Platone
PLATFORM FOR OPERATION
OF DISTRIBUTION NETWORKS

Use Cases and Key Performance Indicators in the Platone Demonstration Sites

Kirsten Glennung | E.DSO

Platone aims to

1. Unlock flexibility to address local congestion and voltage stability
2. Improve grid operation through advanced observability approach
3. Improve customers engagement and facilitate their fair participation in the market
4. Support cooperation with the TSO
5. Ensure reliable and secure power supplies in the context of increasing DER penetration

Overview: demonstration sites

	ITALY	GREECE	GERMANY
Operator	Areti	HEDNO	Avacon
Area	**Rome** Large metropolitan area	**Mesogeia** (Attica region) Mix of rural, urban and sub-urban areas	**Twistringen** (Diepholz) Rural area (agricultural region)
Load	Households Small / medium industries Public buildings EV charging station	Households Small / medium / large industries	Households Agricultural buildings Storage heaters
Variable generation	Rooftop PVs	Rooftop and ground PVs	Rooftop PVs

Use cases: Italy

IT-1 Voltage management in transmission and distribution system

Avoiding voltage violations by exploiting flexibility resources in the day-ahead and real time flexibility market

IT-2 Congestion management in transmission and distribution systems

Preventing congestion issues in by exploiting flexibility resources in the day-ahead and real time flexibility market

2 use cases

Use cases: Greece

GR -1

Functions of the State Estimation tool given conventional measurements

Ensuring high quality estimative of the network state

GR - 2

PMU data integration into state estimation tool

Reinforcing network observability via improved state estimation performance

GR - 3

Distribution Network limit violation mitigation

Examining the use of flexibility tools in case of voltage level limit violation

GR - 4

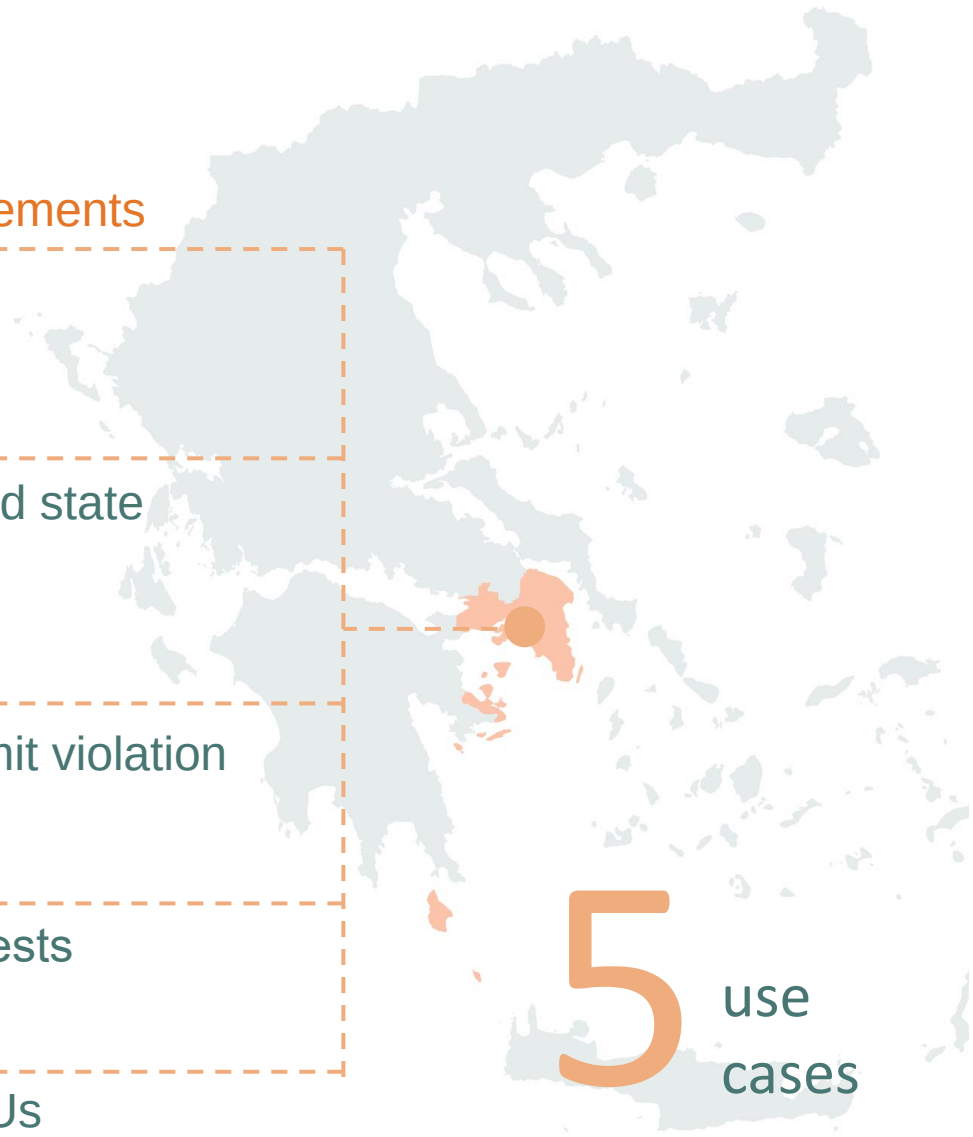
Frequency support by the distribution network

Answering to TSO's frequency support requests

GR - 5

PMU integration and Data Visualization

Examining the integration and operational use of low-cost PMUs



5 use cases

Use cases: Germany

DE -1 Islanding

Implementation of local EMS with focus on the local energy community (LEC)

DE -2 Flexibility provision

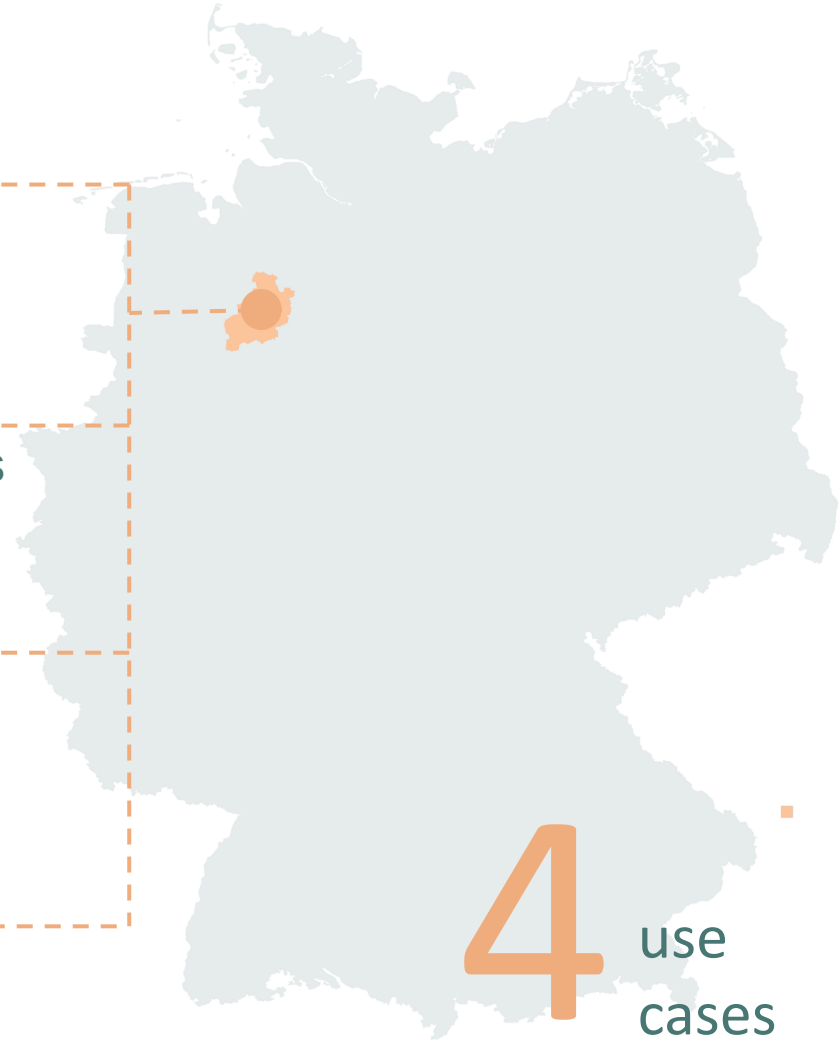
Providing available in the LEC flexibility to a third parties

DE - 3 Bulk energy supply

Reducing the stress on the MV feeder by energy delivery in discrete packages

DE - 4 Bulk energy export

Using local storage to export surplus energy coming from the LEC at fixed time slots



4 use cases

Key Performance Indicators

31 KPIs defined

Project KPIs – to highlight common aspects and differences in approaching them

DEMO specific KPIs – to focus on specific technical challenges

2 domains of KPIs: **technical** and **social**

- The values of KPIs measured in the field will be **reported twice** during the project.
- KPIs will support the **scalability and replicability analysis**.

Key Performance Indicators

PR_01	Participants' recruitment
PR_02	Active participation
PR_03	Flexibility Availability
PR_04	Flexibility Effectiveness
PR_05	Distribution Network Hosting Capacity

IT_01	Market Liquidity
IT_02	Forecast reliability – customer profile
IT_03	Forecast reliability – grid profile

DE_01	Reduction of energy demand provided by MV-grid
DE_02	Reduction of power recuperation peaks
DE_03	Increase of self-consumption
DE_04	Maximization of Islanding Duration
DE_05	Responsiveness
DE_06	Accuracy of the achievement of a given setpoint
DE_07	Success of package-based energy provision
DE_08	Accuracy in forecasting deficits

GR_01	Relative root mean square error (RRMSE)
GR_02	Relative percentage error (RPE)
GR_03	Accuracy metric for complex phasor voltage estimation (MaccV)
GR_04	Convergence metric in terms of objective function
GR_05	Convergence metric in terms of estimated voltage magnitude
GR_06	Convergence metric in terms of estimated voltage angle
GR_07	Generation curtailment
GR_08	Demand curtailment
GR_09	Generation curtailment occurrences
GR_10	Demand curtailment occurrences
GR_11	Network limit violation occurrences
GR_12	Frequency support not provided
GR_13	Field installation and data integration of PMUs
GR_14	Data visualization
GR_15	Visualized tools and services

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Thank you!

www.platone-h2020.eu

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