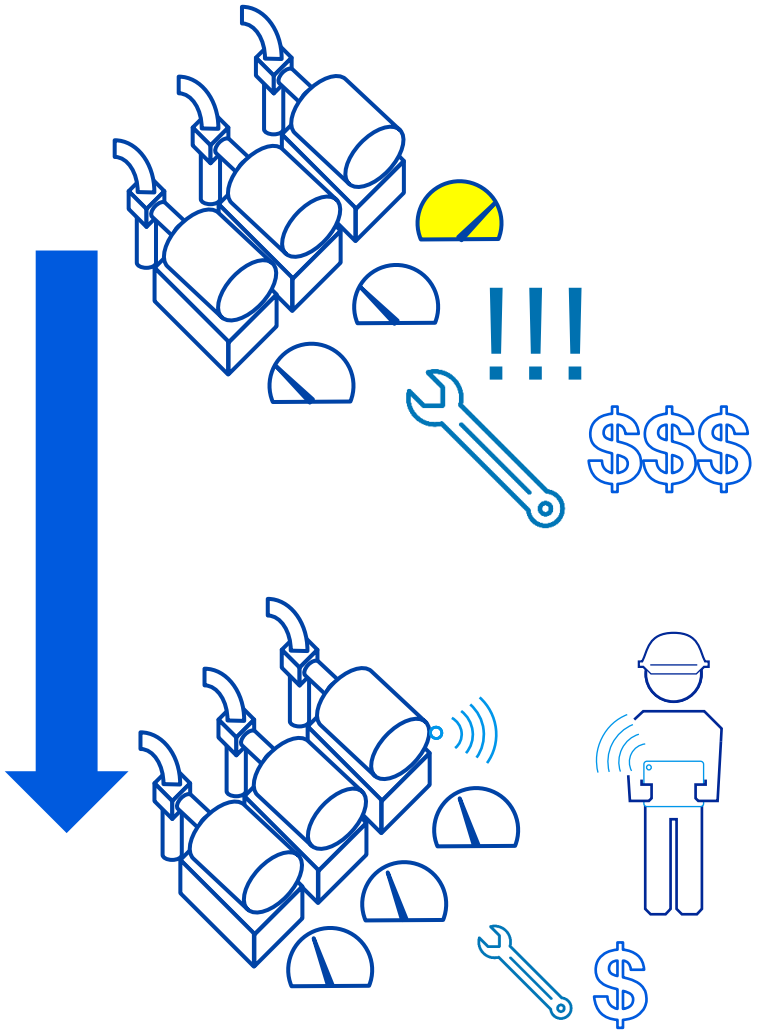
Monitoring and diagnostic of fleets of rotating machines

Diego Pareschi - ABB Oil,Gas and Chemicals

PRODUCTIE PROCES AUTOMATISERING
PPA17

09-02-17 • Hart van Holland in Nijkerk
efficiency
security
modellering
integratie
intelligence
effectiviteit

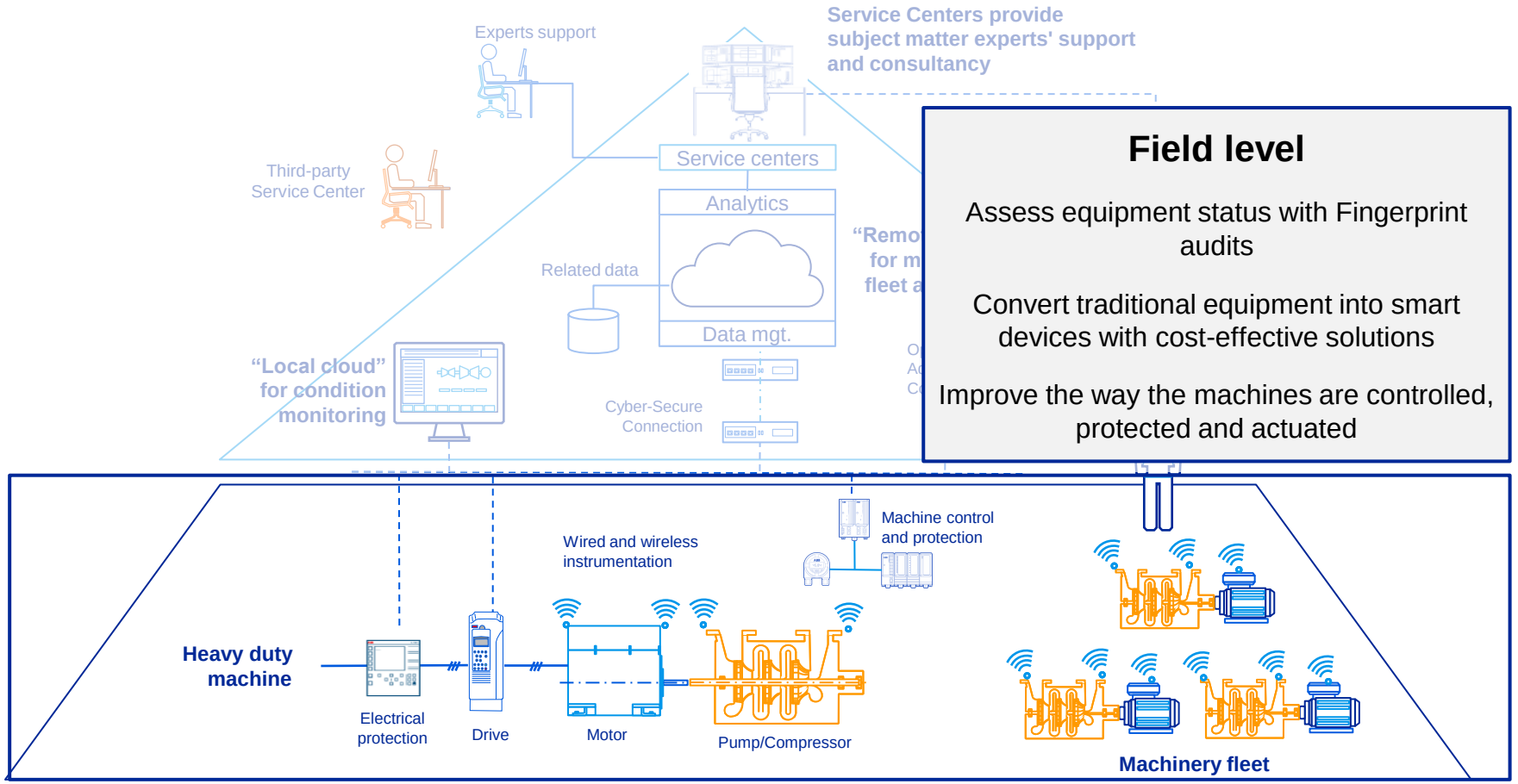
The impact of IoT technologies on Oil, Gas and Chemical plants



- Rotating equipment is the most common cause of downtime or reduced production in OGC plants
- Monitoring the condition of the equipment is often performed manually by maintenance personnel
  - This practice is expensive and sometimes inefficient
- Abundant, low-cost sensors and data processing are convincing more end users to optimize their service strategies to reduce the operating expenditure
- Shift in maintenance practices:
  - From manual to automated
  - From preventive to predictive
- Most active sectors: downstream and chemical

© ABB

Rotating Machines Analytics
Field level – diagnose and implement



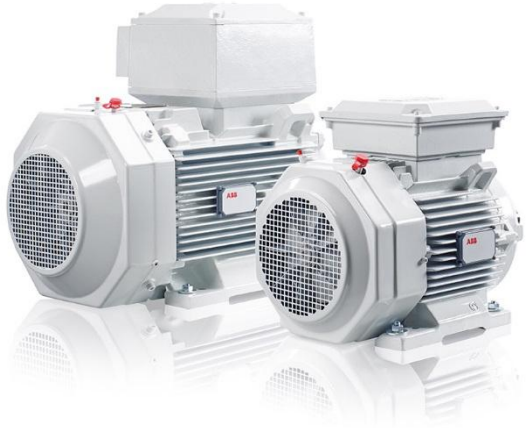
Field level

Assess equipment status with Fingerprint audits

Convert traditional equipment into smart devices with cost-effective solutions

Improve the way the machines are controlled, protected and actuated

Rotating Machines Analytics
Distributed sensing technologies

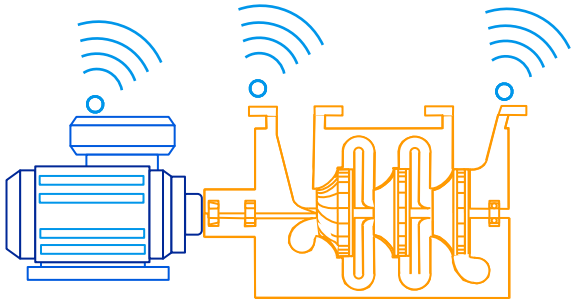


SmartSensor

- For LV electrical motor

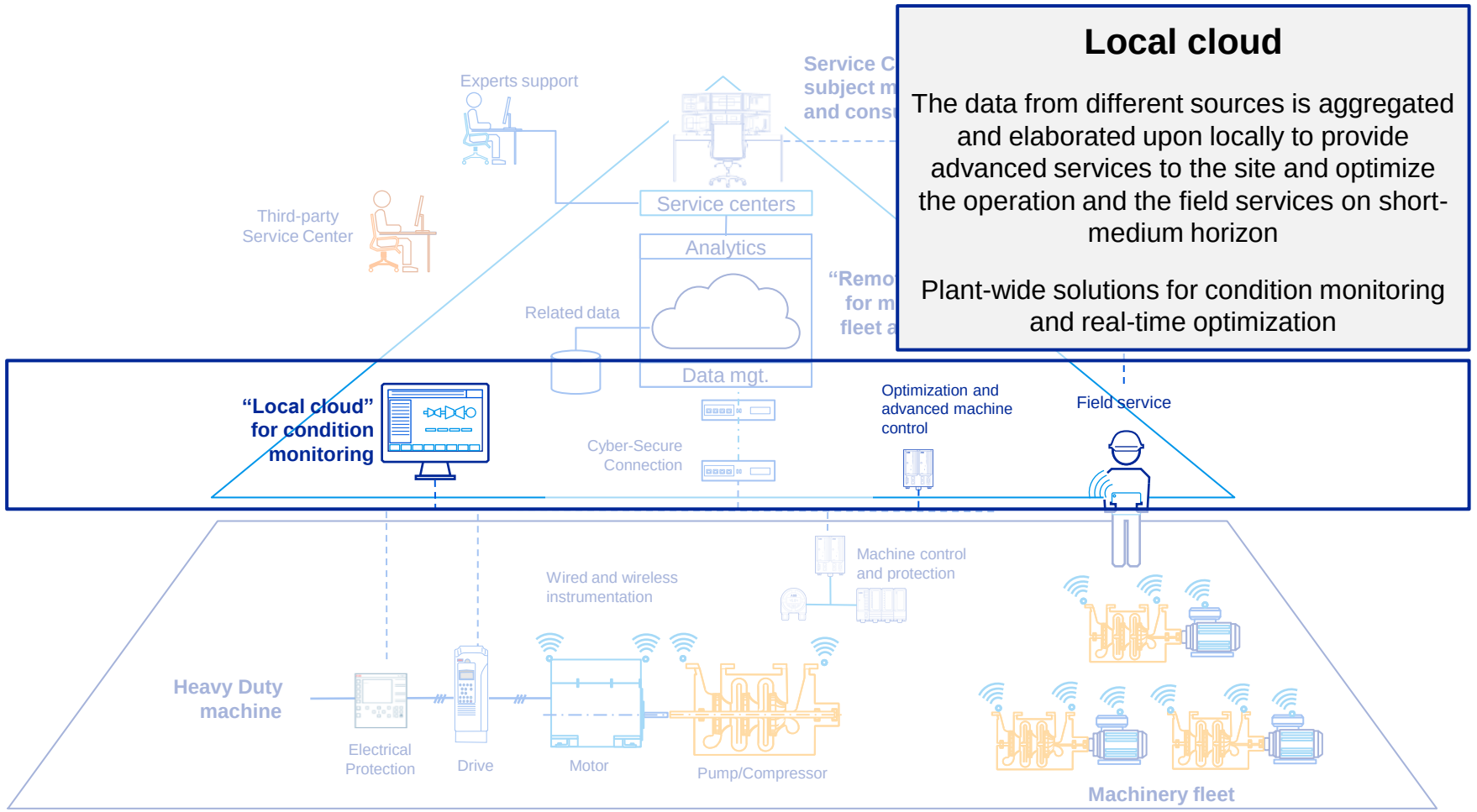
WiMon

- Bearing mounted vibration sensor



© ABB

Rotating Machines Analytics
Local cloud – optimize and sustain



Local cloud

The data from different sources is aggregated and elaborated upon locally to provide advanced services to the site and optimize the operation and the field services on short-medium horizon

Plant-wide solutions for condition monitoring and real-time optimization

© ABB

Rotating Machines Analytics
Product highlight

Rotating Machines channel

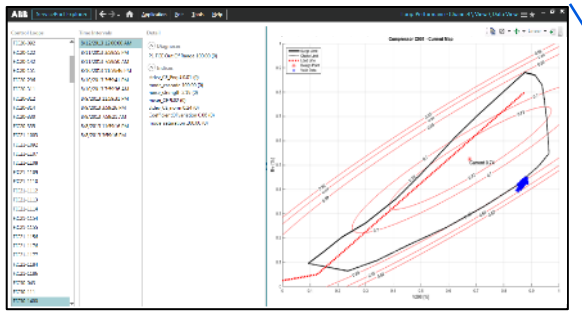
- **Enabler of services that support reliable and efficient operation of rotating equipment**

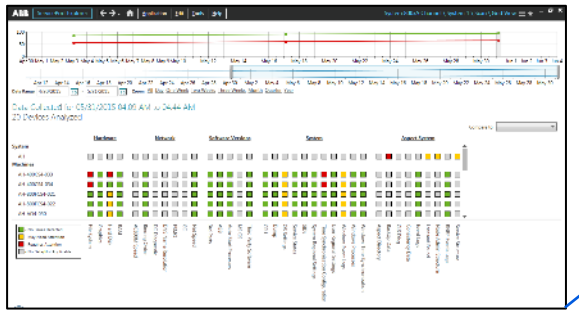
Critical machines pack

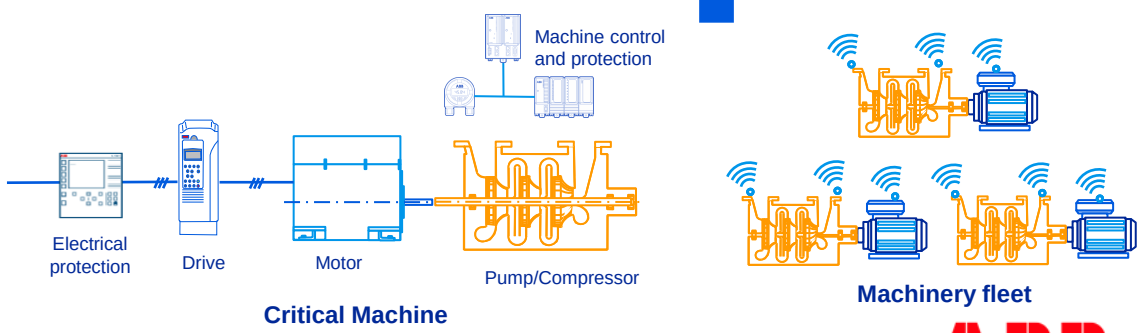
Large centrifugal, axial and reciprocating gas compressors, heavy duty pumps, motors and drives

Machine fleets pack

Pumps, fans and blowers

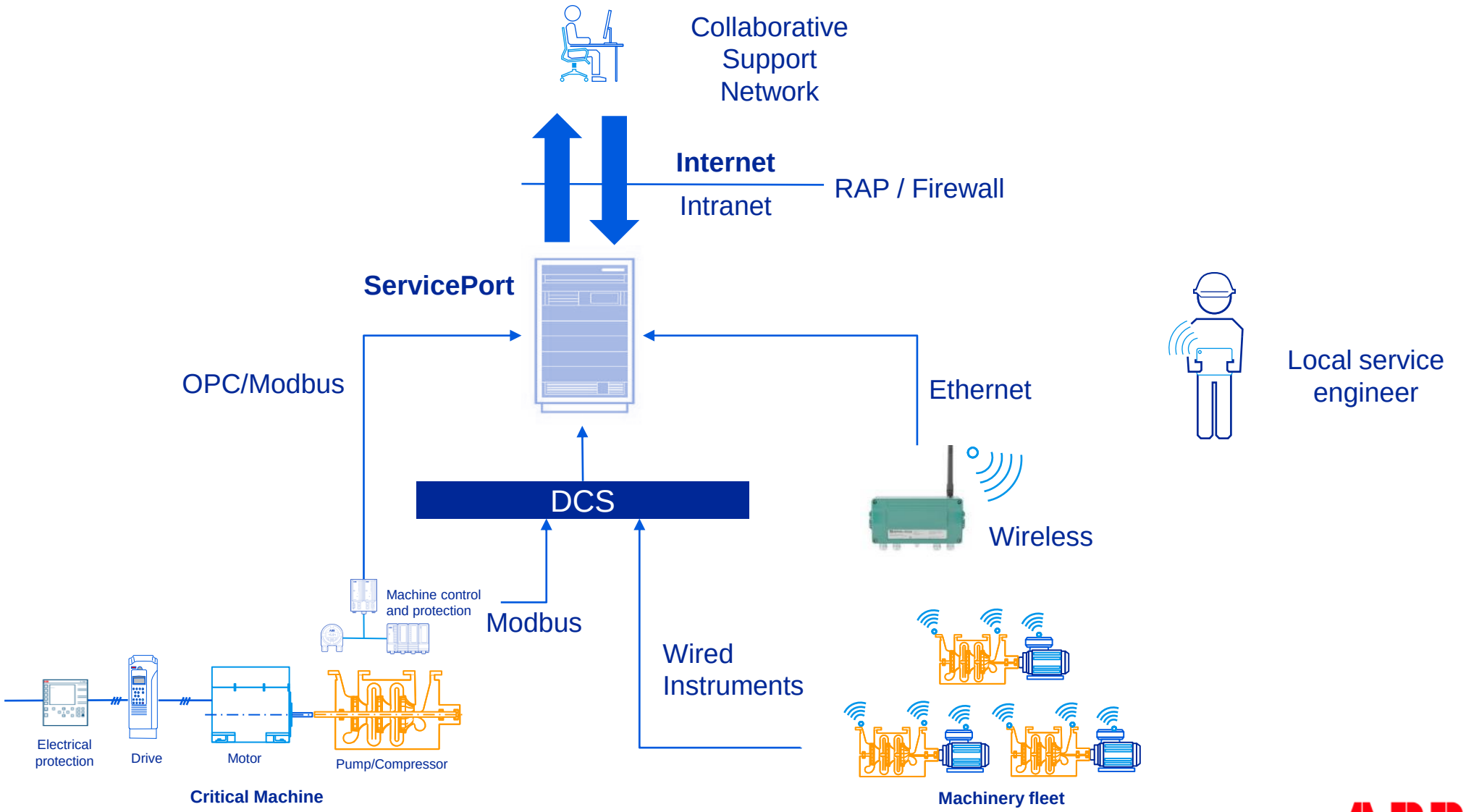






© ABB

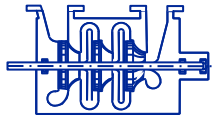
Rotating Machines Analytics
Architecture



© ABB

Rotating Machines Analytics
Product highlight

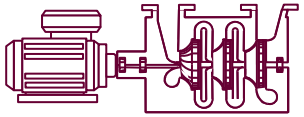
Process



Pump/Compressor

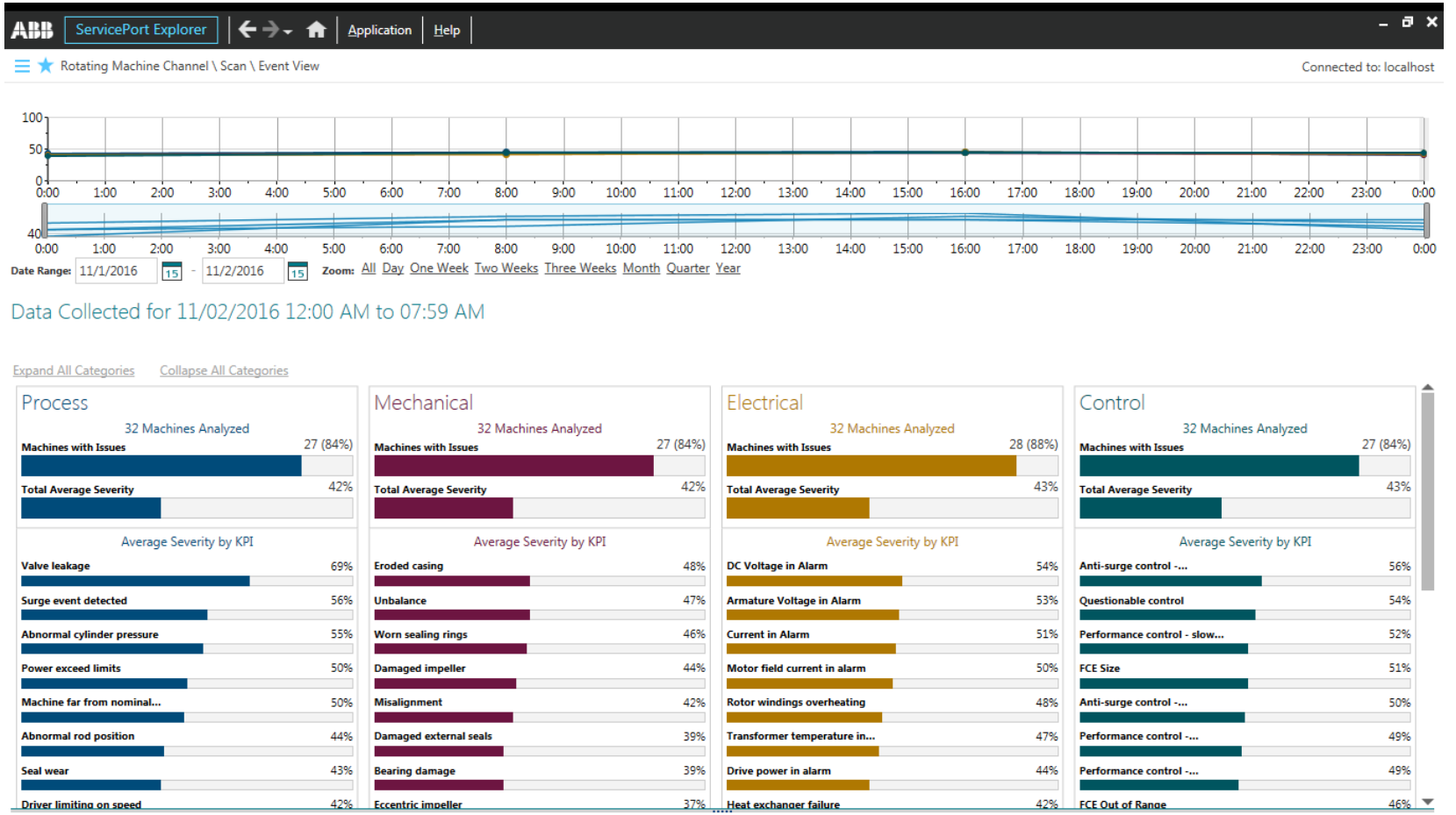
Performance of the process related equipment

Mechanical

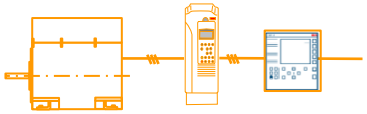


Motor Pump/Compressor

Mechanical condition of the moving equipment



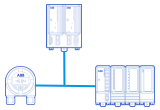
Electrical



Motor Drive Electrical protection

Condition of the electrical equipment

Control

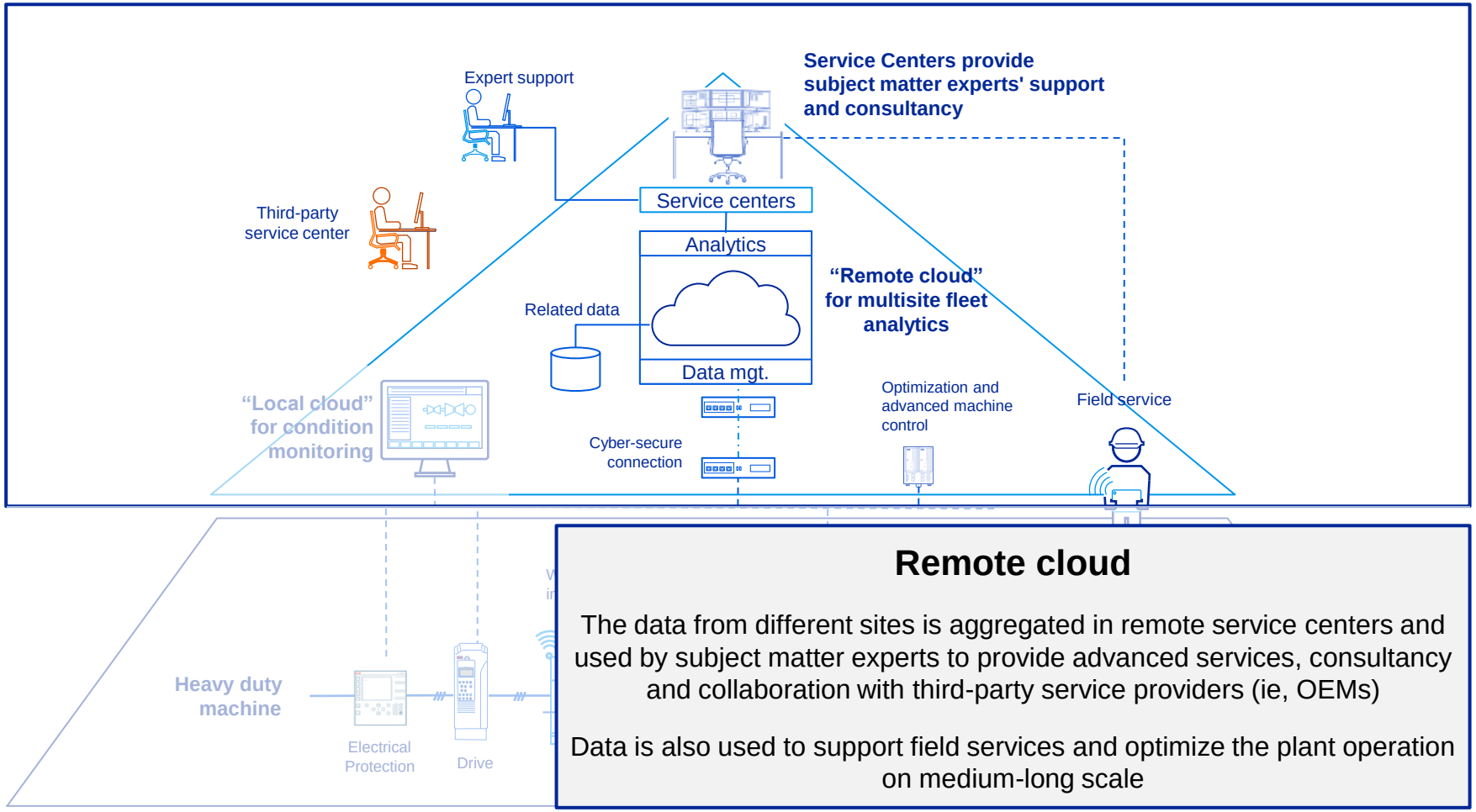


Machine control and protection

Performance of the machine control loops and related equipment

© ABB

Rotating Machines Analytics
Remote cloud – optimize and sustain

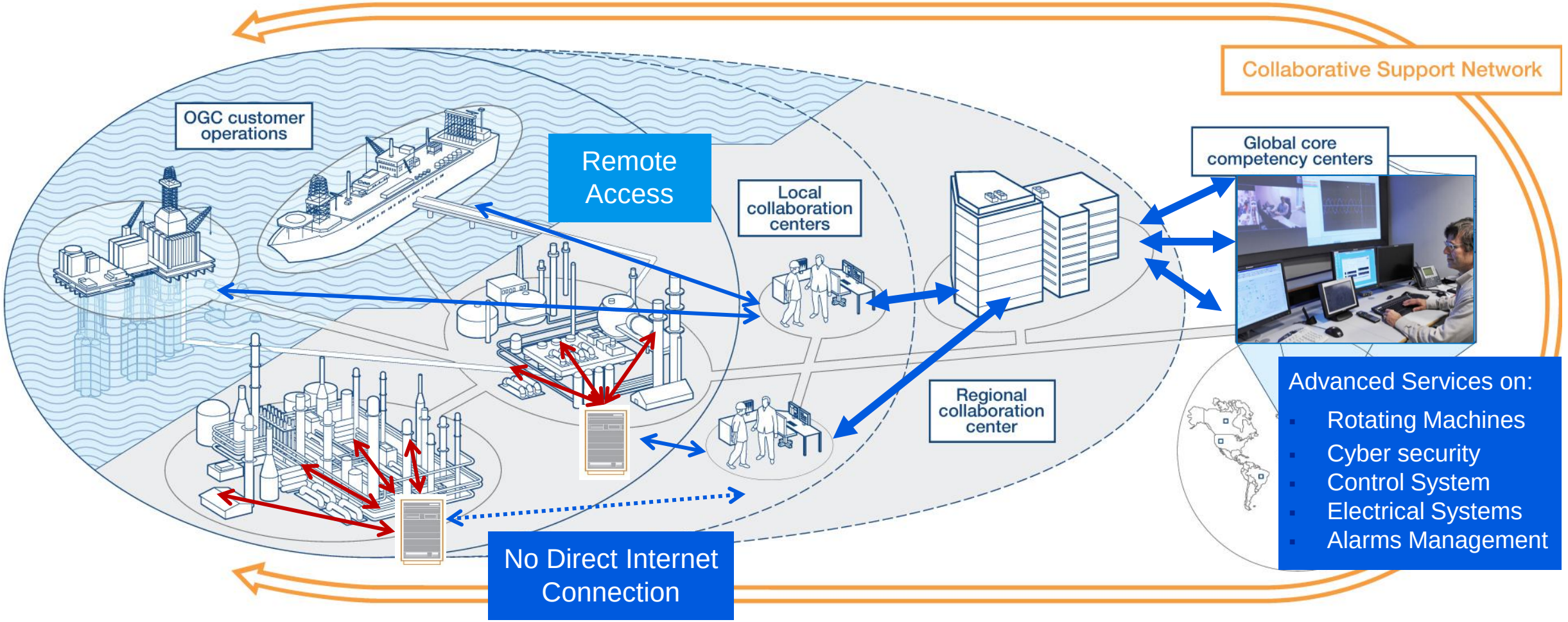


Remote cloud

The data from different sites is aggregated in remote service centers and used by subject matter experts to provide advanced services, consultancy and collaboration with third-party service providers (ie, OEMs)

Data is also used to support field services and optimize the plant operation on medium-long scale

Rotating Machines Analytics
Collaborative Support Network



© ABB

Rotating Machines Analytics
Use case: Fleet of pumps in chemical site – remote access allowed

- **Diagnose**
- Benchmark and fingerprint of machine status
  - Provides health analysis and improvement suggestions
- **Implement**
- Supply distributed condition monitoring solution based on WiMon and SmartSensors
- Service contract and delivery of ServicePort monitoring system
- **Sustain**
- 24/7 condition monitoring and predictive diagnostics
  - Connected to remote monitoring centers
- Predictive alerts for upcoming machine failures / maintenance optimization suggestions

© ABB

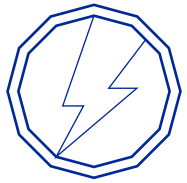
Rotating Machines Analytics
Demo

© ABB

Rotating Machines Analytics
Customer value

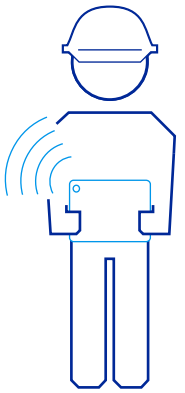
- Early detection and notification of upcoming failures on equipment

- Improvement of machine reliability because of more predictable downtime



- Reduction in energy/fuel costs because of retuning services of machine control systems

- Significant reduction of maintenance costs by influencing maintenance policy changes
  - Full overview on the machine fleet health
  - Clear overview about the residual lifetime of the fleet's assets
  - Shift from preventive to predictive maintenance



© ABB

Contact information

Contact Us

Product Manager Rotating Machines

Diego Pareschi

Diego.pareschi@it.abb.com

Sales Manager – The Netherlands

Harco Blijde

Harco.blijde@nl.abb.com

© ABB

Bedankt voor uw aandacht!

PRODUCTIE PROCES AUTOMATISERING
PPA17

09-02-17 • Hart van Holland in Nijkerk
efficiency
security
modellering
integratie
intelligence
effectiviteit