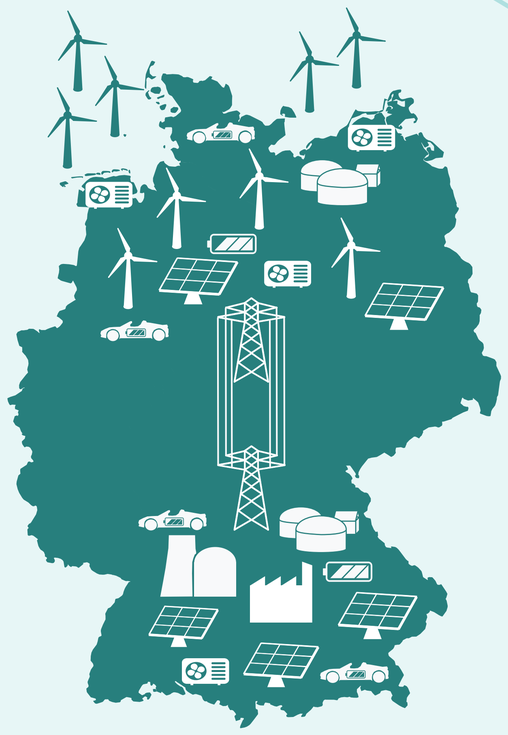
Redispatch3.0

Key Challenges for a Redispatch 3.0

- Grid operator are expected to face an increased number of controllable resources < 100 kW, such as photovoltaic, electric vehicle, storage systems and heat pumps.
- Controllable resources < 100 kW are not part of Redispatch yet
- Operator of these resources do not forward schedules and their behaviours is not easy to predict
- Interaction between load & feed-in in the distribution grid



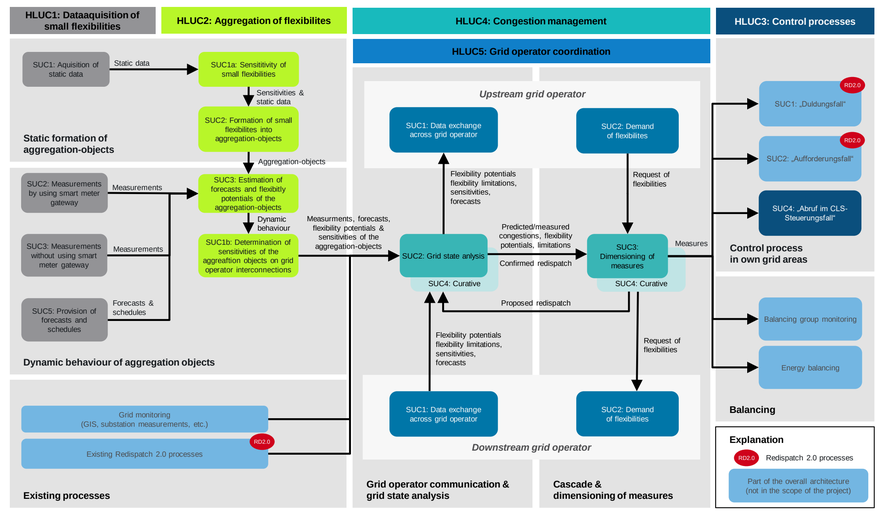
Redispatch	1.0	2.0	3.0
Transmission System Operator	✓	✓	✓
Distribution System Operator		✓	✓
Power plants > 10 MW	✓	✓	✓
Power plants 100 kW - 10 MW		✓	✓
All renewable energies > 100 kW		✓	✓
All renewable energies < 100 kW			✓
Prosumer, batteries, heat pumps, electric vehicle, variable loads etc.			✓

Solutions of a Redispatch 3.0

Overall architecture that covers:

- AI based forecast of controllable resources < 100 kW
- Preventive and curative congestion management
- Aggregation of controllable resources (< 100 kW)
- Smart meter gateways and grid automation
- Incentives and digital grid connection points
- Coordination of DSOs, TSOs, controllable resources and aggregators
- Integration of existing Redispatch 2.0 processes

Overall architecture from a DSO perspective



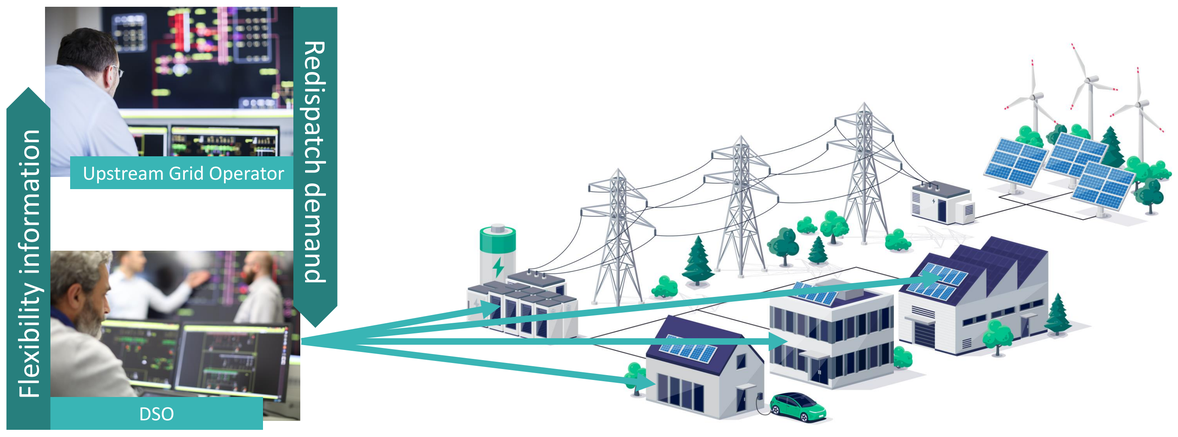
How to Integrate the Flexibility of Controllable Resources < 100 kW into Redispatch?

Aggregation of small flexibilities and information exchange:

- DSOs form aggregation objects of controllable resources < 100 kW (Based on sensitivities, resource types, limitations etc.)
- DSOs determine flexibility of the aggregation objects and forward these information to the upstream grid operators along with possible operation areas

Redispatch demand:

- Grid operators can demand downstream grid operators for congestion management
- Coordination of DSOs, TSOs, controllable resources and aggregators
- Integration of existing Redispatch 2.0 processes



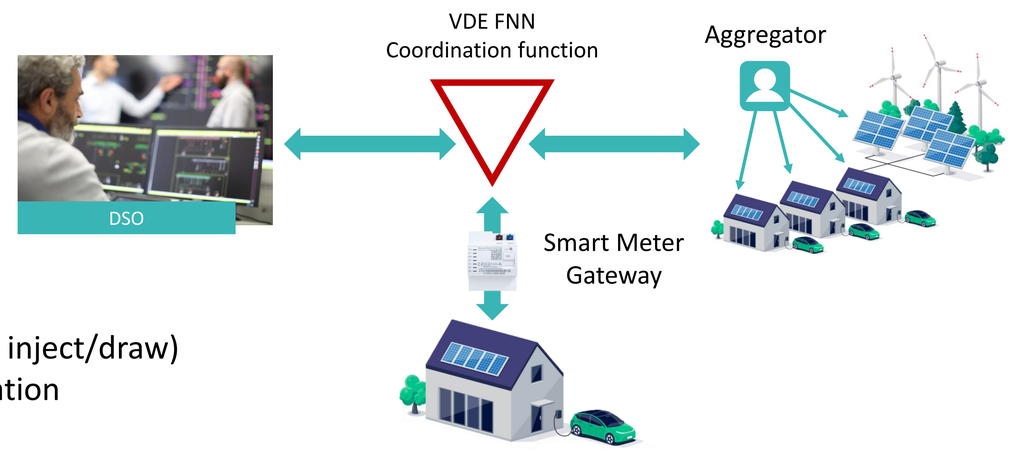
How to Enable Flexibility of Controllable Resources < 100 kW for Mitigating Congestions?

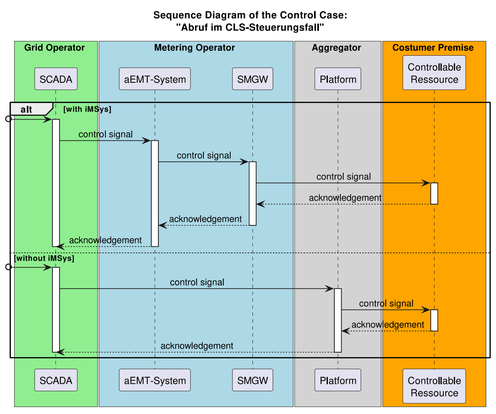
Grid operator, customer and aggregator perspective:

- DSOs are aware of grid restriction and aim for flexibility in case of congestions
- Aggregator/customer may provide flexibility to the market
- Coordination function to adjust different control requests

Control approach for controllable resources < 100 kW:

- Digital grid connection point (i.e. adjusting maximum power to inject/draw)
- Metering operator systems and SMGW can enable grid automation





Who is Involved in the Research Project „Redispatch 3.0"?

Bundesministerium für Wirtschaft und Klimaschutz

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