



IoT in Action

#IoTinActionMS



LEARN



BUILD

SERVICE







Evolving IoT with AI, Mixed Reality and Automation

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Microsoft

PTC + Microsoft: Trusted for Digital Transformation



BRIDGESTONE

bell  **howell**

Carlsberg

 **CELLI**group

BAE SYSTEMS



EAT•N



GLOBALFOUNDRIES®

 **Howden**

 **LACROIX** Electronics

 **NCR**

Southwest 


thyssenkrupp

VOLVO

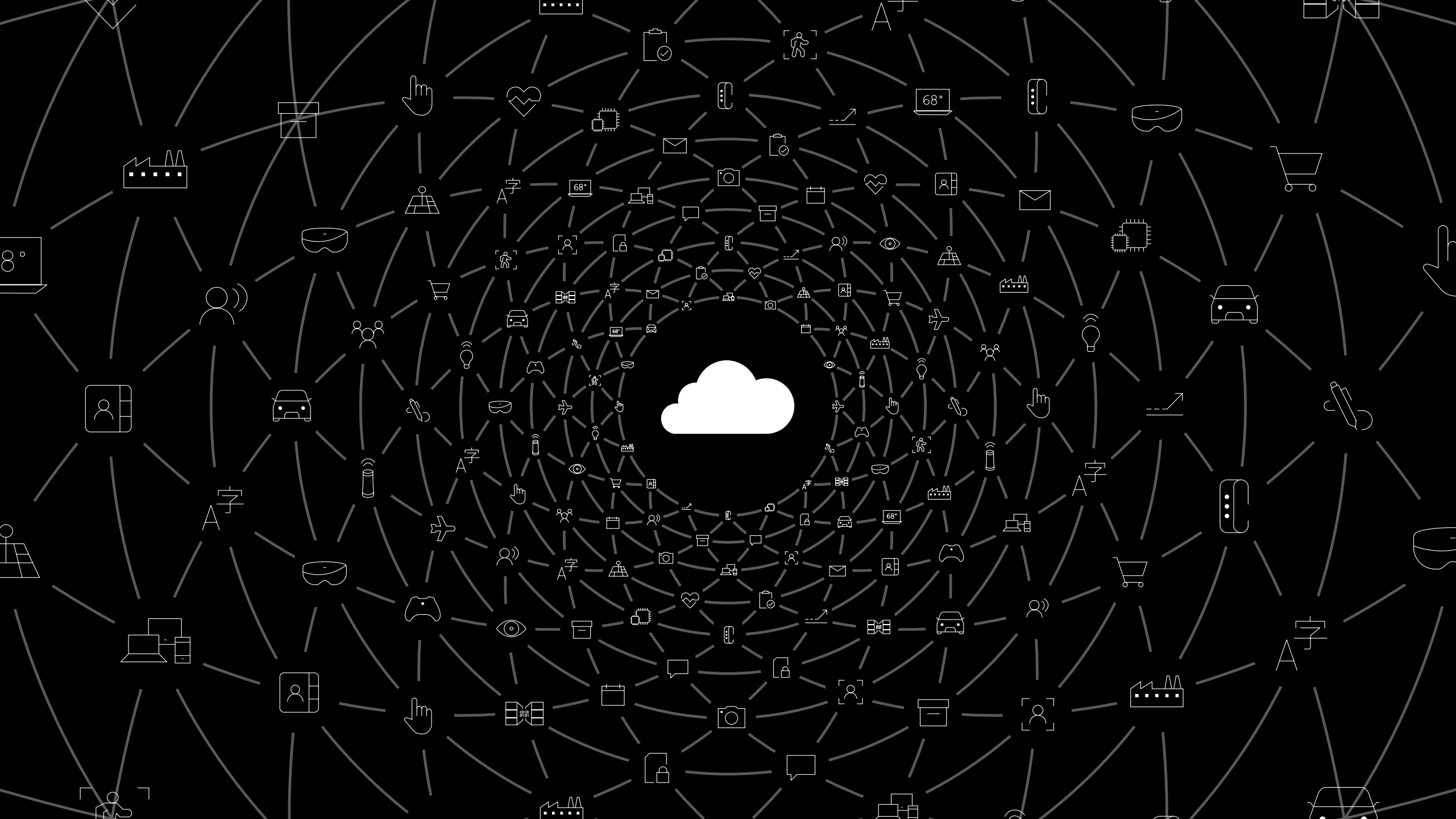
Vestas

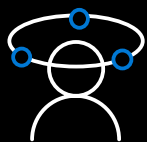


zumtobel group

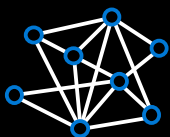
2019 Partner of the Year

100+ World Class Customers





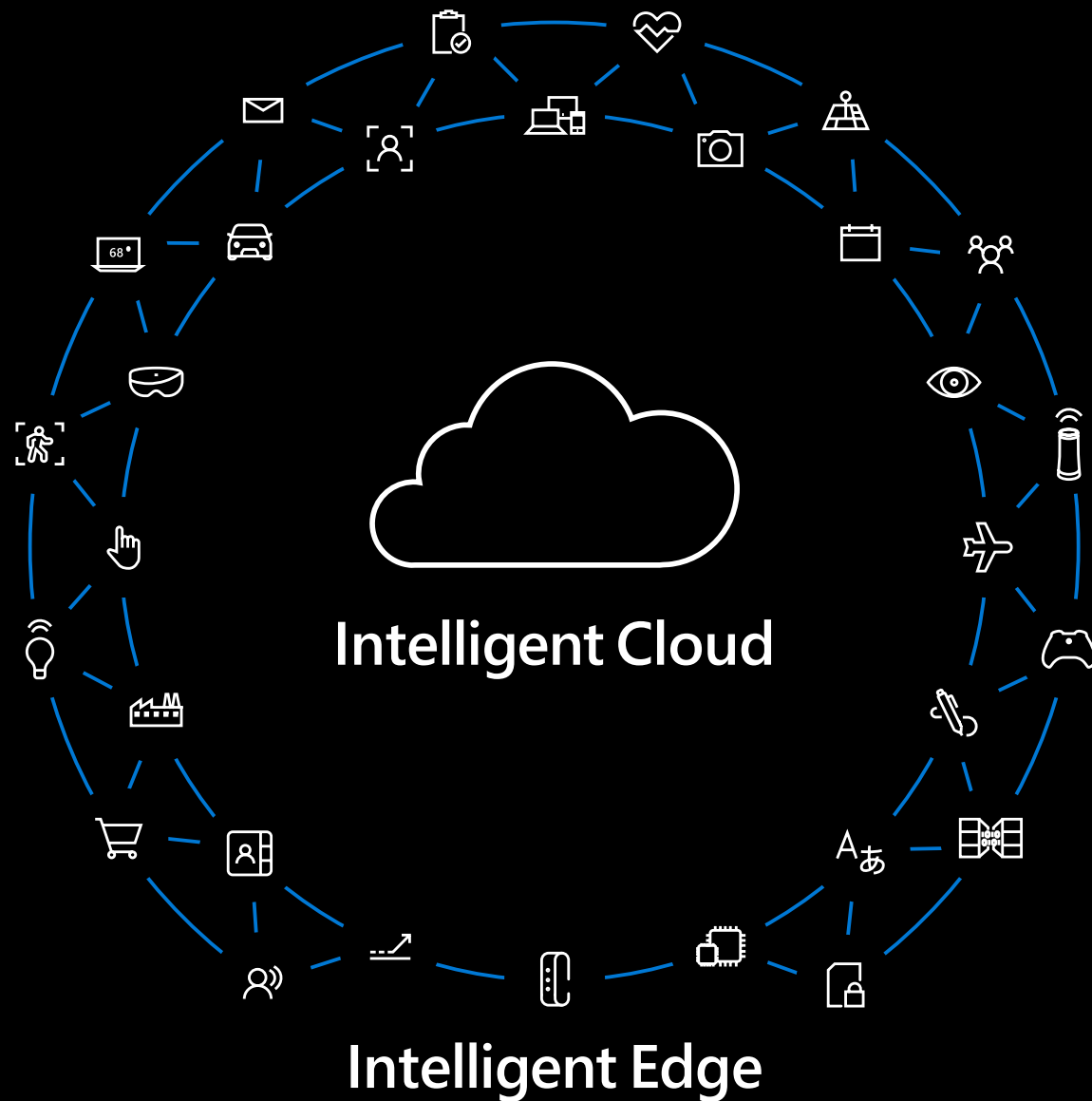
People-centred
experiences



Artificial
Intelligence



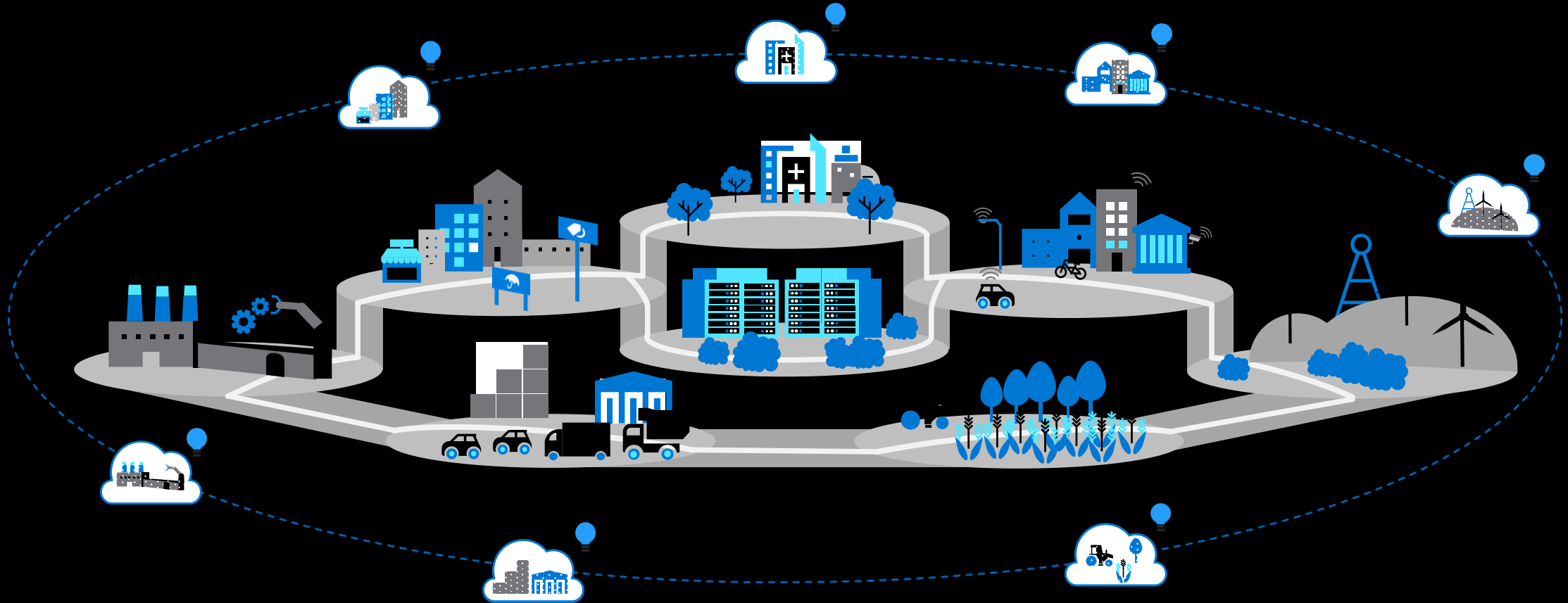
Ubiquitous
computing



Intelligent Edge



Convergence is driving new opportunities



Cloud

Globally available, unlimited compute resources

IoT

Harnessing signals from sensors and devices, managed centrally by the cloud

Edge

Intelligence offloaded from the cloud to IoT devices

Digital Twins

Create living replicas of any physical environment, track the past and predict the future

AI

Breakthrough intelligence capabilities, in the cloud and on the edge

Microsoft's comprehensive IoT product portfolio



Azure Security
Center for IoT

Azure IoT
Priority Verticals



Manufacturing



Retail



Agriculture



Energy



Smart Cities



Healthcare



Transportation

Azure IoT
Solutions



Azure IoT Central
(SaaS)



Azure IoT Reference
Architecture & Accelerators
(PaaS)



Dynamics Connected
Field Service
(SaaS)

Azure
Services for IoT



Azure IoT Hub
Azure IoT Hub Device
Provisioning Service
Azure Digital Twins
Azure Time Series Insights
Azure Maps

Azure Stream Analytics
Azure Cosmos DB
Azure AI
Azure Cognitive Services
Azure ML
Azure Logic Apps

Azure Active Directory
Azure Monitor
Azure DevOps
Power BI
Azure Data Share
Azure Spatial Anchors

IoT & Edge
Device Support



Azure Sphere
Azure IoT Device SDK
Azure IoT Edge
Data Box Edge

Windows IoT
Azure Certified for IoT—Device
Catalog
Azure Stream Analytics
Azure Storage

Azure ML
Azure SQL
Azure Functions
Azure Cognitive Services

MOISTURE



Global Access

1 in 9 people are undernourished (UN)

65% Reduce poverty for 65% of the world's poor who live in rural areas and work in farming

70% more food is needed by 2050



Sustainable Production

70% of global water resources are needed for Agriculture

24% of global greenhouse emission comes from Agriculture

251T liters of water to be saved in 2030 from implementing Smart Agriculture



Need for Economic Growth

30% of global workers are employed by Agriculture

10-30% Agriculture contributes 10% of global GDP and up to 30% in low income countries

\$4.8T Global Agriculture revenue

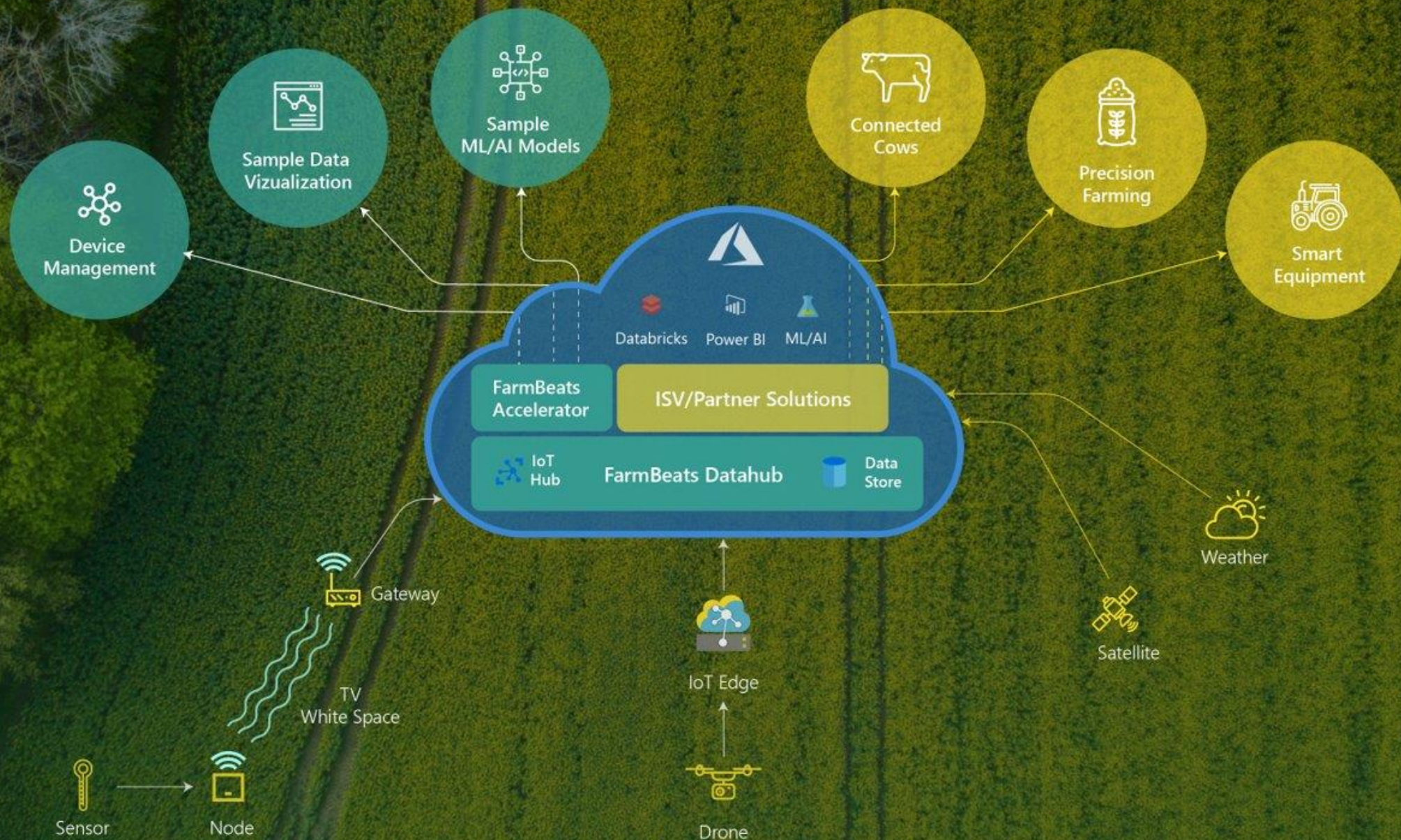
Combine visual data from drones with the sensor data from the farm



Drones are ~1000
dollars and automatic

Can cover large
areas quickly

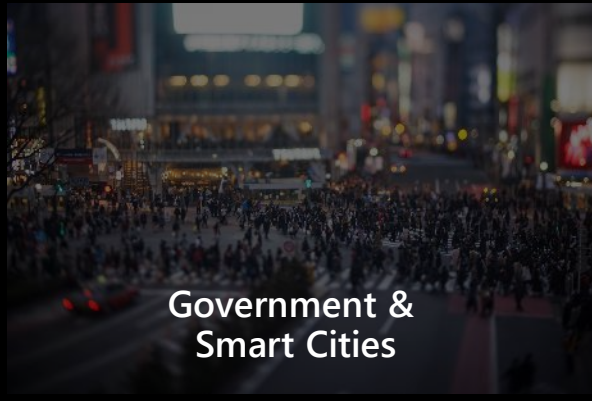
Can collect
visual data



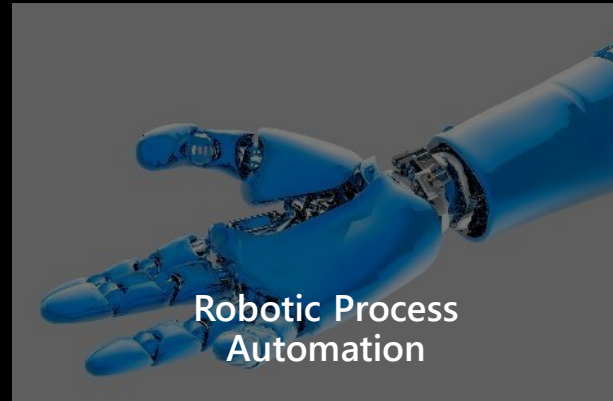




Oil & Gas



Government &
Smart Cities



Robotic Process
Automation



Healthcare



Consumer
Packaged Goods



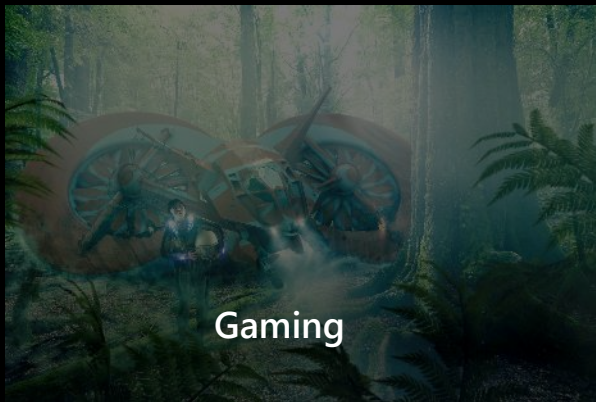
Retail



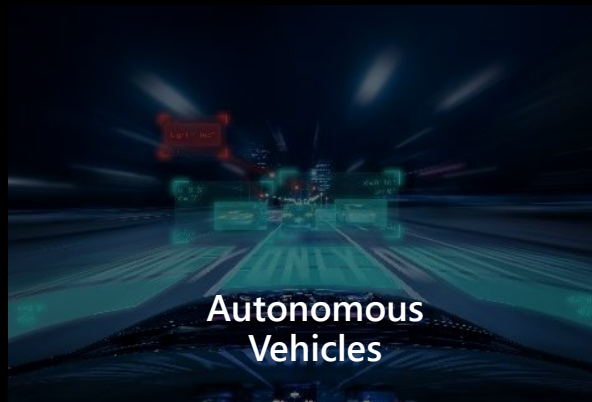
Financial Services



Manufacturing



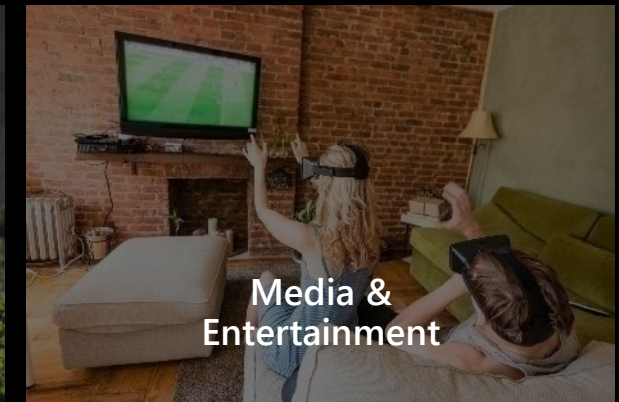
Gaming



Autonomous
Vehicles



Agriculture



Media &
Entertainment

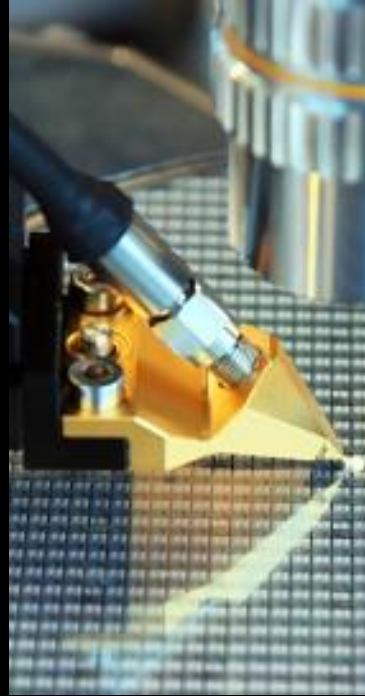
Autonomous systems scenarios



Motion control



Smart buildings



Machine calibration



Process control



Industrial robotics

Mixed reality

A blending of the physical and digital worlds in which users may interact with digital and real-world objects while maintaining presence in the physical world

Physical world

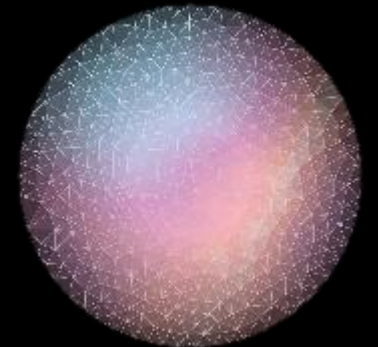


Augmented reality



Virtual reality

Digital world

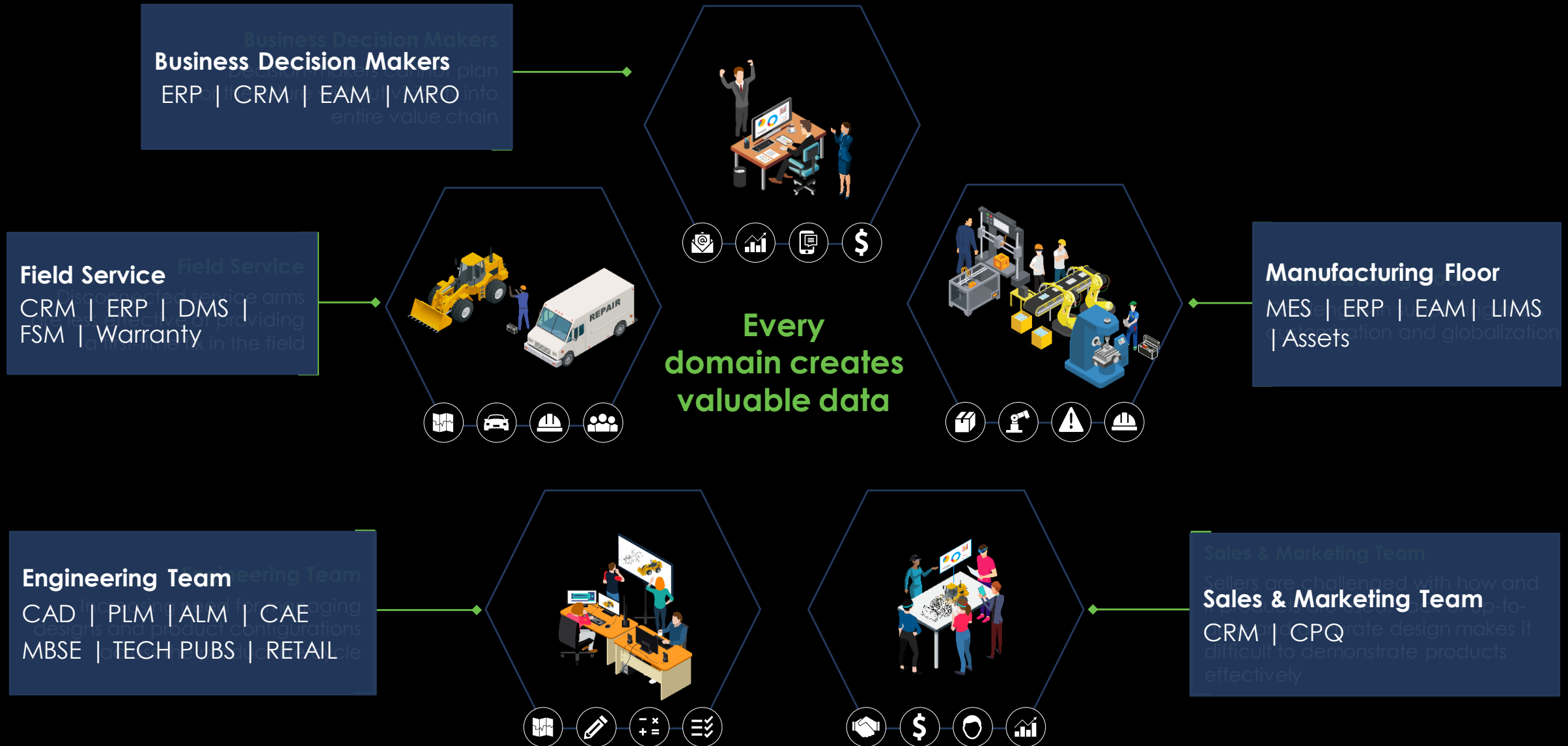


Mixed reality spectrum

■ The 3rd wave of computing

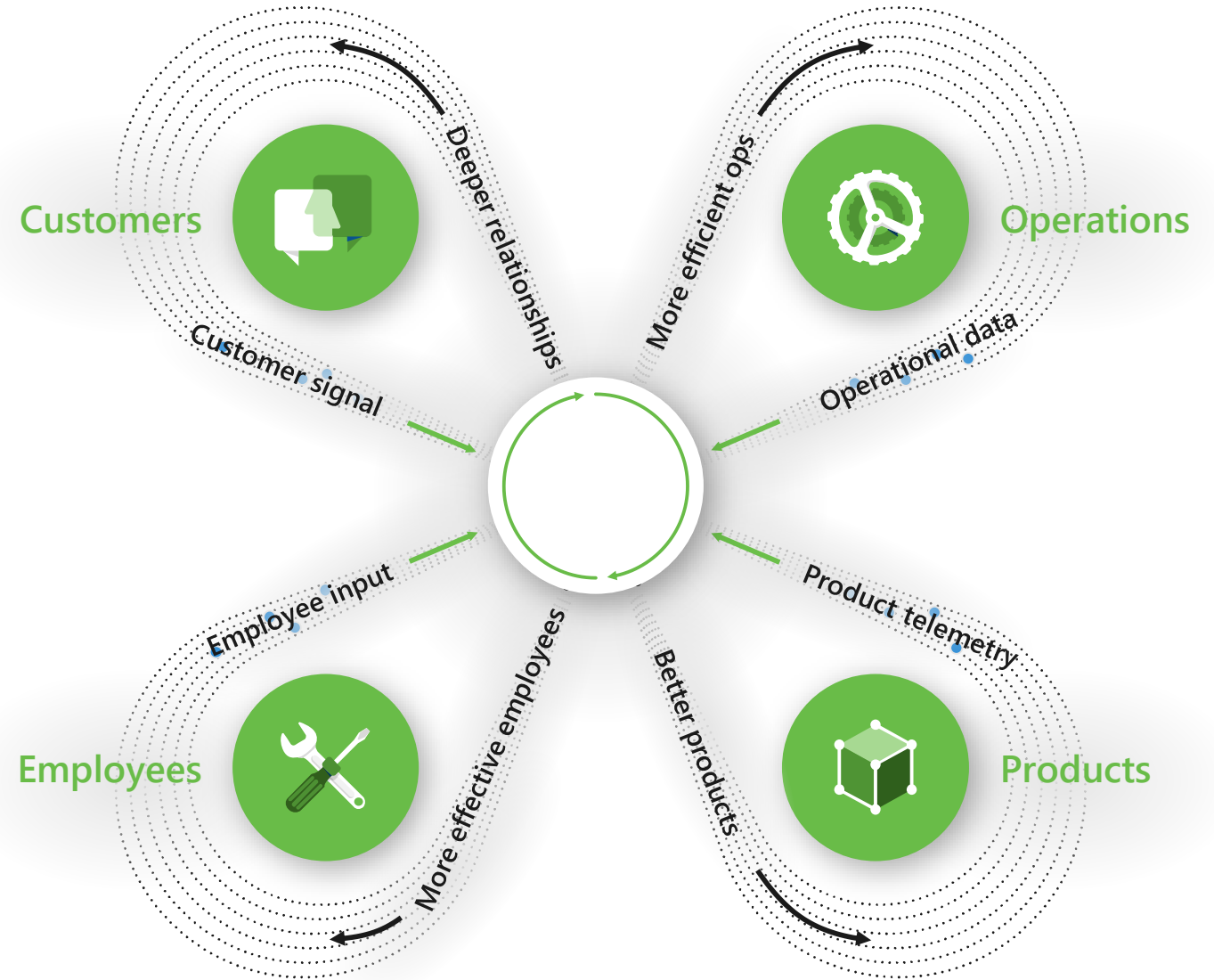


Organizational Silos Limit Innovation

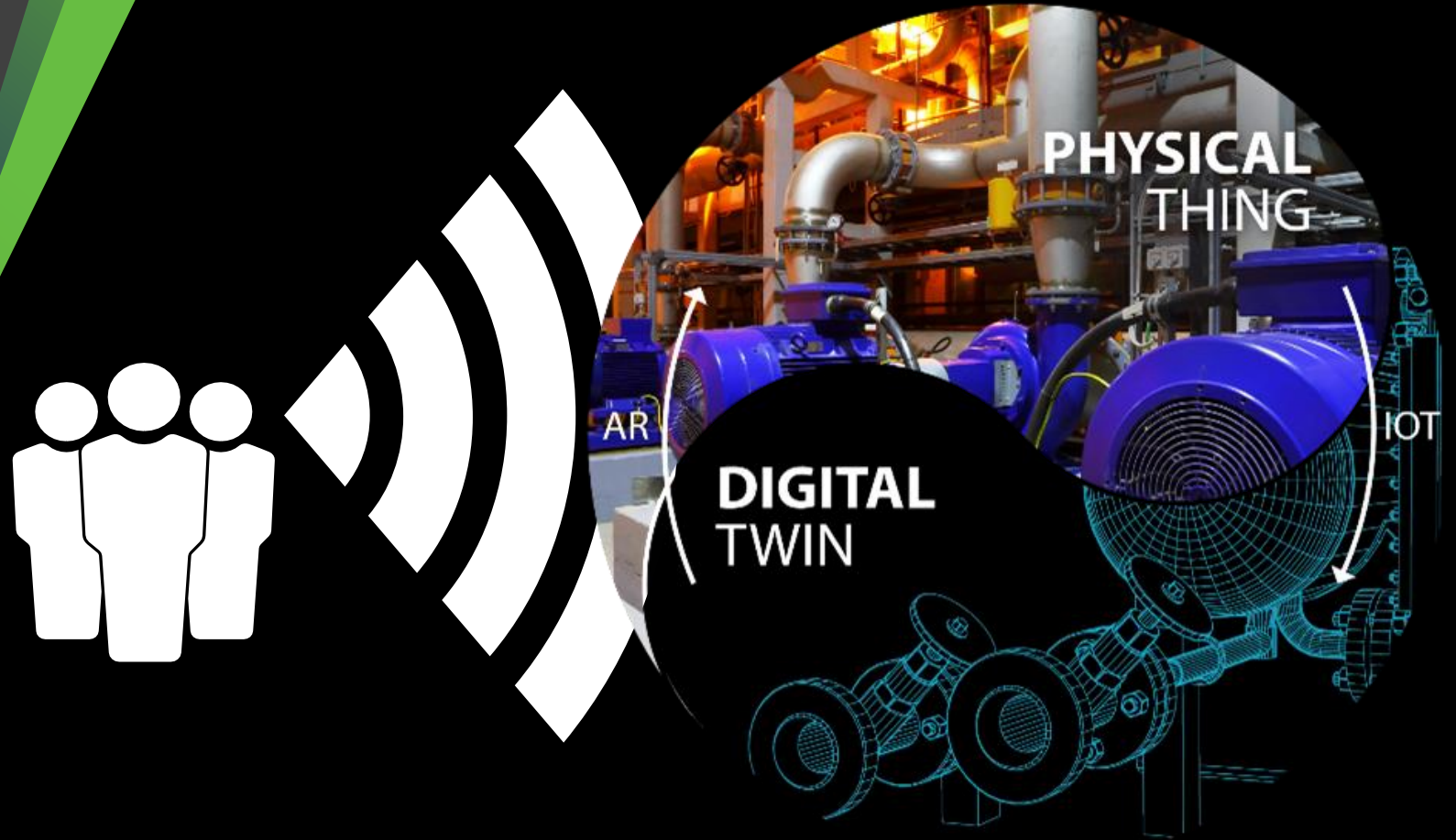


Digital Feedback Loop Accelerate Successful Business Outcomes

- 1 Data:**
Capture digital signal across business
- 2 Insight:**
Connect and synthesize data
- 3 Action:**
Improve business outcomes



IoT and Augmented Reality unlocks the value created by the **CONVERGENCE** of the **PHYSICAL**, **DIGITAL** and **HUMAN** worlds





<https://www.youtube.com/watch?v=rQqyORw4yY8&t=2s>

IoT and Augmented Reality Value Drivers

MANUFACTURING

REDUCE UNSCHEDULED DOWNTIME

LOWER SCRAP AND REWORK

INCREASE THROUGHPUT

LOWER AUTHORIZING TIME

FASTER TRAINING TIME

REDUCE COMPLIANCE COSTS

INCREASE SAFETY

LOWER TURNOVER COSTS

SERVICE

REDUCE MEAN TIME TO REPAIR

INCREASE FIRST TIME FIX RATE

IMPROVE NEW HIRE PRODUCTIVITY

LOWER AUTHORIZING TIME

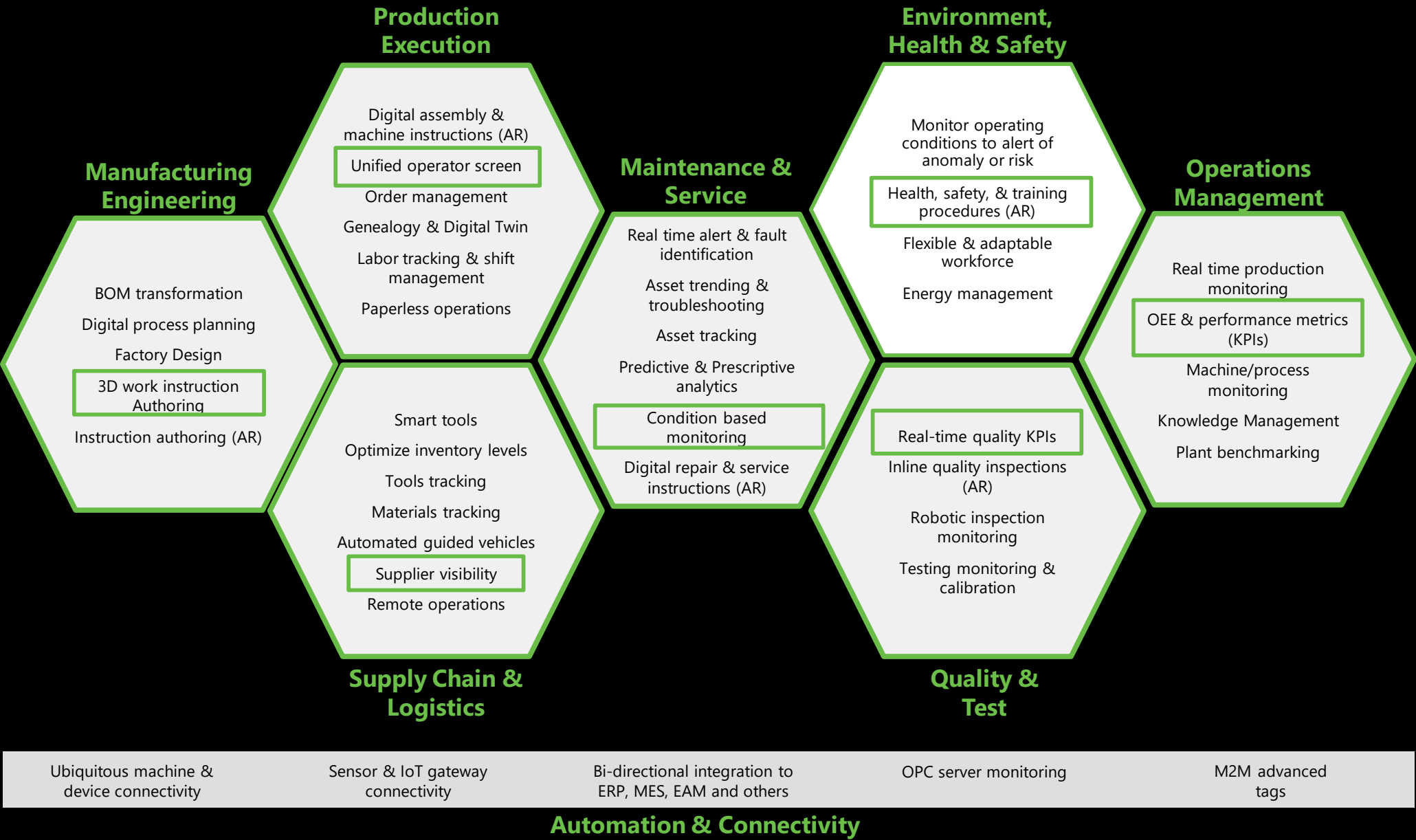
FASTER TRAINING TIME

REDUCE NUMBER OF VISITS

INCREASE SAFETY

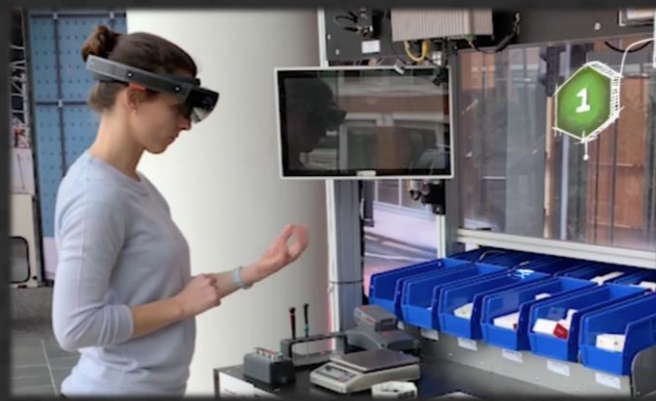
INCREASE SERVICE REVENUE

Selected Industrial IoT and AR USE CASES





vuforia®



for Rapid Expert
knowledge
capture

The **fastest** and
easiest way to
capture and share
expert knowledge

vuforia® expert capture™



for Enterprise
Content Creators

Powerful **AR**
content creation
and **publishing**
solution for
industrial
enterprises

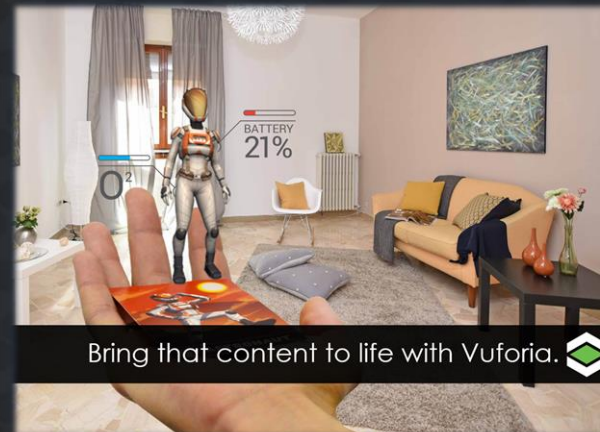
vuforia® studio™



for Remote
Assistance

Allows an expert to
“**see what I see**”
and annotate in a
shared workspace

vuforia® chalk™

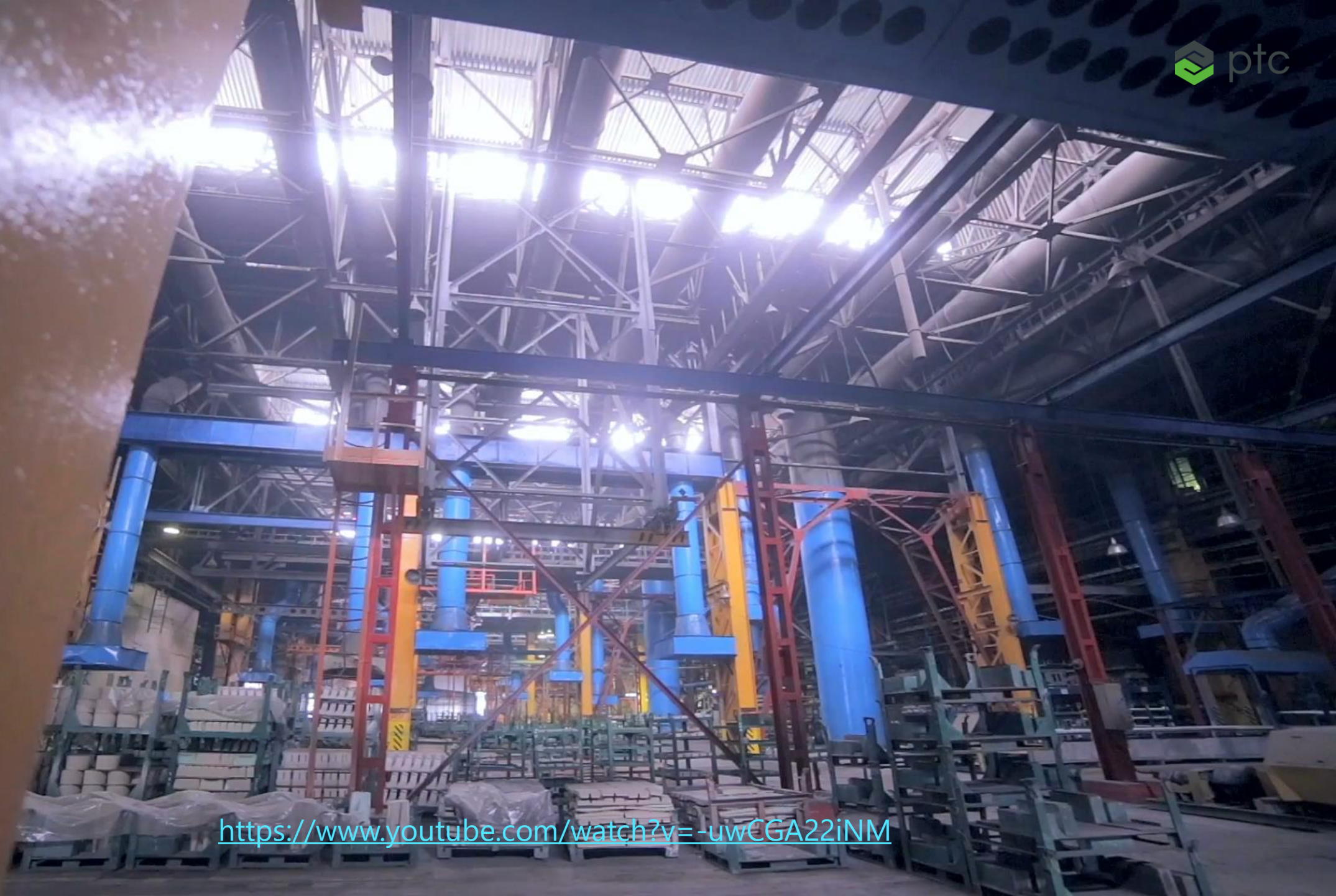


for Developers

Allows **custom**
apps to “see”
and **puts content**
in the world

Bring that content to life with Vuforia.

vuforia® engine



<https://www.youtube.com/watch?v=-uwCGA22iNM>



**End-2-End immersive
experiences enabled by
technology and partners**

