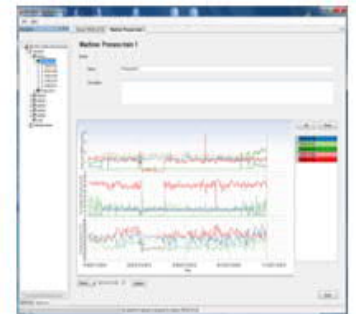


The tools to do the job

Smart Sensors

- ABB's WiMon smart sensor can also be retro-fitted by maintainers in about ten minutes
- It also exploits Bluetooth technology to transfer data to hand-held devices and Wi-Fi to export it to the Cloud
- It is rugged, reliable, affordable and enables equipment that had not previously had its running condition monitored to be assessed on a 24/7 basis
- It is suitable for use in ATEX zoned areas

- Leading Particulars:
 - EX Zone 0.
 - Operating -40°C to +85°C.
 - IP66 (dust tight and powerful water jetting).
 - Reading on demand
 - Up to 5 year battery lifetime; setting dependent.
 - Simple user interface, one button, one LED.
 - Vibration velocity range of 10Hz – 1kHz
 - Acceleration envelope of 500Hz – 10kHz.
 - +/- 350mm/s (10Hz).



The tools to do the job

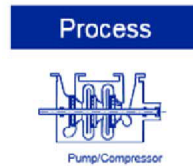
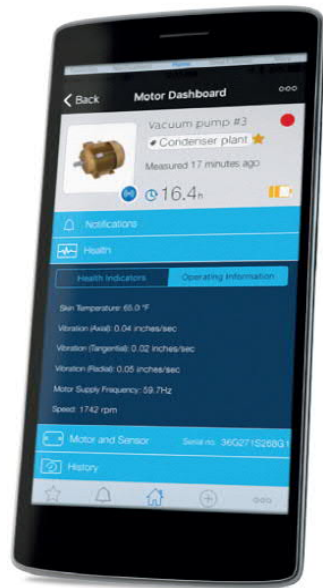
Smart Sensors

- ABB's Smart Sensor is essentially like a fitness wristband for electric motors
- The sensor measures a parameter every hour and retains it in the memory for a month
- Within that month, data can be collected by either manual means, using a smart phone or via the gateway
- The data can then be analysed by the KPI algorithms designed by ABB, the worlds leading producer of electric motors
- The sensor can be easily fitted to the surface of the motor, without wiring or machining, and within ten minutes
- Once activated, it immediately begins to collect operational and condition data of the motor
- Maintenance and operation can be optimised
- The benefits are significant and ROI payback expected to be less than a year

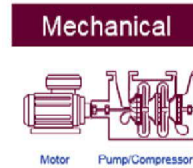


The tools to do the job

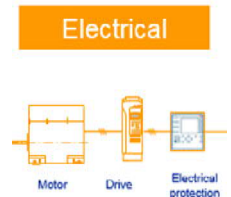
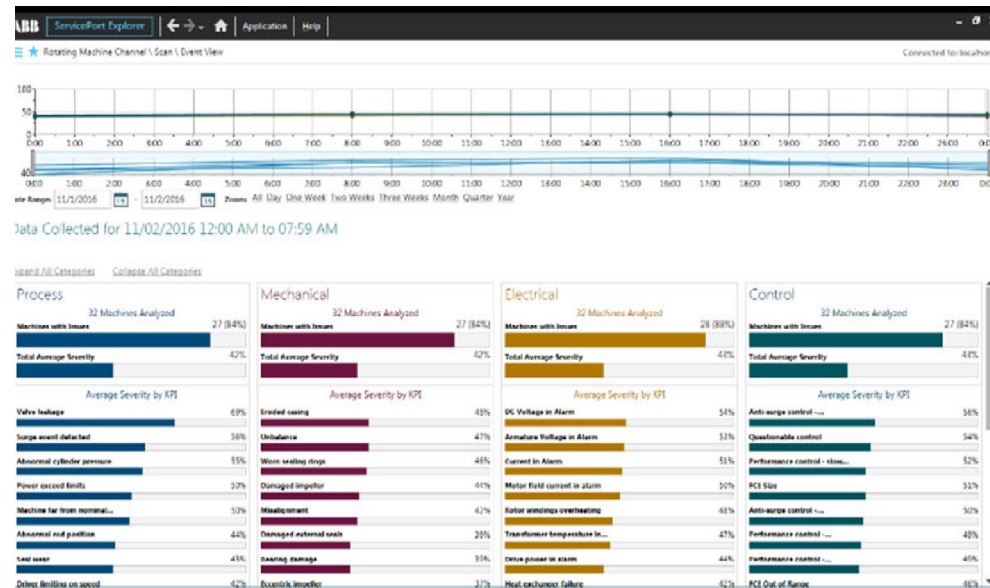
AssetInsight™



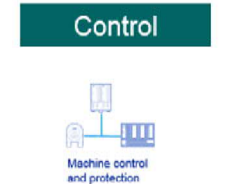
Performance of the process related equipment



Mechanical condition of the moving equipment



Condition of the electrical equipment



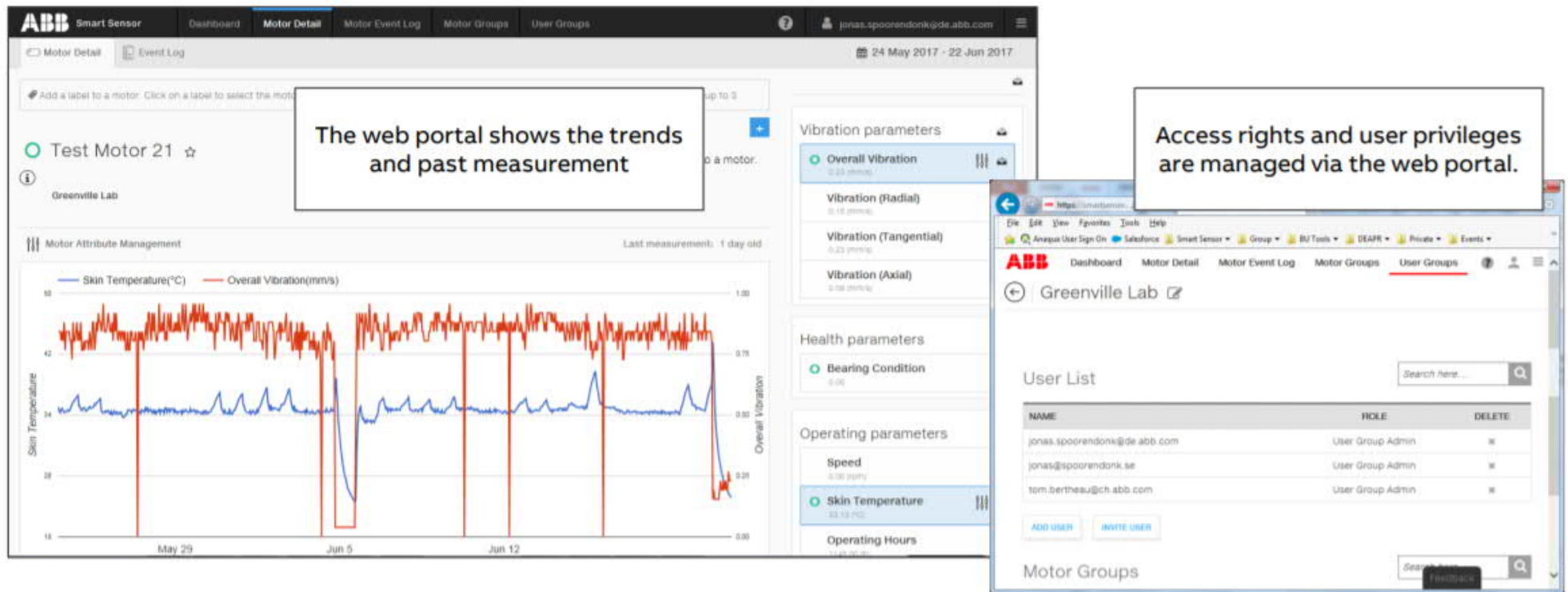
Performance of the machine control loops and related equipment

"We fitted the ABB smart sensor to our existing Brook Crompton motor easily, it only took 10 minutes to fit and I now have all the live motor data displayed on my smart phone. We will be fitting the sensor to all of our critical motors on plant."

Simon Cummins – Engineering Manager

The tools to do the job

AssetInsight™



The tools to do the job

Summary

- Fitting ABB's Smart Sensor to LV motors does not do anything we could not do before – it just does it more easily and cheaply
- Most motors can produce good condition monitoring data when fitted with the sensor; therefore enabling:
 - Safe remote monitoring
 - Advance warning of degraded performance
 - Proactive maintenance
 - Fleet analytics and trending
 - Risk reduction (e.g. Warranty, uptime, spares etc)
- ABB's Smart Sensor can be used on
 - Old and new motors (plus pumps)
 - Large and small applications
 - ABB or non-ABB motors



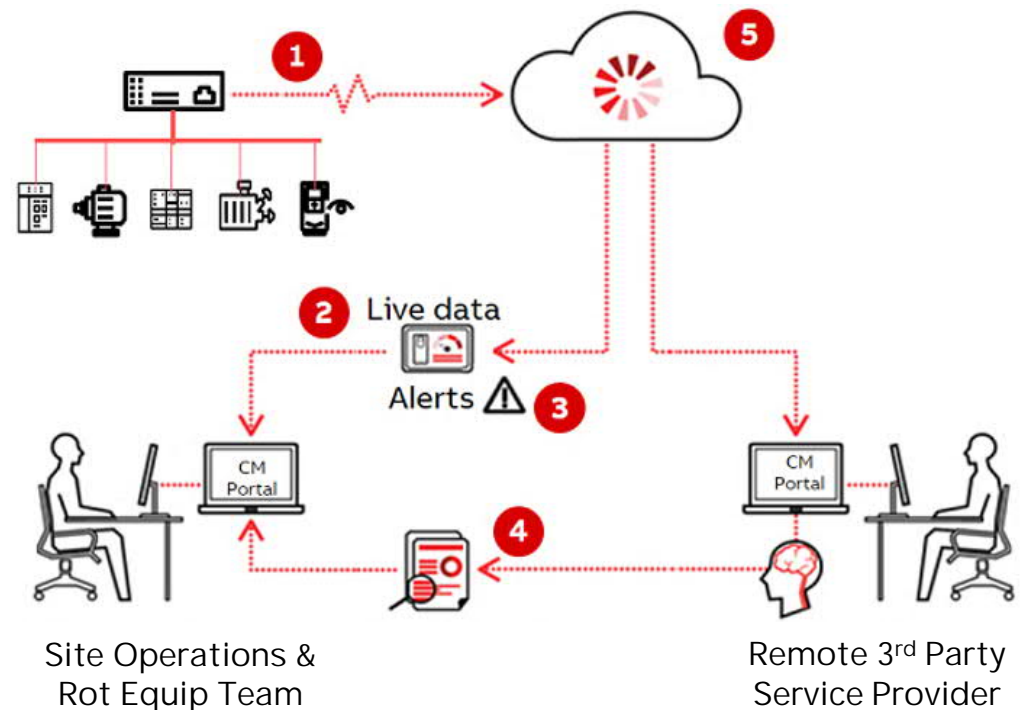
Maintaining Ageing Plant in a Digital World

The Service Delivery

The Service Delivery

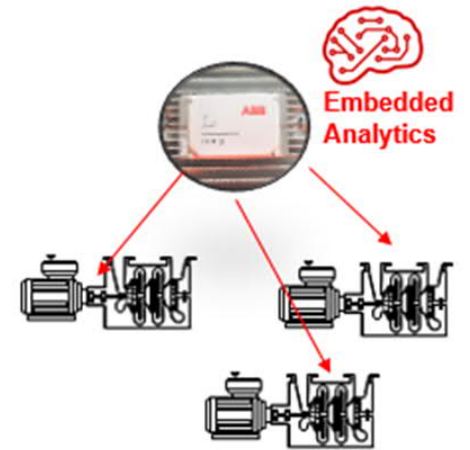
The Theory

- **1:** Equipment running condition data is harvested using smart sensor technology and exported to a cloud-based server
- **2:** Data is retrieved from the cloud-based server and reviewed in real-time by the site team
- **3:** Alerts and machine trip data is viewed anywhere and anytime using the IIoT and mobile devices (e.g. Smartphones, laptops)
- **4:** SME reports are produced by a 3rd party using the data retrieved from the cloud
- **5:** Maintenance strategies are improved by comparing results and use of predictive analytics



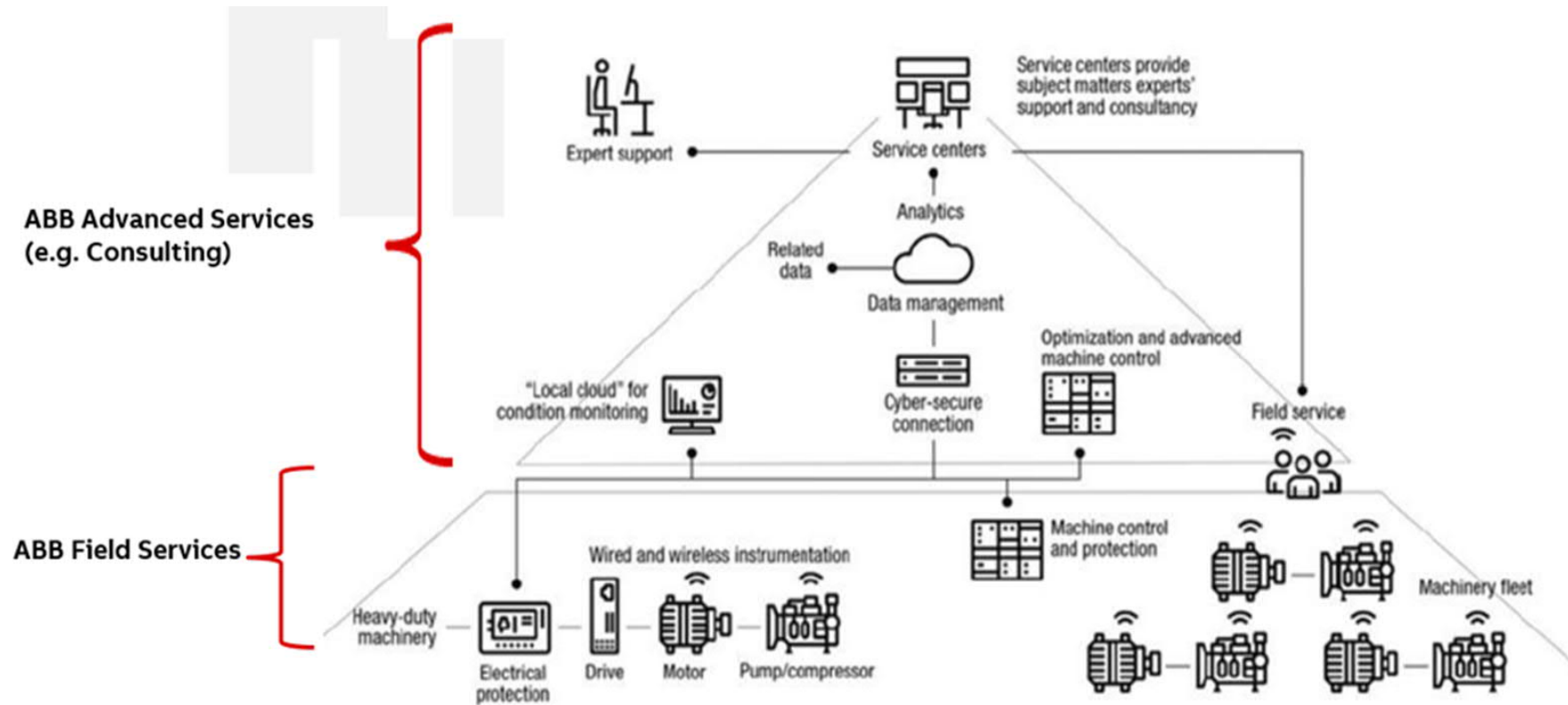
The Service Delivery Offerings

- ABB are capable of offering different levels of condition monitoring support:
 - For operators with an in-house capability to analyse their machines' data: retrofit ABB's Smart Sensors, 'fingerprint' the machines and continue to monitor them on a regular basis
 - For operators with no in-house capability to analyse their machines' data: retrofit ABB's Smart Sensors and engage ABB to provide notification of alerts and condition updates
 - For operators with no in-house capability to analyse their machines' data; retrofit ABB's Smart Sensors and engage ABB to provide notification of alerts, condition updates in addition to regular health prognoses
 - For those operators who are looking for all of the above plus SME support when they need it: ABB can provide them with a call centre manned on 365/24/7 basis and access to a SME via a call-off arrangement

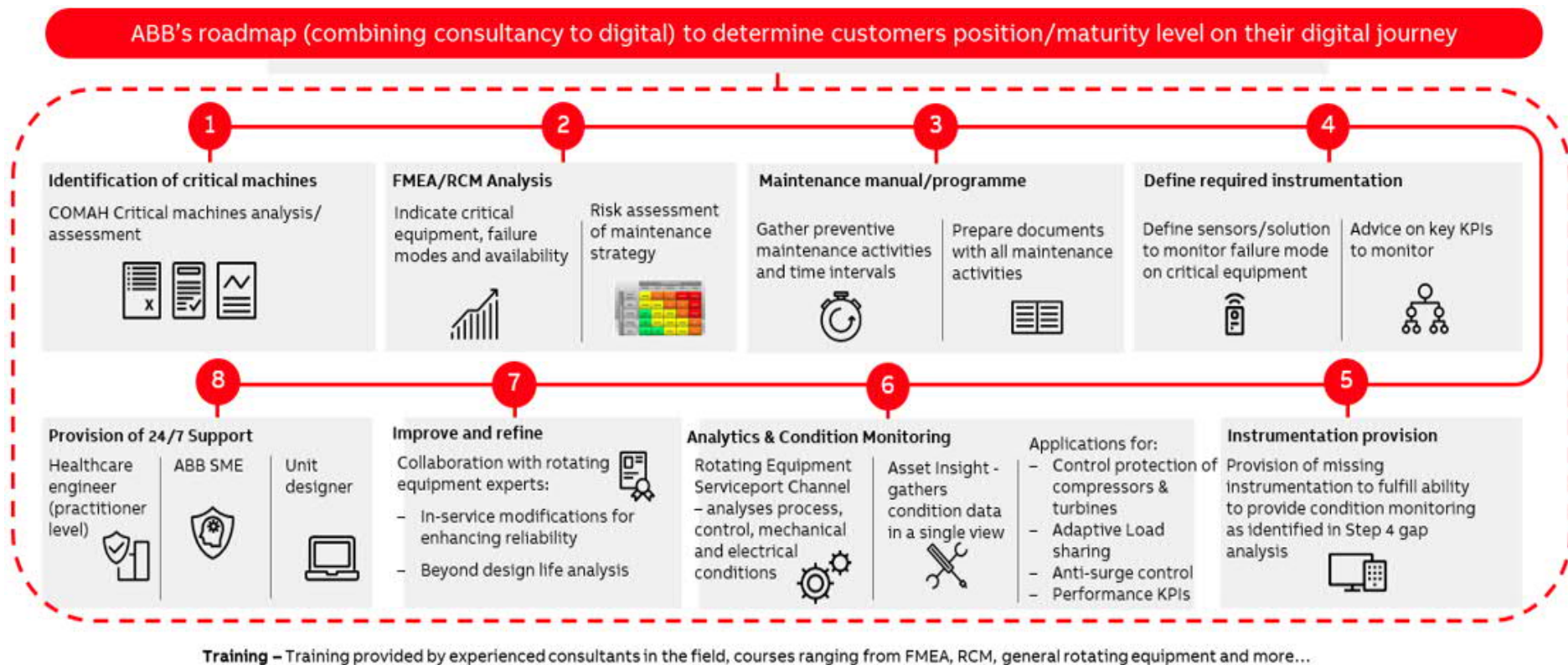


The Service Delivery

Condition Monitoring Service Delivery Pyramid



The Service Delivery Reliability Roadmap



The Service Delivery

ABB UK Capabilities

ABB UK has significant in-depth capability to support operators in their procuring, installing, operating and maintaining critical machines systems

Design and procure

- Critical machine assessments
- Produce procurement specifications
- FMEA studies
- Design verification
- Applicable legislation review

Install and commission

- FAT witnessing
- Upfront R&M studies
- POWER risk assessments
- Installation and commissioning support



Monitor and optimise

- Remote condition monitoring
- SOP and MP reviews
- On-site condition assessments

Operate and maintain

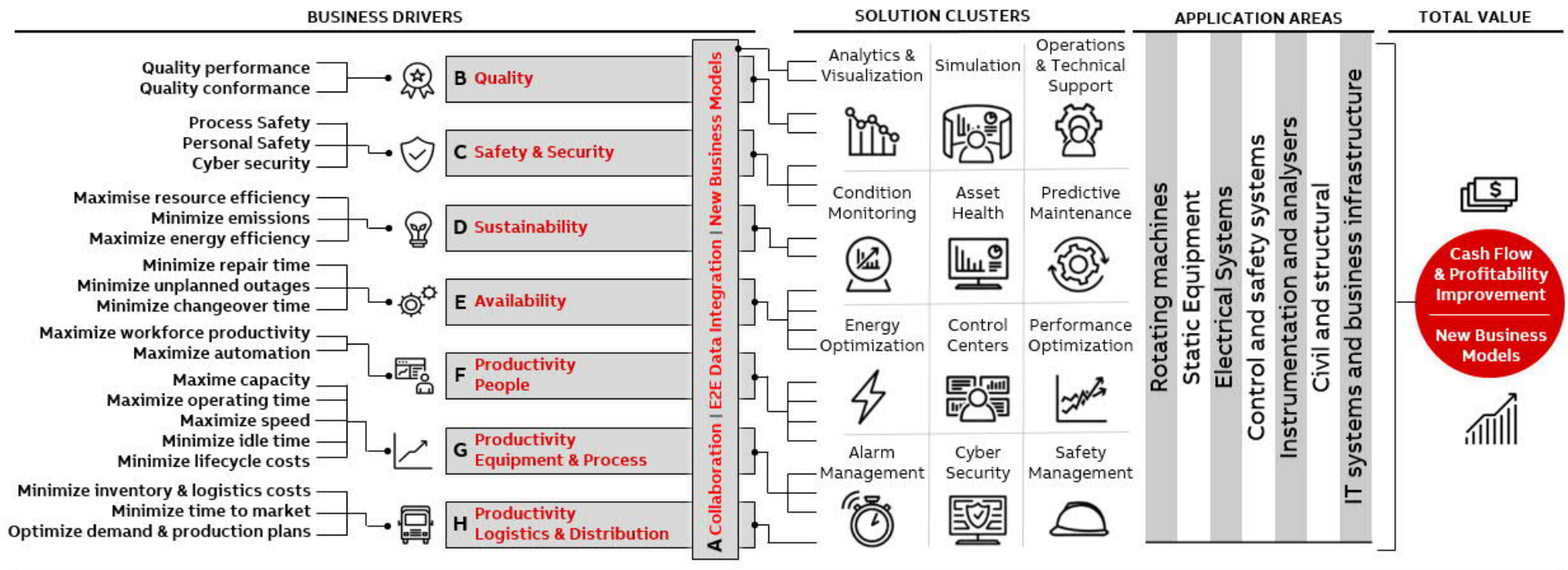
- R&M studies
- RCA failure investigations
- Safety audits

Maintaining Ageing Plant in a Digital World

The Business Case

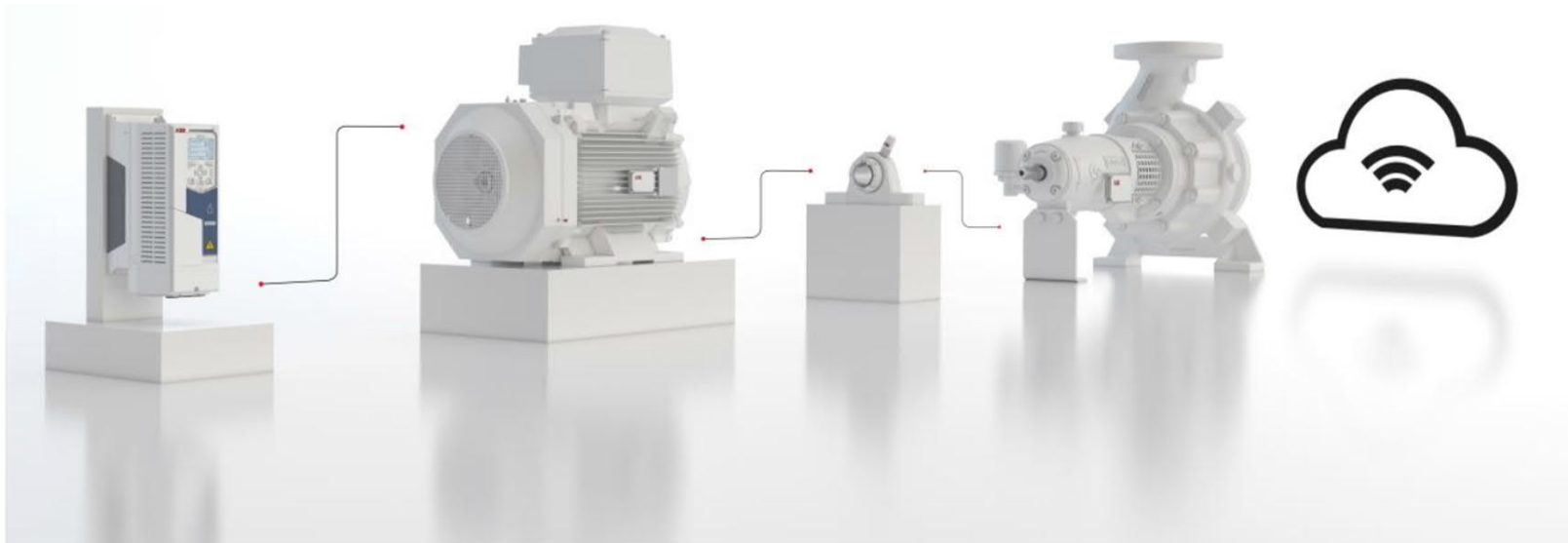
The Business Case

Business Drivers & Solutions



The Business Case

Digital Powertrain



Digital advantage that accelerates efficiency, predictability and safety

The ABB Ability™ Digital Powertrains is a suite of digital solutions including devices, software and services. It combines connectivity and data analytics with our expertise to make your operations efficient, predictable and safe.

ABB ABILITY™

The Business Case

Bona Fides

■ Press releases | Helsinki, Finland, 29 August 2018

Global agribusiness reduces motors downtime with ABB smart sensors

Leading agribusiness, Olam International, is digitalizing its operations with the ABB Ability™ Smart Sensor, fitting the pocket-sized smart sensor in some of its factories to remotely monitor low voltage motors

“What I like most about the sensor is its simplicity. It can be put on any type of motor and the data is transmitted using Bluetooth. The overhead cost is low, which makes it viable, even on a large scale,” said Ravi Yadav, Vice President and Regional Engineering Head, Asia Pacific, at Olam International Limited. The savings from preventing only one motor failure has already recovered Olam’s investment in equipping smart sensors on a number of motors at its factories.

ABB Ability™ Smart Sensors in operation in Vietnamese factories

2018-03-20 - A low voltage motor is the workhorse of many industries, running a broad range of machines, including conveyors, mixers, pumps and fans. The ABB Ability™ Smart Sensor now makes monitoring the condition of each motor in a plant simple and affordable – tracking the motor’s health and performance is as simple as opening a smartphone application.



The Business Case

References

Smart Maintenance

Article by Conal Brown and Prithiv John



RECENT conversations in the media and industry press discuss the potential of big data, the Industrial Internet of Things and Industry 4.0 to transform performance in the process industries^{1,2}.

<https://www.thechemicalengineer.com/features/smart-maintenance/>

Cover Story

Part 1

Rotating Machines: Digital Technologies to Enable Predictive Maintenance

Predictive maintenance for rotating machinery is gaining prominence as plant operators embrace analytics and learn how to approach their operating benchmarks

<https://www.chemengonline.com/rotating-machines-digital-technologies-enable-predictive-maintenance-iiot/>

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Any Questions?

AIB