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# DSM in Switzerland . Possible Coordination of Networks and Markets

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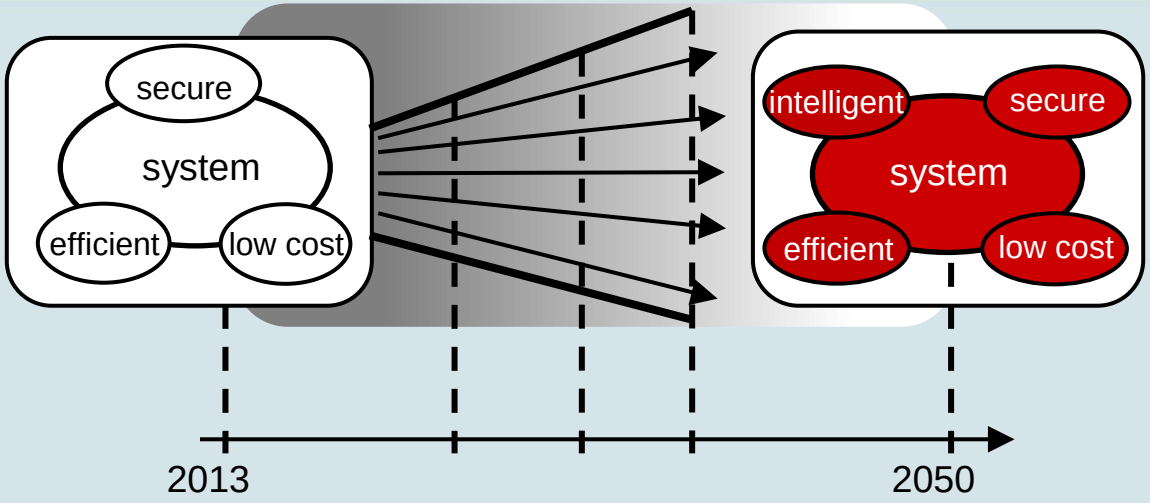
# Overview

- Challenges for electrcity networks
- Smart Grid Roadmap of Switzerland
- Functionalities of Smart Grids and the role of flexibility
- Flexibility for markets vs. networks – a contradiction?
- Future questions to be tackled

# The Energy Strategy 2050 and Future Challenges for Grids - Are Smart Grids a solution? -

- Grid capacity and other circuit impacts
- Grid stability - equlibrium of production and consumption
- Network faults and protection concepts
- Data security and data management
- Increase in energy efficiency

# Smart Grids Roadmap of the SFOE:
# - Goals of the national roadmap – or the next steps




**Goals*:***

- Brings together technical knowledge
- Creates common basic understanding and a vision Smart Grids
- Provides guidelines / identifies need for action
- Initiates coordinated approach to realize the vision

# Basic functionalities
# - What are the features of Smart Grids? -

***Information***

- on passive elements in the grid (lines, transformers)
- on active elements in the grid (e.g. on-load tap changer, storage)
- on production and consumption for the DSO (time resolution x)
- on production and consumption for prosumers (time resolution y)

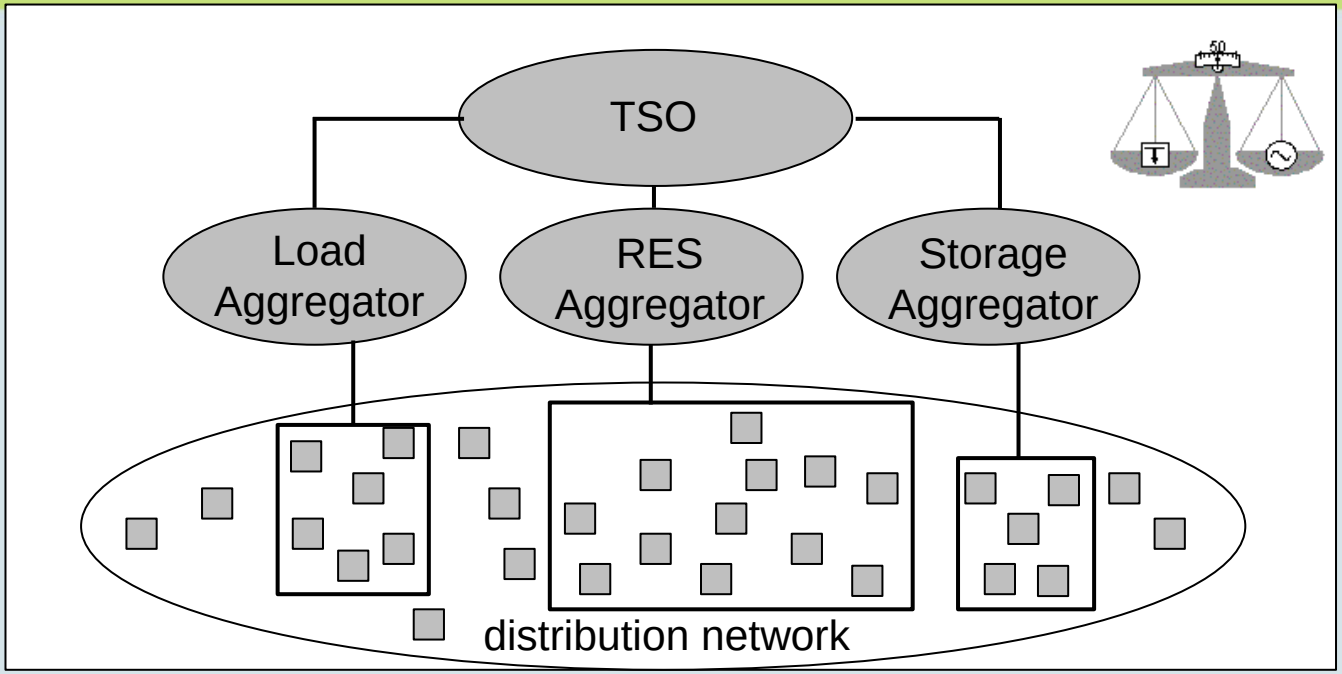
***Grid security and resiliency***

- Management of production, storage and consumption ensuring grid security
- ancillary services by consumption, production of renewable energies
- Cyber-security and fallback solutions for ICT

***Market and consumers***

- consumers and producers of renewable energy operate in markets
- Influencing consumption patterns (interface Smart Home / self consumption)
- simple customer change processes

# Smart Grids example - focus on the system:
# - Flexibility to stabilize the grid – aggregators -




- Future (markets): aggregators control flexibility for market / network premises
- Current (no markets): DSO/utility controls flexibility for its own premises

# Use Cases of flexibility
# - DSM for markets, networks or both -

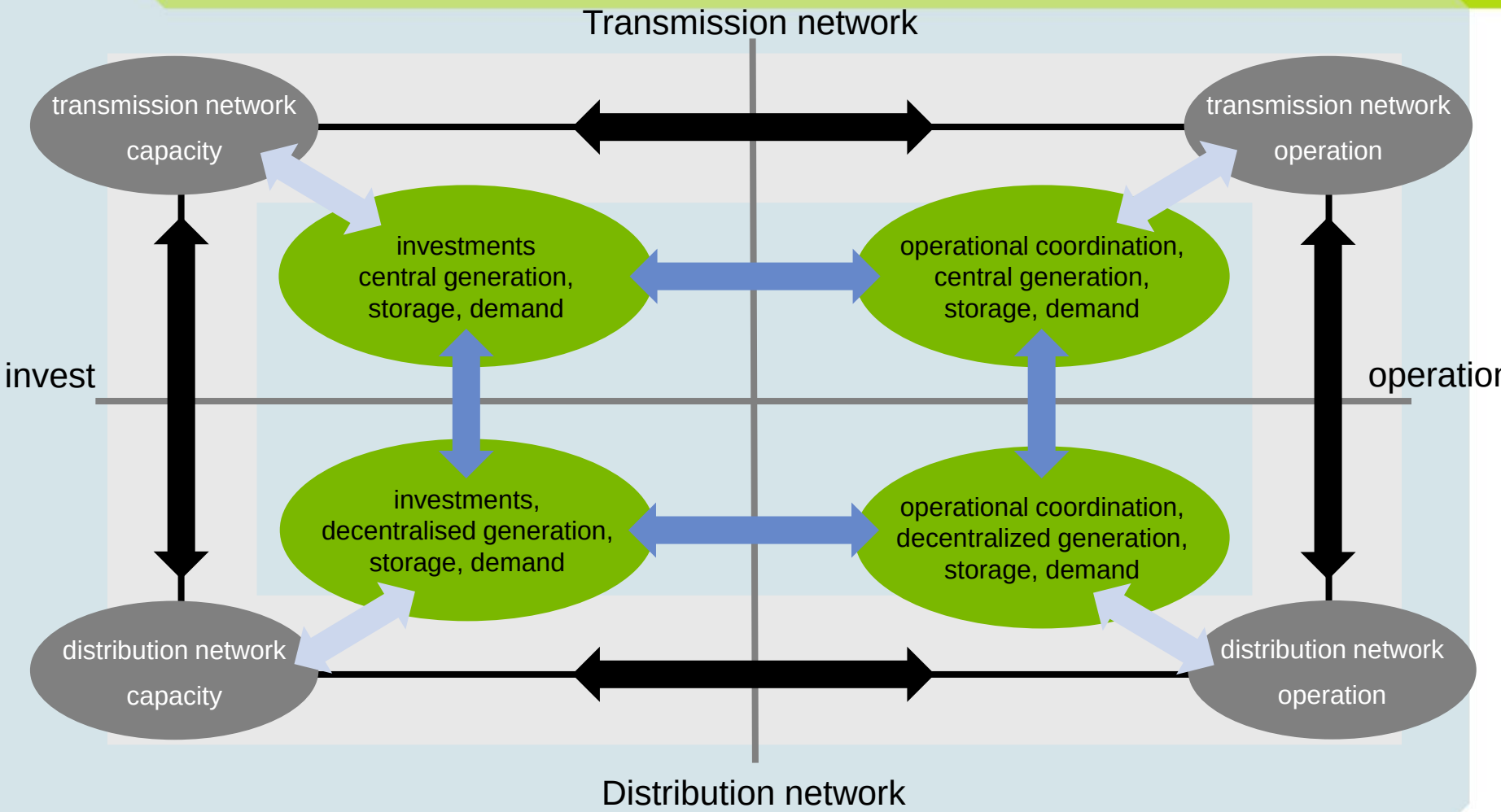
- Main use cases for markets:
  - Ancillary services: primary, secondary and tertiary control
  - Scheduling loads for portfolio optimization
  - Reduce balancing energy costs
  - Consumers maximizing self consumption

- Main use cases for networks:
  - Avoiding load peaks and high tariffs
  - Optimize network utilization, reduce asset strain
  - Ensure secure network operation, avoid congestions

→ Utilities widely not unbundled: integrated view

→ Use cases partly contradictory

# Coordination for DSM
# - or dealing with contradictory goals -



# Coordination for DSM
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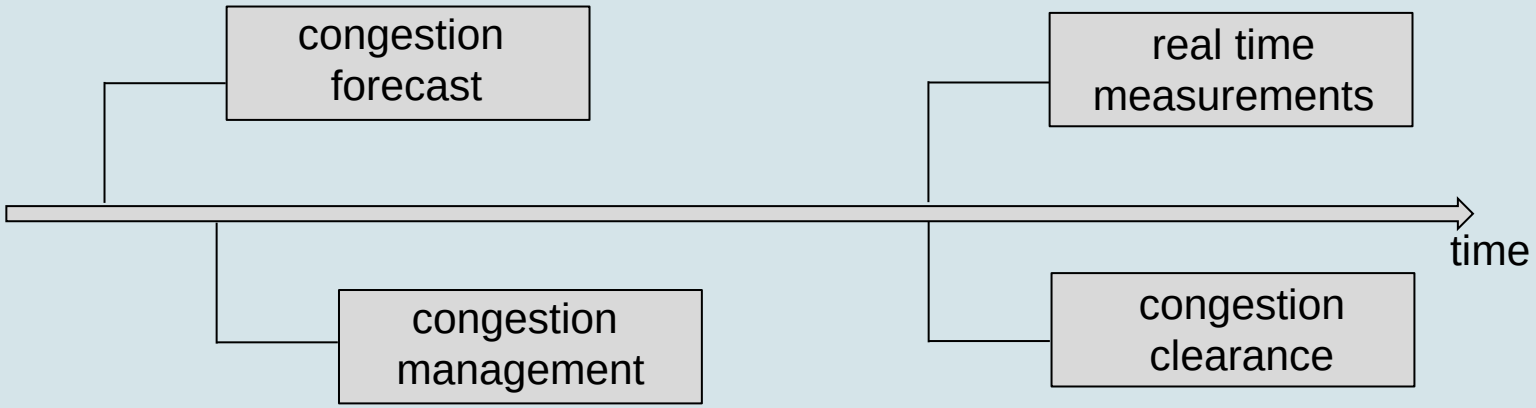


- flexibility is on the market - aggregators, DSOs, others compete
- congestion - voltage issues, overloading, load peaks
- resolve congestion by coordination

# Coordination models for flexibility on markets
# - pros and cons -

- Pros:
  - Increased static efficiency: economies of scale / aggregators
  - Increased dynamic efficiency: innovation is more likely
  - Flexibility is priced into system adequacy
  - Synergies on markets, new products

- Cons:
  - New processes on DSO side
  - New network planning and operation techniques necessary
  - IT will become more important
  - DSO competence to managem complexity
  - Shorter life times of «new» assets

# Future questions
# - The role of regulation -

- Framework for flexibility usage is necessary – costumer decision
- Discrimination needs to be avoided - issue of unbundling
- CAPEX vs. OPEX incentives - conventional vs. «smart»
- Clear guidelines for DSOs when to intervene - security of supply
- Market rules need to value flexibility
- Costs / incentives need to be distributed to the ones who cause them (dynamic tariffs based on energy / power / grid state)

# Thank you for your attention
## Questions, please

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http://www.bfe.admin.ch/smartgrids