



SEPTMBER 2018

Bucharest Microgrid Symposium

Microgrids, Distributed Generation and BESS

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Grid transformation megatrends

An ecosystem of distributed energy capabilities, digital solutions and services to maximize customer value and retention

Decentralization

Distribution networks will see exciting interactions between utilities, consumers, and new market players

Electrification

Increasing penetration of renewable energy sources will require a more flexible power system

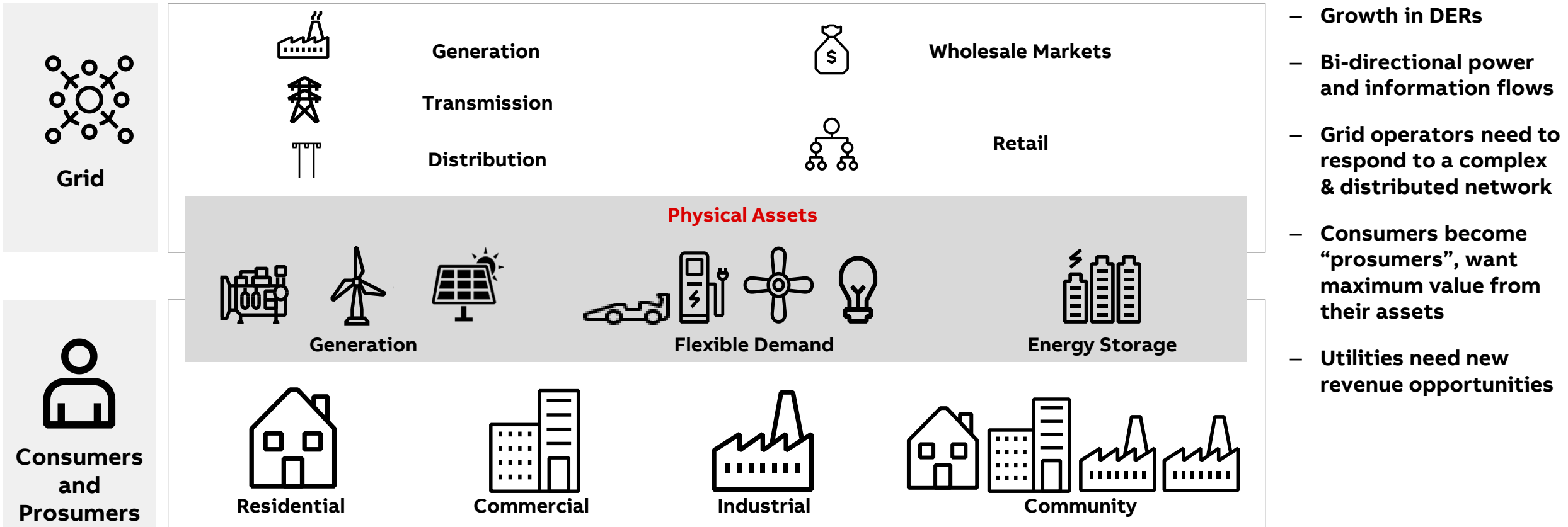
Digitalization

Digital technologies ensure reliable network operation and maximum value to customers



Energy and grid transformation

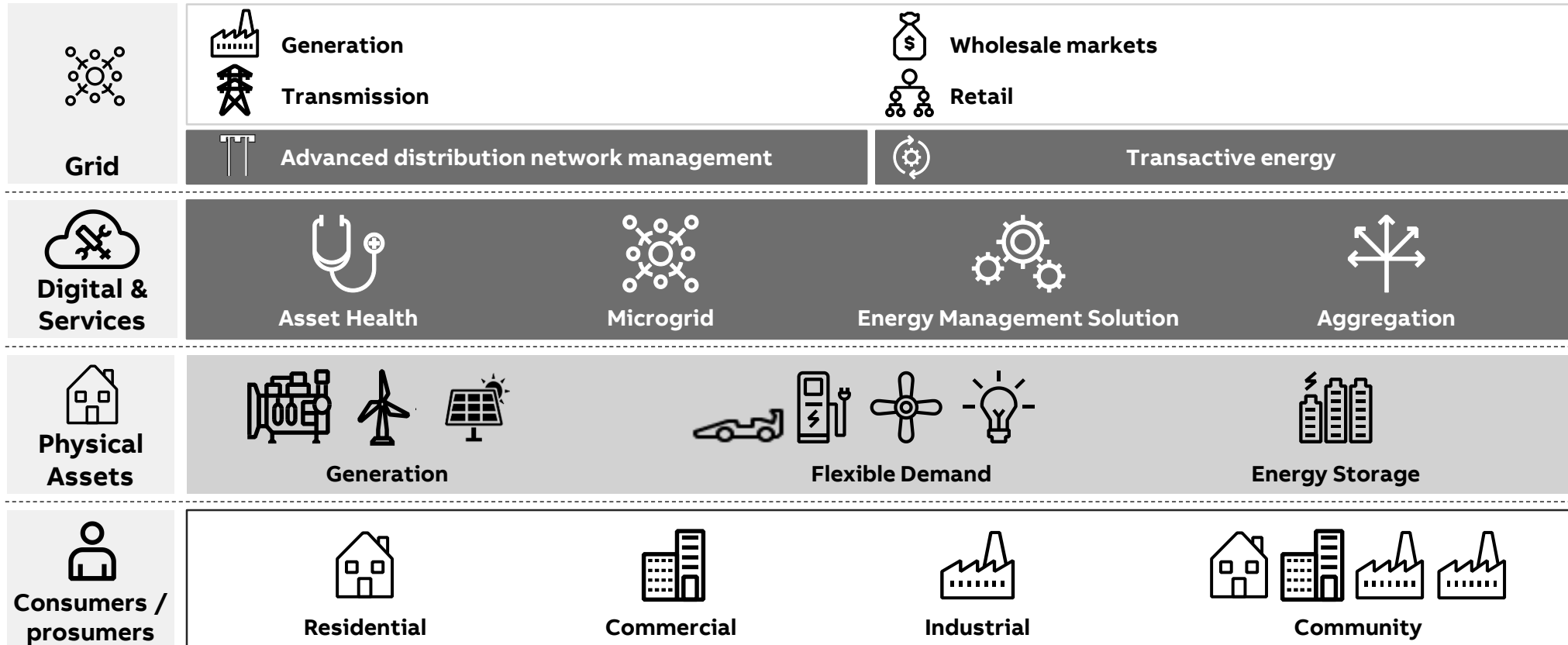
Evolving ecosystem due to growth in distributed capabilities



- Growth in DERs
- Bi-directional power and information flows
- Grid operators need to respond to a complex & distributed network
- Consumers become “prosumers”, want maximum value from their assets
- Utilities need new revenue opportunities

Energy and grid transformation

New opportunities for digital solutions and services at the edge of the grid

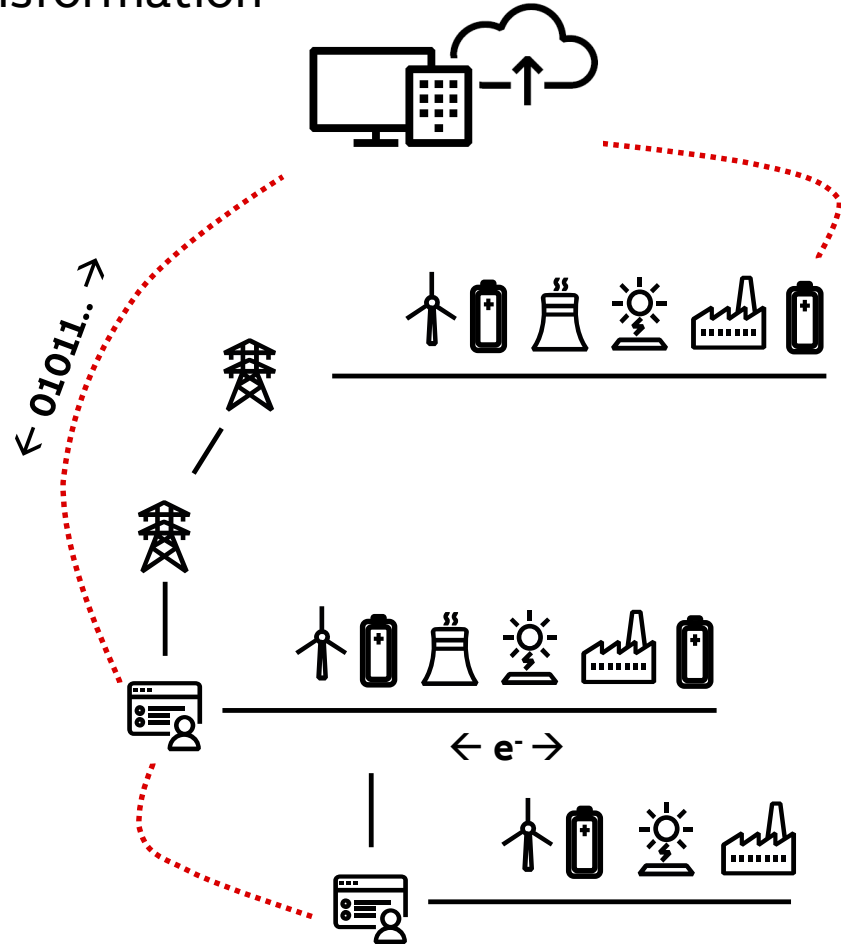


New digital solutions & services required to:

- Optimize system performance
- Ensure grid reliability
- Create business opportunities for energy providers
- Maximize customer value

Managing distributed energy resources

Renewables, BESS, loads, automation & optimization as key elements of microgrids and the grid transformation



Customer challenge:

- Operate distributed energy assets (generation, storage and loads) in an interconnected manner to provide reliable power
- Manage the increasing cost of integrating renewables into the grid system with flexibility options

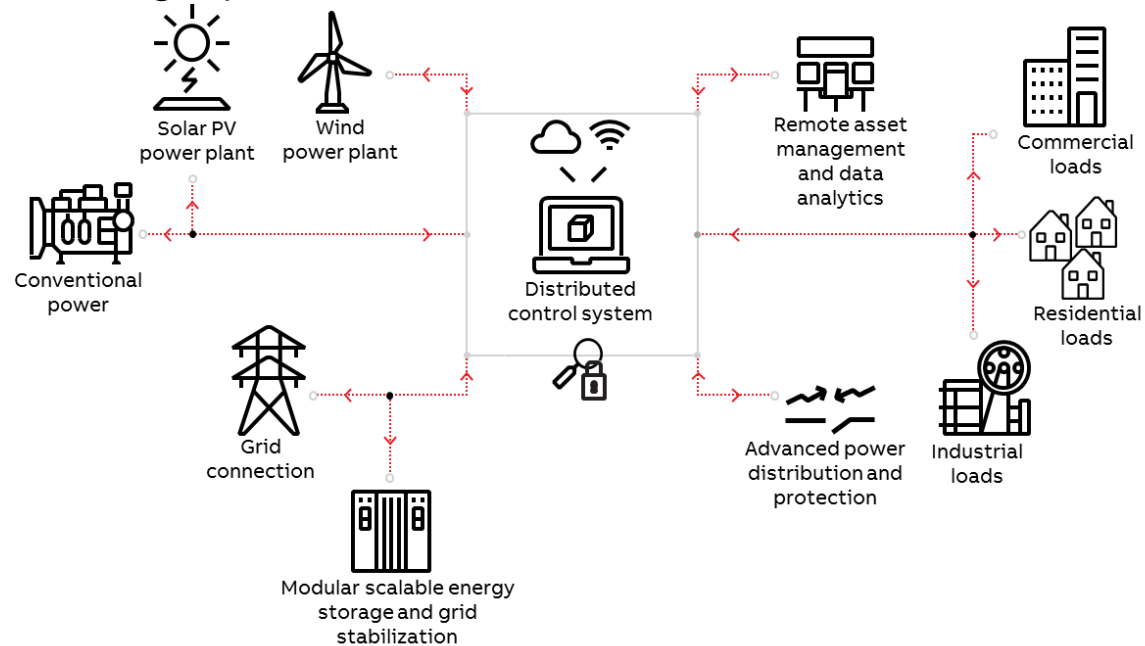
Technology developments:

- **Easy configuration**, engineering and commissioning: tools & test setup
- **Automation solution** that allows for easy interoperability (protocols, engineering): controller & ABB Ability. Optimization and microgrids as part of an active distribution grid
- **Seamless integration** of various aggregation concepts (DERMS, VPPs): interfaces
- **Lowest cost** renewables and storage: low cost BESS, thermal storage, CHP, power-to-X

ABB in Microgrids and BESS

Microgrid Plus control system

Microgrid Plus control distributed system for coordination of generation and loads, integration of renewables and seamless islanding capabilities



PowerStore™ battery energy storage solution

A reliable, modular, containerized “plug and play” solution with a Virtual generator operating mode, handling up to 100% of renewable energy



ABB