

Digital operating model of decentralized assets

– Combining the capabilities of various OEM's –

16th of May 2019



Axel Dancker
Operations CCS Manager

e-on

Agenda

- 1 **Introduction**
- 2 **On-Site Generation Business Model**
- 3 **Operation & Maintenance (O&M) Remote Operation**
- 4 **O&M Service Partner**
- 5 **O&M Challenges**

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Shaping the Future

E.ON

One provider for all energy services

E.ON is an investor-owned energy company with 43,302 employees. Led by Group Management in Essen, our operations are segmented into three operating units:

Energy networks, Customer solutions, and Renewables.

Our B2B solutions offer tailor-made solutions in the areas of energy efficiency, decentralised energy generation, flexibility, virtual power plants and battery storage.

Annual sales 2018 [in bn.]	€30.25
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Adjusted EBIT [in bn.]	€2.98
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B2B Solutions

On-Site Generation

E.ON B2B Solutions

As system integrator we act completely technology neutral and supplier independent

Cogeneration CHP

- Combined Heat and Power Cogeneration (CHP)
- Combined Heat-Power-Cold Cogeneration (CHPC)
- Gas-/Steam turbine
- Fuel Cell



Thermal / Cooling Generation

- Boilers (Heat/Steam)
- Heat pumps
- Absorption chillers



Energy Recovery

- Heat / Steam recovery systems
- Organic-Rankine-Cycle (ORC) Process



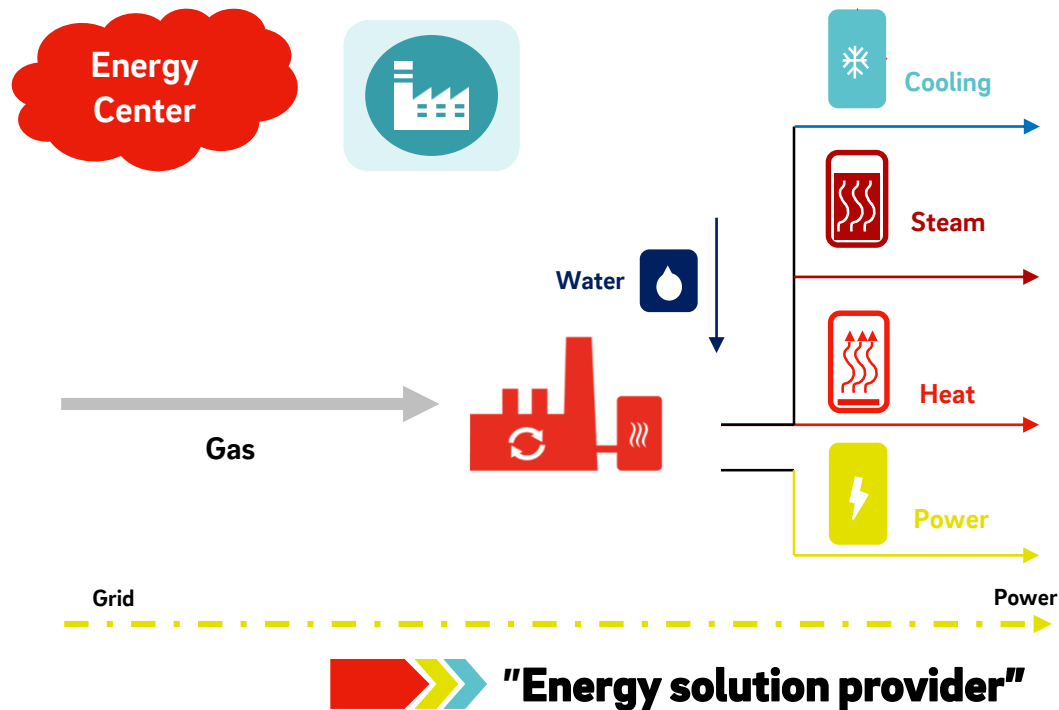
Renewable Energy Production

- Solar PV
- Solar thermal
- Biomass
- Biofuel



On-Site Generation Operation & Maintenance

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Customer



Production Line



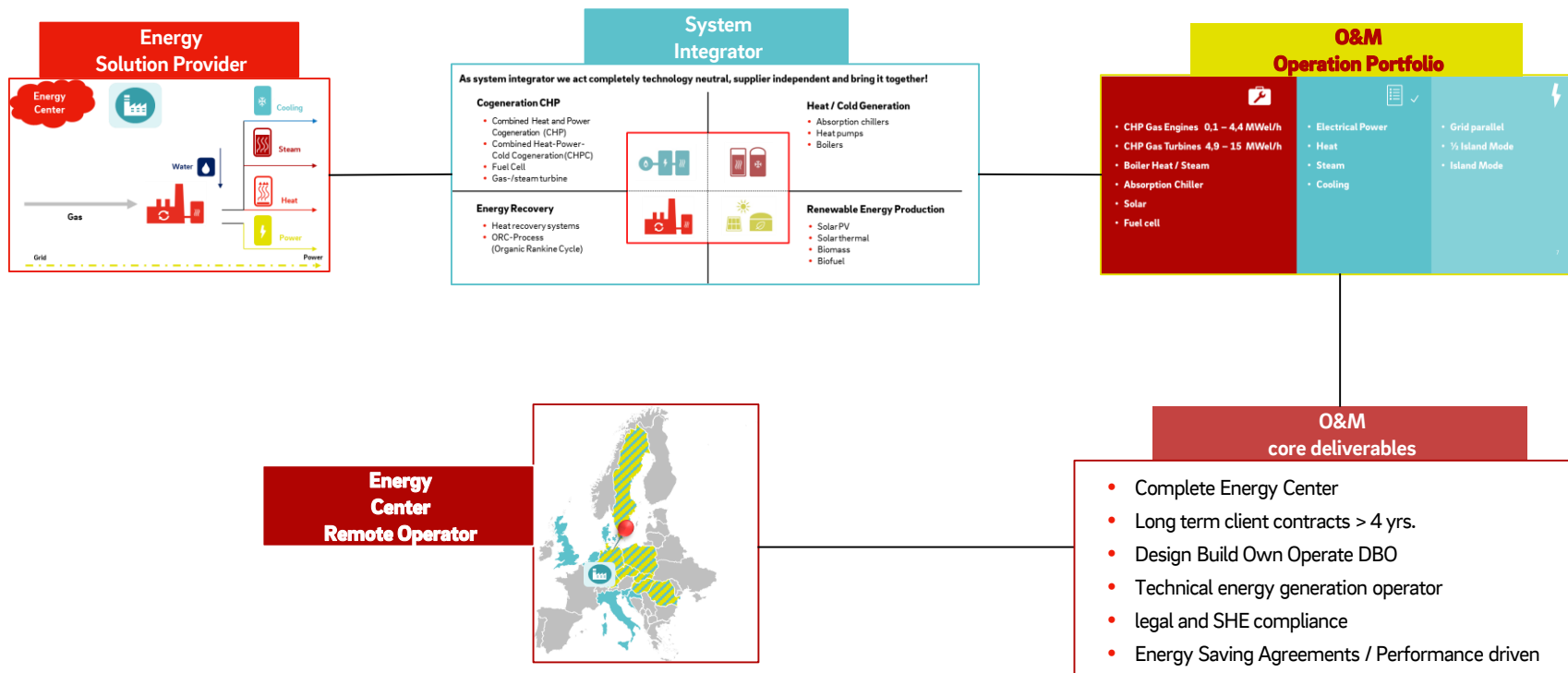
Distribution Center



Office Space

On-Site Generation – Business Modell

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O&M – Operations Philosophy

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Remote Operation 24 / 7

Commercial Operation

- Optimization of contract deliverables
- Customer relationship management
- Balancing Customer demands and market opportunities
- Customer manufacturing demand conversion into energy demand

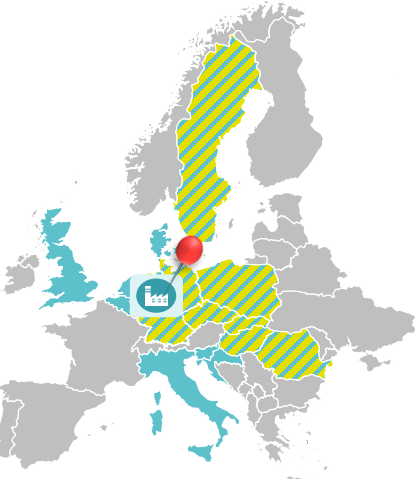
Technical Operation

- First line of defense / response
- Unmanned Facilities
- Target servicing
- Minimizing downtime
- Safety & Environmental management
- Compliant operation
- Partner dispatch

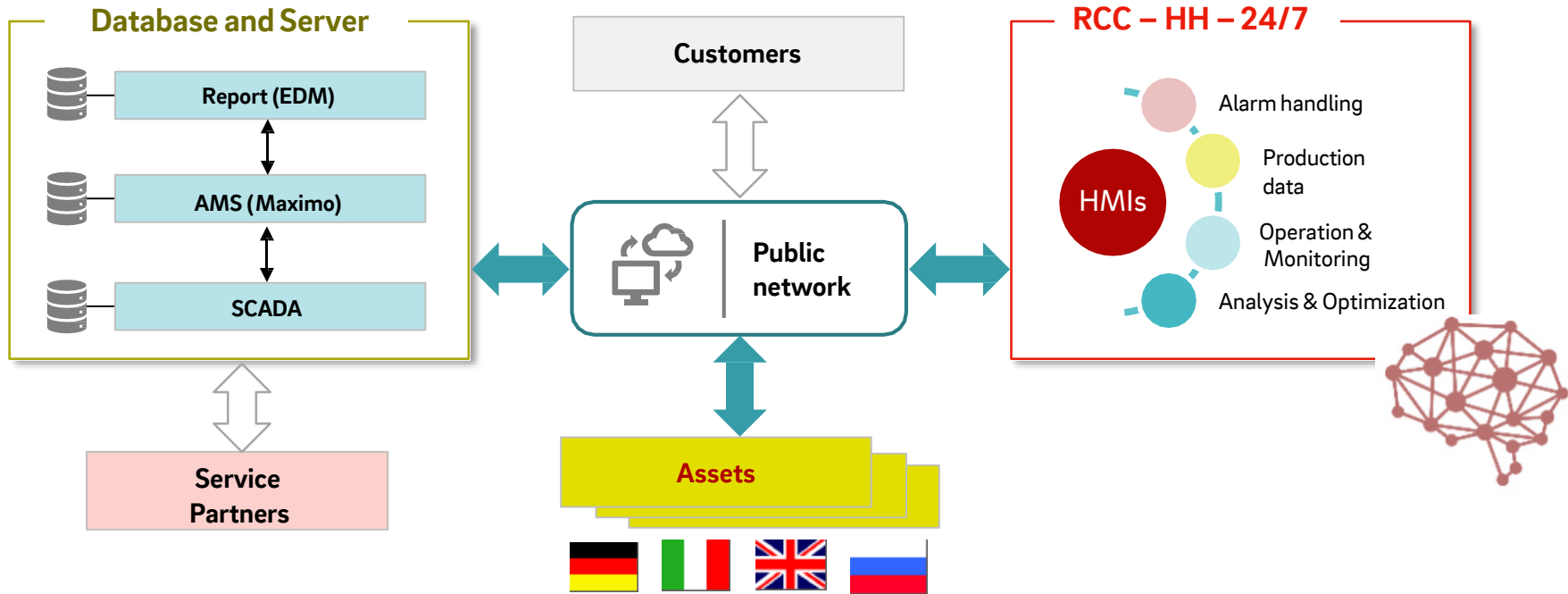
 **"Balance commercial and technical challenges"**

ISLA International Service Logistics Association – Rotterdam
15th – 16th of May 2019

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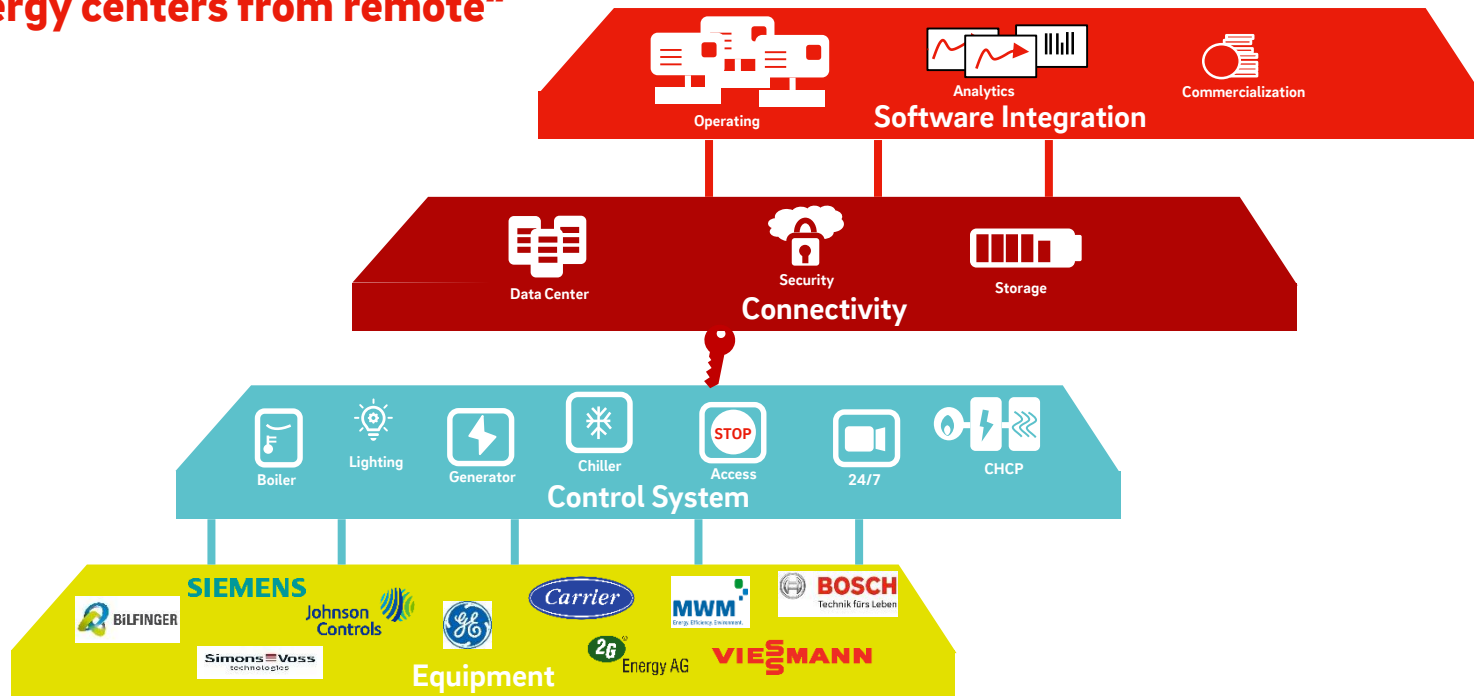
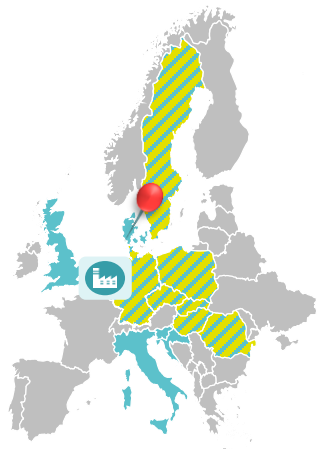
O&M – Tool Landscape



IT landscape

"Operate the energy centers from remote"

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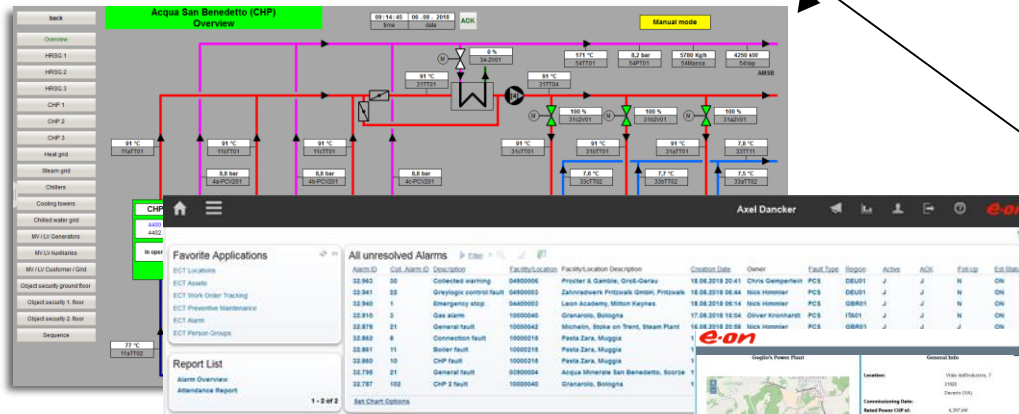
"Our data and transaction rich world"

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O&M "suite"

applications, tools, usability



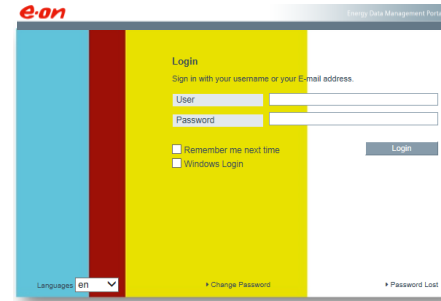
• Operation & Maintenance

• Asset Management

• Reporting

• Processes

• Trending



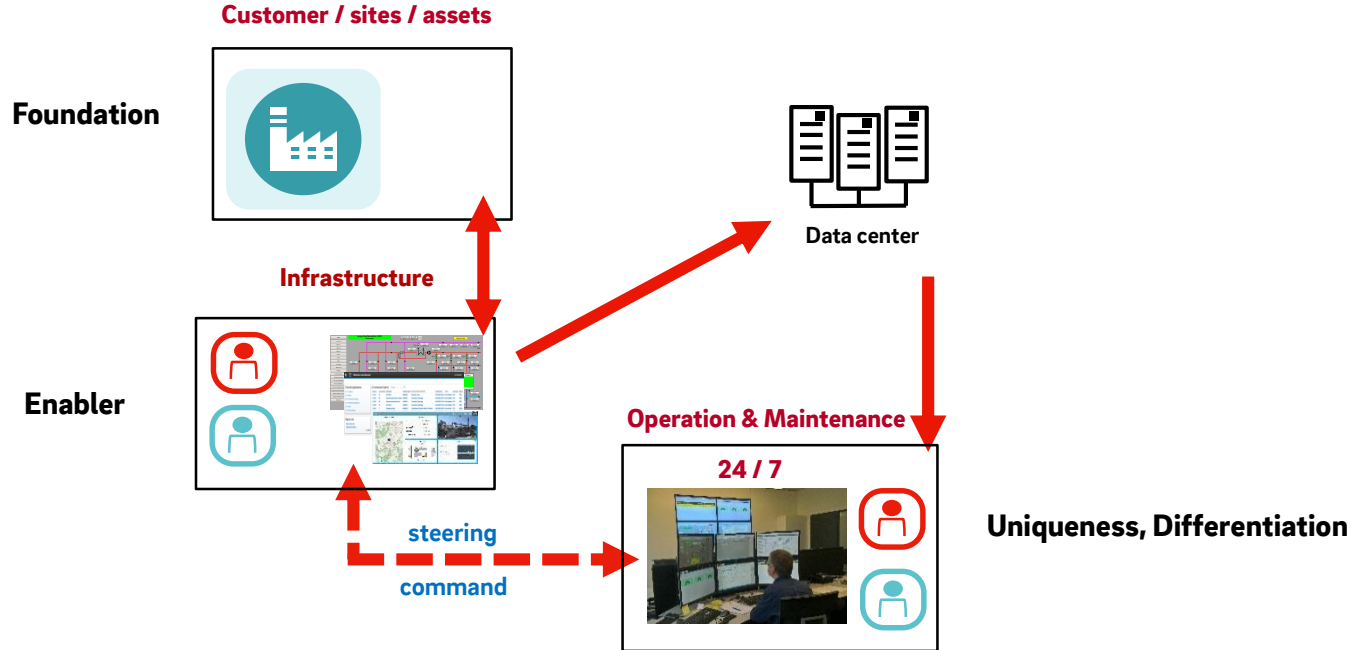
"Fit for purpose"



Operation of Decentralized Asset

How does it look like today?

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"Data's are the oil of the future"



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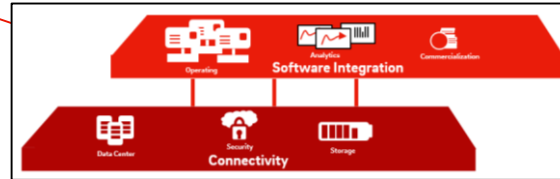
Service Partner "expectation management"

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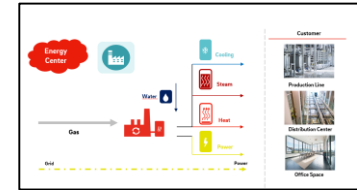
OEM Services



O&M enablers



Customers Energy Center



No. of:

- OEMs
- IIoT Devices

KPIs:

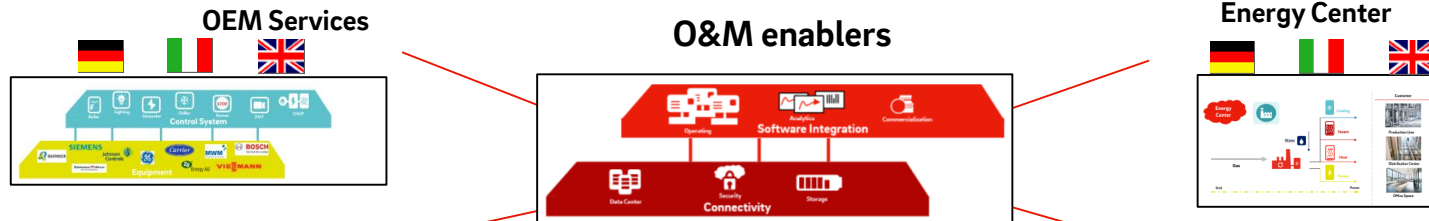
- Output
- Availability
- Downtime



"Conflict by design between break fix service vs. performance operation"

Service Partner "expectation management"

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No. of:

- OEMs
- IOT Devices

KPIs:

- Total Output of Energy
- Downtime
- Response Time

Challenge



Service Partner view



In sight in

Business view



Out sight in

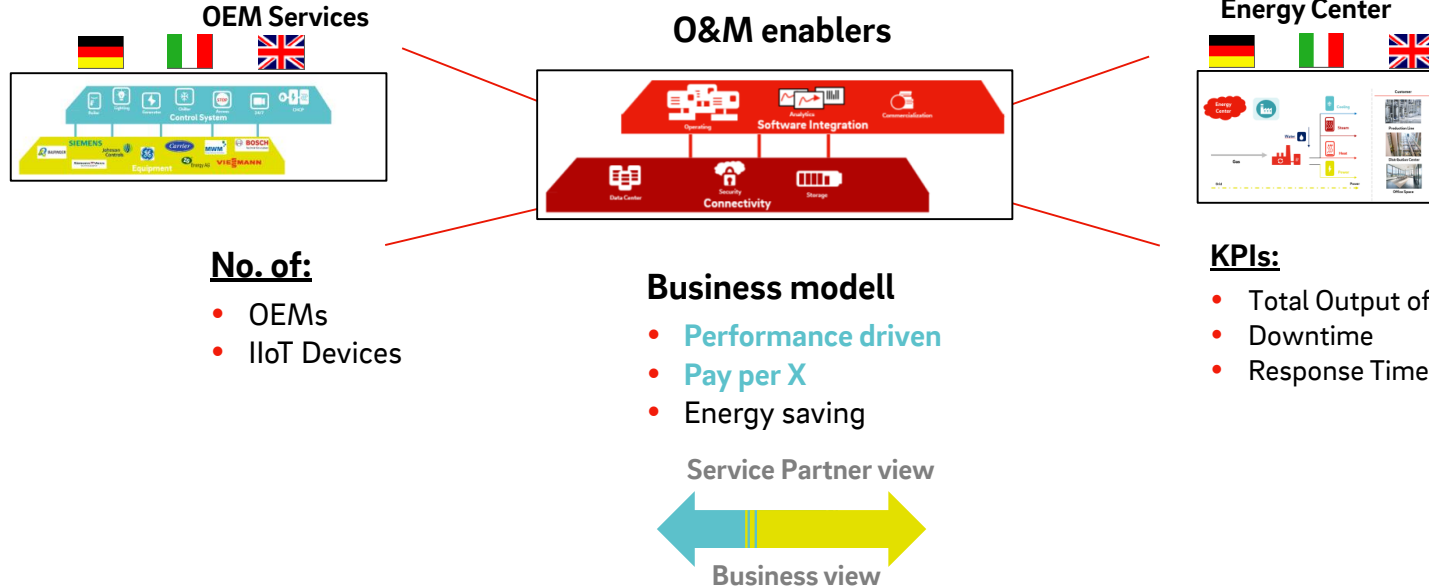
Best value



„How to balance best both views ? “

Service Partner "expectation management"

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"Partnership forces strong close alignment and continuous improvements"



Acqua Minerale San Benedetto



Our customer

Italian-based beverage company with operations in Italy and Spain.

Our solution

- 13.2 MW combined heat, cooling and power (CHCP) in Scorzè
- We generate 100 GWh of electricity and around 70 GWh of thermal energy annually, including steam and chilled water
- We guarantee availability and provide 24x7 remote operation and maintenance

**Annual CO₂
savings of
17,300 t**

**15%
reduction of
energy cost**



Agenda

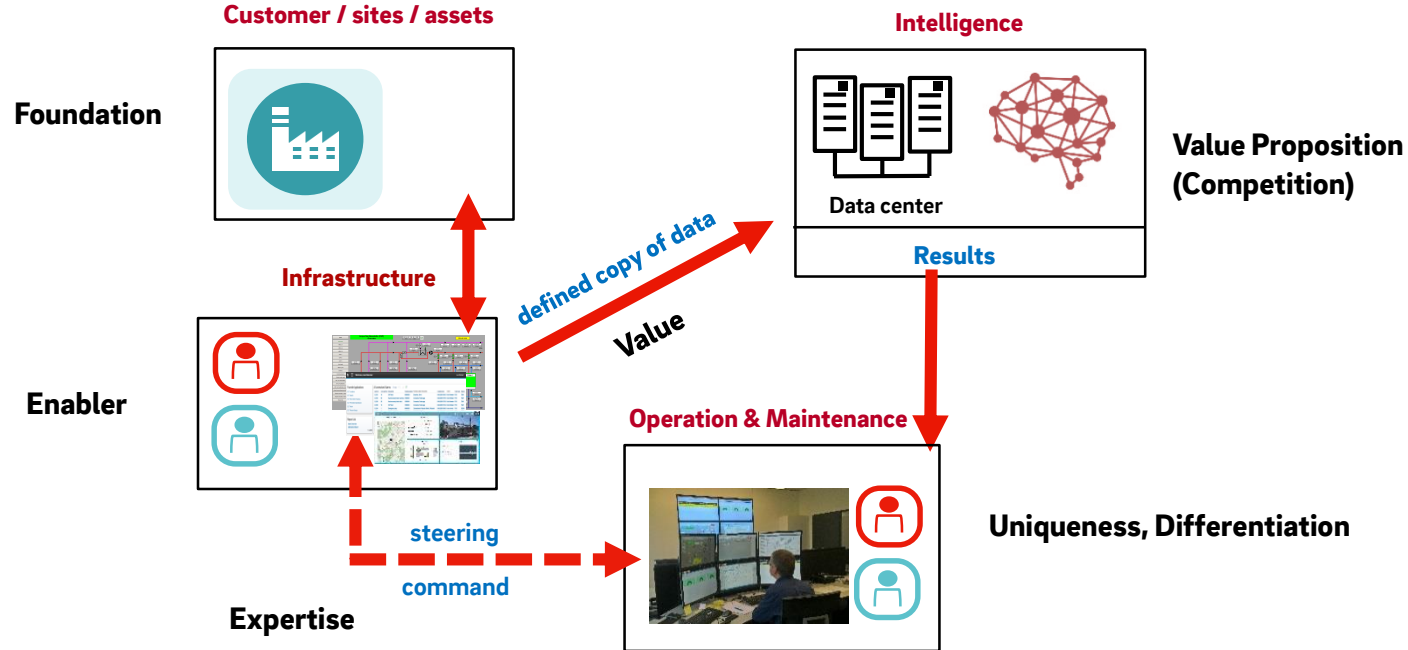
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Operation of decentralized Assets digitalization challenges

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"Achieve the right balance of Expertise and Intelligence"

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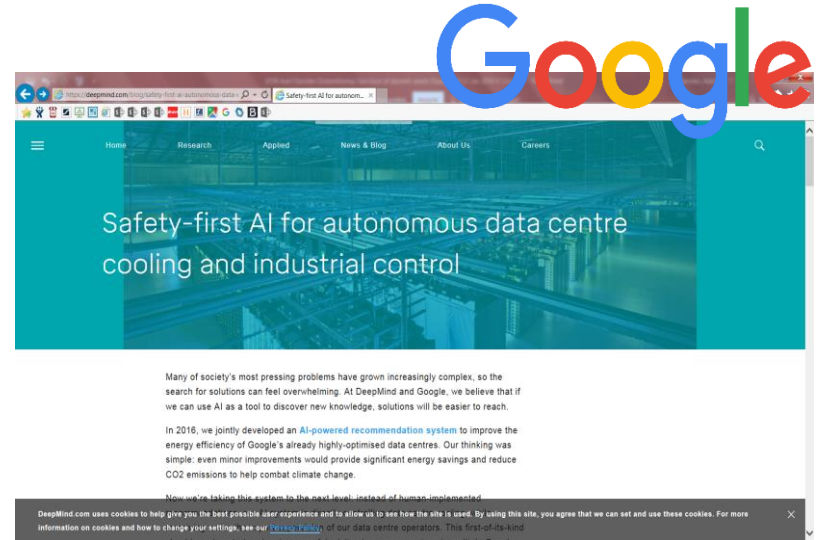
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Future values "the HR challenge"

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Key values

- => **process experience** in energy generation and solutions
- => **data in depth** of energy generation
- => experienced and skilled **people** in energy generation
- => **sustainability** over many years



" New powerful players are entering the B2B energy space"

Operations & Maintenance

change of expectations

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"How to get the best move"

Thank you!

Let's Connect!

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