

P A R I T Y

**Pro-sumer AwaRe, Transactive Markets for Valorization of  
Distributed flexibilitY enabled by Smart Energy Contracts**

## PARITY Use cases & Pilot sites

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**2nd Blockpool Bootcamp**  
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## ❖ Use cases

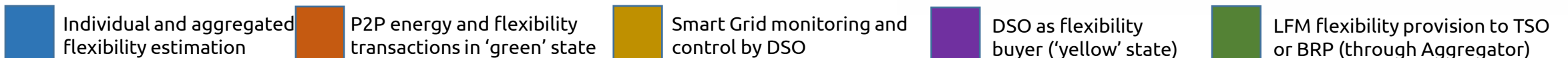
- ❖ Overview
- ❖ Presentation of selected use cases

## ❖ Pilot sites

- ❖ Greek
- ❖ Swedish
- ❖ Spanish
- ❖ Swiss

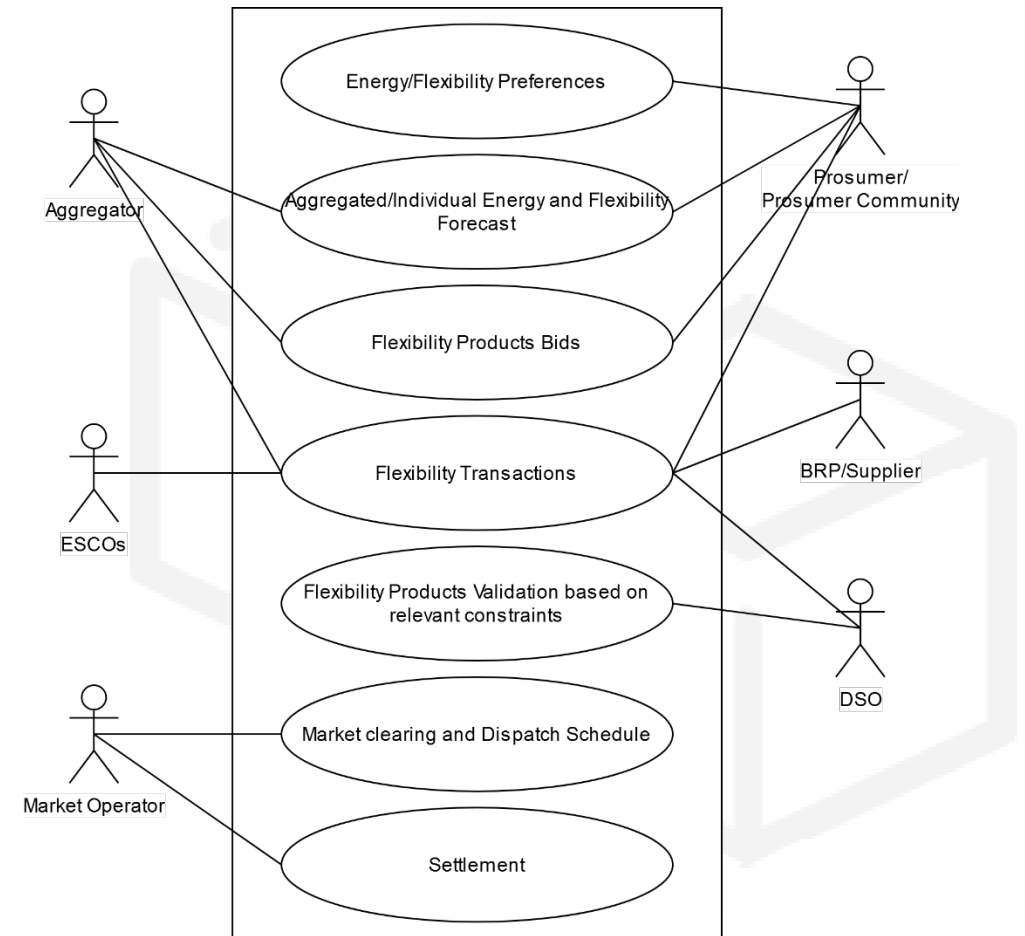


UC	Title
1	Building-level P2H/BAB flexibility estimation & automated provision to aggregator for LFM participation
2	Aggregated P2H flexibility estimation and provisioning for market participation pre-qualification
3	EV profiling and aggregated EV flexibility estimation for market participation
4	Human-centric and contract-safeguarding energy and flexibility transactions in LFM, on the basis of context-aware flexibility profiles
5	Forecasting, scheduling and dispatch of DER flexibility for coordinated management of the LFM grid
6	Smart grid management using enhanced PQ services for grid instability limitation
7	Ancillary services provision by STATCOM to TSO for overlay network stability
8	Congestion management by DSO through operation of LFM to increase DER penetration
9	Provision of ancillary services to overlay ancillary service market operated by TSO
10	Participation of LFM-enabled flexibility to national wholesale energy market
11	Red light (emergency) grid management using automated control of distributed DER (through smart contracts)



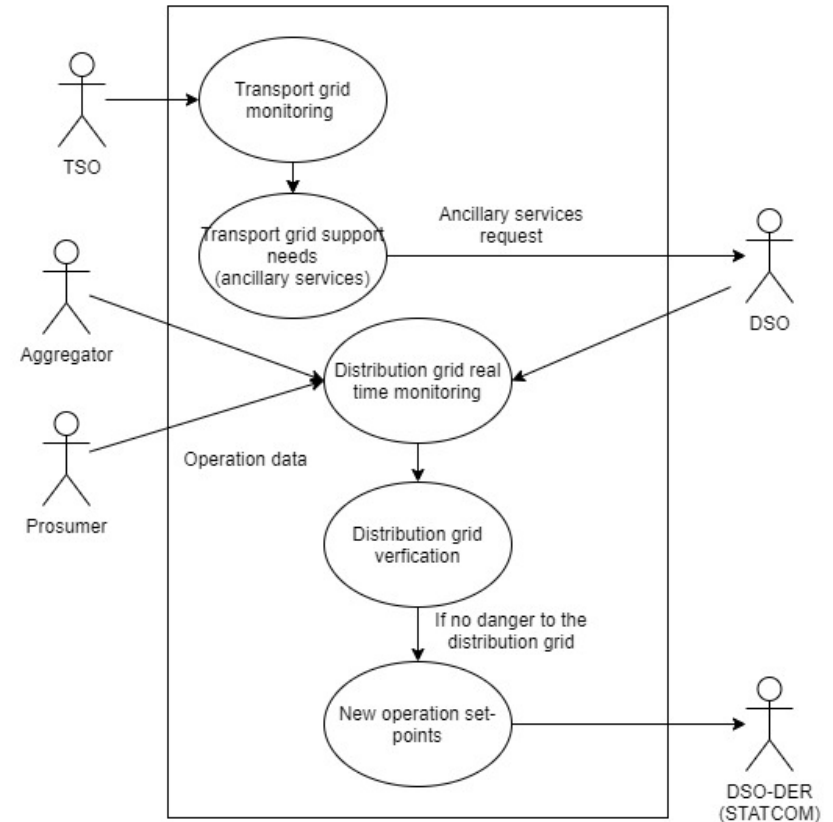
❖ **UC-4: Human-centric and contract-safeguarding energy and flexibility transactions in LFM, on the basis of context-aware flexibility profiles**

- ❖ Focuses on the participation of prosumers in P2P energy and flexibility transactions
- ❖ DSO defines and monitors the grid conditions
- ❖ P2P transaction procedure is performed through the Blockchain agents
- ❖ When the provision of the requested and promised flexibility has been verified, the blockchain performs the necessary remuneration and the peer receives some credits



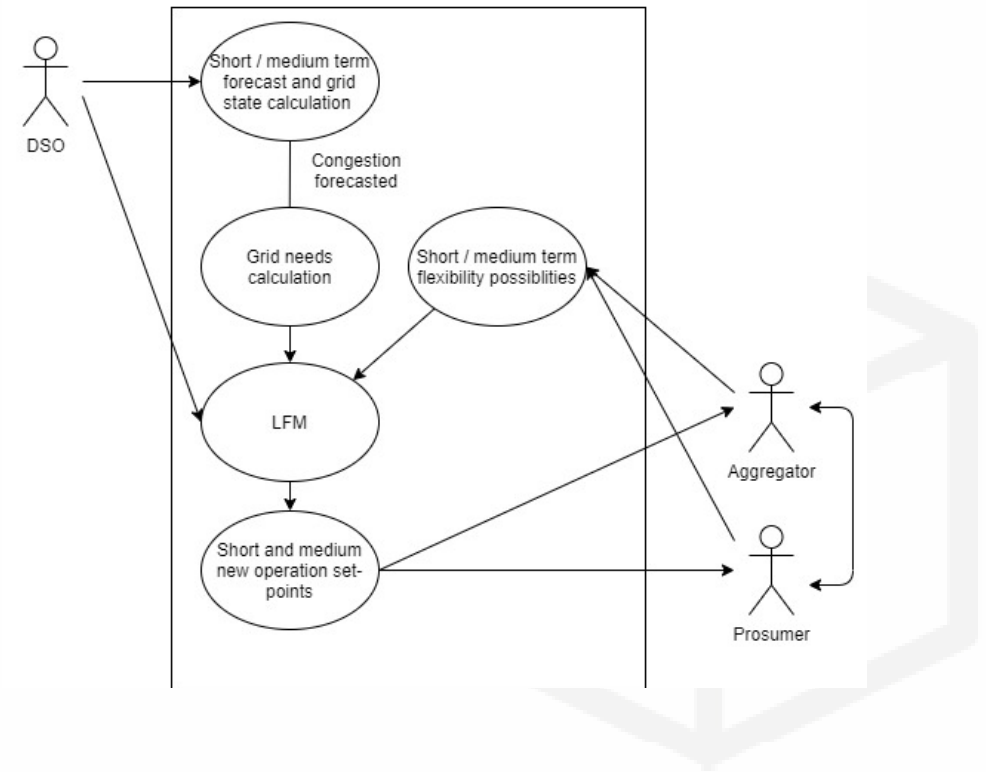
## ❖ UC-7: Ancillary services provision by STATCOM to TSO for overlay network stability

- ❖ LFM is not employed
- ❖ Communication between TSO and DSO
- ❖ TSO sends support request to DSO
- ❖ Calculation of STATCOM setpoints by the DSO



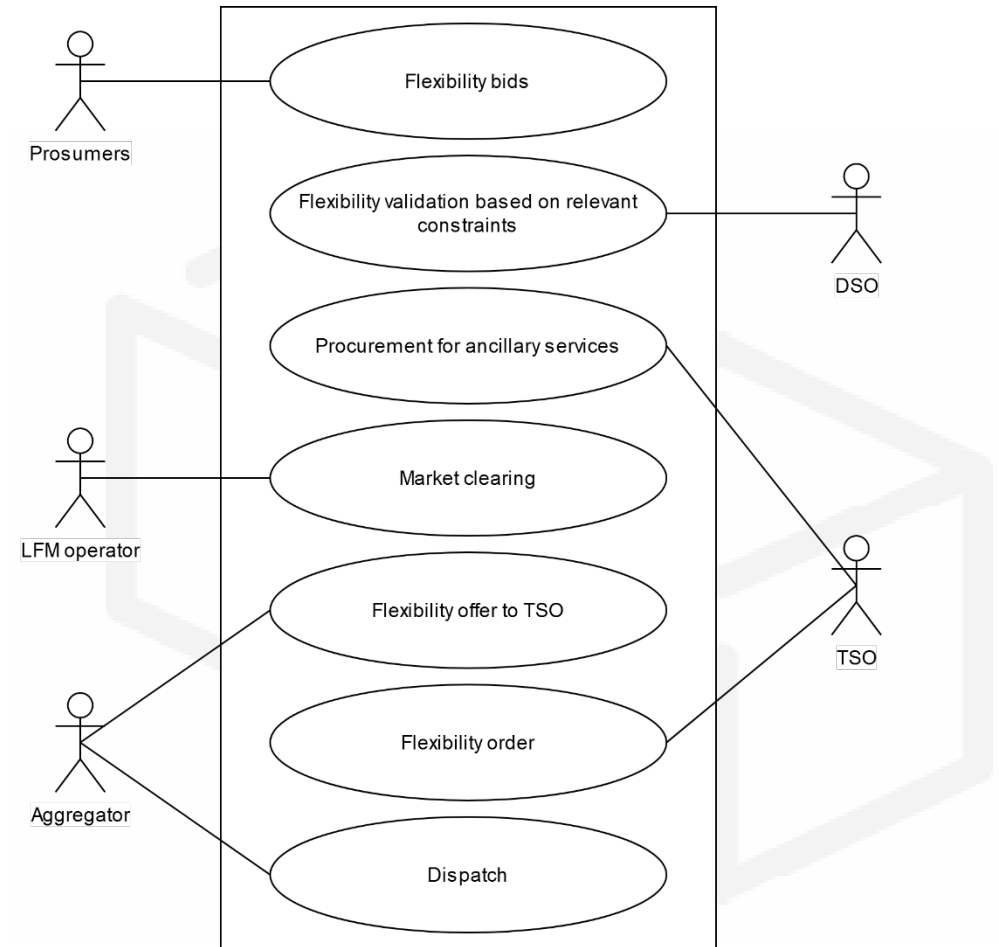
## ❖ UC-8: Congestion management by DSO through operation of LFM to increase DER penetration

- ❖ Detected network yellow/orange state by the DSO
- ❖ Activation of LFM: DSO requests flexibility in LFM market
- ❖ DER mapping and recruitment through Aggregator
- ❖ Dynamic activation of flexibility in real time to reduce or eliminate congestion



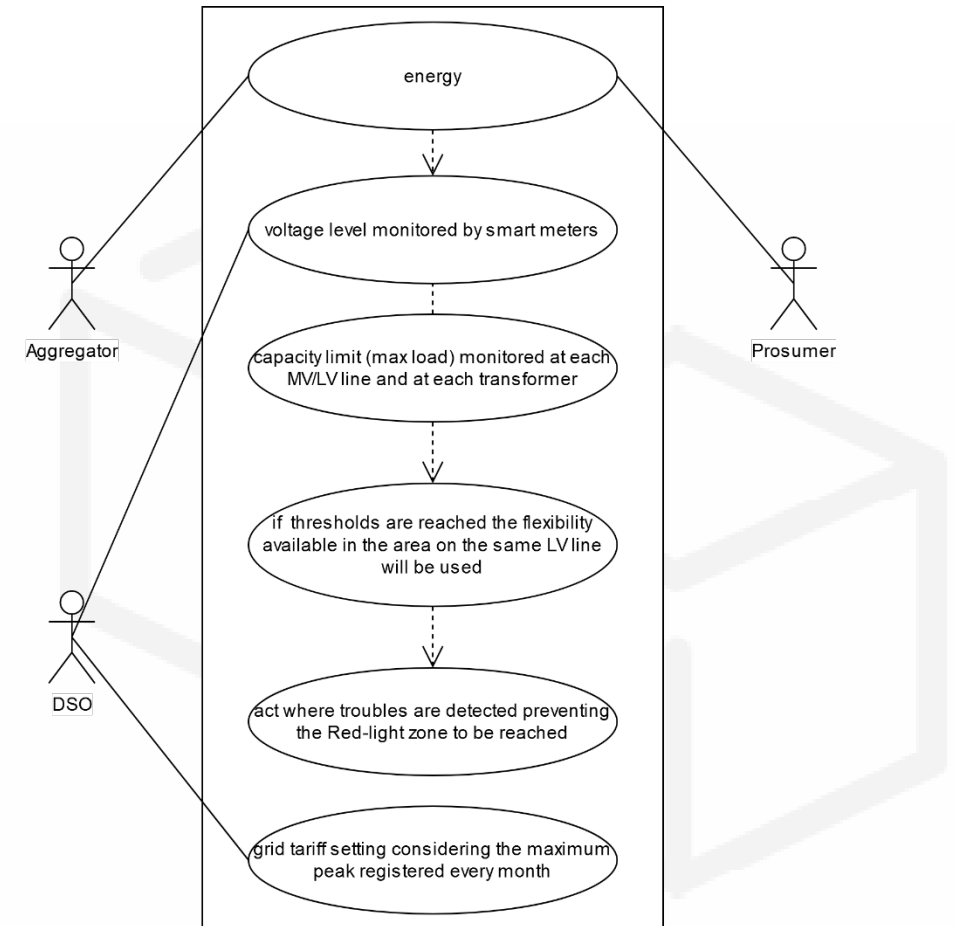
## ❖ UC-9: Provision of ancillary services to overlay ancillary service market operated by TSO

- ❖ Network is in 'green' state
- ❖ Communication between TSO and Aggregator. TSO publishes a call for tenders (for balancing)
- ❖ Automated transactions through smart contracts. DER dispatch through the Aggregator
- ❖ TSO will request offer for keeping available flexible assets (remunerated by a reservation payment) and if their flexibility is eventually needed, an explicit dispatch request will be sent (dispatch remuneration)



❖ **UC-11: Red light (emergency) grid management using automated control of distributed DER through smart contracts**

- ❖ Voltage level monitoring by smart meters. If threshold is reached, DSO sends 'red' network state signal and flexibility in the area on the same LV line will be used
- ❖ LFM is not employed
- ❖ Smart contracts between DSO-Aggregator-Prosumers are applied



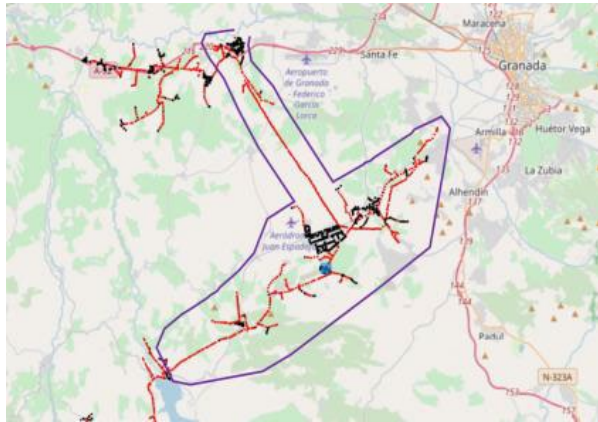




P A R I T Y

# Pilot sites

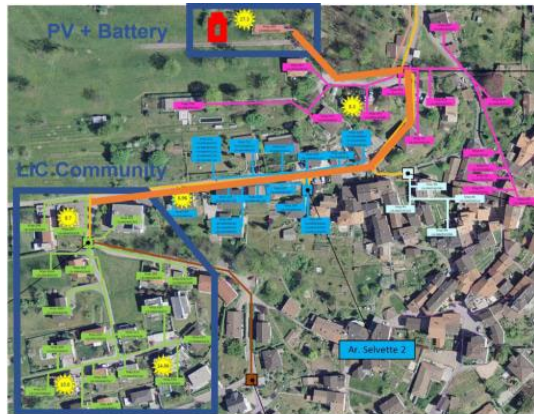
❖ The PARITY solution will be demonstrated in 4 pilot sites located in Spain, Greece, Sweden and Switzerland



Distribution Grid,  
CUERVA&URBENER,  
Spain



Buildings and fuel station  
facilities, BFS, Greece



Luggagia Innovation  
Community, AEM,  
Switzerland



Residential and office  
buildings, E.ON, Sweden



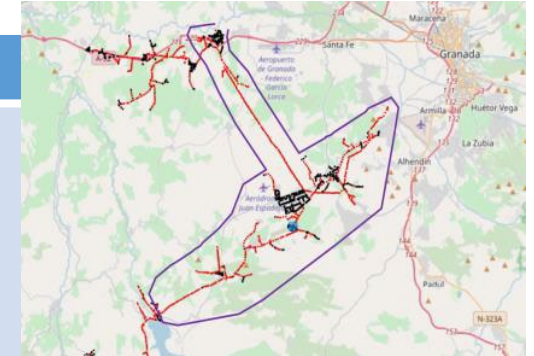
Building	Equipment
1 large commercial 40 residential 3 fuel stations (EV charging points)	<ul style="list-style-type: none"> <li>• PVs (30kW)</li> <li>• Thermal storage</li> <li>• 8 EV charging points</li> </ul>
Use cases	
UC-1, UC-2, UC-3, UC-4, UC-5	



Building	Equipment
3 residential buildings (48 apartments)	<ul style="list-style-type: none"> <li>• EV-charger</li> <li>• 40 kWp PV installation</li> <li>• Communal gas-powered heating system</li> <li>• Potential electric water heaters</li> <li>• Planned 57,6kWh NiMH-battery storage and 33 kW inverter</li> <li>• Energy information system</li> </ul>
Office building (2 floors)	<ul style="list-style-type: none"> <li>• Planned 115,2 kWh NiMH-Battery storage and 66 kW inverter</li> <li>• 6 planned EV-chargers</li> <li>• Planned 34 kWp PV installation</li> <li>• Planned controllable illumination</li> <li>• Electrical HVAC</li> <li>• District heating, individual thermostats per radiator</li> </ul>
Use cases	
UC-1, UC-2, UC-4, UC-5, UC-9, UC-10, UC-11	

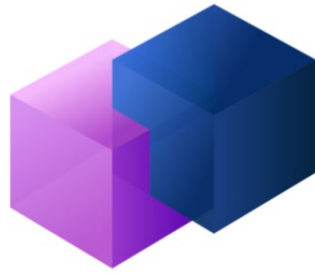


Building/Area	Equipment
Cuerva	<ul style="list-style-type: none"> <li>• 273 supply metering points</li> <li>• 4 residential prosumers by Cuerva (13 kWp of domestic PV)</li> <li>• 6 Low Voltage Feeders</li> <li>• EV Charger of 22 kW (working at 7kW)</li> <li>• 100 kWp PV power plant in the LV network</li> <li>• 15 kWp PV deployed in the Escúzar School</li> </ul>
Urbener Commercial (office) buildings  CIRCE office building  San Miguel MAZ building	<ul style="list-style-type: none"> <li>• 6 EV charging stations up to AC 44kW</li> <li>• Air conditioning 4 indoor units and 2 outdoor through fan coils</li> <li>• DHW production by electric boiler</li> <li>• HVAC system, smart meters, PV installation on the roof, EV charging points</li> <li>• Heat pump, DHW, electric water heaters</li> </ul>
<b>Use cases</b>	
UC-1, UC-2, UC-4, UC-5, UC-6, UC-7, UC-8, UC-9, UC-10, UC-11	



Building	Equipment
18 residential & Municipality building	Electricity smart meters Central heating system Central water heating Individually controlled cooling system Electric HVAC system PV (will be installed)
Use cases	
UC-1, UC-2, UC-4, UC-5, UC-10	





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## Questions & Answers

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PARITY project website: <https://parity-h2020.eu/>

