2017 中国互联网安全大会
China Internet Security Conference

万物皆变 人是安全的尺度
Of All Things Human Is The Measure

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Cybersecurity in the Industrial Internet of Things

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THE DIGITAL ECONOMY IS TRANSFORMING ALL INDUSTRIES INCLUDING SAP

IoT will be one of the most fundamental aspects of the digital transformation

$4-11 trillion

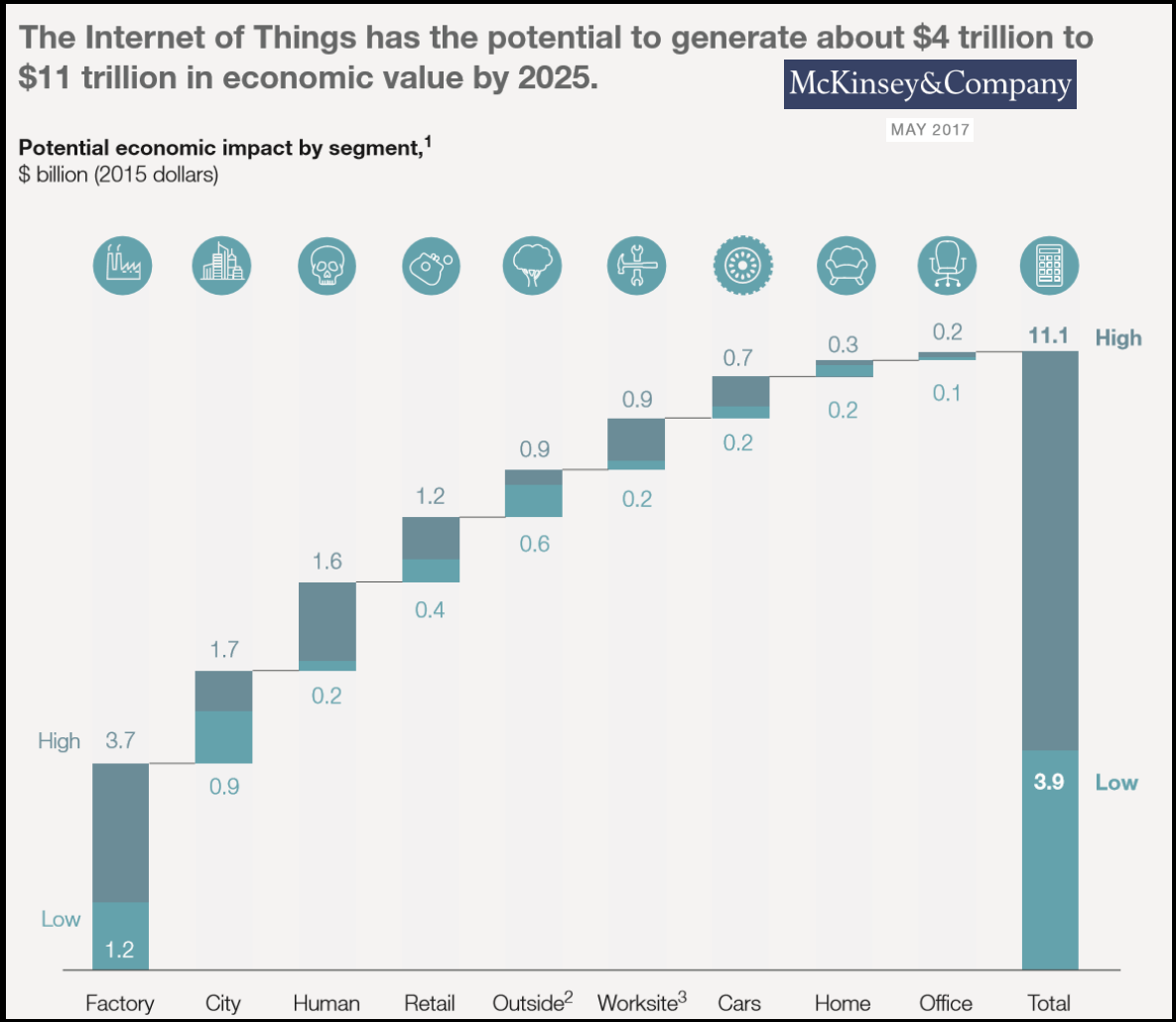
Potential economic impact per year by 2025

80%

of business processes & products will be reinvented, digitalized or eliminated by 2020

to Outcomes

Industries with the highest IoT spent potential



Cloud Infrastructure - Fundamental to Industrial Internet of Things (IIoT)

IoT Bridge

Connected Product	Connected Assets	Connected Fleet	Connected Infrastructure	Connected Markets	Connected People
Product Insights	Fixed Assets Insights	Mobile Asset Insights	Building Insights	Market Insights	People and Work
Goods and Equipment	Manufacturing Execution	Logistics Safety	Construction	Rural Areas	People and Health
Supply Networks	Manufacturing Networks	Logistics Networks	Energy Grids	Urban Areas	People and Homes

Edge Computing

IIoT Foundation

Cloud Platform

Focus industries

Penetrate the industries with the highest IoT spent potential

- Discrete industries
  - Industrial machinery and components
  - High tech
- Public services
  - Future cities
  - Defense and security
- Energy and natural resources
  - Oil and gas
  - Utilities
  - Chemicals
- Service industries
  - Telecommunications

Connectivity stands first

"We cannot capitalize on the data at our solutions if we do not **assure** and broaden our **connectivity capabilities** to ingest all data from all type of devices & networks."

Vendors will offer a dizzying array of wireless tech to support IoT field use cases.

Various characteristics of IoT devices such as small bursty traffic, dense sets of connections, or long distances require new forms of wireless connections, such as LoRaWAN, Sigfox, or 3GPP's narrowband (NB)-IoT. For IoT decision-makers, there will be more than 20 wireless connectivity options and protocols to evaluate.

There will be a large-scale IoT security breach.

Source: www.forbes.com/sites/gilpress/2016/11/01/internet-of-things-iot-2017-predictions-from-forrester/#47c14f436bb6

Retrofit on physical assets with sensors

Low-powered devices and networks

Reliable and cost effective, meeting industrial needs

Low-powered devices

- Do not consume much power to work and communicate
- Do not require a continuous communication link

Low-powered wide area networks (LPWAN)

- Reduced packet size
- High latency
- Low throughput

Enable this by discarding security as a showstopper for adoption

The first was a DVR running the software of the Chinese company previously-identified as being a key target of the Mirai hackers

Security for Internet of Things

Once IoT devices are connected to the Internet

"Driven by the current large-scale deployment of connected objects as well as the upcoming mass-adoption of digitally charged products, cybersecurity has to keep the pace with these developments in order to embrace the new ends of the system boundaries, i.e. the physical devices."

Source: https://www.mckinsey.de/files/mck_connected_car_report.pdf

Decentralization and distribution of enterprise systems

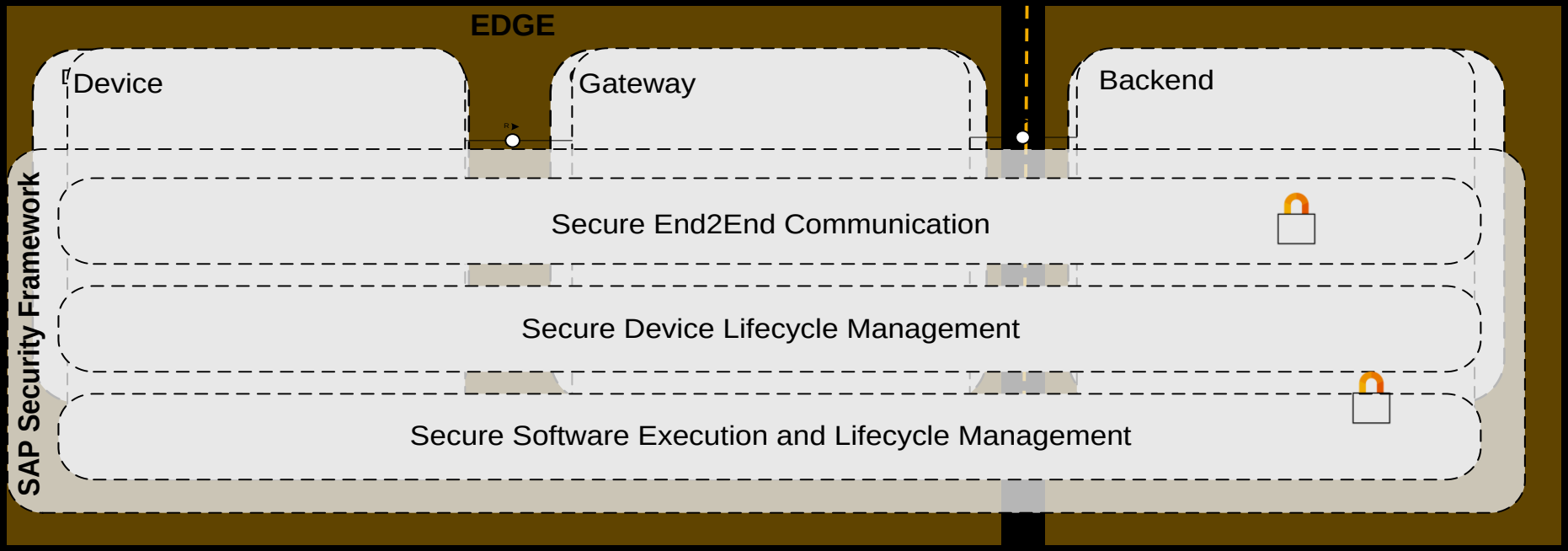
Edge computing from SAP (as part of SAP Leonardo)

Highest level of

- Business visibility
- Application centralization
- Data consolidation
- Technology abstraction

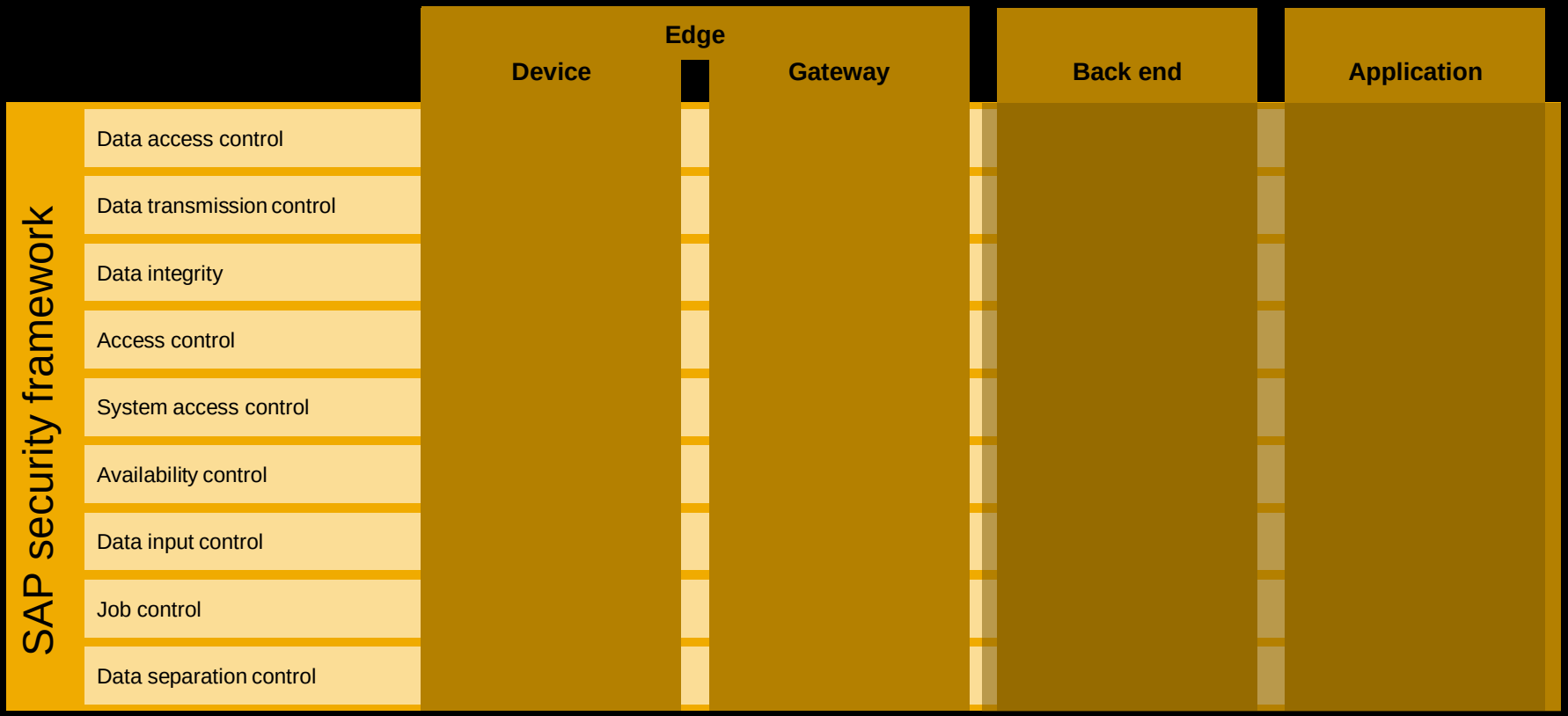
Decentralization and distribution of enterprise systems

Edge computing from SAP (as part of SAP Leonardo)



SAP security reference model

SAP security framework, version 1.2



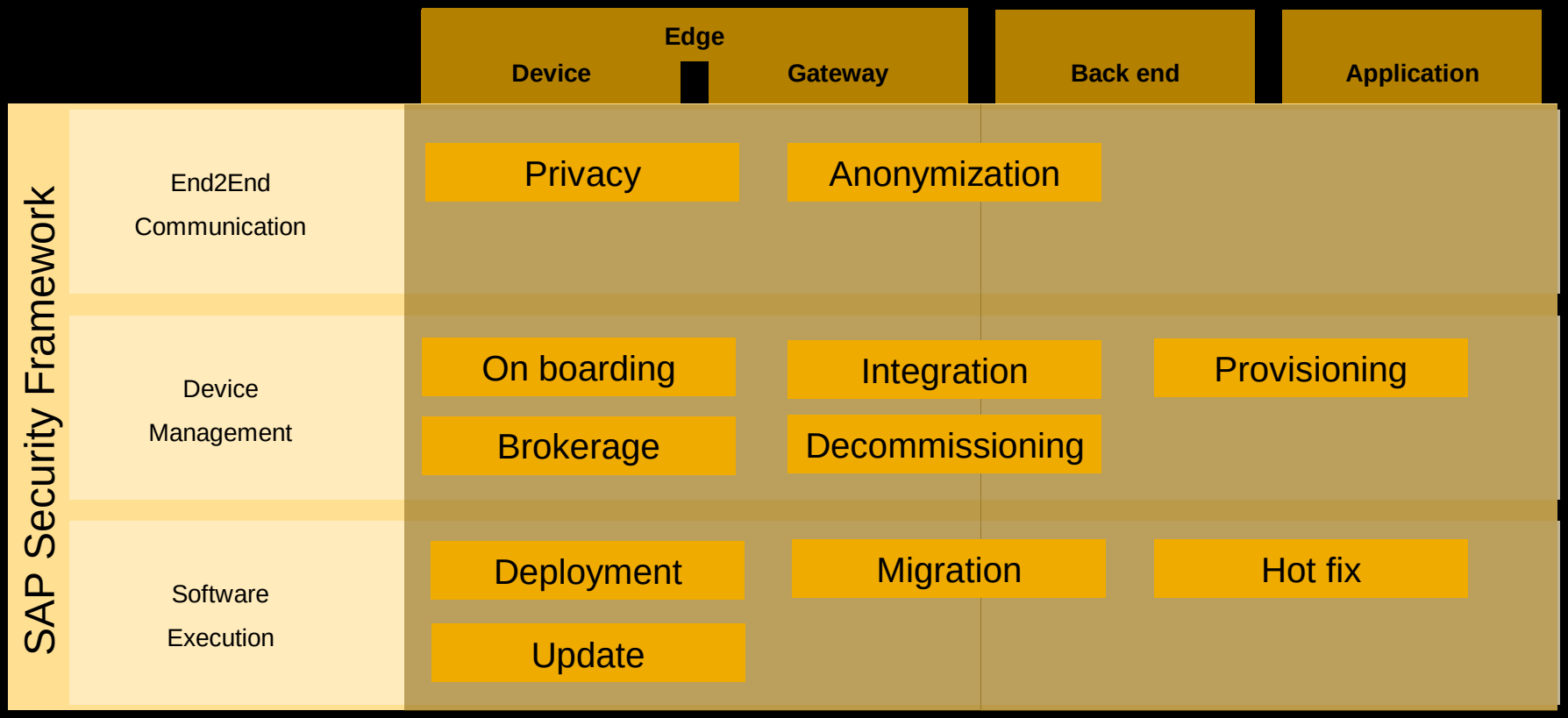
SAP security reference model

IoT-driven enhancement

SAP security framework	Edge: Device	Edge: Gateway	Back end	Application
Data access control				
Data transmission control				
Data integrity				
Access control				
System access control				
Availability control				
Data input control				
Job control				
Data separation control				

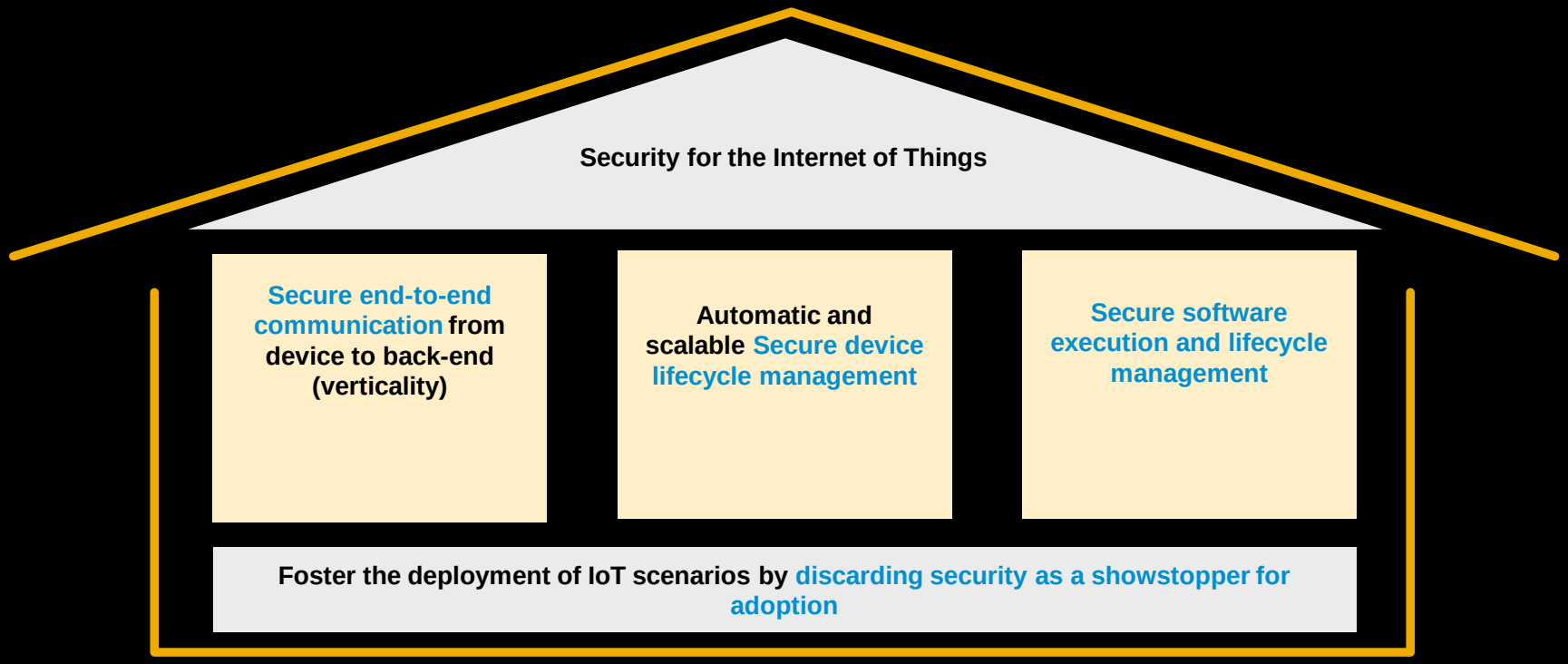
SAP security reference model

IoT-driven enhancement



Security as enabler for the Industrial Internet of Things

Security pillars



Summary

- The digital economy is transforming all industries including SAP. Industries have the highest IoT spent potential
- Cybersecurity has to keep the pace with these developments in order to embrace the new ends of the system boundaries
- SAP enhanced IoT driven security reference model with data, device and application security service

THANKS