



## Spatial Aggregation of Local Flexibility

*Zonal spatial information enabling local energy usage (flexibility) and solving grid-related constraints at the DSO level*

Achieve a wholesale market design with geolocational dimensions enabling collaboration between participants of various sizes

### Distinctive Features

- The introduction of a spatial dimension into the existing wholesale-market design
- The use of shadow prices to determine order clearing prices as an efficient way of solving grid-related constraints at the DSO level
- The adjustment of the existing EUPHEMIA algorithm to achieve a novel intraday electricity market structure

### Why

*The Pilot's motivations*

- Create an efficient way of solving grid-related constraints at the DSO level
- Holistic mathematical formulation for optimal market outcomes, linking consumers, DSOs, and TSOs
- Provide a common flexibility market framework for TSOs and DSOs and all stakeholders in the value chain
- Validate a congestion pricing model based on the differentiation of zones at DSO level (PUN)
- Secure competition and the supply of flexibility
- Demonstrate coordination between TSOs and DSOs
- Enable more integrated RES

### What

*The Pilot's expectations*

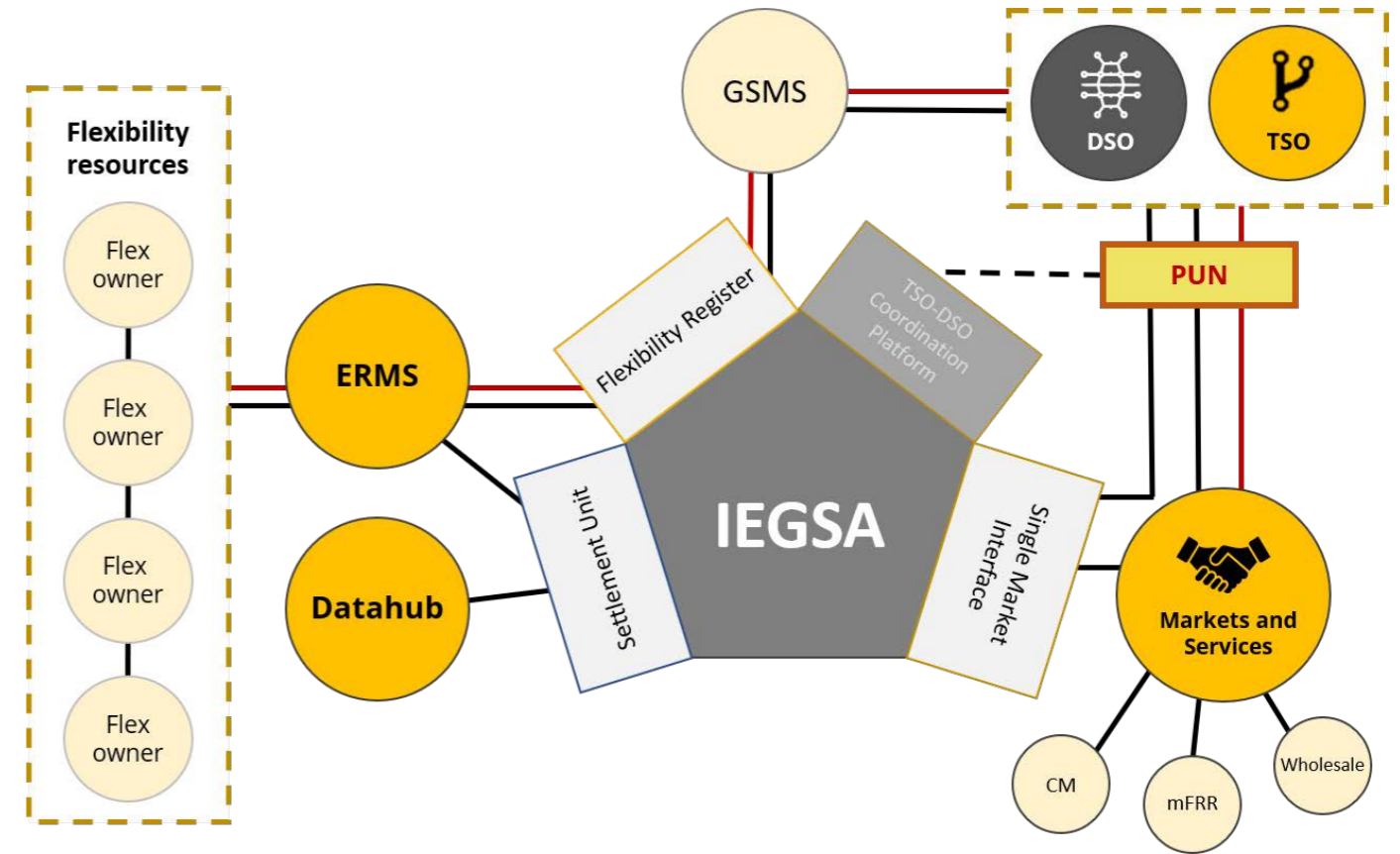
- **Technical:** Enable DSOs to use the intraday flexibility pool as a tool for congestion management
- **Business:**
  - The validation of a EUPHEMIA-based auction-type market in intraday, promoting aggregated flexibility bids
  - The introduction of shadow prices to determine clearing prices while reflecting local grid constraints in wholesale markets
  - Closer TSO-DSO cooperation, leading to a more reliable network and lower grid management costs
  - Expand the opportunities for market participants to be involved in balancing and flexibility markets
  - A demonstrated framework to facilitate the trading-based optimisation of grid resources
  - A demonstrated multi-level exposure of demand response and increased incentives for further resources

### Business Model

- Developing a prototype to introduce local flexibilities into the existing wholesale market
- Completing DSO grid mapping, connections with TSOs, and TSO-DSO and DSO-DSO transfer capacities
- PUN-like bid pricing to help alleviate cost distribution disincentives in low-liquidity local zones
- The aggregation of local flexibility up to the TSO wholesale market
- DSO usage of local flexibility based on the inclusion and resolution of a spatial dimension realised in simulation
- The new concept with zonal spatial information will enable local energy (flexibility) usage. Congestion management-aimed transactions are expected to result in new trades.

### KPIs Definition

- Demand-side flexibility and small-scale DER participation on wholesale markets:
  - The total number of offers for grid flexibility to grid operator and the number of offers approved.
  - The amount of new flexibility offered to the DSO/TSO.
  - Increased liquidity in euros in flexibility markets.



### User Features

- Lowering barriers for the participation of the demand side and small-scale DER flexibility
- Local (zonal) pricing to incentivise local flexibility in intraday timeframes

### Grid and Market Features

- A EUPHEMIA-based platform with the introduction of a spatial dimension
- A platform based on existing wholesale marketplaces with already established products, liquidity, and proven algorithm solutions