

Azure Digital twins un mundo paralelo

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¡Gracias!

Patrocinadores Locales



Colabora



Agenda

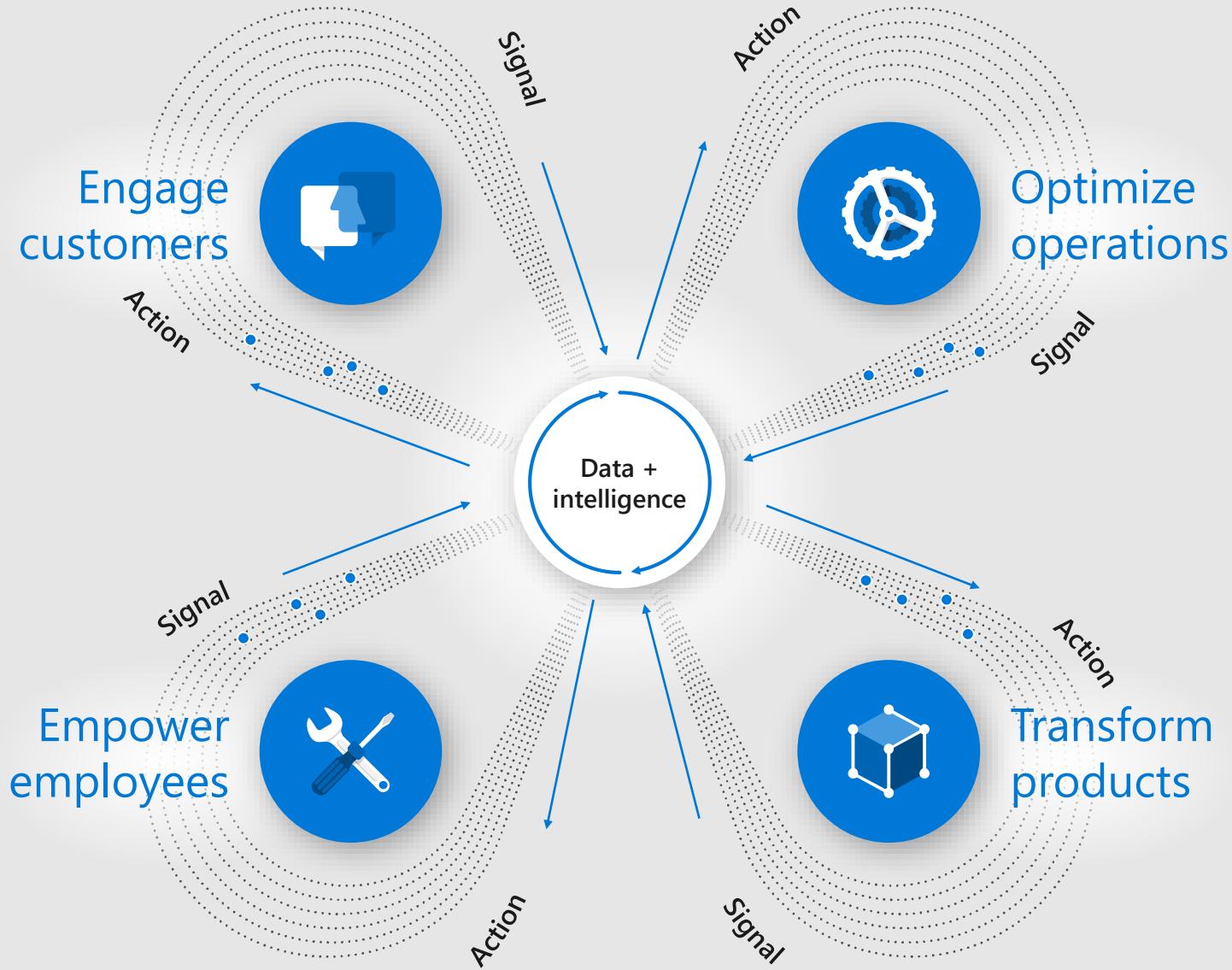
Introducción

Contexto IoT

Azure Digital Twins

Demo

Introducción



80B

Connected “things” by 2025 generating 180ZB of data



\$130B

New monetization avenues due to IoT-related services



80%

Companies that increased revenue as a result of IoT implementation



\$100M

Average increase in operating income (avg. 8%) among the most digitally transformed enterprises

Cloud



Globally available,
unlimited compute
resources

IoT



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

AI

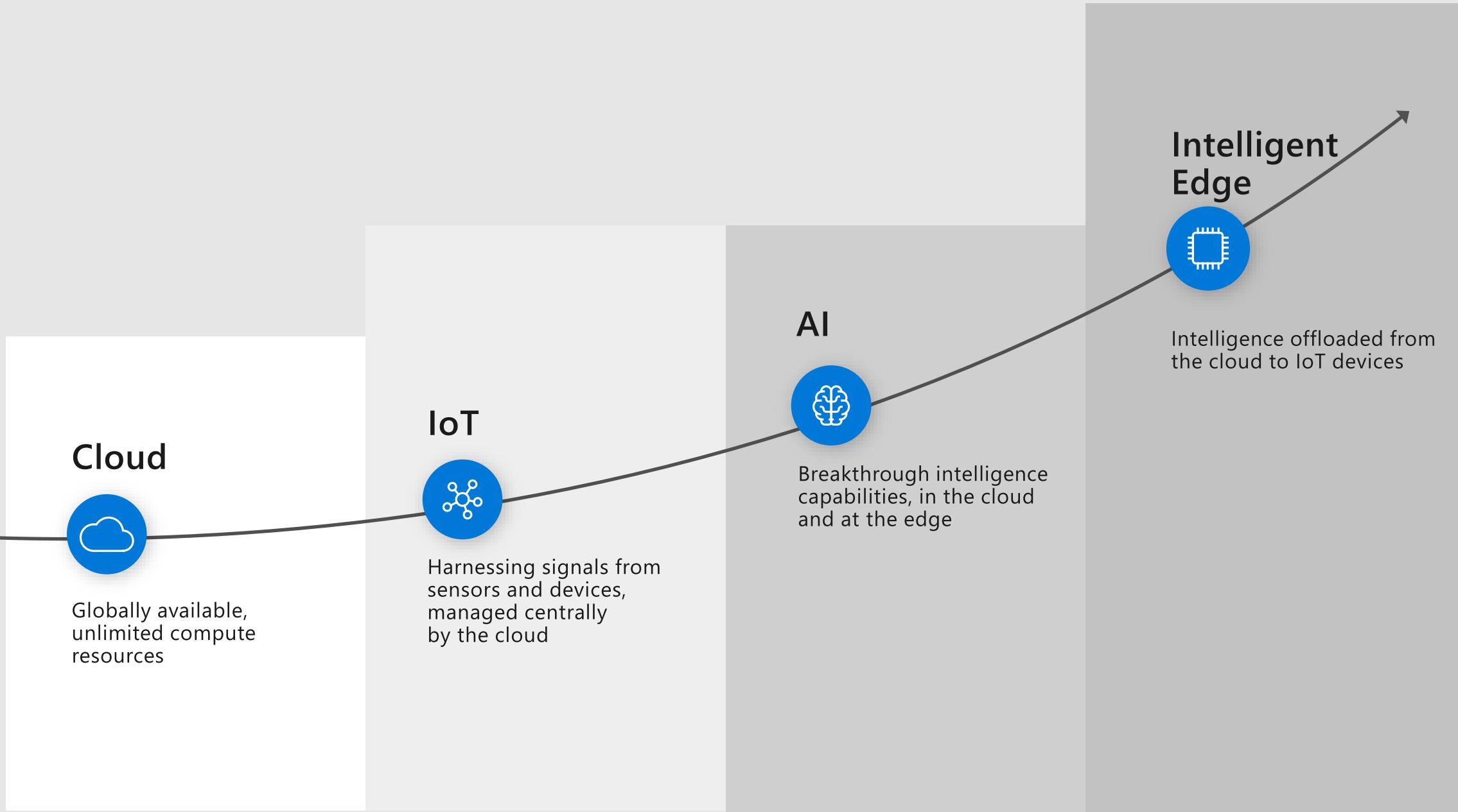


Breakthrough intelligence
capabilities, in the cloud
and at the edge

Intelligent Edge



Intelligence offloaded from
the cloud to IoT devices





Productive



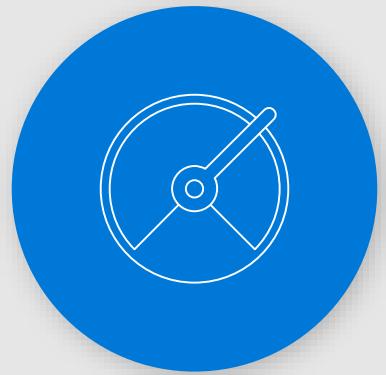
Hybrid



Intelligent



Trusted



Productive



Hybrid



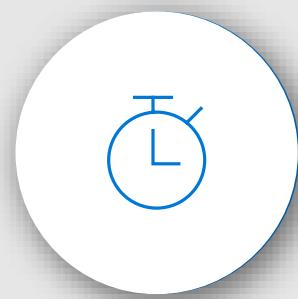
Intelligent



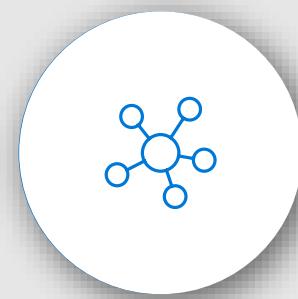
Trusted



Azure IoT: Productive



Deploy
in minutes



Build on open
source innovation



Solutions and partners to help
you at every step



Azure IoT: Hybrid



Connect devices, OS and
protocols you already use



Deploy cloud logic to the edge



Connect only when needed



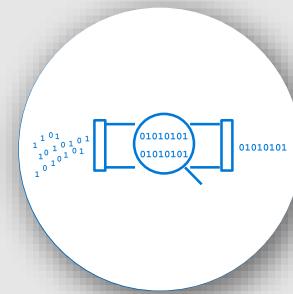
Azure IoT: Intelligent



Create intelligent analytics to predict future outcomes



Build spatial and edge intelligence into your solution



Explore and analyze time-series data



Azure IoT: Trusted



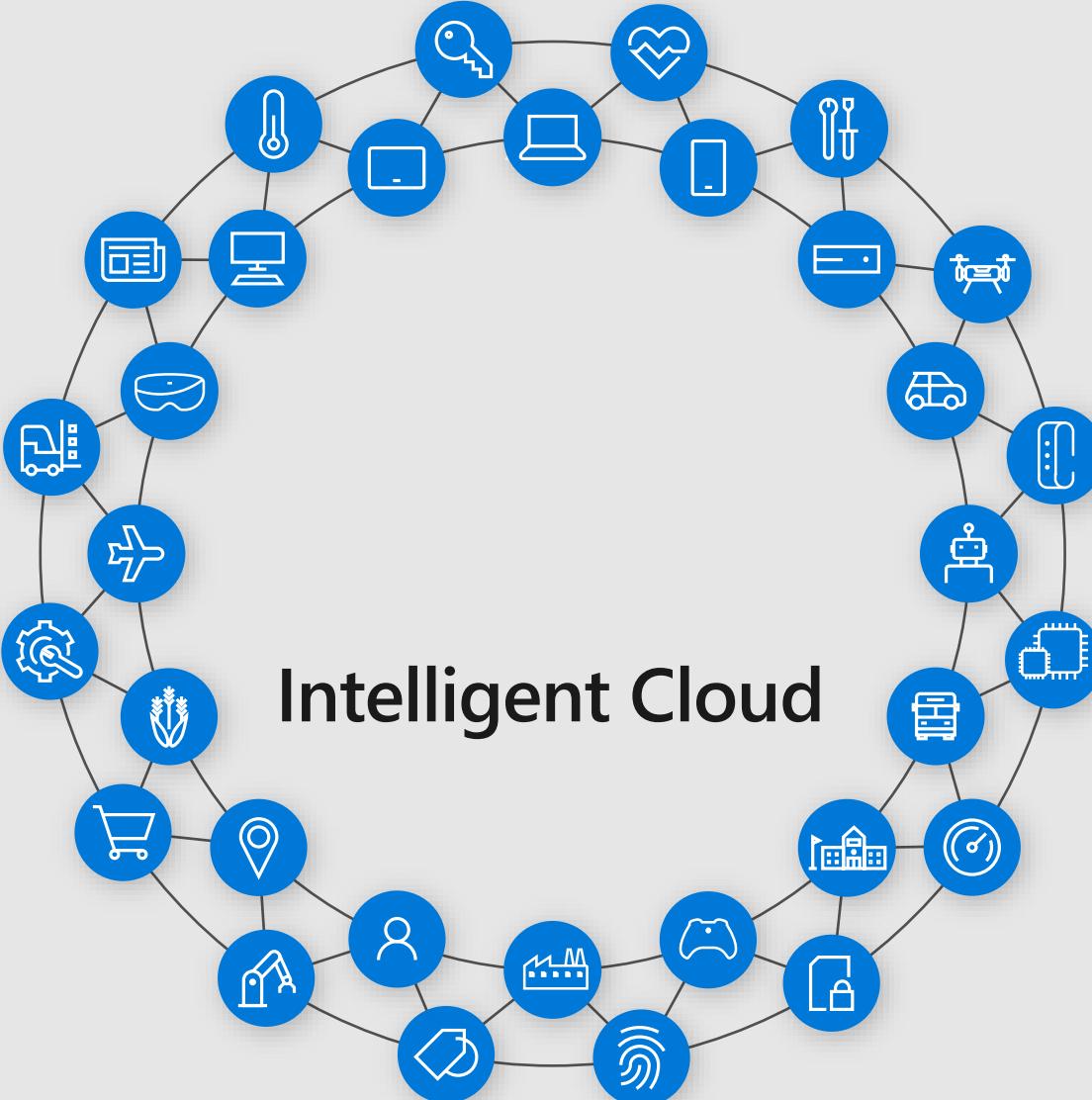
Securely provision and manage your IoT devices from anywhere



Build on proven enterprise-ready IoT solutions



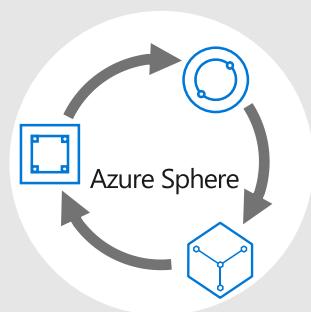
Leverage built-in security features and best practices



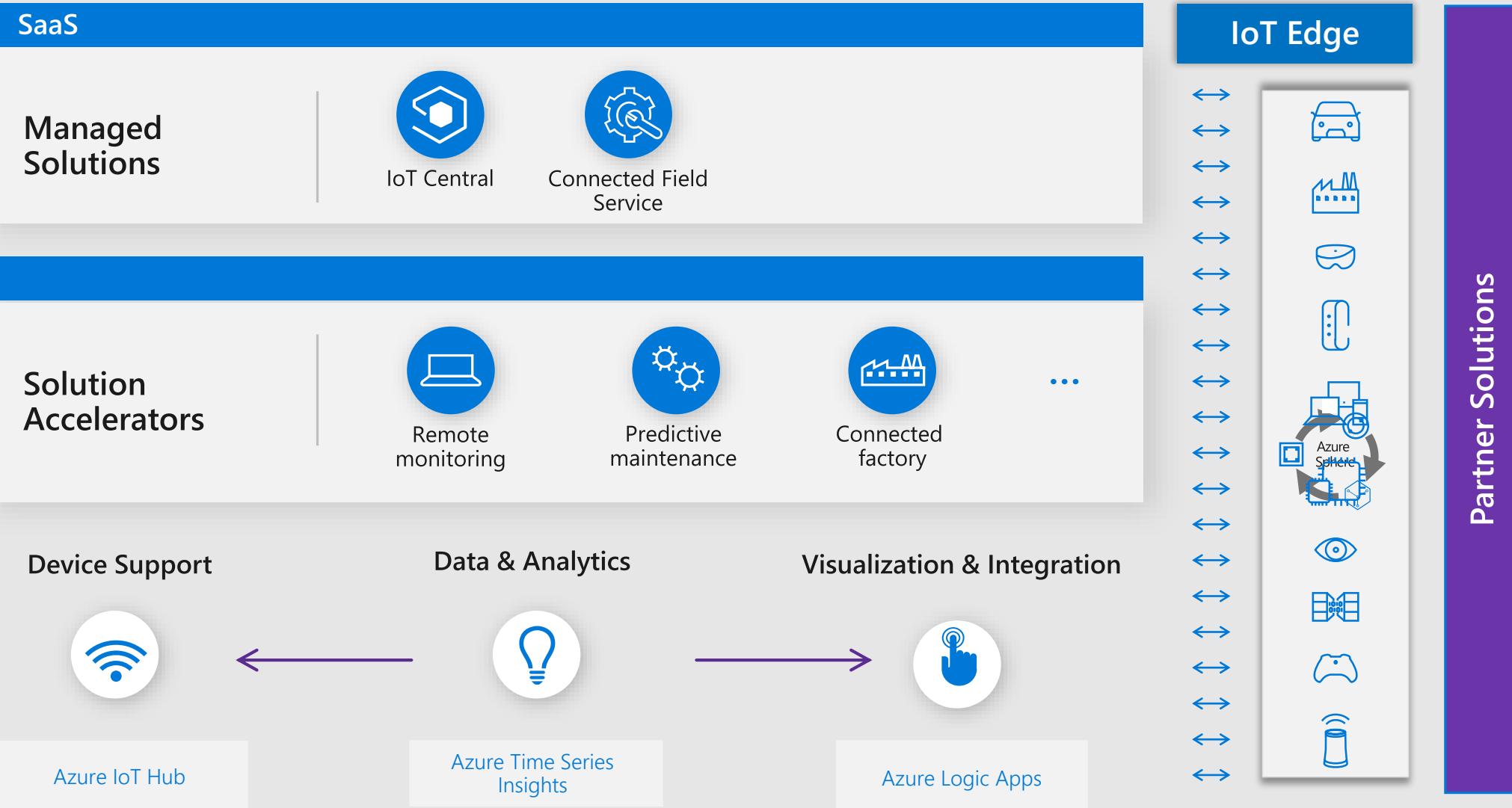
Intelligent Cloud

Intelligent Edge

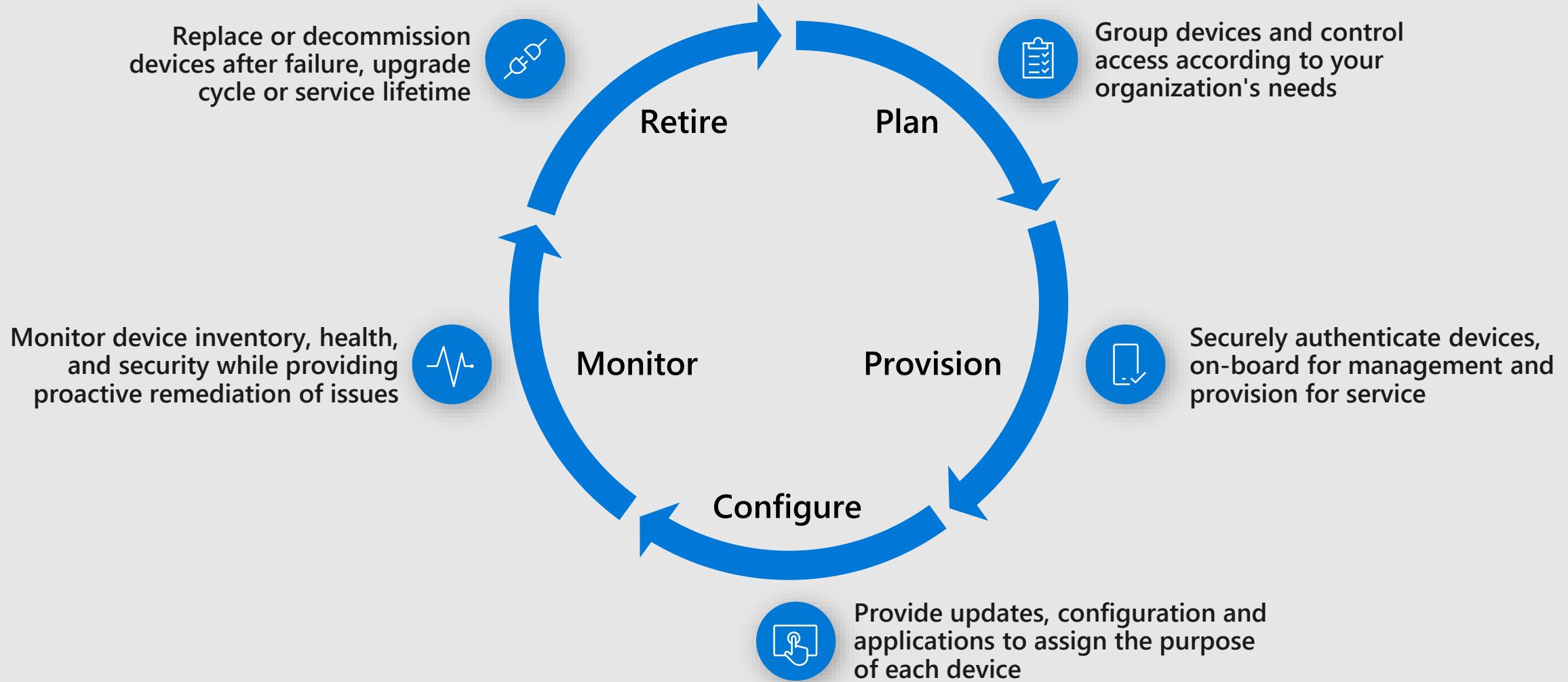
Azure IoT solutions and services



Azure IoT Edge



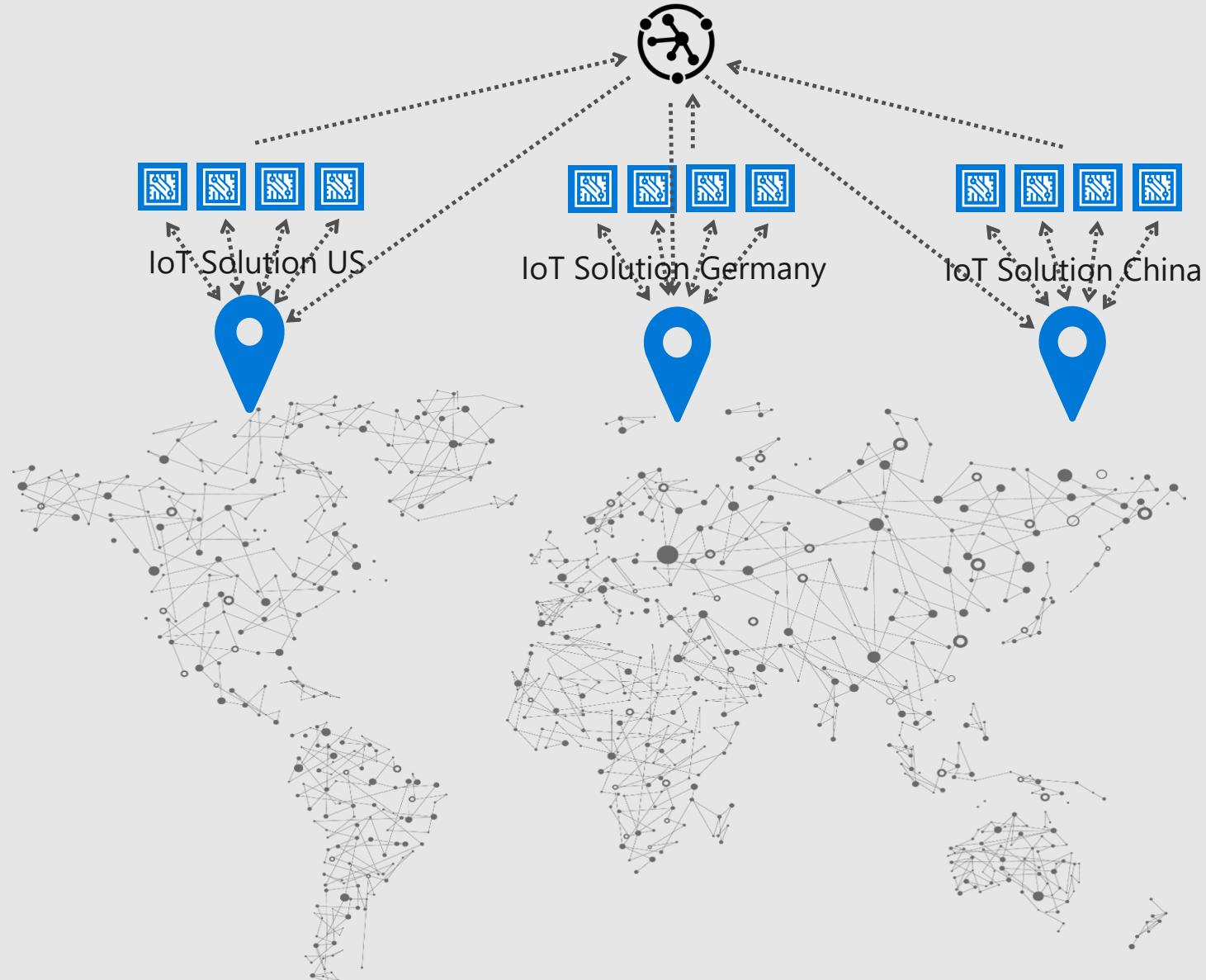
IoT device management lifecycle



Azure IoT Hub Device Provisioning Service

Register and provision devices with zero-touch in a secure and scalable way

- Simple "plug and play" provisioning
- Minimize manual connection requirements
- Enhanced security through HSM
- Global availability



End to End Security with Azure IoT Hub and Azure IoT solution accelerators

Securely connect millions of devices...

...over a secure internet connection...

...to Microsoft Azure – built with security from the ground up



Device Security

X.509 Certificate Based Identity and Attestation
Device Provisioning, Authorization & Management
Support for Diverse Hardware Secure Modules



Connection Security

X.509/TLS-Based Handshake and Encryption



Cloud Security

Azure Security Center | Azure Active Directory
Key Vault | Policy-Based Access Control

Azure IoT Hub security controls

Three device attestation and authentication Methods with policy based access controls



Access Controls

- Permission based
- Role based
- Action based
- Per device granularity



Azure IoT Central



Fully hosted and managed by Microsoft



No cloud development expertise required



Device connectivity and management



Monitoring rules and triggered actions



User roles and permissions



Analytics, dashboards and visualization



Risk-free trial with simplified pricing

Azure Digital Twins

A History of Digital Twins

R&D & ENGINEERING

MANUFACTURING OPERATIONS, SERVICES

NEW SERVICES DRIVEN BUSINESS MODELS

Information mirroring* model

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

Simulation and 3D printing

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

Connected IoT assets

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

Model any physical environment

- Humans and device collaboration
- Spatial awareness and intelligence
- Mixed Reality experience

Digital Twin evolution



Real Object

Virtual Object



*Dr. Michael Grieves and John Vickers – University of Michigan



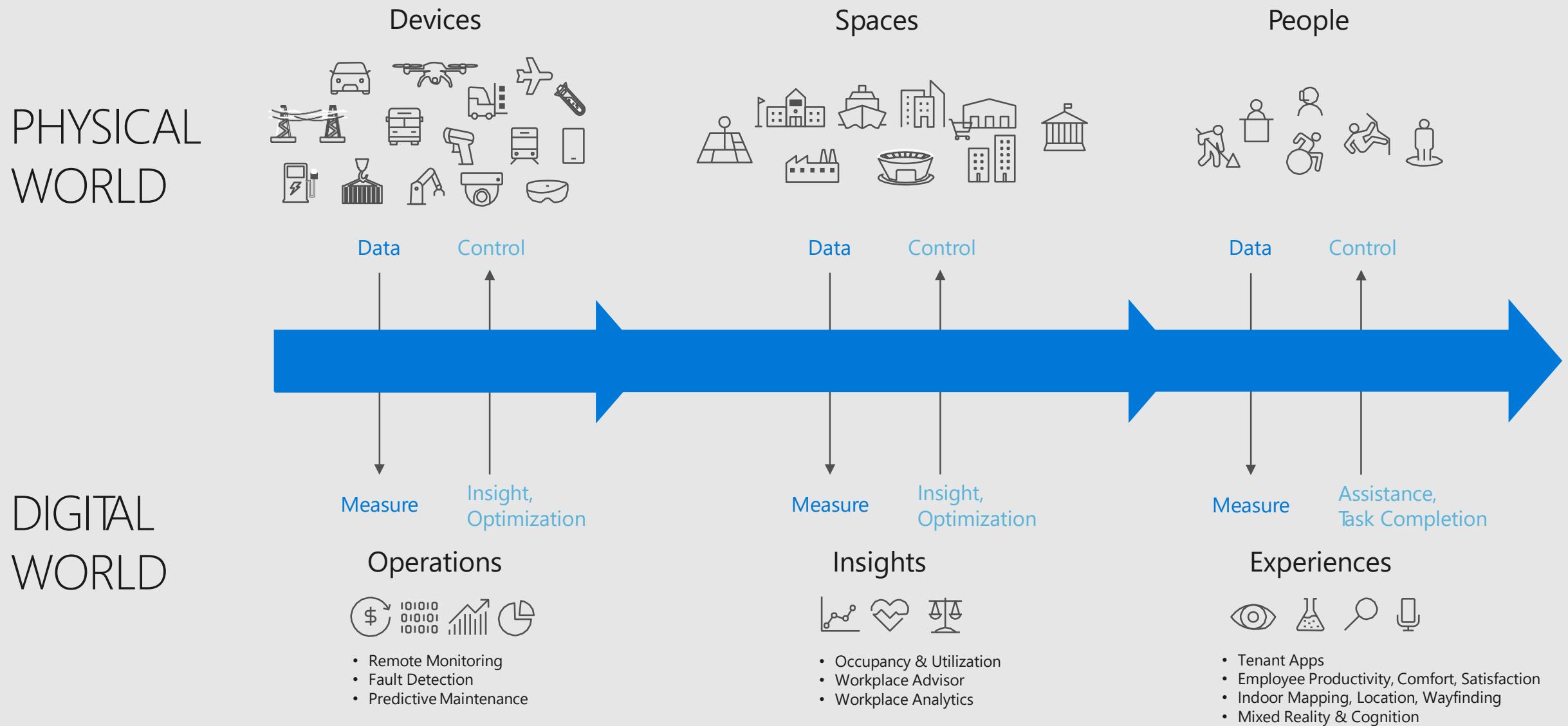
Remote Monitoring
Predictive Maintenance



Enable any organization to create digital feedback loops for all aspects of their business

2018 - ...

Digital Twins: Fusing physical and digital



Azure Digital Twins



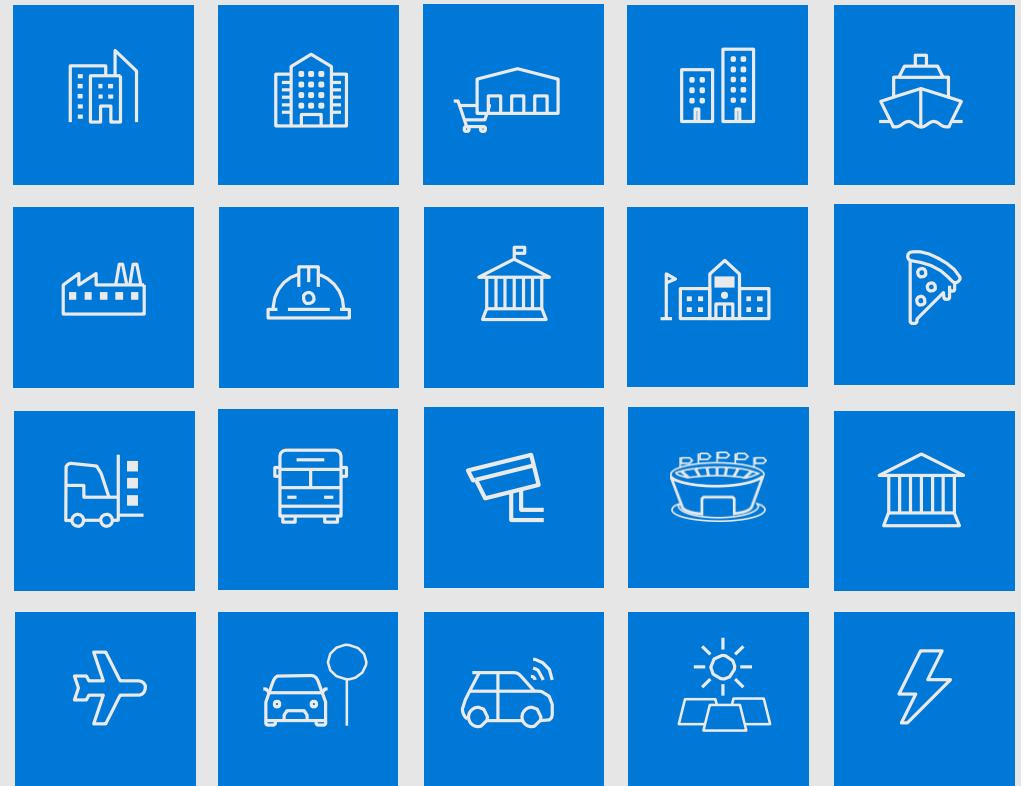
Build next generation IoT solutions with Azure Digital Twins

Virtually represent the physical world with a digital twin that
models the relationships between people, places and devices.

Leverage predefined and **extensible Twin Object Models** to build
contextually-aware solutions uniquely attuned to your industry domain.

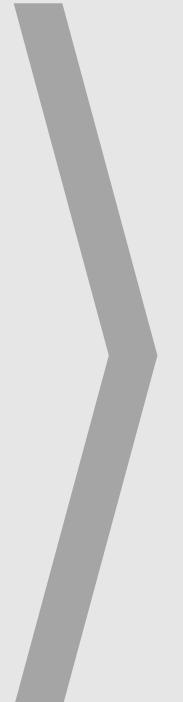
Automate actions in a space with custom functions that send events
and /or notifications to endpoints based on incoming telemetry.

Securely replicate solutions across multiple tenants through
built-in multi- and nested-tenancy.



Virtual instance of a customer-unique asset

Physical asset operational in the field



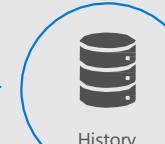
Virtual asset in digital space



- Operating parameters (pressure, temperature, ...)
- Consumables (quantity, flow, age ...)
- Environment (humidity, location, ...)

Real-world,
real-time data

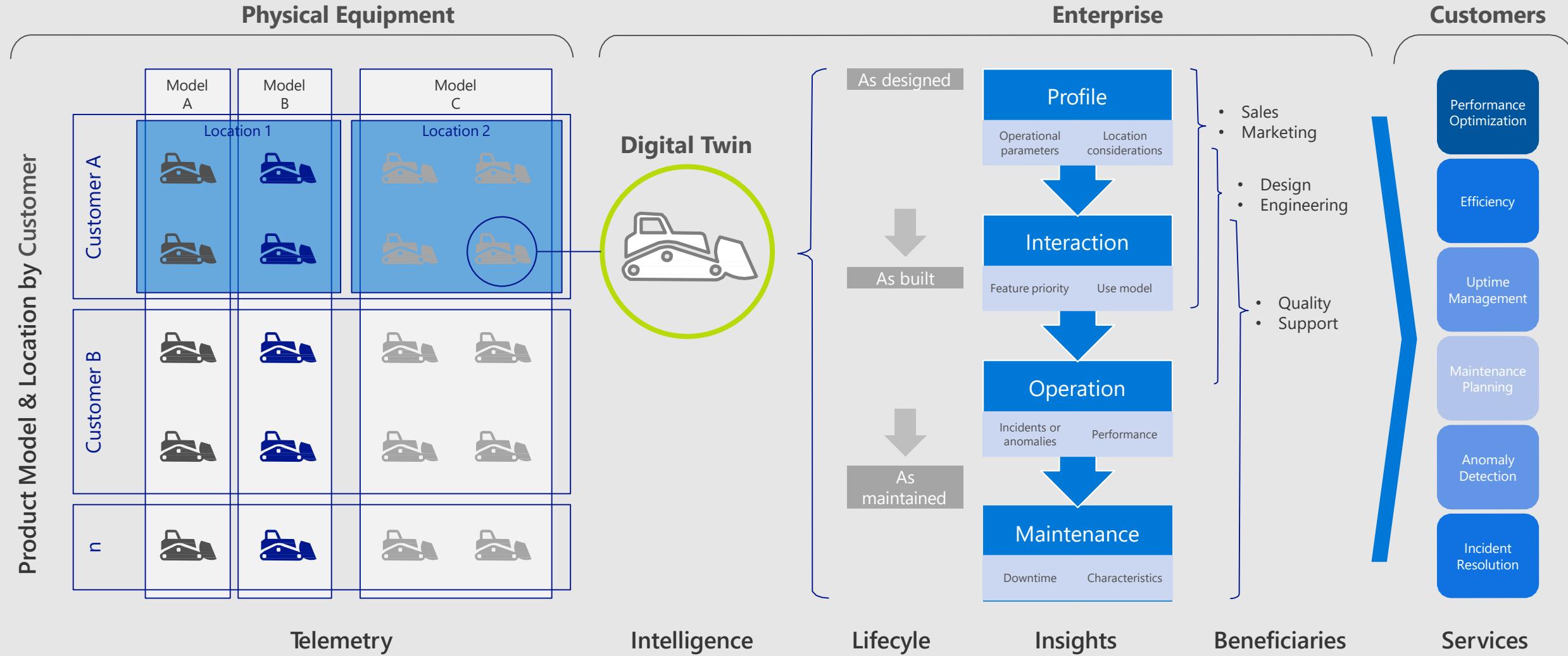
- Engineering (as designed)
- Manufacturing (as built)
- Field service (as maintained)



History

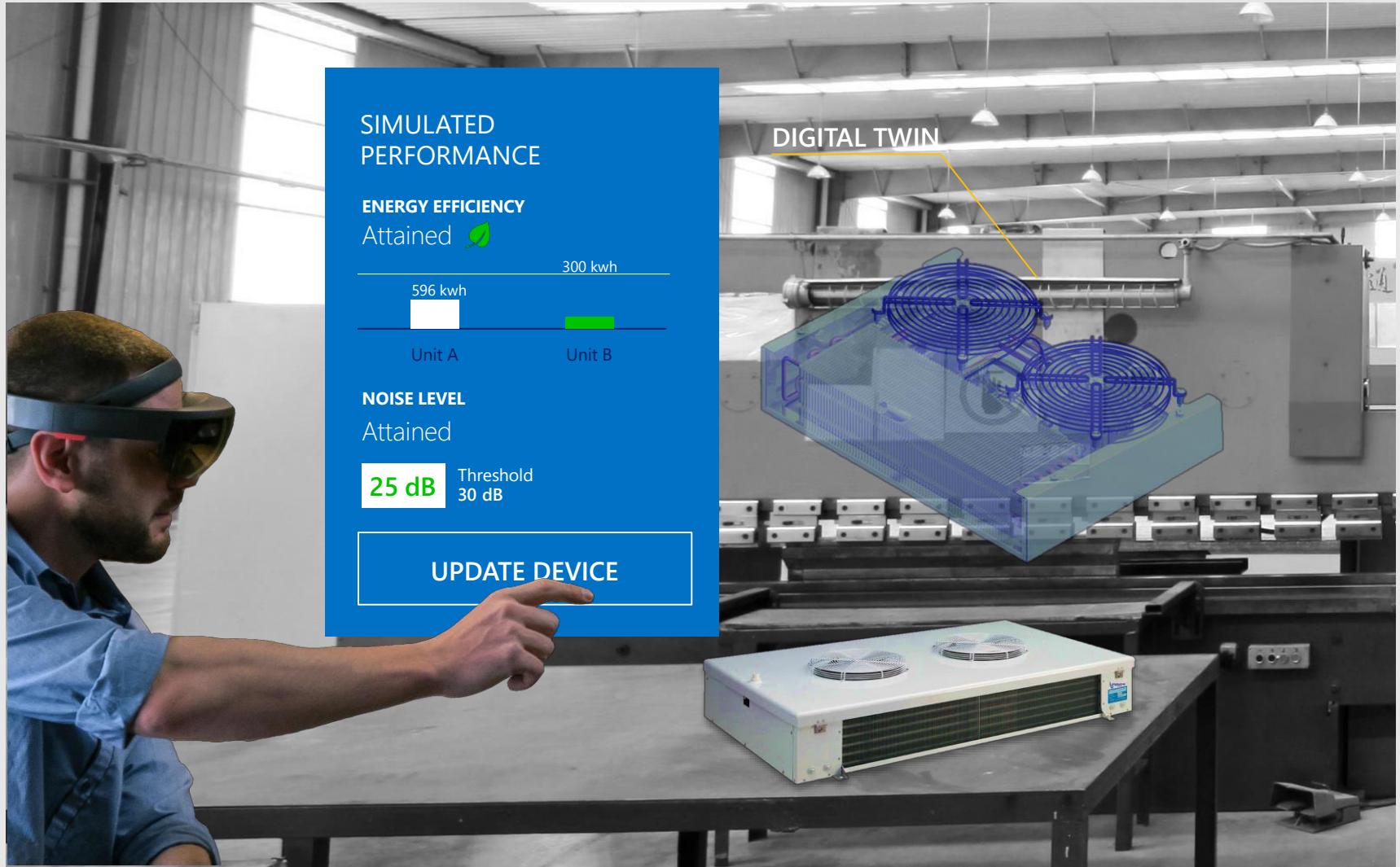
Simulation

Insights into a specific product or entire line

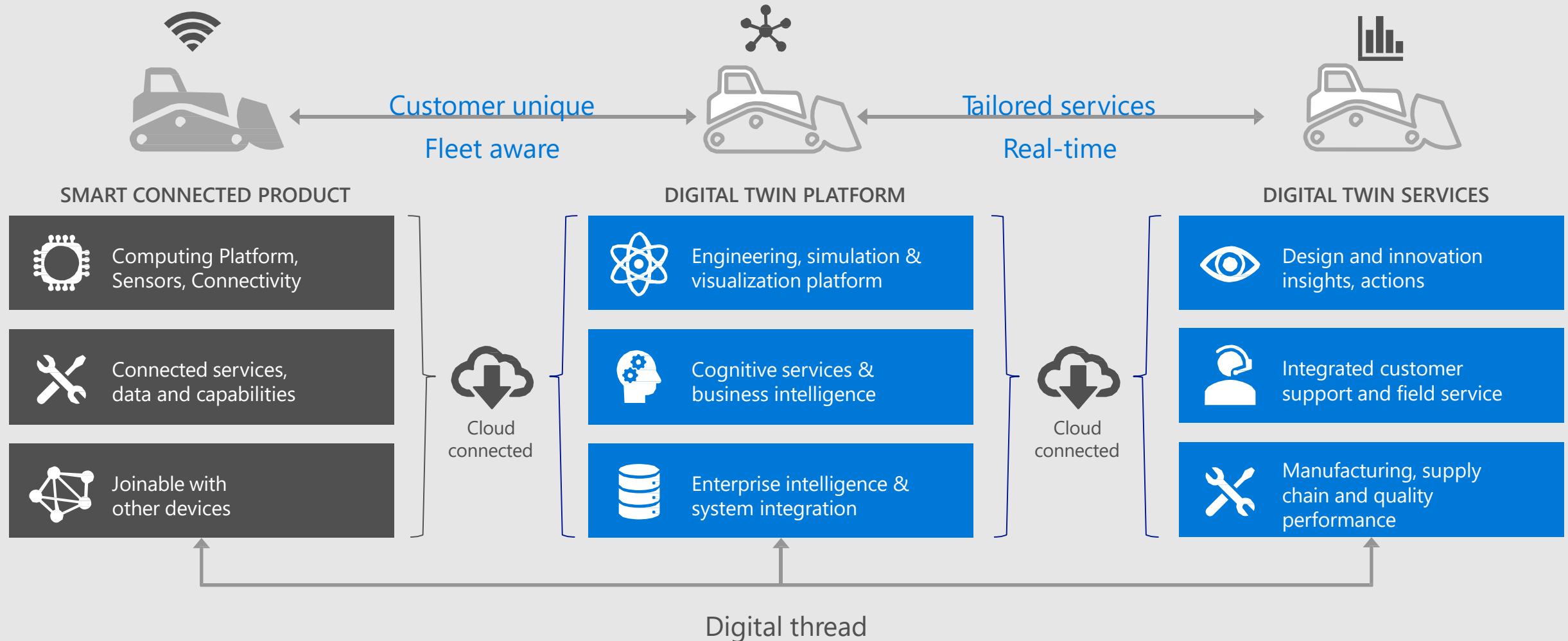


Example workflow

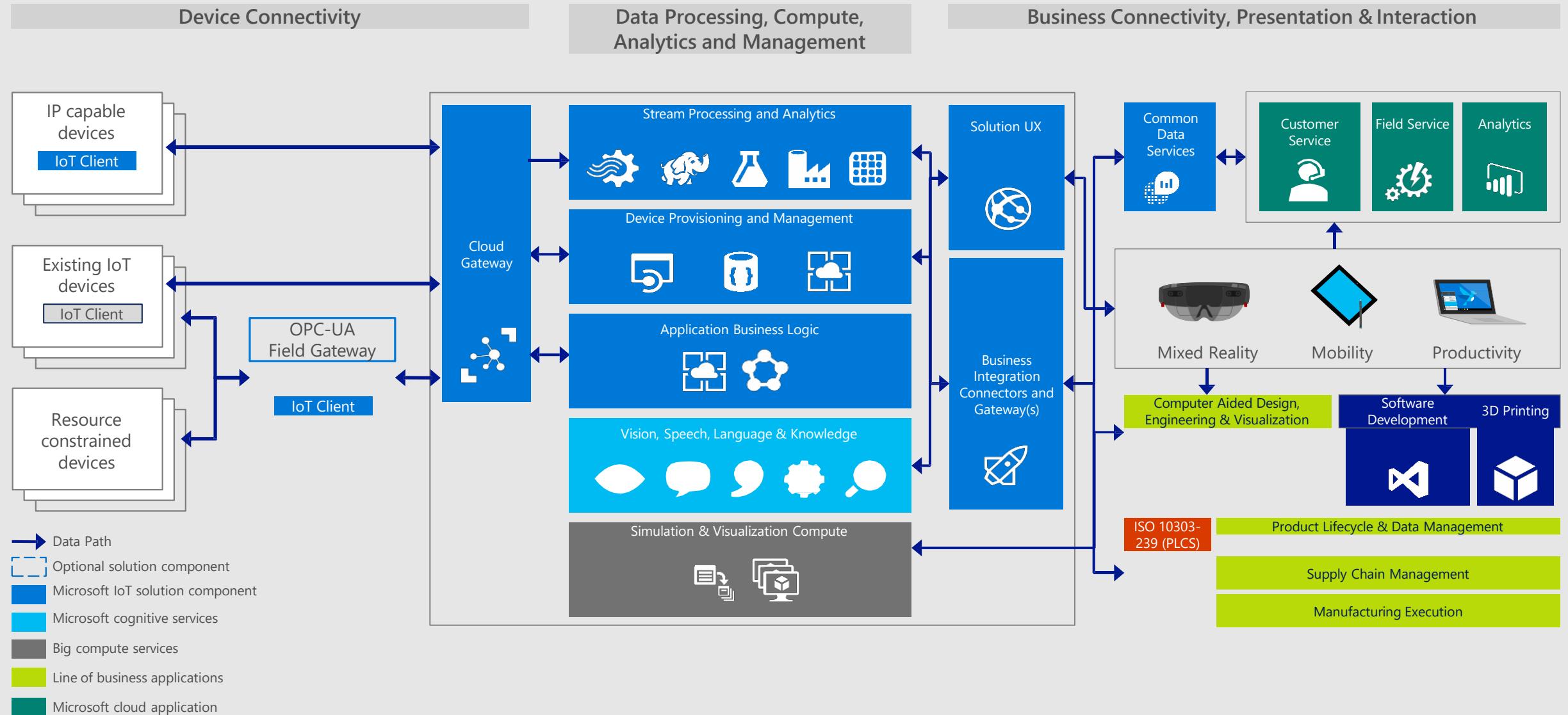
1. Identify device by physical attributes
 - Scan; topology
 - Barcode
2. Load the Digital Twin
 - 3D visualization
 - Instantiate virtual asset
3. Report performance
 - Historical & real-time
 - Insights & predicted outcome
4. Simulate new outcome
 - New settings
 - Recommended parameters
5. Take action
 - Implement
 - Share, collaborate



Digital Twin Solution Architecture



Digital Twin System Architecture



Demo

¡Gracias!

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Colabora



2019

Global Azure
BOOTCAMP

Muchas Gracias!

