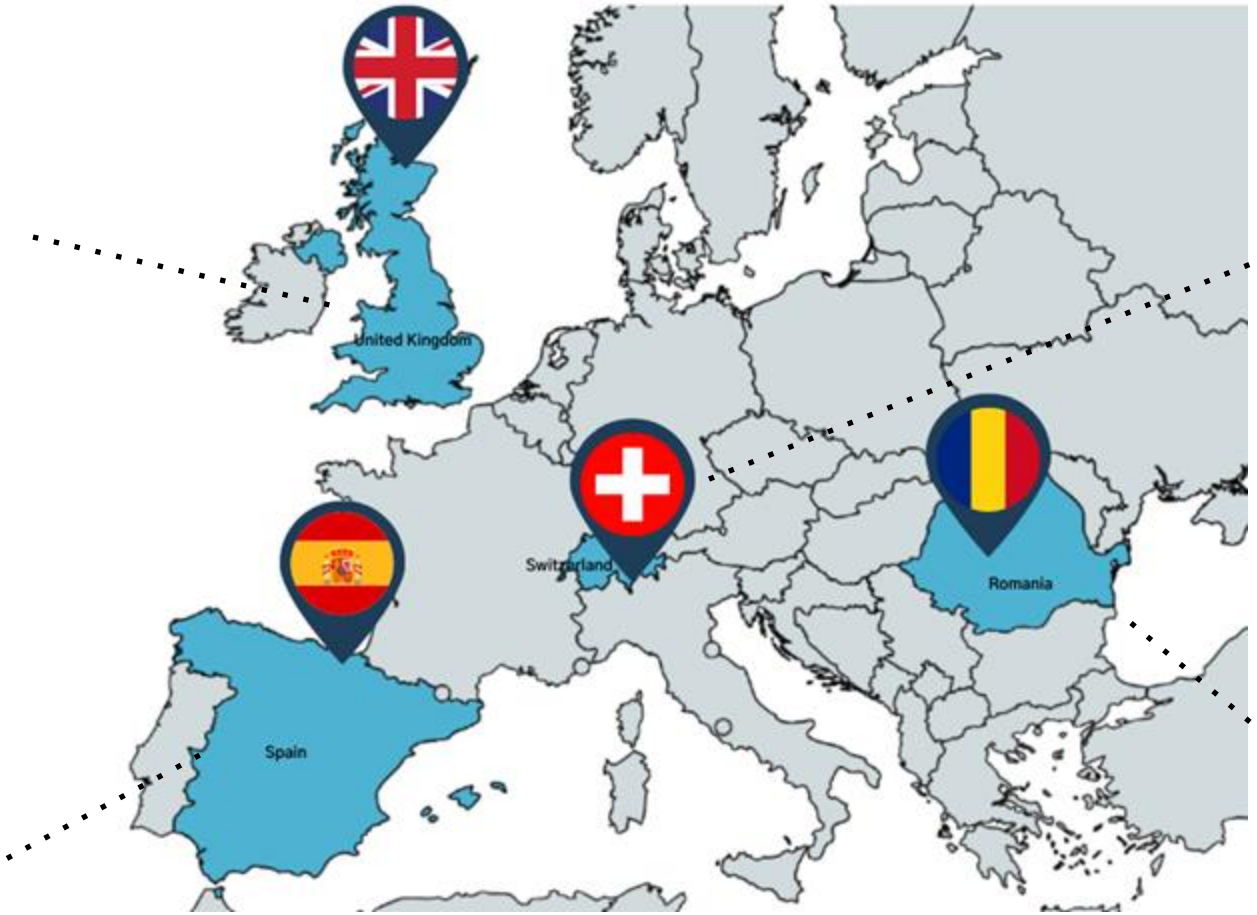
Demonstrate the InterPED solution in diverse pilots, targeting a 30% unlock in demand flexibility.

Replicability Plans

Extend InterPED's impact beyond the project with strategies for adoption in 'follower' districts.

Pilots

Pilot Name: Ecovillage Findhorn
Pilot Type: Mixed - residential and commercial buildings



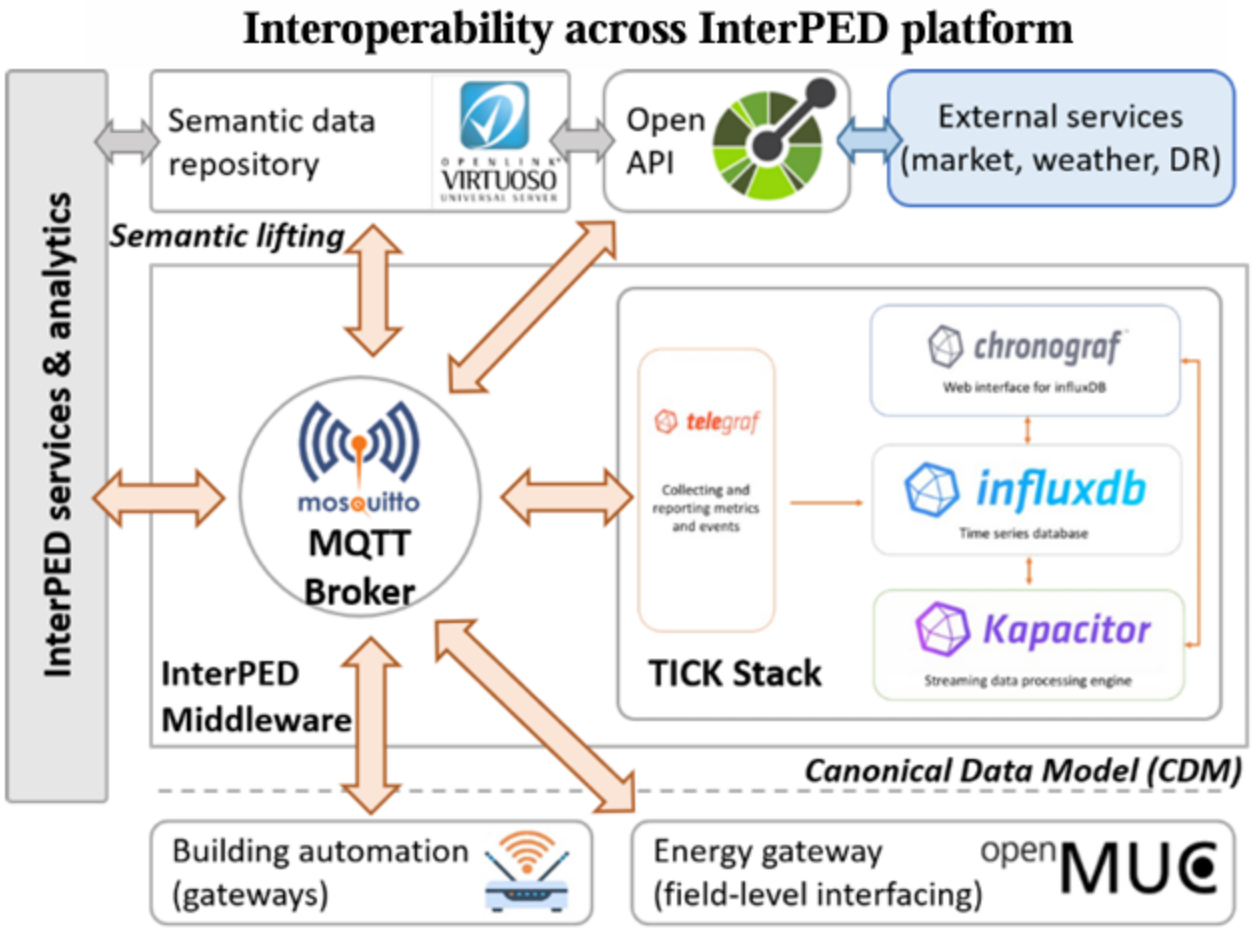
Pilot Name: Arena Innovation Community
Pilot Type: Mixed - tertiary and residential buildings

Pilot Name: : Lugaritz-Matía Community
Pilot Type: Mixed - tertiary and residential buildings

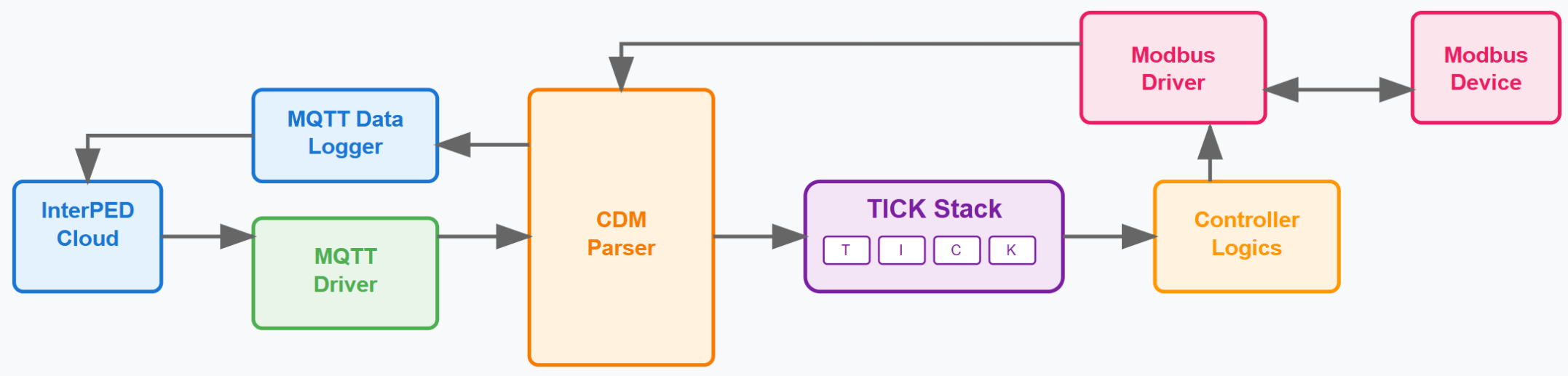
Pilot Name: Alba Iulia College District
Pilot Type: Tertiary buildings, with surrounding residential area

Contribution to Interoperability in Energy Communities

- **Ensuring system interoperability (both syntactic and semantic)**
- **Cross-sector integration for PEDs** (power, heating and cooling, gas)
- **Smart grid interoperability compliance** and conformity tests for PED interoperability
- **Certification and standardization frameworks** (OpenADR 2.0, USEF and SGIP IPRM).
- **PEDs as local energy marketplace** for **community trading of energy and flexibility sharing**



InterPED CDM (Canonical Data Model)

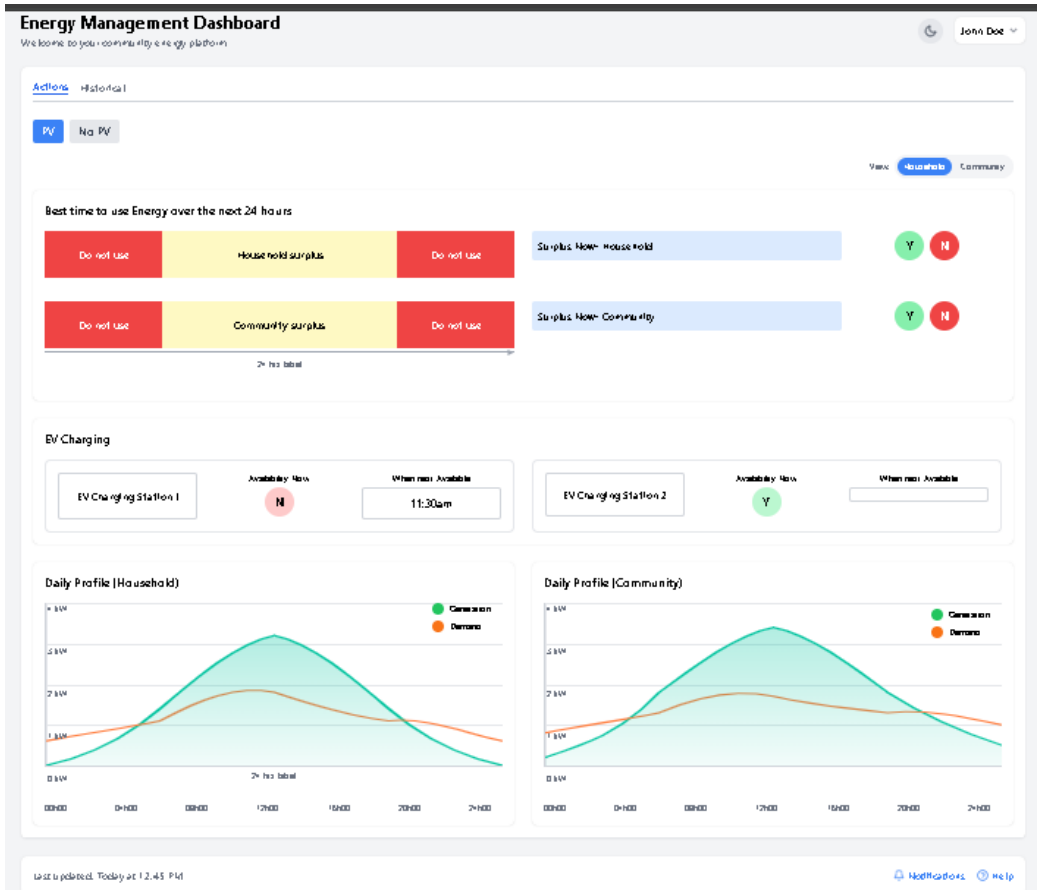


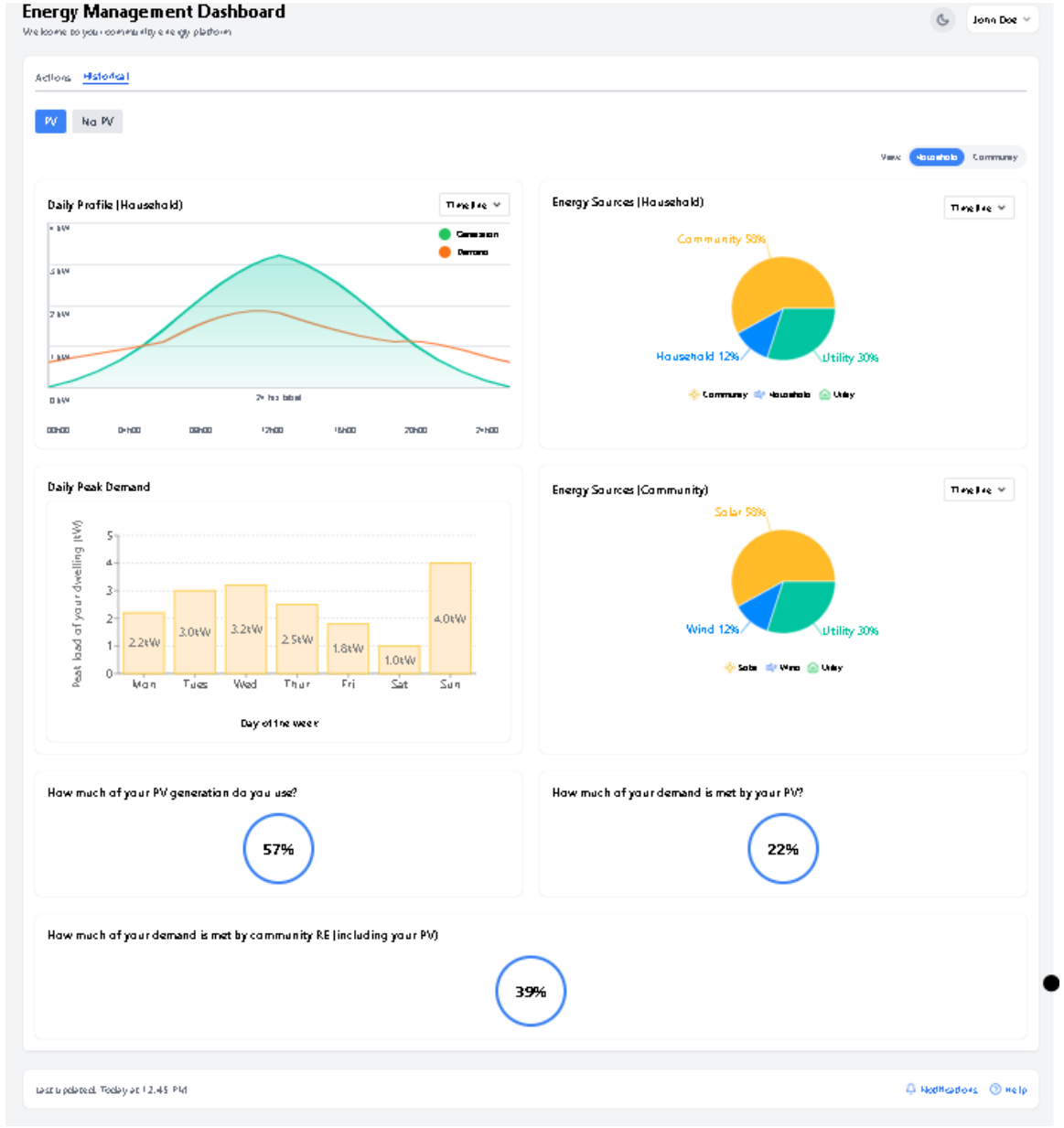
Semantic interoperability

EEBus SPINE extended

XML-based common messaging

DASHBOARD





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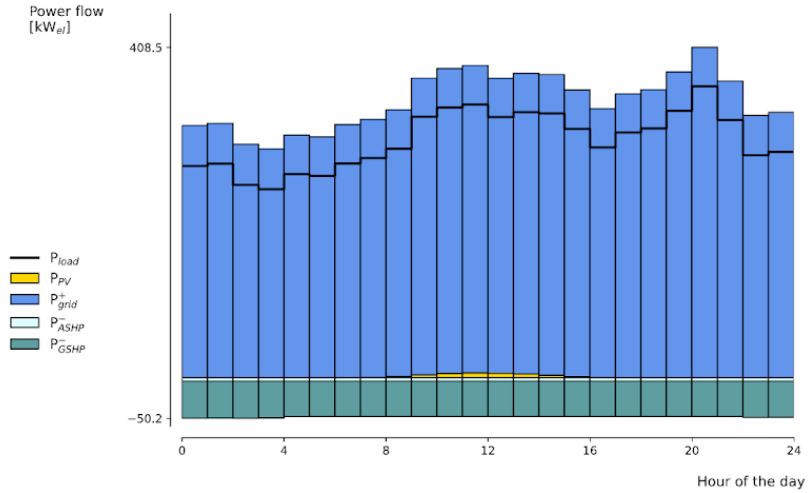
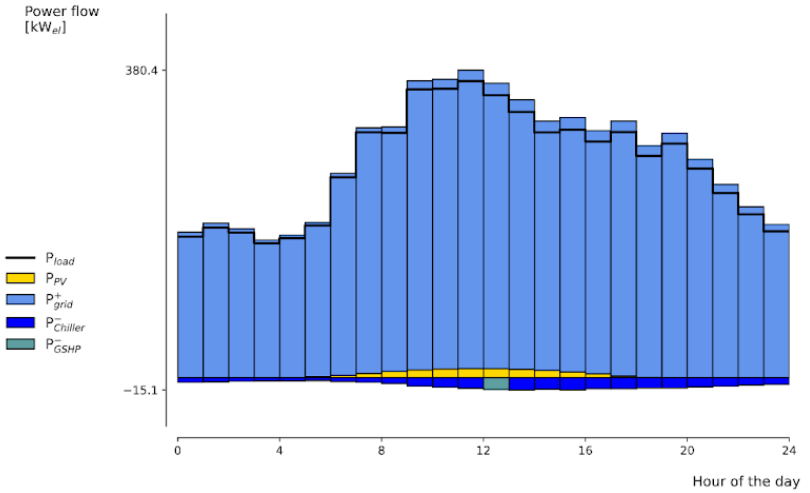
Data sets

- Where measurements are not available, estimated data sets (hourly profiles) are used
- Estimations for both electrical energy and heating are based on nPRO software simulations





Using AI

- Historical data sets together with simulations based on planning tools and predictions are used
- In the next development stage, AI generated data will be used for scenario validation

Lessons learned

- The integration of **heterogeneous energy vectors** (electricity, heating, cooling, gas) requires robust interoperability frameworks at both **syntactic and semantic levels.**
- A **Canonical Data Model (CDM)** is essential to manage the **high volume and resolution mismatch** of data collected from diverse sources across the PED ecosystem.
- **Data harmonization and alignment** are technical prerequisites for enabling cross-platform analytics, simulation-based planning, and real-time control functionalities.
- One of the major barriers in existing districts is the **lack of digital and physical infrastructure**, making integration complex and resource-intensive.
- **Next-generation districts**, designed as Local Energy Communities (LECs) or PEDs, can **natively adopt interoperable architectures**, enabling faster deployment of cloud-based energy management systems.

Reach interPED project

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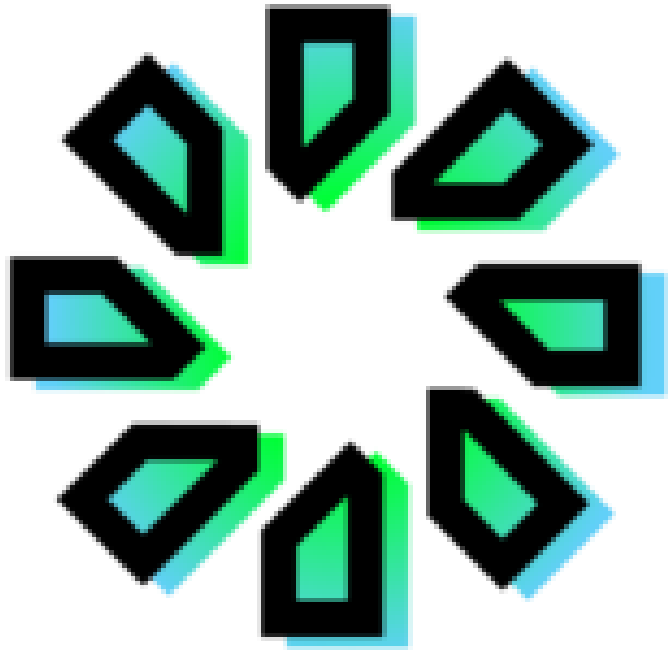
- https://twitter.com/interped_eu
- https://www.linkedin.com/company/interped



INTERPED

Thank you!

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