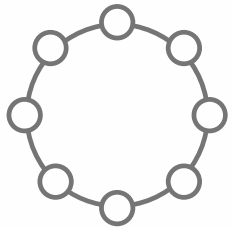
NEXT KRAFTWERKE

Aggregators and coordinatio with TSO /DSO



A BRIEF OVERVIEW

Centrali Next and Next Kraftwerke

NEXT – WHO WE ARE

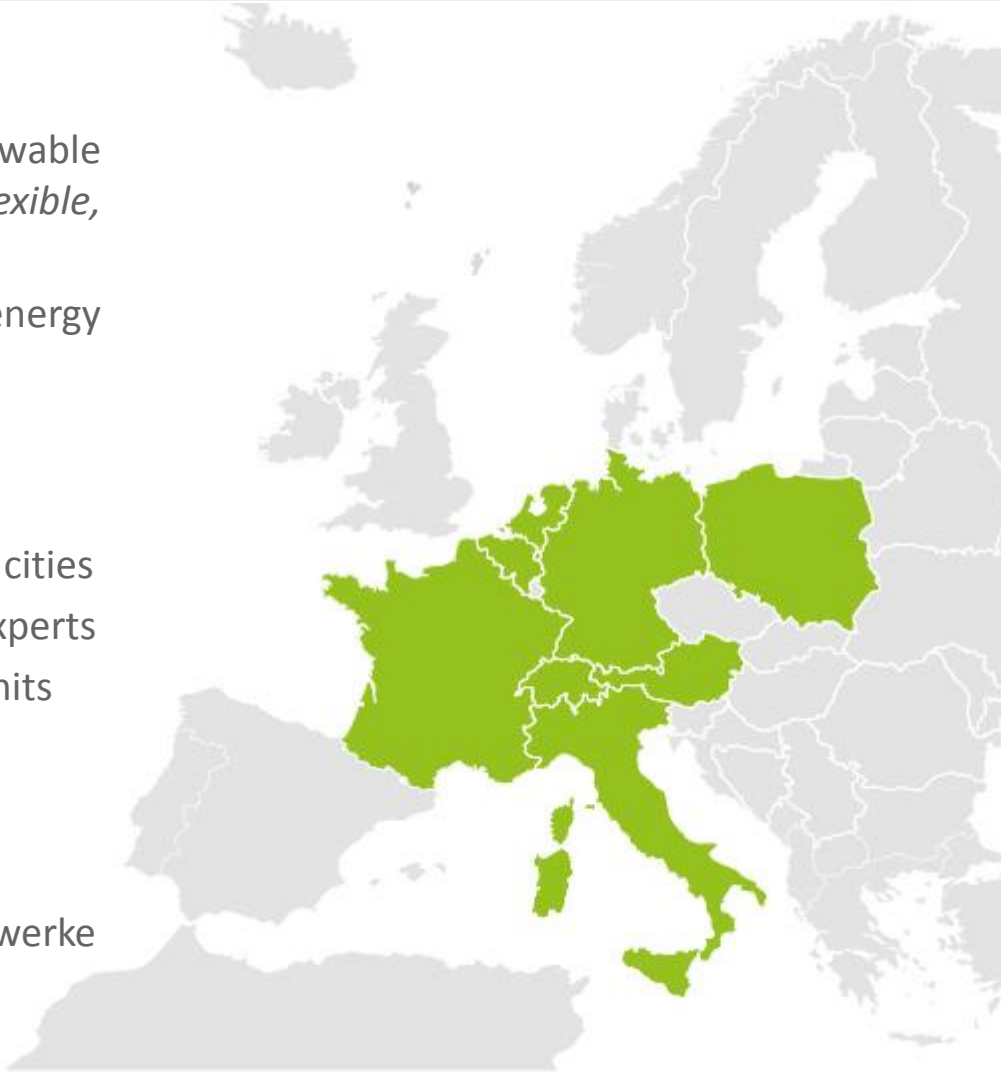
- **Virtual Power Plant Operator**: bundling renewable energy units and flexible loads – *digital, flexible, sustainable*.
- **Power trader**: providing access to European energy exchanges and control reserve markets.

KEY FACTS – Next Kraftwerke

- Based in Cologne and various other European cities
- Founded in 2009, now > 130 energy market experts
- Aggregation of more than 5,000 distributed units
- Overall capacity of more than 4,000 MW

KEY FACTS – Centrali Next

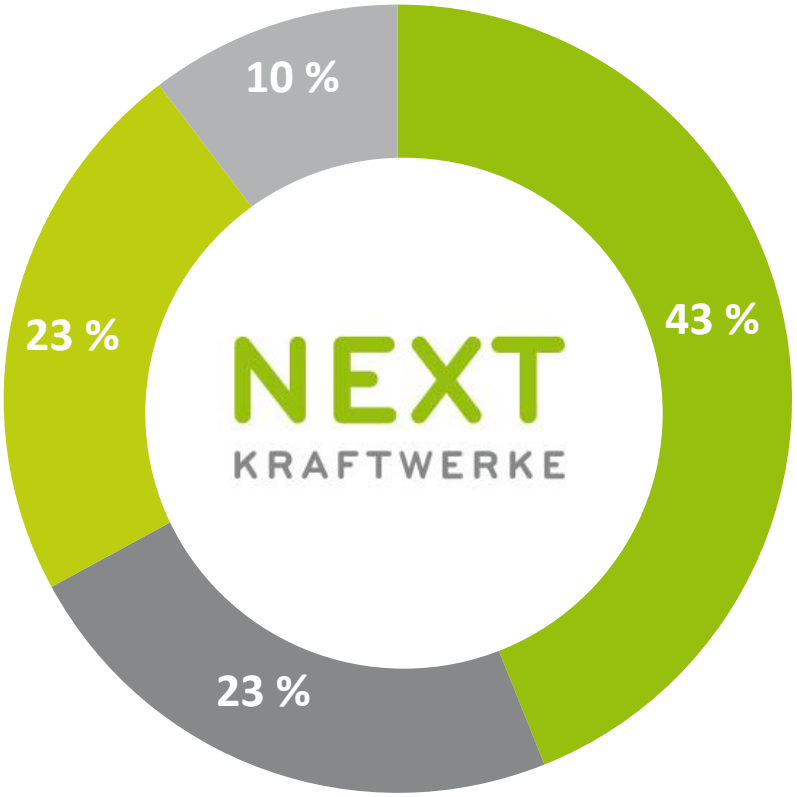
- Centrali Next S.r.l. is a subsidiary of Next Kraftwerke
- Foundation in early 2017, office in in Milan



PORTFOLIO

The Next Pool all over Europe

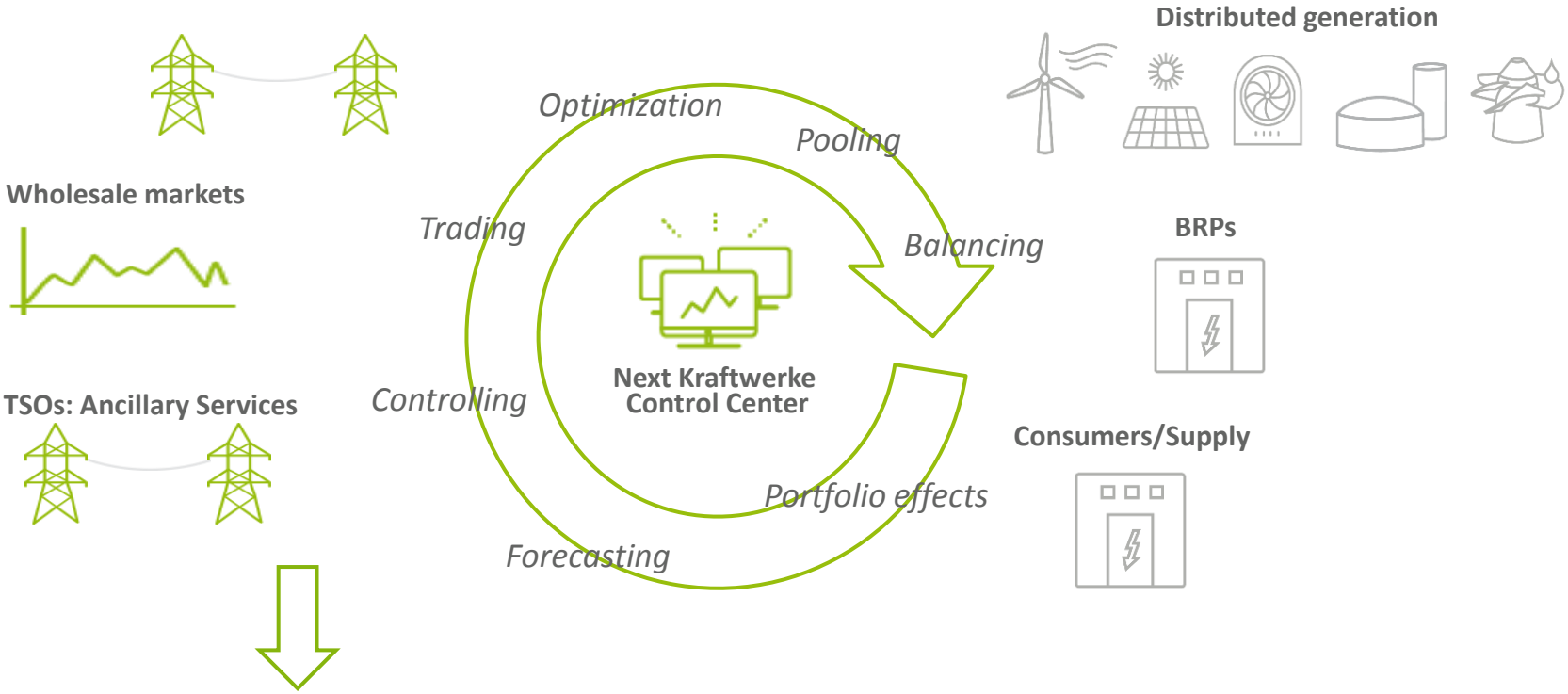
- Flexible Renewables (Bioenergy, hydro, etc.)
- Demand Response / Emergency Generators
- Solar power
- Wind power



* The Next Kraftwerke portfolio comprises of more than 5000renewable energy producers and large-scale power consumers in Germany, Austria , France & Belgium

DIGITAL UTILITY

VPPs: Digital platforms to ensure better grid stabilization



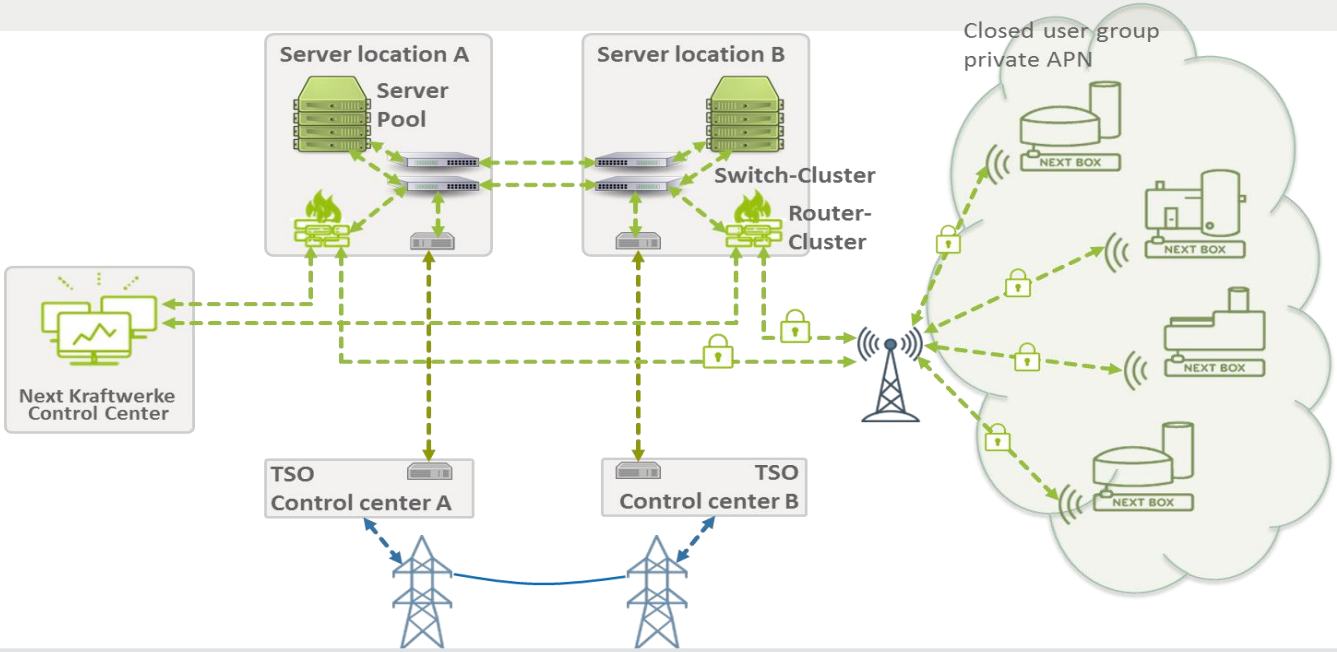
- More market participants
- Higher forecasting quality
- Better balanced BRPs
- Less balancing energy needed

→ Increased cost efficiency

→ Less bulk risk

→ What can be done on DSO-level?

Coordination with TSO



Direct and continuous communication with TSOs.

- **Market** Participation and role as **balancing service provider**
- **Monitoring** of Virtual Power Plant operations
- Data exchange for **safe operations** and settlement

Communication:

- Via industrial and **standard protocol**
- **Reliability**

Coordination with DSO

There is no DSO level – market for flexibility in distribution grids. Our experience in supporting DSO in some projects

Current situation (Germany)

- Distributed generation is frequently connected to distribution grid
- In case of need they can **curtail power** production of distributed generation:
  - Asset owner are informed about this
  - BRPs/Aggregators are not properly informed. Risks in provisioning of reserve power services and penalties.

- **Other critical point:** DSOs should not be competitors as flexibility managers in the market where they are also DSOs. Their role can create distortion to the market

Our Vision:

- **DSOs must have knowledge** of all is happening in its grid – Flexibility management can in general **reduces Grid operation costs** and reduce grid investments.
- Continuous communication and **interaction** with aggregators
- Possibility od DSO Control only in case of Emergency, not exclusively rights
- Interaction with Aggregators by **buying flexibility services by them**

Coordination with DSO

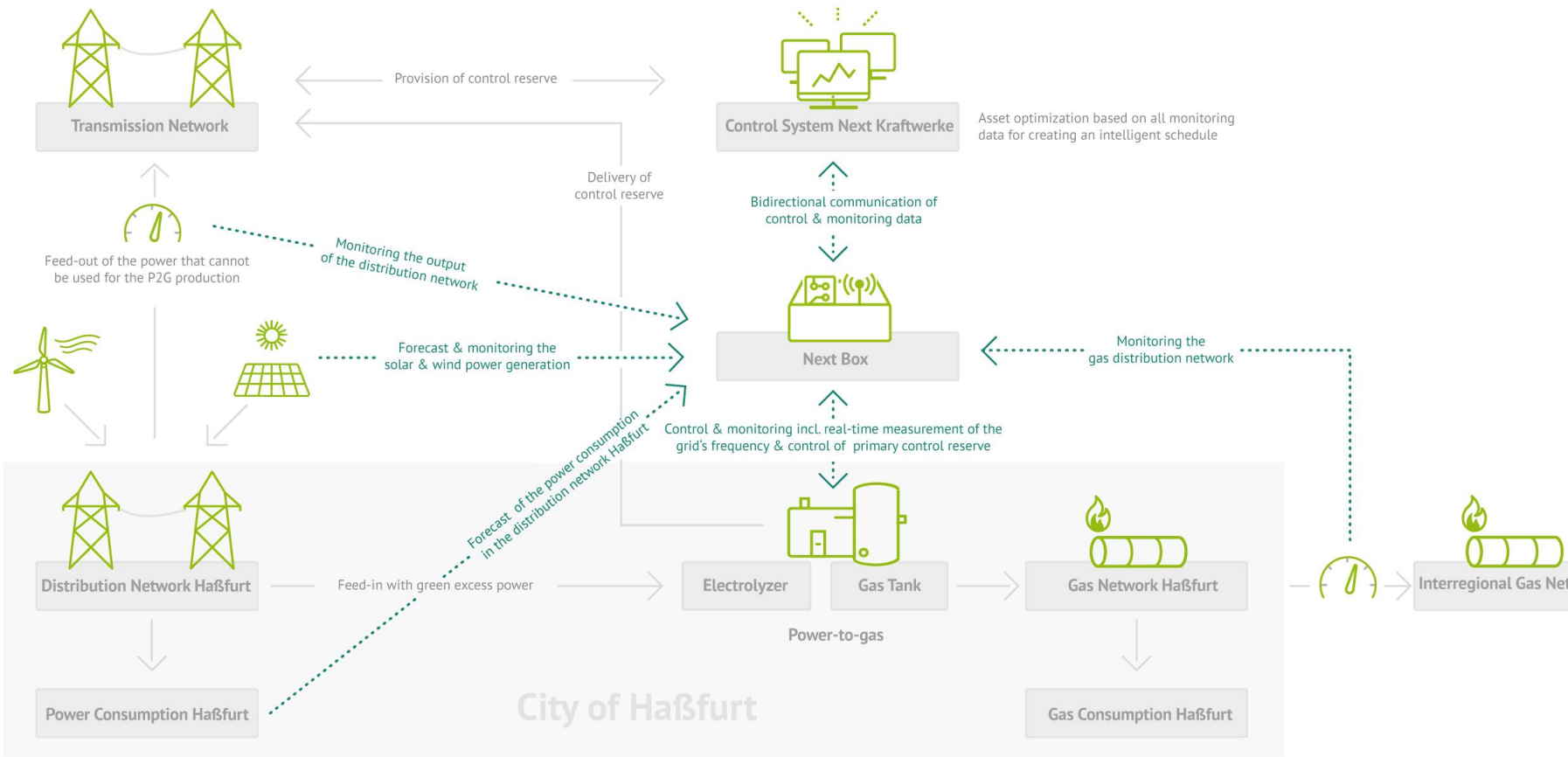
Needed developments:

- Standard communcation protocola and data format for communication Grid operators - BRPs about curtailments (Necessary especially where there are a lot of DSOs)
- Standard technical requirements
- DSO should have access to flexibility but only via a local market
- Clear definition of settlement consequencies of curtailment or response to DSO commands/needs

APPLICATION VPP: LOCAL FLEXIBILITY

Combining DSO and TSO flexibility

Integration of the power-to-gas unit Windgas Haßfurt



→ Local forecasting of wind & PV and subsequent delivery of flexibility from dispatching a local PtG unit

ABOUT

THE GOAL Making 100% renewable energy possible

THE PATH Digital, flexible, sustainable

THE STATUS One of the largest Digital Utilities in Europe

THE TEAM About 130 employees with a broad academic background

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NEXT
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