

„Digital Dialogue“ Agenda | September 22, 2020

01.
8AM | 3PM

Keynote – The future of
#digital transformation

Anton Kotov

Chief Strategy Officer | Chief Digital Officer, ABB Electrification

02.
9AM | 4PM

Empowering data-driven decisions -
Overview of ABB's digital solutions

Andrea Temporiti

Head of Digital, ABB Electrification

03.
10AM | 5PM

Digitalization of
data centers

Dave Sterlace

Global Head of Technology Data Center Solutions, ABB

04.
11AM | 6PM

The “Digital Feedback Loop” –
turning Data into Action

Roger Mueller

Industry Executive Manufacturing Western Europe, Microsoft


Please wait. The webinar session is about to start soon!

Dave Sterlace

Global Head of Technology
Data Center Solutions, ABB

Digitalization of datacenters

✉ dave.sterlace@us.abb.com

 [dave-sterlace](#)





DAVE STERLACE | GLOBAL HEAD OF TECHNOLOGY, DATA CENTER SOLUTIONS, ABB

ABB Ability™ “Digital Dialogue” webinar

Digitalization of data centers



Mission of session

Points of value

1

Data centers are an ideal incubator for IoT exploration

2

Digitalization can result in cost savings, increased safety and higher efficiency.

3

Better insight into disparate systems allows analysis that was previously impossible

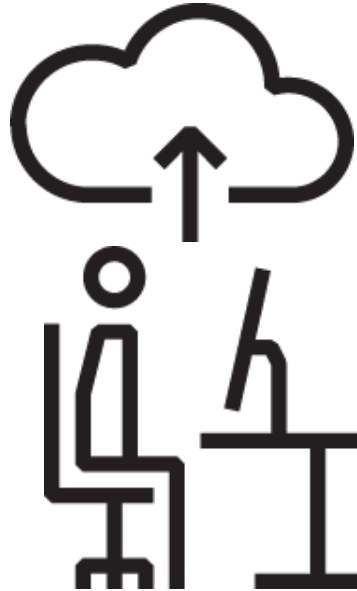
What is digitalization?

It is the combination of connected technologies that add value in new ways

Connecting and communicating



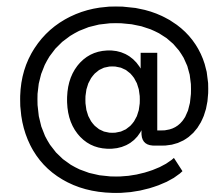
Collecting and controlling



Analyzing and acting



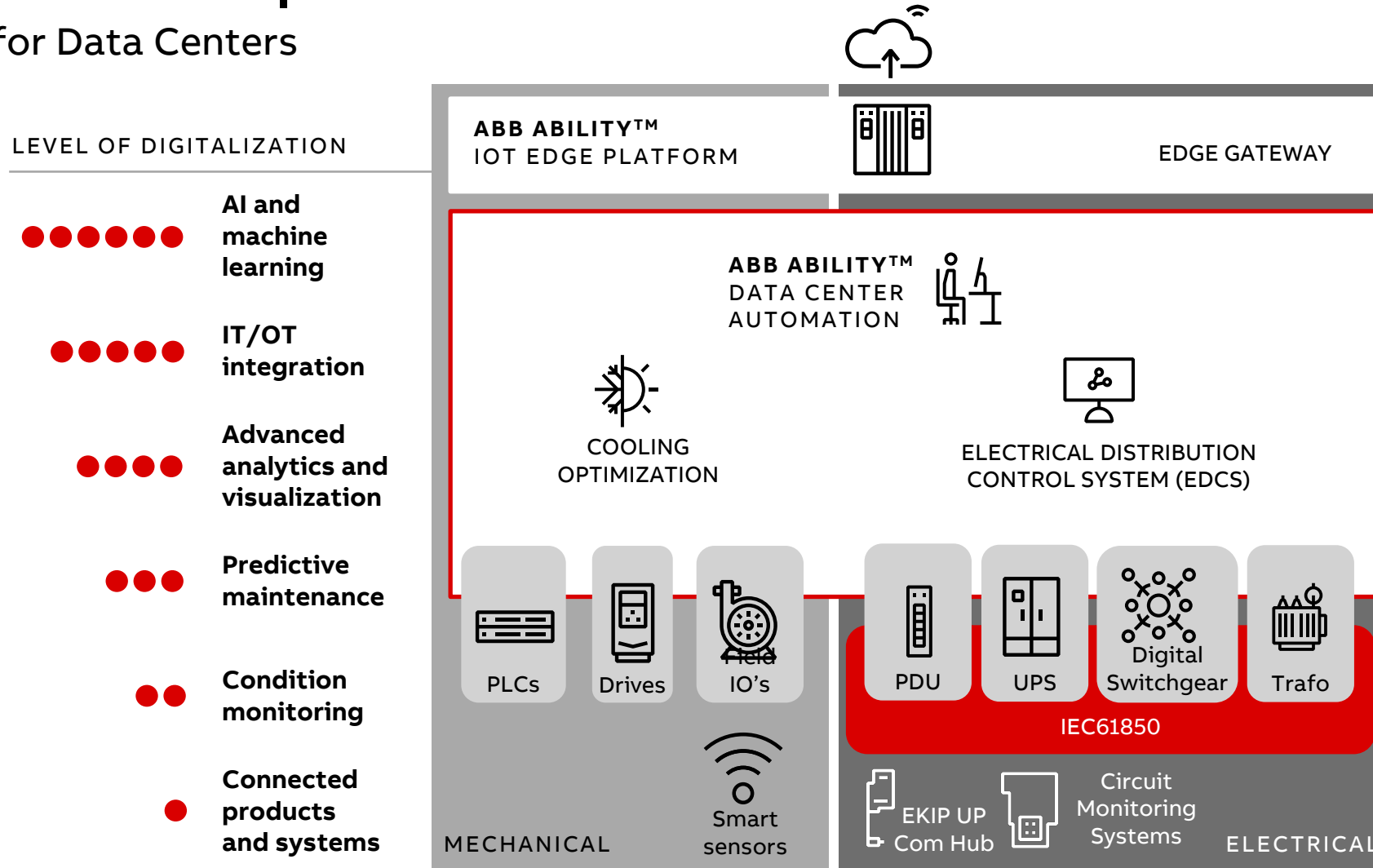
New business models



Cyber security

Digital Data Center Operations Architecture

ABB Ability™ for Data Centers



—

Data centers are an ideal incubator for IoT exploration

Factors to consider



Unprecedented scale

20B connected devices by 2025
per Gartner 50B per Cisco



Wireless

3000 cell sites in NYC today
vs 100k in 2025



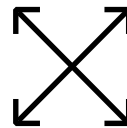
Latency

will drive edge



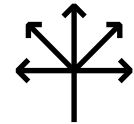
Security

Target's breach went in through
HVAC "back door" in '12



Flexibility

Infrastructure must scale
like IT loads

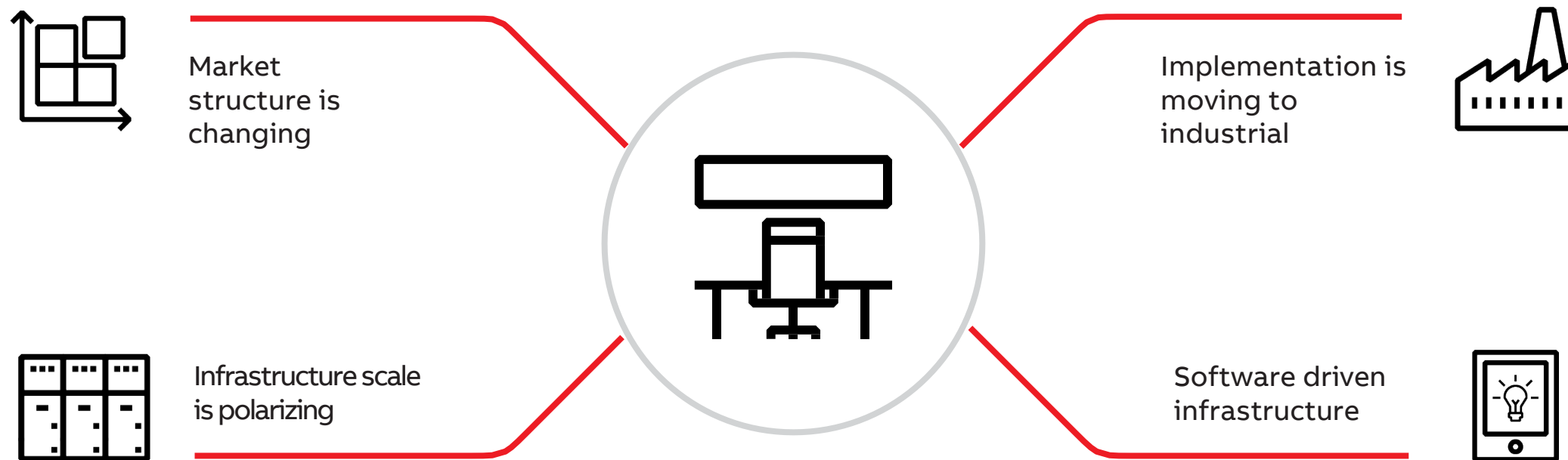


Visibility

Infrastructure needs to follow
"fail small" paradigm

The future of data centers

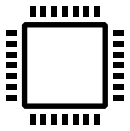
Global trends changing the data center landscape



Digitization will transform how we operate digital factories.

Leveraging industrial experience is an opportunity

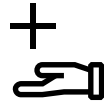
Innovation without risk



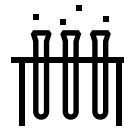
Semiconductors



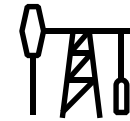
Food & Beverage



Pharmaceuticals



Chemicals



Oil & Gas



Automotive

70k+ digital control system
installations

Installed base of **70M** digital
devices

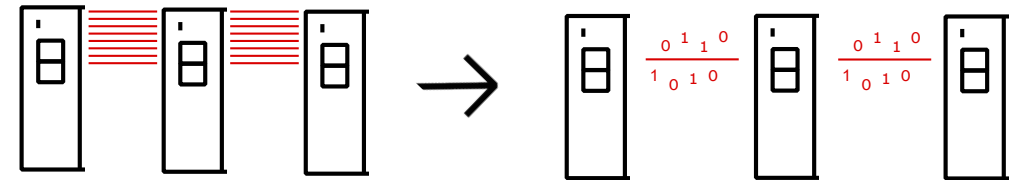
Digitalization can result in cost savings, increased safety and higher efficiency

Digital switchgear

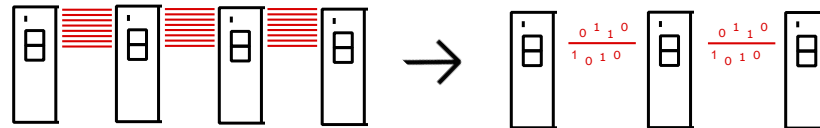
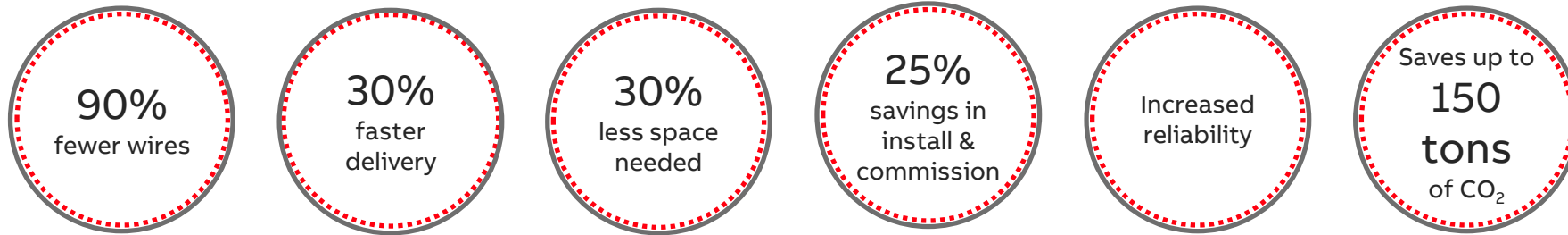
What is it?

Definition

- Digital switchgear enables **smart electrical networks** that deliver power reliably and efficiently.
- A combination of the latest digital technologies and ABB's switchgear which bring **increased flexibility, reliability and safety**, while reducing weight, footprint and delivery time.
- **Seamless integration** of innovative protection, control and sensing devices, where all measures, statuses and commands transferred via a real-time Ethernet bus using IEC 61850 protocol.
- Enables **pro-active management** of equipment throughout the entire life cycle. Enables easy integration for smart functionality, including power management, real-time diagnostics and remote monitoring.



Why Digital?



IEC 61850 digital communications

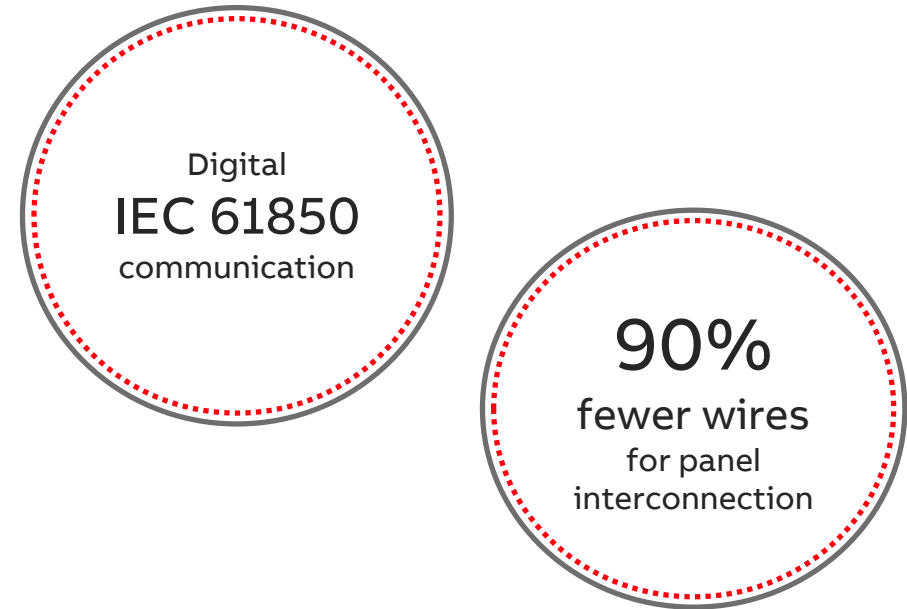
Benefits of digital switchgear

Increased system reliability

Benefits of IEC 61850 communication

Fast and reliable communication with IEC 61850, the global standard for communication in substations

- In conventional switchgear, a complex scheme requires large amounts of wires to be connected between the cubicles; with digital switchgear a self-supervised communication cable passes that information from cubicle to cubicle
- Flexibility to adapt and change the switchgear, without costly and time-consuming physical re-wiring and changing panel hardware
- Using the programmable logic in the protection relays changes are done easily and faster
- GOOSE (Generic Object Oriented Substation Event) communication between the station equipment for improved speed and reduced switchgear cabling
- Fewer wires reduces risk of failures



Benefits of digital switchgear

Faster delivery time

30% faster delivery

Shorter time from ordering to operation

- Digital switchgear can be delivered faster thanks to
 - One size fits all with sensor technology vs engineering CT/VTs (7 variants vs 5700 globally)
 - Wide range means the same sensor can work for many different needs
 - Sensors available in stock
 - Configuration in hardware wiring is minimized, changes can be made using the software



Benefits of digital switchgear

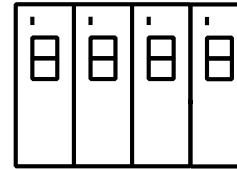
Reduced footprint

Reduced space requirement

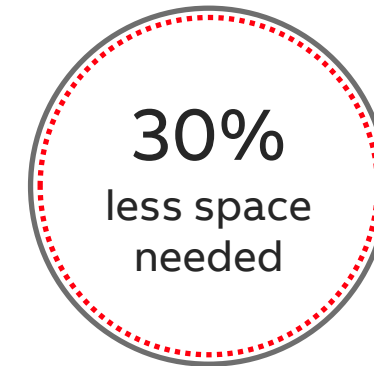
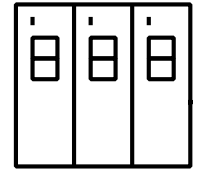
Up to 30% reduced MV switchgear footprint (ANSI)

- Busbar metering cubicle(s) can be omitted, because voltage sensors are more compact
- New generation of sensors are a perfect fit in switchgear, and they weigh less

Conventional switchgear



Digital switchgear

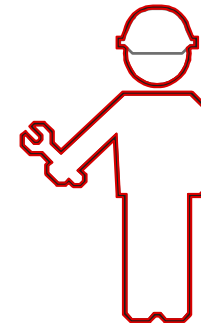
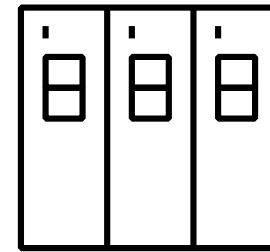


Benefits of digital switchgear

Faster installation and commissioning

Reduced time spent on installation and commissioning

- Fewer panels
- Less cabling
- Fewer components in the control compartment
 - Switchgear is delivered pre-tested, which minimizes commissioning time
 - A 30 panel switchgear line-up, installation time can be reduced up to two working days
- If modifications are required in commissioning, they can be done quickly in the protection relays, generally not requiring hardware changes



Benefits of digital medium-voltage switchgear

Increased switchgear reliability

Increased reliability

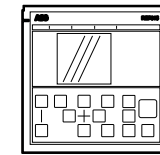
Digital switchgear is based on ABB's well-known and established switchgear hardware platforms, but uses sensors

- With sensors less human interaction is required, which leads to decreased risk of malfunction
- Sensors are smaller, reduce risk of isolation degradation in the switchgear
- Sensors are immune against grid disturbances, such as ferro-resonance phenomena

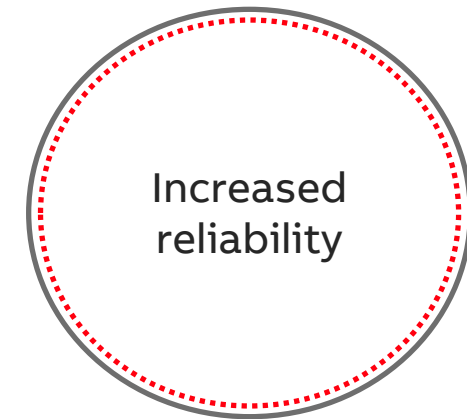
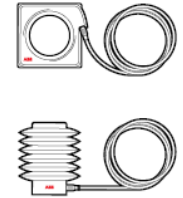
Digital communications

- Permanent active supervision of wiring and signal transfer with IEC 61850 digital communication to enable fast and precise actions in case of failures

Digital switchgear



IEC 61850



Benefits of digital switchgear

Energy-efficient and climate-friendly

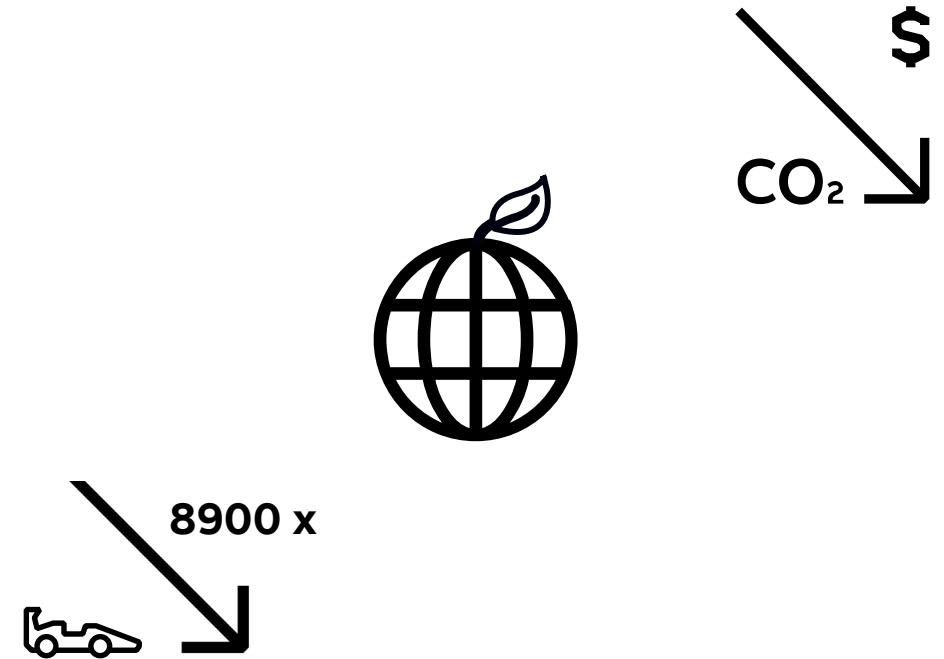
Reduced environmental impact

Energy loss is minimized with the use of sensors

Reduced resource consumption in manufacturing

During 30 years of operation, 14 panels of digital switchgear

- Lowers energy consumption up to 250 MWh
- 1 MW is equivalent to the power produced by 10 car engines, so the energy saved can power 8,900 Formula-E race cars from start to finish in one race
- Saves up to 150 tons of CO₂
 - the same amount as the emissions from a mid-size car driven for 1 250 000 km
 - It takes 8200 trees one whole year to absorb that amount of CO₂



Benefits of digital switchgear

Increased safety

Safer switchgear operation

Sensor technology for current and voltage measurement ensures a safer working environment for personnel

- When testing current and voltage signal secondary circuits, personnel are not exposed to high-voltage
- Sensors are easier to work with compared to conventional metering transformers, minimizing risk of human errors
- Less material exposed to high-voltage electrical stress, decreasing risk of failure

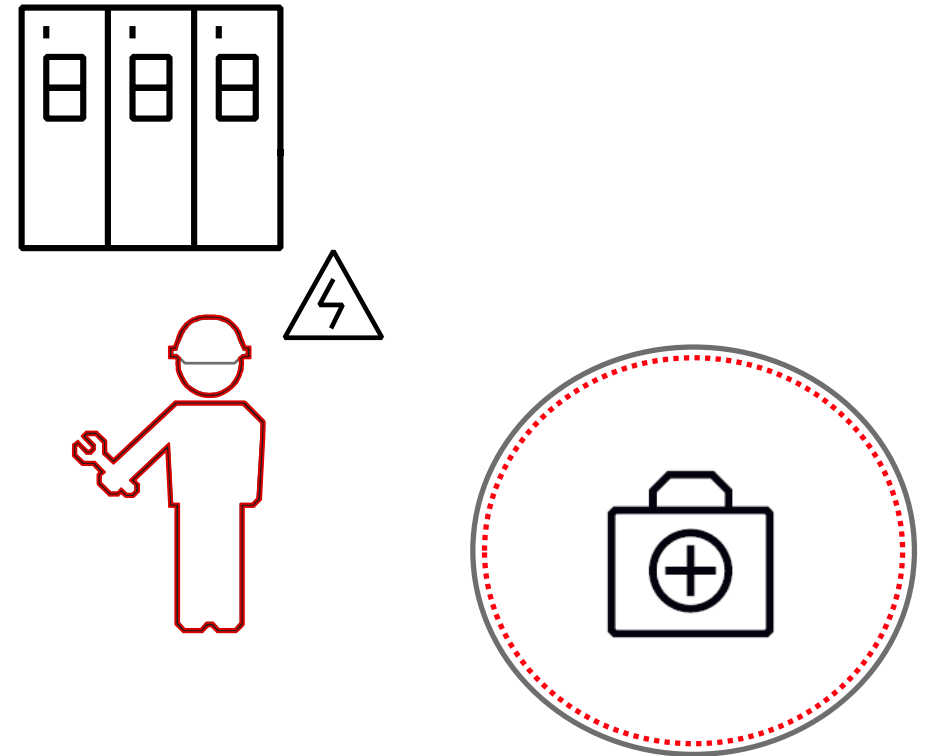
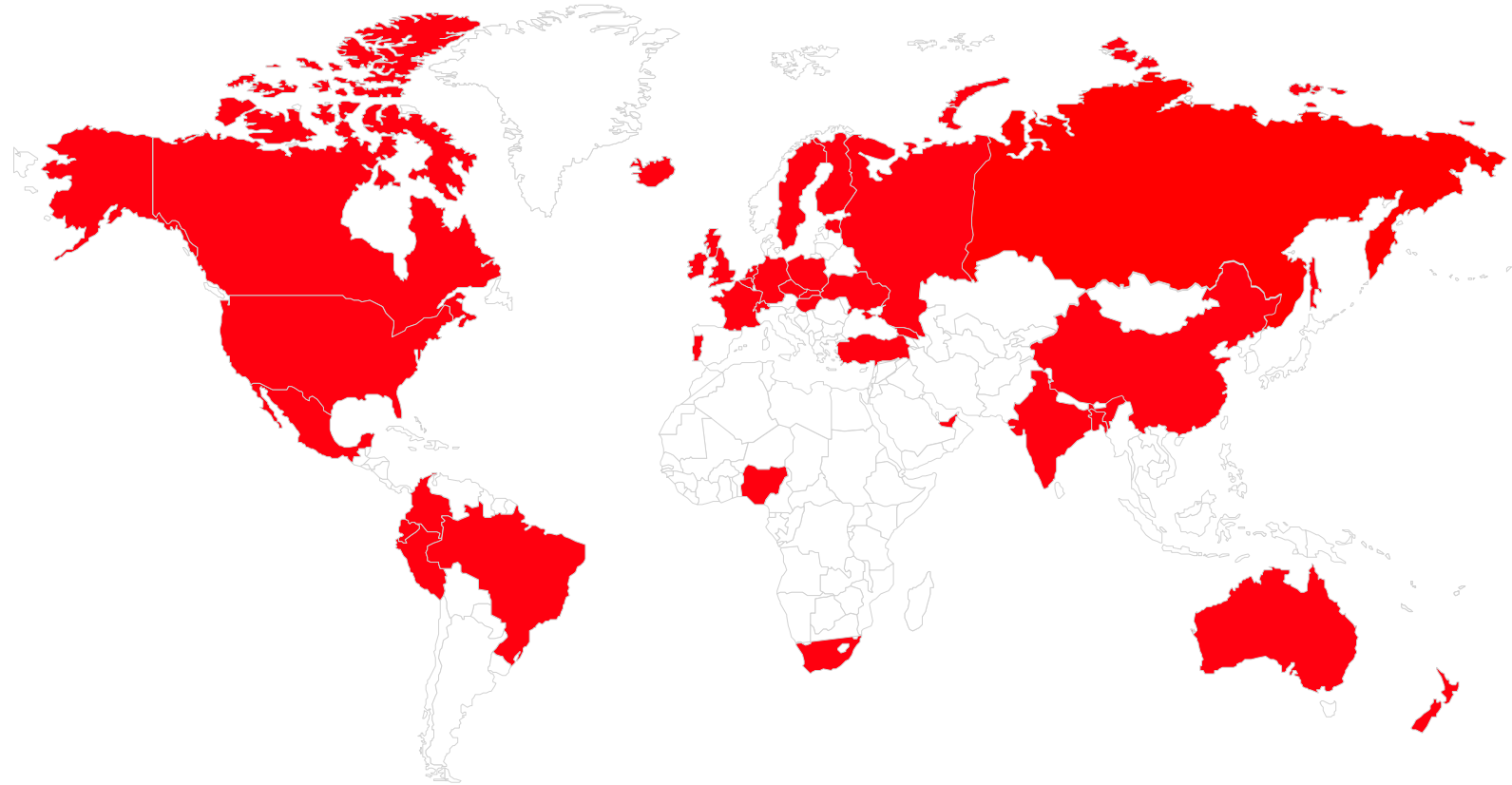


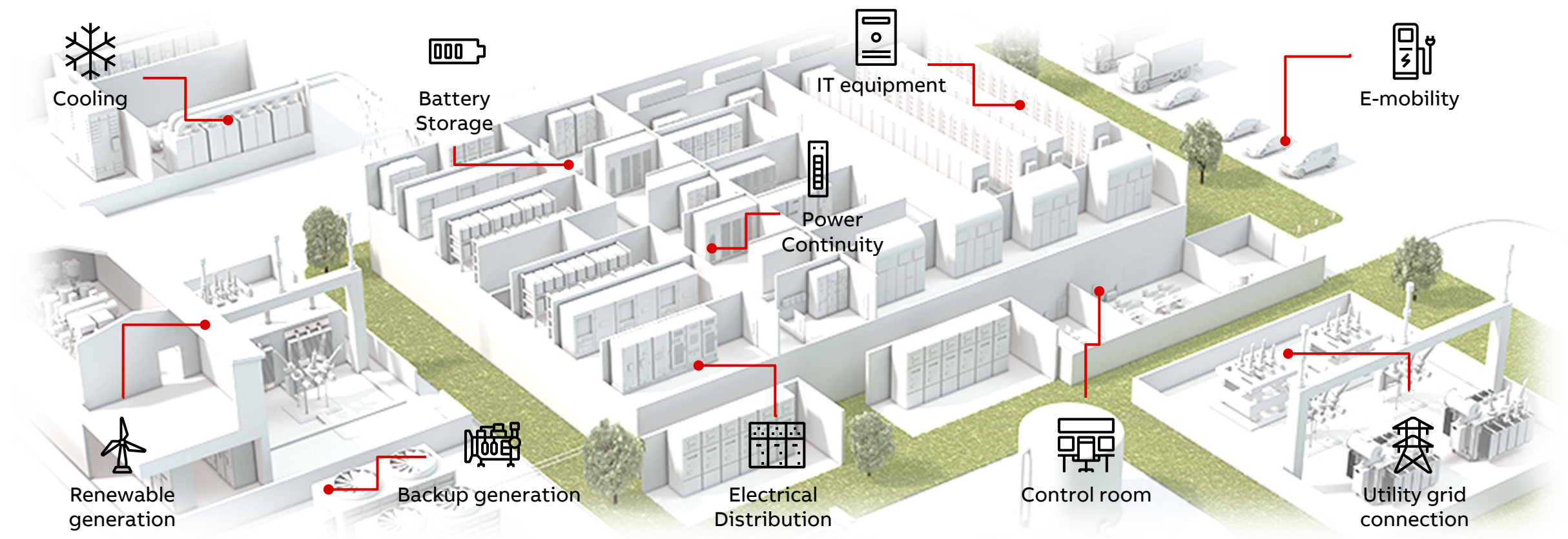
ABB Digital – a true global portfolio

worldwide references



Better insight into disparate systems allows analysis that was previously impossible

Data Centers



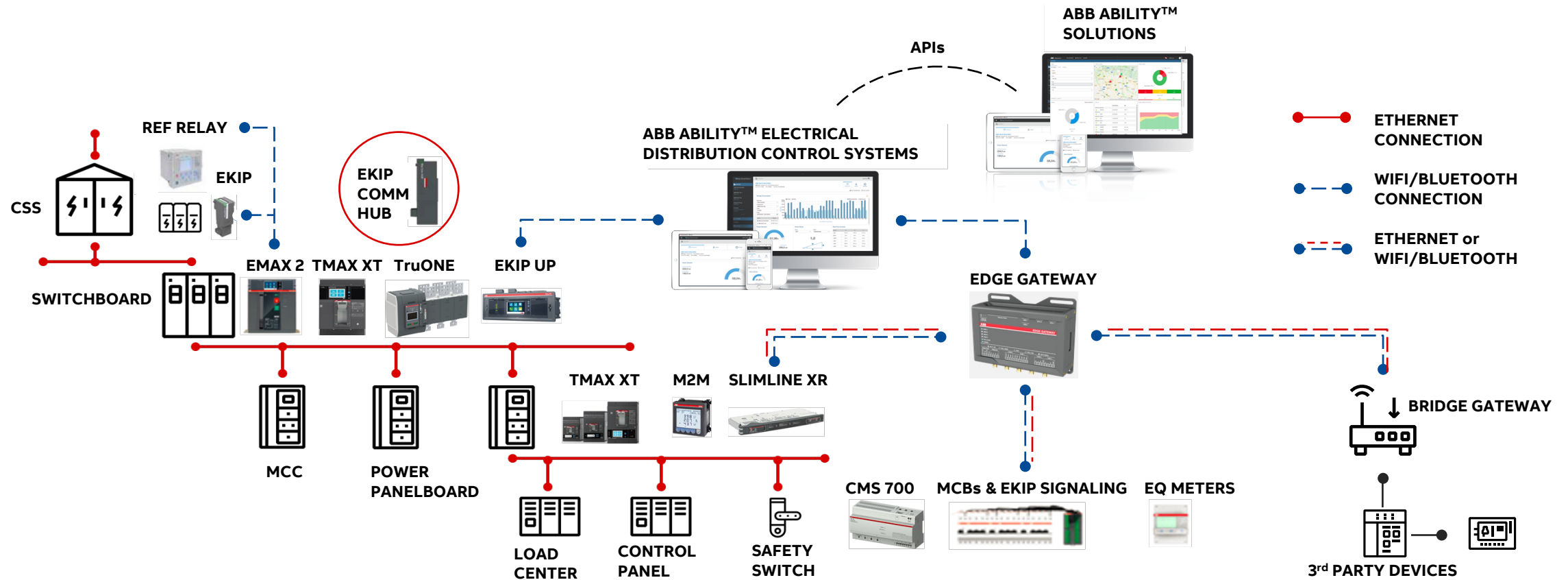
Embedded Connectivity

Ekip built in functionality

Energy Management Supervision

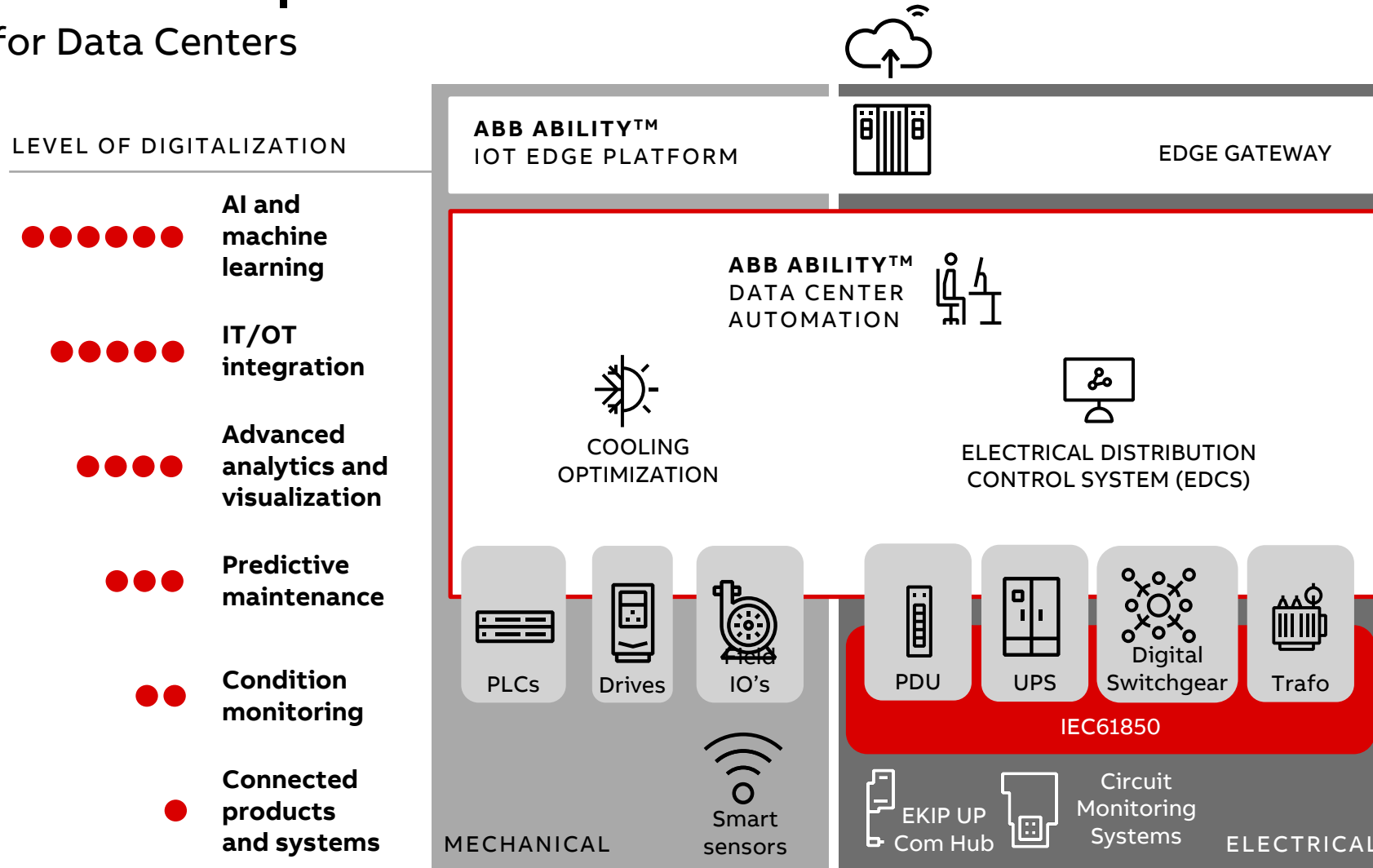


Electrical Distribution Control System



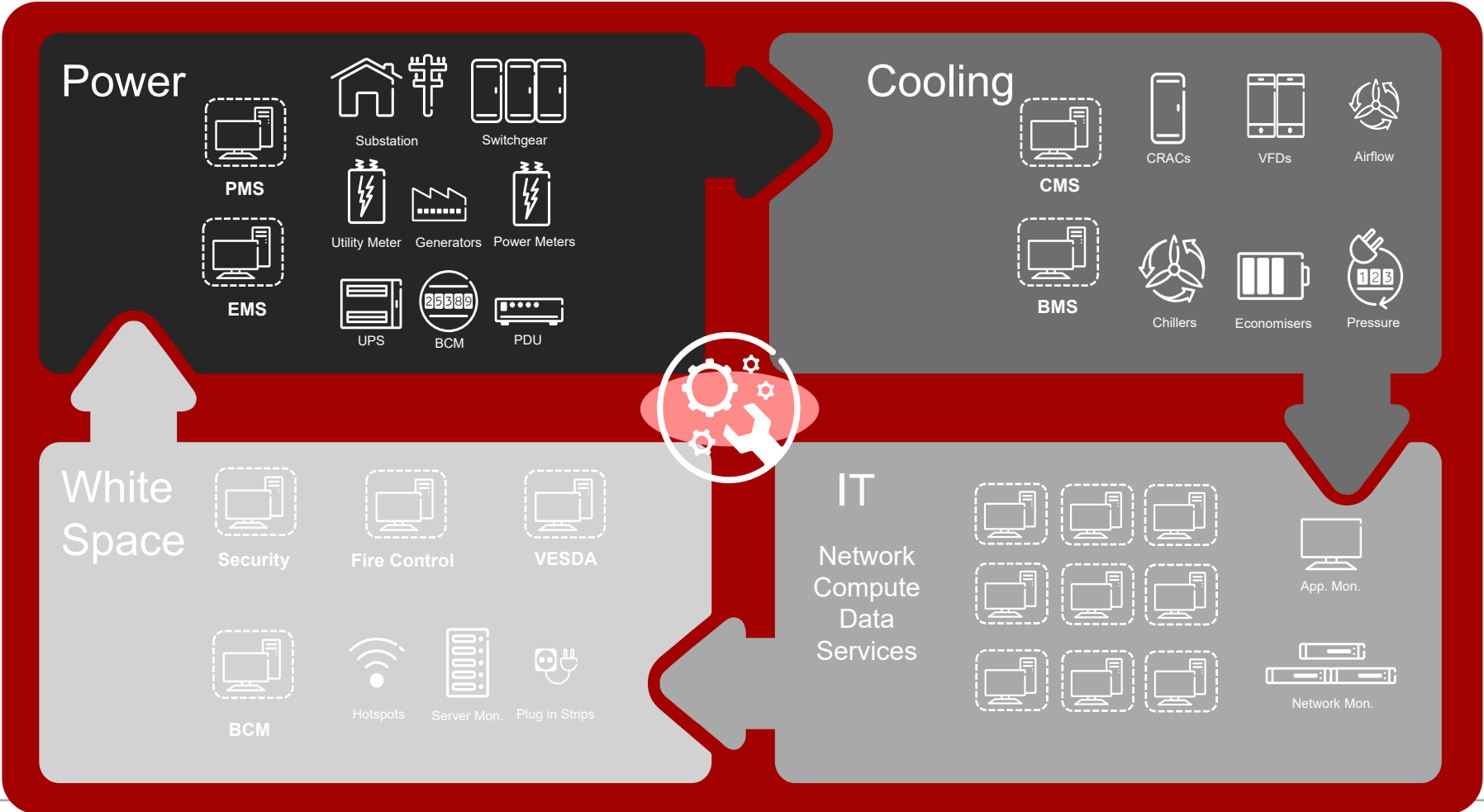
Digital Data Center Operations Architecture

ABB Ability™ for Data Centers



Data Center Automation

Fully integrated facility and IT



Mission of session

Points of value

1

Data centers are an ideal incubator for IoT exploration

2

Digitalization can result in cost savings, increased safety and higher efficiency.

3

Better insight into disparate systems allows analysis that was previously impossible

Q&A



ABB