

Virtual Power Plant in Leipzig

Short description

Basic features of VPP

- Decentralised Energy Assets
- Demand Response
- Grid balancing
- Integration of various power sources
- Participation in the energy market

What are the special features of the LSW-VPP?

- A digital platform ecosystem as foundation for all use cases and microservices
- Interaction of assets with people: L-zero smart sockets, fleet management
- Use of external data: open data, spatial data
- Holistic sector coupling: joint optimisation of electricity, heat, mobility

Key results during the project lifecycle

- Digital platform building: modern ecosystem of microservices that can be extended for new use cases
- Tested dynamic interaction with users in sockets and vehicles, prepares energy system for dynamic use
- Implementation of digital tools and AI-based methods in the company, training of employees
- AI-based district heating prepares system for solar thermal plant
- Visualisation of the results with dashboards
- Leveraged IoT business model development and direct marketing of renewable energies in exchange for market prices

DEMO DISTRICT

Virtual (entire city)

PARTNERS INVOLVED



COMPLETION DATE

10/2022

KEY NUMBERS

About 7,000 assets and devices connected: cogeneration plants, heat stations, electric vehicles, virtual storage form, sensors, smart plugs user smart phones

CO₂ REDUCTION POTENTIAL

High

CONTACT PERSON AND LINKS

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Virtual power plant

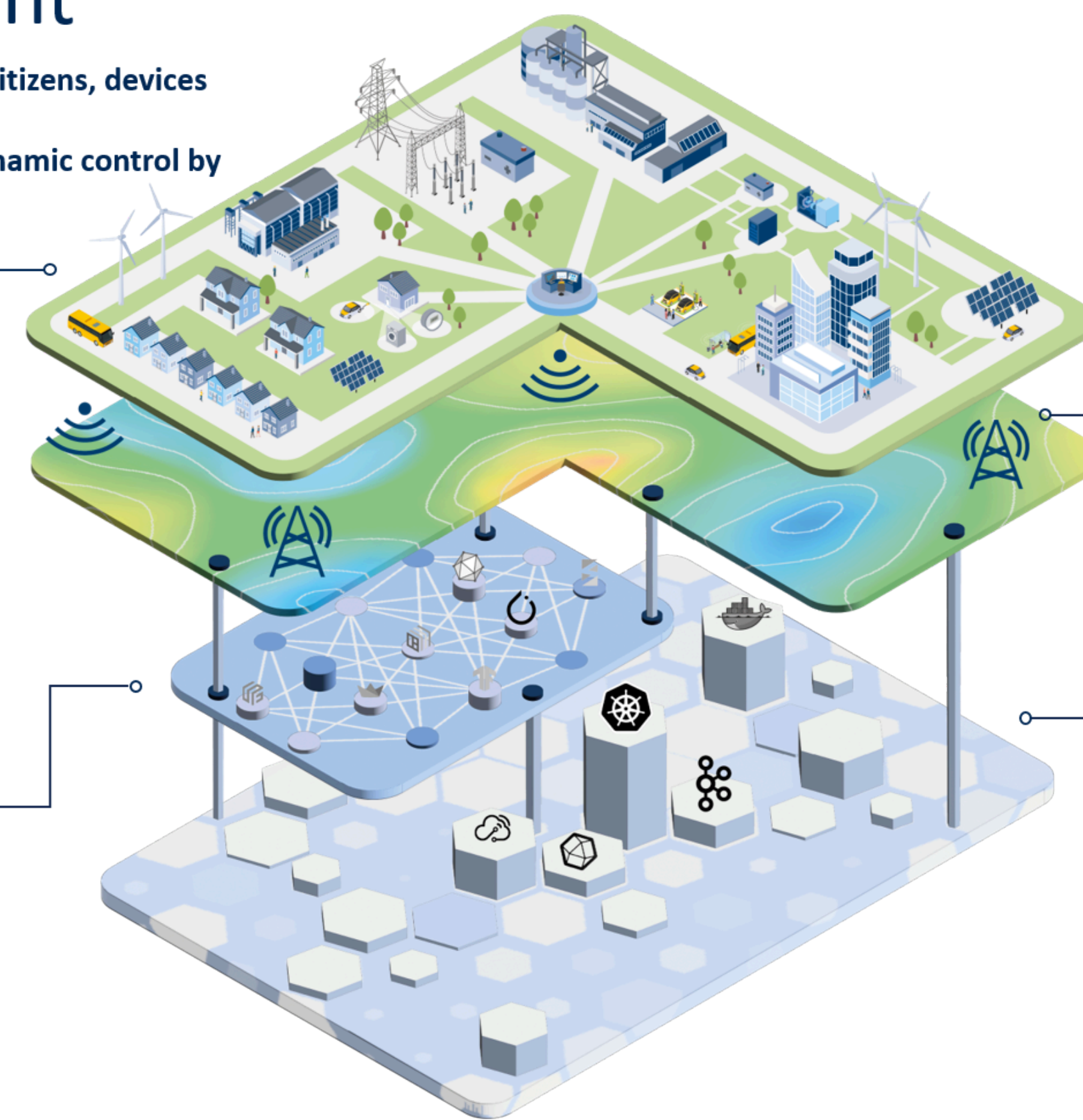
- ❖ Leipzig as a living digital ecosystem of citizens, devices and systems
- ❖ CO₂ reduction through incentivised dynamic control by municipal utilities

Level 1
Ecosystem of citizens, devices and systems that are digitally connected to LSW in real time using IoT technology

Level 3
Analytics & AI Layer
For the prediction and optimisation of decentralised loads, as well as explorative identification of new business models

Level 2
Dashboards & cockpits for visualising and managing energy flows, environmental information and the city's economic potential

Level 4
Digital platform as the foundation of the IT ecosystem on which LSW applications and services run



Insights and learnings

- How to integrate large heterogenous data streams onto buildings for future planning
- How to build a holistic general purpose digital platform to connect thousands of assets, devices, users and vehicles
- How AI can be used practically to optimise the industry and organisational processes
- How to train employees for the use of digital services for business processes

Challenges

- Data governance: Which stakeholders are allowed to share and receive data?
- Development of specific interfaces between proprietary legacy systems and new open source solutions
- Finding buildings and devices for testing purposes outside of productive operations
- Big data integration: e.g. transmitting and analysing highly granular telemetry data from generating assets or heating stations

Plans for replication

- Digital platform as a product that can be utilised by other electric utilities
- AI-based services as a business model
- IoT developments (L-Box light) as a product
- Fleet Management: dynamic marketing of flexibility for vehicle fleet owners

Questions and comments from partners

Comments to be added during poster session at Consortium meeting in Leipzig

