



DSO and Consumer Alliance (a centralised energy management system for microgrids)

A combination of EESs and demand response involving both large and residential users

Improve the quality of the local DSO network and implement an early-stage DR program to exploit synergies in a municipal-scale and multi-energy microgrid

Distinctive Features

- Exploiting the high share of renewable generation in a city microgrid
- Smart management algorithms for an LV distribution grid

Why

The Pilot's motivations

- Maximise flexibility to the DSO
- Integrate and coordinate large- and small-scale assets
- Exploit the potential of the multi-energy microgrid
- Reduce flowback of electricity to the TSO
- Increase power quality in LV network
- Implement an advanced control system
- Coordinate flexibility service providers' products/ programmes and DSOs' congestion-management issues

What

The Pilot's expectations

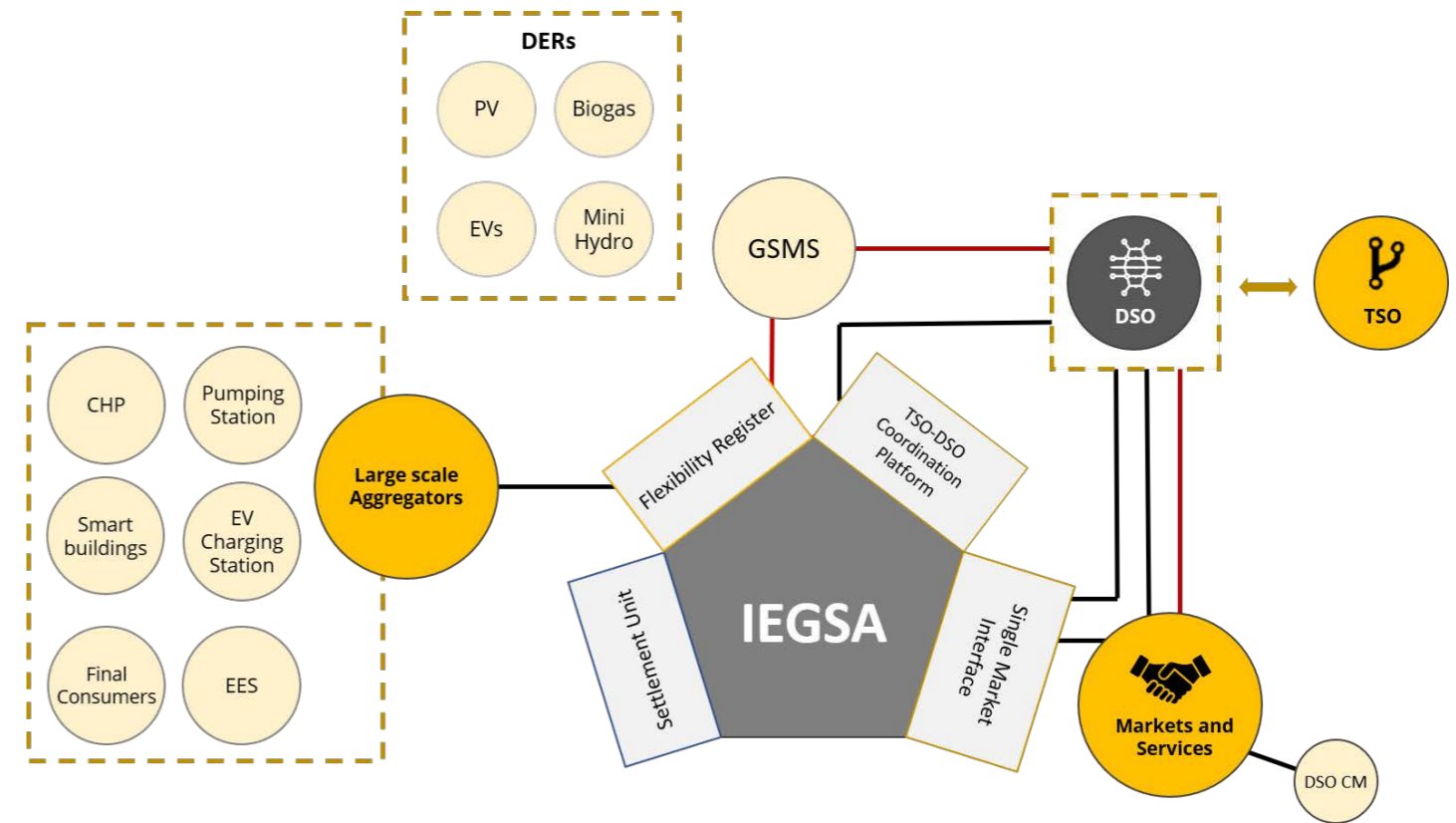
- **Technical:**
 - Increase the microgrid self-consumption of renewable energy, thus reducing the amount of power injected into the national grid at the point of common coupling with the national TSO
 - Improve the power quality of the microgrid by acting on the critical LV lines identified by the DSO
- **Business:** Promote final-user engagement in DR programs
- **Social:** Promote the development of local energy communities

Business Model

- Reduce the flowback of electricity to the TSO
- Increase power quality in the LV network
- Use BESS to optimise power supply from distributed and non-programmable DERs
- Flexible and responsive users in rural branches of the network
- Compensate for sudden lacks of power production in the microgrid at specific times of the day
- Maximise the potential of distributed energy resources across sectors
- Increase the provision of flexibility

KPIs Definition

- The quantification of monitored BESS performance
- The improvement of the monitored quality parameters of suburban branches
- The number of DR response hours in the year involving large users
- The number of MWh of flexibility provided by the CHP plant
- Lower congestion management costs for the DSO
- Hours operated in islanding mode
- The amount of excess electricity injected into the transmission network
- The number of hours for which electricity is injected into the transmission network – in both winter and summer
- The amount of flexibility provided by FSPs (and to which end users)



User Features

- The involvement of the entire microgrid and its users
- Maximising the self-consumption of locally produced RE and grid connected assets
- Incentives for final users to take part in a DR programme
- Cooperation among prosumers

Grid Features

- Short-term congestion management to the local DSO (15 minutes ahead)
- Improved power quality in countryside branches characterised by low consumption