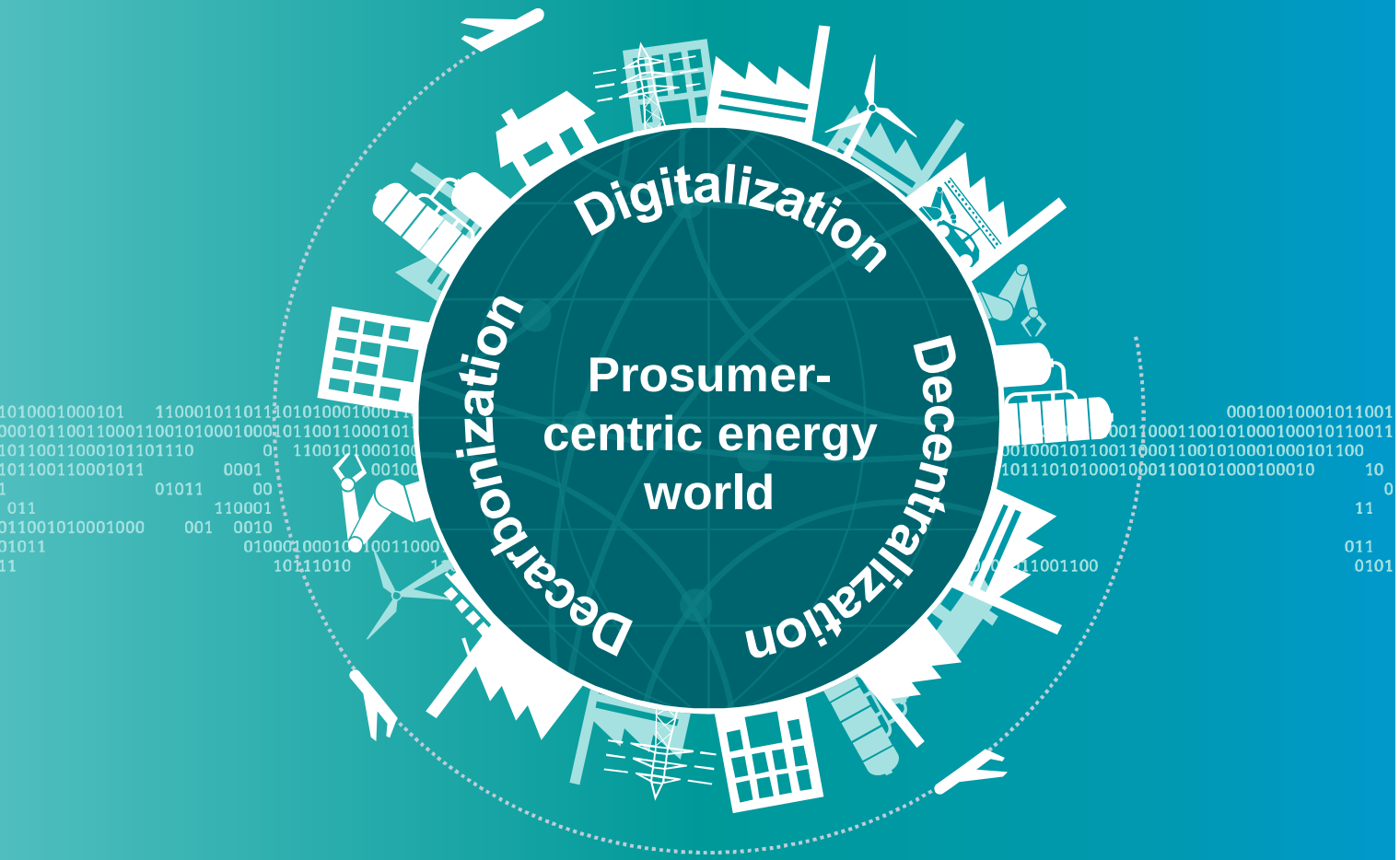
MindSphere meets energy

Unlock the potential of digitization

The current **energy world** will be heavily **disrupted**



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From
Predominantly fossil-driven energy world

To
Renewable world through wind, solar and storage

From
Centralized energy production supplying consumer

To
Household and businesses become prosumers

From
Traditional, vertical energy disruption model

To
Energy trading plat-forms which are the new digital utilities

Data management and energy systems – In the age of digitalization they merge and change the world

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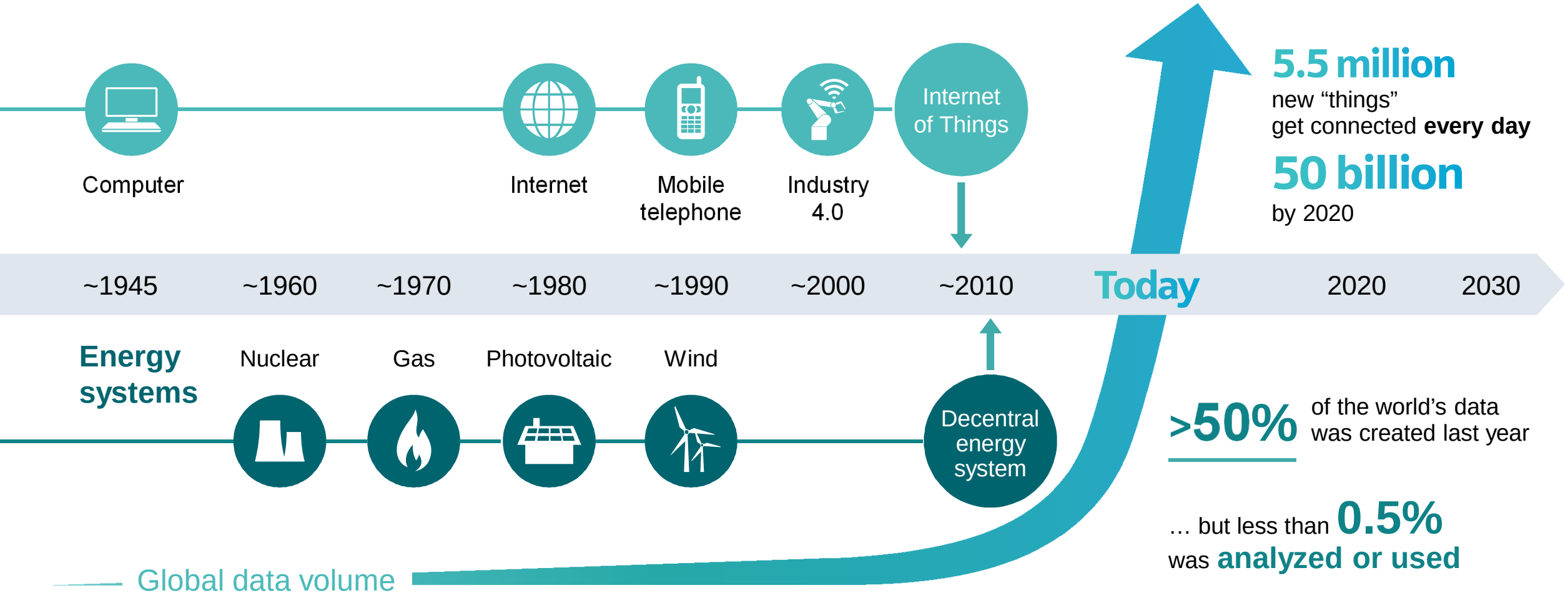

5.5 million
new "things"
get connected **every day**

50 billion
by 2020

>50% of the world's data was created last year

… but less than **0.5%**
was **analyzed or used**

Digitalization changes everything

Electrification – Automation – Digitalization –
Our strategy to shape the digital transformation

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Design & Engineering | Automation & Operation | Maintenance & Utilization

Siemens Software

Siemens Digital Services

MindSphere

The cloud-based, open IoT operating system

Platform as a Service

Digitally enhanced Electrification and Automation

Holistic IT security concept

MindSphere enables everything

MindSphere for energy – The open, cloud-based IoT operating system

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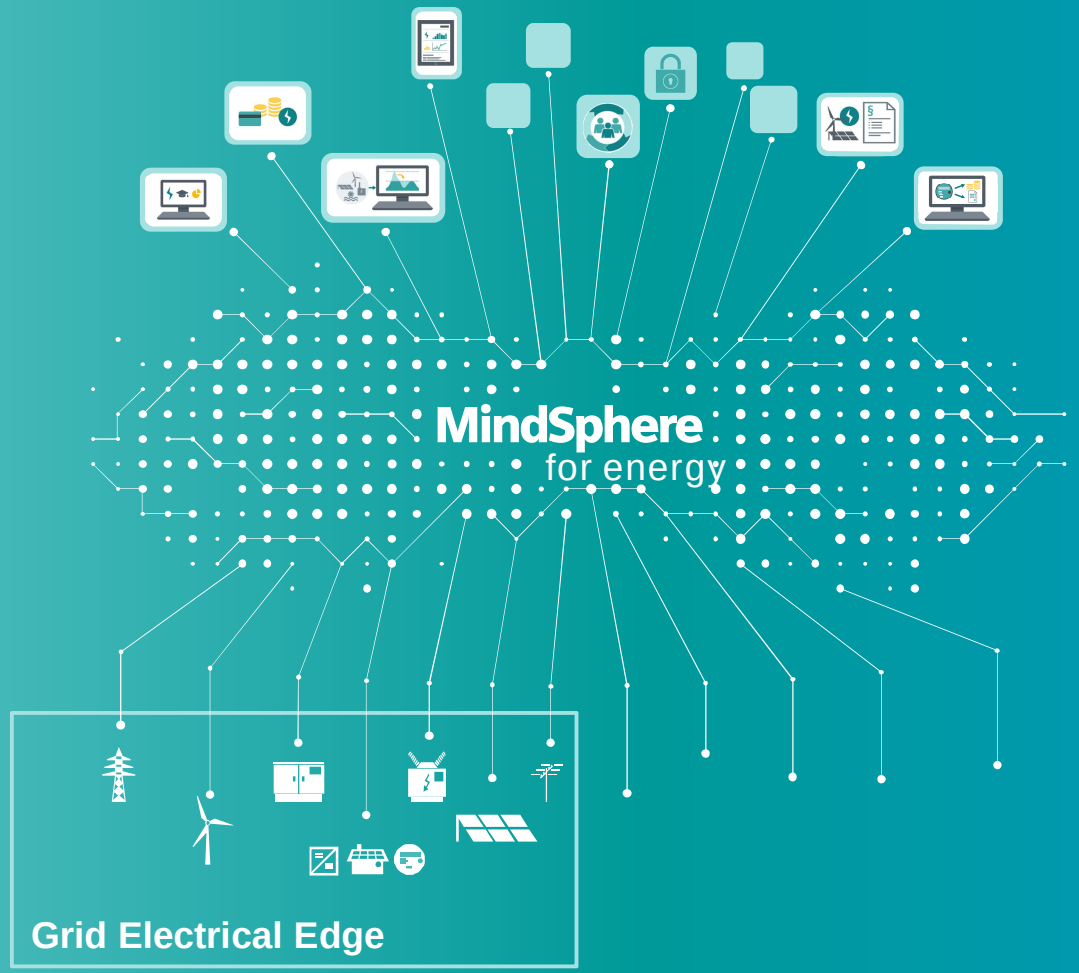

Deep
domain knowledge

Connectivity
- Power grid assets
- Electrical infrastructure assets
- Grid edge devices

Driving business success
- Powerful energy applications
- Digital energy services

Hot news
Existing EnergyIP applications with 75 million contracted devices will be running on MindSphere for energy

MindSphere for energy – The open, cloud-based IoT operating system

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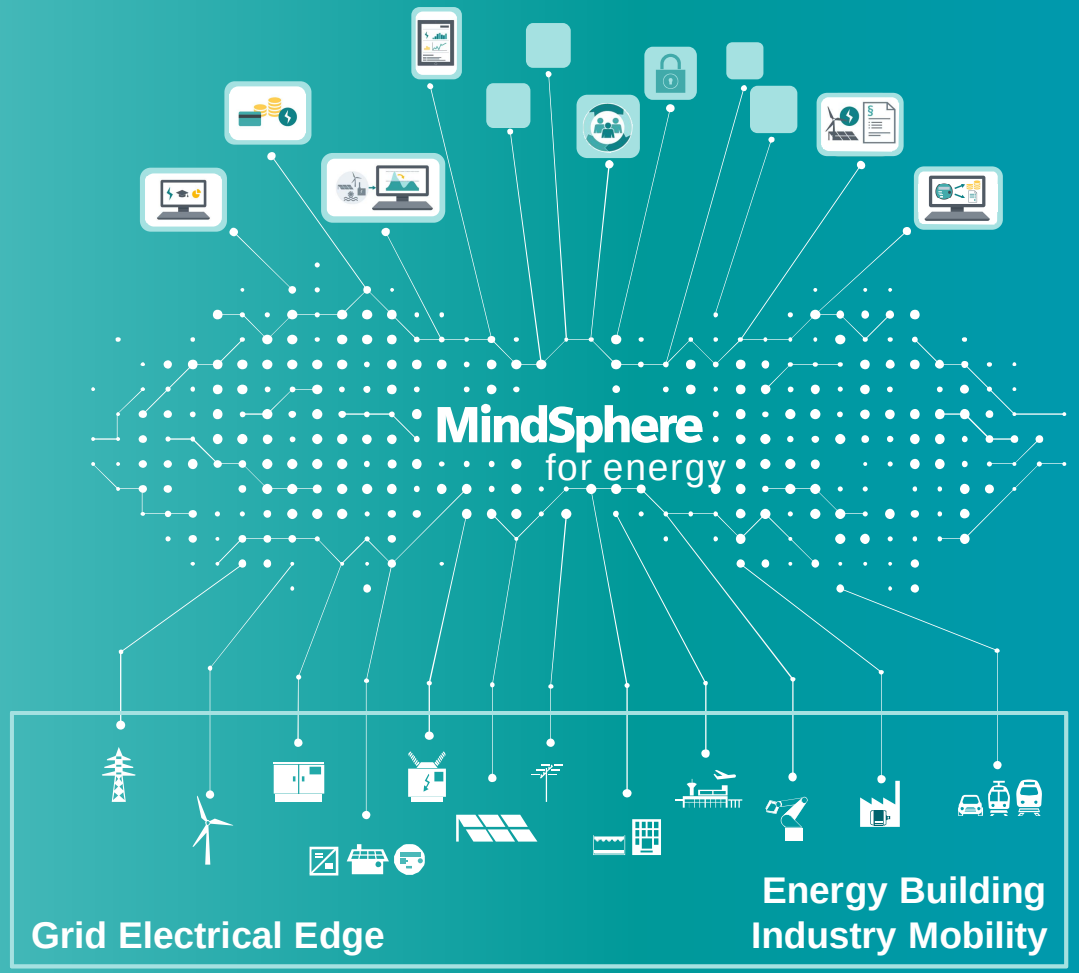

Broad

end-to-end solutions

- Value chain optimization
- Data models
- Connected e-mobility
- Industry standards
- **Sector coupling**
- Cross indus-tries
- City plat-forms

MindSphere for energy – The open, cloud-based IoT operating system

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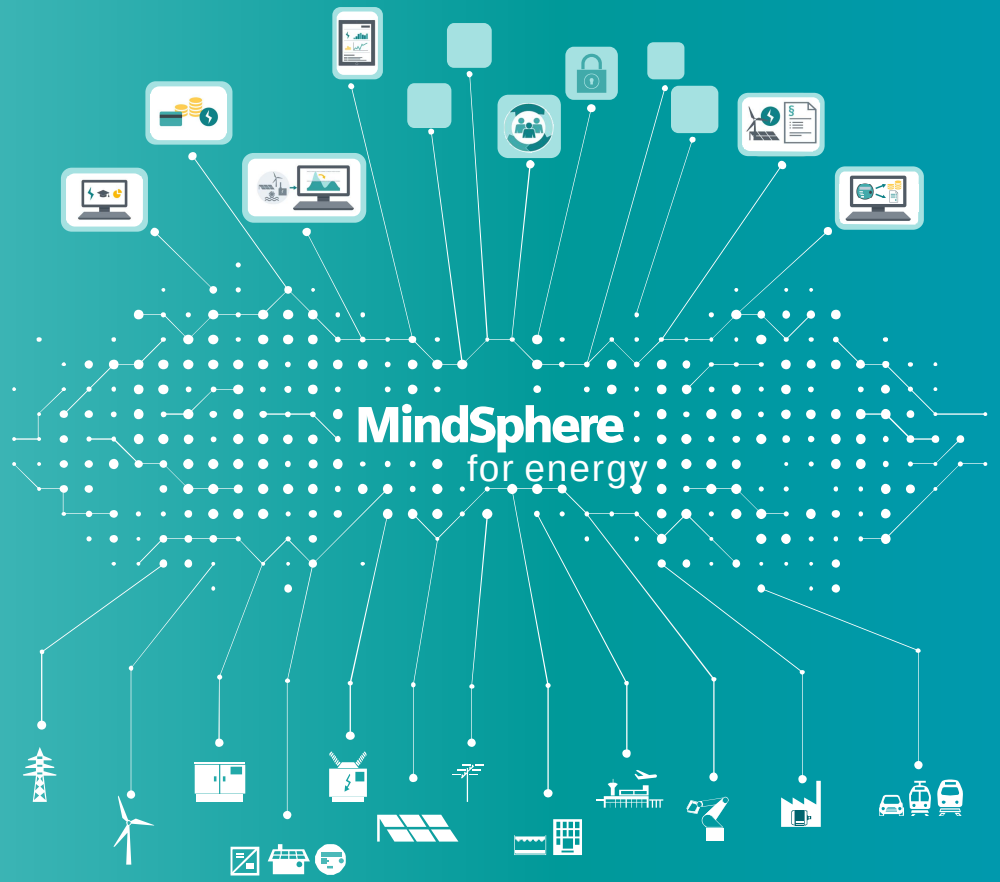

Open
platform and ecosystem

- Open API
- Open connectivity, e.g. OPC UA P/S
- Open partner network

bluvision · FUJITSU · amazon web services · accenture · IBM Watson · OMNETRIC Group · Capgemini · SAP · chemtech · orange Business Services · Atos · pwc · Deloitte. · evosoft · intel · Microsoft Azure · senseye · TATA CONSULTANCY SERVICES · McKinsey&Company

Hot news
EnergyIP Meter Data Management now available as SAP Meter Data Management by Siemens and listed on SAP price list as on premise solution

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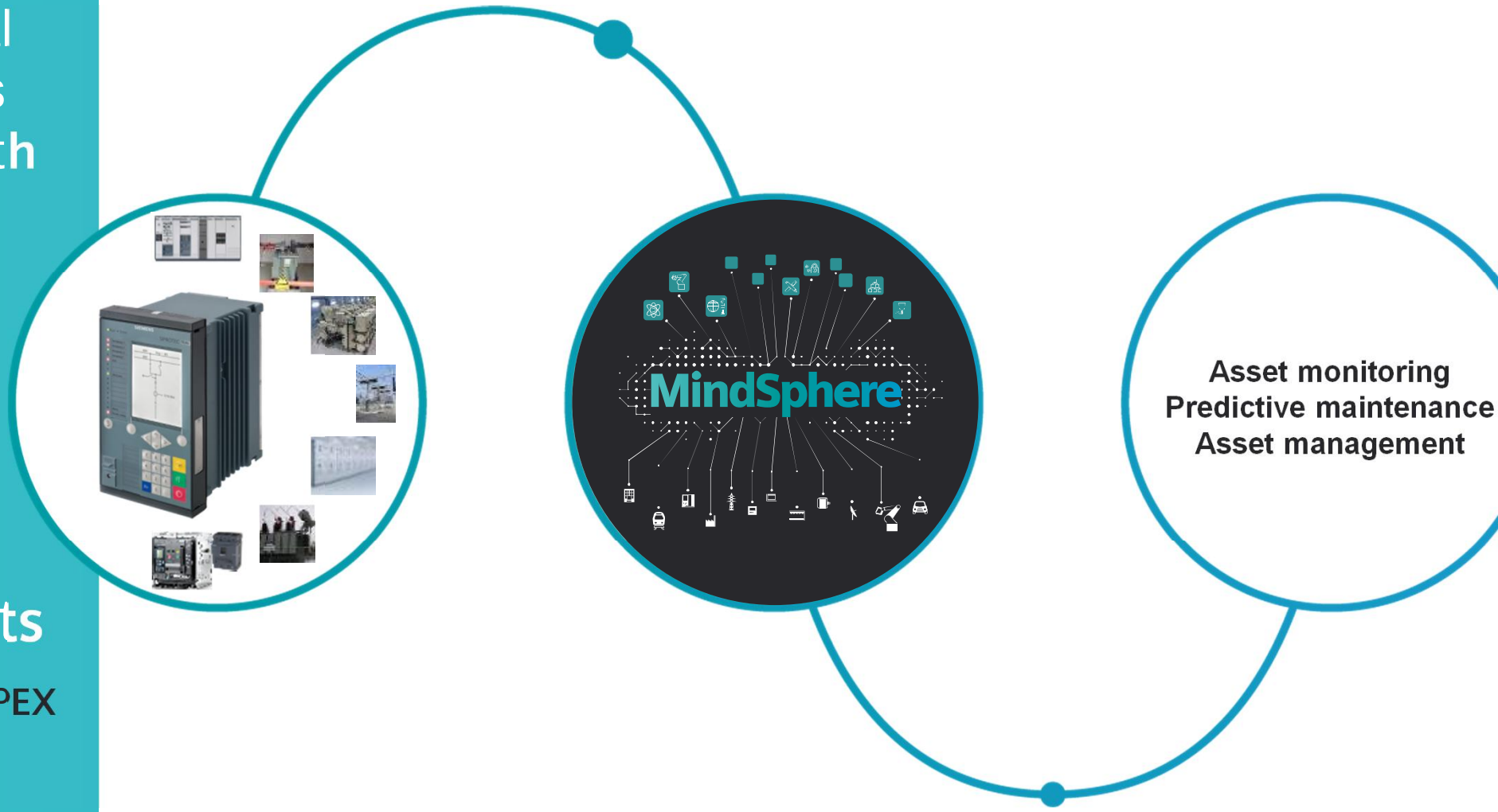
MindSphere for energy connecting electrical infrastructure assets as demonstrated with SIPROTEC 5 on Hannover Fair 2017



Customer benefits

Reduction of CAPEX and OPEX
Longer asset lifecycles
Lower maintenance cost

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Reforming the Energy Vision

New meter data management system for New York City

Mass scale energy transparency

- Full scale advanced metering infrastructure implementation for Consolidated Edison and Orange and Rockland
- About 3.9 million electric and 1.2 million gas meters
- Near real time data, 15 min intervals delivered every 15 min

Benefits

- Key enabling technology to achieve the stated New York Reforming the Energy Vision (NY REV) goals for improved efficiency and reliability
- Operational savings and new system-wide efficiencies
- Overall customer savings through increased transparency and awareness of power and gas consumption

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Green energy from the cloud

Big data analytics reduces carbon footprint in component manufacturing at GESTAMP

Monitoring of real-time energy consumption needs

- Siemens hardware and cloud-based service
- 14 plants connected in 5 countries
- Environmental management system allows continuous optimization of energy efficiency

Benefits

- 10 – 15% energy savings
- No CAPEX – only monthly fees
- Payback <3 years
- Further non-energy related benefits e.g. production optimization

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Save to win

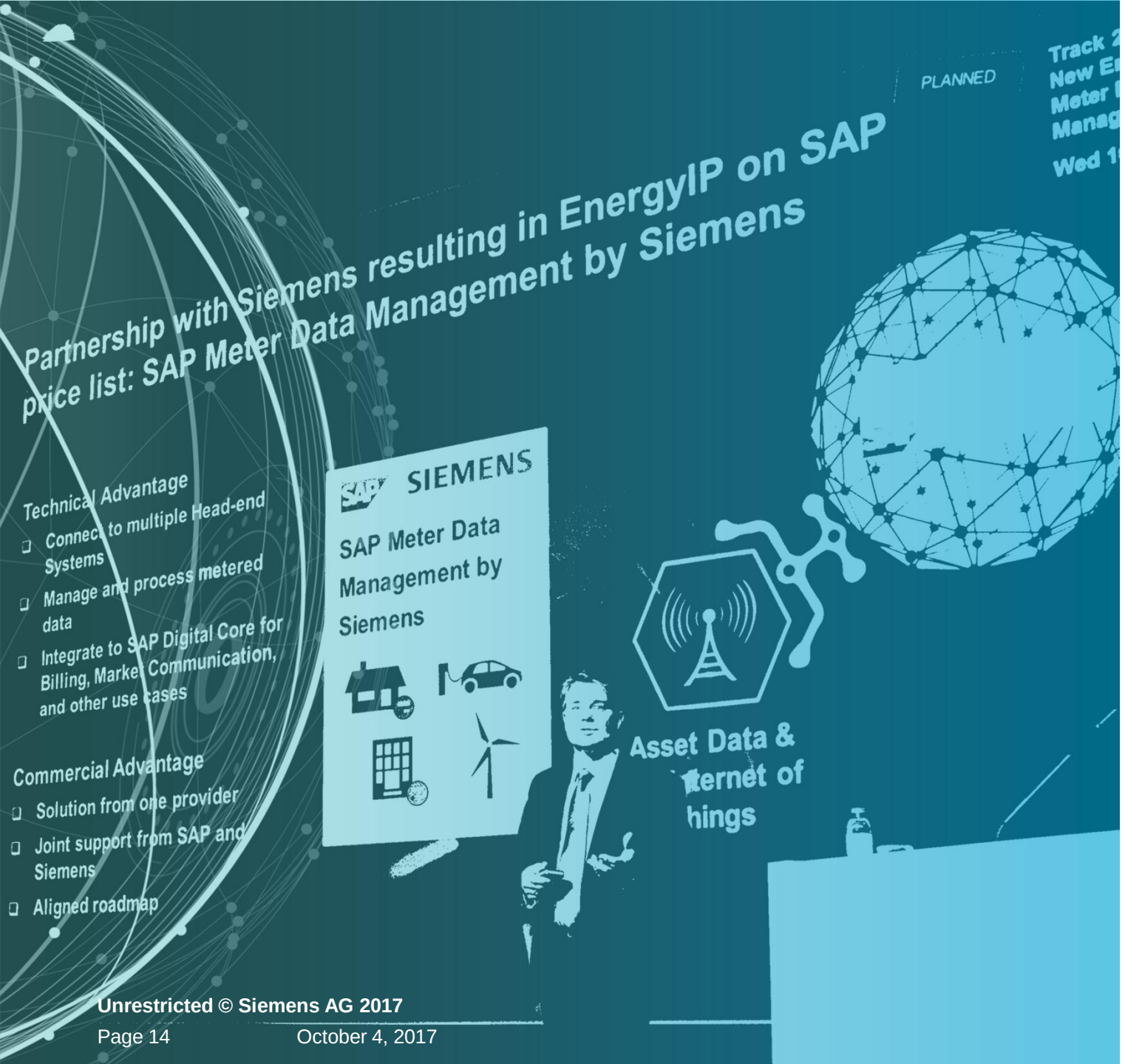
Sello Shopping Mall, Espoo, Finland uses Siemens Distributed Energy System to connect power production and storage to the grid to optimize demand and supply in electricity market

Intelligent energy system

- 1,68 MW battery storage, 600kW Solar PV
- Electricity reserve market contract with national grid operator Fingrid
- 1.6 M€ grant from Ministry of Employment and Economy

Benefits

- 480,000 € p.a. gains in energy market
- 470 MWh p.a. energy production
- 281 tons CO2 p.a. emission reduction
- 118,000 € p.a. savings in energy efficiency and maintenance



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SAP Meter Data Management by Siemens

Agreement combines SAP for Utilities solutions with Siemens' meter data management solutions

"Real-time access to device and meter data combined with customer and commercial data will help provide utilities with a comprehensive view on their customers and technical devices. We anticipate that this will change the landscape in how utilities will operate in the future."

Henry Bailey
Global Vice President
SAP Utilities Business Unit

OMNETRIC Group

A Siemens & Accenture Company

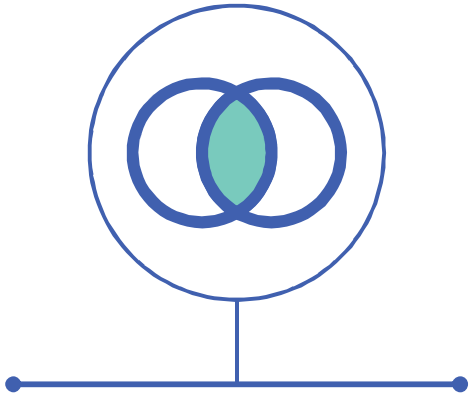
New utility applications on MindSphere

Maikel van Verseveld,
CEO, OMNETRIC Group

Since 2014, OMNETRIC Group helps energy providers capture the opportunities of digitalization in the grid

Our approach is to look at energy provider systems and data from the operations side of the challenge

100% dedication to IT/OT



Best of two worlds

Ready-made solutions

“Expert” culture

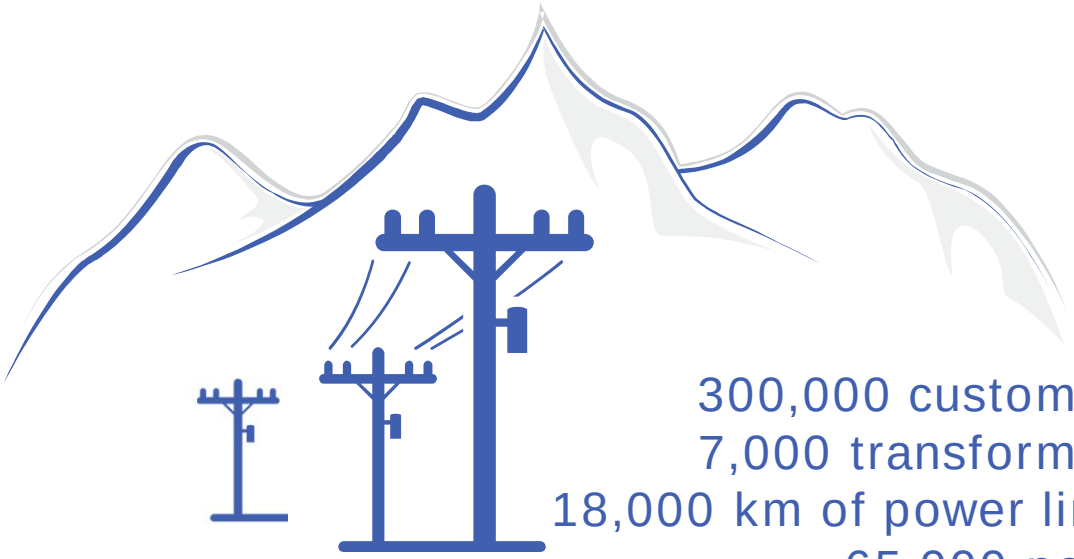
OMNETRIC Planning and Outage Intelligence MindApp

Combining large amounts of different internal and external data about:

- Assets (such as characteristics, inspection detail, ...)
- External context (environment, GIS, ...)

The application manages:

- Complex data integration
- Large-scale data processing
- Sophisticated statistical modeling: two-stage logistic regression model for fully automated outage-risk prediction



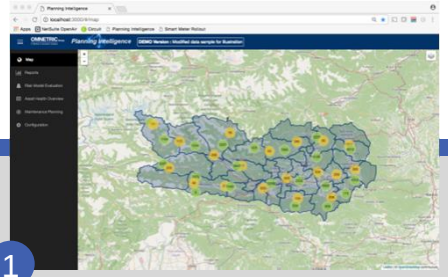
300,000 customers
7,000 transformers
18,000 km of power lines
65,000 poles

90% accuracy of statistical models @KNG for outage prediction

Kärnten Netz
Ein Unternehmen der Kelag

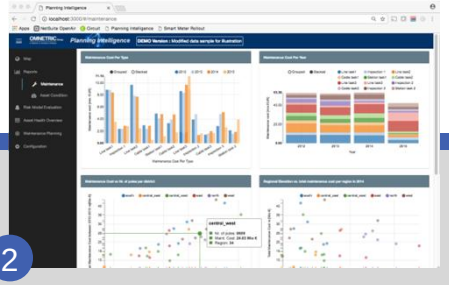
Insights for planning and operational decisions to reduce maintenance cost and drive better service

PnOI MindApp



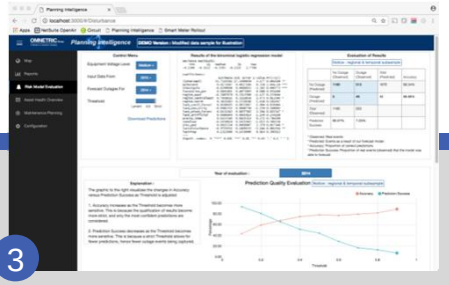
1

- Geographical distribution of poles and power line segments



2

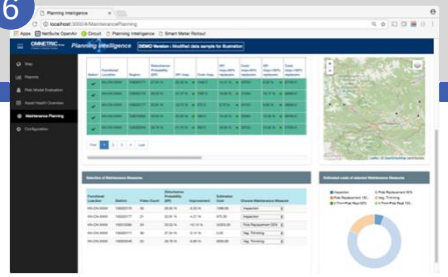
- Asset characteristics e.g. age, type, maintenance activity



3

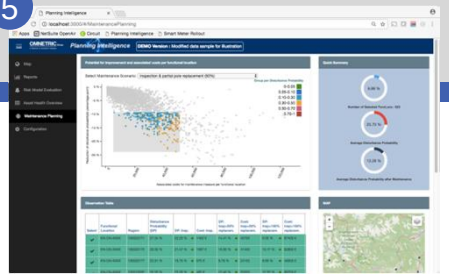
- Risk modeling evaluation

- Annual planning simulates probability of cost/cost reduction of outage



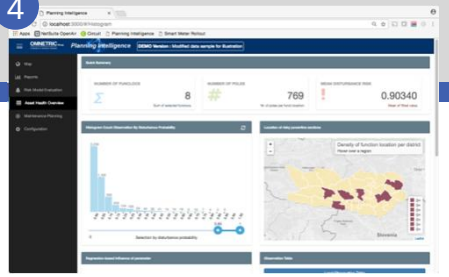
6

- Maintenance planning simulates impact of maintenance measures on outage probability



5

- Asset health summarizes findings about disturbance-related condition of assets



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Thank you