EMPOWERING AEROSPACE

Transforming aerospace products, operations and business models through digital innovation

Amol Adgaonkar
Aerospace Industry
Microsoft

Microsoft

Digitization accelerates collaboration

Amol Adgaonkar

Director, Manufacturing Industry at Microsoft

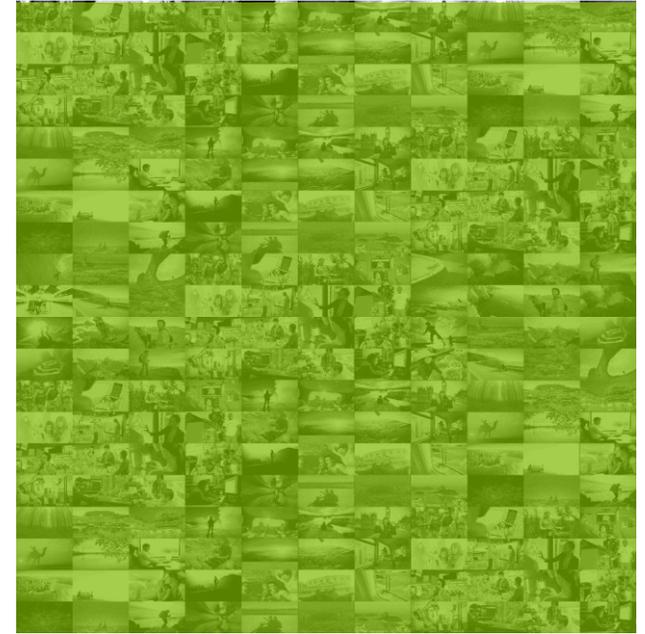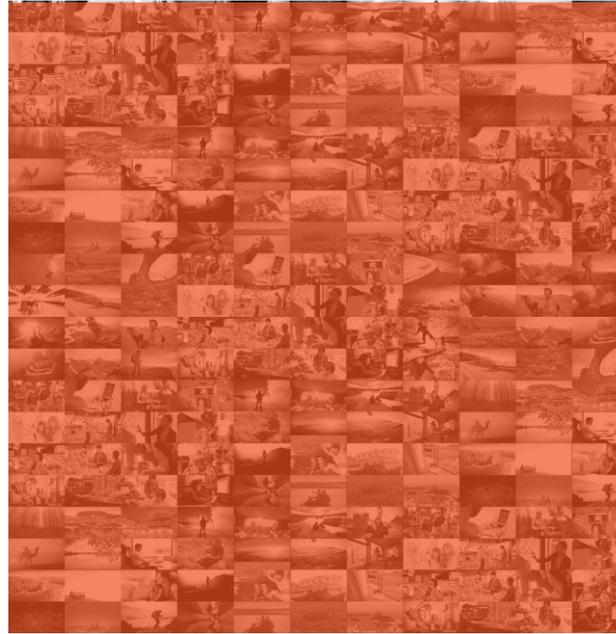Redmond, Washington · 500+ connections · Contact info

Data Ownership — Data Sharing — Security — Trusted Platform

Microsoft mission

Empower every person and every organization on the planet to achieve more

2 Mil
kilometers
intra-datacenter fiber

72+
Tb per second
backbone

54+
Azure regions

100+
datacenters

Millions
of servers
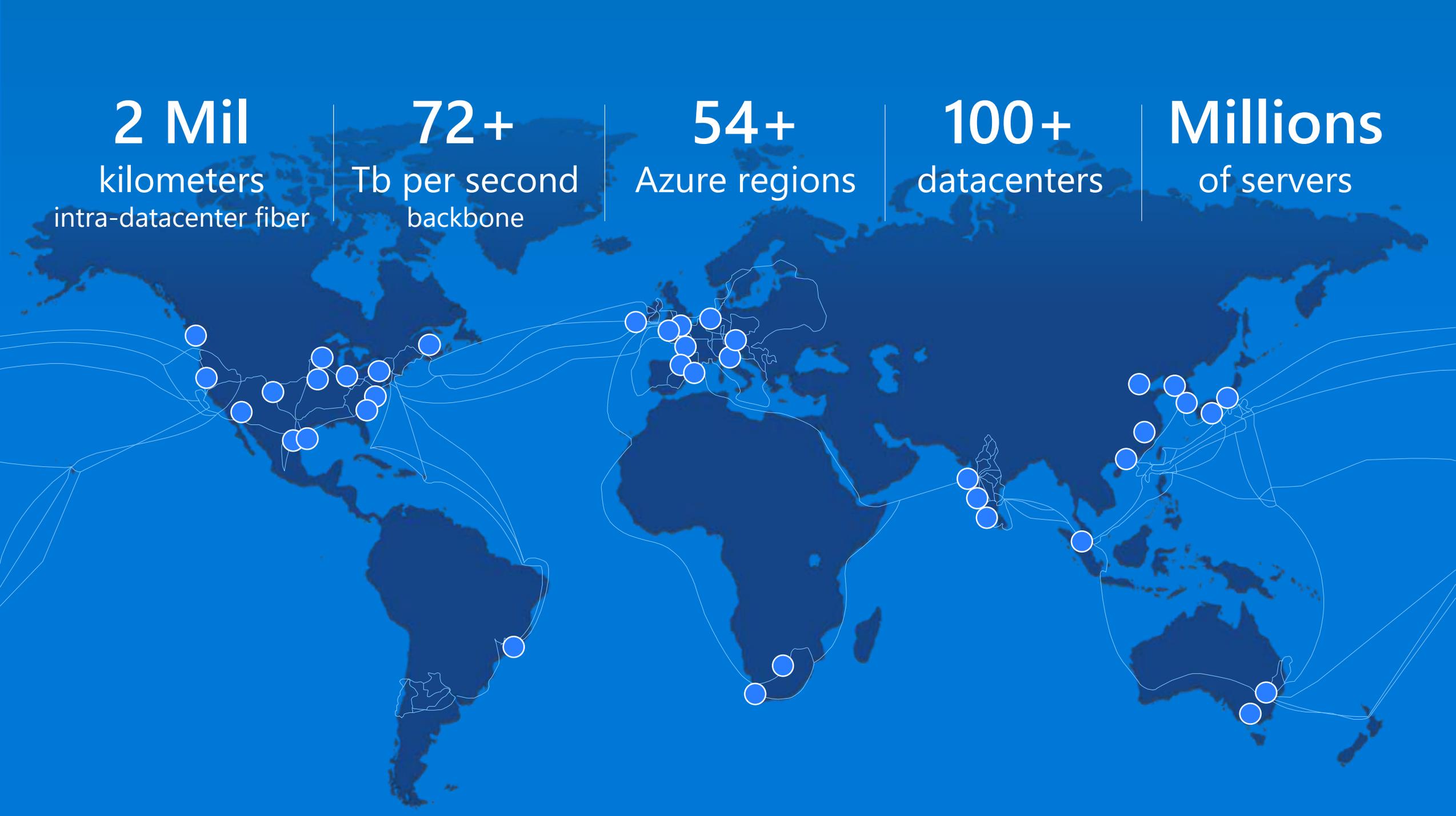
While delivering on Microsoft's commitment to...

SECURITY – We'll help you keep your data secure

PRIVACY and CONTROL – Your data is private and under your control

TRANSPARENCY – You know what we are doing with your data

COMPLIANCE – We manage your data in accordance with the law

RELIABILITY – We provide enterprise grade uptime for cloud services

Building a trusted, responsible, inclusive cloud

AccountGuard | Cloud for Global Good | The Future Computed | Microsoft AI Principles | AI for Earth | Cybersecurity Tech Accord

Workforce transformation – convergence of IT & OT

Information Technology

Modern Devices
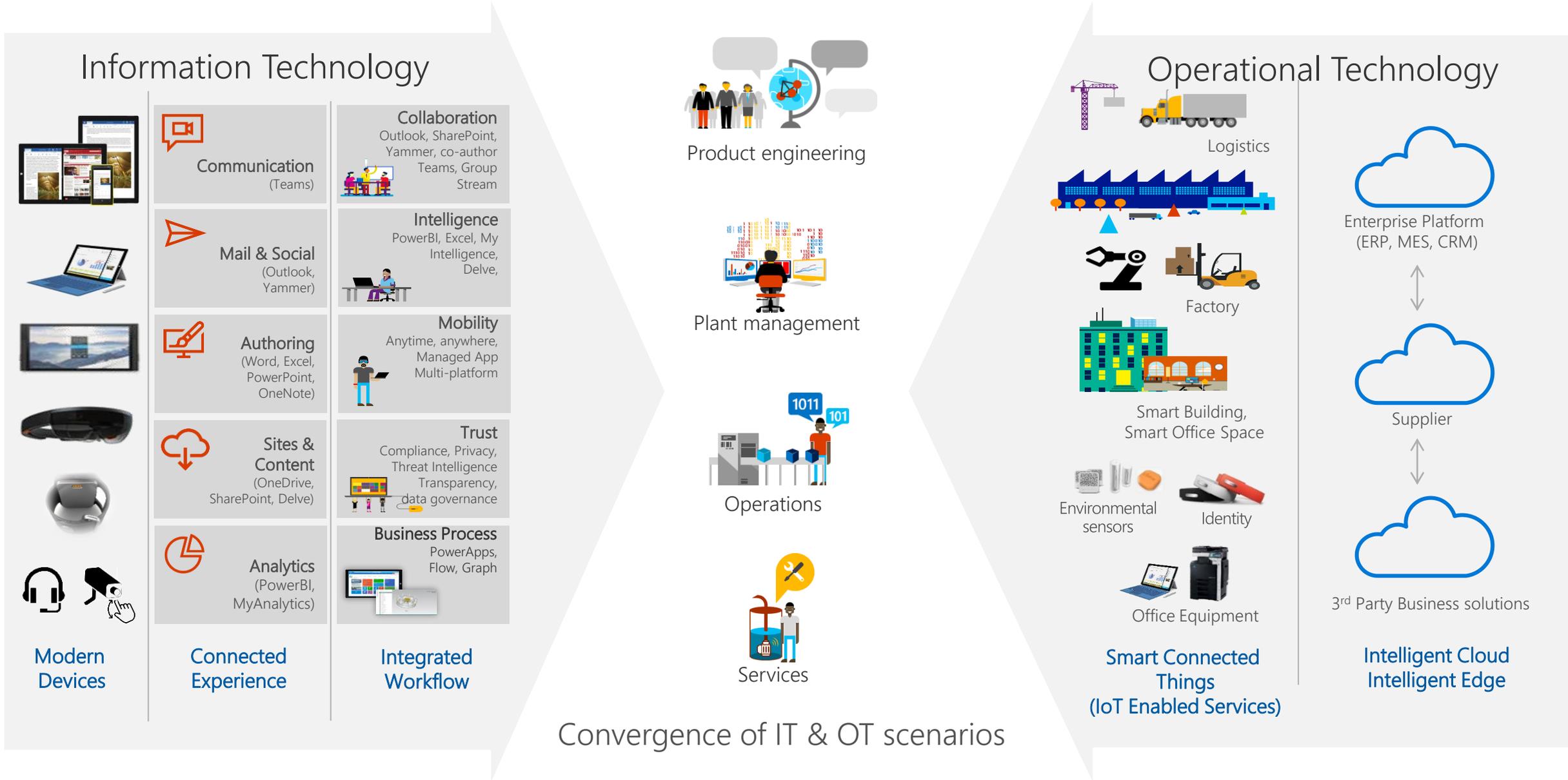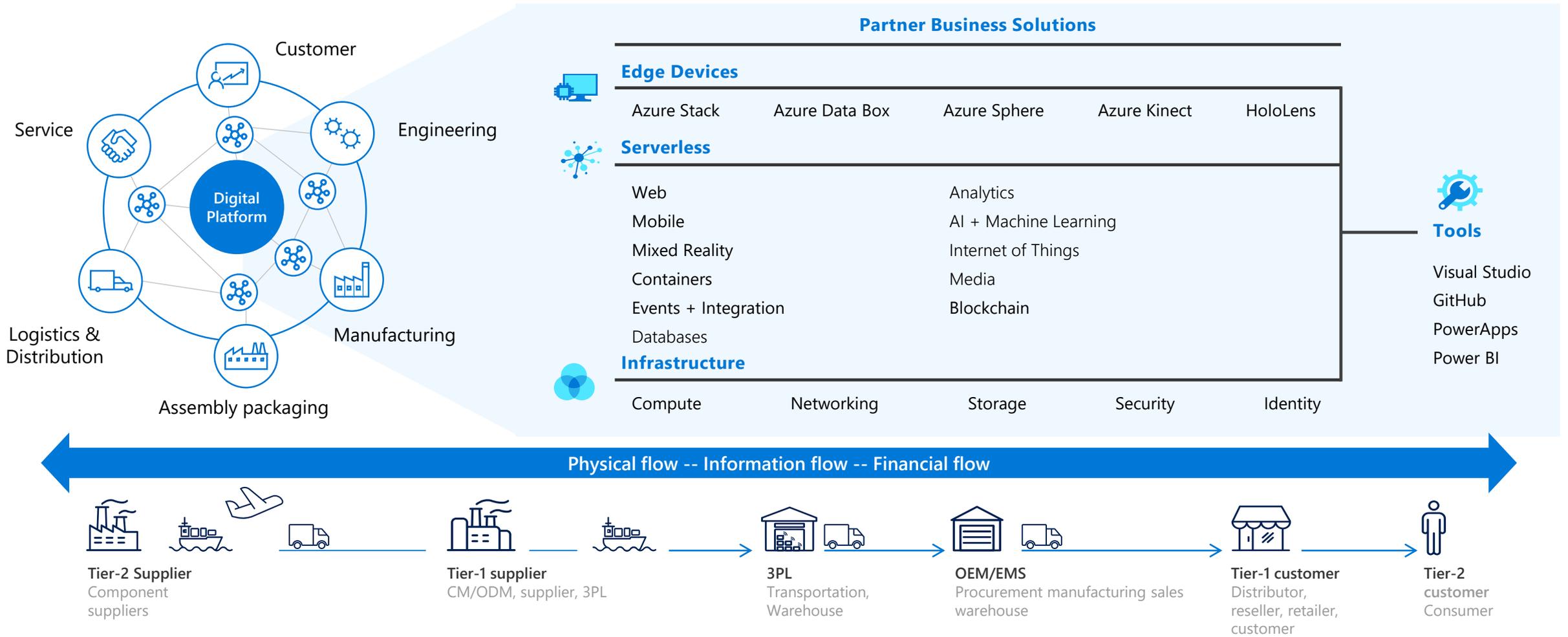
Connected Experience

Communication (Teams)	Collaboration — Outlook, SharePoint, Yammer, co-author Teams, Group Stream
Mail & Social (Outlook, Yammer)	Intelligence — PowerBI, Excel, My Intelligence, Delve,
Authoring (Word, Excel, PowerPoint, OneNote)	Mobility — Anytime, anywhere, Managed App Multi-platform
Sites & Content (OneDrive, SharePoint, Delve)	Trust — Compliance, Privacy, Threat Intelligence Transparency, data governance
Analytics (PowerBI, MyAnalytics)	Business Process — PowerApps, Flow, Graph

Integrated Workflow

Convergence of IT & OT scenarios

Product engineering

Plant management

Operations

Services

Operational Technology

Logistics

Factory

Smart Building, Smart Office Space

Environmental sensors

Identity

Office Equipment

Smart Connected Things (IoT Enabled Services)

Enterprise Platform (ERP, MES, CRM)

Supplier

3rd Party Business solutions

Intelligent Cloud Intelligent Edge

Intelligent supply chain builds on a digital platform

Digital Platform

Customer · Engineering · Manufacturing · Assembly packaging · Logistics & Distribution · Service

Digital Platform

Partner Business Solutions

Edge Devices

Azure Stack	Azure Data Box	Azure Sphere	Azure Kinect	HoloLens

Serverless

Web	Analytics
Mobile	AI + Machine Learning
Mixed Reality	Internet of Things
Containers	Media
Events + Integration	Blockchain
Databases	

Infrastructure

Compute	Networking	Storage	Security	Identity

Tools

Visual Studio
GitHub
PowerApps
Power BI

Physical flow -- Information flow -- Financial flow

Tier-2 Supplier
Component suppliers

Tier-1 supplier
CM/ODM, supplier, 3PL

3PL
Transportation, Warehouse

OEM/EMS
Procurement manufacturing sales warehouse

Tier-1 customer
Distributor, reseller, retailer, customer

Tier-2 customer
Consumer

Connected
Leverage the cloud to connect, automate, visualize E2E view of your business

Predictive
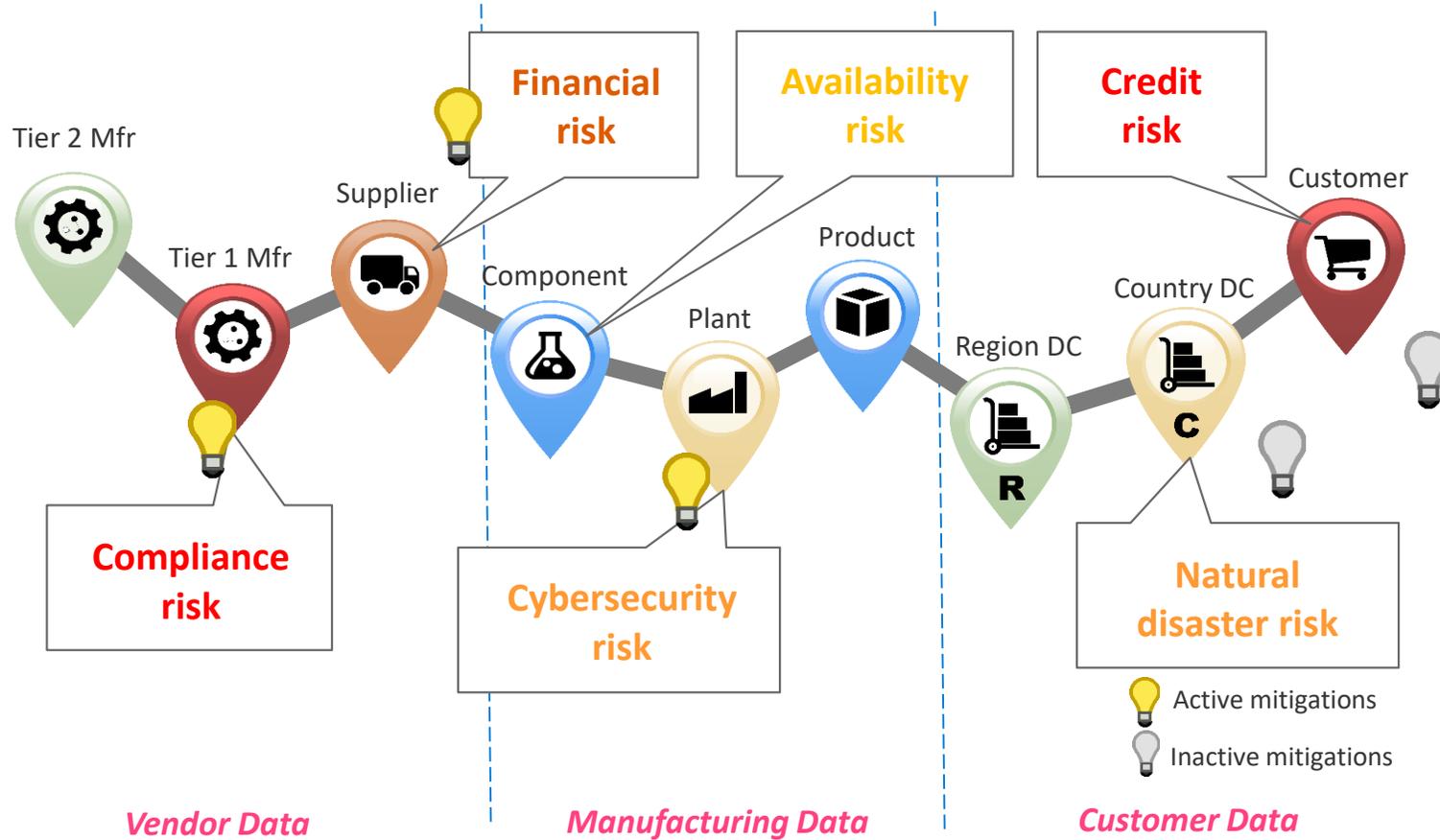Move from reactive to predictive with big data, machine learning, and IoT

Cognitive
Amplify with algorithmic decision making and automated execution

AI augments Supply chain risk management

Microsoft for Startups

Strategic Risk

Operational Risk

Regulatory Compliance Risk

Quality Risk

Cybersecurity and Data Risk

Tier 2 Mfr

Tier 1 Mfr

Supplier

Financial risk

Component

Availability risk

Plant

Product

Credit risk

Region DC

Country DC

Customer

Compliance risk

Cybersecurity risk

Natural disaster risk

Active mitigations

Inactive mitigations

Vendor Data

Manufacturing Data

Customer Data

RAAD™ VaR (Value at Risk)

3.7
-11.9%

The RAAD™ Rating

RAAD™ Risk Intelligence

Identify, track, and fix any risk exposure issues, anywhere they exist in the up-to-date supply chain

Microsoft

RAAD

Big Compute virtualizes design supply chain

Design requirements → **Design prototype** → **Design verification compliance** → **Design validation testing** → **Virtual visualization**

Design collaboration across the supply chain

Tier 2 suppliers → **Tier 1 suppliers** → **Manufacturer**

Partners |

AI and Blockchain secure 3D printing

Automated Part detection
AI based Cognitive Services recognize parts via camera images and identify the right part number

Controlled & Certified 3D Printing
Blockchain technology enables controlling which files can be printed on which printers and authorize specified users only to print a certain set of copies

Authenticate User/Device → Camera points to the spare part → Part Detected and CAD model identified → Part customized if necessary → Printing Authorized (Printer, Quantity) → Certified Remote Printer authorized → Print Job released → 3D Printed Parts

Access Controls
Active Directory authenticates and authorizes user for access

Workflow guided by PLM systems
Access to CAD data, Part customization, testing, simulation, verification, approvals and related workflow steps guided by the PLM systems

Additive Manufacturing
3D Printing transforms manufacturing, maintenance and service scenarios

Partner | MOOG

Customer:
GE Aviation's Digital Group

Industry:
Manufacturing

Size:
10,000+ employees

Country:
United States

Products and services:
Microsoft Azure
Azure Blockchain
Azure Blockchain Service
Azure Logic Apps
Microsoft Power BI

[Read full story here](#)

"With Azure Blockchain technologies, we unlock value for our customers by providing verified data in real time. Aviation always operates with the utmost safety, but now we're also improving efficiency and reducing costs."

—David Havera, Blockchain Leader, GE Aviation's Digital Group

Situation:

GE Aviation's Digital Group worked closely with one maintenance and repair customer who wanted a better way to track parts and repair history than manually handling paper documents.
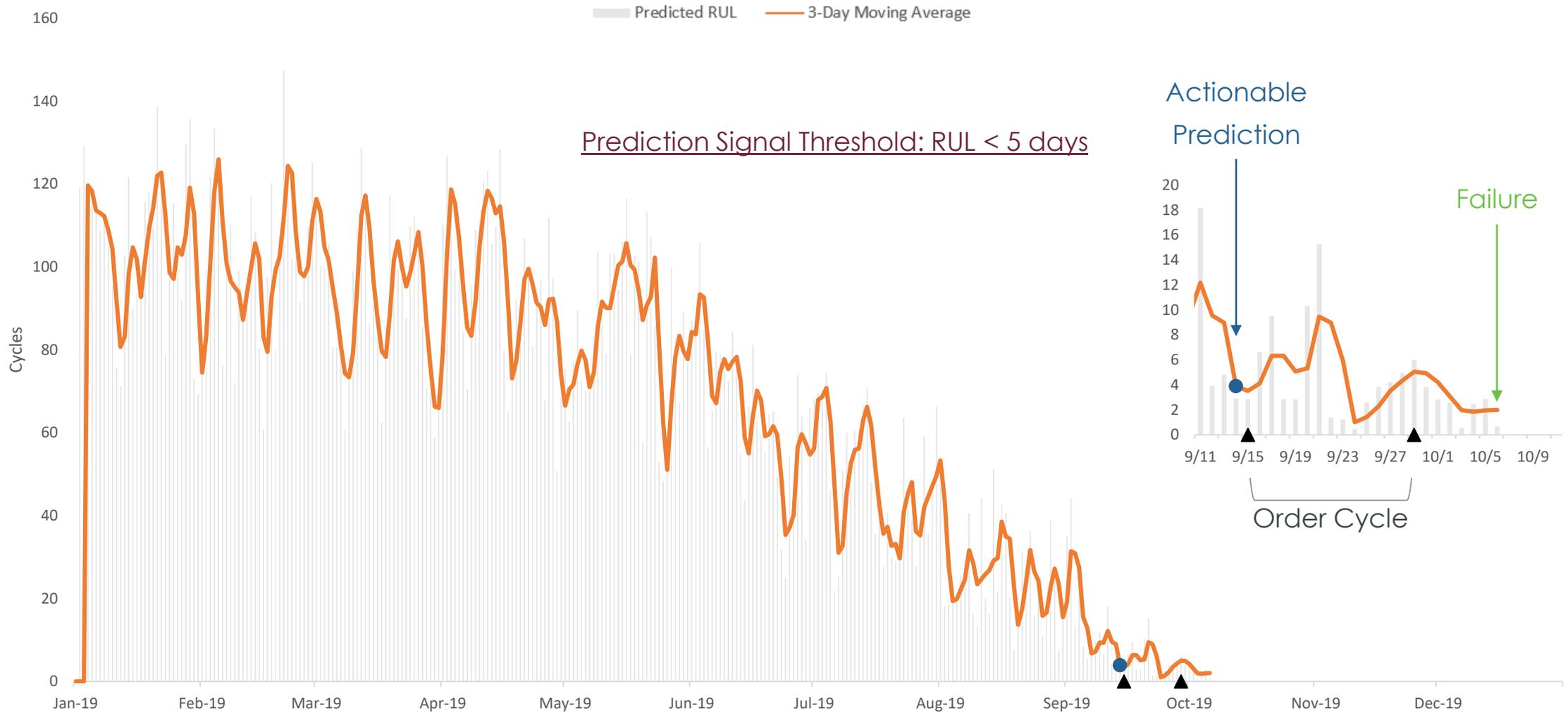
Solution:

GE Aviation's Digital Group created a data solution to use with its customers that centralizes data in Microsoft Azure and shares and verifies it using Azure Blockchain technologies. The solution cleans, ingests, and analyzes data using Azure Logic Apps and Microsoft Power BI.

Impact:

Instead of spending weeks or years searching for scattered paper documentation, people scan a part or engine and get its full history in real time. GE Aviation's Digital Group collaborates closely with its customers, and both parties gain efficiency, cost savings, and trust in the data.

PREDICTIVE INSIGHTS IMPROVE STOCKING PLANS

Prediction Signal Threshold: RUL < 5 days

Actionable Prediction

Failure

Order Cycle

Customer:
Airbus Defence and Space

Industry:
Defense and Intelligence

Size:
10,000+ employees

Country:
The Netherlands

Products and services:
Microsoft HoloLens 2
Microsoft Azure
Azure Remote Rendering
Azure Spatial Anchors

Read full story here

"Airbus has a history of constant innovation, and with Azure mixed reality and HoloLens 2, we can offer our customers better products and services and bring exciting new ideas to market faster."

—Jean-Brice Dumont, Executive Vice President of Engineering, Airbus Defence and Space

Situation:

Airbus built 10,000 aircraft in its first 40 years and aims to build 20,000 more in the next 20 years. To do this, the company needs to deploy cutting-edge tools and technologies to accelerate production and find new ways of working.

Solution:

Airbus is using Microsoft Azure mixed reality and services like Azure Spatial Anchors and Azure Remote Rendering with HoloLens 2 to expedite aircraft design and manufacture, facilitate collaboration, and change how complex ideas are communicated.

Impact:

Airbus expects to reduce design validation time by 80 percent and accelerate complex tasks during assembly by 30 percent, while increasing quality, safety, and security.

Thank you

Amol Adgaonkar, Manufacturing Industry, Microsoft Corporation

LinkedIn: Amol Adgaonkar