



Brüel & Kjær Vibro
A member of the NSK Group

iSETPOINT®

The Future of Machine Health Diagnosis using AVEVA™ PI System™ Based Condition Monitoring

Dimichell Gonzalez Industry Leader | December 16th 2023

CONFIDENTIAL DOCUMENT



How healthy do you believe you are?

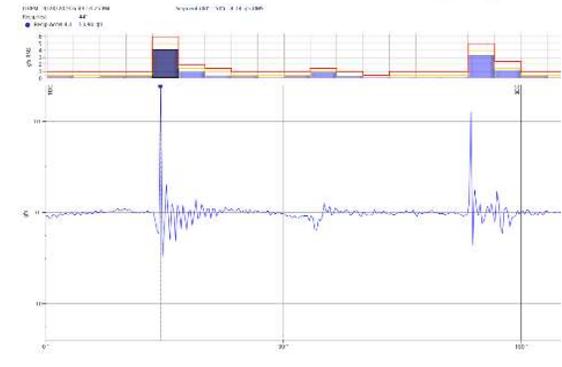
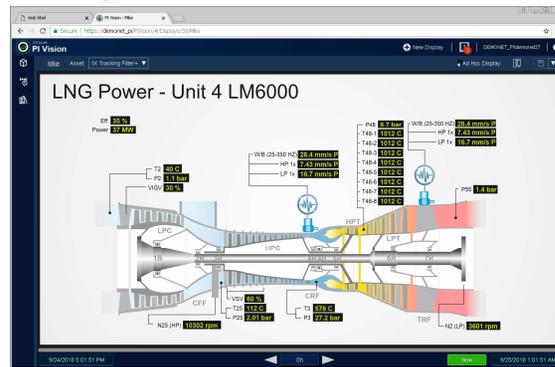
Most of us only visit a doctor when we have symptoms of ill health

20-45%*
of heart attacks
are “silent”

*

*Source: Wake Forest Baptist Medical Center Study 2023

Are you treating your machines like you treat your health?





Most predictive maintenance programs fail because of complexity!

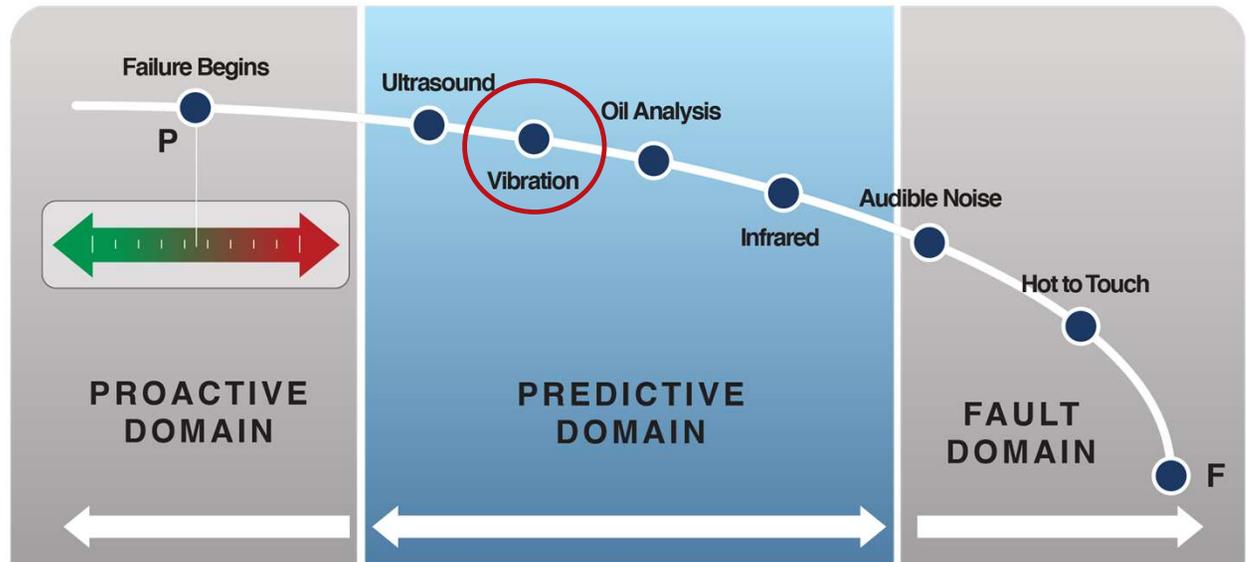
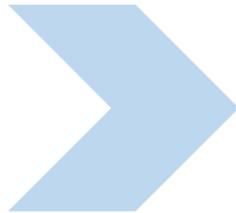
Only **30%** *
of manufacturing companies know
the exact condition of their assets

One-hour breakdown of a
machine can cost a company up
to **\$260,000** *

*Source: Vanson Bourne &ServiceMax 2021

Benefits of Condition Monitoring – through Vibration

CONDITION MONITORING
FROM DETECTION TO DIAGNOSIS



I-P-F curve showing early indicators of potential bearing problems on rotating equipment. Source: Adrian Messer



Eliminate Safety Risks



Extend Asset Life



Increase Uptime

Do you listen to professional advice?



Just tell me – how long have I got and what's the next step?



**The are approx. 25, 000
Cardiologists in the U.S.A.**

**There are < 25, 000
CAT IV Vibration
Analysts worldwide**

Brüel & Kjær Vibro – The Company

A pioneer in asset optimization and protection solutions for rotating equipment

Founded in
1942

Workforce of
213
employees

Network of
76
channel partners

2
main manufacturing /
logistics facilities

3
diagnostic and surveillance
expertise locations

5
commercial offices
worldwide

With over
35,000
wind turbines instrumented

With over
800
hydro turbines instrumented

With over
10,000
hydrocarbon-processing
machines instrumented

What is needed to create actionable insights?

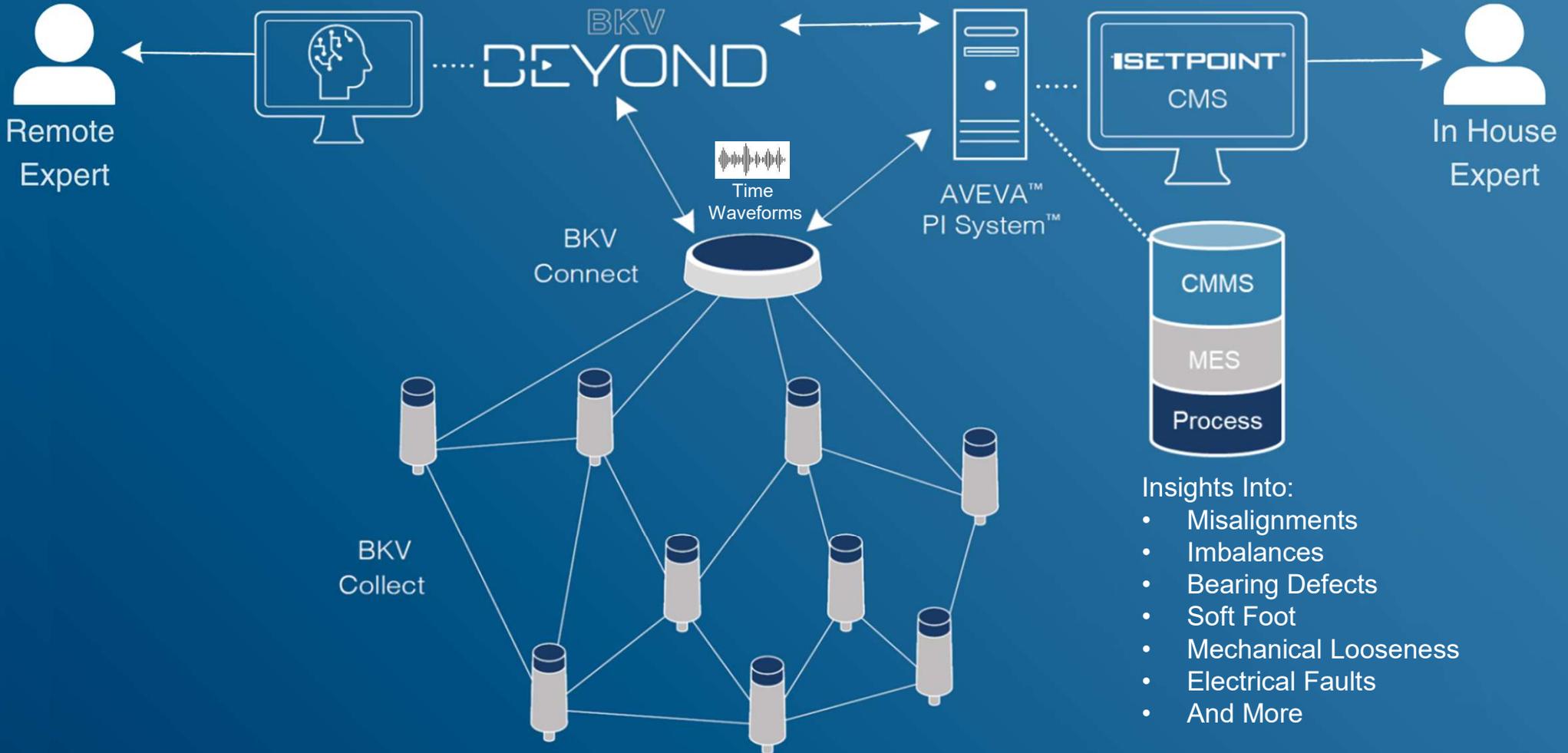
- **Criticality Analysis** - Collect data at the correct frequency, based on expected faults and criticality.
- **Filter Measurements** - Only collect meaningful data to identify specific conditions and complex issues
- **Provide Context** – Avoid creating data silos (using AVEVA™ PI System™) so that data can be viewed in context with other plant data to build actionable insights
- **AI versus HI** – Although AI can look for patterns, human expertise still has a role to play

| Criticality | Waveform and Spectrums | Scalar Values |
|--|---|---|
|  Critical Assets |  On change |  <100ms |
|  Semi-Critical Assets |  Every 8 Hours |  Every Minute |
|  Auxiliary Assets |  Daily |  Every 8 Hours |



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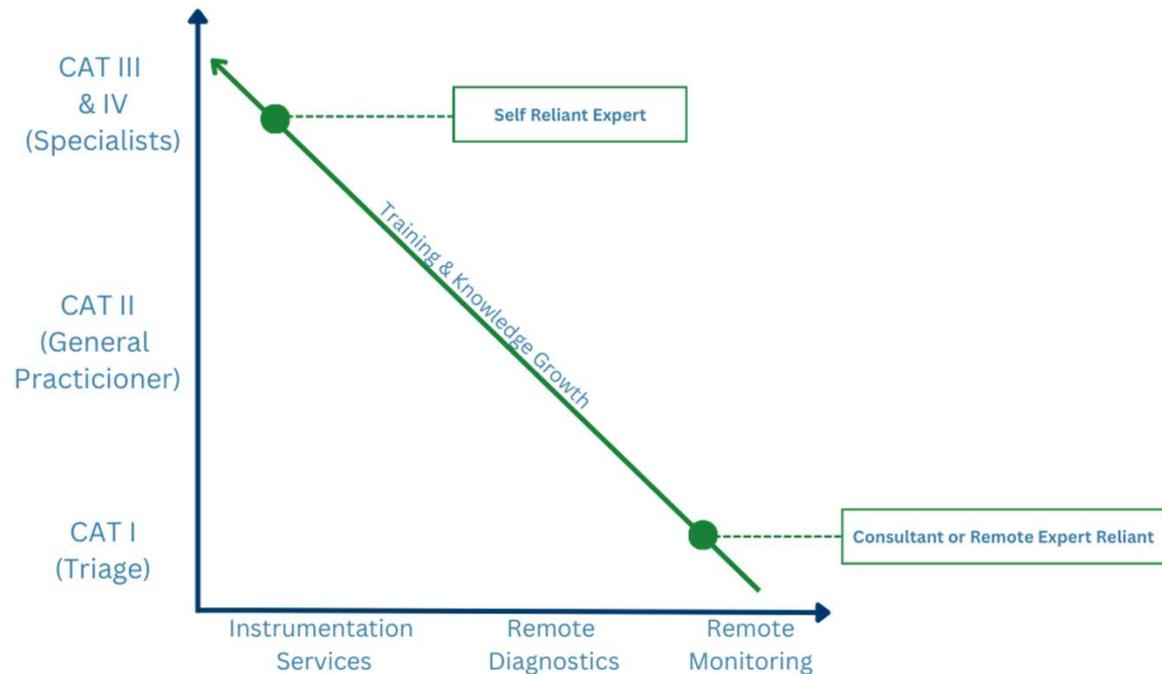


Who should deliver machine healthcare?

Choose your monitoring strategy using the AVEVA[™] PI System[™]

- Build in-house expertise
- Outsource expertise and reap the benefits of AI/ML
- Use a “hybrid” approach

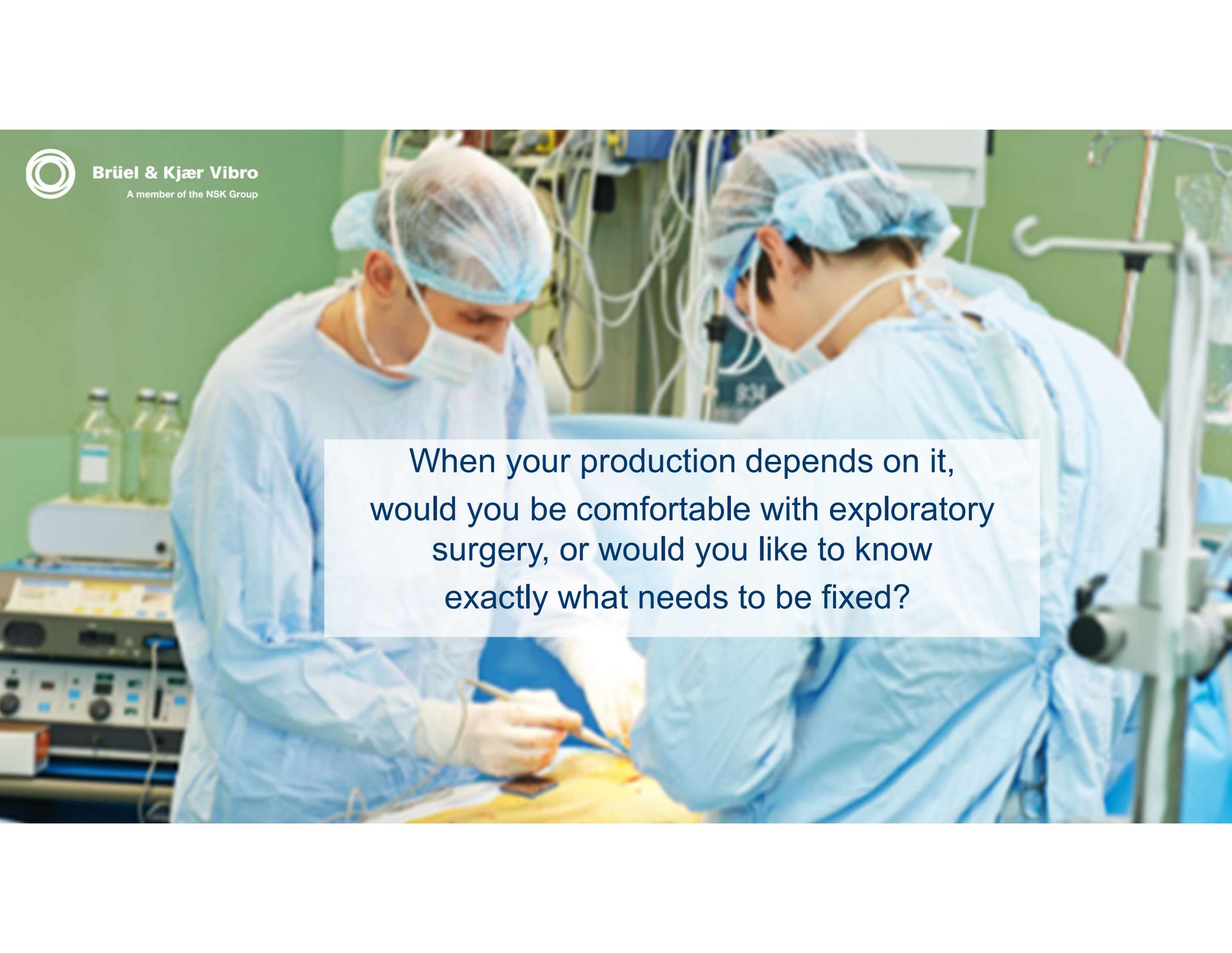
Migrate from External CMS to Self-reliance as experience and expertise grows





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A photograph of two surgeons in an operating room. They are wearing blue scrubs, blue bouffant caps, and white surgical masks. They are focused on a surgical procedure on a patient lying on a table. The background shows various pieces of medical equipment, including monitors and IV stands.

When your production depends on it,
would you be comfortable with exploratory
surgery, or would you like to know
exactly what needs to be fixed?



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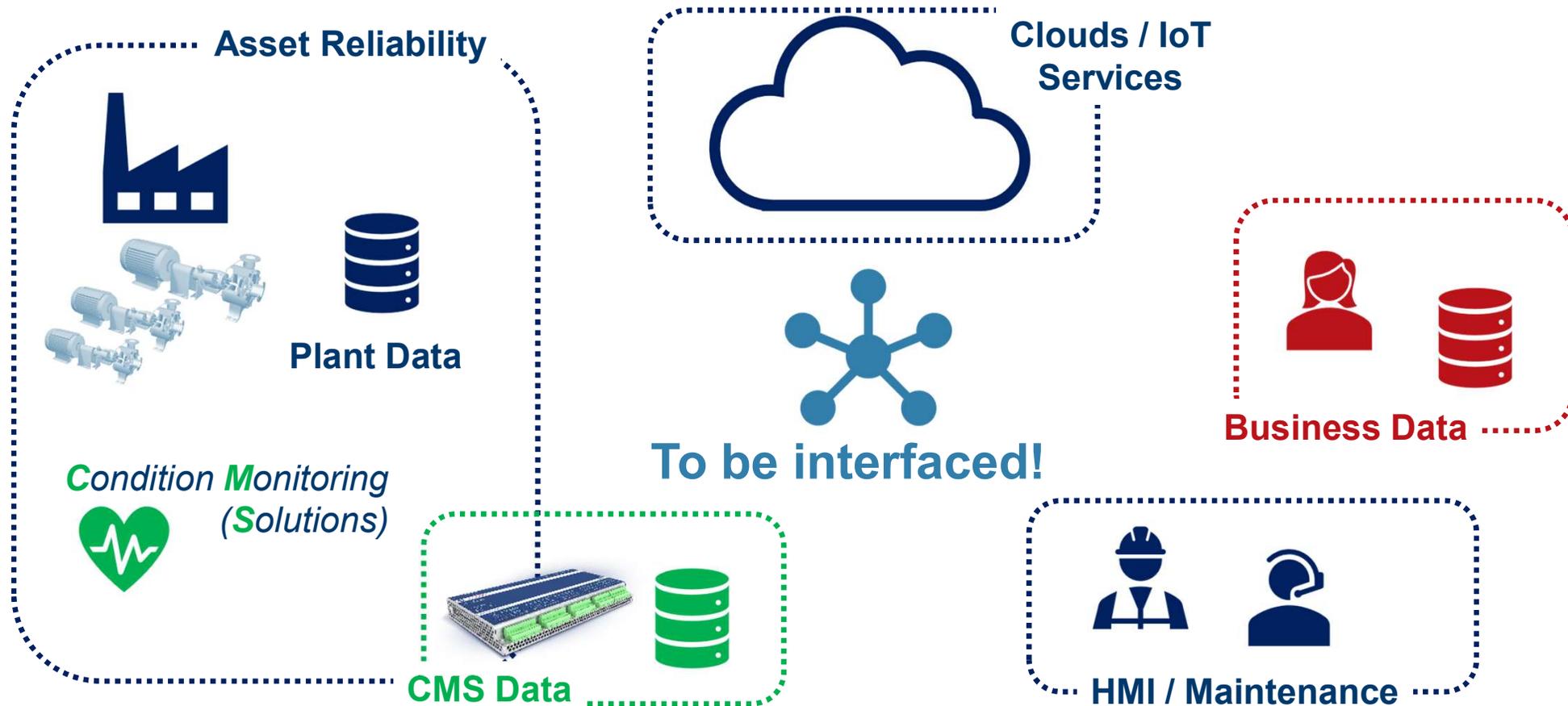
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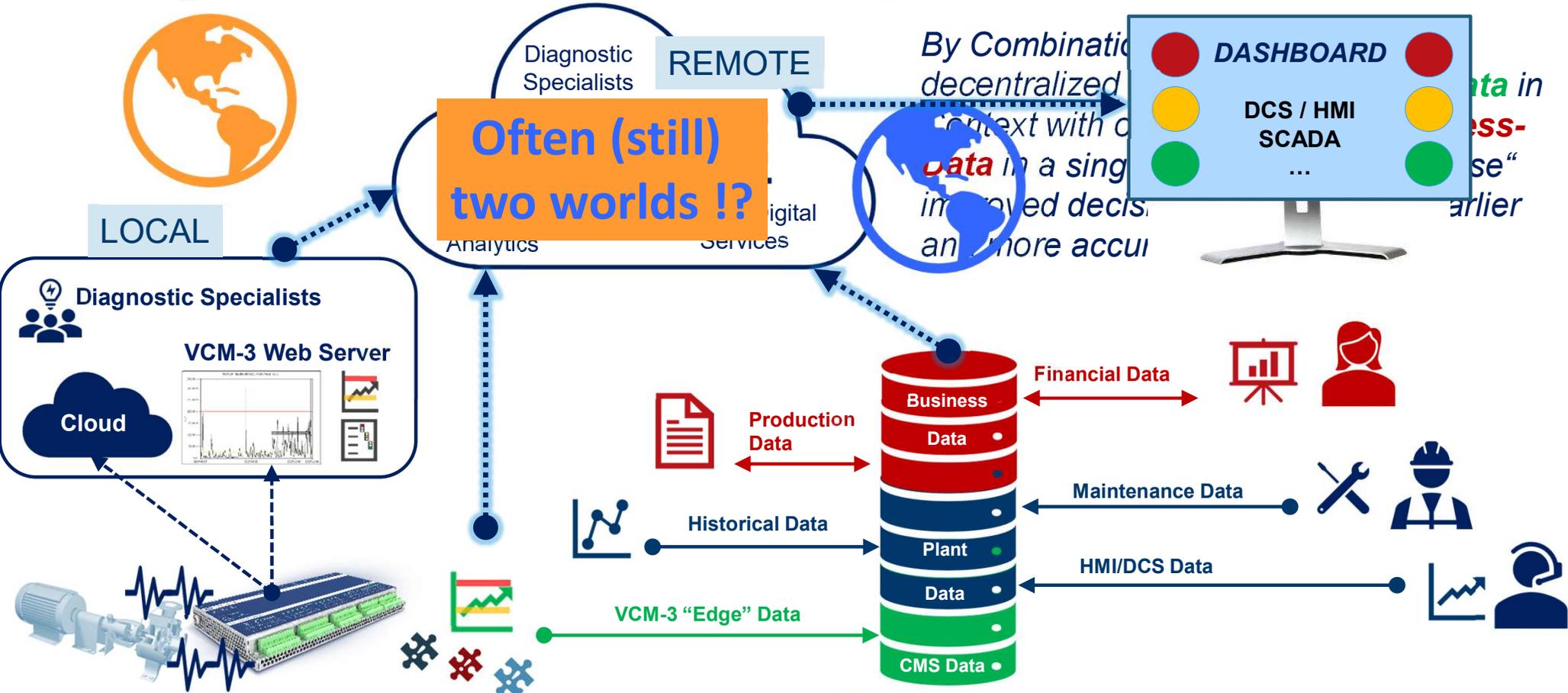


***System Integration* – Condition Monitoring
embedded in Processes & Digitalization**

“Integration of Systems & Data” – LINK via Digitalization



Integration of Condition Monitoring into your Digital Strategy



Questions?

If you have a health challenge that you'd like to discuss, please come to our stand at

If I can't diagnose it personally, with me today are some of the finest machine medics that money can buy.



Thank you for listening.