Microsoft

Enabling excellence in digital industrial operations, today

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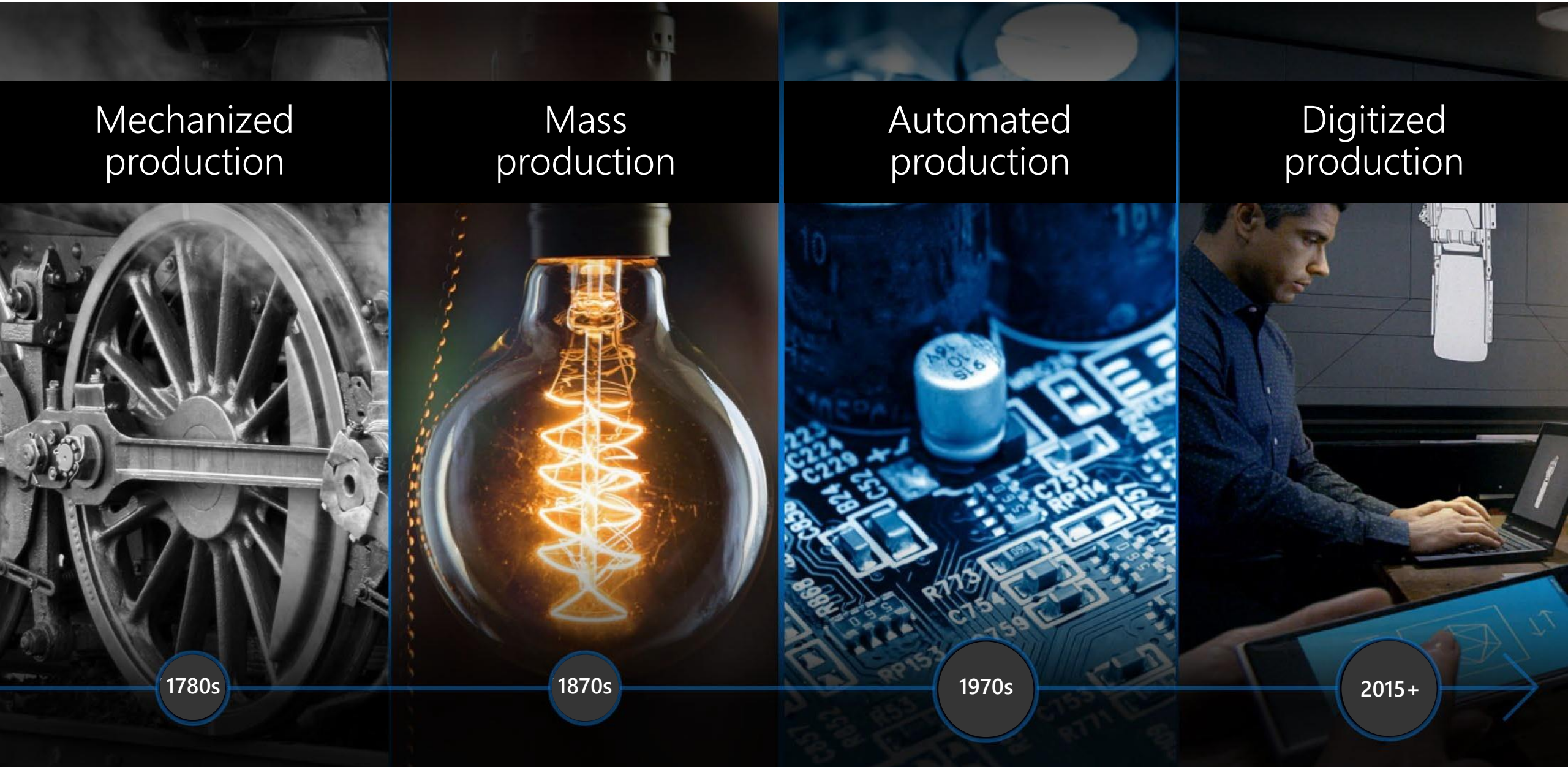
Industry Principal Solution Specialist,
Microsoft Western Europe

Pescara,14 Settembre 2017

Digital Disruption and the 4th Industrial Revolution



30% simultaneous revenue increase and cost reduction for Industry 4.0 first movers by 2020, compared to only 2.9% p.a. and 3.6% p.a. respectively for the average company.[1]

"**Consumers** will ultimately choose the winners and losers among the companies and brands vying to deliver convenient, low-cost and customized **mobility solutions.**"[3]

40% of operational processes will be **self-healing and self-learning** by 2022.[5]

Within 3 to 5 years, hundreds of millions of things will be represented by **digital twins**.[4]

85% of manufacturing executives expect **human-machine-centric** environments to be commonplace by 2020.[6]

95% of business leaders expect their company to use the **IIoT** within the next three years."[2]

$500b potential in savings for manufacturers and equipment makers from **virtualization, real-time communication, and cobot** technology.[7]

This infographic is based on Microsoft analysis of third-party data. Sources include: 1. PWC 2016 Global Industry 4.0 Survey; Dr. Reinhard Geissbauer, Jesper Vedso and Stefan Schrauf. http://www.gartner.com/newsroom/id/3482617 2. Connected business transformation: how to unlock value from the Industrial Internet of Things. Accenture. February, 2017. 3. What's ahead for fully autonomous driving: Consumer opinions on advanced vehicle technology. Deloitte. February 2017. 4. 1. http://www.gartner.com/newsroom/id/3482617 5. DC FutureScape: Worldwide Digital Transformation 2017 Predictions Jan 2017 Doc # US42259317 Web Conference By: Michael Versace. 6. Eric Schaeffer et al., Machine Dreams; Making the most of the connected industrial workforce. Accenture. February, 2017. 7. Daniela Costa, Head, European Capital Goods Equity Research, Goldman Sachs Research; Forrester Research. January, 2017.

Mastering digital to innovate business processes

Achieving operational excellence

Creating new services via connected products

Anticipating and reacting to complex, regulations

Responding to connected, empowered consumers

Communicating with entire value chain

Managing increased cyber risk

Achieve digital excellence with connected products and services

Smart product innovation

Plants and supply chains of the future

Connected marketing, sales, and services

IoT enabling rich connected consumer experiences

Pervasive connectivity enabling new offerings and revenue

CONNECTED VALUE NETWORKS

Transforming how products are designed, manufactured, and sold

CONNECTED SERVICES AND EXPERIENCES

Creating new business models as a service provider

A new class of digital twin

NEW SERVICES DRIVEN BUSINESS MODELS

MANUFACTURING OPERATIONS, SERVICES

R&D & ENGINEERING

Information mirroring* model

- → Powerful modeling and analysis.
- → R&D and engineering focus.

Simulation and 3D printing

- → Digital design, virtual assembly, and simulation.
- → 3D printing goes mainstream.

Connected IoT services

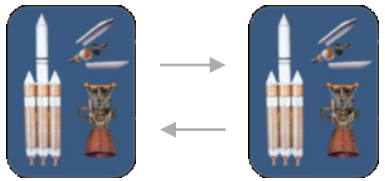
- → Unified physical and virtual data.
- → Rapid feedback across design, manufacturing, and operations.

End-to-end innovation

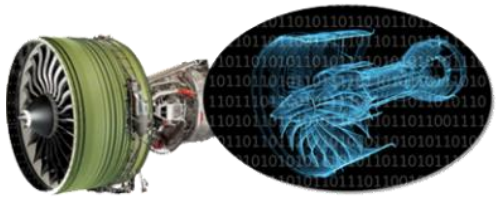
- → Mixed reality visualizations.
- → Cognitive services.
- → Human and device collaboration.

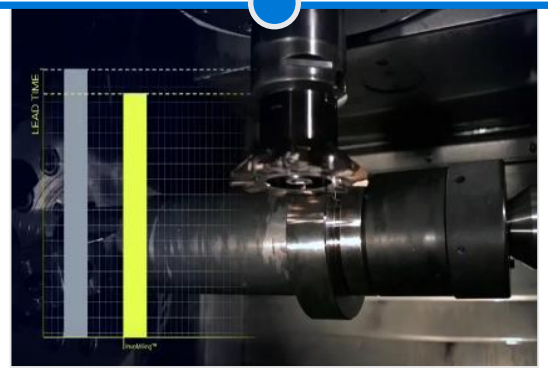
Digital Twin evolution

1985-2002 (18 years) | **2003–2014** (12 years) | **2014–2016** (3 years) | **2017**



Real space | Virtual space





Dr. Michael Grieves and John Vickers – University of Michigan

Microsoft offerings for the Digital Twin

Software and hardware capabilities

Azure | Azure IoT Suite | Azure Machine Learning
High Performance Computing | HoloLens | Cortana Intelligence Suite | Azure Blockchain | Trusted Cloud

Preconfigured solutions

Remote Monitoring | Predictive Maintenance | Connected Field Service Connected Operations

Connected Product/Systems Value Curve and Maturity Levels

Setting the Strategy for Next-Generation Business Models

VALUE

Level 1 — Unconnected

- Fight fires
- Limited product feedback
- High cost of service

Level 2 — Connected

- Remote access as allowed
- Fragmented information
- Reactive response to issues

Service

Level 3 — Serviceable

- Remote access as needed
- Some proactive monitoring
- Service cost avoidance
- Electronic software delivery

Analyze

Level 4 — Intelligent

- Predictive maintenance
- Monitor and report on services
- View and analyze product data
- Leverage usage data for new product enhancements

Integrate

Level 5 — Optimized

- Enterprise integration
- Configuration and warranty management
- Pay-per-use models/billing integration
- Track and locate /inventory management

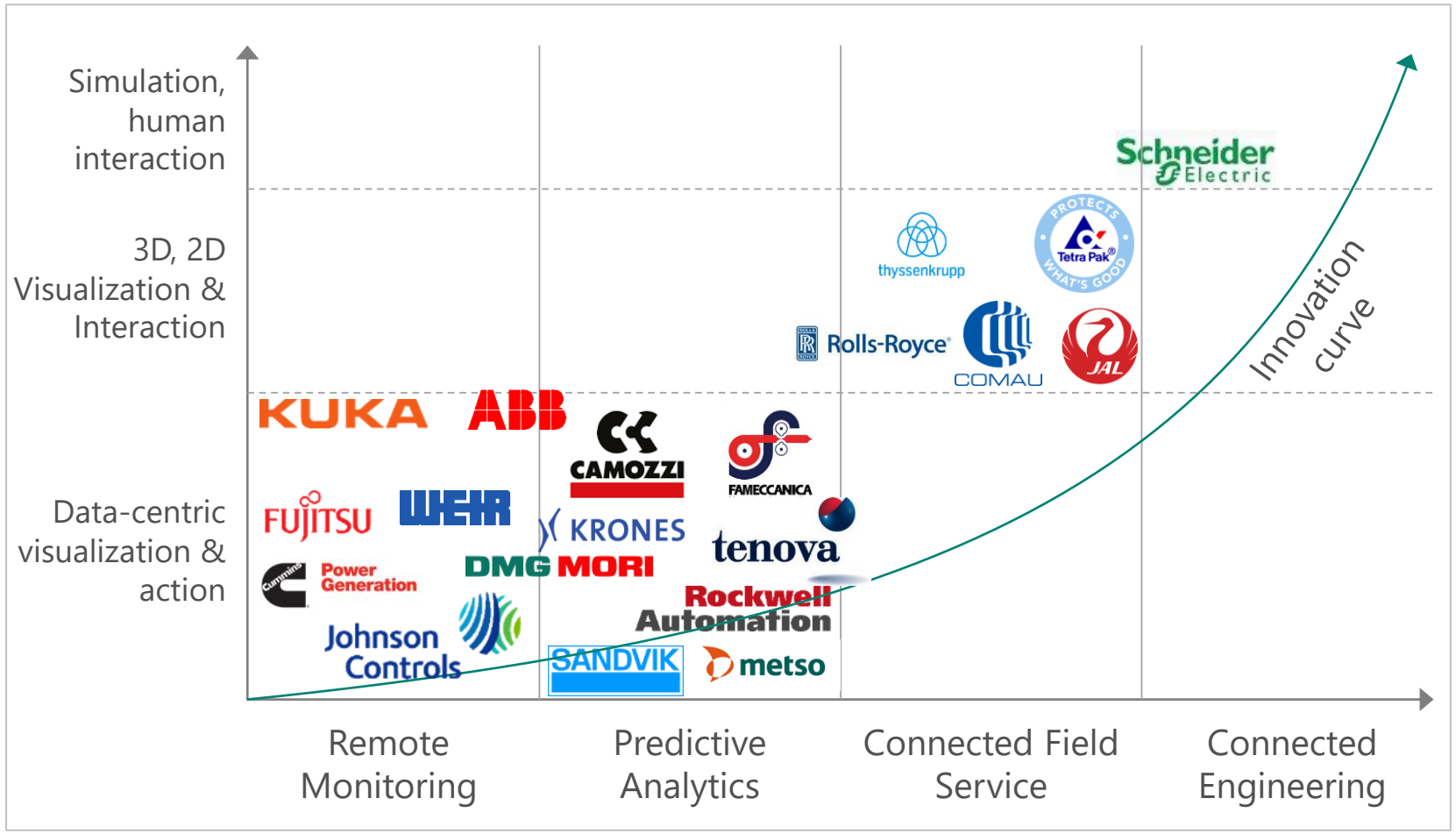
Reinvent the Product Experience

Level 6 — Differentiated

- New revenue-generating capabilities
- Cloud-delivered, customer applications
- Replenishment management
- Remotely control products
- Compliance and audit reporting
- Mobile integration
- Cloud-to-cloud-to-mobile mashups

Microsoft

Digital Excellence is a Strategic Journey



The Connected Customer

- Monitor performance & maximize efficiency, reliability
- Refine or add value-added equipment features & services
- Mitigate downtime and increase availability

The Connected Enterprise

- Drive design & engineering innovation through customer & equipment insights
- Improve quality and reliability
- Differentiate with 360 degree customer service

WHAT DO ALL THESE COMPANIES HAVE IN COMMON?
THEY ACCELERATED THE PACE OF THEIR BUSINESS TRANSFORMATION WITH A DIGITAL STRATEGY

Microsoft

You don’t have to run (your business) faster, you have to change the way you run (your business)

Microsoft

Microsoft@Hannover Messe 2017

Among all the companies exhibiting at Hannover Messe in 2017, it could easily be argued that ***Microsoft had the most impressive performance.***

Matthew Littlefield - LNS Research International

Technology is important, but getting the business infrastructure right is the real determinant of success - over the last 6 months we've seen a lot of announcements about new platforms, but without anything behind it.
They don't have the ecosystem worked out, the partnerships set up. ***Microsoft is at the forefront.***

Alex West, IHS-Markit

Microsoft

The total package: keeping food and drink flowing safely from farm to table

Objectives

- Tetra Pak wanted to prevent process disruptions across the food industry, that could take the entire packaging operation offline for days

Solution

- Adopt a digital strategy using Azure IoT Suite + Advanced Analytics + Remote Field Service to enable its cloud-connected machines to predict exactly when equipment needs maintenance, avoiding breakdowns.

Benefits

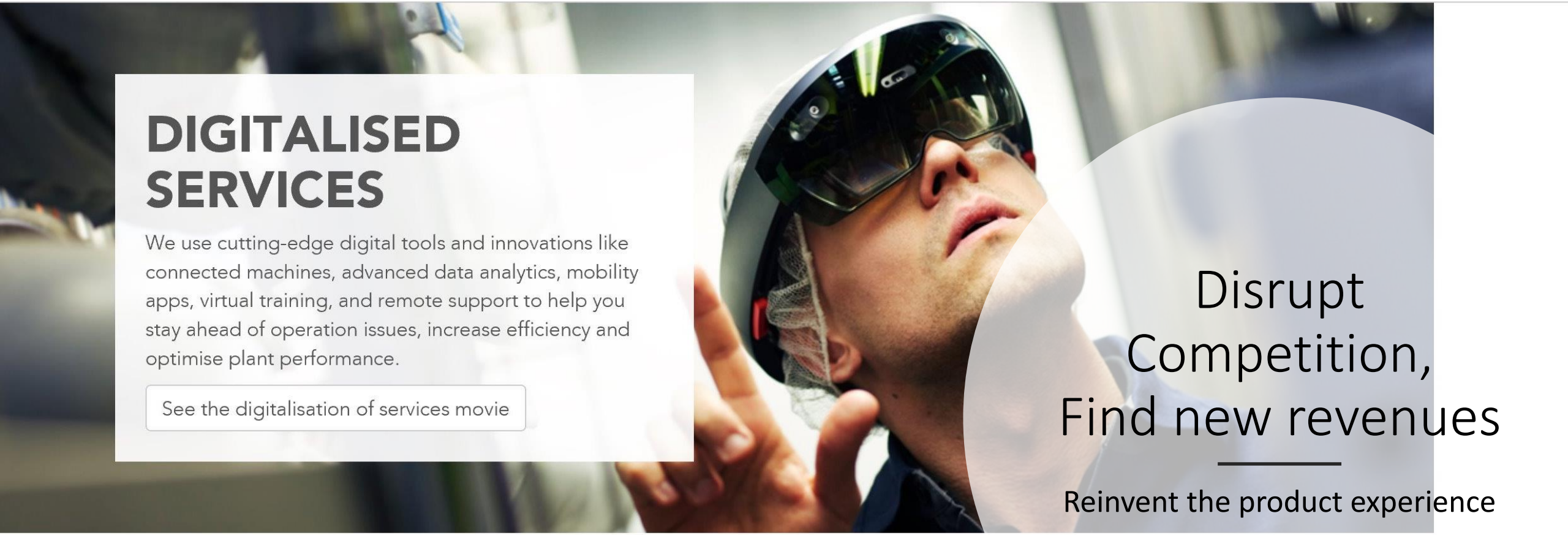
- Predictive maintenance for anomaly detection
- Tetra Pak service engineers use HoloLens to more quickly diagnose and fix machine issues
- Reduce operational costs, downtime
- Business model innovation
- Improve customer services and satisfaction

"We will take over a lot of risk on behalf of our customers. To do that, we need cutting-edge technologies to control and minimize these risks. When you have plants around the world, the service knowledge we gain from one plant comes to benefit another. This prevents issues from happening."

Johan Nilsson, Vice President of Tetra Pak Services

Microsoft

Digitalisation of Services



DIGITALISED SERVICES

We use cutting-edge digital tools and innovations like connected machines, advanced data analytics, mobility apps, virtual training, and remote support to help you stay ahead of operation issues, increase efficiency and optimise plant performance.

See the digitalisation of services movie

Disrupt Competition, Find new revenues

Reinvent the product experience

WHAT OUR SERVICES DO FOR YOU

Elevator manufacturer innovates business model, arms field technicians with actionable guidance

Challenge

Increase uptime and improve preventive maintenance capabilities in more than 1.1 million elevators worldwide.

Strategy

Applied Microsoft Azure IoT real-time monitoring and data analytics to elevator manufacturing and services, and enabling field services with HoloLense

Results

- Reduced costs for ThyssenKrupp and its customers
- Increased reliability through predictive maintenance and rapid, remote diagnostic capabilities
- Dramatically reduced time-to-intervention and case resolution

"We wanted to go beyond the industry standard of preventative maintenance, to offer predictive and even *preemptive* maintenance, so we can guarantee a higher uptime percentage on our elevators."

— Andreas Schierenbeck, CEO, ThyssenKrupp

ThyssenKrupp

Microsoft

ThyssenKrupp Access Solutions

ThyssenKrupp

Home About Us Product Advisor Contact ThyssenKrupp Elevator AG Switch Country

Text Size: A A A

Home Elevators Stair Lifts Platform Lifts

Search

- Overview
- Stair Lift Installation
- Flow II
- Levant Comfort
- Levant

Buying in 3 steps

1 **EXPLORE**
View our products

2 **CONNECT**
with a Local Dealer

3 **SCHEDULE**
Arrange a visit

Stair Lifts

ThyssenKrupp Access Stair Lifts

Stair lifts are a practical and economical solution for people who face mobility and accessibility problems within their own homes, but want to maintain a healthy, happy, and active lifestyle without having to relocate. A ThyssenKrupp Access chair lift is the solution. We engineer every stair chair with a wide variety of smart and innovative products designed to fit your unique needs.

Business model transformation - from selling jet engines to selling "power by the hour" airtime

Challenge

- Help aviation customers minimize the cost and disruption of maintenance activities
- Help customers better manage fuel costs

Solution

- Use IoT technology to collect, aggregate, and analyze engine and other data
- Provide dashboard for insights from data

Benefits

- Improves the efficiency of maintenance activities and fuel usage for customers
- Delivers insights to the right stakeholders at the right time
- Saves customers money

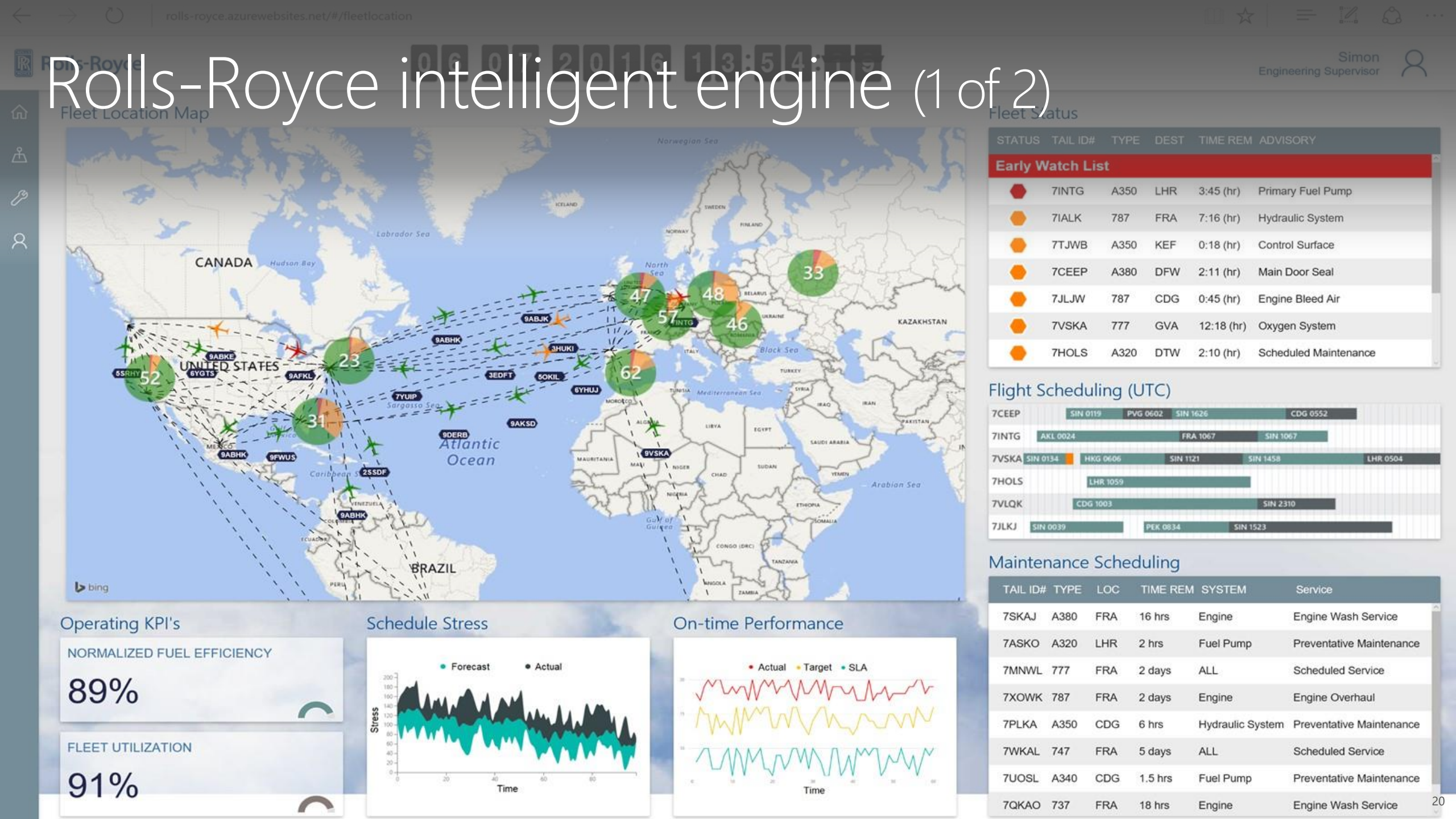
Rolls-Royce

"We can use data and insight in new ways to refine our customers' operations to add more value to them and allow them to do more with less."

— Nick Farrant, Senior Vice President, Rolls-Royce

Farnborough Airshow 2016
Digitally enabled services

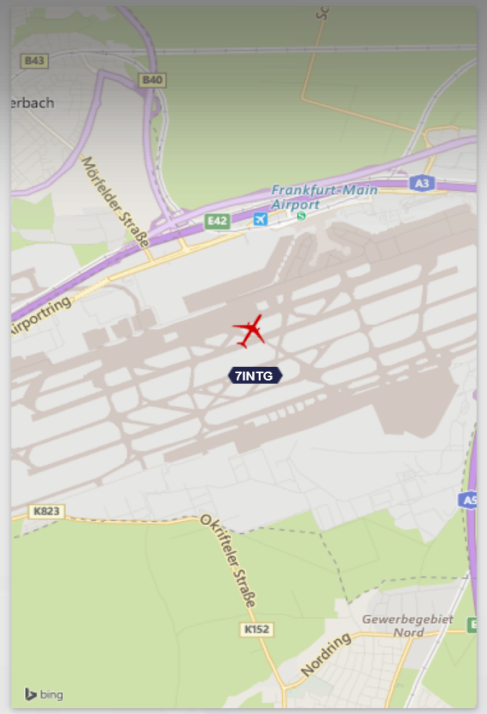
Rolls-Royce intelligent engine (1 of 2)



Rolls-Royce intelligent engine (2 of 2)

Simon
Engineering Supervisor

Location

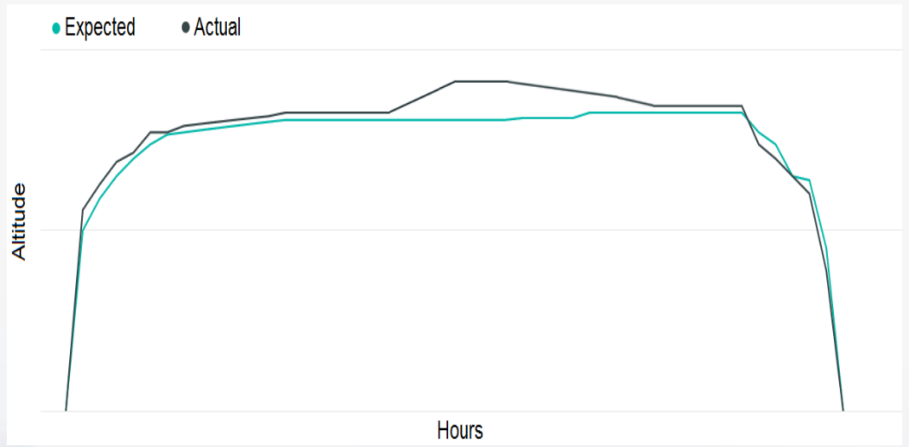


Aircraft Overview

Elise Armstrong
Captain
(SEA)
Fuel VAR: +12%

Marcus Furlong
First Officer
(SEA)
Fuel VAR: +12%

Flight Variance - Last Flight



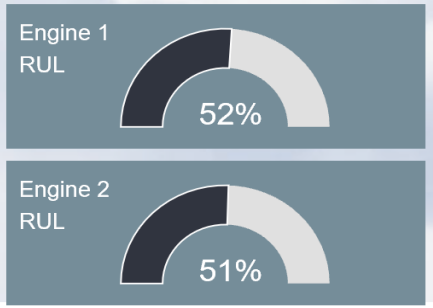
Flight Details

TAIL NUMBER	7INTG
TYPE	Airbus A350
POWER PLANT	2 x Trent XWB
LOCATION	Frankfurt, Germany
TERMINAL	A, Concourse C, Gate C16
NEXT FLIGHT	FRA – SEA – 06:30 UTC
TIME UNTIL DEPARTURE	3:45
LAST SERVICE	LHR – 02/11/2016
NEXT SERVICE	LHR - 07/06/2016
ON TIME PERFORMANCE	94%

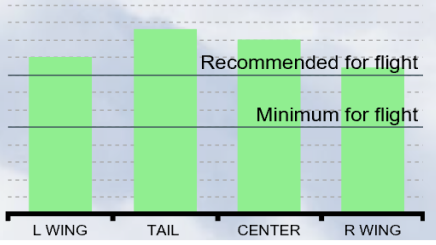
Aircraft Systems

STATUS	ATA CODE	LOCATION	Flight Critical
	ATA 85	Propulsion Systems	Pilot Discretion
	ATA 75	Engine Bleed Air Valve	No
	ATA 52	Primary Door Seal	No
	ATA 50	Cargo Door	No
	ATA 33	Lights - Cargo Hold	No
	ATA 38	Water/Waste System	No
	ATA 21	Air Conditioning	No

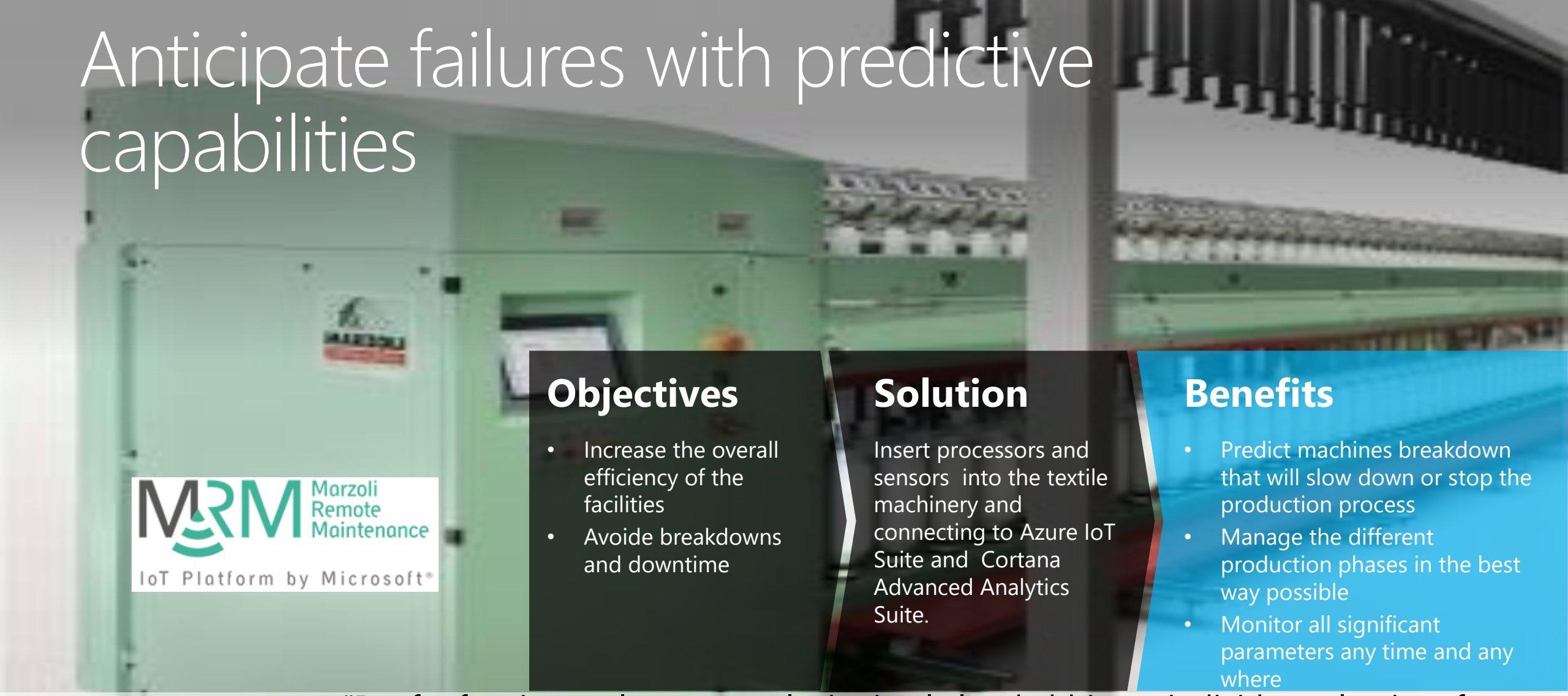
Engine Details



Aircraft Fuel Level



Anticipate failures with predictive capabilities



MRM Marzoli Remote Maintenance
IoT Platform by Microsoft

Objectives

- Increase the overall efficiency of the facilities
- Avoide breakdowns and downtime

Solution

Insert processors and sensors into the textile machinery and connecting to Azure IoT Suite and Cortana Advanced Analytics Suite.

Benefits

- Predict machines breakdown that will slow down or stop the production process
- Manage the different production phases in the best way possible
- Monitor all significant parameters any time and any where

CAMOZZI

Microsoft

“Per far funzionare le nostre soluzioni nel cloud abbiamo individuato la piattaforma Azure e la suite Cortana Analytics di Microsoft come le tecnologie migliori e siamo grati a Microsoft Italia per aver creduto nella nostra tecnologia che ci posiziona oggi tra i leader di questo comparto»

— Lodovico Camozzi, Presidente e Amministratore Delegato del Gruppo Camozzi

Comau helps improve efficiency and cut costs

> Mixed reality, machine learning, and artificial intelligence are redefining the industrial world and Microsoft means to be the enabler of the success of companies willing to reimagine their business in a more efficient, sustainable, and safe way, thanks to new technologies."

— **Tiziana Olivieri**, Enterprise & Partners Lead, Microsoft Italy

COMAU

TENOVA
Data Mining & Smart Steel

*"**Technological innovation represents** a major commitment for Tenova and **a crucial factor in the company's growth strategy**, and we found in **Microsoft a key ally** to bring about digital transformation. **Thanks to** cloud computing, IoT, and machine learning technologies by **Microsoft**, **we are able to develop a 4.0 solution** which represents our best recipe to contribute the future of the iron and steel industry. The goal is to **make plants always more intelligent and connected**, to offer **services of high added value** by analyzing the data from machines to **optimize production**, and to **help our customers to achieve their business objectives**."*

Andrea Lovato, Tenova CEO

tenova

Microsoft

Energy technology provider innovated electric vehicle services with the cloud

Challenge

- Capitalize on market growth with new products.
- Stay competitive in a changing market.

Solution

- Launched a new electric vehicle fast-charging services platform.
- Combined charging stations with Azure cloud services.

Benefits

- Provided performance, stability, and scalability.
- Enhanced charging station services for EV drivers.
- Enabled development of new services, such as proactive maintenance.

ABB

"By partnering with Microsoft, ABB will be able to offer best-in-class operations as well as innovative advanced services."

— Pekka Tiitinen, Discrete Automation and Motion Division President, ABB

Lo sapevate che i flussi di energia funzionano come i flussi di dati? Parola di ABB, che nel settore ha progetti ambiziosi.

2017-06-13 - In un mondo sempre più affamato di energia elettrica la sfida del futuro si potrebbe giocare in nanosecondi: gestione e controllo di flussi di elettroni e di dati. Con auto elettriche che diventano salvadanai energetici, relè innovativi, smart grid e altre innovazioni. Ecco le soluzioni digitali di ABB Ability, che viaggiano sul cloud Microsoft Azure

Per gentile concessione di www.industriaitaliana.it/ - Articolo di Marco De' Francesco

Lo smart lab di ABB a Dalmine

Produzione persa, impianti e manodopera inattiva, prodotti difettosi, danni, attrezzature danneggiate sono fra gli effetti delle interruzioni di potenza nell'industria manifatturiera. In generale, secondo il sondaggio "Alliance Risk Barometer 2018" (condotto su 1.237 esperti di rischio di 55 paesi) il rischio più sentito dalle aziende a livello globale è il blocco delle attività.

Links

- → Leggi l'articolo sul sito di Industria Italiana
- → ABB Ability, l'offerta digitale integrata di ABB
- → Internet of Things (IoT)

Altri link utili

- → ABB lancia ABB Ability™, l'offerta per soluzioni digitali industriali all'avanguardia

Assisting Plant Operations using Hololens @Bentley

"Virtual tutors make sense when the steps necessary to execute the task are known in advance. But what if something unexpected happens? For instance, a pipe bursts, or an instrument stops working properly. A tutor app would not be of any use here, because it has not been programmed to deal with such situations. In such cases the user is on his own…
As a solution to this, we proposed the concept of an AR assistant. It would take the form of an Augmented Reality voice operated system that the user could ask questions to, and that would provide him with all the data he needs to resolve the issue he is facing."

Stephane Cote, Augmented Reality Research Scientist at Bentley Systemsàù

Microsoft

Enterprise Asset Management
Self Healing Services @Schneider Electric

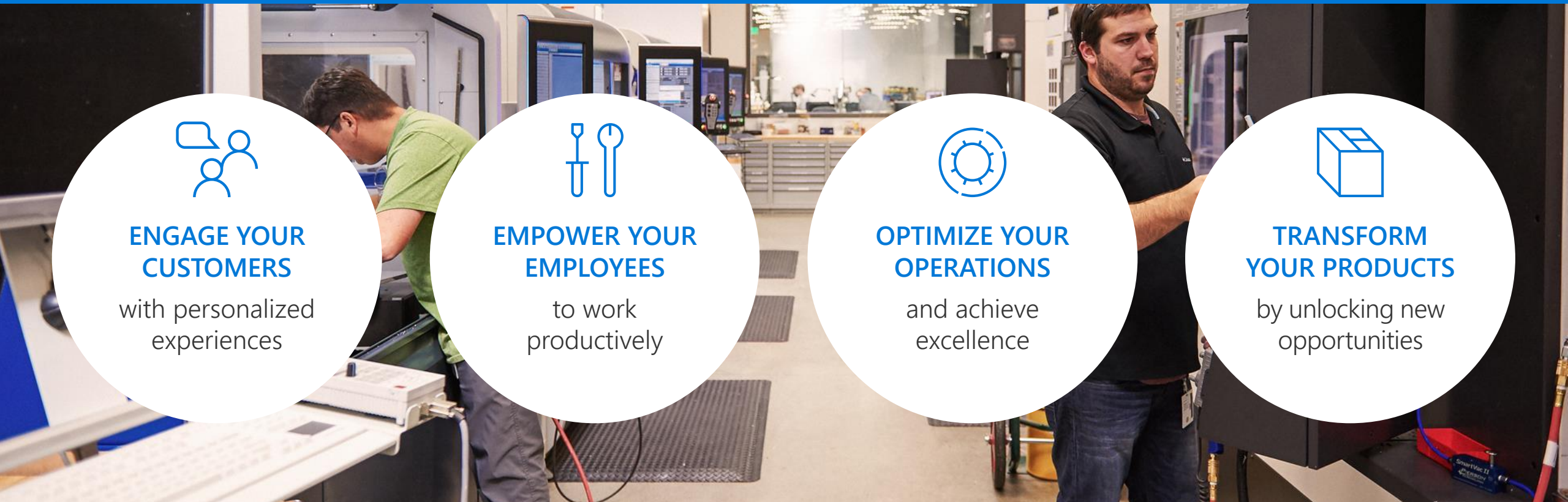
Microsoft

Schneider Electric

Summary | Empowering Industrial Operations

Transforming how products are designed, manufactured, and sold

Creating new business models as a service provider



ENGAGE YOUR CUSTOMERS

with personalized experiences

EMPOWER YOUR EMPLOYEES

to work productively

OPTIMIZE YOUR OPERATIONS

and achieve excellence

TRANSFORM YOUR PRODUCTS

by unlocking new opportunities

Carlo.Moretti@microsoft.com

http://www.microsoft.com/industry

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