

OSMENSE

OPTIMAL SYSTEM-MIX OF FLEXIBILITY
SOLUTIONS FOR EUROPEAN ELECTRICITY

WP6: Near real-time cross-border energy market

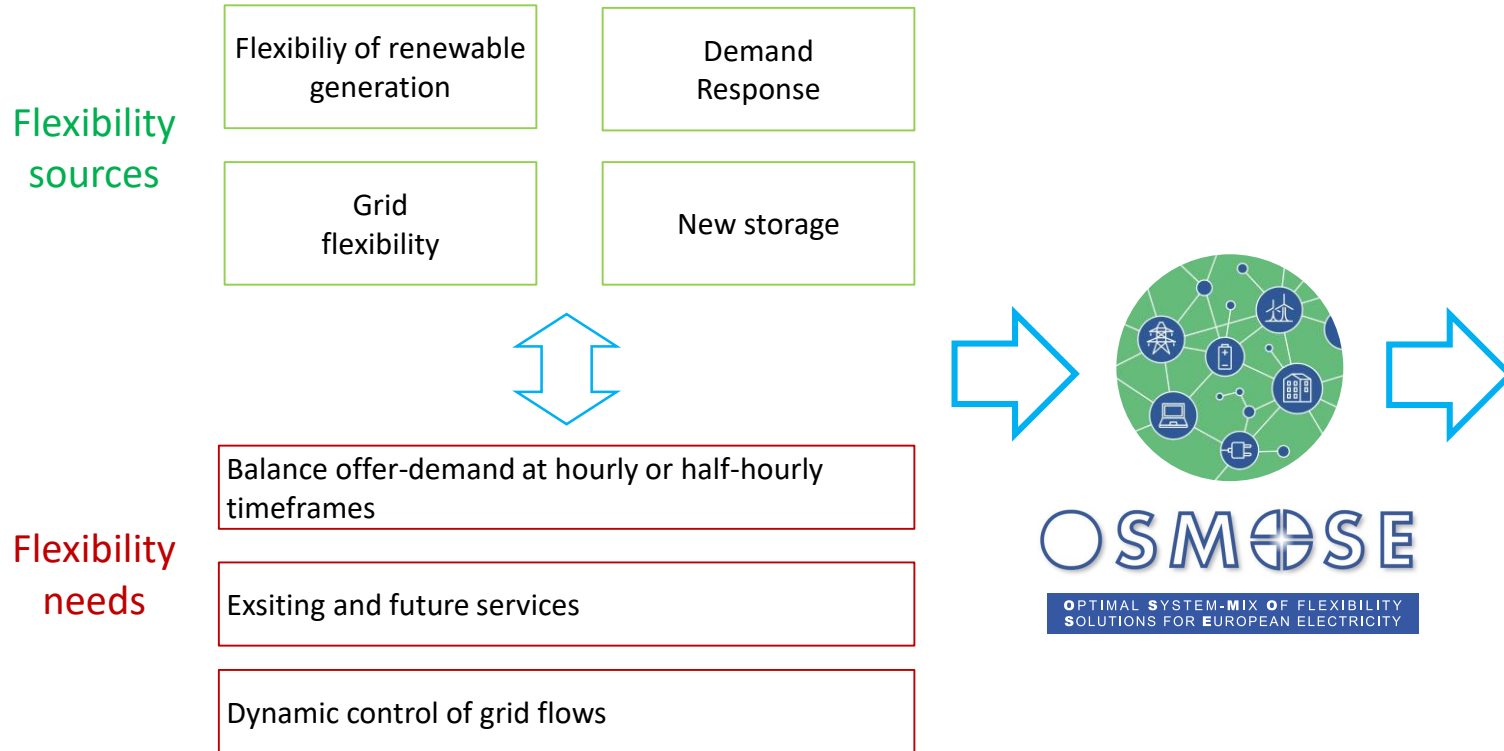
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A new opportunity to extract value of electrical system flexibilities



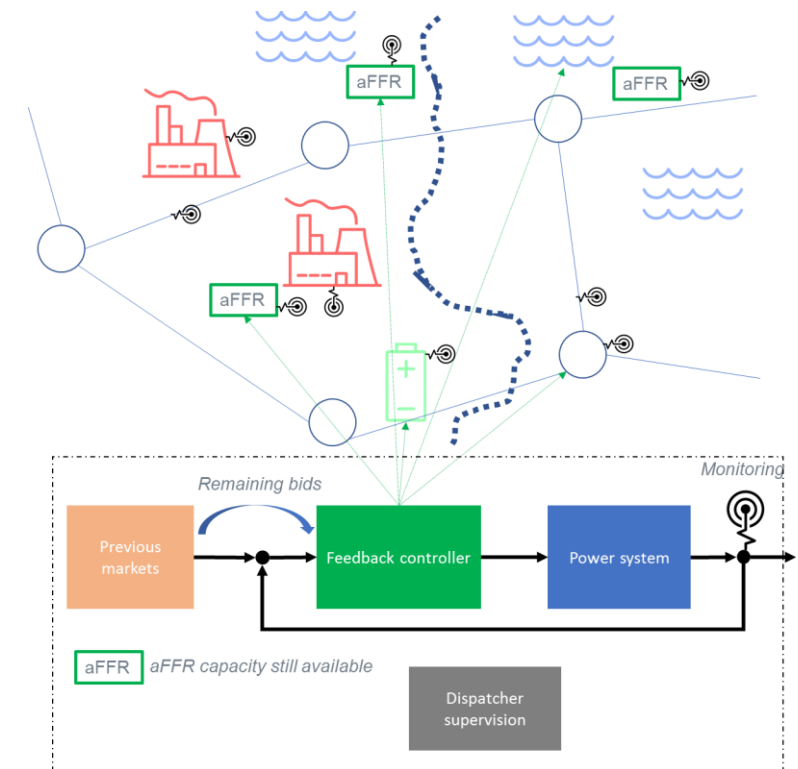
Work package 6

The objective is to experiment a **close-to-real-time joint optimisation** of generation/storage/demand & grid, in order to extract **the most value from remaining flexibilities of the electrical system**.

What's the value in running a platform?

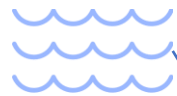
- **Concept of WP6 uses a 3-step approach:**
 - (Close-to) real time Cross Zonal Capacity assessment
 - Coupling of flexibility markets on congested borders
 - Short-term planning inside production companies, for the creation of flexibility bids
- **First and Second Process merged in close-loop manner**

Additional Possibilities arise from Less Uncertainties



Innovative 2 layers solution

Who ?



RESERVED CAPACITY FOR INCIDENT (AFRR) ❌

NON RESERVED CAPACITY ✅

aFFR available command

How ?

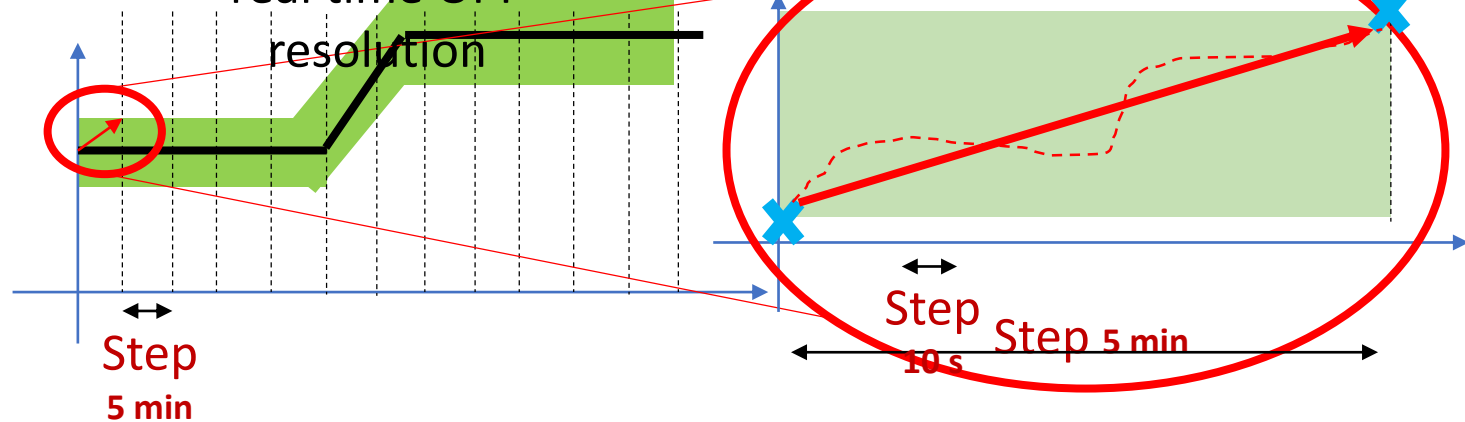
Layer 1

Layer 2



Standard but cross border and real time OPF resolution

Innovative MPC with power flow manifold



❌ Safe N and N-1 state

Safe zone

→ Command for the group ensure safe N and N-1 conditions

----- Trajectory determined by the super-fast loop 4

Who earns money?

Where is the money coming from?

Additional potential of Generation units

Release of energy constraints on generation units

Enhance integration of renewables

Cost-effective operation of storage systems

Increased cross-border capacity utilization

How do you set prices for flexibility?

Opportunity and not imbalance driven

Market based prices – calculated based on optimal power flow and FlexEnergy bids

Will the project continue when the R&I funding stops?

Adding additional borders/countries

TRL9 requires additional robustness

Utilize Dynamic thermal rating in optimization

Include controllable demand response

What to remember?

01 Market driven

This market is opportunity and not imbalance driven. It gives extra opportunities to flexible units which are not used in ancillary services. This gives more flexibility to support intermittent sources. Only aFRR qualified units.

02 Near-real time

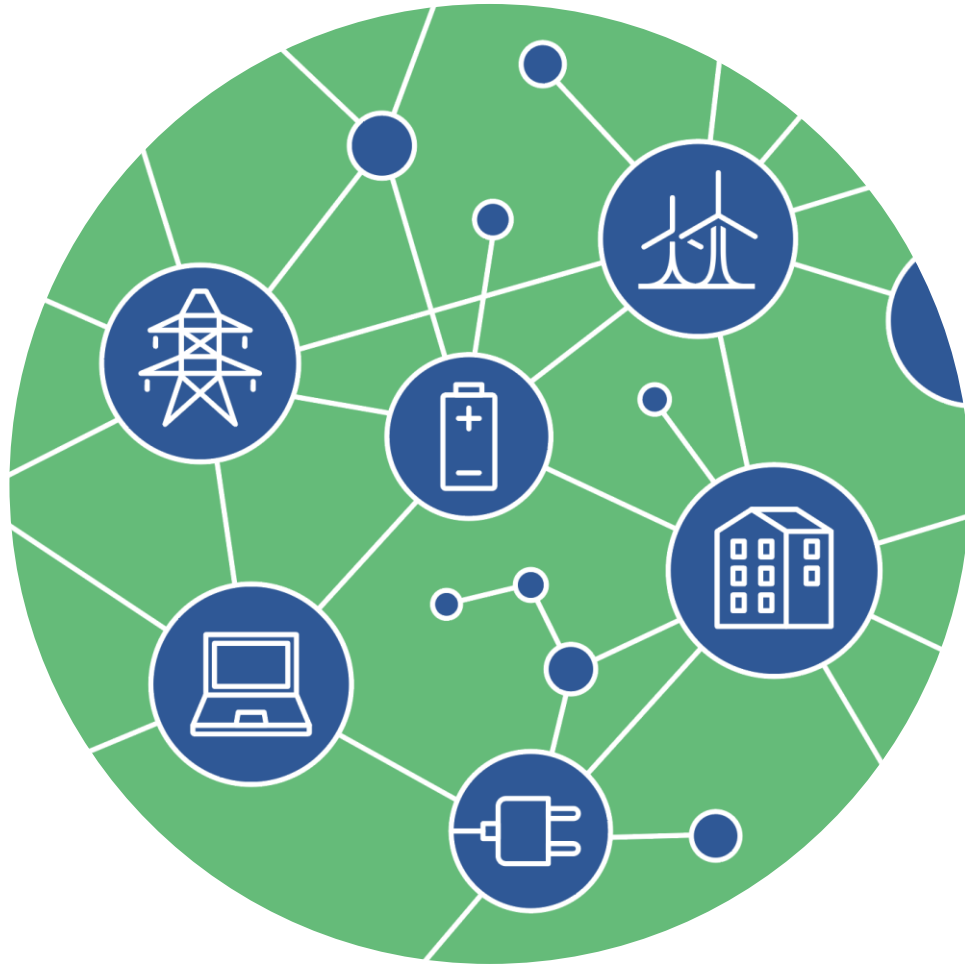
The market is a near-real time. This extends the opportunity to trade beyond current cross-border intraday GTC.

03 Power flow optimization

FlexEnergy Bids are executed in a way that the power flows are optimal given the current grid status. This enables extra energy exchange over the borders.

04 Close-loop operation

Enables bid de-activation, if a problem occurs during the execution



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