# SONDER

## Service Optimization of Novel Distributed Energy Regions

*"With interoperability profiles, graph-based predictions and flexible prosumers such as datacenters, SONDER introduces novel approaches for local energy systems."*

Local and regional energy systems are expected to become essential partners for distribution system operators and significant contributors to energy system stability. Typically, power peaks can be buffered by the grid, but the unpredictable nature of renewable energy sources, the unexploited efficiency of gas, electricity, and biofuels in operating buildings, and electric vehicles concurrencies lead to unknown correlations. There are no strategies available for communities to manage distributed energy resources, help optimizing local efficiency, pool, orchestrate, and command flexibilities in an increasingly digital world, and offer that flexibility on the markets. Building on existing knowledge of national and regional projects, together with stakeholders in NGOs, industry, and ESCOs, we investigate novel services for communities to generate, consume, provide demand response, and storage in a pan-European setting, including smart cities, residential, industrial, and data center users.
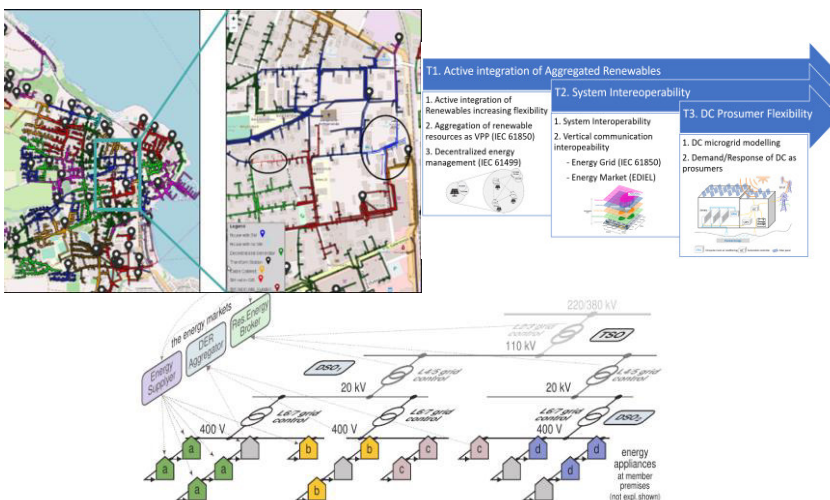


**ERA-Net Smart Energy Systems**

### Project Duration

01.09.2019 - 31.08.2022

### Project Budget

Total Budget:  € 2,273,425.-
Funding: € 1,493,107.-

### Project Coordinator

TU Wien (AT)

### Project Partners

- PowerSolution Energieberatung GmbH (AT)
- Technologieplattform Smart Grids Austria (AT)
- Allmobil GmbH (AT)
- Lulea University of Technology (SE)
- RISE Research Institutes of Sweden AB (SE)
- ACON Datacenter (SE)
- AlaRI Advanced Learning and Research Institute (CH)
- Fachhochschule Nordwestschweiz - Institut für Elektrische Energietechnik (CH)
- Siemens Switzerland AG (CH)
- Arbon Energie AG (CH)

### Project Website

www.project-sonder.eu

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**ERA-Net
Smart Energy Systems
Joint Call 2018**

This project has been awarded funding within the ERA-Net SES Joint Call 2018 for transnational research, development and demonstration projects. EUR 33.4 Mio of funding have been granted to 23 projects from 16 regions and countries.

## Main Objectives

- Devise reference architecture for ECs and evaluate it at example of Austrian model region

- Guidelines for deployment of regional storage battery considering an economically feasible ownership and operator model

- Contribute to discussion on e-storage regulation

- Improved prediction methods for PV production and consumption

- Efficient predictive grid maintenance

- Investigate Datacentres as Prosumers for Energy Flexibility

## Expected Main Results

- Common reference architecture for ECs

- Integration profiles to mitigate interoperability issues for ECs

- Optimal operation control of stationary BESS (mainly for peak power shaving purposes)

- Prediction of load consumption profiles at different levels of Arbon distribution grid

- Microgrid simulator with datacenter

- BESS operator model for ECs

- Forecast of daily load consumption profile for improved performance in balancing market

- Realistic case study scenarios for datacentres and microgrid

- Production prediction model for DSOs and TSOs

- Models for datacentres as consumer/producer in energy grid

- Comprehensive datacentre model

- Comparison of proposed forecast models

- Communication interoperability between ECs and Energy Market

- Datacentre prosumer model with microgrid

**Joint Programming for Flourishing Innovation from Local and Regional Trials towards a Transnational Knowledge Community**

**www.eranet-smartenergysystems.eu**