

Implementing Digital Innovation in a Nuclear Environment 2020



Thursday 15th October and
Wednesday 21st October

Virtual Conference

Welcome back!

Session 2 will start at 10:15

Proudly sponsored by

**accenture**

NUCLEAR INSTITUTE

GO DIGITAL

CONFERENCE

OCTOBER 2020 | COLIN ELLAM

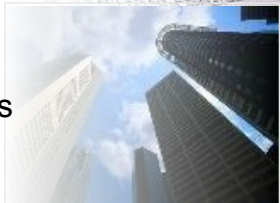
\$44.3

In Annual Revenues



40

Industries
Served



50+

Delivery Centers across five continents, offering services in 39 languages

506,000

Employees



150+

Powerful alliance network of market leaders and innovators



6,000+ CLIENTS

97 of our top 100 clients have been clients for at least 10 years

92 of the Global Fortune 100

75%+ of the Global Fortune 500



200+

Locations across 51 countries serving clients in 120+ countries



GLOBAL CORPORATE RECOGNITION

- Forbes' Global 2000 – 17 years running
- FORTUNE's Global 500 – 19 years running
- INTERBRAND'S Best Global Brands – 18 years running
- FORTUNE's World's Most Admired Companies – Ranked No. 34 overall and No. 1 in IT Services; 18th consecutive appearance on the list...to mention a few



Accenture Strategy & Consulting



Accenture Interactive



Accenture Technology



Accenture Operations

Health and Public Services

Financial Services

Communications, Media & Technology

Products

Resources

AGENDA

- 1** **CONNECTED WORKER**
KATE LEVESTAM
- 2** **CONNECTED MANUFACTURING**
JESS BOWRING
- 3** **DIGITAL PLANT**
MRIDU GUPTA
- 4** **DIGITAL IN AEROSPACE AND DEFENCE**
ADRIAN SPRAGG
- 5** **DIGITAL IN SMART CITIES**
MOLLY BLATCHLY-LEWIS



01

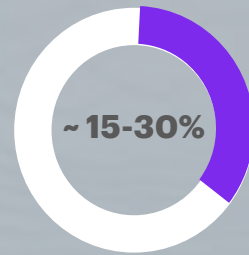
CONNECTED WORKER

Kate Levestam

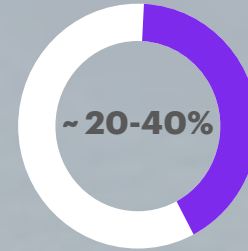
DRIVERS AND BENEFITS

Many drivers, both internal and external will accelerate the business case for an organisation to implement a **Connected Worker** solution that leverages **digital technology to improve the worker experience** across the work management lifecycle.¹

COVID-19



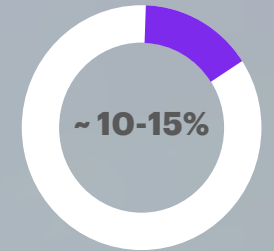
IMPROVED
EFFICIENCY



INCREASED
THROUGHPUT



INCREASED
SAFETY



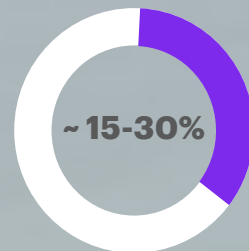
INCREASED
FIRST TIME
RIGHT

HEALTH & SAFETY

PRODUCTIVITY DEMANDS

SCHEDULE PRESSURES

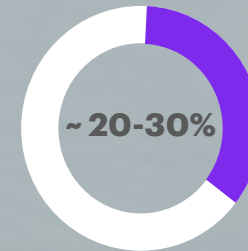
INCREASING SIZE & SCALE



INCREASED
WORK
ACCURACY



ENHANCED
TRAINING



INCREASED
POSITIVE
IDENTIFICATION



IMPROVED
WORKER
SATISFACTION

USE CASES AND CAPABILITIES

There are numerous use cases that may be deemed relevant to the Connected Worker offering, with a range of capabilities available that can unlock value.



SAFETY

e.g. Job Safety Analysis



OPERATIONS

e.g. Procedural Adherence



QUALITY

e.g. Visual Inspection & Audit



MAINTENANCE

e.g. Troubleshoot & Repair



SUPPLY CHAIN

e.g. Supplier Collaboration



CONTINUOUS IMPROVEMENT

e.g. Best practice identification

1

ENABLING CAPABILITIES

DIGITAL WORK INSTRUCTIONS AND INSPECTIONS

OVER-THE-SHOULDER SUPPORT AND TROUBLESHOOT

IMAGE CAPTURE AND VIDEO RECORD

2

ENHANCING CAPABILITIES

MARK UP AND ANNOTATION

RUGGED DEVICE COMPATIBILITY WITH SAFETY FEATURES

EXTENDED REALITY AND AUGMENTATION

3

EMBEDDING CAPABILITIES

INTEGRATION / API AVAILABILITY

DIGITAL THREAD OF RICH DATA TO SUPPORT AUDIT AND TRACEABILITY

02

CONNECTED MANUFACTURING

Jess Bowring



AMRC
ADVANCED MANUFACTURING
RESEARCH CENTRE



The
University
Of
Sheffield.

INDUSTRY X

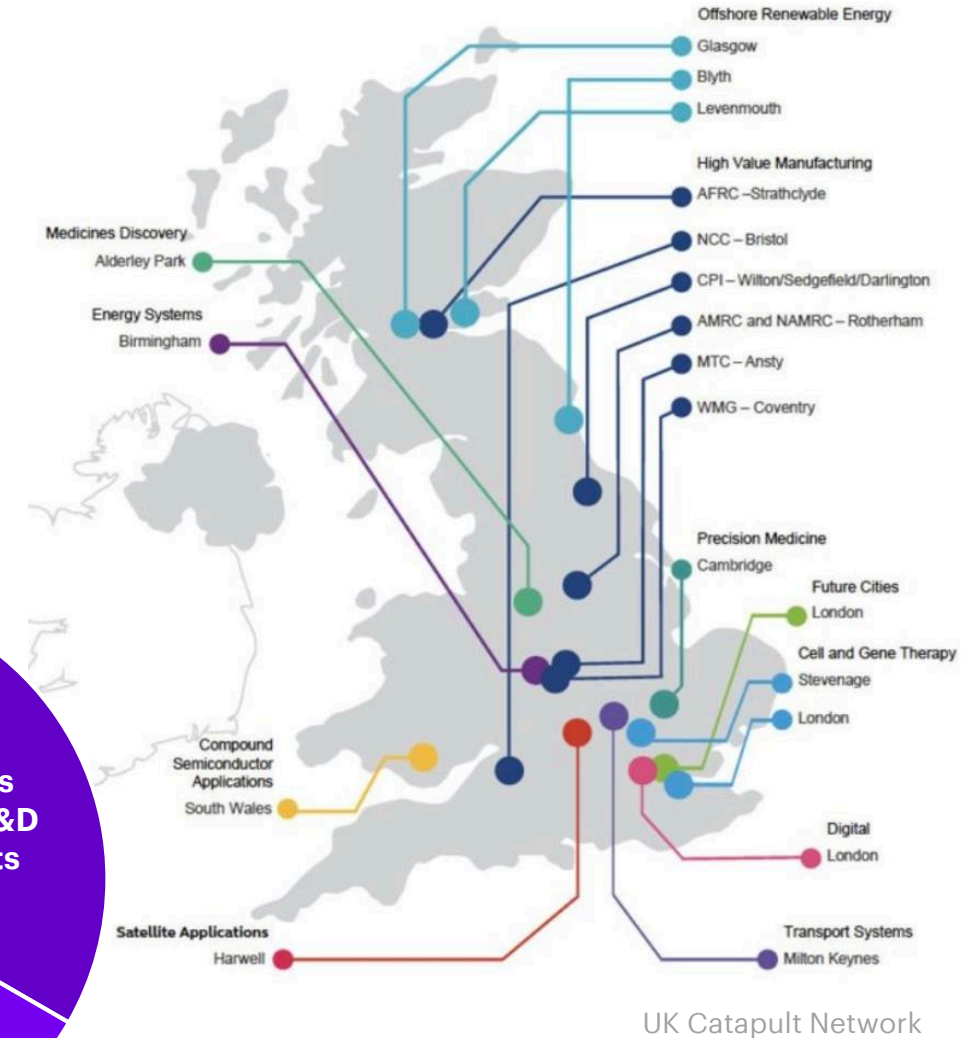
ACCENTURE AT THE AMRC

AMRC Overview

The University of Sheffield Advanced Manufacturing Research Centre (AMRC) is a world-leading research and innovation centre and part of the High Value Manufacturing (HVM) Catapult programme in the UK.

The Catapult network was developed to address the issue that the UK is 3rd/4th in the world for university research output **but** we struggle to capitalise on this and transform it into economic benefit. The AMRC has a 3 part funding model to drive Innovation in the UK.

The AMRC site is on the Sheffield Business Park and includes 8 different buildings. This business park is also home to factories owned by Boeing, McLaren, and Rolls-Royce (amongst others).



AMRC and Technology Readiness Levels

Innovative technologies are described by their TRL (Technology Readiness Level). The role of the AMRC is to bridge the 'Valley of Death' of Innovation.

This is where research and ideas from Academia don't make it to Industry due to a variety of factors such as lack of funding, and accessibility to equipment. The AMRC has over £300m worth of equipment which is used as a test bed for new technologies mainly focussing on the process, method of manufacture and increasingly how to integrate digital solutions into the process.

ACADEMIA < INNOVATION GAP > INDUSTRY
"Valley of Death"



£300M

Value of Equipment
across the AMRC

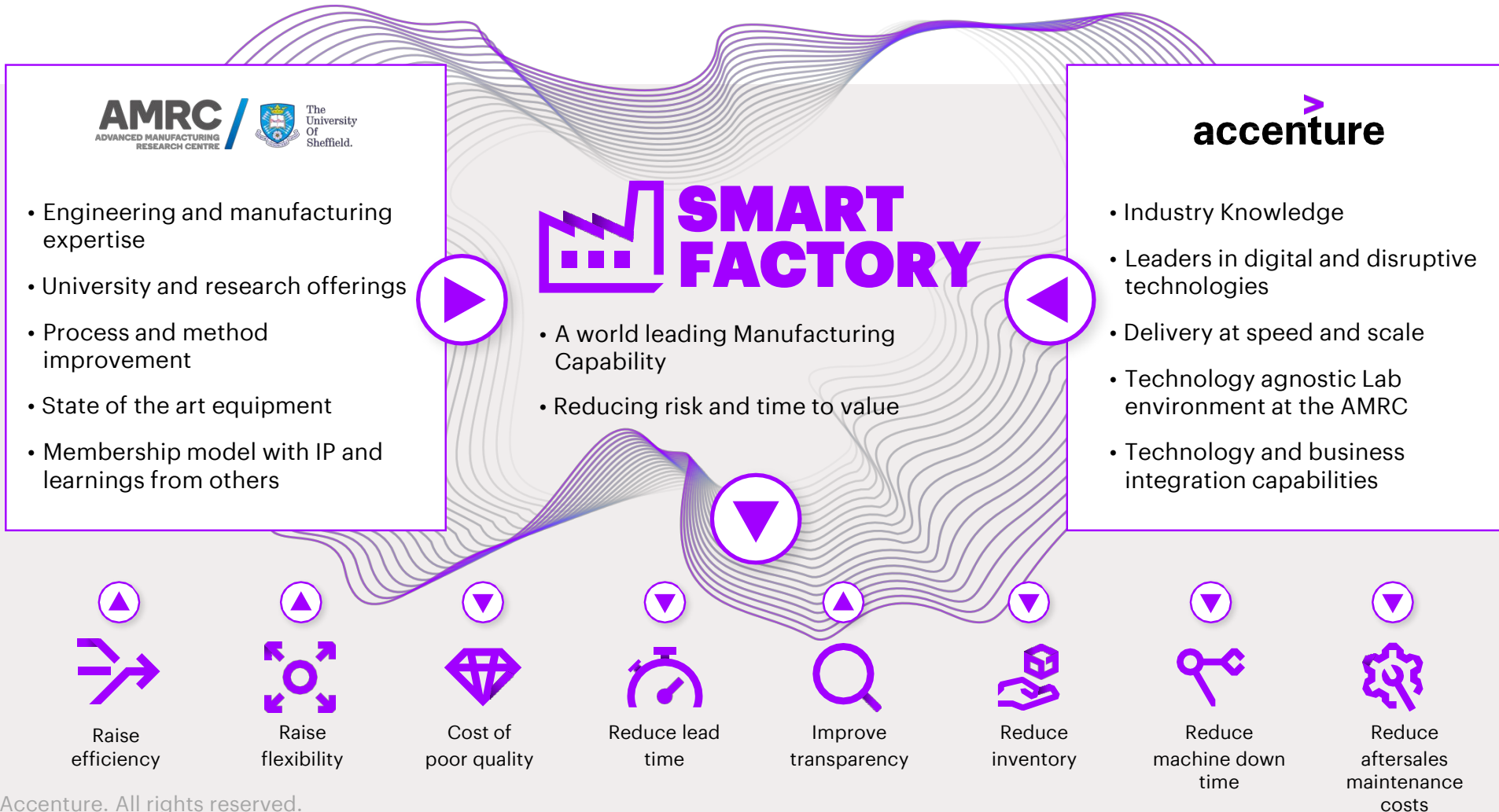
650+

Number of staff at the AMRC
working on research projects



AMRC
ADVANCED MANUFACTURING
RESEARCH CENTRE

AMRC and Accenture Joint Value Proposition



AMRC in Action

AMRC helps customers develop innovative methods of manufacture to reduce costs, increase quality and to generate/retain IP in the UK. All the examples below have led to the creation of new factories/jobs in the UK.



ROLLS-ROYCE

The AMRC developed a new method of manufacture of engine discs. Previous method used required **7 hours** of set up time whereas the new method developed by AMRC required just 45 minutes.

The reduced manufacture time and associated cost savings prevented the offshoring of manufacture and the opening of a new factory in Washington, Tyne and Weir.

This can be seen in **Factory of the Future**



BOEING

The design for the 737/767 actuators was developed by Factory 2050. Previously manufactured by a supplier in Mexico, the new design enabled production to be brought in house and on-shored.

The first Boeing factory in Europe has been opened opposite the AMRC. Factory design and layout was defined using Discrete Event Simulation, resulting in an increase productivity by up to 50%. A second factory/extension is now being planned/built.

Factory Simulation can be seen at **Factory 2050**

03

DIGITAL PLANT

Mridu Gupta



INITIAL PHASES



DIAGNOSE AND DEFINE



ESTABLISH
"NORTH STAR"



REIMAGINE THE
BUSINESS



BUILD
AWARENESS



BUILD AND EXPERIMENT



LEAN
EXPERIMEN-
TATION



AGILE
DEVELOPMENT



MINIMAL VIABLE
PRODUCTS (MVP'S)



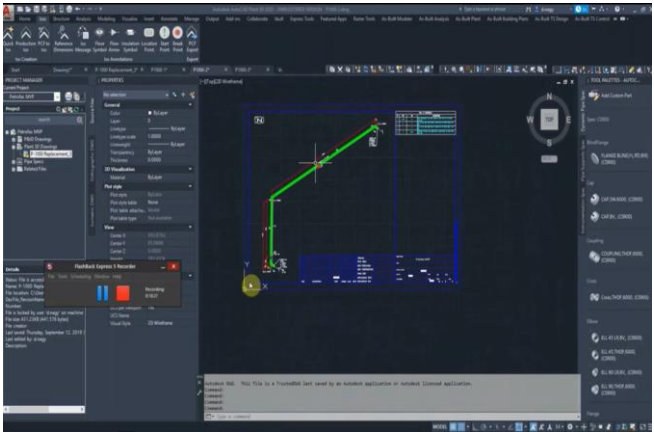
LAUNCH AND SCALE



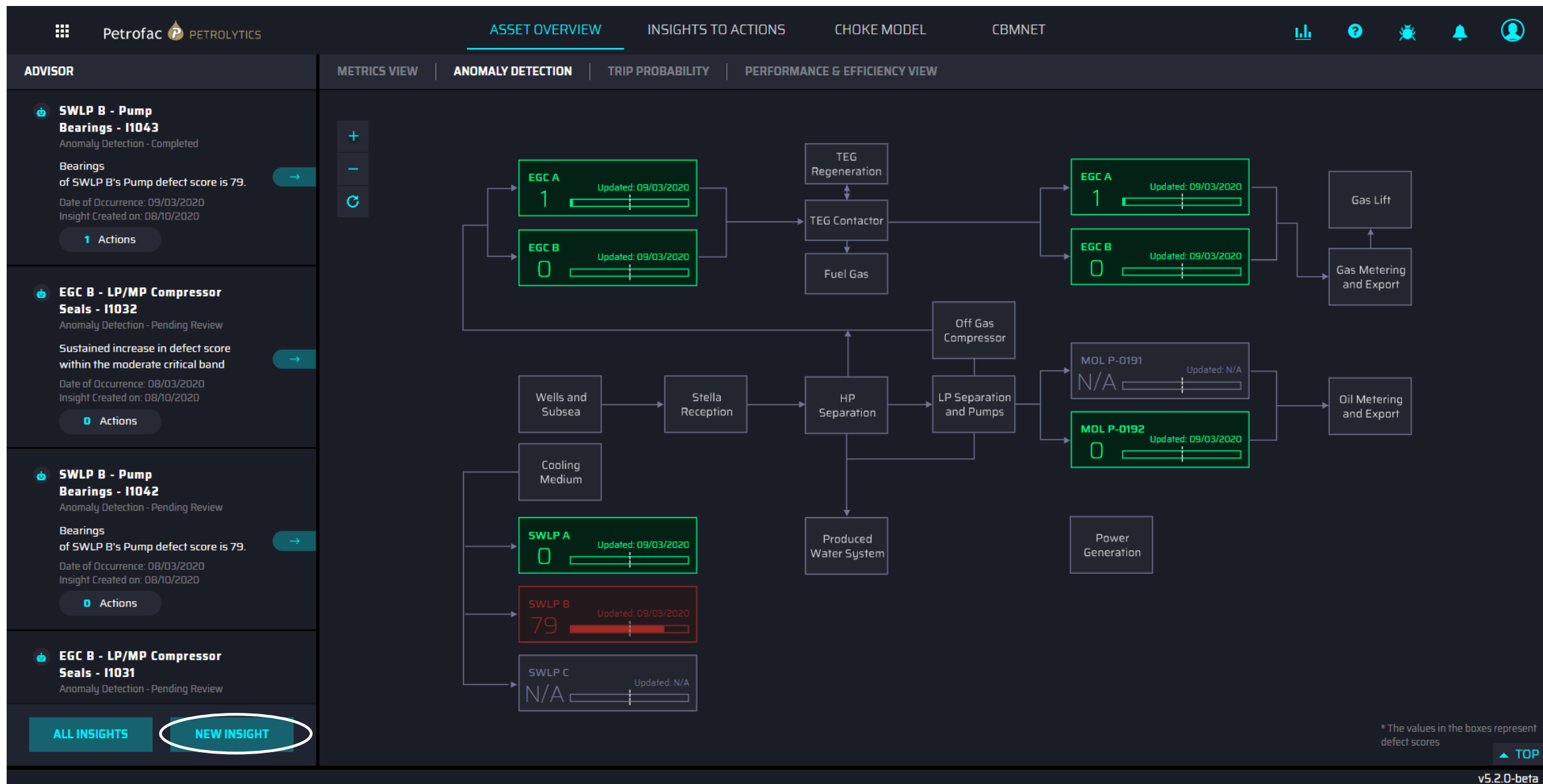
INDUSTRIALIZE
DEPLOYMENT



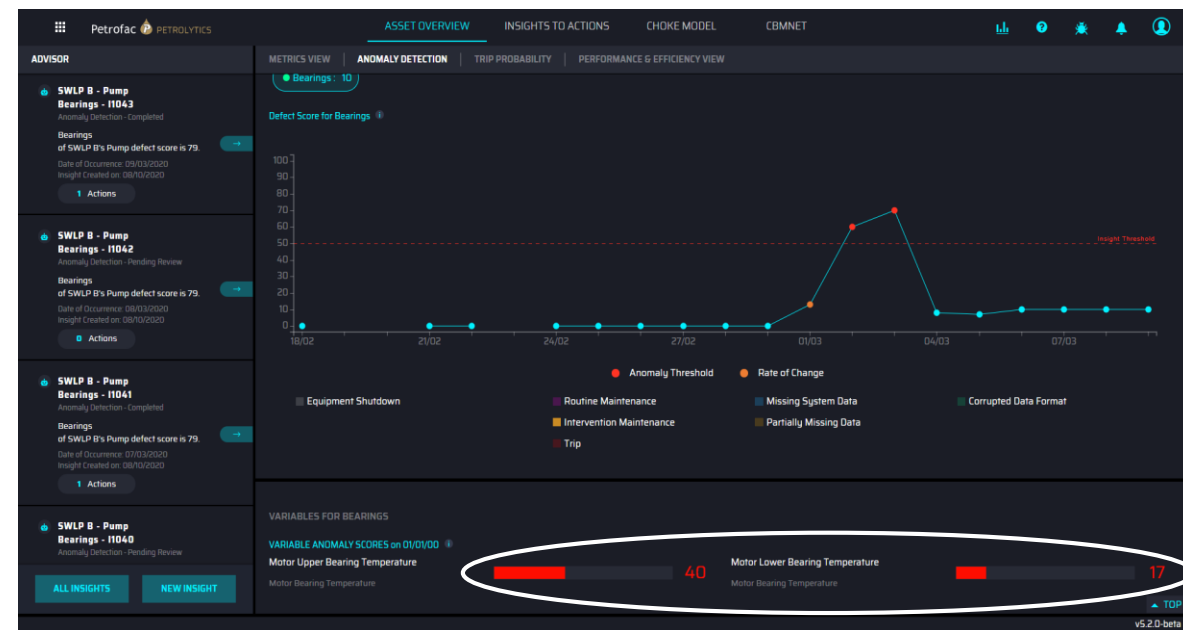
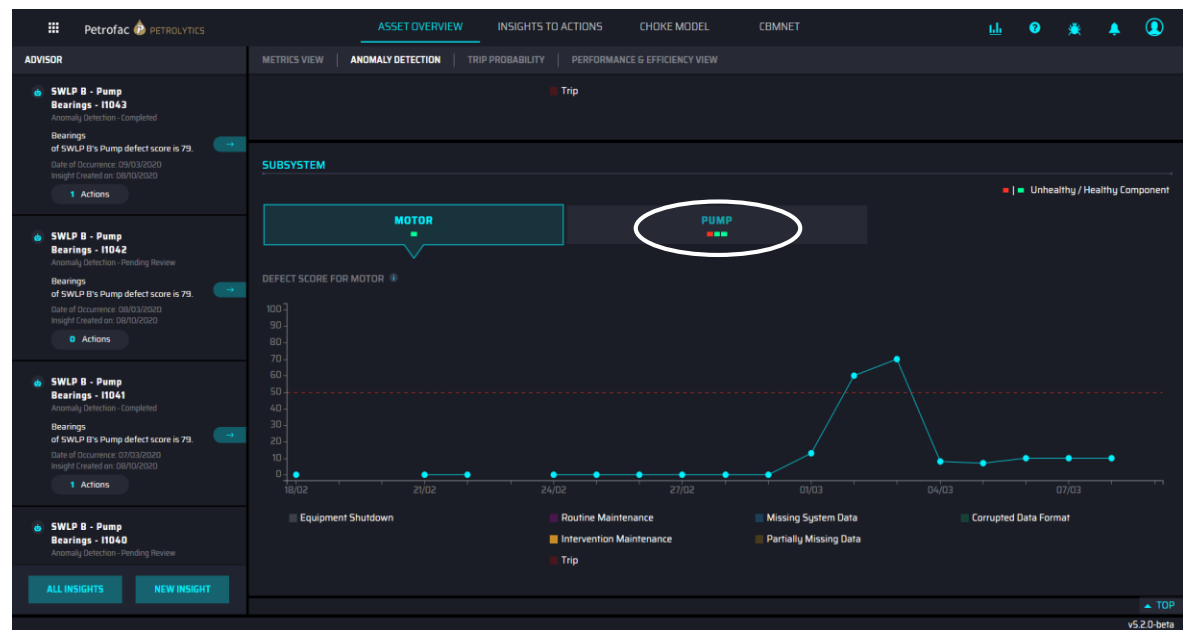
MONITOR VALUE



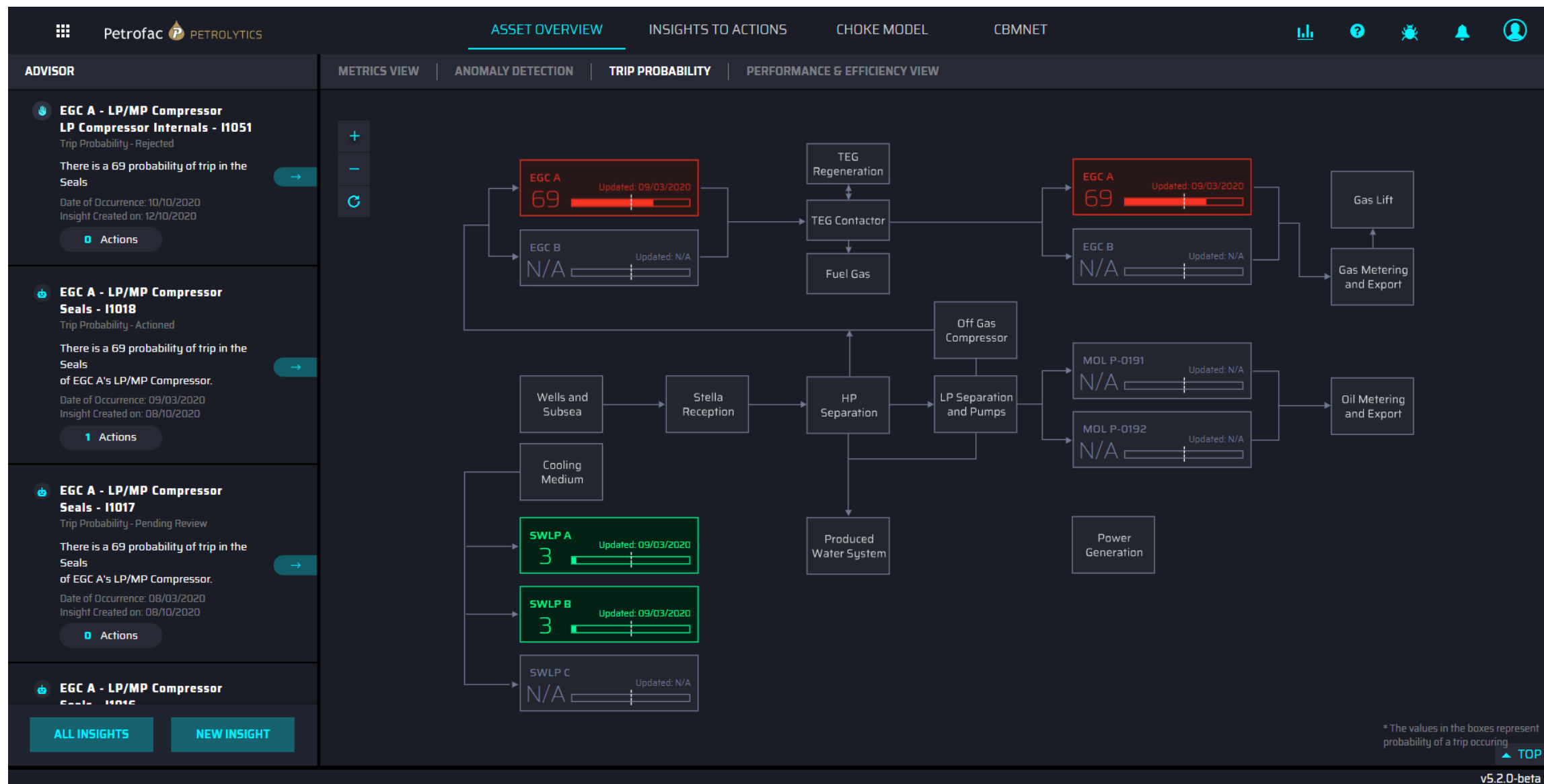
Asset Overview – Anomaly Detection



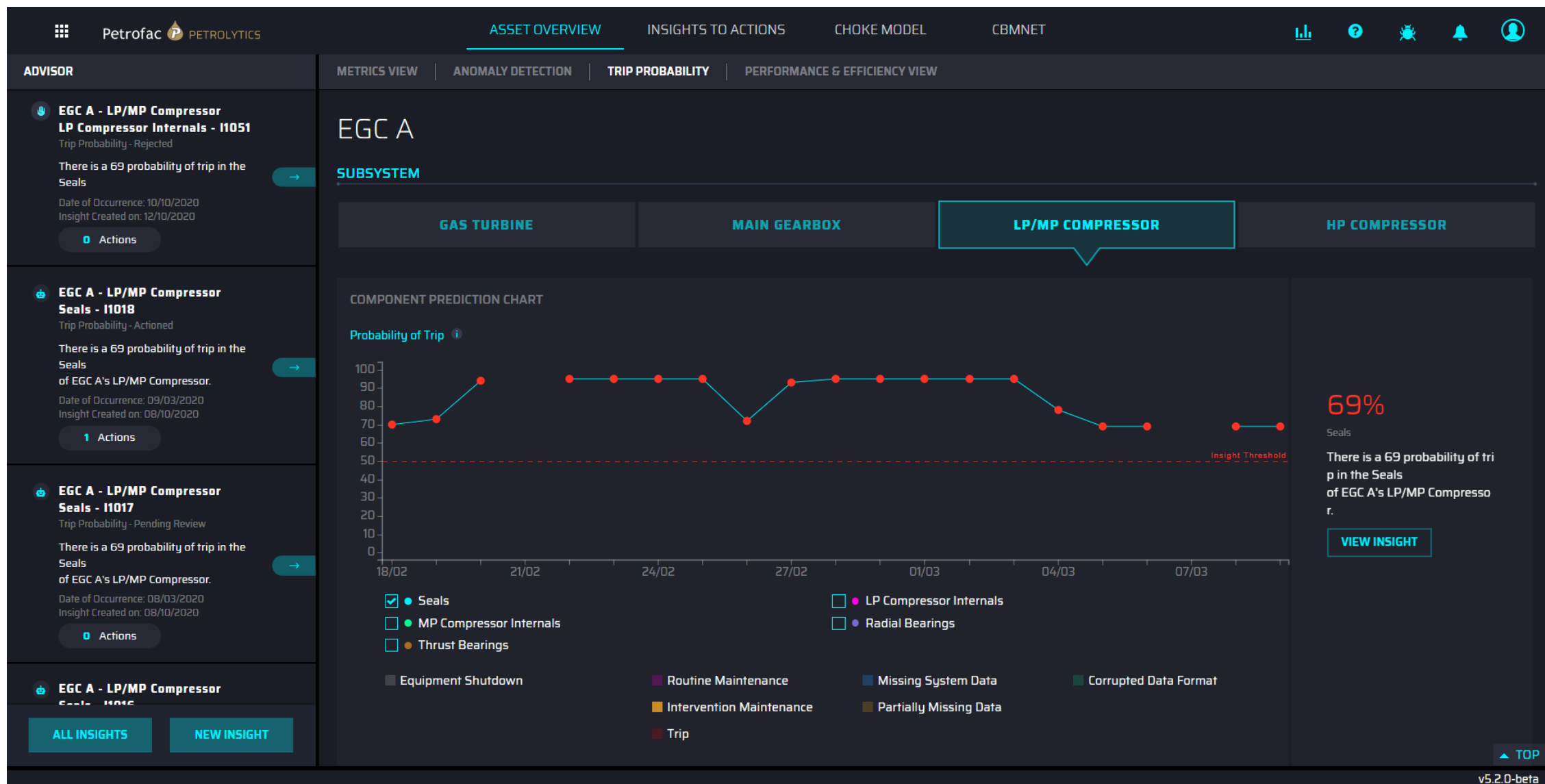
Asset Overview – Anomaly Detection



Asset Overview – Trip Probability



Asset Overview – Trip Probability



Insights to Actions

Petrofac PETROLYTICS

ASSET OVERVIEW INSIGHTS TO ACTIONS CHOKE MODEL CBMNET

OVERVIEW INSIGHTS TO ACTIONS

Filters

Insights(52)

0 1 day ago

ECC A - LP/MP Compressor LP Compressor Internals - I1051
Trip Probability
There is a 69 probability of trip in the Seals
Date of Occurrence: 10/10/2020
Insight Created on: 12/10/2020
Rejected

0 5 days ago

MDL P-0192 - Pump Pump Internals - I1050
Anomaly Detection
Rapid increase in defect score by 1550% since previous day
Date of Occurrence: 22/02/2020
Insight Created on: 08/10/2020
Completed

0 5 days ago

MDL P-0192 - Pump Pump Internals - I1049
Anomaly Detection
Rapid increase in defect score by 1000% since previous day
Date of Occurrence: 19/10/2020
Insight Created on: 08/10/2020
Action(s) In Progress

Actions(10)

0 5 days ago

MDL P-0192 - Pump Pump Internals - A1000
completed
Completed by: DP Supervisor
Assigned to: (Petrofac) Calan Turniff
Completed

0 4 days ago

MDL P-0192 - Pump Pump Internals - A1001
Check the pump is good
Assigned to: (Petrofac) Calan Turniff
In Progress

TDP v5.2.0-beta

You have 0 assigned actions and 0 overdue actions

Raphael Select Insight Type

INSIGHTS OVERVIEW

TOTAL # OF INSIGHTS

52

Pending Review 42 80.8%
 Action(s) In Progress 5 9.6%
 Rejected 1 1.9%
 Completed 3 5.8%
 Acknowledged 0 0.0%
 Actioned 1 1.9%

INSIGHTS OVERVIEW

Active actions YTD 5

Overdue Actions YTD 0

Total # Actions YTD 10

Average time taken to create an action from insight creation
 Average time taken to close an action from action creation

TDP v5.2.0-beta

INSIGHT DETAIL

Raphael - I1042

Insight created on: 08-10-2020 Date of Occurrence: 08-03-2020

Link Insight

System SWLP B Subsystem Pump Component Bearings

Status Pending Review Created By

Insight Description

Bearings of SWLP B's Pump defect score is 79.

0 actions are created Go to Anomaly Detection

☒ Confirmed insight with Operations team

REJECT INSIGHT CREATE ACTION

CREATE ACTION

Raphael - I1042

Insight created on: 08-10-2020 Date of Occurrence: 08-03-2020

System SWLP B Subsystem Pump Component Bearings

Status Pending Review Created By

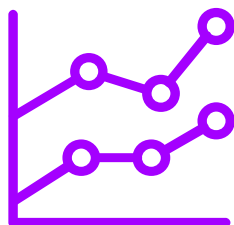
Assign Action (Microsoft Energy CoE In) Completion Deadline 22/10/2020

Action Description

xyz

CANCEL SUBMIT ACTION

Value Achieved



Real-time asset health
Predictive maintenance
AI insights
Work order maintenance



Estimated \$8 million saved from early prediction of anomalies within 3 months



10-20% reduction in maintenance costs

04

DIGITAL IN AEROSPACE AND DEFENCE

Adrian Spragg

NUCLEAR INSTITUTE

accenture[>]



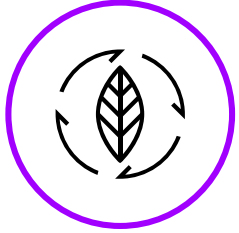
DIGITAL IN AEROSPACE AND DEFENCE

DIGITAL IN AEROSPACE AND DEFENCE

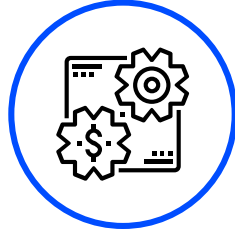
THE POTENTIAL FOR DIGITAL AND INNOVATION



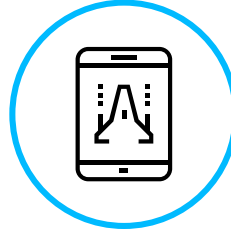
COMPONENTS OF A NEW DIGITAL ECOSYSTEM



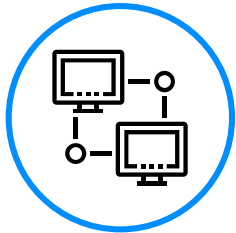
Digital twin and thread



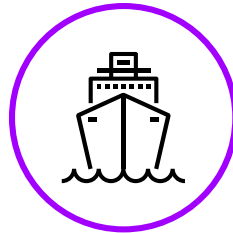
Digital project control
across a **connected**
supply chain



Digital factory or Shipyard



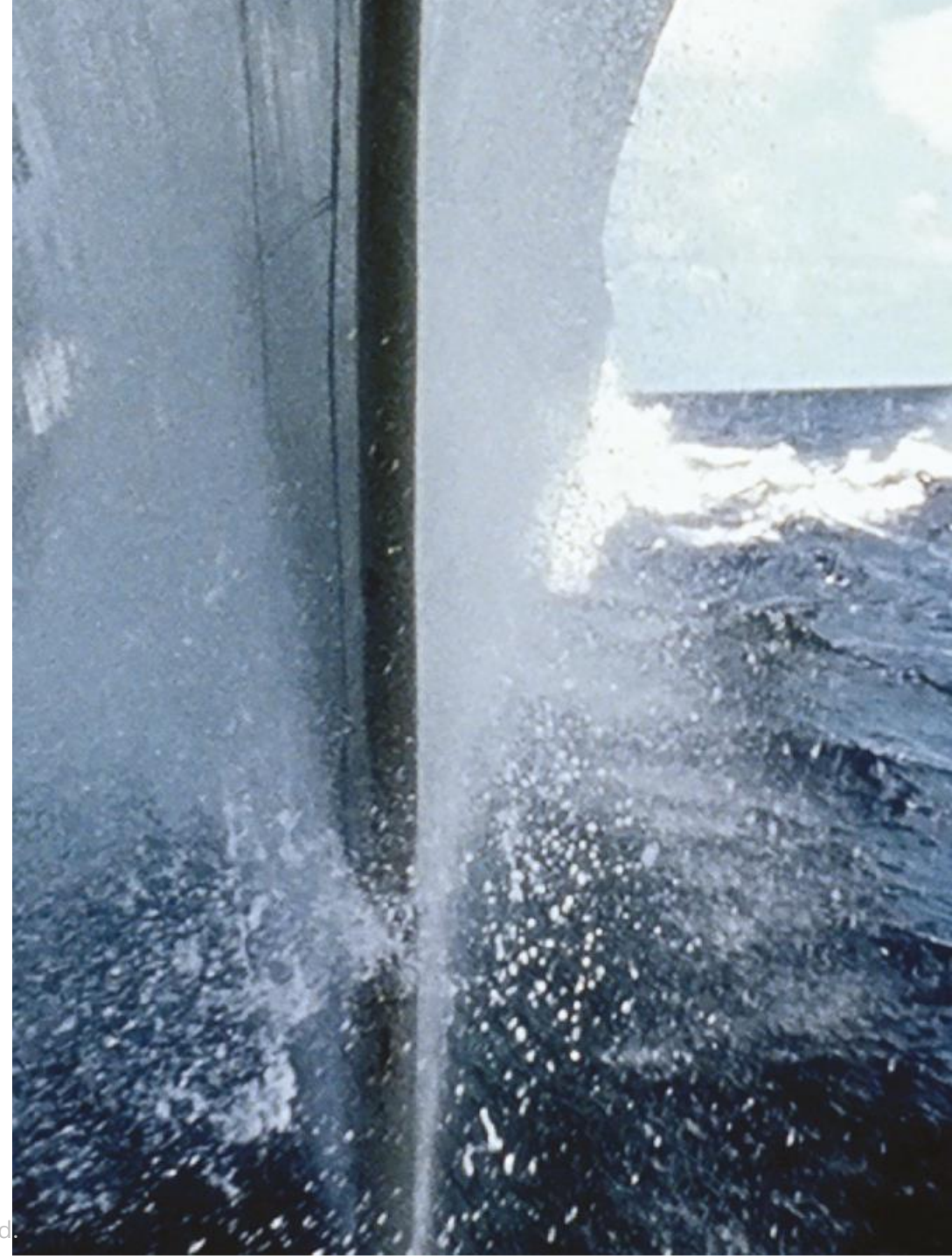
Connected workforce



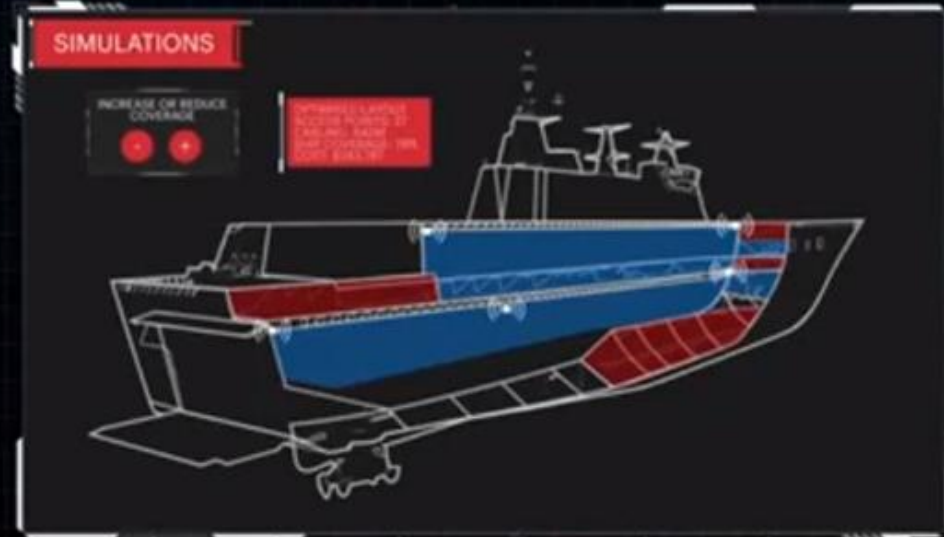
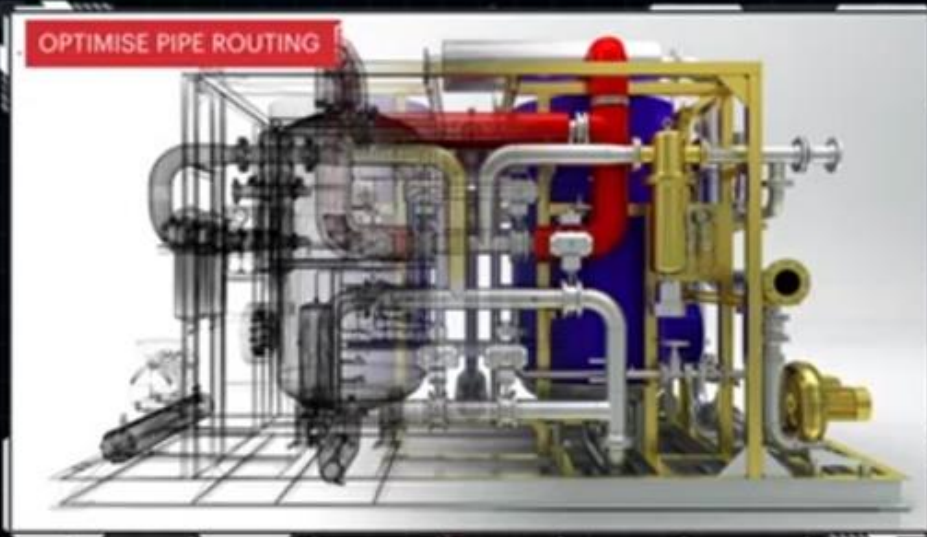
Connected asset



Secure, open platform
for digital services

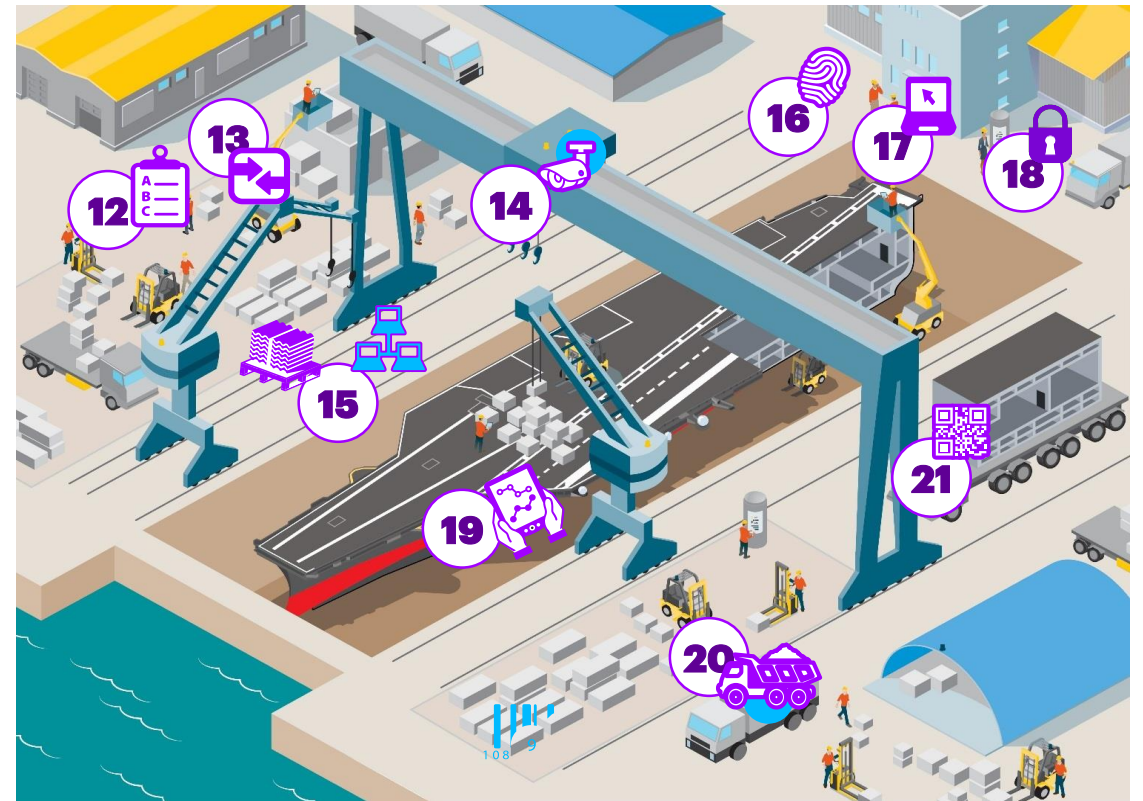
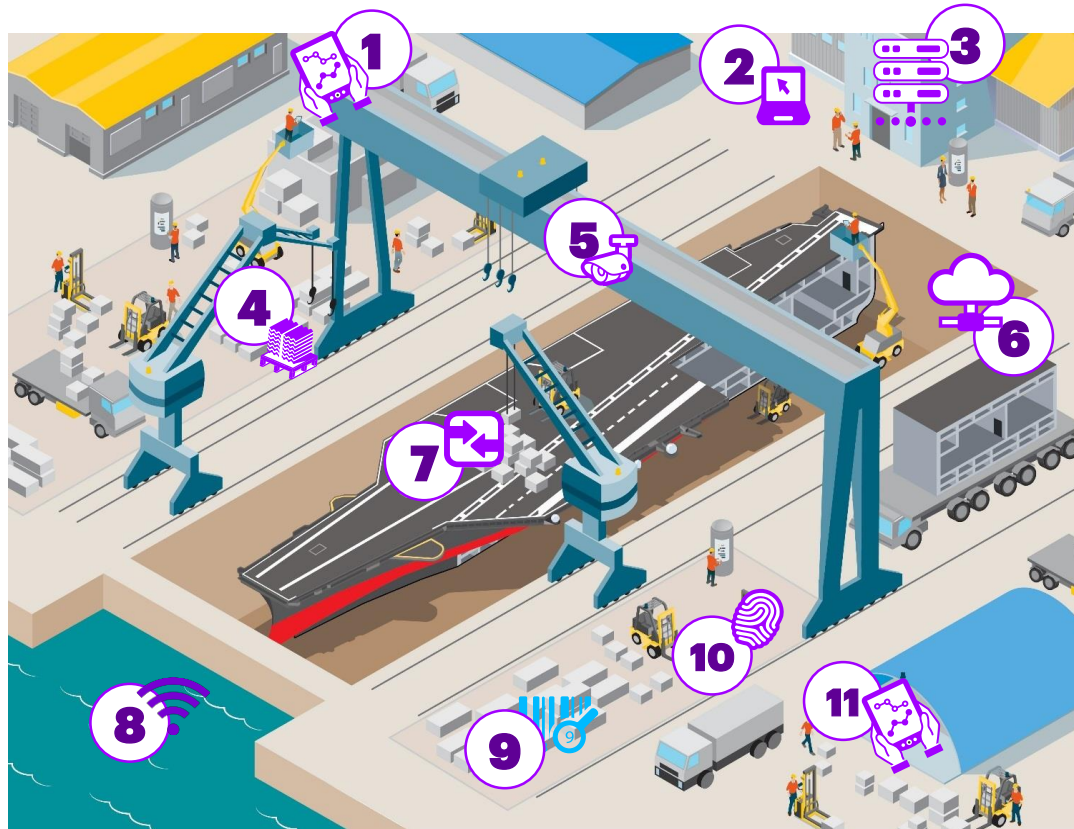


DIGITAL TWIN - MARITIME



THE DIGITAL SHIPYARD

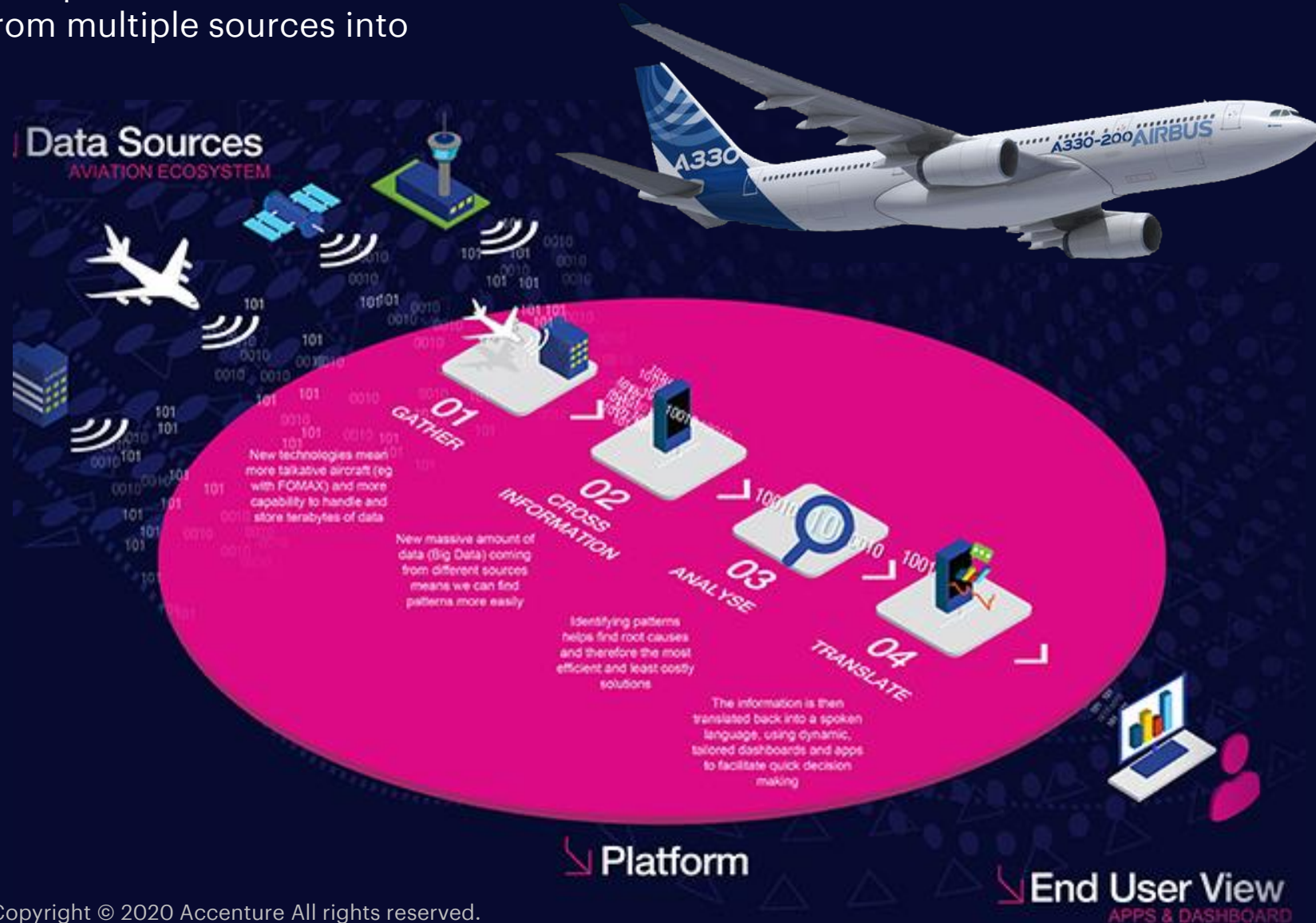
CONNECTED SHIPYARD OF SMART SENSORS, IIOT AND INNOVATION - BRINGING SMART MANUFACTURING TO SHIPBUILDING



SERVICES COLLABORATION PLATFORM

Skywise provides users with a single access point to enriched data by bringing together aviation data from multiple sources into **one**

- **Harness deep in-service data** and insights to improve its **aircraft designs and service** offerings.
- Providing suppliers and OEMs with rich operational and **maintenance insights**.
- Optimising each aircraft's performance through flight **operations data analytics**.
- Virtual cabin experience for airline **customer satisfaction**.



05

DIGITAL IN SMART CITIES

Molly Blatchly-Lewis

A series of overlapping, translucent purple wavy lines that flow from the left towards the right side of the slide, creating a sense of motion and digital connectivity.



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REDEFINING SMART CITIES

Molly Blatchly-Lewis

A nighttime photograph of a city street, likely in Tokyo, featuring tall skyscrapers and illuminated streetlights. The scene is used as a background for the text.

**FROM SMART
SENSORS...**

**...TO RESILIENT HUMAN-
CENTRED SYSTEMS**



KEEP OUR CITIES MOVING: RESILIENT TRANSPORT



KEEP OUR CITIES THRIVING: RESILIENT ECONOMIES



KEEP OUR CITIES WORKING: RESILIENT OPERATIONS

A person is holding a smartphone, and the background is a blurred crowd of people. The text 'KEEP OUR CITIES CONNECTED: RESILIENT SERVICES' is overlaid on the image. 'KEEP OUR CITIES' and 'CONNECTED:' are in white, and 'RESILIENT SERVICES' is in blue.

KEEP OUR CITIES CONNECTED: RESILIENT SERVICES



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THANK YOU

Connect via: [linkedin.com/in/mollymayblewis/](https://www.linkedin.com/in/mollymayblewis/)

Learn more at: <https://www.accenture.com/gb-en/services/public-service/cities-and-infrastructure>



Q&A

Colin Ellam

