DER Integration - OpenADR

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The Grid Evolution from Uni-directional and Top-Down to Bi-directional and Distributed triggered the development of two major independent Systems

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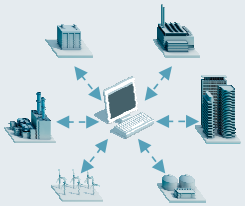
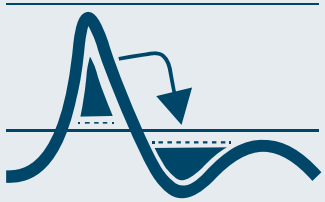
1 Distributed Energy Management



- Applying traditional optimization concepts for energy generation to distributed generators
- Virtual Power Plant (VPP) as best known concept

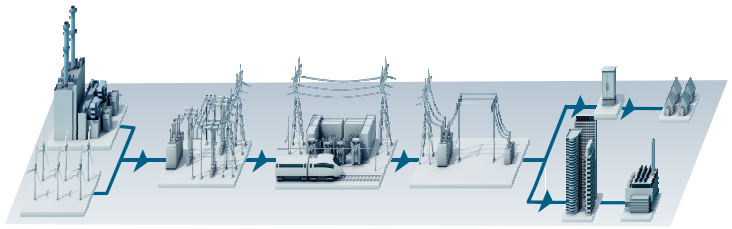
“How can we bundle distributed Generation and optimize it?”

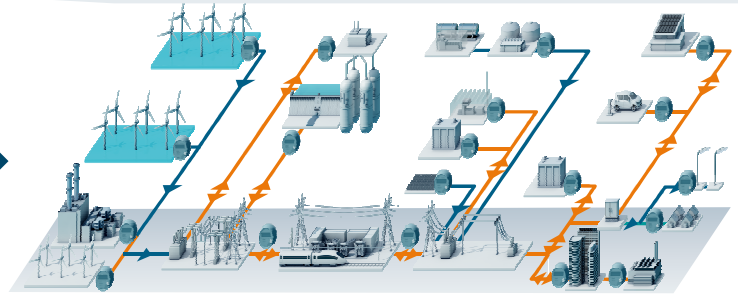
2 Demand Response Management



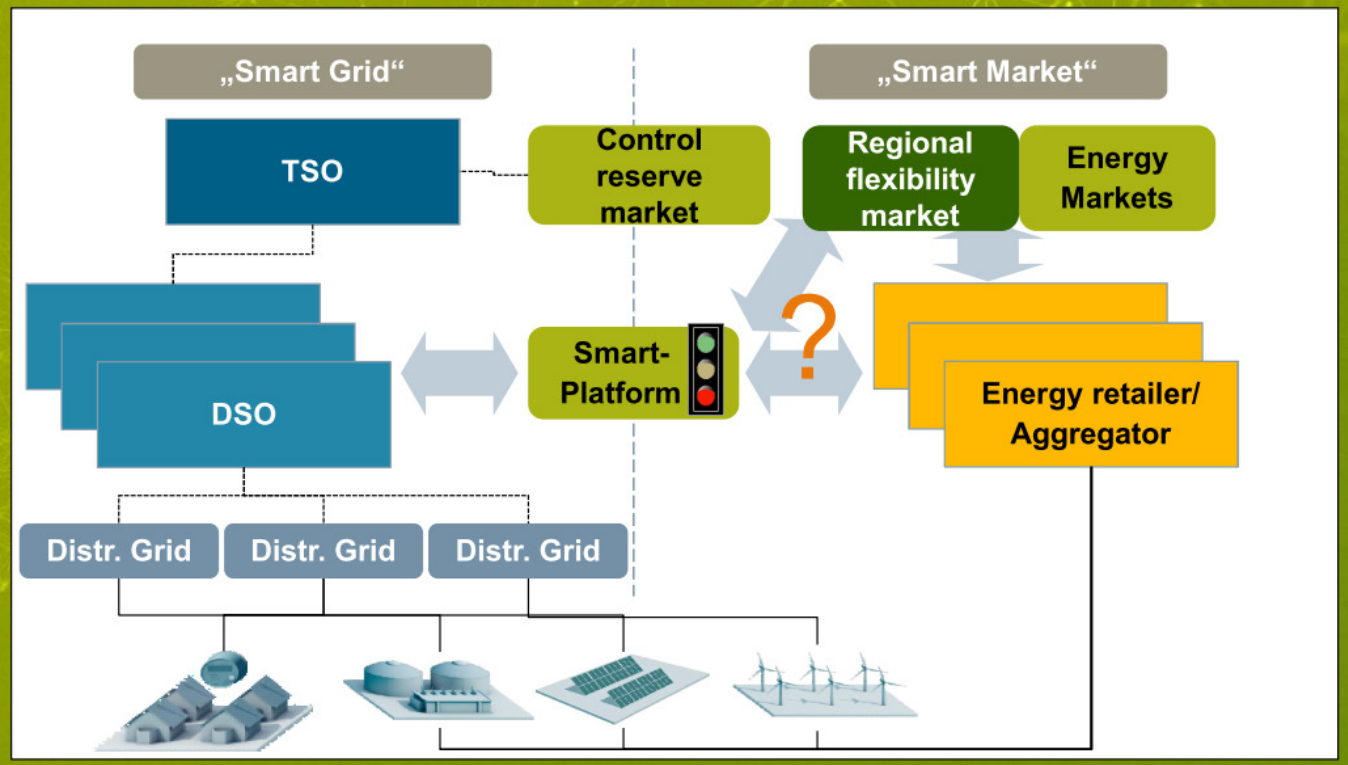
- Event based management of Demand and Generation with distributed Grid Assets
- Load balancing / grid stability as overarching goal

“How can we manage loads and ensure grid reliability with distributed grid assets?”





New markets evolving around Distributed Energy Resources DER
New roles & new market actors



Political discussion:

Public interface between DSO & Aggregator as Smart-Platform (Grid-traffic-light concept)

DSO → DSP Distribution System Provider

Transactive Grid

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How do we go from theoretical to application?

Distributed Energy Resource Management Systems

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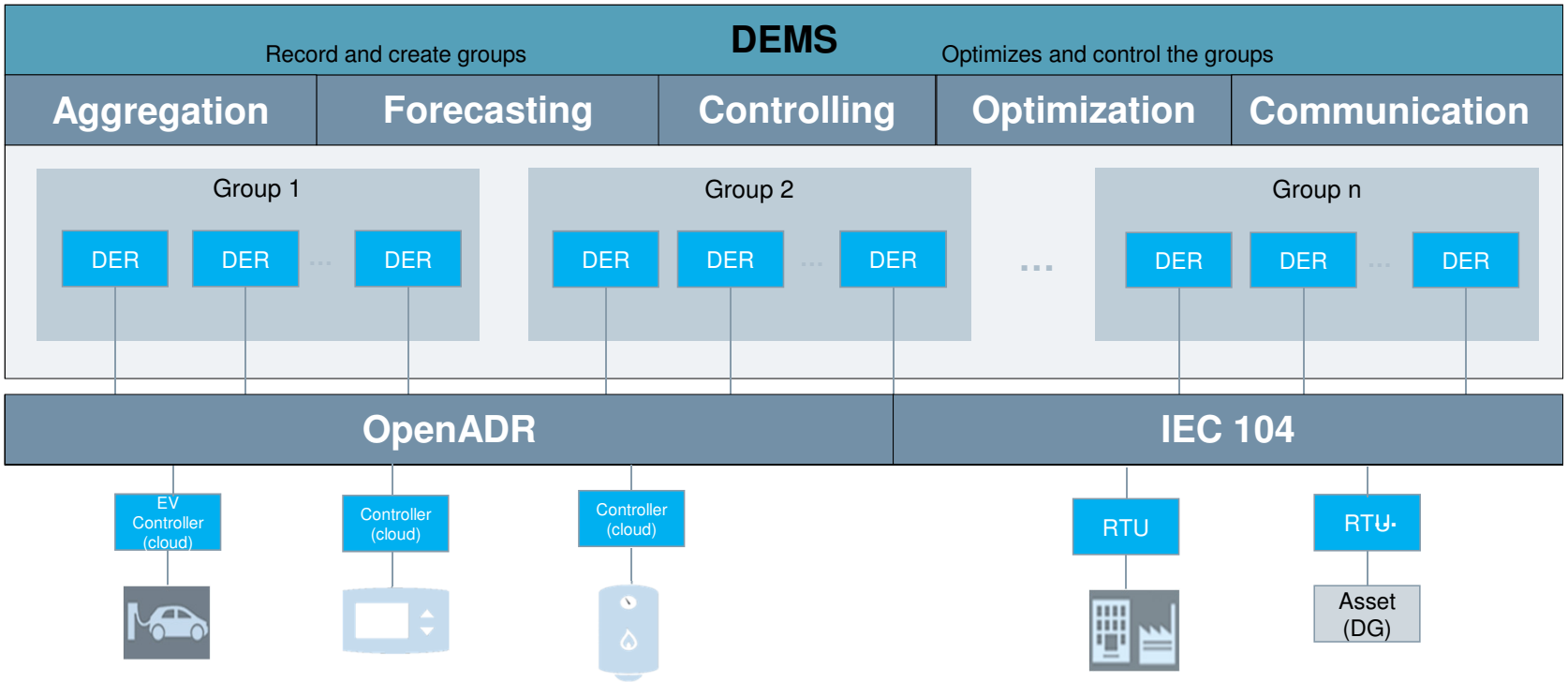
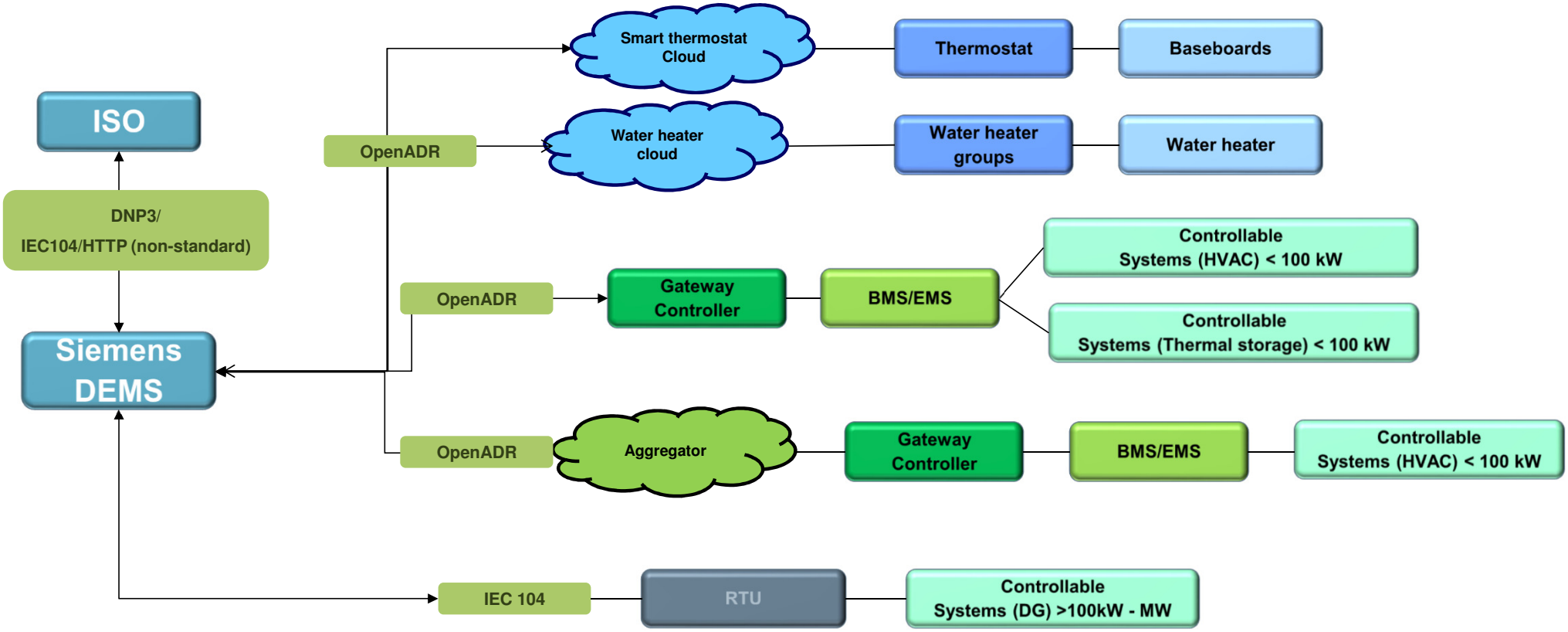
Technical structure



DER Distributed Energy Resource
RTU Remote Terminal Unit

Connecting DERs Using Standard Protocols…



Experience connecting DERs…

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OpenADR

- Large scale targeted emergency dispatches
- Support for various program and device types using simple strategies
- Flexibility in defining and capturing asset specific data
- Security between OpenADR VTN-VEN

- Event driven (DER control)
- Heartbeat support
- Scalability of reports for large number of assets
- Payload size over networks with less bandwidth

(DNP3, IEC104)

- Closed loop control
- Low network footprint
- Real time feedback with asset status

- Require dedicated communications infrastructure.
- Restricts deployments at scale
- Security is an after thought (Private WANs, VPNs, encryption).

OpenADR Evolution…

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- Signal strategies cover a wide variety of use cases (DERs included)
- Focus on preferred deployment models when dealing with different market segments
- Options to enable communications over low to high bandwidth connections
- Review reporting requirements for scaling across thousands of connected DERs
- Flexibility to support closed loop control
- DR Tag in the name

Thank You!

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