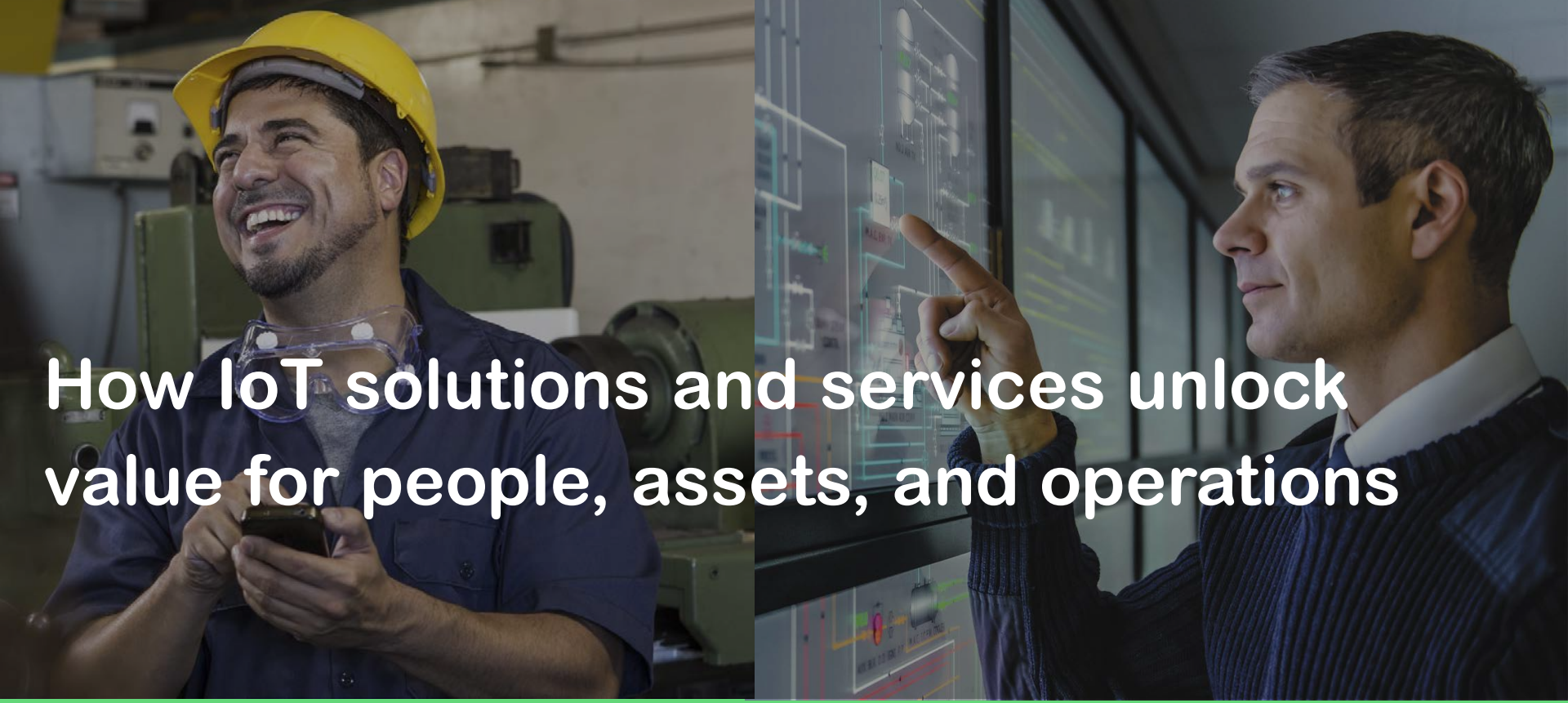

How IoT solutions and services unlock value for people, assets, and operations

Arthur M. Silva
VP, Segment & IoT Marketing Strategy

Confidential Property of Schneider Electric |

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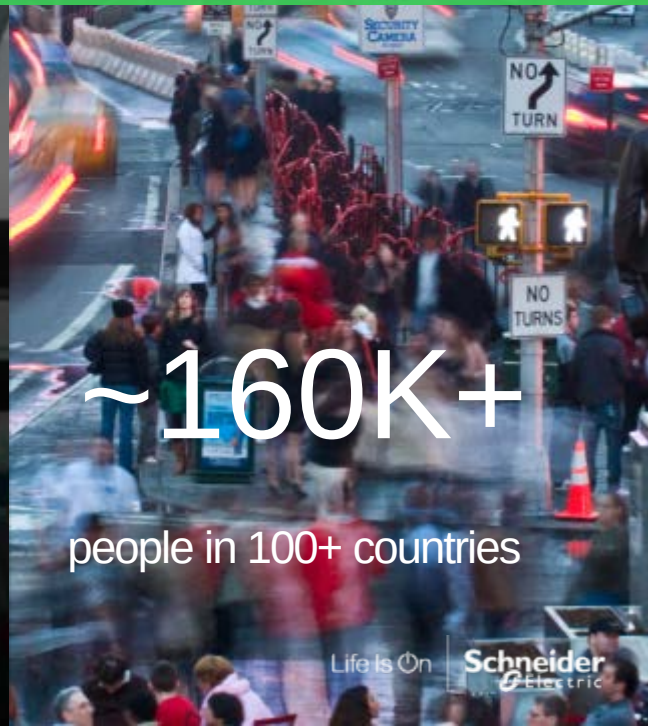
Schneider Electric, the Global Specialist in Energy Management and Automation

€26.6Bn

FY 2015 revenues

~ 5%

of revenues devoted to R&D



~160K+

people in 100+ countries

...with Balanced Geographies

27% North America

26% Western Europe

29% Asia Pacific

18% Rest of the world

FY 2015 Revenues

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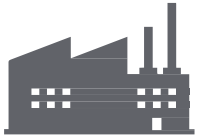
...with Diversified End Markets

Datacenter & Networks

Building

Energy & Infrastructure



Industry

14%	45%	20%	21%

FY 2015 Revenues

Our technologies ensure that

Life Is On

everywhere, for **everyone**,
at **every moment**.

Energy is the base of life, so we help to ensure that energy is:

- **Safe**
- **Reliable**
- **Efficient**
- **Connected**
- **Sustainable**

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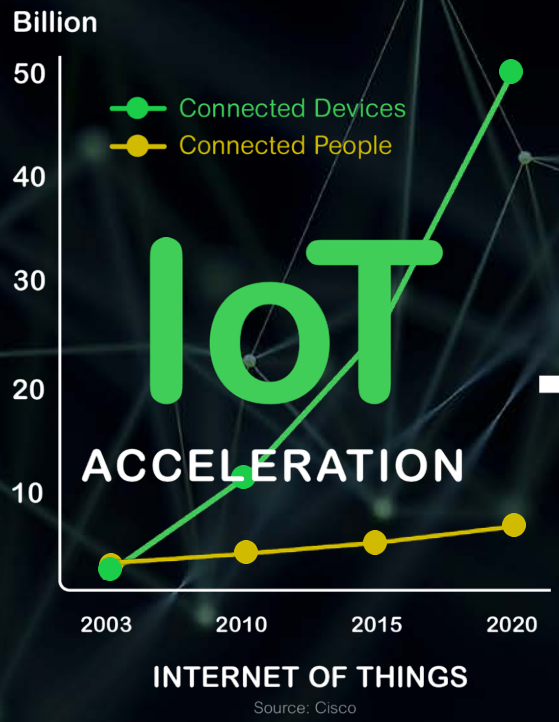
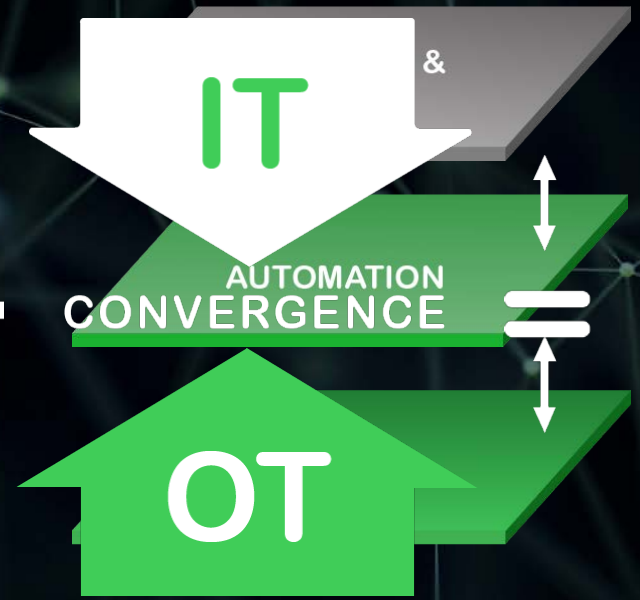
Efficiency gains will come from IT/OT convergence





ENERGY & PROCESS

OPTIMIZATION

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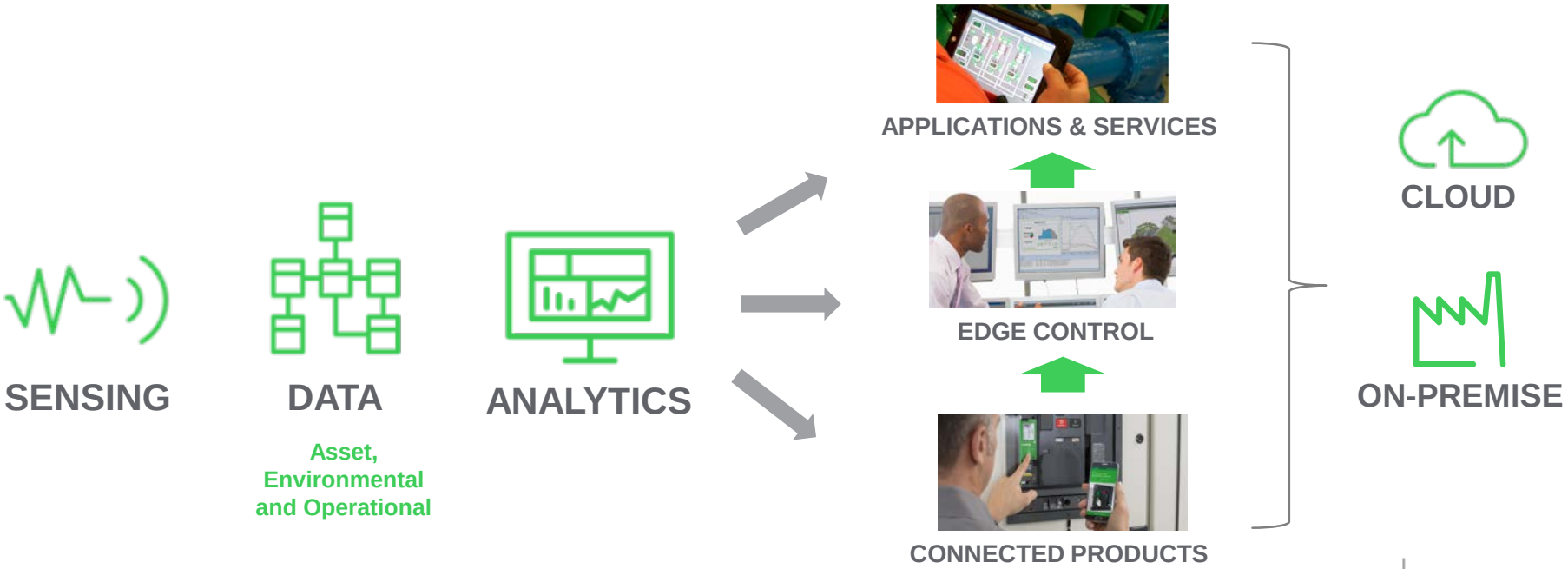
A simplified view of the Internet of Things



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Translating data into actionable intelligence

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Three very key innovation drivers

Cloud-first strategies are the foundation for staying relevant in a fast-paced world (Gartner)

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IoT-enabled innovation areas in the industrial world

Smart Products

Augmented Operations

Mobile Applications

Advanced Engineering, Automation, and Control

Smart Machine & Smart Plant Solutions

Predictive Analytics

Cloud-based Software and Managed Digital Services

Asset & Energy Performance Management as a Services

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Increasing safety, efficiency, productivity, and sustainability of…

ASSETS

PEOPLE

OPERATIONS

FACILITIES

ENERGY

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ASSETS
Extended Life
Performing as expected
Predict and Prevent Downtime
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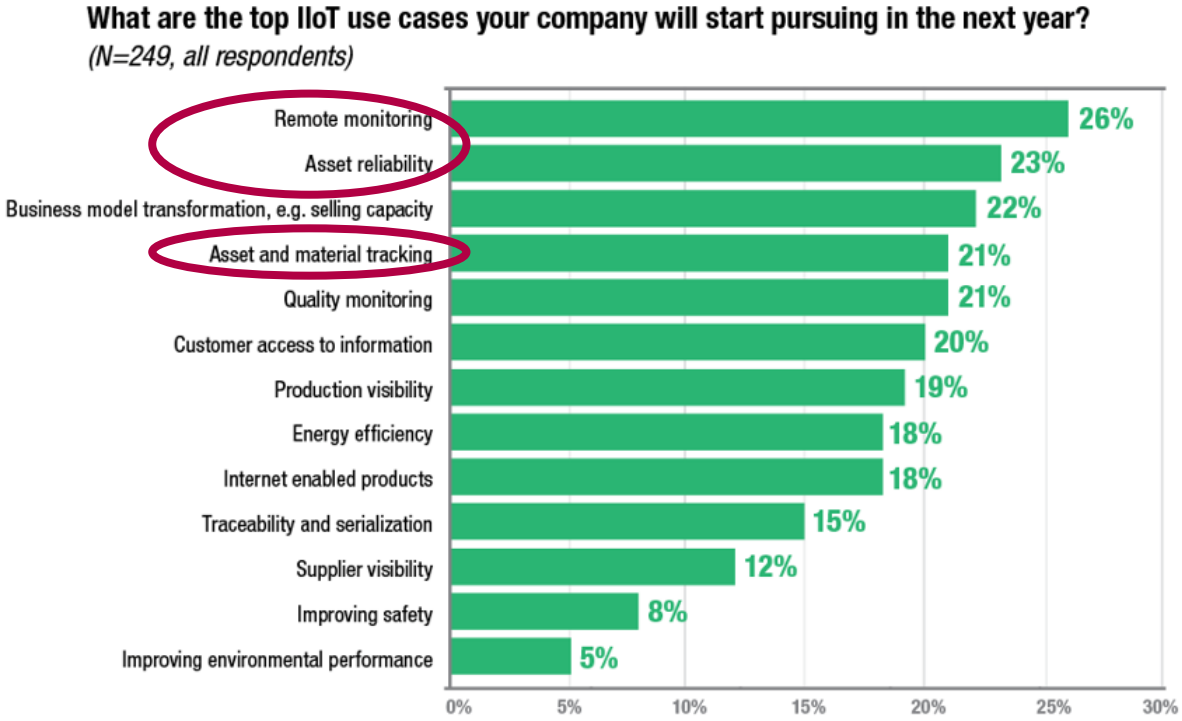
Schneider Electric

Asset related use cases are the logical first choice



LNS IIOT Research Study - 2017

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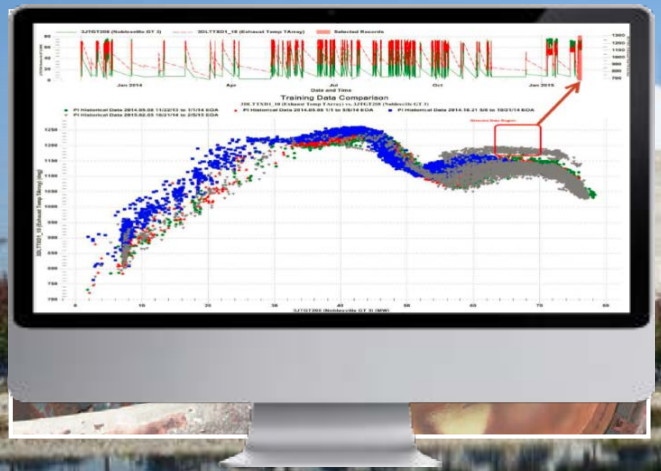
Predictive analytics delivers savings for energy utilities

Thanks to predictive modeling and scheduled maintenance of combustion turbines Duke Energy saved almost $500k



DUKE ENERGY®

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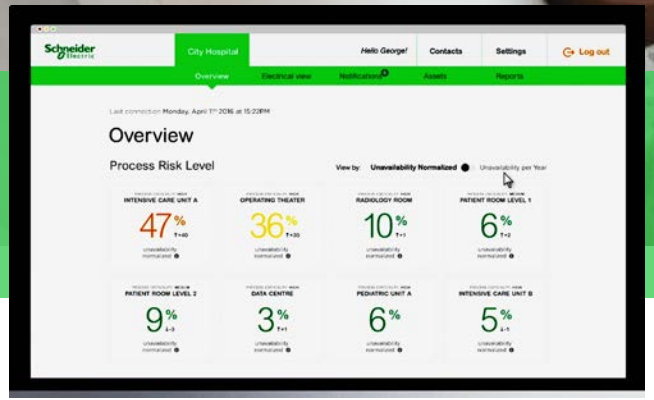
Asset Performance Management as a Service ensures power availability



APMaaS is a service that helps customers secure their installations with the monitoring of critical Electrical Assets (Schneider Electric and Third parties) performed by experts in Service Bureau and advanced analytics

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PEOPLE

- Keep people safe
- Make people more productive
- Enable smarter decisions

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Electric

Mobile control applications increase situational awareness

“The ability for our engineers and operators to use tablets and smart phones for controlling city services has greatly increased situational awareness and allowed us to become more efficient.”

Darren Schulz, Deputy Public Works Director Carson City, Nevada

WonderWare™ In Touch™, Historian, SmartGlance™

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OPERATIONS

- Process control
- Supply chain
- Telemetry

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Efficient & productive operations are major drivers of IIoT adoption

2015 survey of about 200 automation executives conducted by Morgan Stanley and *Automation World* magazine

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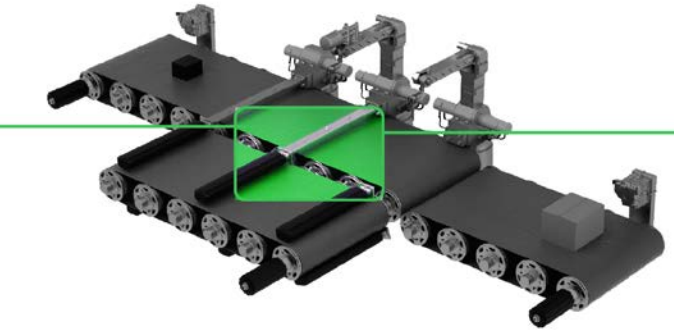
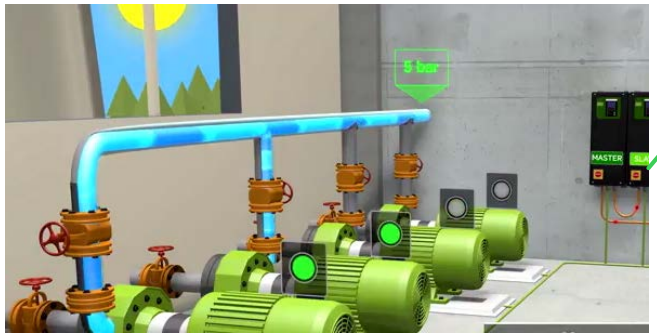
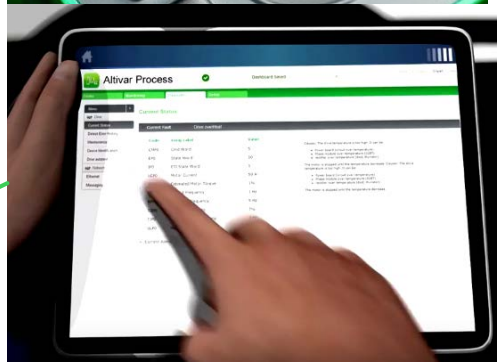
1st ever connected variable speed drive built for process control





Pumping and conveying operations

Altivar™ variable speed drives



Remote access and QR codes for servicing

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Traceability app monitors milk quality from collection to the plant

Instrumentation and
Sensors for Temp, Acidity, and more…

Bulk Milk Cooler

Milk Tanker Truck

Dairy Plant Receiving

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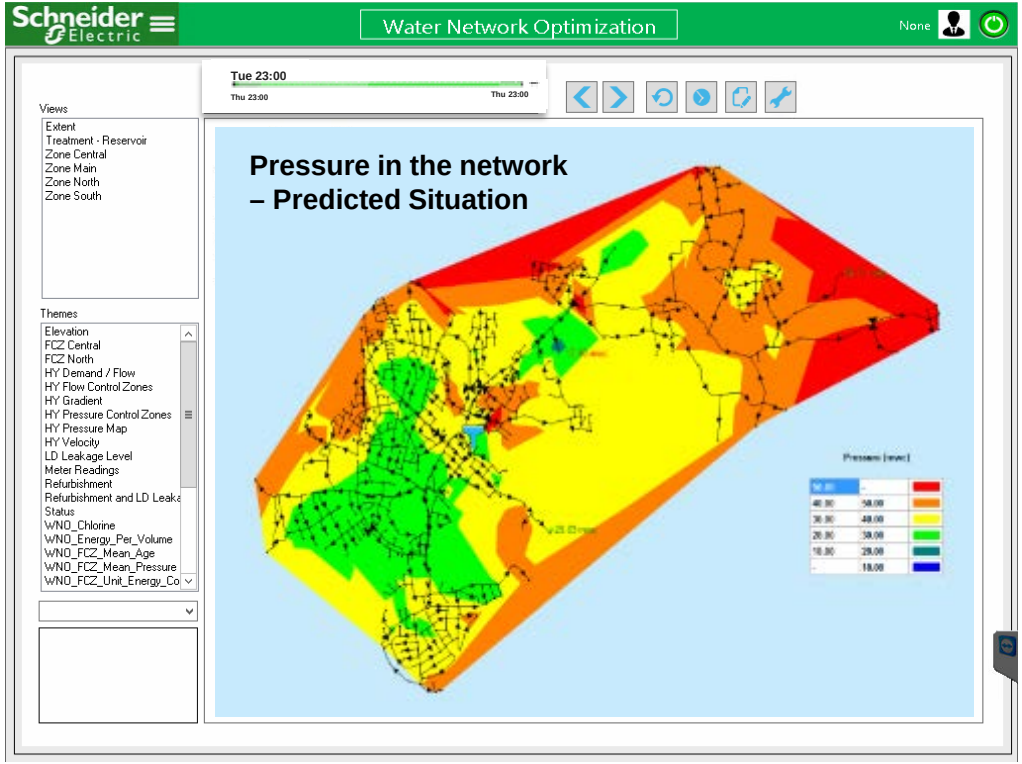
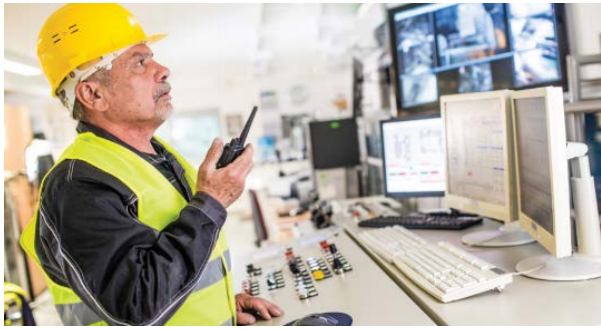
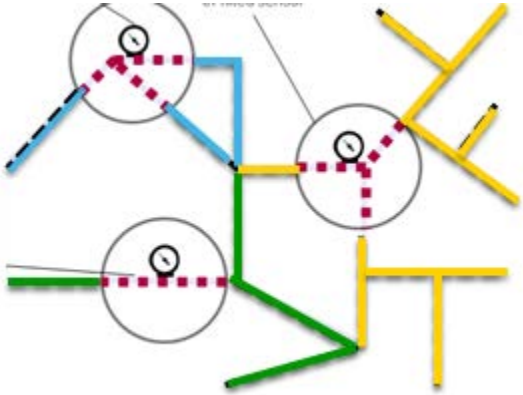
Water network optimization software predicts and prevents shortages







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Industrial operations leveraging IoT need infrastructure for
EDGE COMPUTING

Pre-fabricated data center in an industrial enclosure

FACILITIES

- Building efficiency
- Building sustainability
- Space utilization

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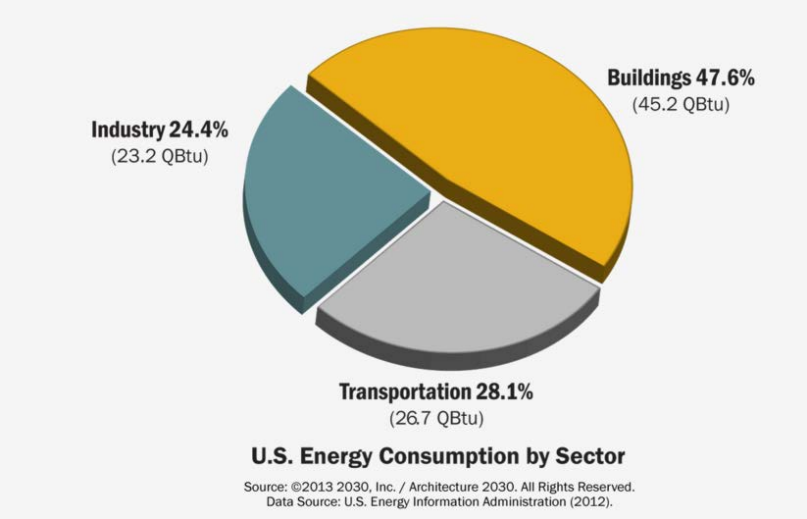
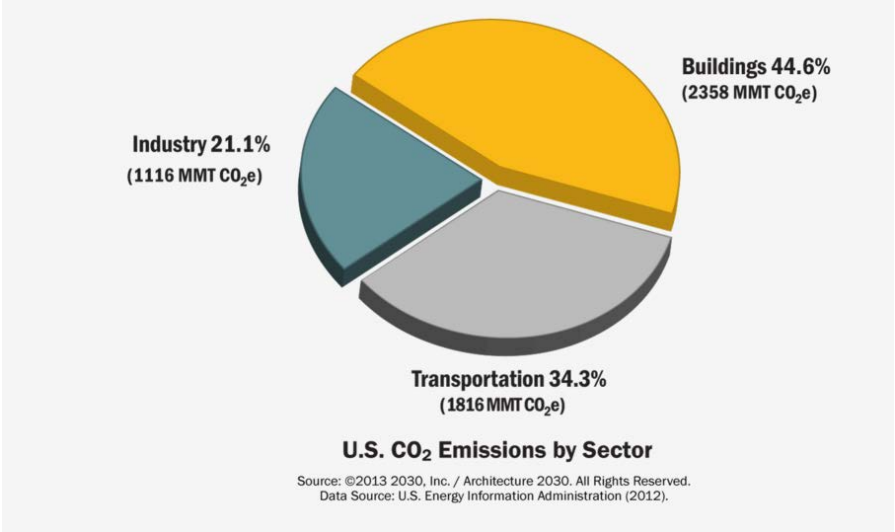
Did you know….

Buildings consume the most energy and create the most CO2 emissions





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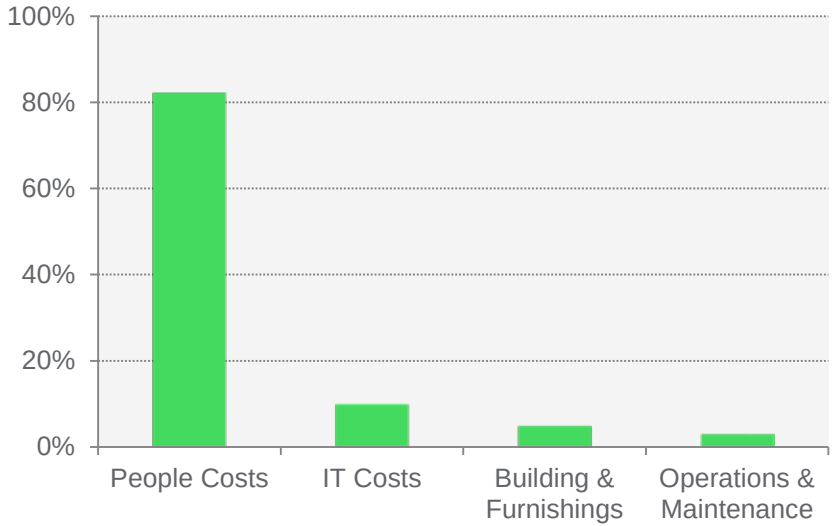
At the same time, businesses are challenged to increase profitability and worker productivity

- People costs can be **10 – 40 times the maintenance and operation costs** over the lifetime of a building

- Even **small increases in staff efficiency can have a huge impact** on business than just reducing costs

Average Annual Enterprise Costs

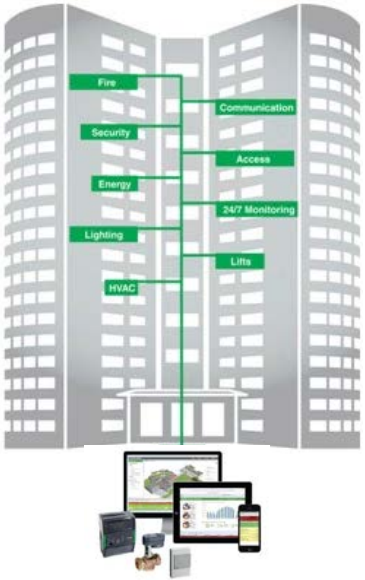


Source: CABA Intelligent & Integrated Buildings Council (IIBC), CABA White Paper, Improving Organizational Productivity with Building Automation Systems, page 7, 2014.

Advancing Building Control and Automation increases efficiency, comfort, and space management

Building Management System

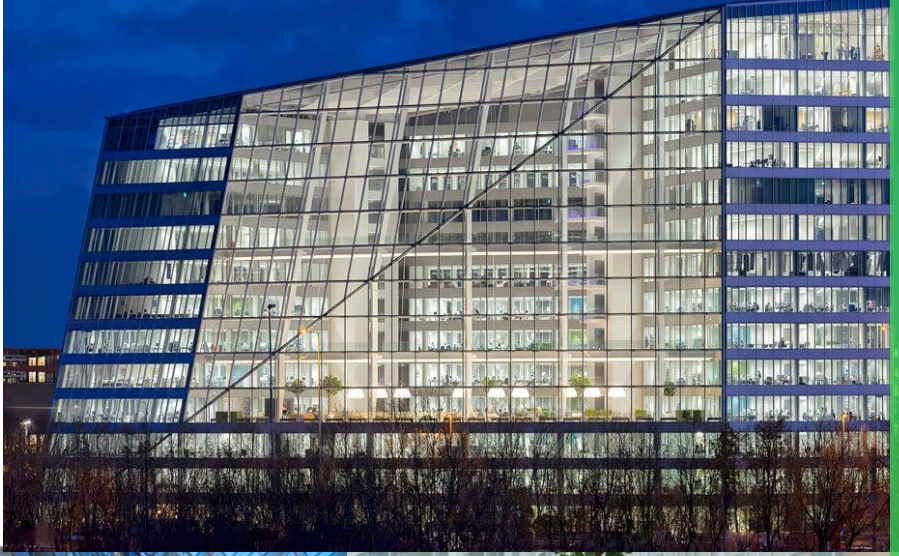
Metering, Monitoring, Analysis and Management of Electrical, HVAC, Lighting, Blinds, and Safety.



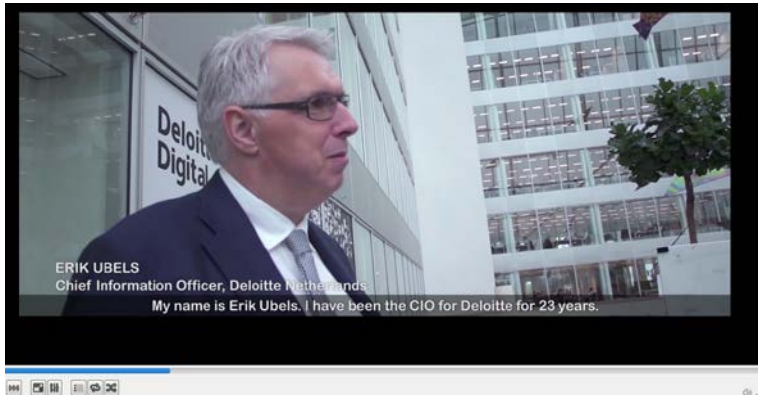
Workplace Efficiency Services

Employee badges with RFID sensors transmit people location data to an automation server in the cloud

Visitors and employees can connect to a “service portal” enabling **control of lighting, temperature, and blinds**



The world's most sustainable office building



"Schneider Electric is the single backbone so we can connect everything and also get the building data into a data analysis platform."

Erik Ubels, CIO
Deloitte Netherlands

Deloitte. THE EDGE AMSTERDAM

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ENERGY
• Smart grid
• Enterprise efficiency
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Utilities can boost operational and energy efficeincy

Network Analytics

- Efficient operations
- Predictive maintenance

Information System

- Visual Situational Awareness & Real Time control

Capturing Data

ADMS reduced energy losses by **4%** per year to optimize operational costs by €5.7 M per year

SAIDI/SAIFI indicators reduced by **22%** with outage management systems

Grid efficiency improved through GIS data transfer into Distribution Management System

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Energy performance services uncover efficiency opportunities

Energy metering devices

Building management systems

Weather monitoring systems

Utility bill data

Occupancy data

Water usage

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Scalable IoT solutions require a secure and open
PLATFORM &
ARCHITECTURE
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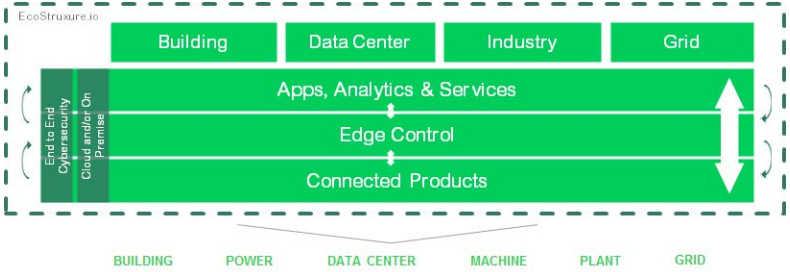
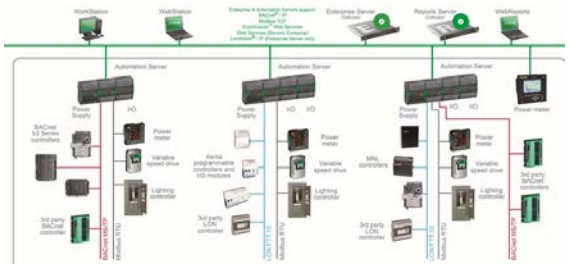
EcoStruxure™

Innovation At Every Level

Industry leading
TECHNOLOGY STACK



Tested and validated
REFERENCE ARCHITECTURES



IoT PLATFORM
Core technology capabilities for solutions at scale

Microsoft intel salesforce CISCO IBM zuora DELL ptc ARM

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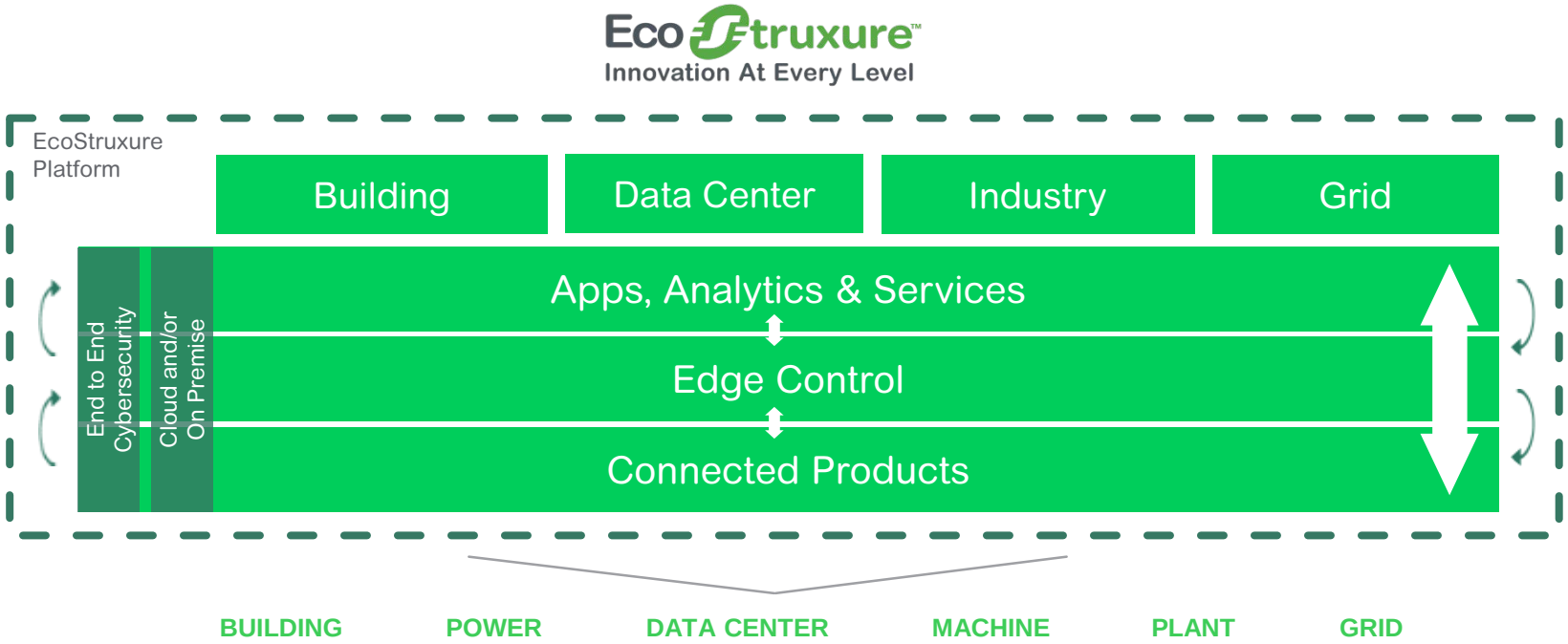
EcoStruxure: 3 Innovation Layers, 4 End Markets, 6 Architectures



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EcoStruxure™ Platform

Innovation At Every Level

Core technologies for Embedded Connectivity & Intelligence

Enables **smart sensing, embedded computing, IP networking, and edge analytics**

- Discovery & onboarding
- Collect & store
- Configuration & messaging
- Contextualize semantics & rules
- Localized machine learning & analytics
- Configure & upgrade
- Device embedded applications

An interoperable foundation for Smart Operations

Serves as the buildings blocks for **control, management, automation, and optimization** of an entire operation on premise and in the cloud

- Hardware agnostic connectivity
- Drivers, toolkits and templates
- Manufacturing, process, and equipment data aggregation
- Data abstraction & contextualization
- Predictive analytics, models & visualization
- Applied rules, models & workflow
- Application modules

Infrastructure for Cloud Connected Digital Services

Enables the delivery of **cloud-based connected apps, analytics, services, control, and monitoring**

- Remote connectivity & control
- Device lifecycle management
- Structured sigh velocity data store
- Data lake raw storage
- Data Symantec & contextualization
- Machine learning & analytics
- Managed z application services
- Microsoft Azure

A set of Interoperable technology capabilities for delivering IoT-enabled EcoStruxure Solutions at scale.

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EcoStruxure™
Innovation At Every Level

Platform Partnerships

Core technologies for **Embedded Connectivity & Intelligence**

An interoperable foundation for **Smart Operations**

Infrastructure for **Cloud Connected Digital Services**

The platform capabilities have been built on best-in-class technology partnerships

Microsoft, salesforce, zuora, DELL, Hewlett Packard Enterprise, vmware, ITI, intel, accenture, ARM, CISCO, industrial internet CONSORTIUM, ptc, servicemax, kinvey, IBM, SIGFOX

+8000 System integrators

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EcoStruxure™
Innovation At Every Level

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EcoStruxure™
Innovation At Every Level

EcoStruxure™ DATACENTERS

DIGITAL REALTY

Capgemini

switch sky

EcoStruxure™ BUILDINGS

HILTON WORLDWIDE

SANOFI

Deloitte.

EcoStruxure™ INDUSTRY

Nestlé

BLACK & VEATCH
Building a world of difference.

PEPSICO

EcoStruxure™ GRID

neoen
renouvelle l'énergie

DUKE ENERGY.

enel

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IIoT is accelerating

Cloud, mobile, & services

Use IoT data for actionable intelligence

Real world Industrial IoT use cases

EcoStruxure Architecture & Platform

It takes an ecosystem

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