



Welcome to MCF –
Marine Corrosion
Forum / ICorr –
Institute of Corrosion
2020 Webinars.



Institute of Corrosion partnering with
**Gary Whyman (Business
Development for Plantweb
Solutions – UK&I)**
of **Emerson Automation Solutions**

7th October 2020



“Proactive Maintenance: What is
is it and how can you get there?”

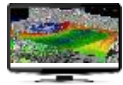
About Me

- I worked for 16 years in the Petrochem Industry, all of them in Process Control & Instrumentation, in various roles and registered as a PrTech during this time. Many years in a plant maintenance environment, plant expansion projects & DCS upgrades and 3 years in Training and Development of apprentices, junior engineers and multiskilling of artisans.
- I have also spent 21 years in business development roles, much of it entailing international travel.
- Qualifications include National Trade Test certificate, National Diploma in Electrical Engineering and Trainer Development Diploma



Emerson Automation Solutions

Data Management



Reservoir Modeling



Operations & Alarm Management



Advanced Process Control



Planning & Scheduling



Plant Asset Management



Control Engineering



Training & Simulation



Real-time Optimisation



Energy Management



Asset Integrity Management

ENGINEERING & DESIGN

CONTROL SOFTWARE

PRODUCTION MANAGEMENT

ASSET RELIABILITY & PERFORMANCE

Control



PROCESS CONTROL & SAFETY SYSTEMS



WELLHEAD CONTROL



MODULAR & MACHINE CONTROL



MACHINERY HEALTH

Field Devices



MEASUREMENT & FLOW



ANALYTICAL



SOLENOIDS & PNEUMATICS



FINAL CONTROL

Plantweb Digital Transformation Solutions



v4 © 2019

DIGITAL FOUNDATION

Project, Lifecycle, and Educational Services

Production Optimisation

Operator Performance

Control & Safety Systems

SCADA

DIGITAL TRANSFORMATION

Consulting & Implementation

 Digital Strategy & Cybersecurity

 Upskilling & Change Management

 Shutdowns, Turnarounds, & Outages

 Industry Expertise

Service Models



Software-as-a-Service
Cloud-Deployed Applications



Connected Services
Asset Expertise and Actionable Insights

Platforms & Software



Asset Performance Platform
Connect, Analyse, and Collaborate



Workforce Effectiveness
Digitally Enabled People



Device & Machinery Diagnostics
Condition-Based Analytics



Asset Health Apps
Pre-Configured & Advanced Analytics



Digital Twin
Plant & Asset Optimisation

Secure Connectivity



Data Integration
Architectures & Network Design



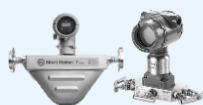
Cybersecurity
Embedded at All Levels



Secure First Mile
Data Pathways to External Applications and Experts

Intelligent Field Devices

Measurement Instrumentation



Valves & Actuators



Motion Control



Pervasive Sensing



Process

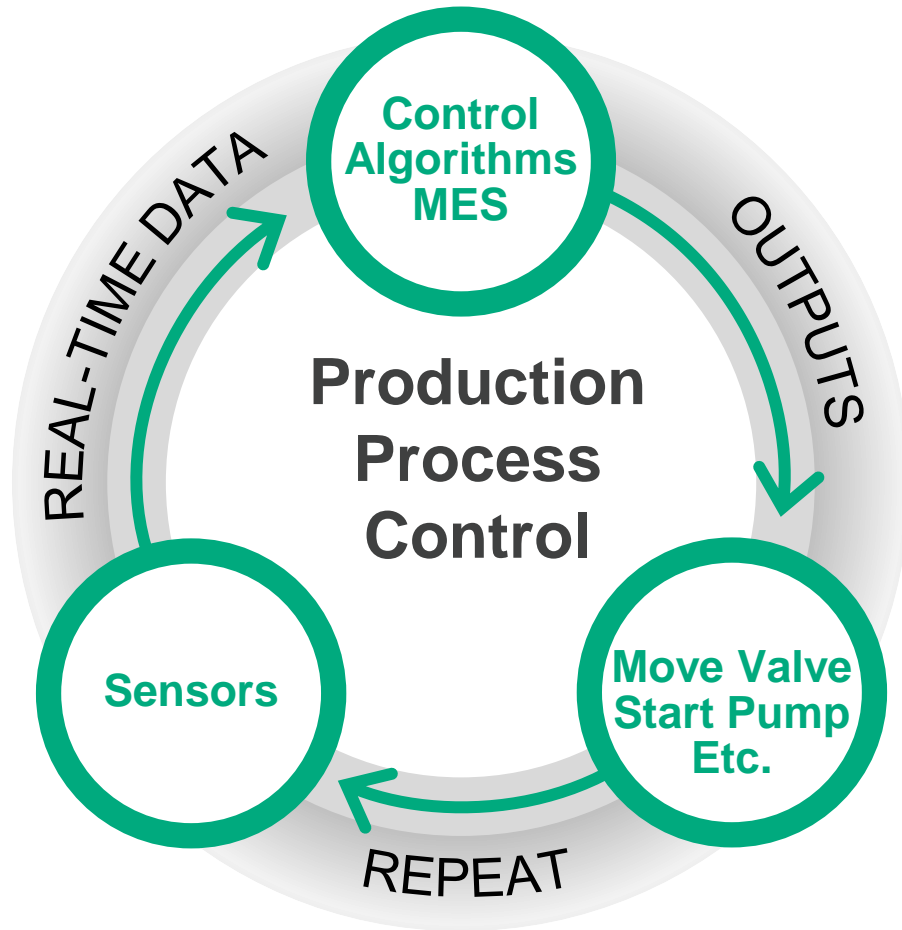
Environment

Equipment

People & Assets

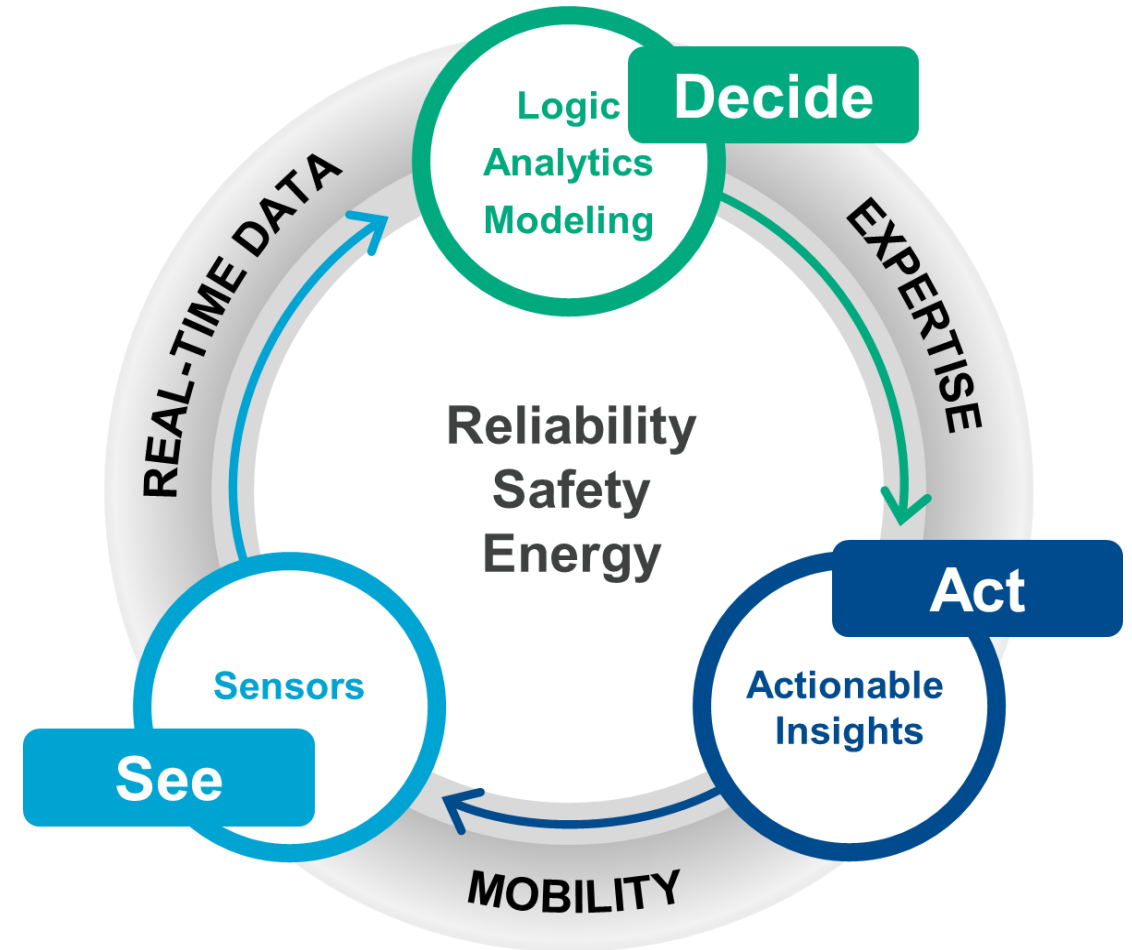
See, Decide, Act & Repeat

Process Control



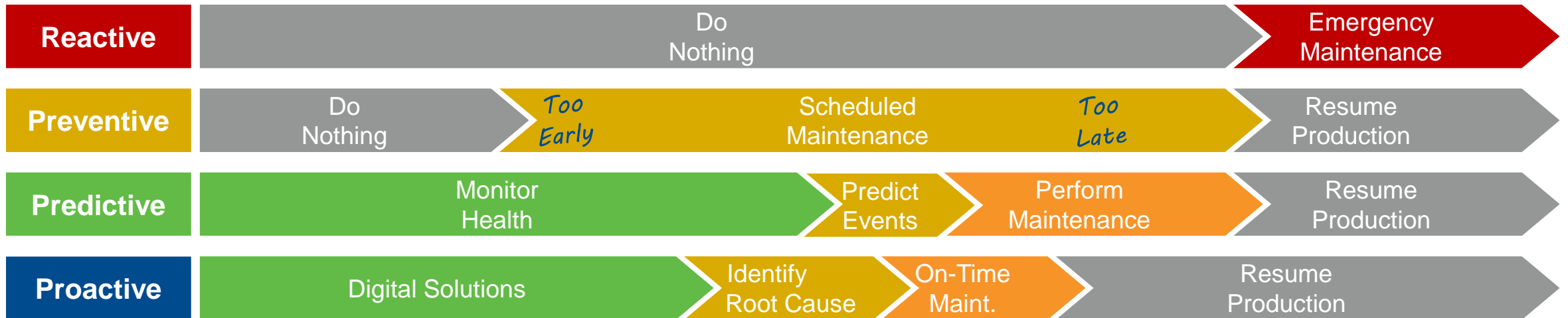
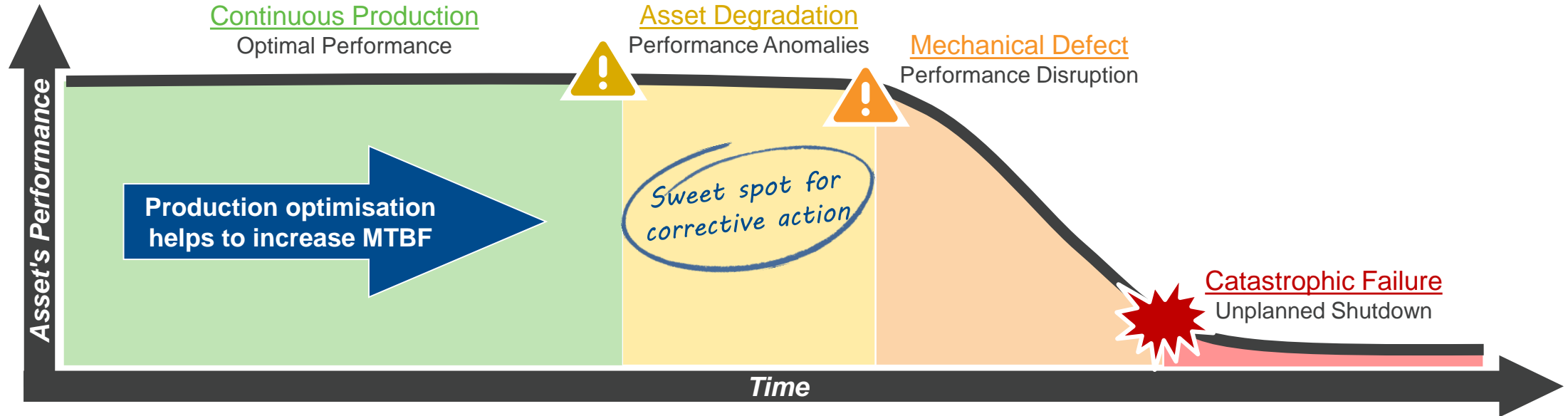
Closed Loop

Asset Performance



Closed Loop

Typical Maintenance Strategies



Main Reasons Why Plants Are Still Waiting On Things to Fail...

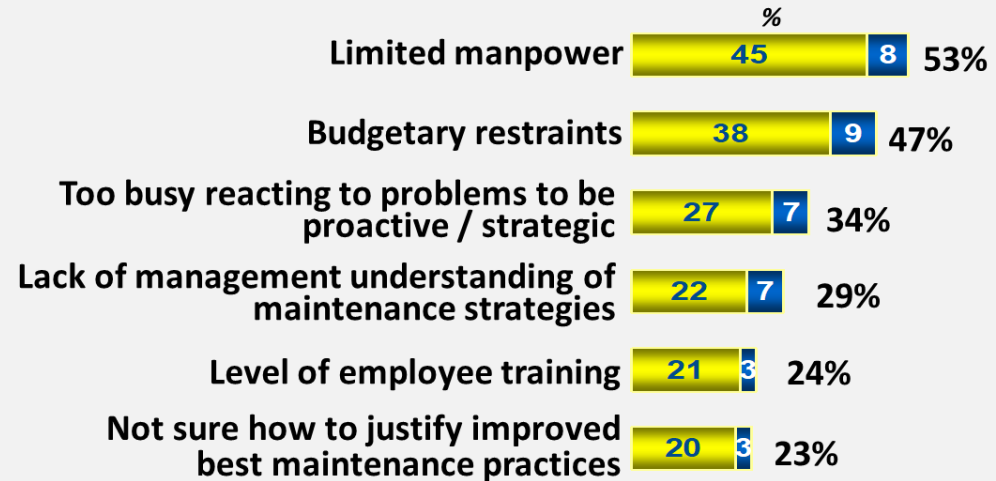


	1988	Today	Best Cost
Reactive	55%	→ 55%	10%
Preventive	30%	31%	25-35%
Predictive	10%	→ 12%	45-55%
Proactive	5%	2%	5-15%

Reactive
Planned

Source: *Maintenance Technology*

Why?



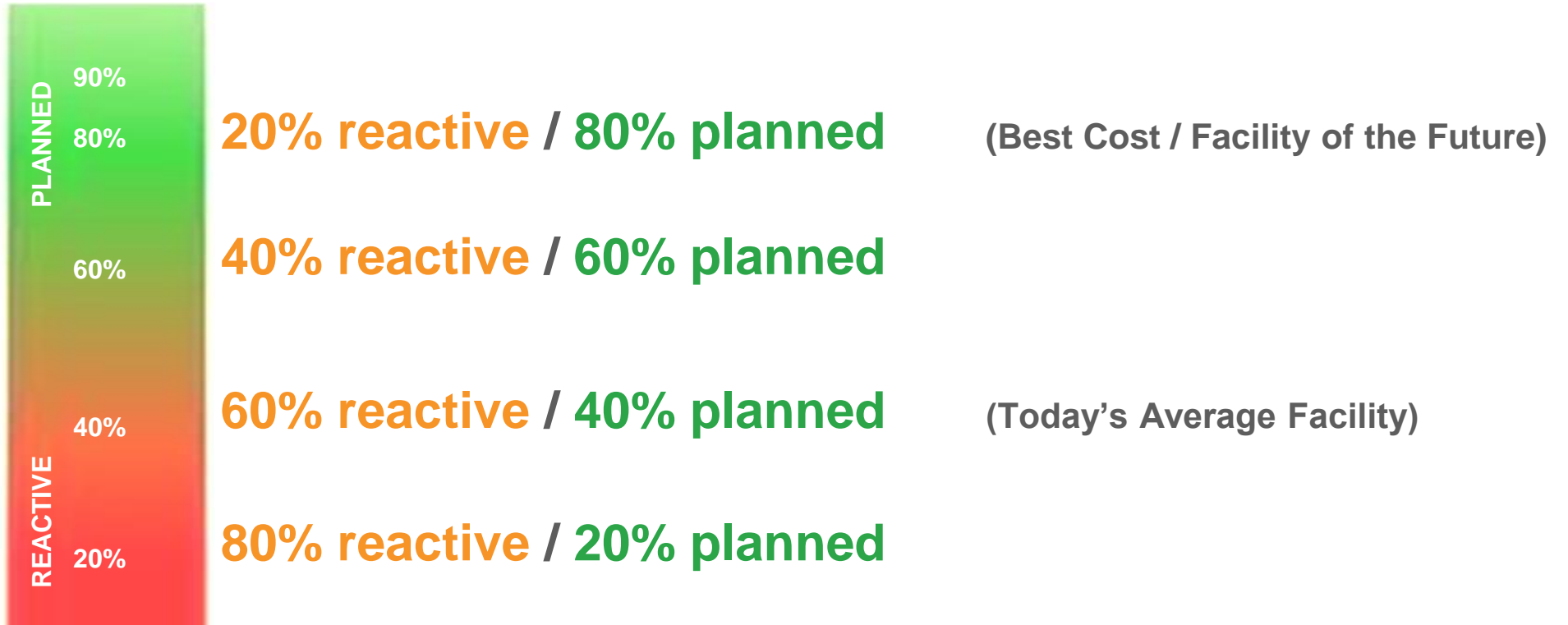
MAJOR
INSURMOUNTABLE

Plants are designed & built, on average, to perform in 3rd Reliability Quartile

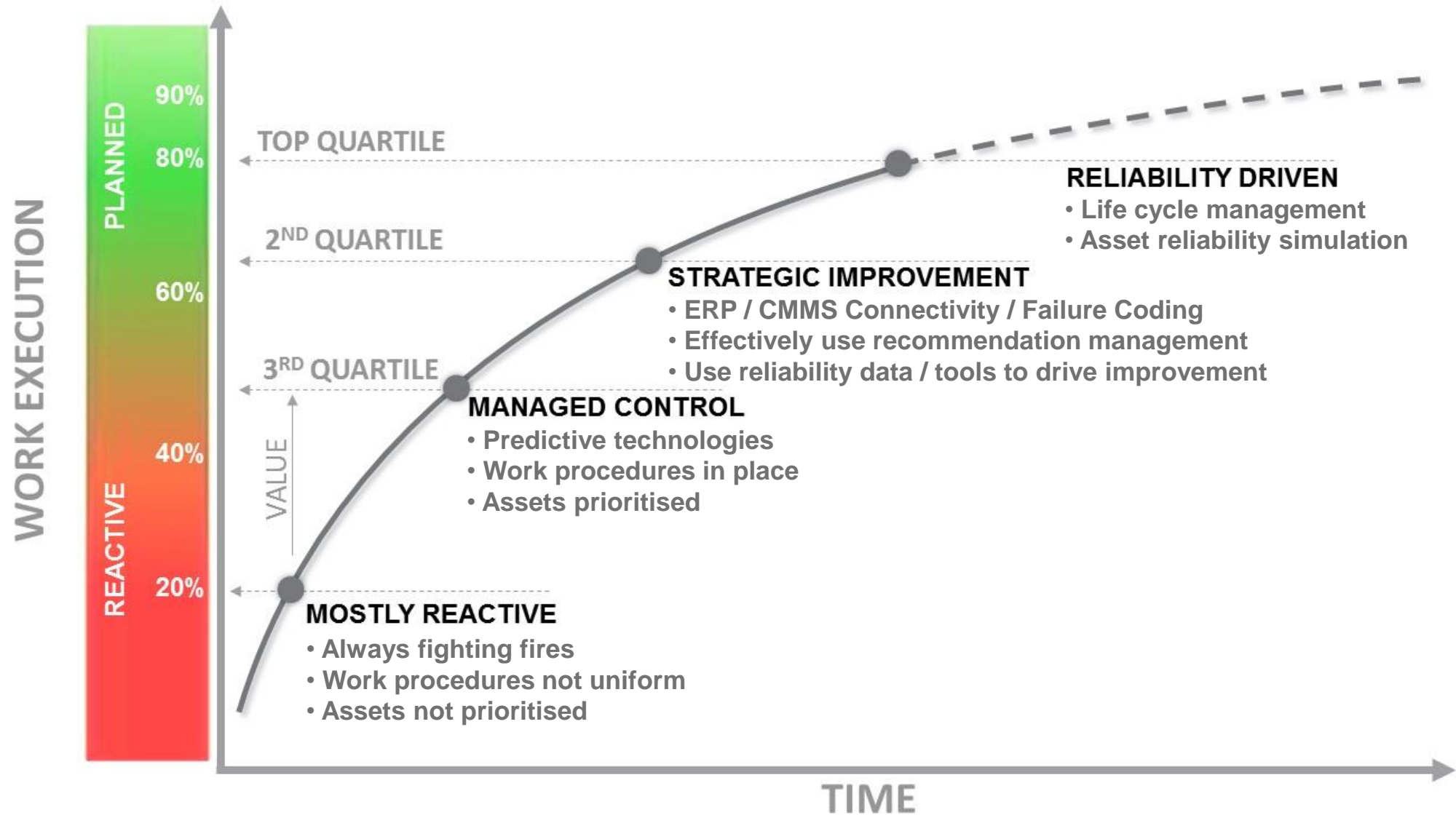
"I'm Staffed to Run, Not Staffed to Grow"

Question of The Day

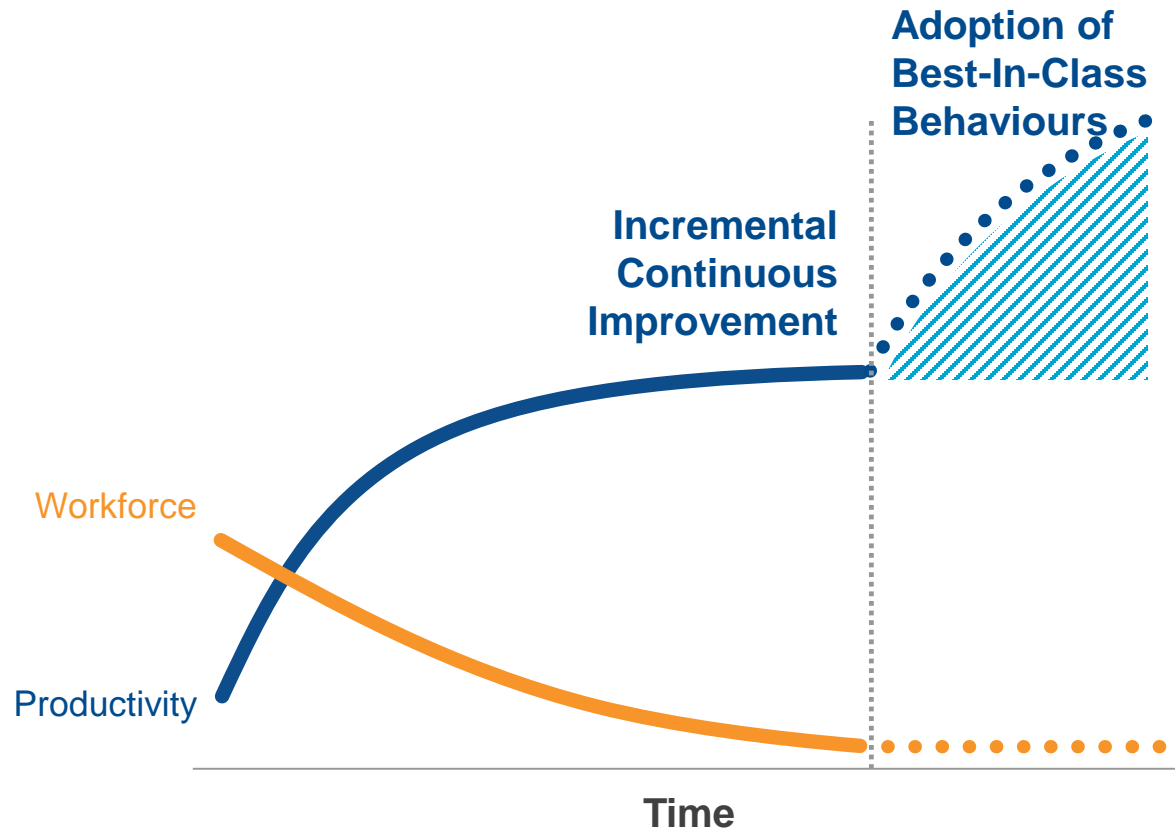
...Where is your organisation today?



Asset Monitoring Differentiates Players in the Industry



Digital Tools Can Enable A Change in Work Practices



5 ESSENTIAL COMPETENCIES OF DIGITAL TRANSFORMATION

Automated Workflow

Decision Support

Workforce Upskilling

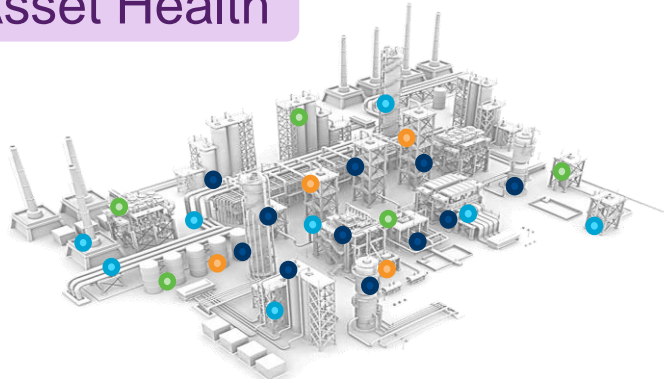
Mobility

Change Management

Technology Can Help Us Drive an Enhanced Workflow

Example of a Change In Work Practice

Asset Health

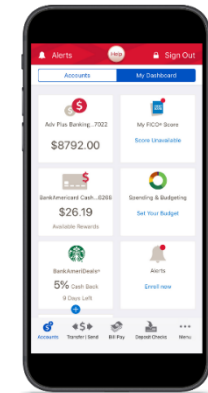
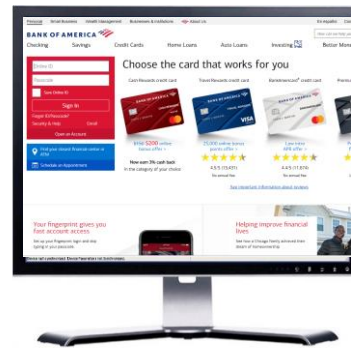


Manual Inspection

Online Monitoring

Automatic Notification

Account Balance



1990's

2000's

Today

Asset management needs a holistic approach

This already exists for Operations

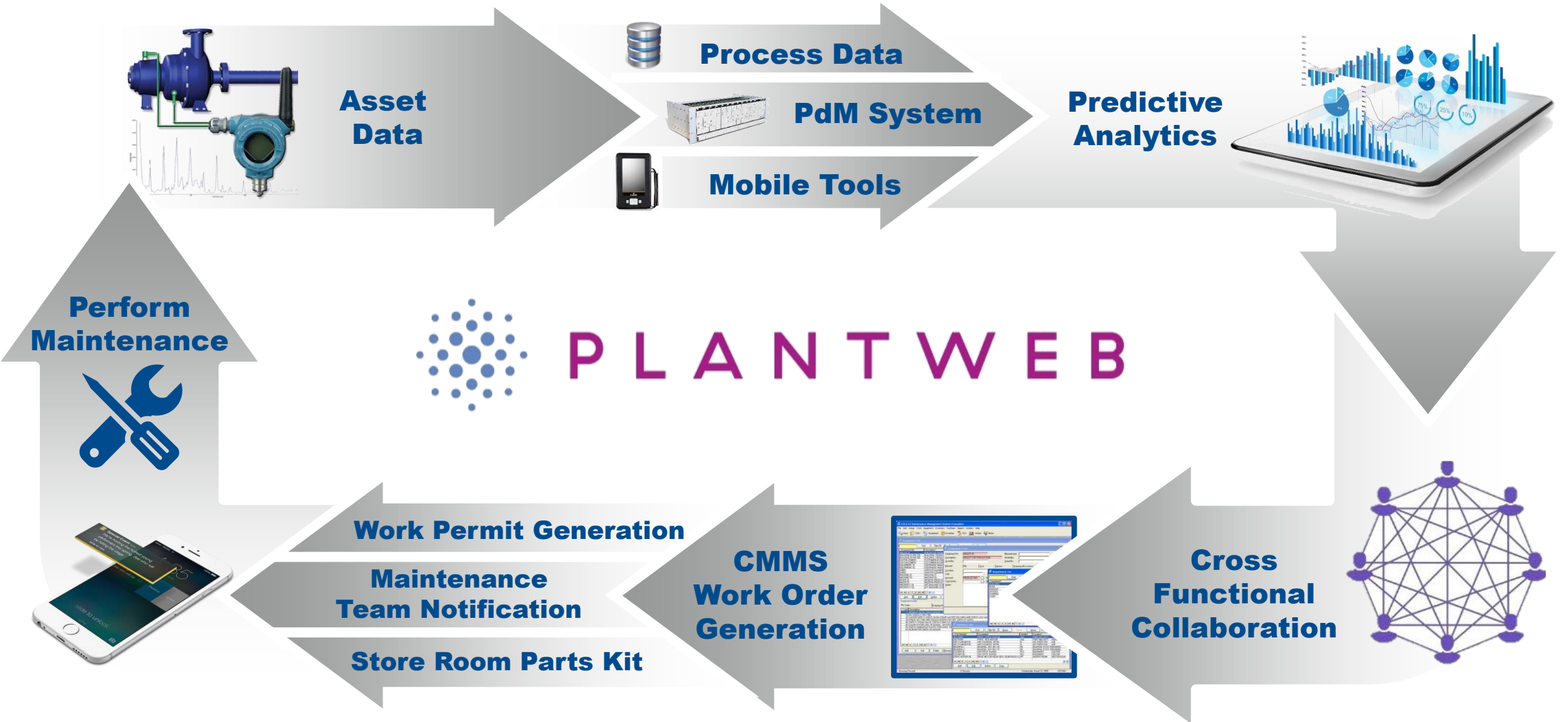


Performance Analytics

Fixed-Asset Monitoring



Plantweb Enables Digitally Integrated Operations & Reliability Loop



Future Proof Pervasive Sensing Portfolio

BUILDING ON THE INDUSTRY'S BROADEST SENSING PORTFOLIO



CORRLOG
ROXAR



NON-INTRUSIVE
CORROSION & EROSION



VIBRATION



VALVE
POSITION



LOCATION



RADAR
LEVEL



LEVEL
SWITCH



DISCRETE



FLOW
TOTALIZER



TOXIC GAS
H2S / CO / O2



NON-
INTRUSIVE
TEMPERATURE



PRESSURE
GAUGE



PRESSURE



TEMPERATURE



ACOUSTIC



POWER
MODULES



THUM
ADAPTER

Simplified
network
management

Fits your
existing security
architecture

Certified for
hazardous
locations
conditions

Deployment
flexibility

Future proof

Persona based content delivery



! Travel Deviation

! High Vibration

! Cavitation

Mobility



AR



Connected Services



Workflow Integration



Instrument and Valve Health

Control Loop Performance

Principle and Data Driven Analytics

Machinery Protection and Prediction

AMS Device Manager

! Travel Deviation

DeltaV

Artificial Intelligence and Machine Learning

Data Driven Analytics

AMS Asset Monitor

Edge Analytics Device

EMERSON PLANTWEB insight

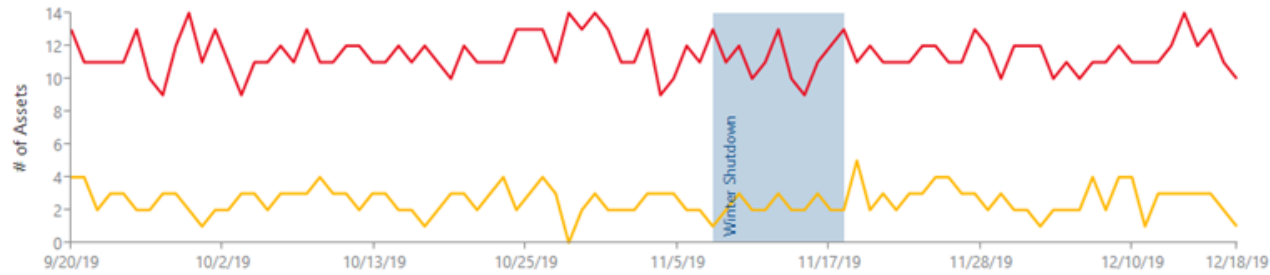
! Cavitation

AMS Machinery Manager

! Vibration

A Persona-Based View of Asset Health

Health



Feed

LT-2202
 Description: Default Site/Round Rock, TX\Command Center\Separation\Tank 1\LT-2202
 Rick (2019-11-17T08:51:51.7625513)
 Configuration Change
 Configuration Change

FT-2222
 Description: Default Site/Round Rock, TX\Command Center\Separation\Tank 1\FT-2222
 Rick (2019-11-18T06:51:51.7625513)
 Communications failure
 Communications failure

FV-2222
 Description: Default Site/Round Rock, TX\Command Center\Separation\Tank 1\FV-2222
 Rick (2019-11-18T15:51:51.7625513)
 Performance Diagnostic - Air Mass Flow Performance Diagnostic
 Performance Diagnostic - Air Mass Flow Performance Diagnostic Advisory
 Check ValveLink Spec. Sheet ValveLink Spec. Sheet data is either missing or invalid. Analysis may be suspended or incomplete. The following parameters should be reviewed: - Bench set - Nominal supply pressure:From the main menu, select Spec Sheet | Valve and Actuator and fill in the missing information. Important: when complete, select Save Dataset.

FT-2123
 Description: Default Site/Round Rock, TX\Command Center\Separation\Tank 2\FT-2123
 Rick

Bad Actors

Asset	Number of Events	Event Type
FT-2222 Description: Default Site/Round Rock, TX\Command Center\Separation\	103	Communications Failure
LT-2202 Description: Default Site/Round Rock, TX\Command Center\Separation\	78	Device Alert Failure
FV-2121 Description: Default Site/Round Rock, TX\Command Center\Separation\	53	Travel Deviation
FV-2222 Description: Default Site/Round Rock, TX\Command Center\Separation\	47	Travel Deviation

Watched Assets

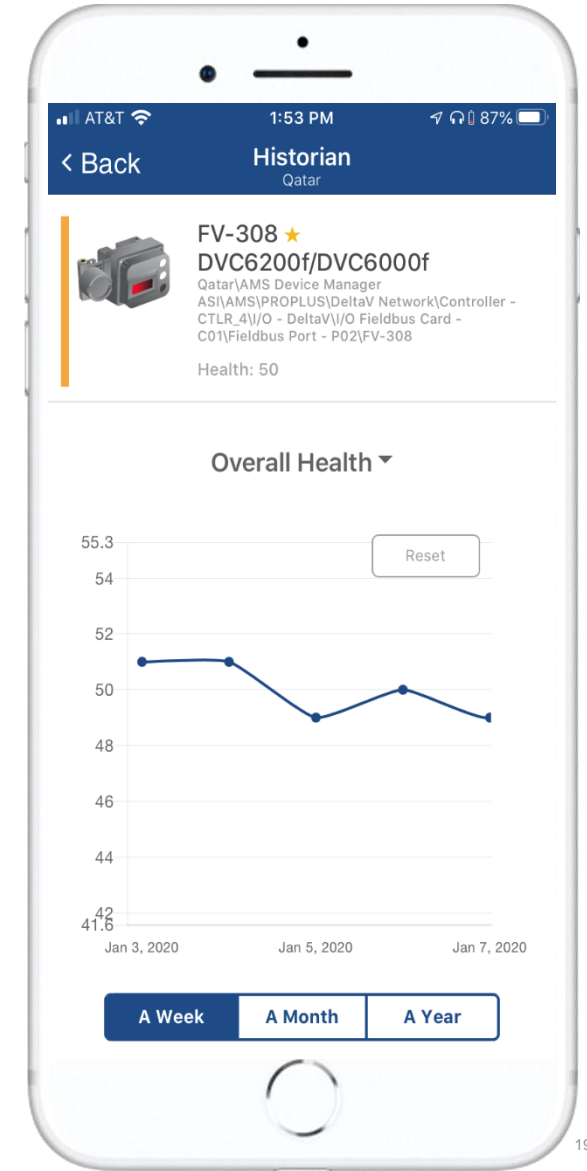
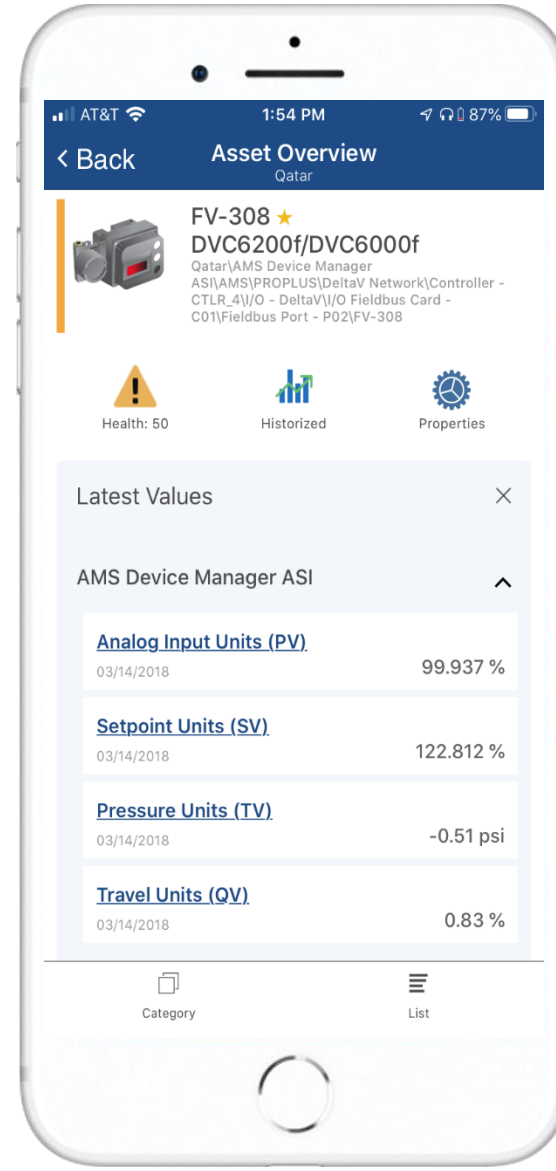
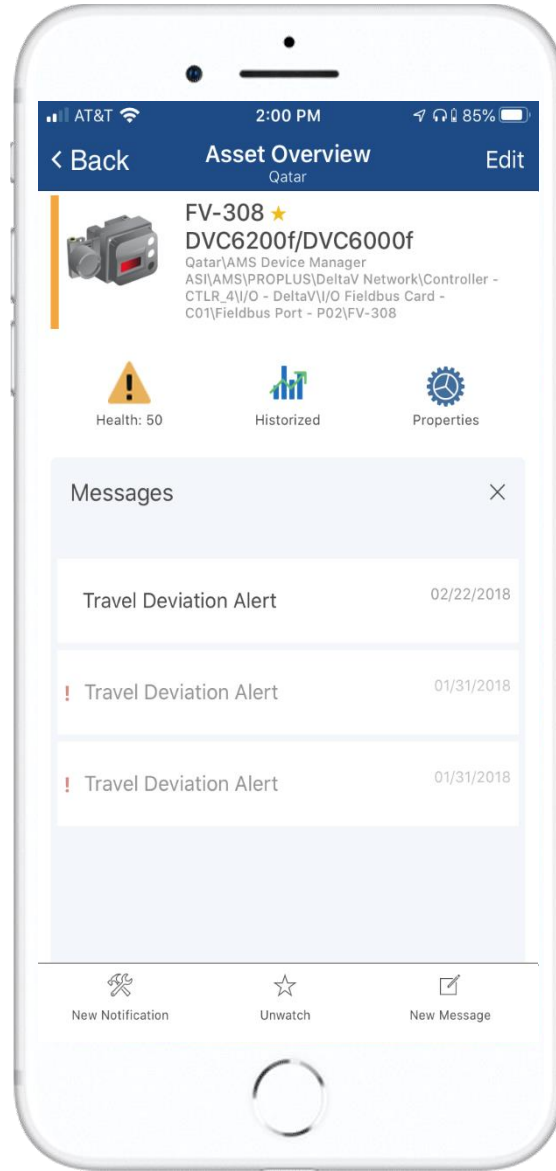
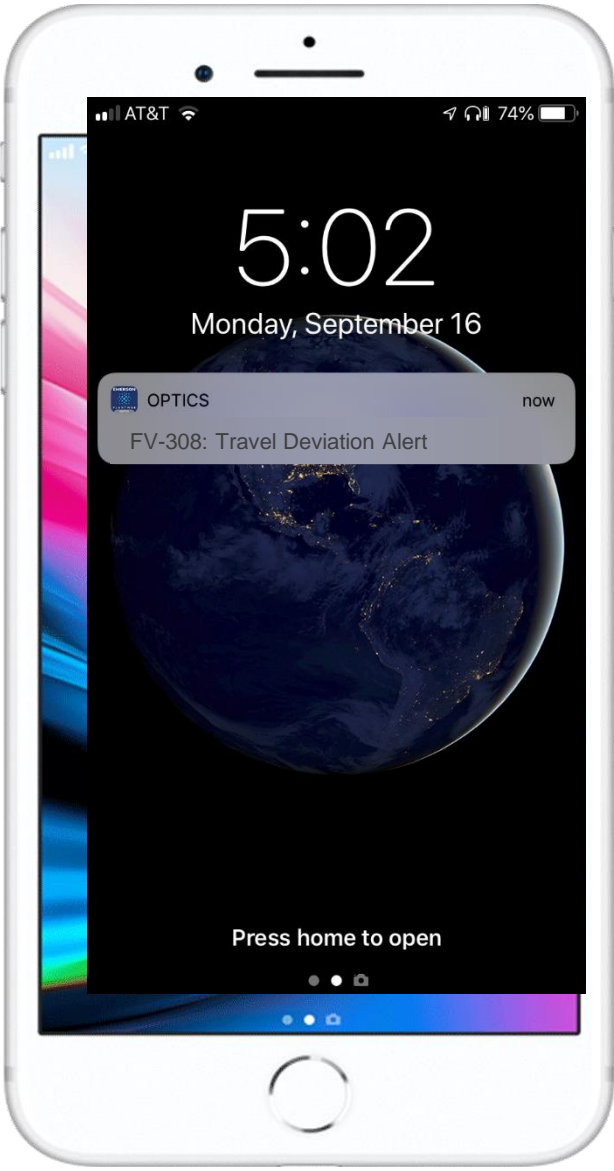
A horizontal bar chart showing the distribution of asset health: 4 Critical (red), 2 Warning (yellow), and 1 Good (green).

FT-2222 Description: Default Site/Round Rock, TX\Command Center\Separation\Tank 1\		9 ▼ 76
LT-2202 Description: Default Site/Round Rock, TX\Command Center\Separation\Tank 1\		1 ▼ 31
FV-2121 Description: Default Site/Round Rock, TX\Command Center\Separation\Tank 1\		75 ▲ 37
FV-2222 Description: Default Site/Round Rock, TX\Command Center\Separation\Tank 1\		27 ▲ 11
FT-2221 Description:		40 ▼ 17

Last Updated

Just Now
December 18, 2019 10:00am

Always Know the Status of Your Critical Valves & Assets

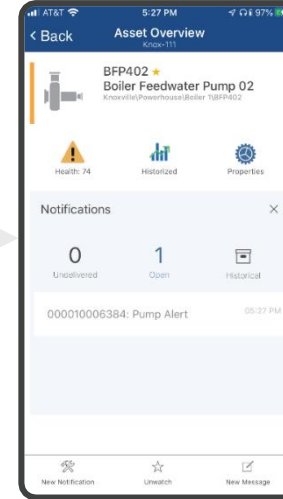


Turn Insights into Action with CMMS Integration

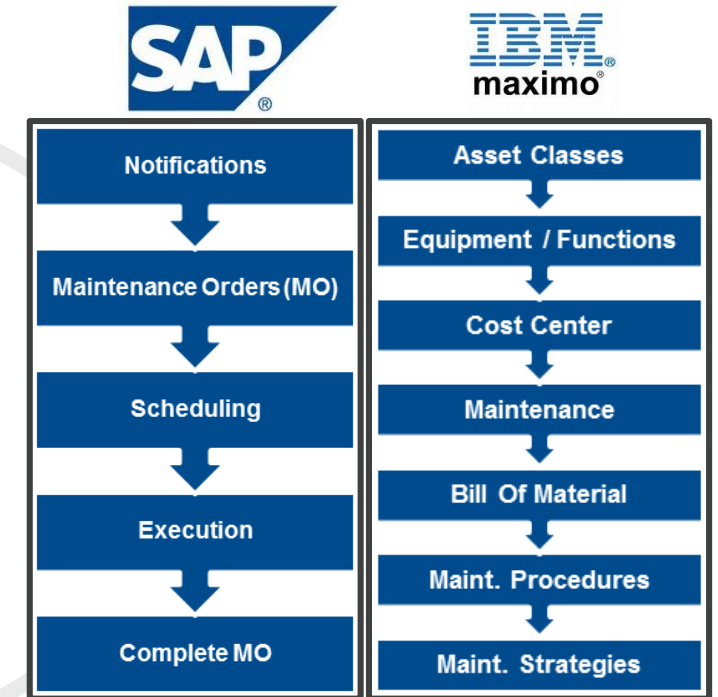
1. Alert Received



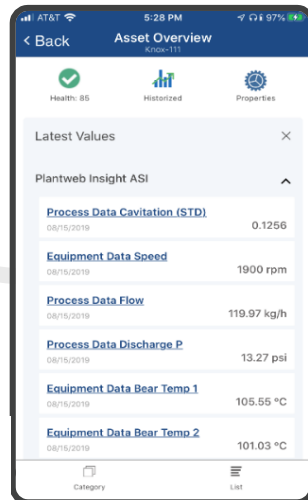
2. Create Notification



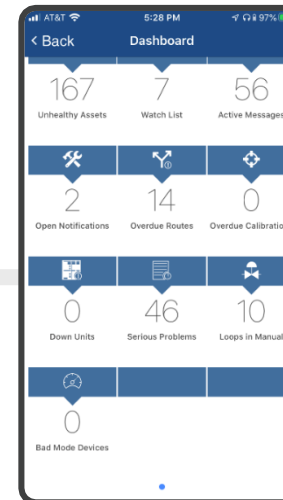
3. Schedule Work



5. Asset returns to healthy

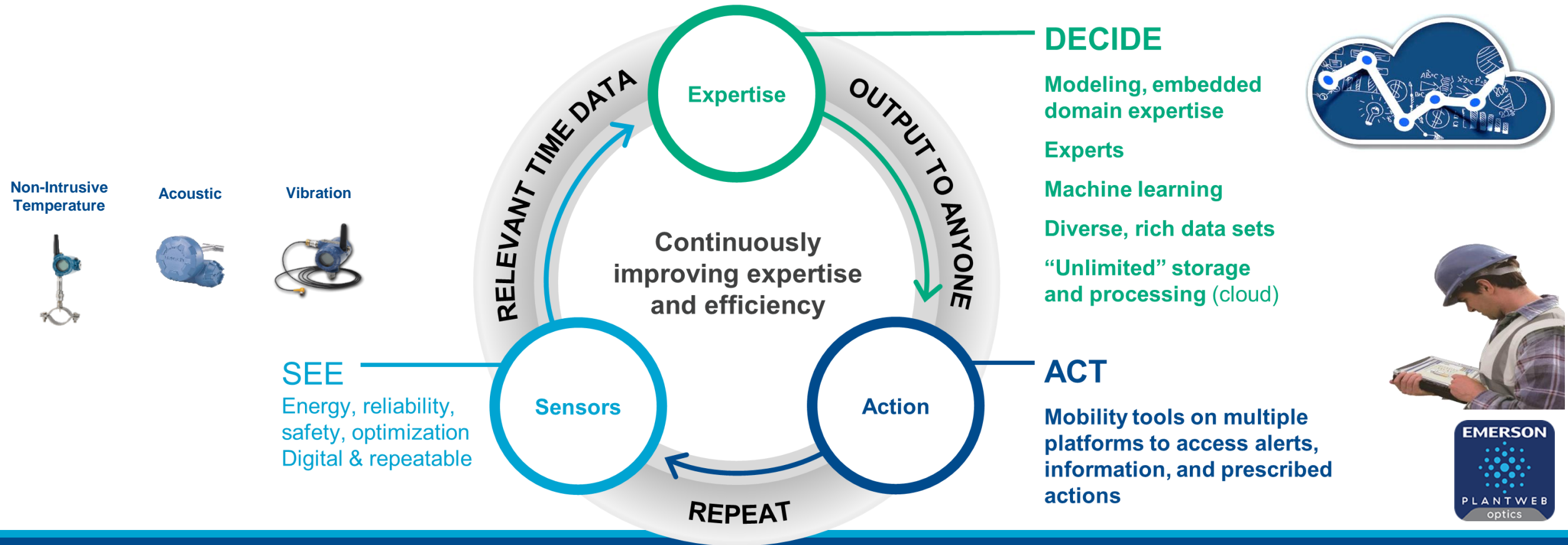


4. Track the Status



Wrench Time 

Digital Transformation “Closes the Loop” in New Areas



Automating & optimising operational processes with technology is Digital Transformation



Thanks for your attention
Any question?

Please get in touch!

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Mobile: 07970 297 036

THANK YOU FOR ATTENDING

This Webinar was brought to you by MCF working in partnership with ICorr and Emerson Automation Solutions.

Q&A

Selection of Questions to **Gary Whyman**, Post-Presentation 07/10/2020

Questions and Answers – MCF / ICorr Joint Event Aberdeen – 7th October.2020

- **Q.** How has Covid in 2020 accelerated this more integrated and more effective approach to Maintenance Management. Are you seeing clear evidence of this ?
- **A.** Yes an exponential increase since COVID. Much increased awareness about remote accessibility and collaboration. Customers want to know more about how Digital Solutions can help them drive workforce effectiveness from remote locations and have mobility, (right info-right people-right time – 24/7)
- **Q.** Could you please explain how failure events are predicted in the predictive (condition monitoring) maintenance approach ?
- **A.** Proactive combines predictive with changing behaviors to move things to higher level. With predictive monitoring, on commonly used rotating assets like Pumps & compressors, we can use preconfigured algorithms incorporating Failure Mode & Effect Analyses, Fault Tree Analyses or logic rules, using baseline parameters, (user defined or as per asset design specification curves) and setting high & low limits around these parameters to indicate possible failures or events leading up to failure.

Questions and Answers – MCF / ICorr Joint Event Aberdeen – 7th October.2020

- **Q.** How can proactive maintenance be linked / aligned with integrity management of static equipment and integrity operating windows in operation?
- **A.** Proactive approach aligns things better to the 'sweet spot'. We have advanced analytical solution called KNet which can look at complex relationships between input data, input – output variables, predict performance, life cycle, duty cycle of assets, remaining time left, etc.
- <https://www.emerson.com/documents/automation/product-data-sheet-knet-5-2-reliability-solutions-en-6899038.pdf>
- This is a data driven solution, as opposed to the pre-configured algorithm approach mentioned in the question before. By knowing well beforehand how an asset performance is going to decline, at what rate and the effect thereof, we are able to better plan our maintenance strategy for the asset.

Questions and Answers – MCF / ICorr Joint Event Aberdeen – 7th October.2020

- **Q.** More of a follow-on comment. I understand from a recent EI/Shell presentation that around 10% maintenance items on Shell Facilities in US have been using Augmented Reality of late, with SME's homeworking / giving instructions to site.
- **A.** Great move with declining available expertise. We are currently busy with some AR (Augmented Reality) pilot projects which incorporates the latest version of our PLANTWEB Optics Solution with AR capability. AR has been around for a while but industry is starting to show real interest now as the technology has moved at a fast pace, with huge improvements.
- <https://www.emerson.com/en-gb/automation/asset-management/asset-monitoring/health-monitoring/plantweboptics>
- Soon, companies will start to adopt as they recognize the need to speed up fault resolution rates, support access for inexperienced workers, on the job training, utilizing iOps centres to support multiple remote locations or using software as a service in the cloud.

Questions and Answers – MCF / ICorr Joint Event Aberdeen – 7th October.2020

- **Q.** In our industry we use Critical, standard and informational categories in practice for status, can these be accommodated ?
- **A.** Proactive systems can be aligned/designed to meet this approach. The solutions all adopt similar event categories in notifying persona of problems, health & performance, etc. and can be prioritized as determined. Our strategic services team can assist companies with categorization, life cycle management, criticality assessments, workflow management, etc.
- **Q.** You spoke about use of mobile and AR (Augmented Reality) equipment, does this type of system also allow for reporting issues noticed on the plant by maintenance crew i.e. observed defects on systems they are not working on but walk past ?
- **A.** Yes we have a device available for this and can assist you. Yes, we have various “mobile worker” tools that include solutions for route-based inspections, periodic inspections, walkabouts, etc.