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# Distribution Constraints Market: evolvDSO roles and use cases

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# DSO's new and evolving business processes

Services to implement an Active Distribution System Management approach

## New and evolving DSO activities

The **improvement of network planning and operation processes**, in order to optimise network investments

The **need to contract and activate flexibilities** at different timeframes to solve specific distribution network constraints



Distribution System Optimiser



Customer Relationship Manager



Distribution Constraints Market **Officer**

## Associated services

Optimise the development of the network using available levers (LV phase balance optimisation and/or network tariff structure)

Elaborate the distribution network multiannual masterplan (including flexibility calls for tenders)

Optimise work programmes (TSO, Producers, and DSO works)

Optimise network operations until market gate closure based on a schedule (in operational planning)

Decide asset renewal priorities and optimise maintenance programmes

Contract non-firm grid access with power limitation

Elaborate the distribution network multiannual masterplan (including flexibility calls for tenders)

Operate a distribution constraints market (day-ahead and intraday)

## Domains

**NETWORK PLANNING**

**OPERATIONAL PLANNING**

**OPERATION & MAINTENANCE**

**NETWORK PLANNING**

**MARKET**

# D1.3 Distribution Constraints Market Officer - Role

- Capability to contract flexibility resources, based on the needs of the Distribution System Optimiser
- Local flexibility offers made by flexibility operators can be procured in the long-**(flexibility tender)** and short-term **(flexibility market)**
- **The decision to procure flexibility would be evaluated against its opportunity cost, i.e. the cost of not using flexibility to relieve grid constraints but expanding the grid**

# D1.3 Distribution System Optimiser - Role

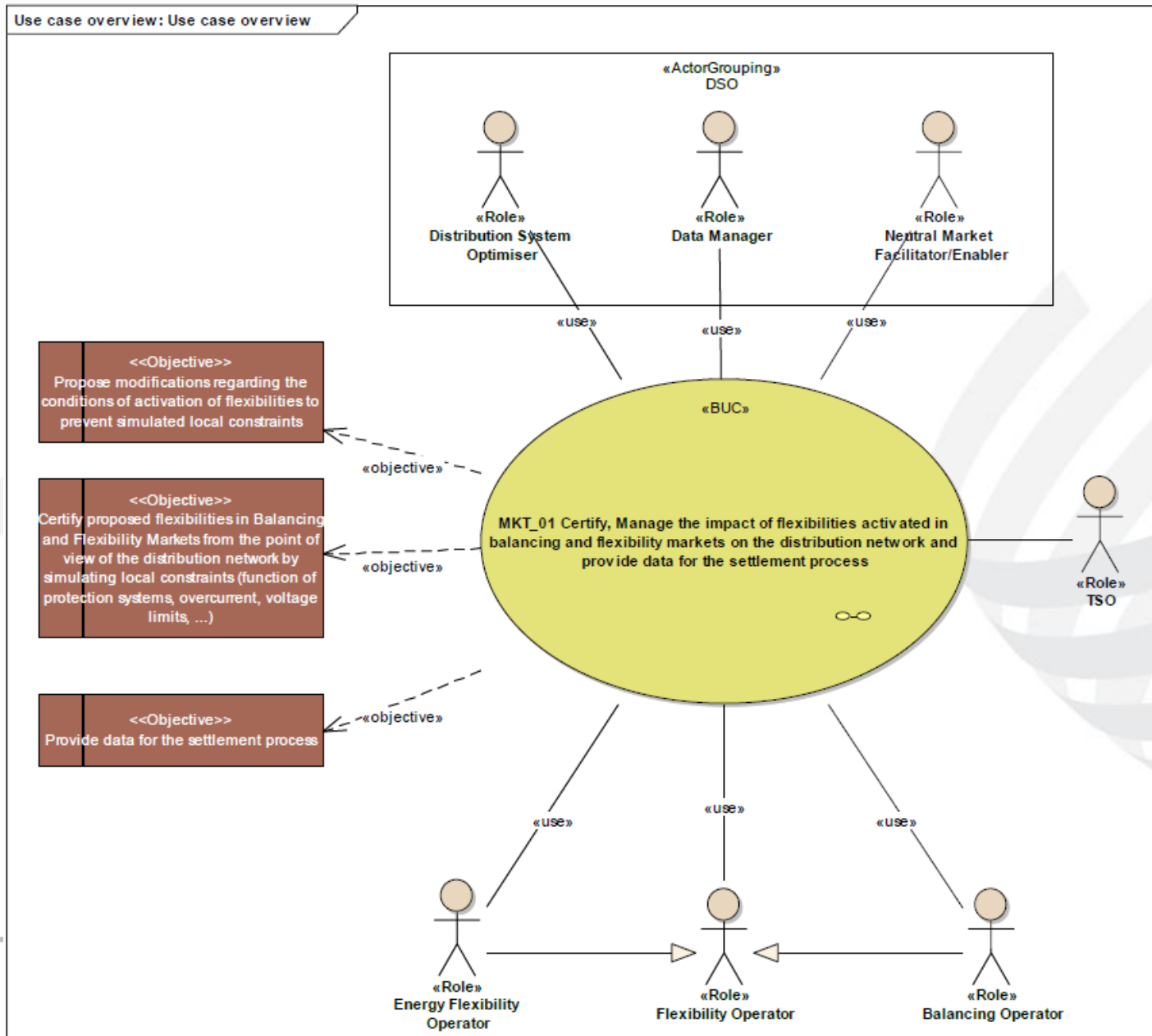
- Improves development, operation, and maintenance of the distribution network → optimise the available levers
- Application of flexibility-based services to optimise network planning and operation
- **The innovation lies in new methods and processes for planning and operation of the grid**
  - Smart grid technologies (e.g. distributed control system, network sensors)
  - **Advanced management tools (e.g. state estimator, optimal power flow)**

## D2.1 Certify, manage the impact of flexibilities activated in Balancing and Flexibility markets on the Distribution network, and provide data for the settlement process

- This Business Use Case describes how the DSO
  - Certifies flexibility operators and flexibility perimeters including sites connected to the distribution network
  - Qualifies balancing offers in day ahead and intraday and energy flexibility offers in day-ahead from a DSO point of view
    - **Ensure that their activation do not create new constraints on the distribution network, and propose modifications if necessary**

# D2.1 Certify, manage the impact of flexibilities activated in Balancing and Flexibility markets on the Distribution network, and provide data for the settlement process

## Use Case Overview

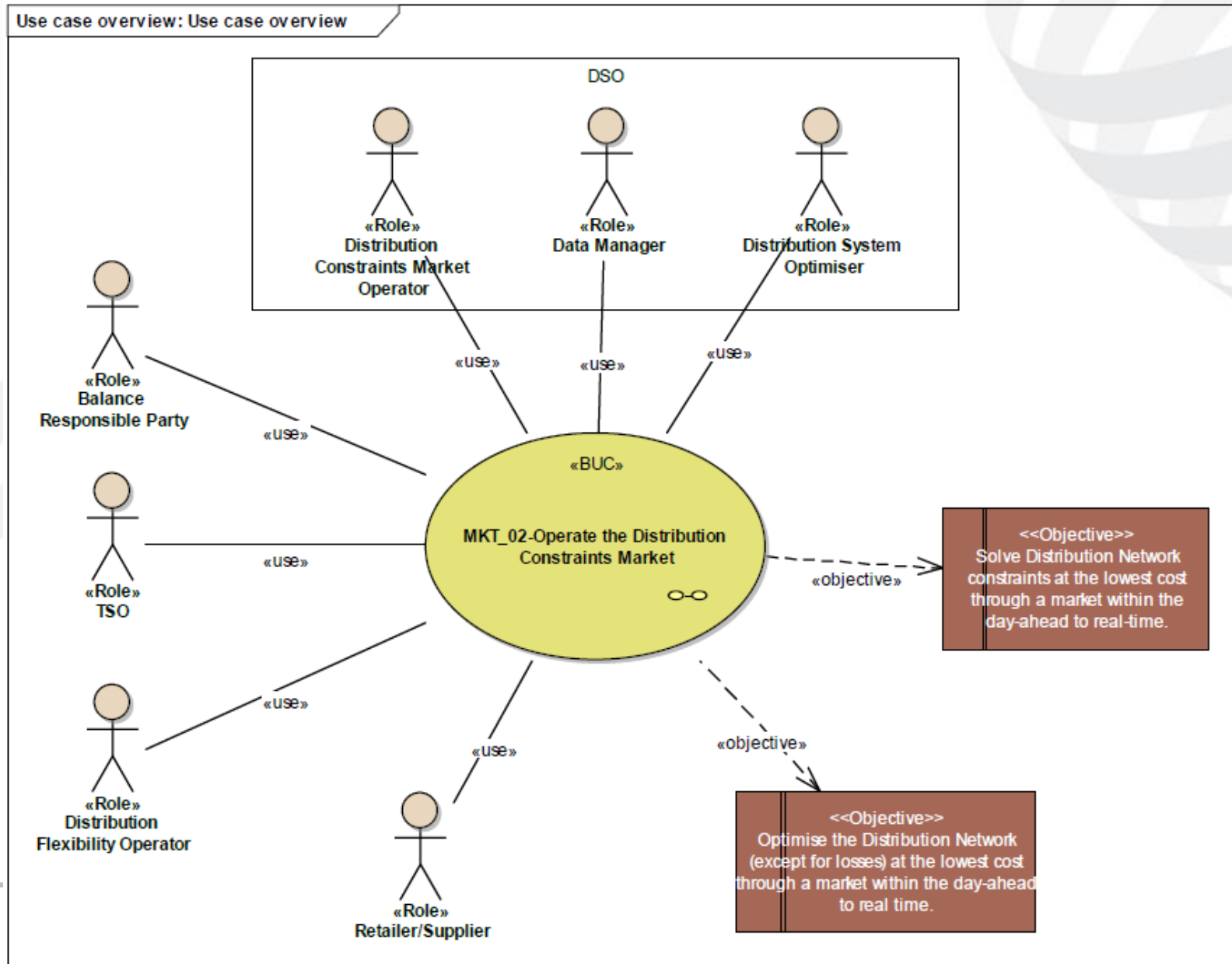


## D2.1 Operate a distribution constraints market (day-ahead and intraday)

- The Business Use Case describes how the DSO solves specific distribution network constraints at the lowest cost by purchasing Distribution Flexibility Offers proposed on a new Distribution Constraints Market
- The DSO manages the Distribution Constraints Market, and 3 major actions are considered:
  - Ask for distribution flexibility offers to solve constraints detected in Operational Planning
  - Receive Distribution Flexibility Offers
  - Manage the activation of Distribution Flexibility Offers

# D2.1 Operate a distribution constraints market (day-ahead and intraday)

## Use Case Overview





# D1.4 Future market architectures and regulatory frameworks

## Progressive involvement of DSO in flexibility activation

Scenario/ Characteristic	S1	S2	S3	S4
DSO aware of available flexibility resources in its grid	No	Prequalification	Prequalification Real-time vision	Prequalification Real-time vision Can use Resources.
DSO can modify flexibility activation requests	No	No	Yes	Yes
DSO can contract flexibility resources for grid management	No	No	No	Yes

- **(S2)** DSO is involved in the process of prequalification but has no possibility to interfere at the moment of activation requests
- **(S3)** DSO is involved in both prequalification and activation. The DSO will have the possibility to modify or ban the activation of flexibility offers → higher collaboration with the TSO
- **(S4)** DSO is fully participating and adopting a proactive approach for flexibility management. Possibility to contract flexibility resources for grid management or to support the TSO in his task of system security

# Closing Remarks

- DSOs will need to implement new practices for grid operation, especially for constraints management processes at MV and HV → relevant for scenarios with high DRES penetration at the distribution grid level
- Constraints management at the LV networks should be mainly based on DSO own resources (MV/LV OLTC, storage) and non-firm connection contracts
  - Mid/long-term bilateral flexibility contracts are another possibility (→ from LV NTW planning phase)
- Different competitive mechanisms and their liquidity should be tested
  - A common platform (both TSO and DSO procurement) for flexibility is one option to promote liquidity
  - Set a maximum price for flexibility (→ from NTW planning phase)