



SIMO SÄYNEVIRTA, COUNTRY DIGITAL LEAD – ABB OY

Role of Digitalization in Energy and Industrial Revolutions?

IIC IIoT Energy & Efficiency Forum

Espoo May 25th, 2018

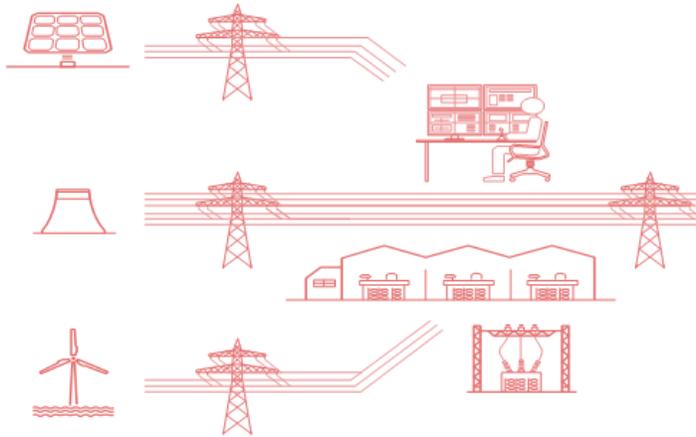


Energy and Industrial Revolutions

World as we know it is being disrupted – at unprecedented rate of change

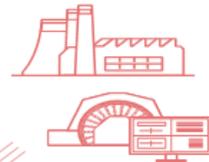
Utilities

Renewable electrification
Smart distribution



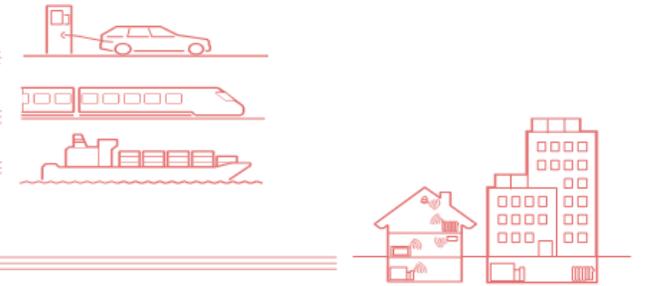
Industry

Industry 4.0
Collaborative, Flexible Manufacturing
Real-time energy optimization



Transport & Infrastructure

Smart Cities
E-Mobility
Mobility-as-a-Service
Data centers



Electric energy and digitalization are the common denominators

Renewables and energy storage driving unprecedented change

Consider these developments

Renewables growth



+27%

Already over 27% of all energy generation in Europe comes from renewables, while in the US 15%

Energy storage price reductions



\$36/Month

Average American consumes 903 kWh/month → ~30kWh/day
By 2020 it will cost \$36.8/month (\$1.2/day) for a full day of electricity storage

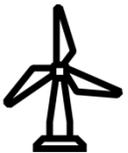
New regulations & incentives



8-10%

Global renewables capacity has increased by 8-10% y-o-y since 2010 and the trend is to continue, with over 150GW added annually (2/3 of all capacity addition)

Renewables penetration



85%

At certain times of year in Germany the Max hourly variable renewable generation rate already above 85% of hourly demand. Result: **NEGATIVE ENERGY PRICES**

Disruption through new business models

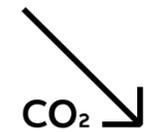


\$0



SV Startup Volta offering FREE EV charging in exchange for media rights at prime high-value properties.
If this business model succeeds, the EV MARGINAL COST of energy will be ZERO

The Green agenda

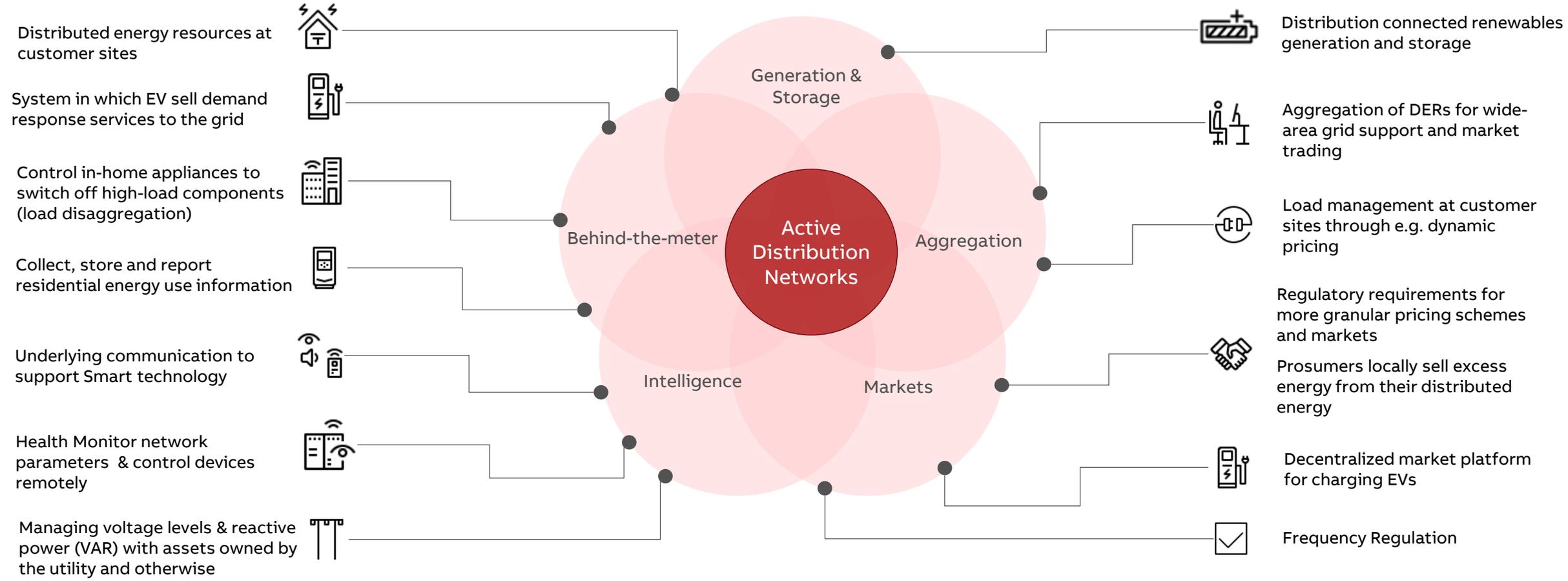


\$350 billion

China recently said it would shut 85 coal plants and instead invest \$350 billion in renewable sources of energy

Resulting in increasing complexity in Energy System

New challenges for traditional paradigms for control and commerce



Smart Manufacturing offers tremendous business potential

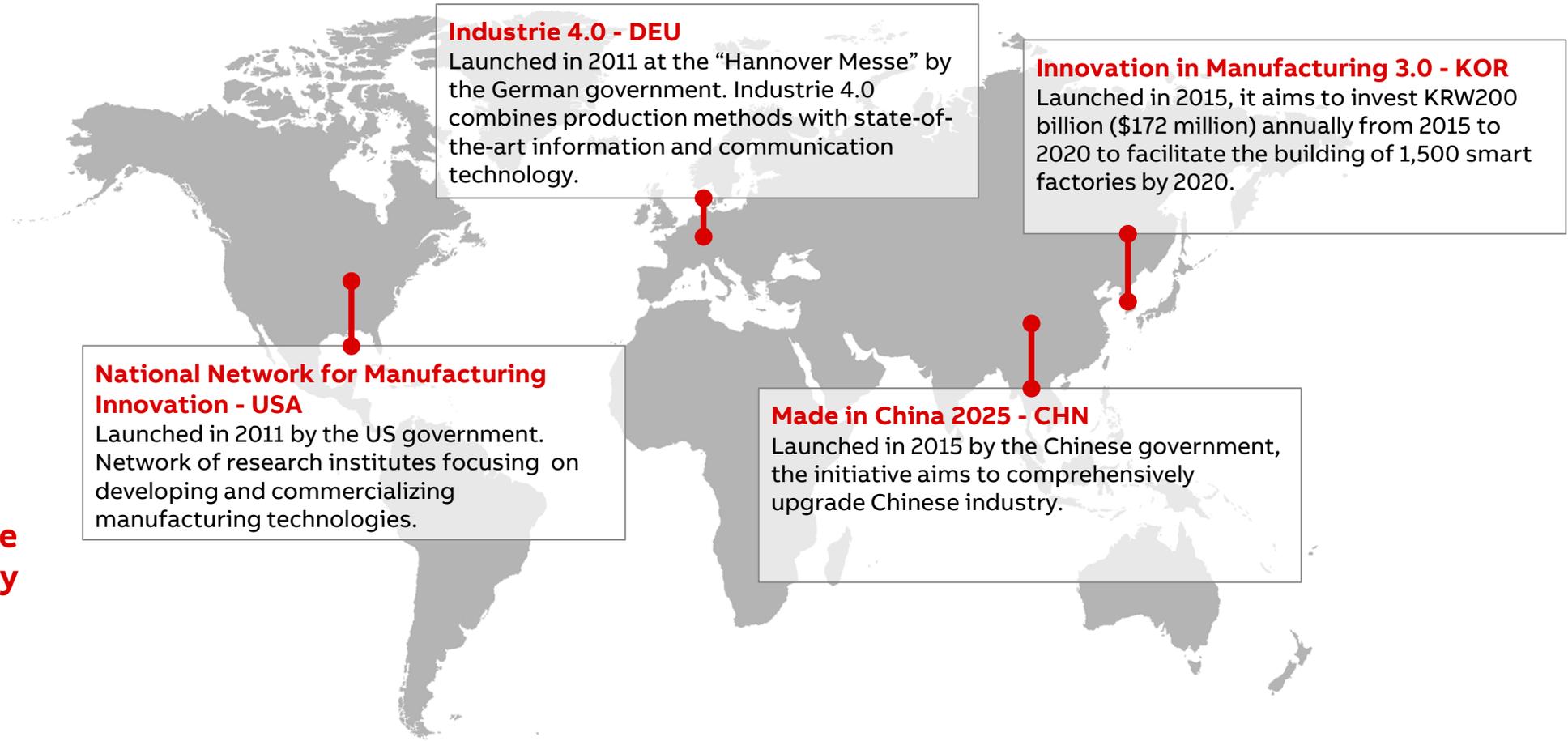
Tapping into benefits requires much greater agility than typical today

“Smart factories have the potential to add \$500 - \$1,500 billion annually to the global economy in the next five years.”

Source: Capgemini 2017

“Smart factories are revolutionizing manufacturing by enabling a 7x increase in overall productivity by 2022.”

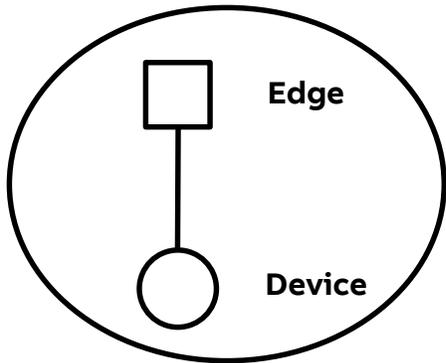
Source: Capgemini 2017



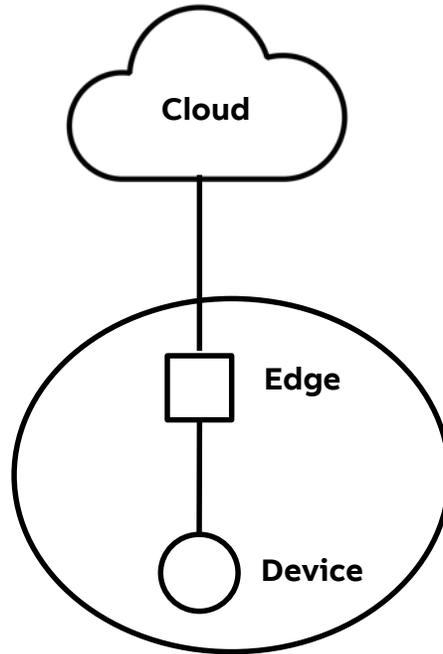
Multiple deployment models required

Secure digital solutions on-premise, in the cloud, and in an ecosystem

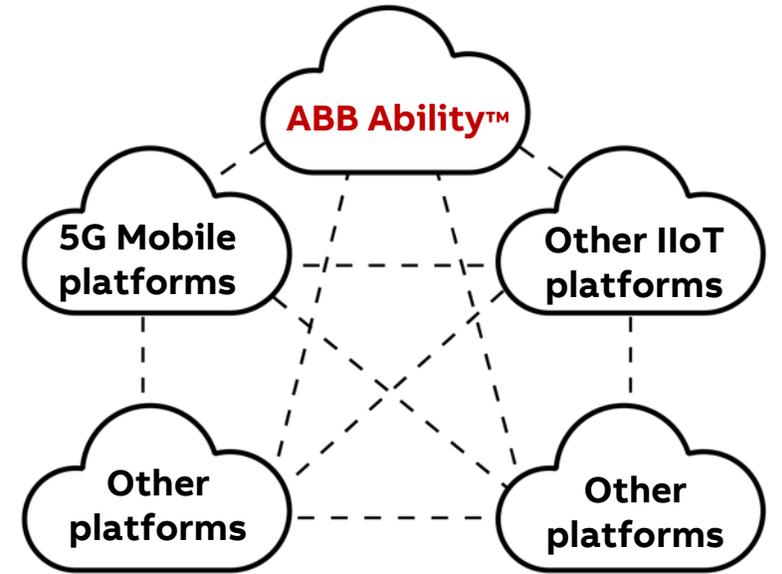
Fog



Cloud

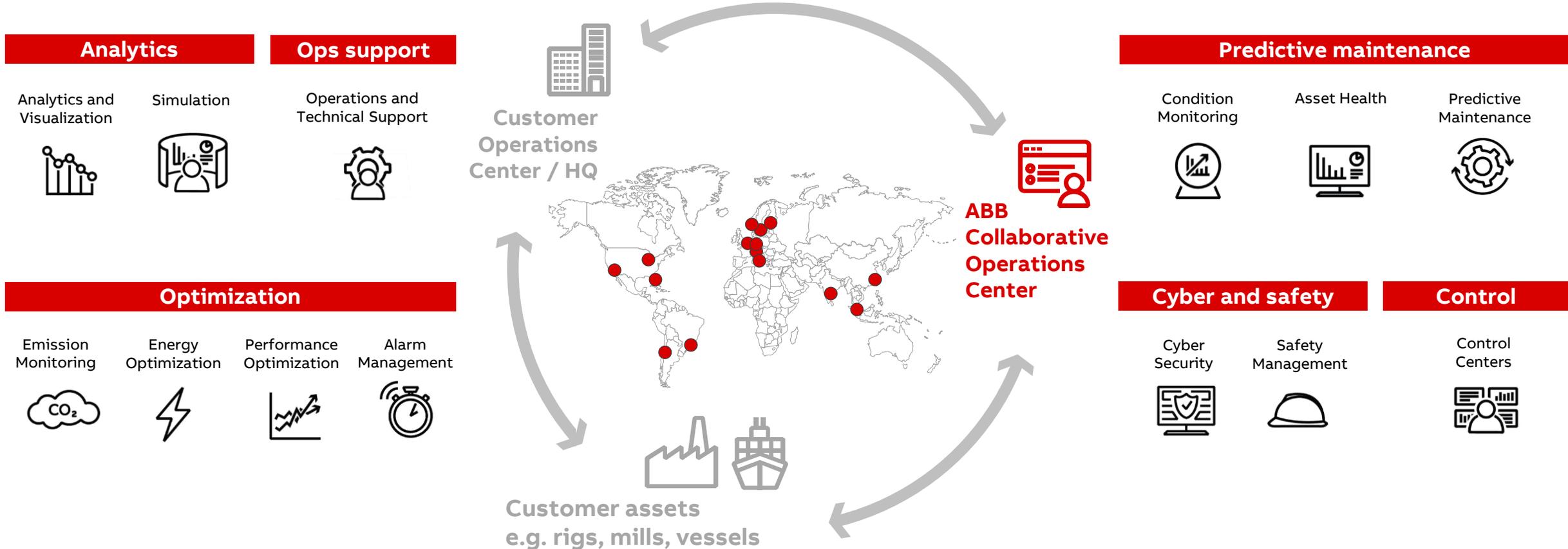


Intercloud



Resulting in new way of working: Collaborative Operations

Collaborative Operations links ecosystem players together for value



Things are coming together with IIC

ABB contributions to the Industrial Internet Consortium

Technology and Liaison

Architecture

- Co-authored IIRA Analytics and Advanced Data Processing

Analytics and Artificial Intelligence

- Co-authored Industrial Analytics WP and IIAF

Edge Computing

- Co-authored Edge Computing WP

Liaison

- Liaison Officer for NEMA

Testbeds and External Events

TSN – Flexible Manufacturing for Robotics and Automation Cells

- Testbed contributor (B&R)
- Co-authored TSN WP (ABB and B&R)

IoT Solutions World Congress

- Program Committee member
- Diamond Sponsor 2017

Global Forum

- Panelist in Reston
- IIC Keynote in Helsinki

Governance and Support

Policies

- Strengthened member agreement to cover anti-trust principles
- Contributed to Group procedures

Leadership

- Co-founded the Industrial Analytics TG
- Technology WG co-chair
- Elected to SteCo representing Large Industry members

Support

- Member dinner in Helsinki

ABB is committed to the success of the IIC with digitalization and IIoT best practices

ABB