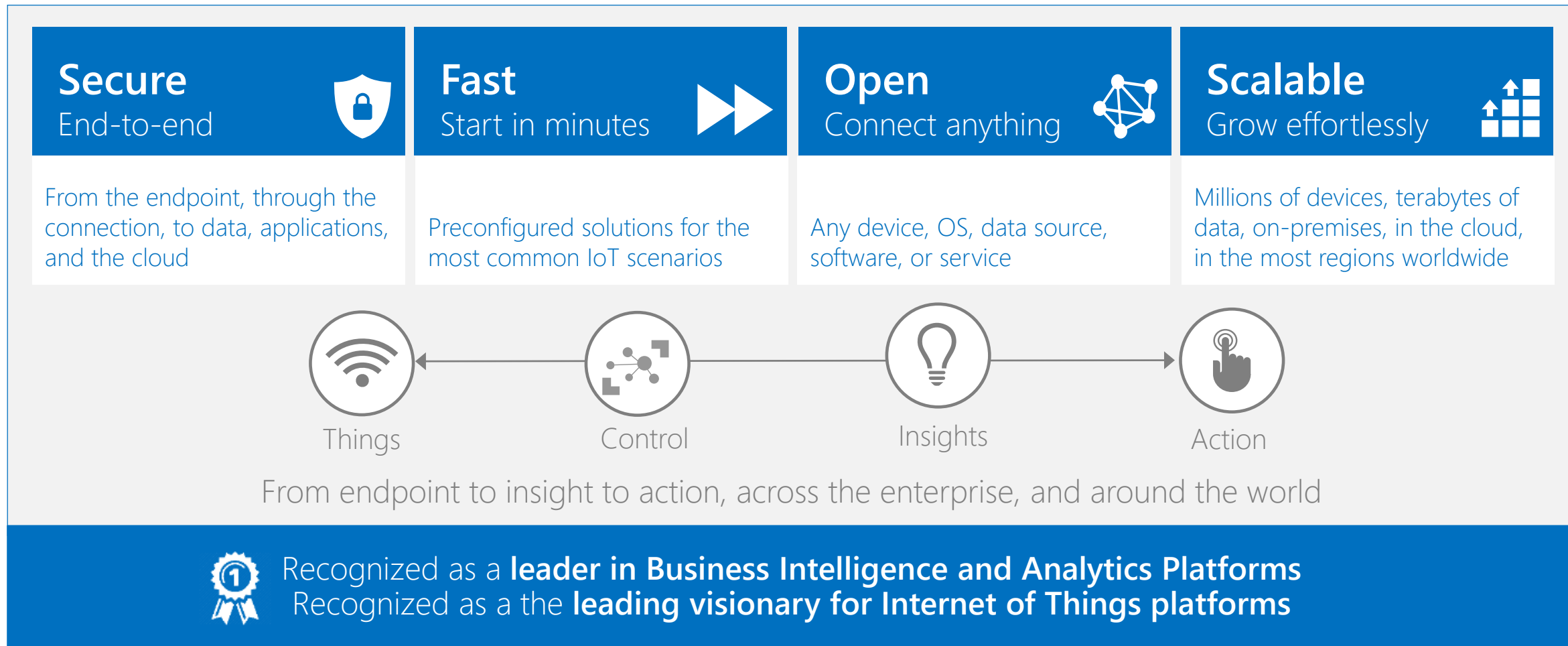


Securing IoT Infrastructure

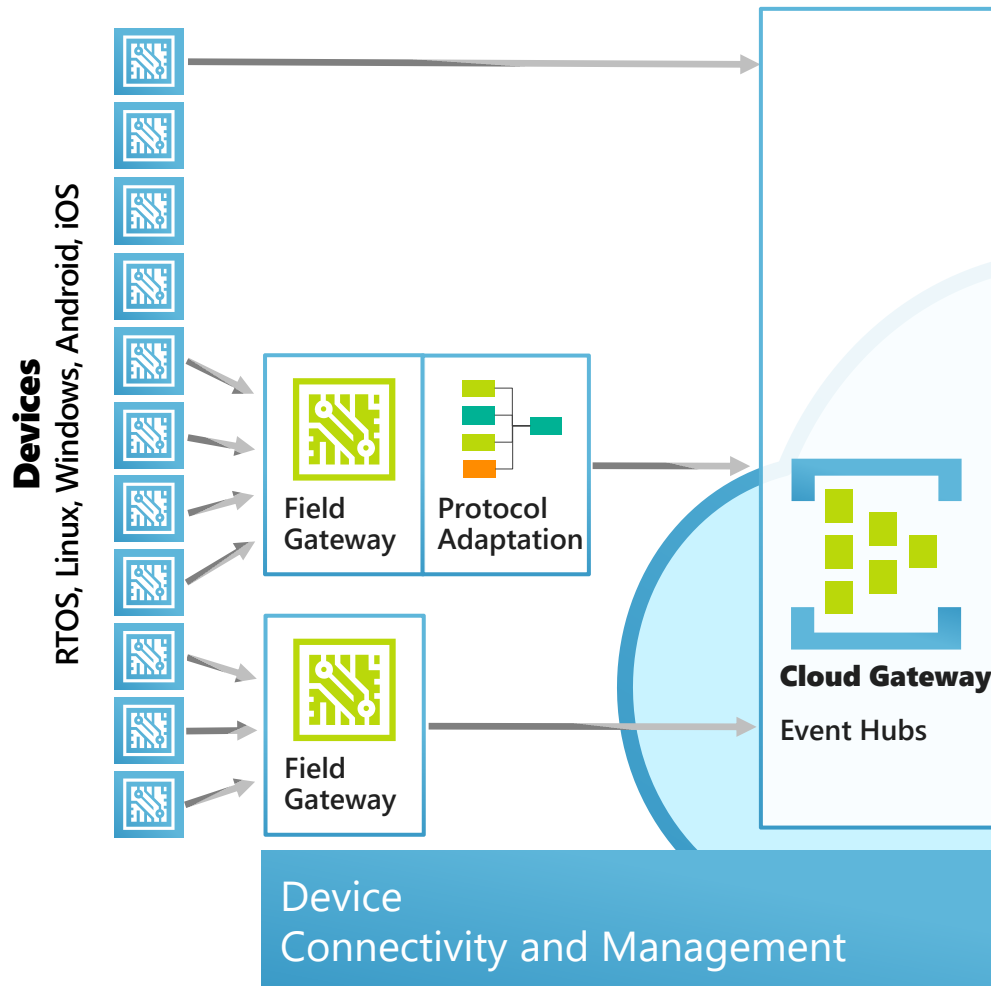
Azure IoT: Ready for the enterprise



Built on the **industry's leading cloud**



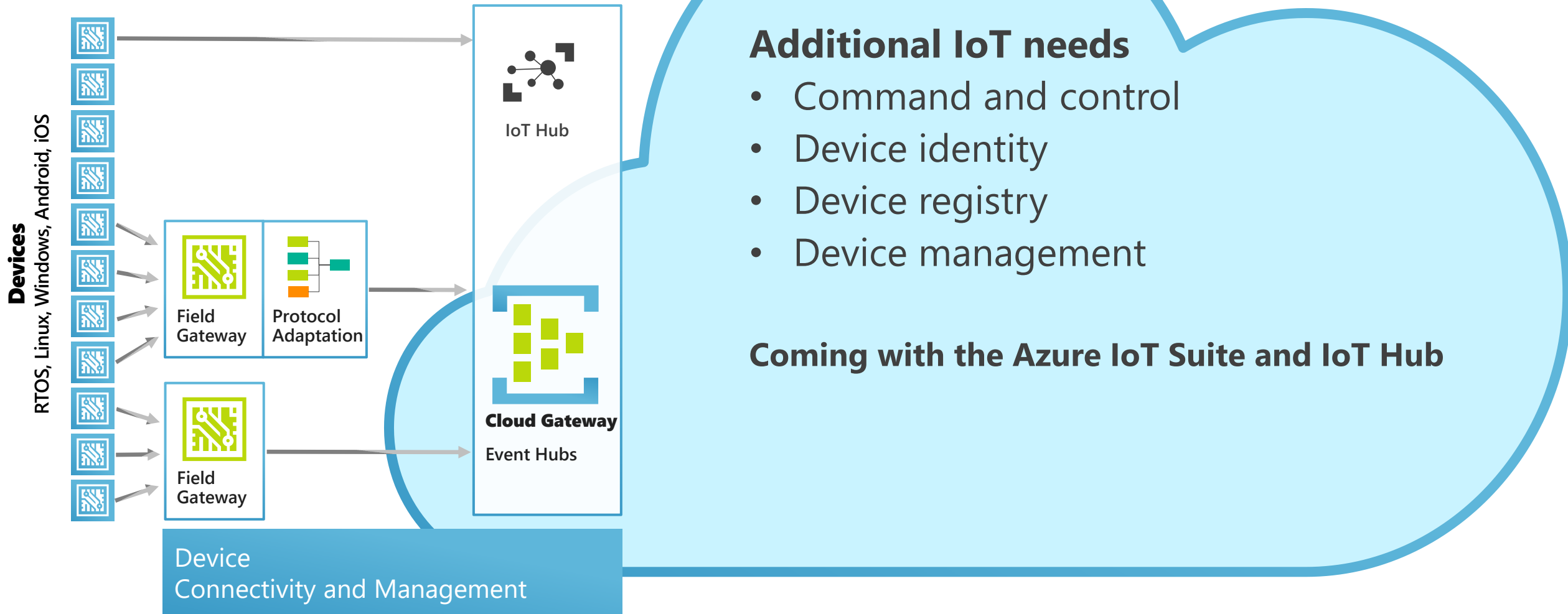
IoT device and cloud patterns



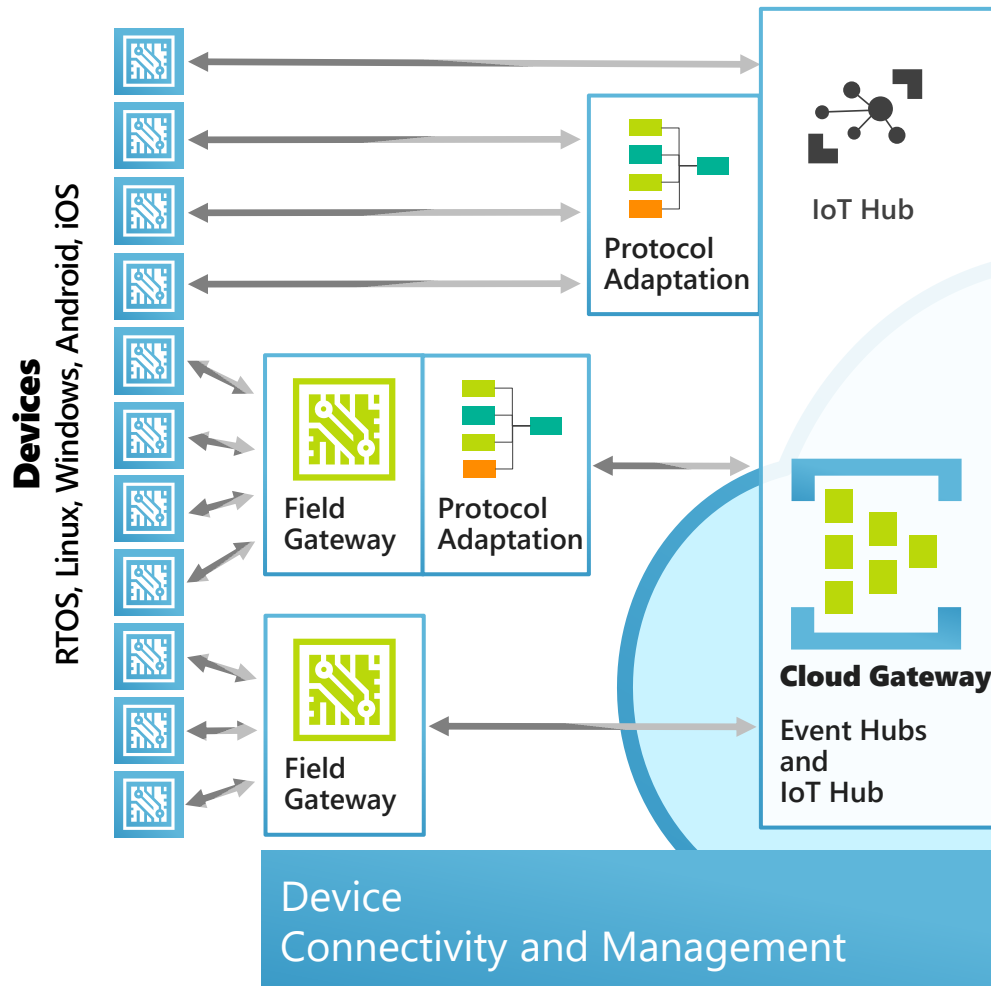
Event hubs

- High scale telemetry ingestion service
- HTTP/AMQP protocol support
- Each event hub supports
 - 1 million publishers
 - 1GB/s ingress
- Generally available worldwide
 - 30 billion messages per day
 - 100+ TB ingested per day

IoT device and cloud patterns



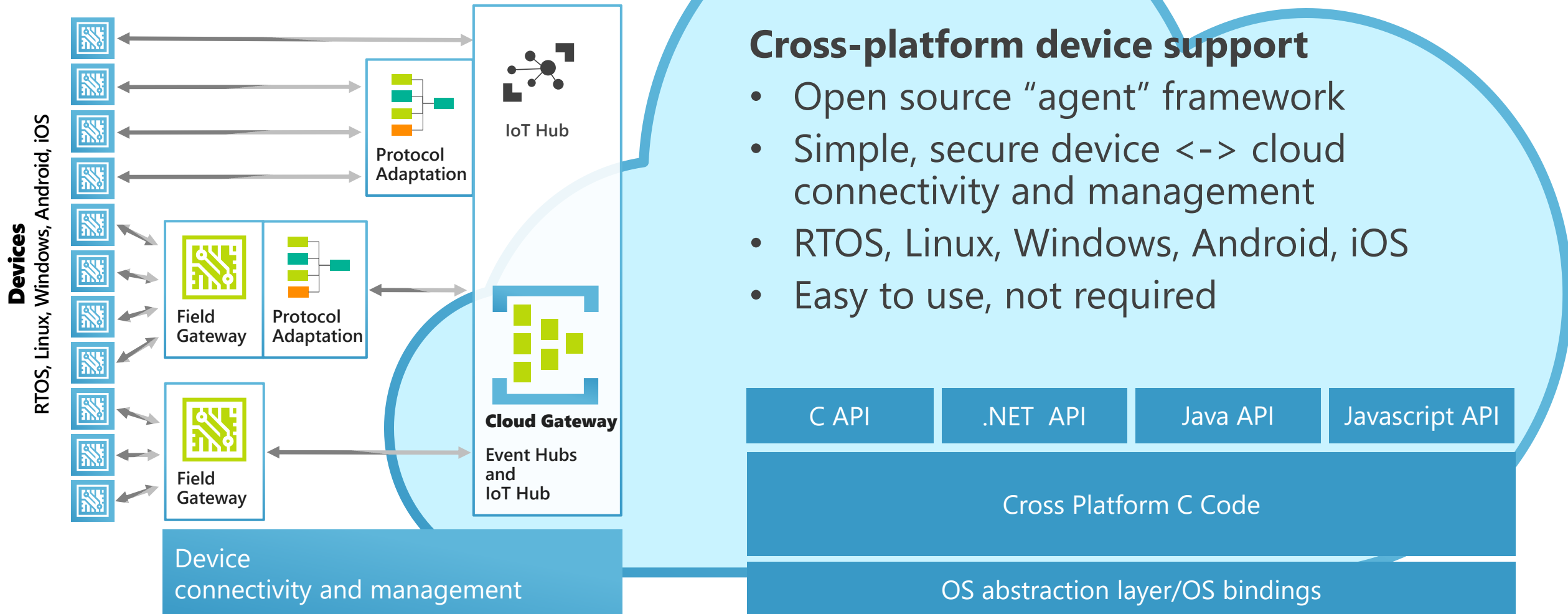
IoT device and cloud patterns



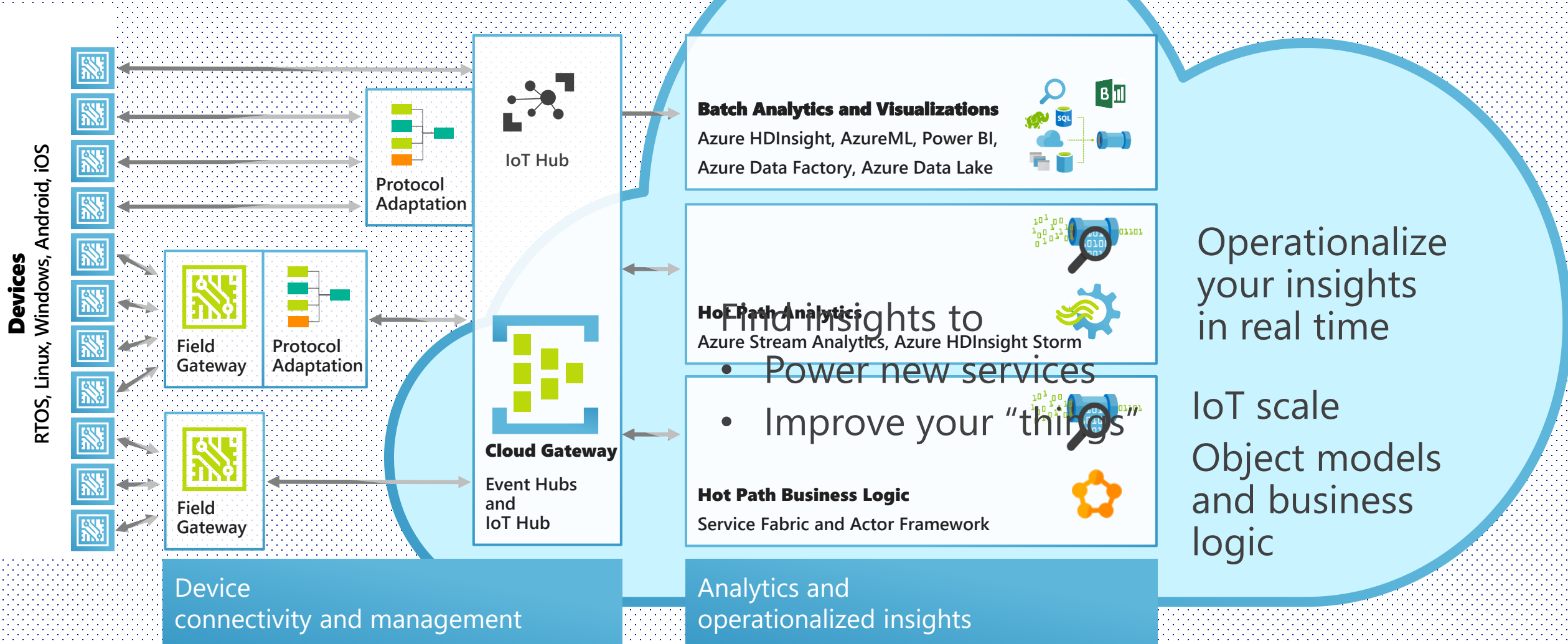
IoT hub

- Capability of the Azure IoT Suite
- Bidirectional device \leftrightarrow cloud
- Up to 10 million devices
- Telemetry ingestion
- Command and control
- Device registry and identity
- Device management
- HTTP/AMQP
- Extensible protocol support/MQTT

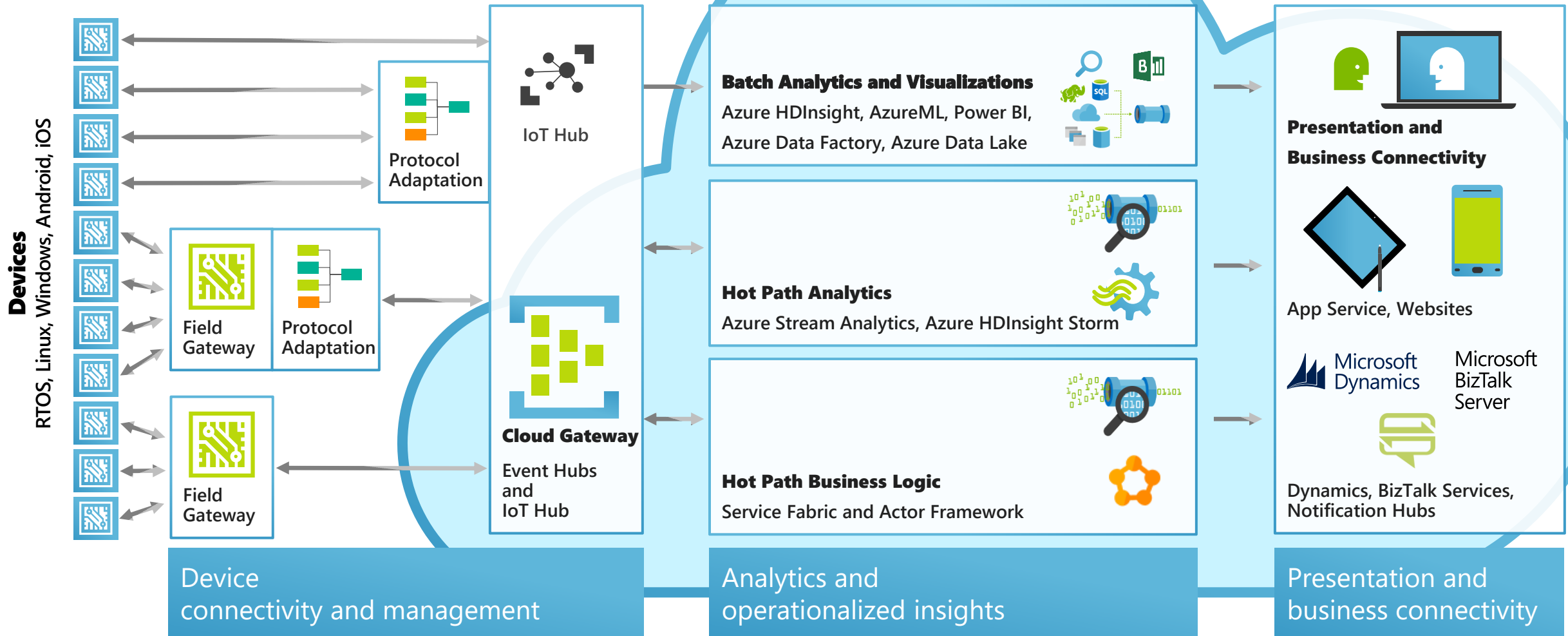
IoT device and cloud patterns























IoT device and cloud patterns



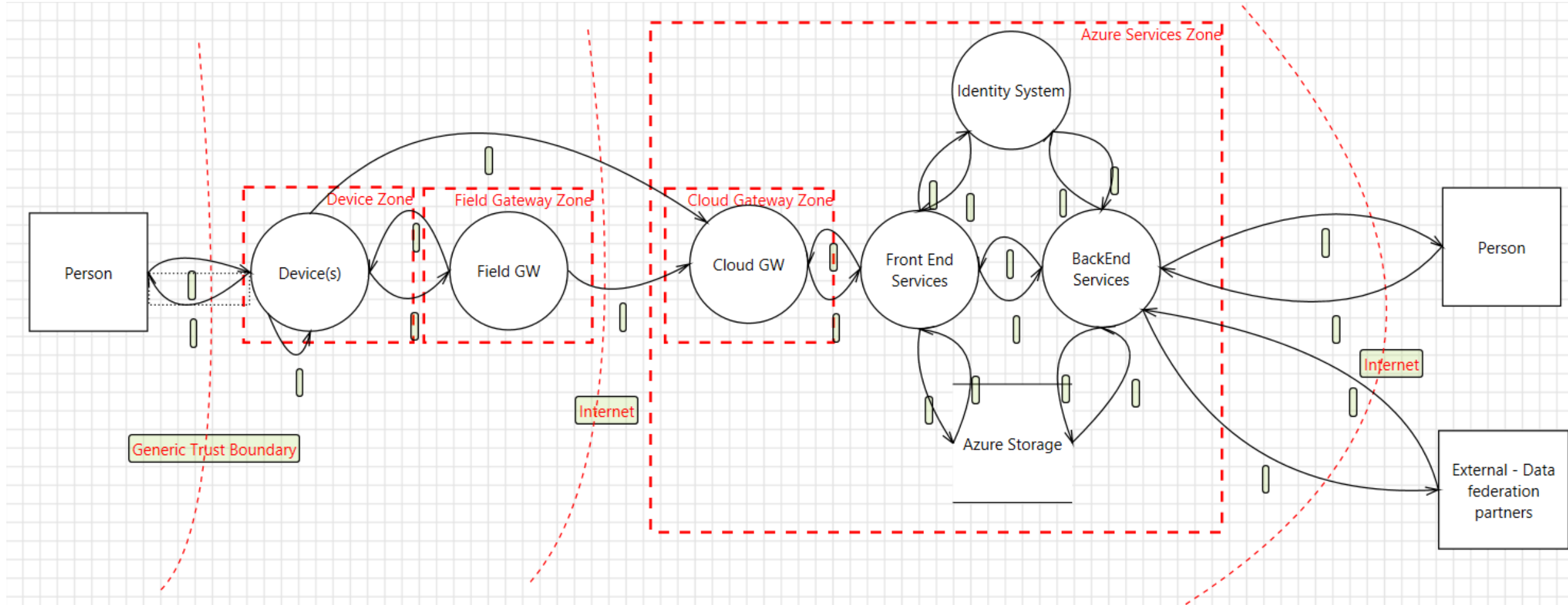
IoT device and cloud patterns



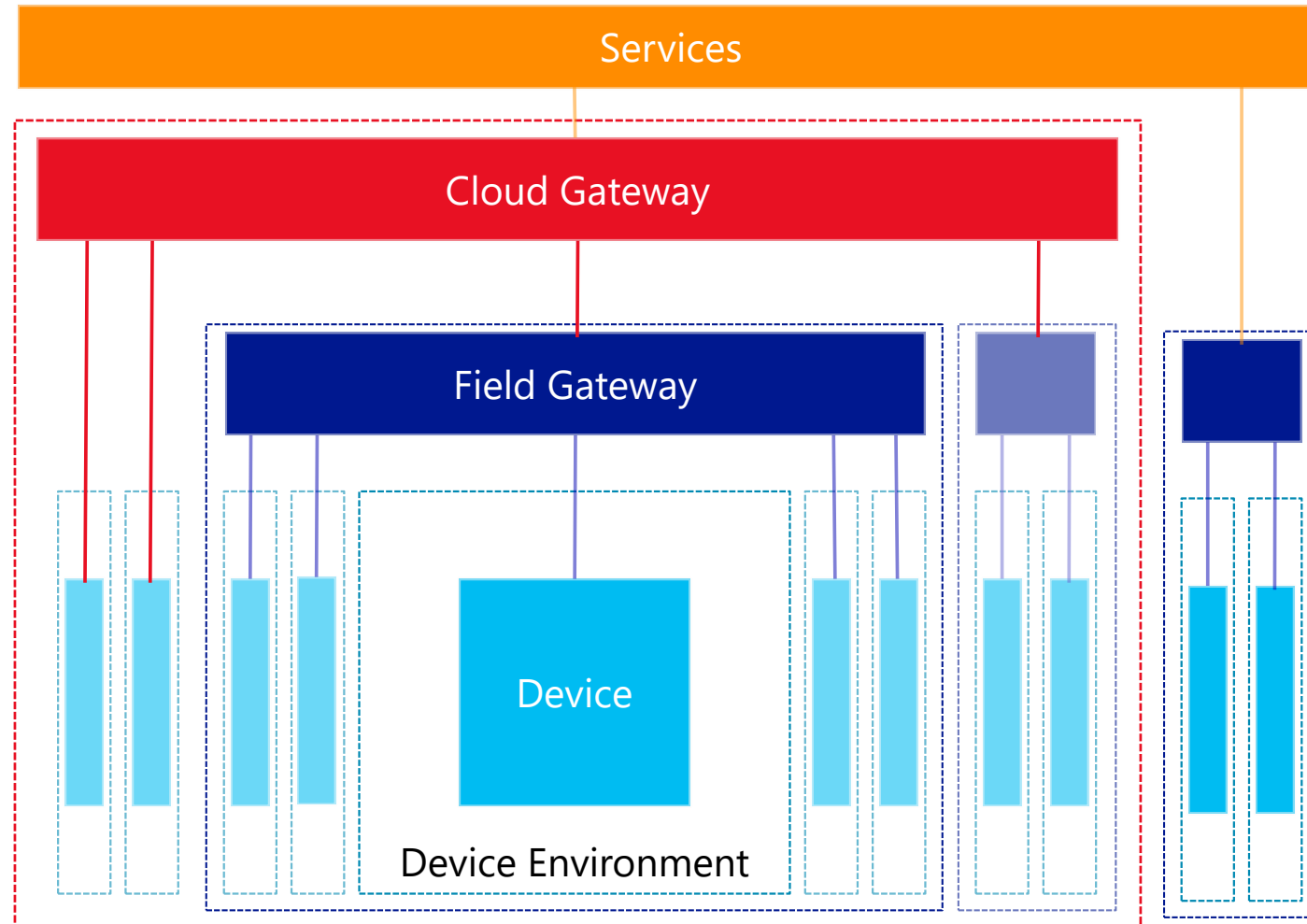
Microsoft Azure IoT services

Devices	Device connectivity	Storage	Analytics	Presentation and action
	 Event Hubs	 SQL Database	 Machine Learning	 App Service
	 Service Bus	 Table/Blob Storage	 Stream Analytics	 Power BI
	 External Data Sources	 DocumentDB	 HDInsight	 Notification Hubs
	 IoT Hub	 External Data Sources	 Data Factory Data Lake	 Mobile Services
				 BizTalk Services

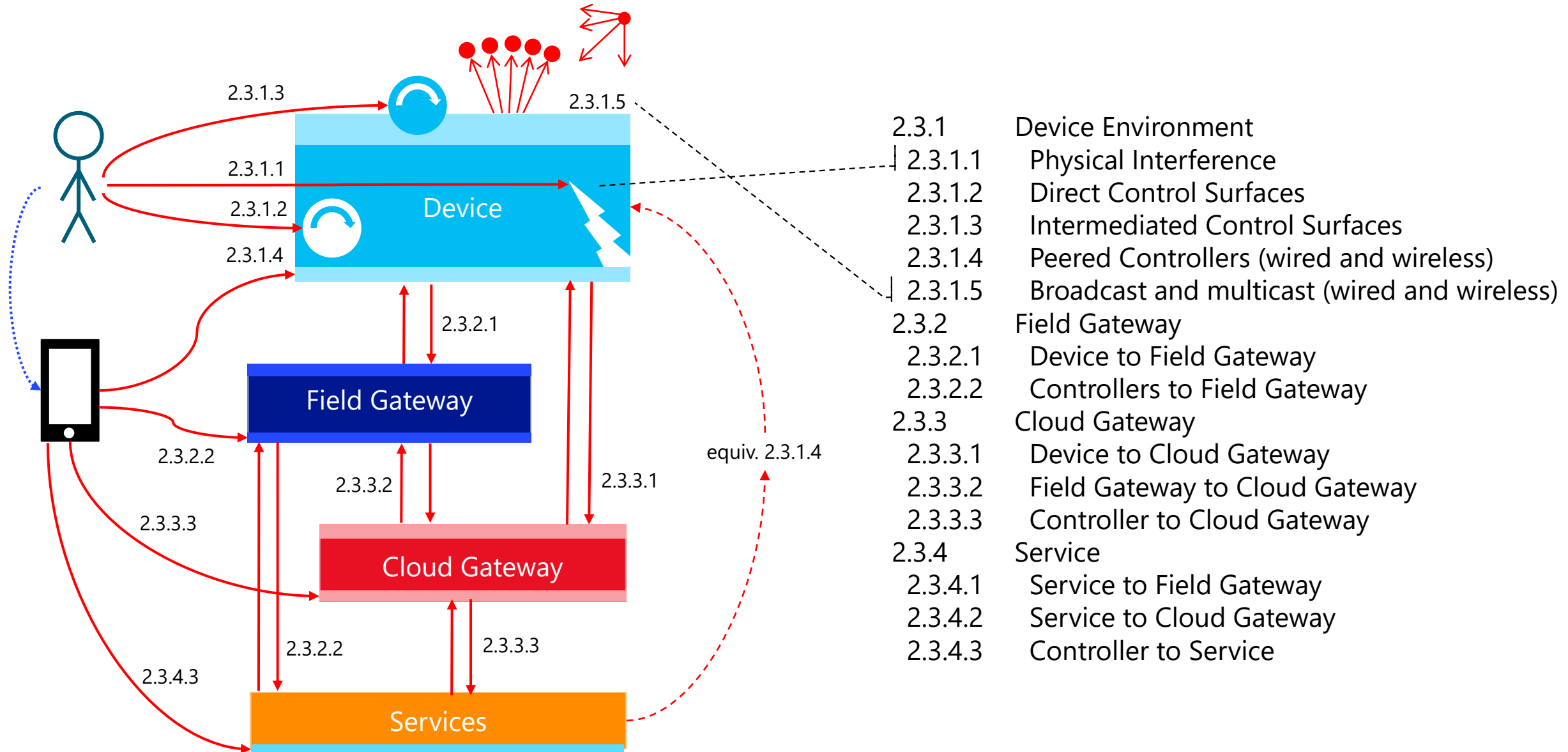
Azure IoT services reference architecture



Four zones of IoT security



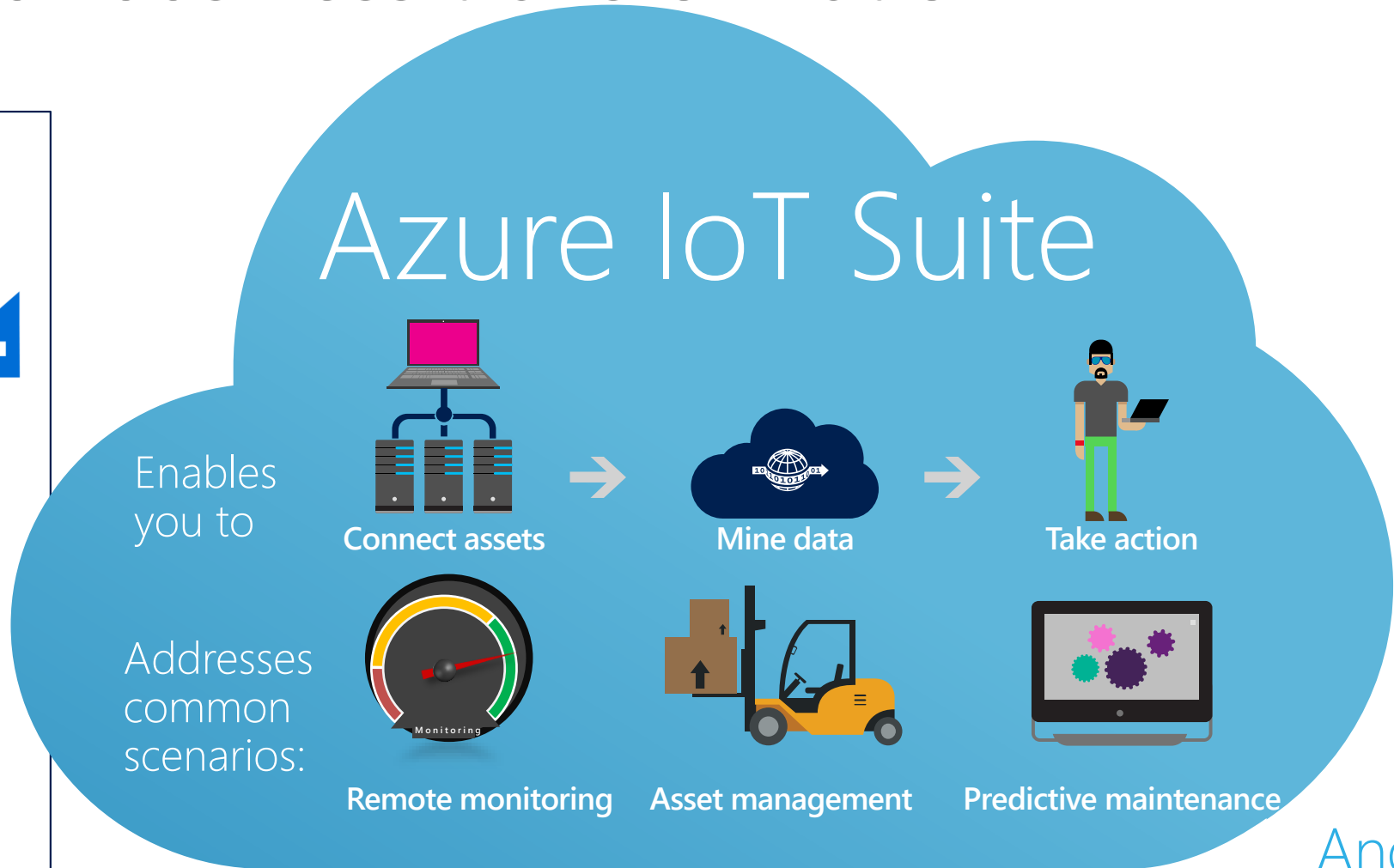
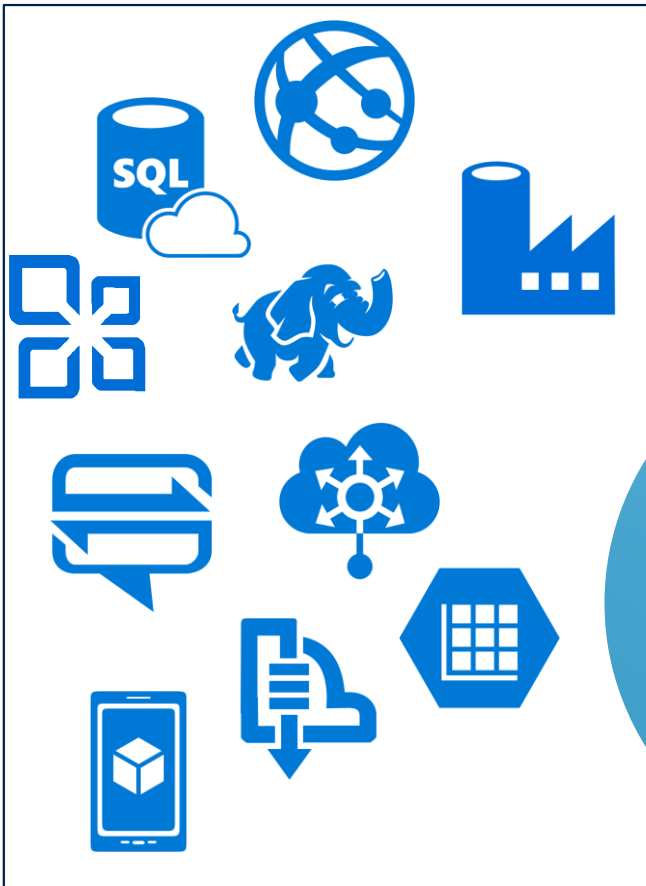
High level view of IoT threats



Microsoft Azure IoT Suite

Accelerate your business transformation

Azure IoT services



And more...

Elements of Azure IoT Suite

1. Connect and Manage Devices & Gateways



Preconfigured solutions



Gateway & Devices



Connect and control

2. Analyze streaming data & Generate predictive insights*



Real time analytics



Data visualization



Predictive analytics*

3. Integrate into business systems



Workflow integration



Push and broadcast notifications



ID and access management

4. Secure IoT Infrastructure



5. Customize IoT Architecture

* Only applies to Predictive Maintenance

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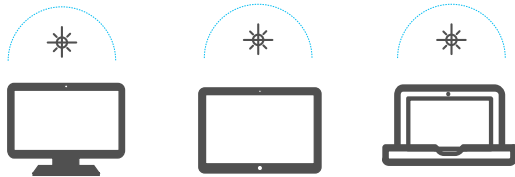
IoT Security



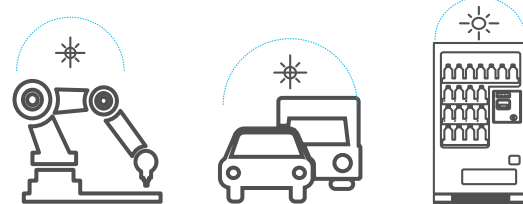
Why securing Internet of Things is hard

System of Systems

Information
Technology

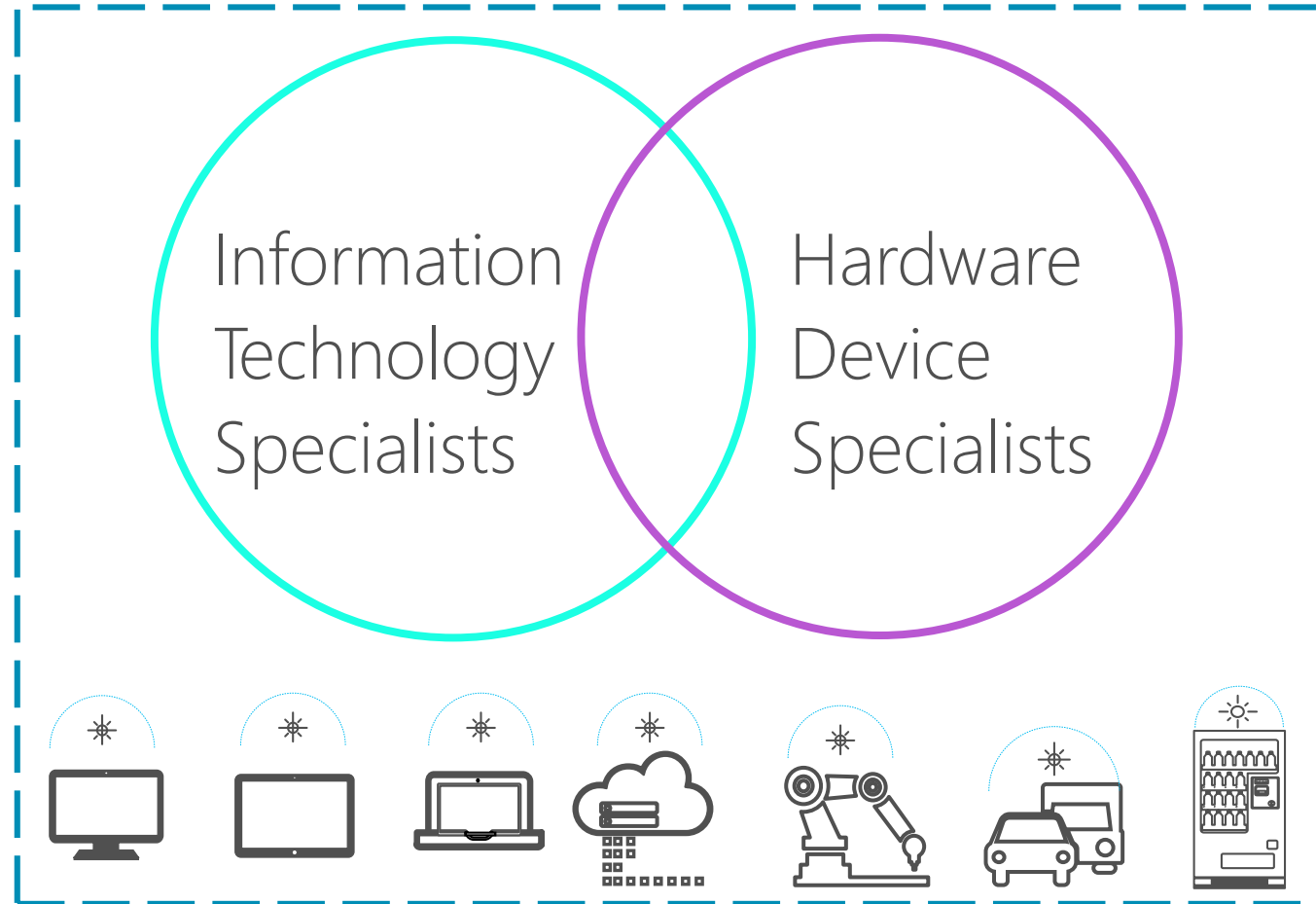


Operational
Technology

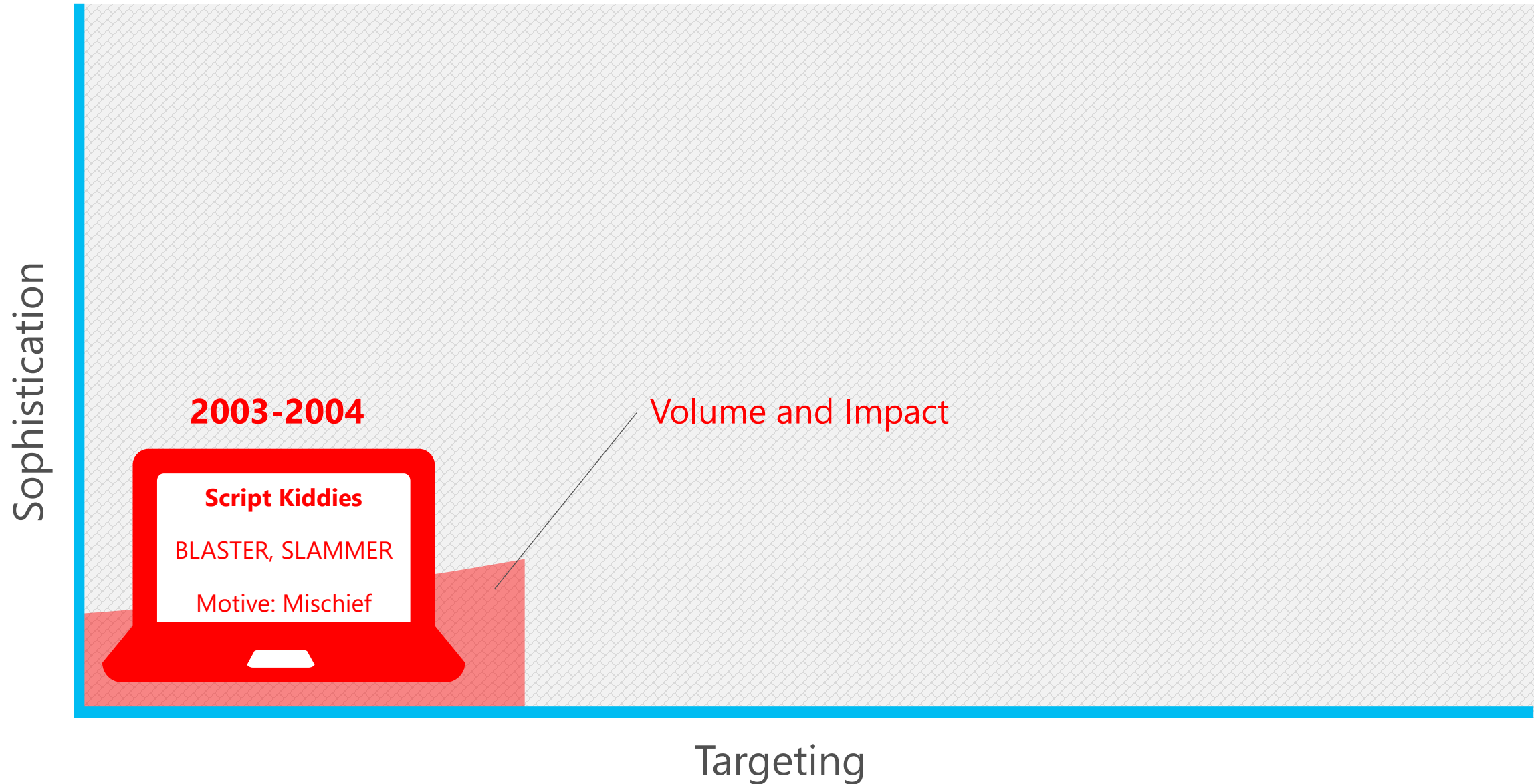


Why securing Internet of Things is hard

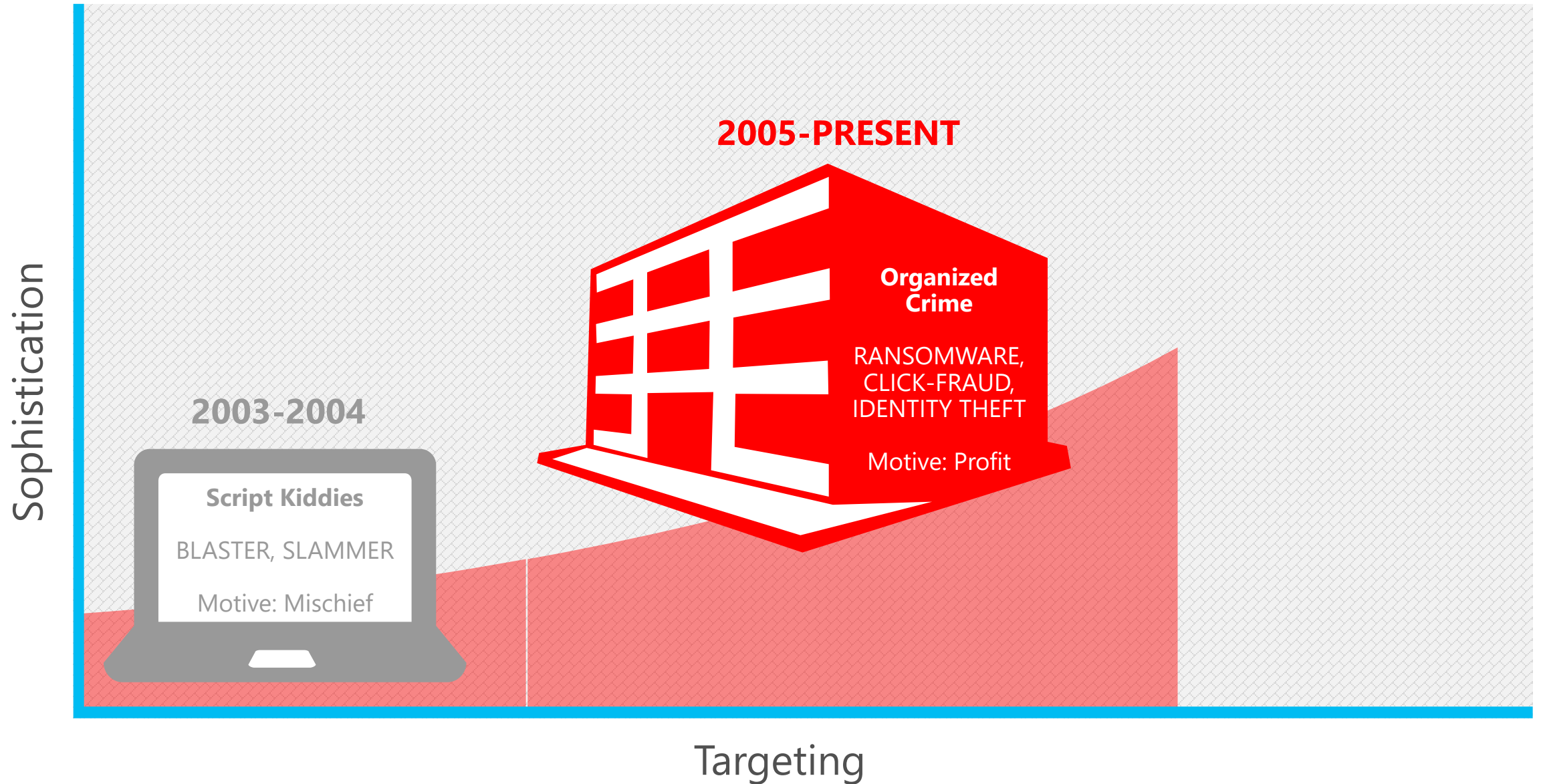
System of Systems



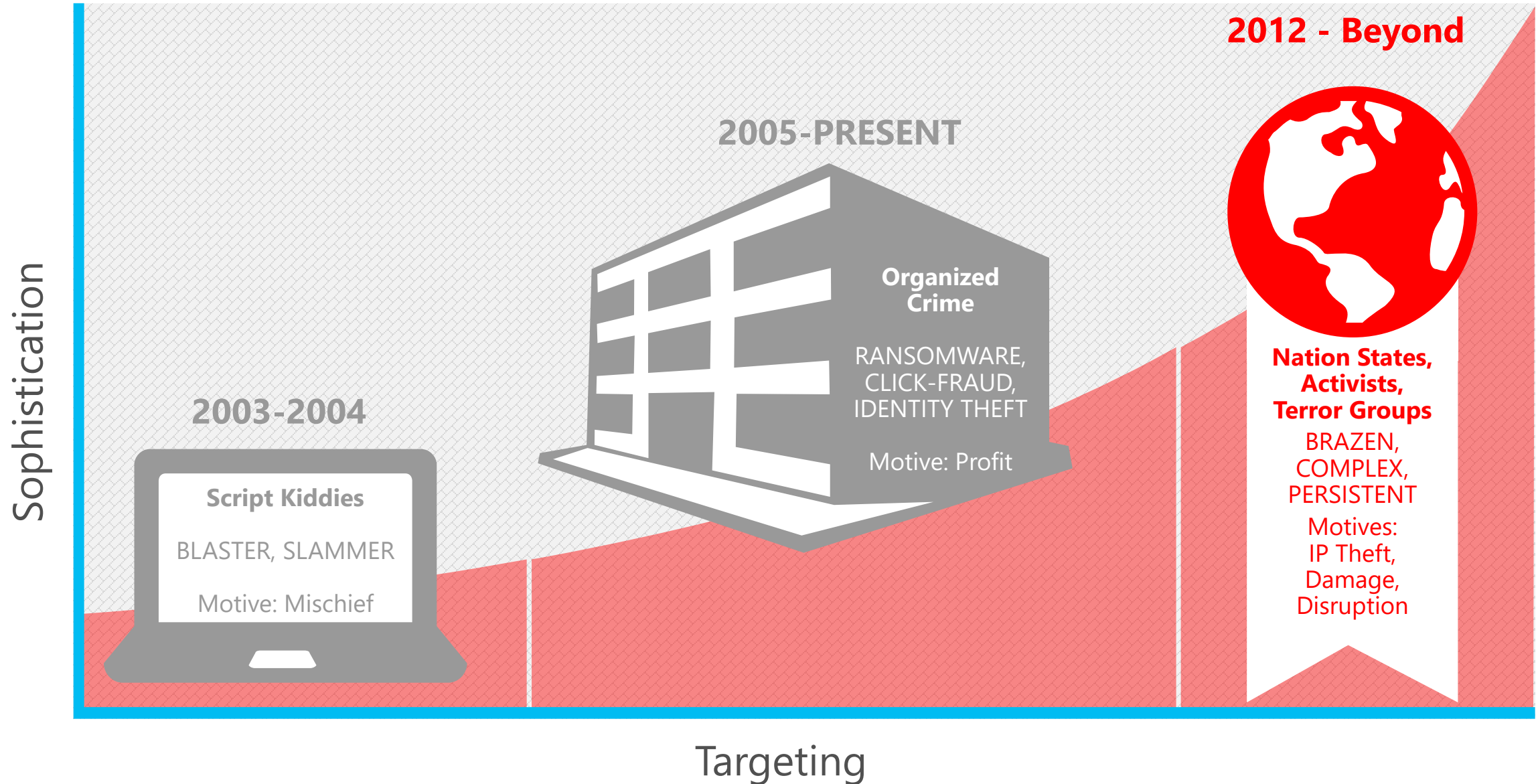
The evolution of attacks



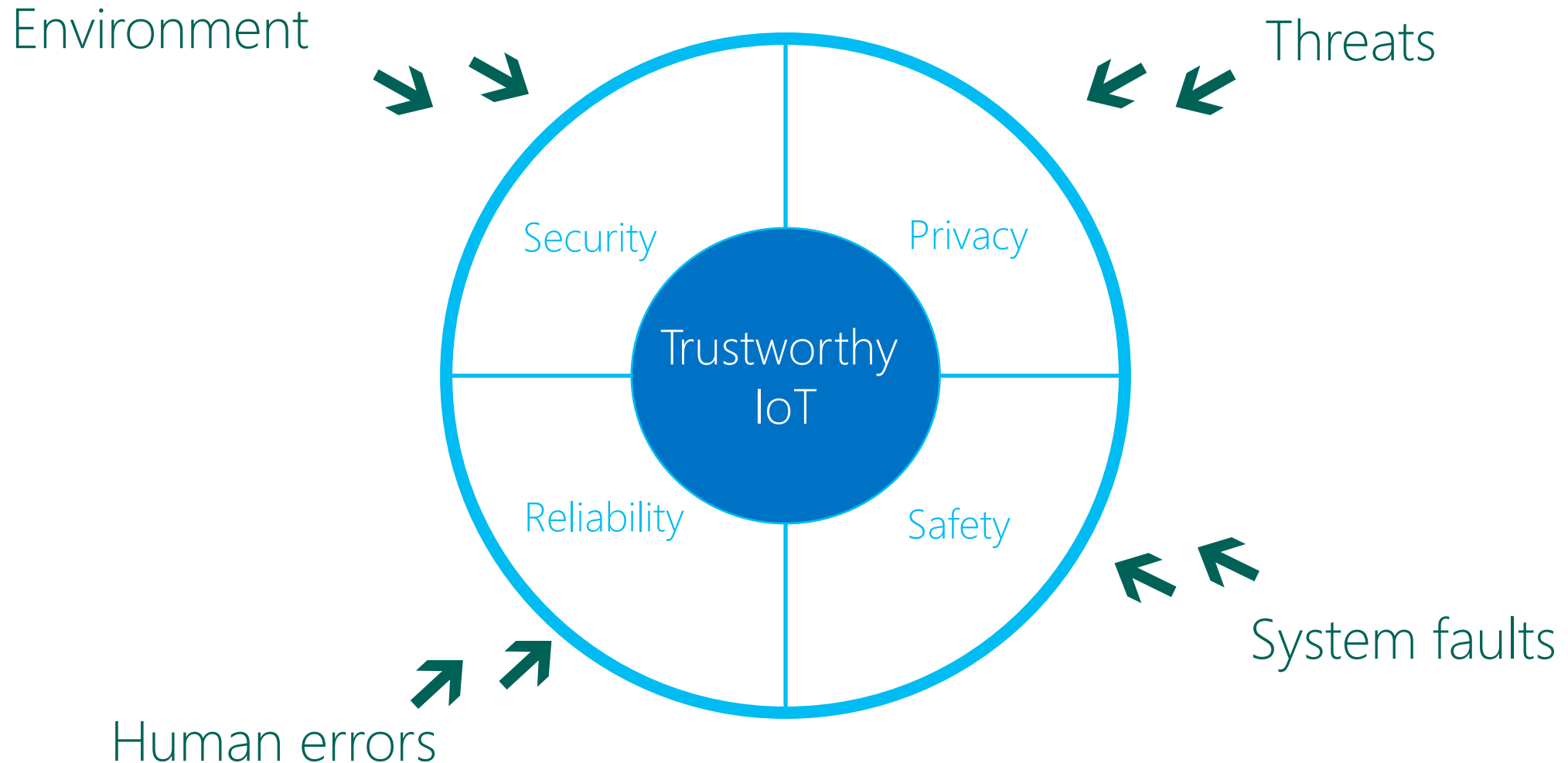
The evolution of attacks



The evolution of attacks



Trustworthy Internet of Things



Azure IoT Suite security features

Securely connect millions of devices . . .



Device security

Device provisioning and authorization

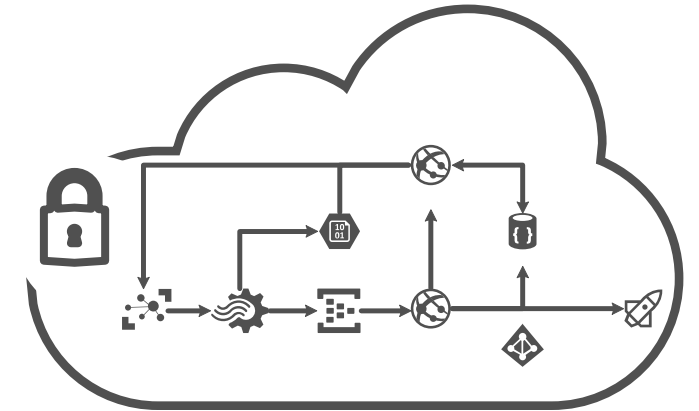
Over a secure internet connection . . .



Connection security

X.509/LTS-based handshake and encryption

To Microsoft Azure – built with security from the ground up



Cloud security

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

Defense in depth – Important roles

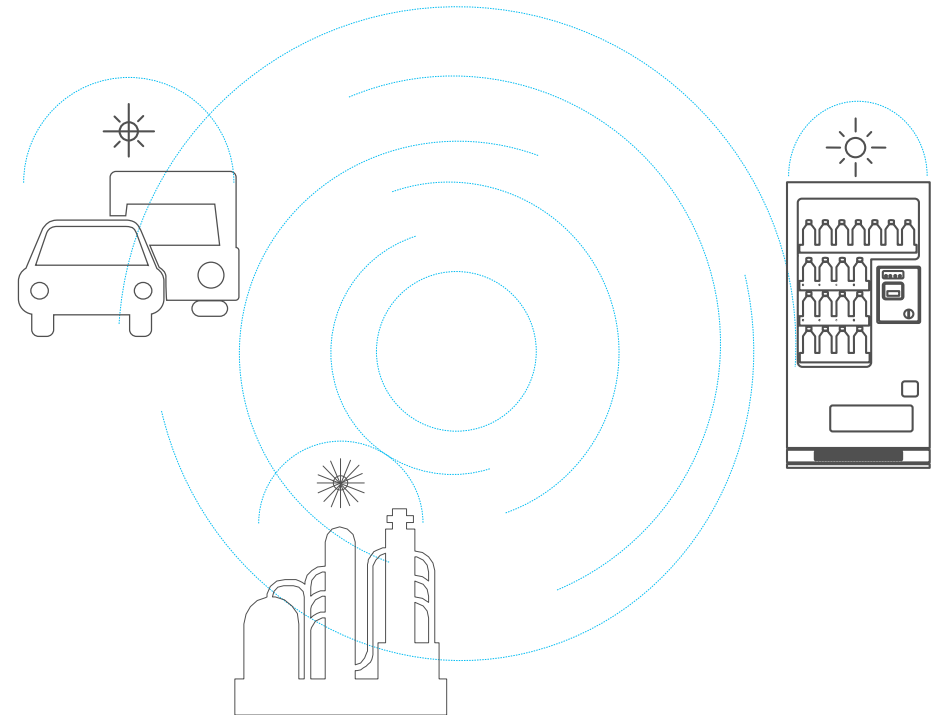
IoT hardware manufacturer and integrator

IoT solution developer

IoT cloud and solution provider

IoT solution deployer

IoT solution operator



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