



TUGA IT

SUMMER EDITION

LISBON, JULY 19-21, 2018

Industrial IoT

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Eldert Grootenboer

Cloud Solution Architect

Microsoft Azure MVP

SME IoT

International Speaker

Blogger

Global Integration Bootcamp

Azure IoT Community

Published Author

TechNet / MSDN / GitHub

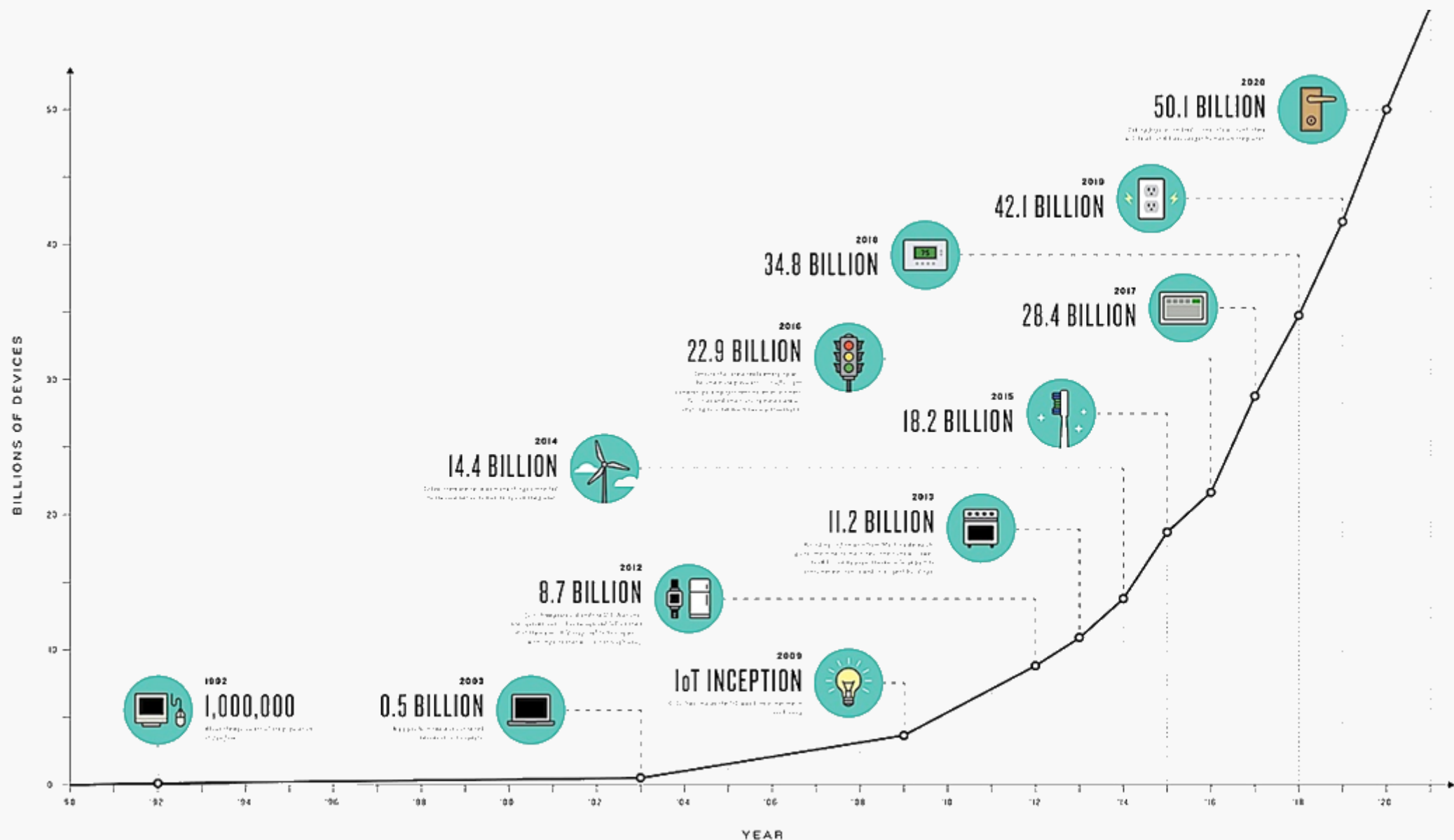
Boat enthusiast



Everything Connected, Always



The Numbers



A simple view of an IoT solution



A more realistic view...





Azure IoT Hub

Scenario

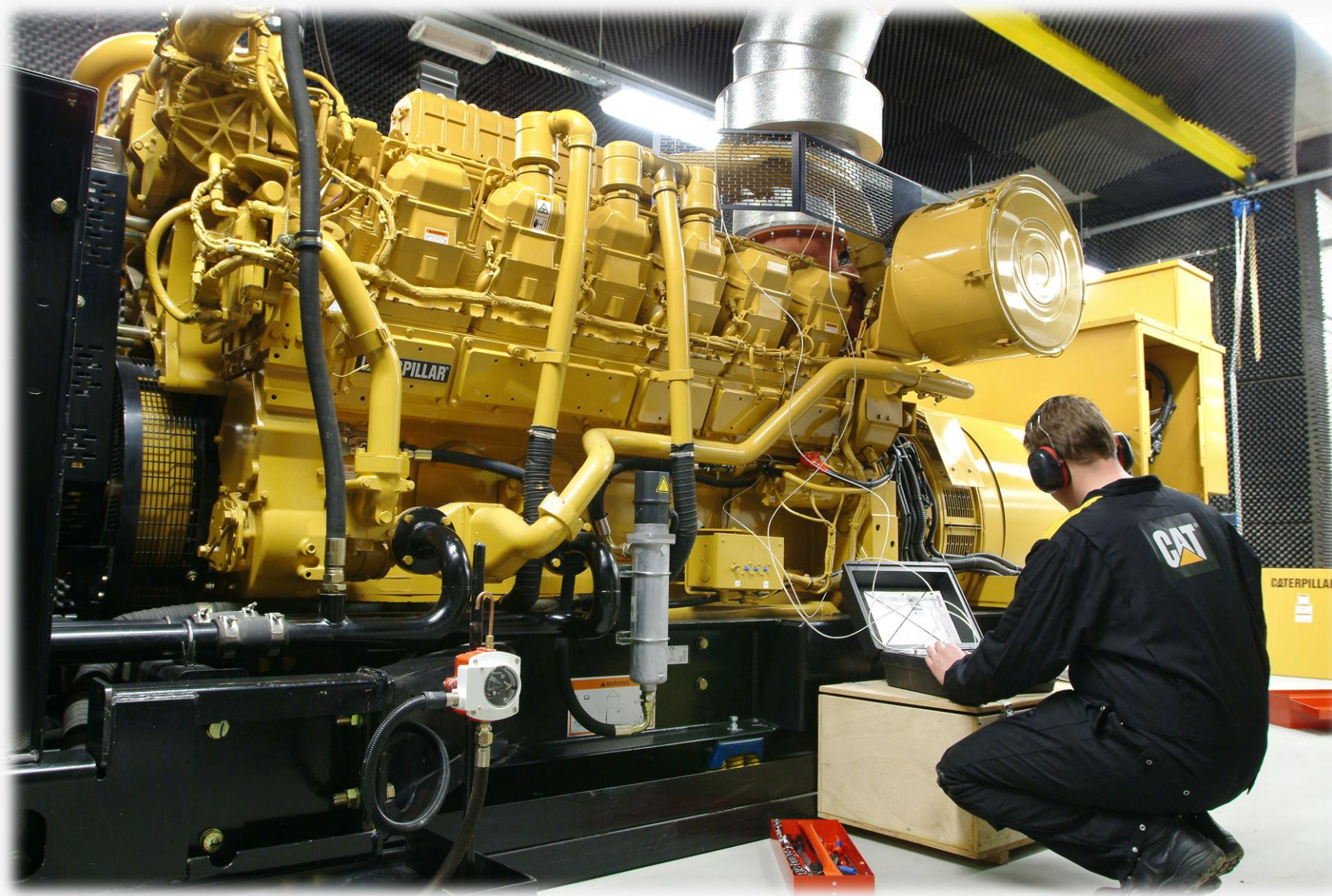




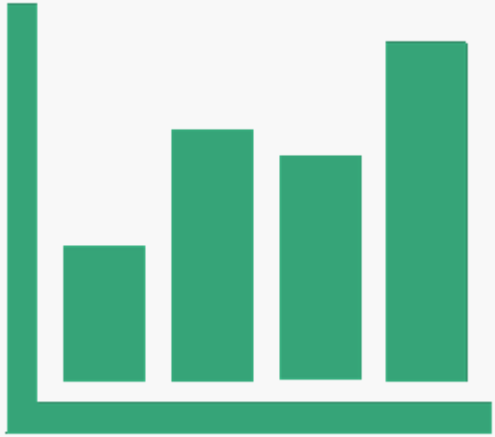






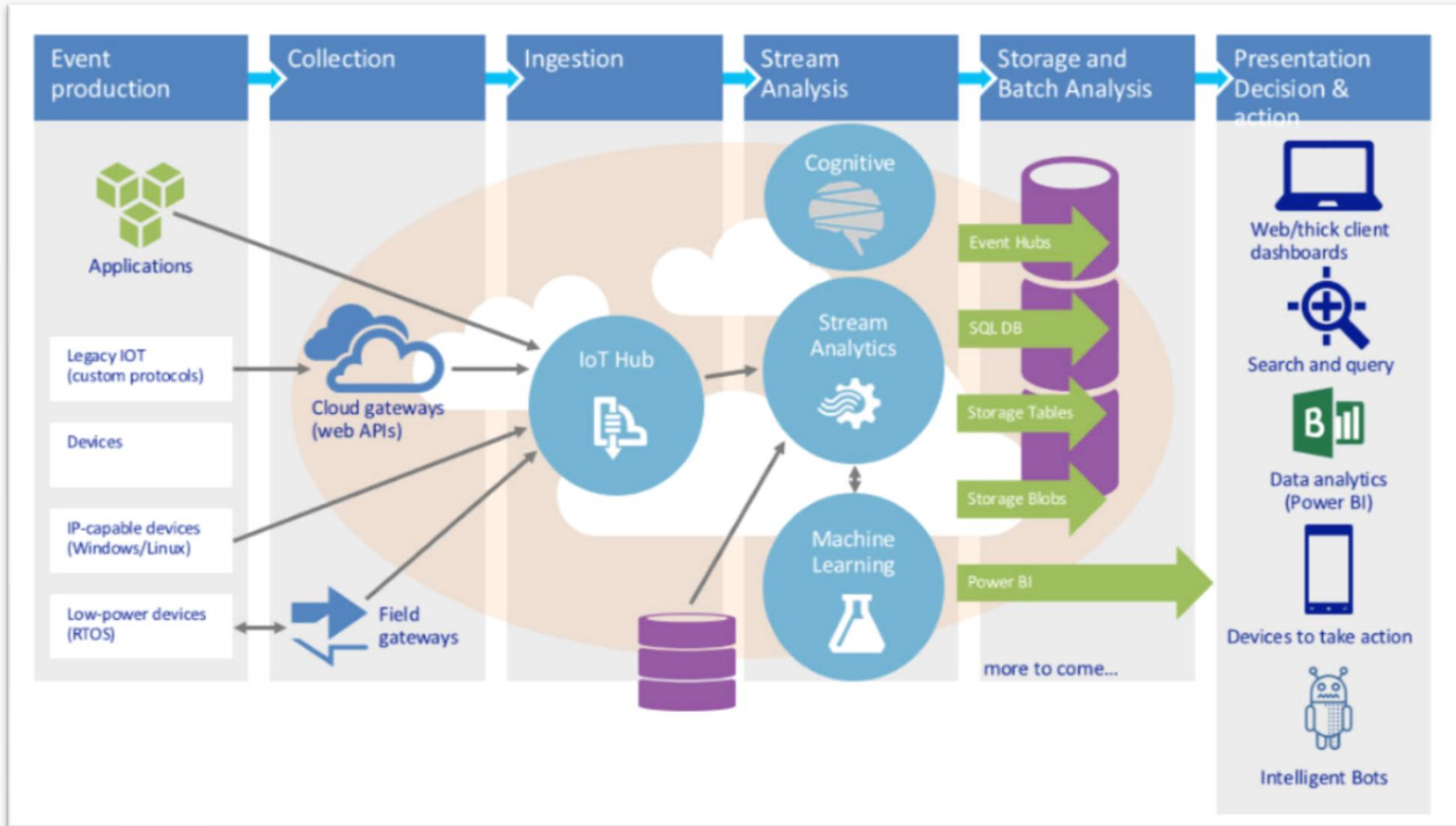


What do we want?

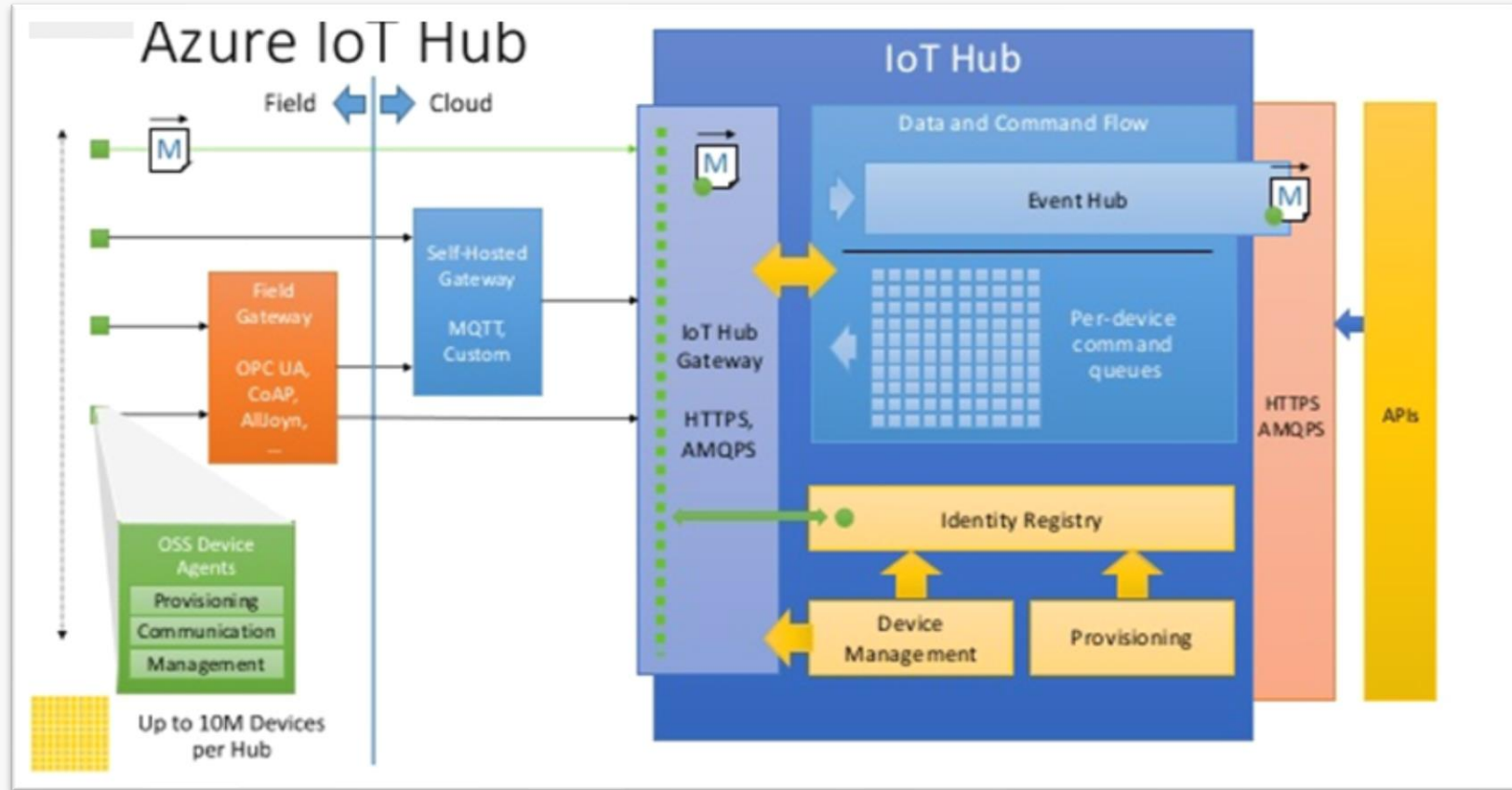


Azure IoT

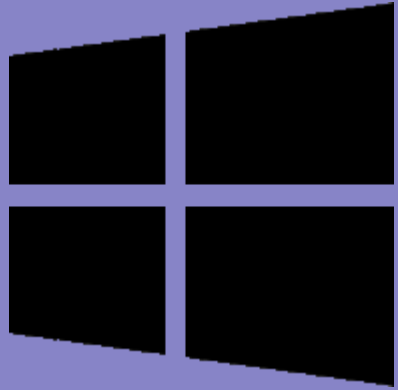
IoT Architecture



IoT Hub



Platforms and Protocols



LiNux



Microsoft
.NET

HTML



MQTT
Transport
Queue
Message
Telemetry

Device Management

Device Management



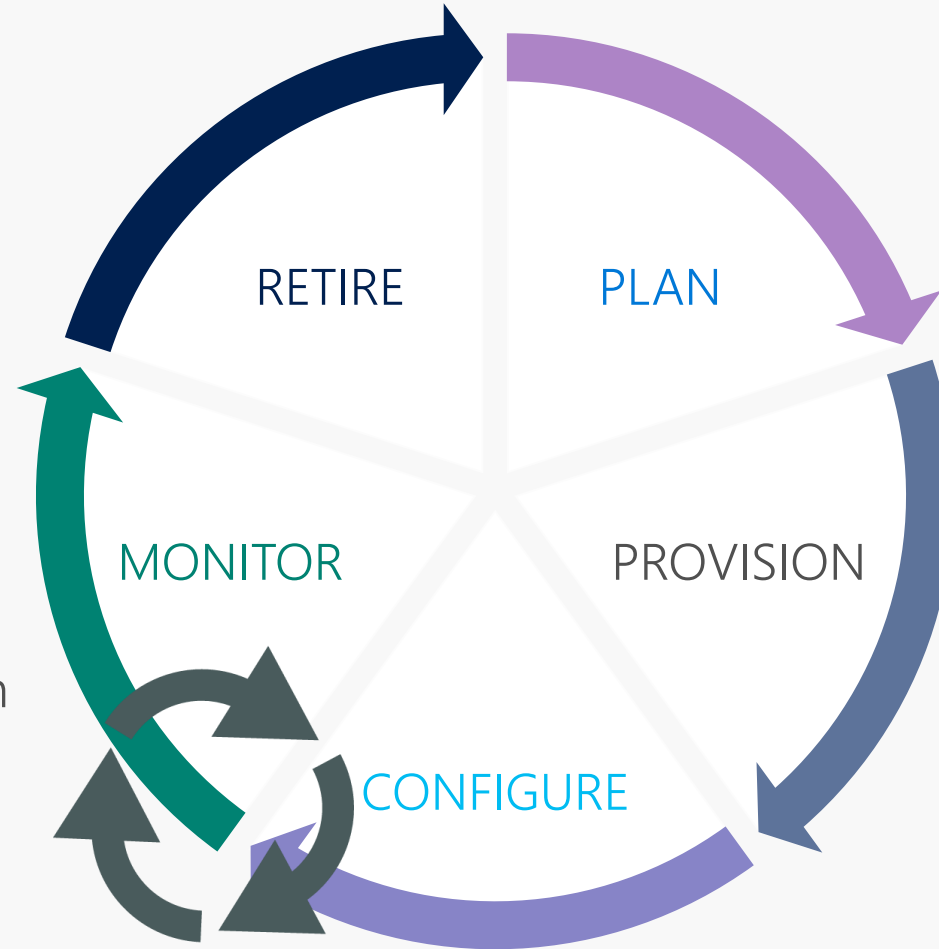
Replace or decommission devices after failure, upgrade cycle or service lifetime



Monitor device inventory, health & security while providing proactive remediation of issues



Provide updates, configuration & applications to assign the purpose of each device



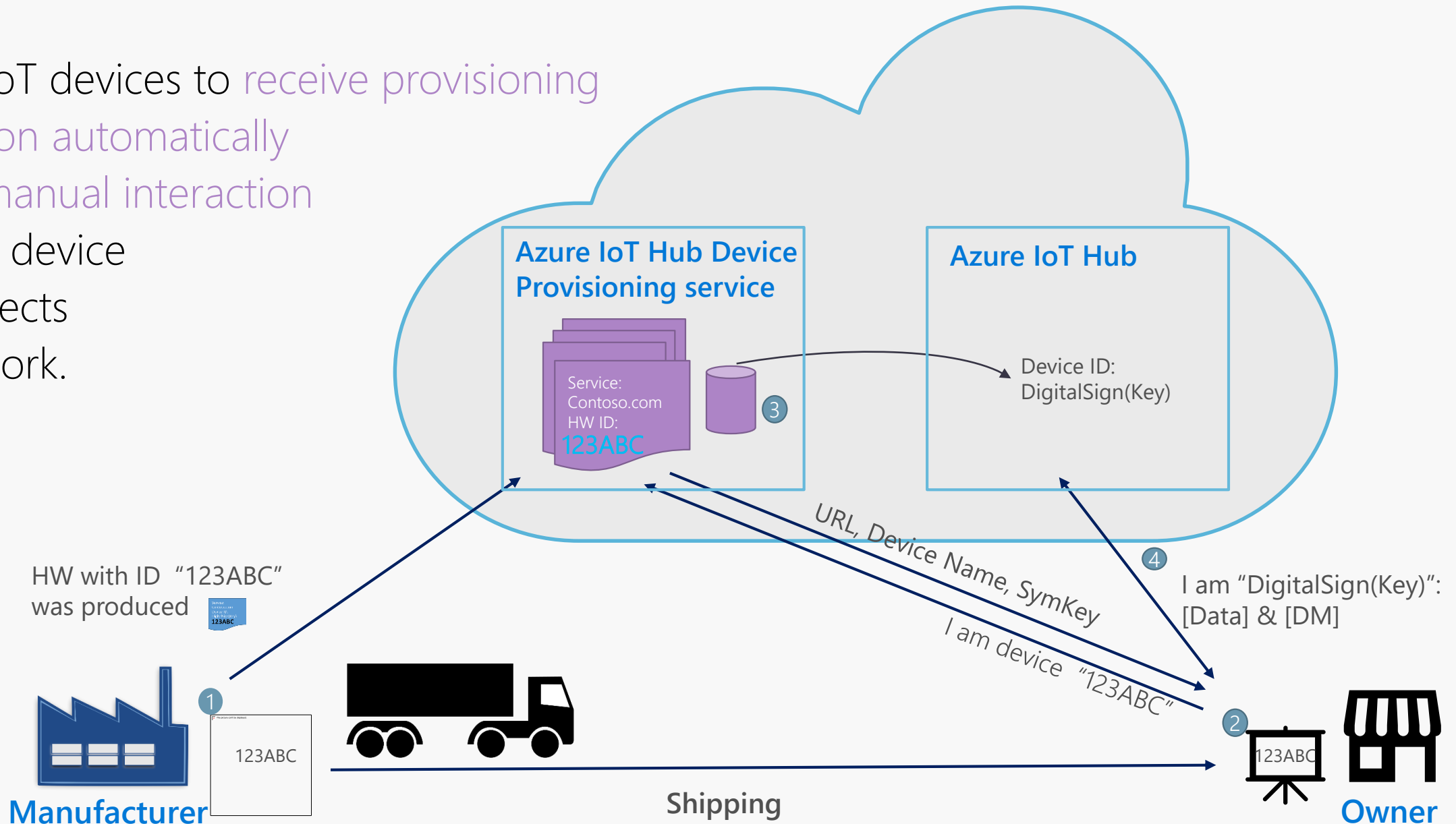
Group devices and control access according to your organization's needs



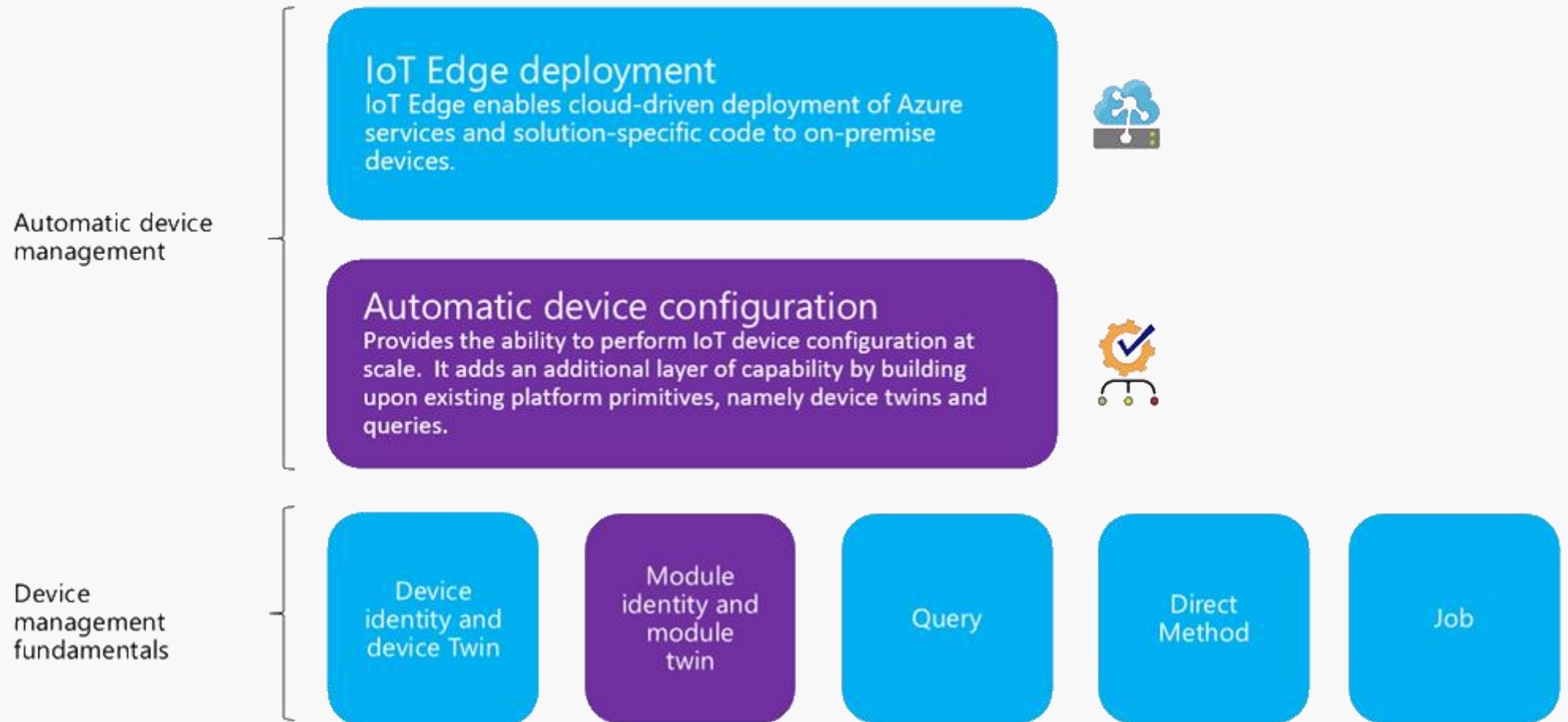
Securely authenticate devices, on-board for management and provision for service

Device Provisioning Service

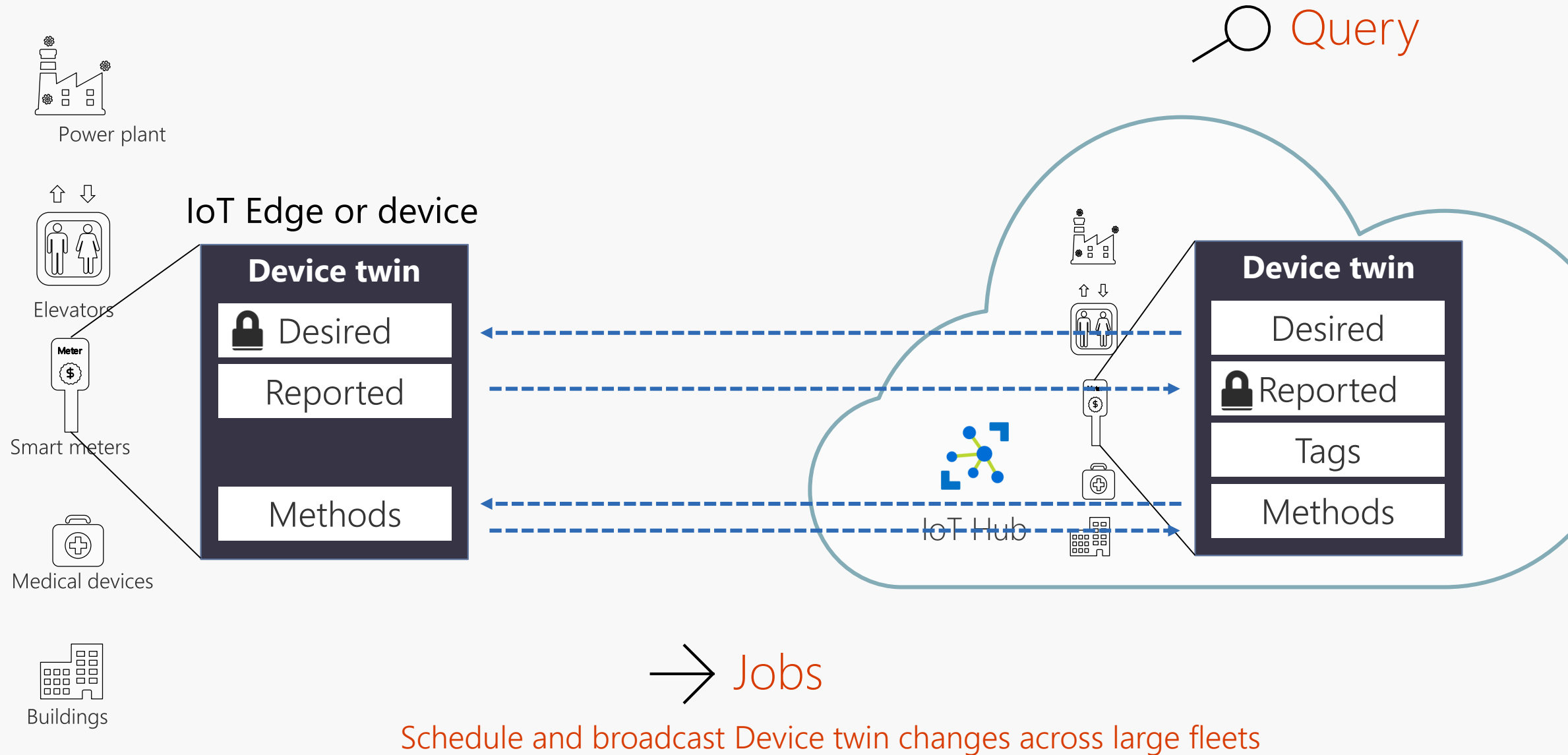
Enables IoT devices to receive provisioning information automatically without manual interaction when the device first connects to a network.



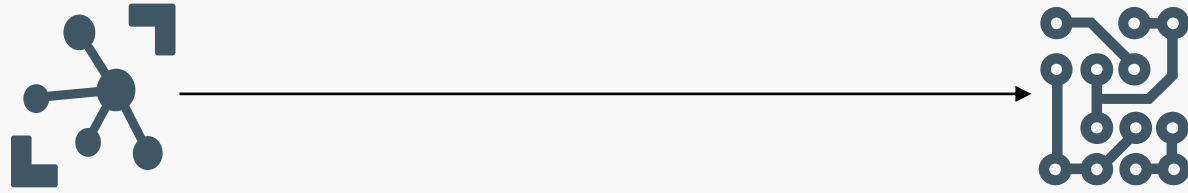
Device Management Building Blocks



Device Management



Scenario – Automatic Configuration

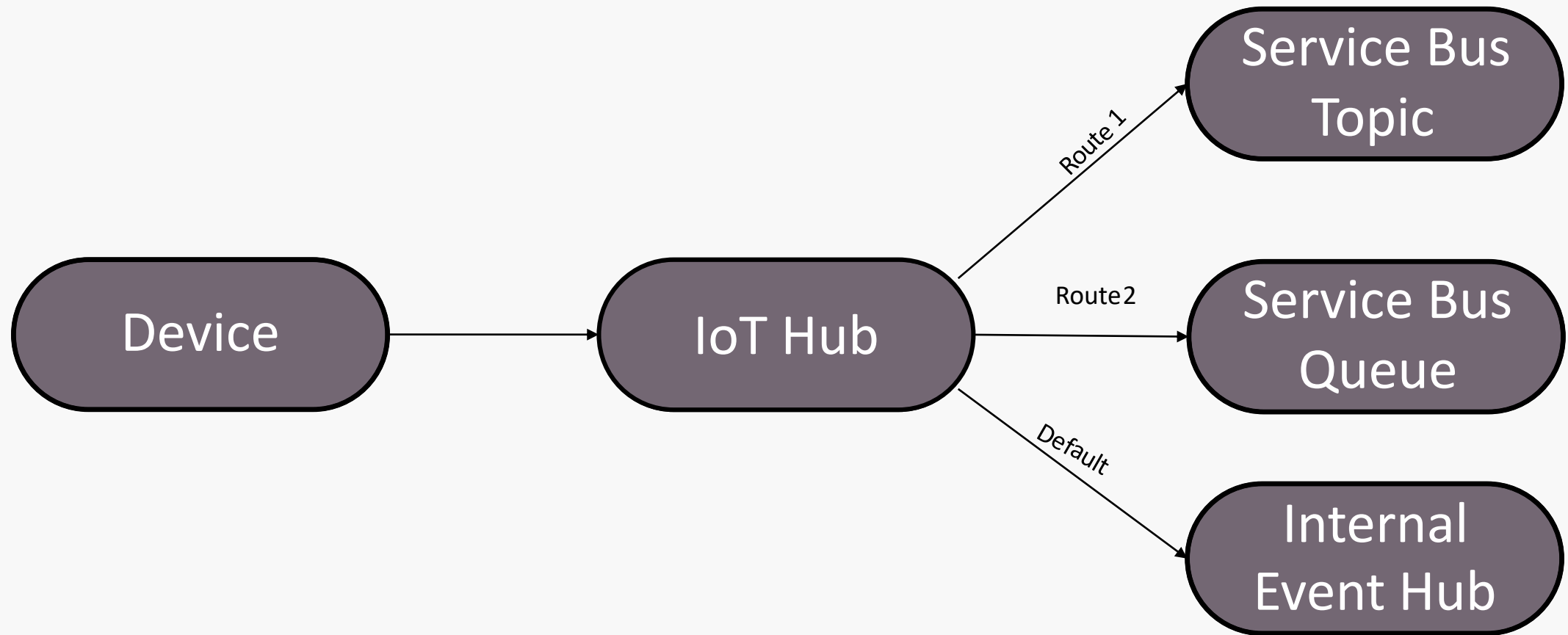


IoT Hub Communication

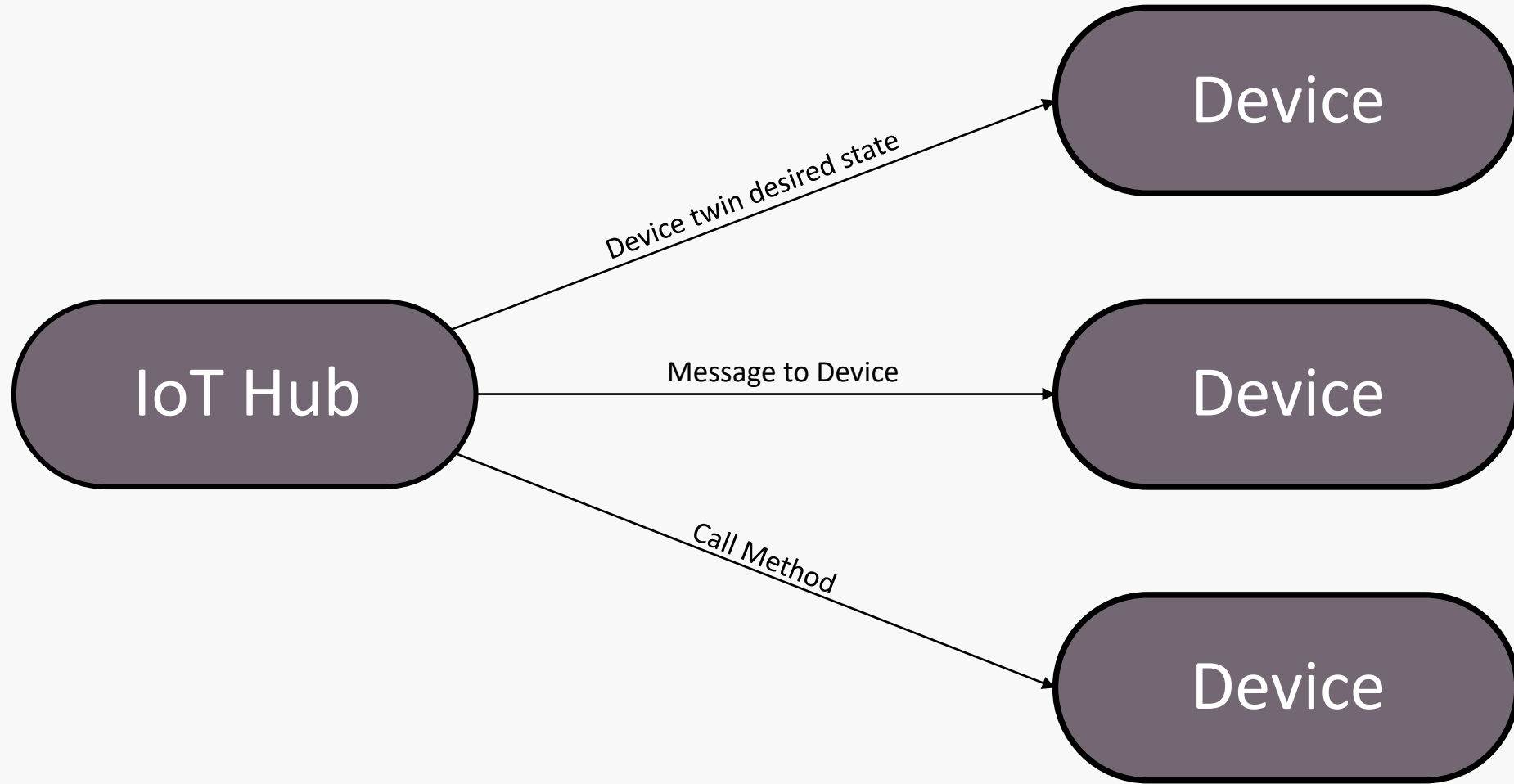
Device To Cloud



Routes



Cloud To Device



But how about the business?



Microsoft
Dynamics 365TM

Dynamics 365 Field Service

Hourly view

Initial public view

Filter & Map View

Filter Map View

Map View Settings

Slow Traffic Legend Gray Road

Shenandoah Beach, Lake Park, Kirkland, Red Bank, White, Yarrow Point, Clyde Hill, Medina, Bellevue, Eastgate, Mercer

Search resources...

Brady Hannon 0:00 0%

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Kris Nakamura 0:00 0%

Luke Lundgren 0:00 0%

Matthew Everson 0:00 0%

Norbert Sandberg 0:00 0%

11/17/2016

4:00 AM 5:00 AM 6:00 AM 7:00 AM 8:00 AM 9:00 AM 10:00 AM 11:00 AM 12:00 PM 1:00 PM 2:00 PM 3:00 PM 4:00 PM 5:00 PM 6:00 PM 7:00 PM 8:00 PM 9:00 PM

Work Order - Replace ... Duration: 2 hrs 1 min

Work Order - Inspectio... Duration: 2 hrs 1 min

Work Order - Fuse out Duration: 2 hrs 2 min

Work Order - 00001 Duration: 3 hrs 15 min

Work Order - Install ne... Duration: 2 hrs 23 min

Work Order - Camera i... Duration: 2 hrs

Work Order - Website d... Duration: 2 hrs 7 min

Work Order - Water sup... Duration: 2 hrs 28 min

Work Order - Min. Diag... Duration: 2 hrs 9 min

Work Order - Measure ... Duration: 2 hrs 6 min

Work Order - Internet c... Duration: 2 hrs 13 min

Work Order - Flame sha... Duration: 2 hrs 18 min

Work Order - Reple... Duration: 2 hrs

Work Order - Pen not w... Duration: 2 hrs 15 min

Work Order - hard disk... Duration: 2 hrs 13 min

Work Order - Light bulbs Duration: 2 hrs 27 min

Work Order - Circuit Re... Duration: 2 hrs 19 min

Work Order - Oil Cycl... Duration: 2 hrs 7 min

Work Order - Data file c... Duration: 2 hrs 5 min

Work Order - Water pr... Duration: 2 hrs

Work Order - Replace SL... Duration: 2 hrs 14 min

Work Order - Broken T... Duration: 2 hrs 7 min

Work Order - Magnets... Duration: 2 hrs 12 min

Work Order - Thermost... Duration: 2 hrs 9 min

Work Order - Catalog L... Duration: 2 hrs

Work Order - Heating fl... Duration: 2 hrs 15 min

Work Order - MRI Sanit... Duration: 2 hrs

Work Order - Replace ... Duration: 2 hrs 1 min

1 - 16 of 16

Booking Requirements

All Unscheduled Work Orders

| Name | From Date | To Date | Duration | Priority | Territory | Time From Promised | Time To Promised | Status | Created On |
|-------|-----------|---------|----------|----------|---------------------|--------------------|------------------|------------------------|---------------------|
| 00001 | | | 2 hrs | | WVA | | | Active | 11/16/2016 10:49 AM |
| 00002 | | | 2 hrs | | WVA | | | Active | 11/16/2016 10:52 AM |

Dynamics 365 Connected Field Service



Full Solution

 CRMHelperiothubdynamics36566a5a684ddc543d68991a29


 CRM-To-IoT

 dynamicscrmonline

 iothubdynamics365421984316cf64efa82994d2

 iothubdynamics36579bb65b

 iothubdynamics36584ac1eb8a0634c629df0ad9

 iothubdynamics365fa98aa3784384cc08b37d4c11e7e6b9e

 IoTHubiothubdynamics36538b10dd3608a4ef6b9d23d871c

 IoT-To-CRM

 QueueMessageParseriothubdynamics365257ccee39bb044

 SBMessage

 ServicePlan

 Simulatoriothubdynamics3658d3d1318613f46eb9f4706c6

 sqlsrviothubdynamics3653118e1ae2bf140eda35c43425f8

 dbwoi43h2wl4cdw

 IoTHubEldert

App Service

iothubdynamics365

Logic app

iothubdynamics365

API Connection

iothubdynamics365

Stream Analytics job

iothubdynamics365

Storage account

iothubdynamics365

Stream Analytics job

iothubdynamics365

Service Bus

iothubdynamics365

App Service

iothubdynamics365

Logic app

iothubdynamics365

App Service

iothubdynamics365

API Connection

iothubdynamics365

App Service plan

iothubdynamics365

App Service

iothubdynamics365

SQL server

iothubdynamics365

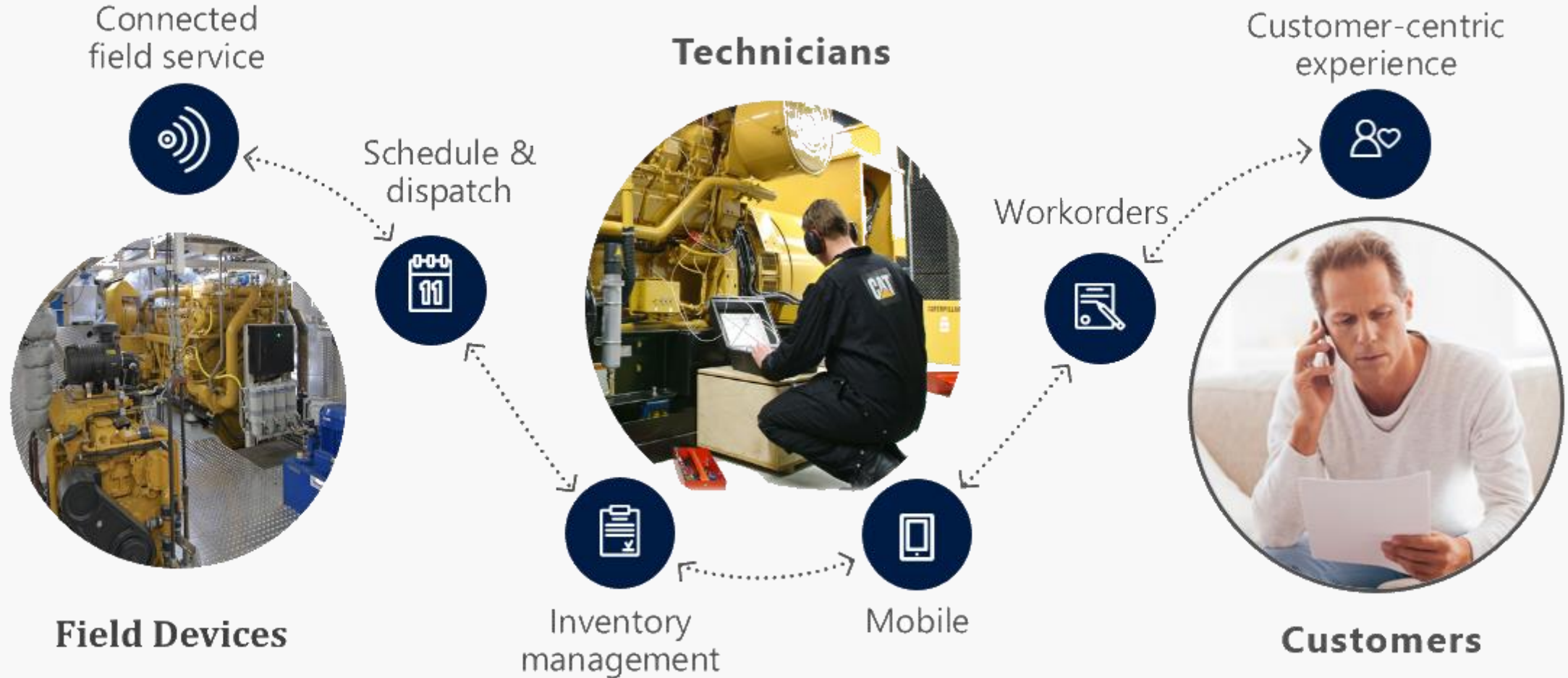
SQL database

iothubdynamics365

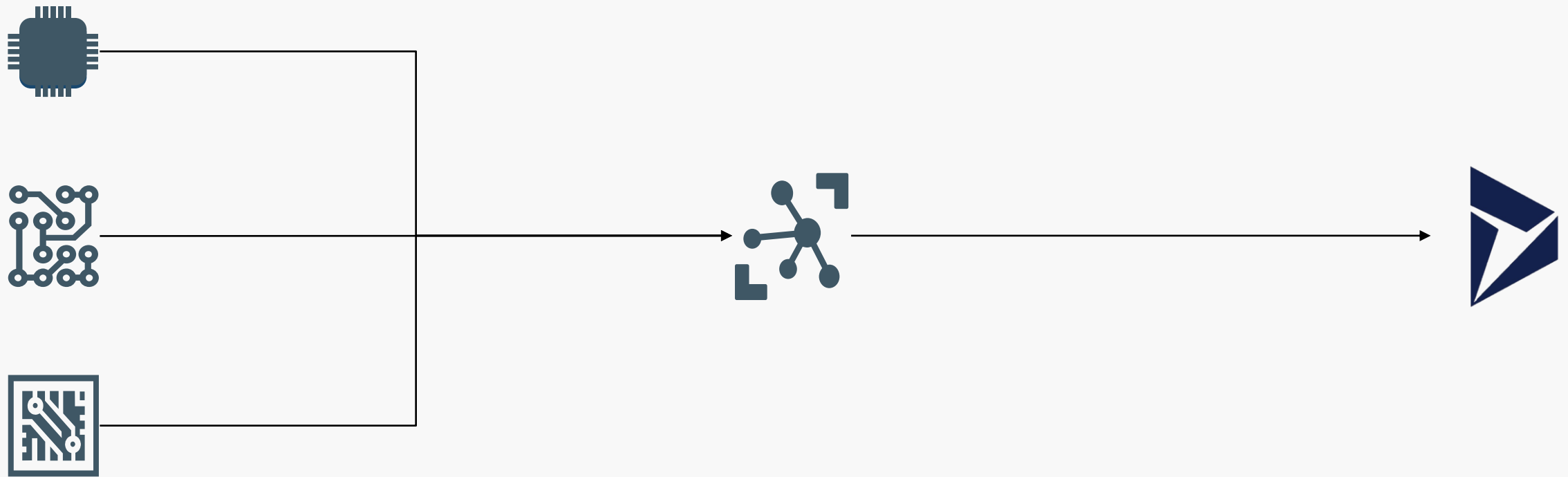
IoT Hub

IoTHubEldert

Dynamics 365 Connected Field Service



Demo

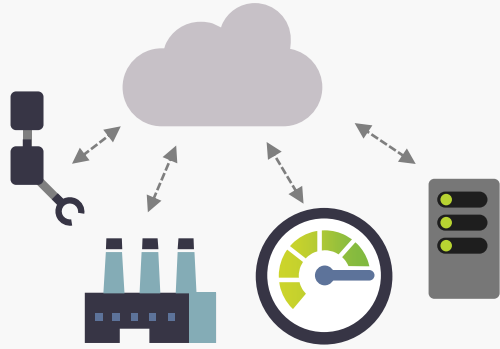


IoT Edge

On The Edge



IoT in the Cloud and on the Edge



IoT in the Cloud

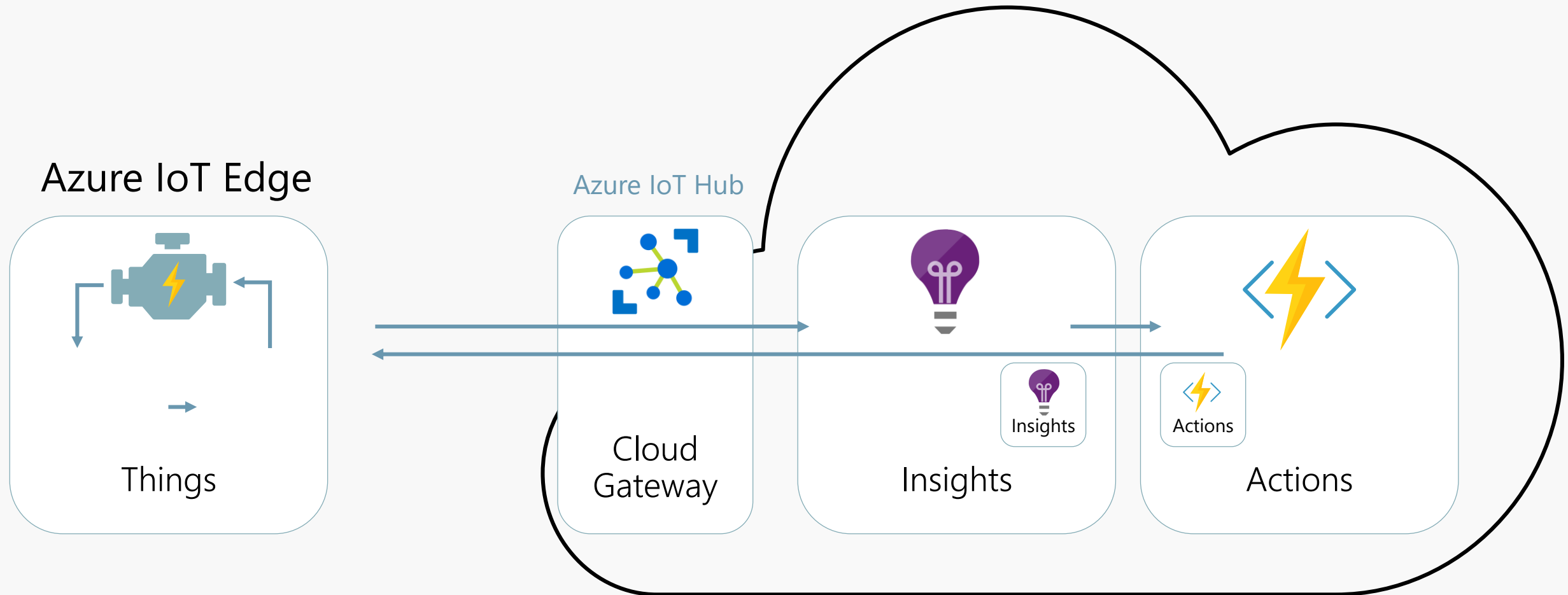
- Remote monitoring and management
- Merging remote data from multiple IoT devices
- Infinite compute and storage to train machine learning and other advanced AI tools

IoT on the Edge

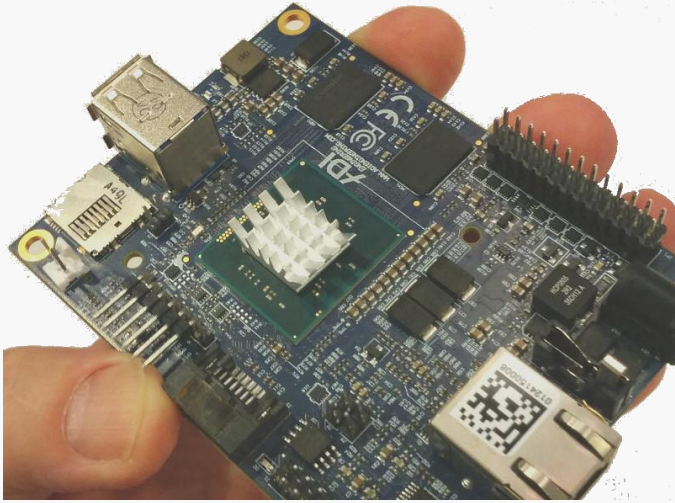
- Low latency tight control loops require near real-time response
- Protocol translation & data normalization
- Privacy of data and protection of IP

Symmetry

IoT Pattern + Edge



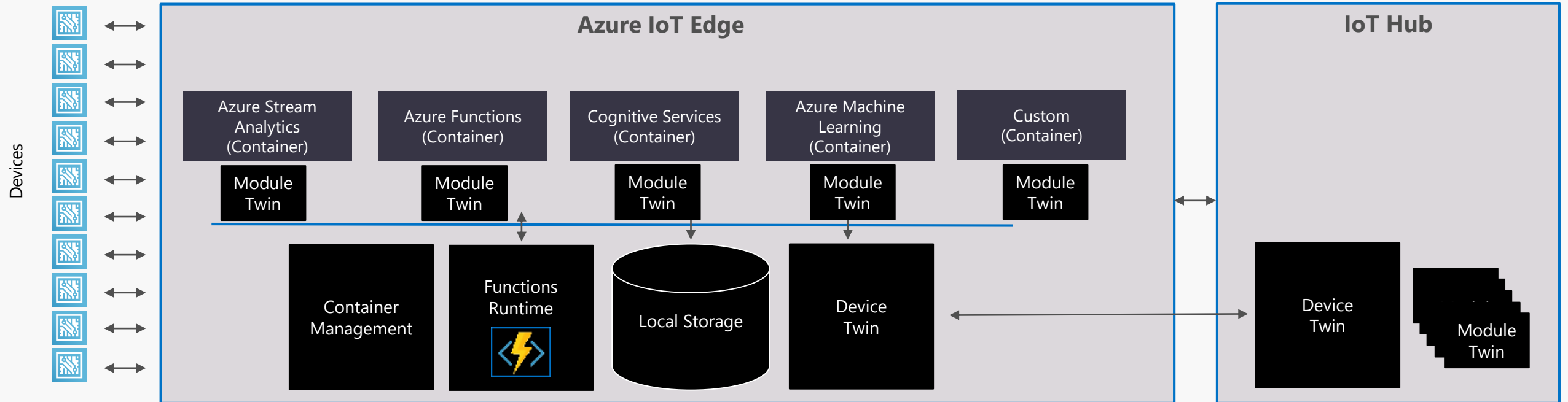
Edge Device



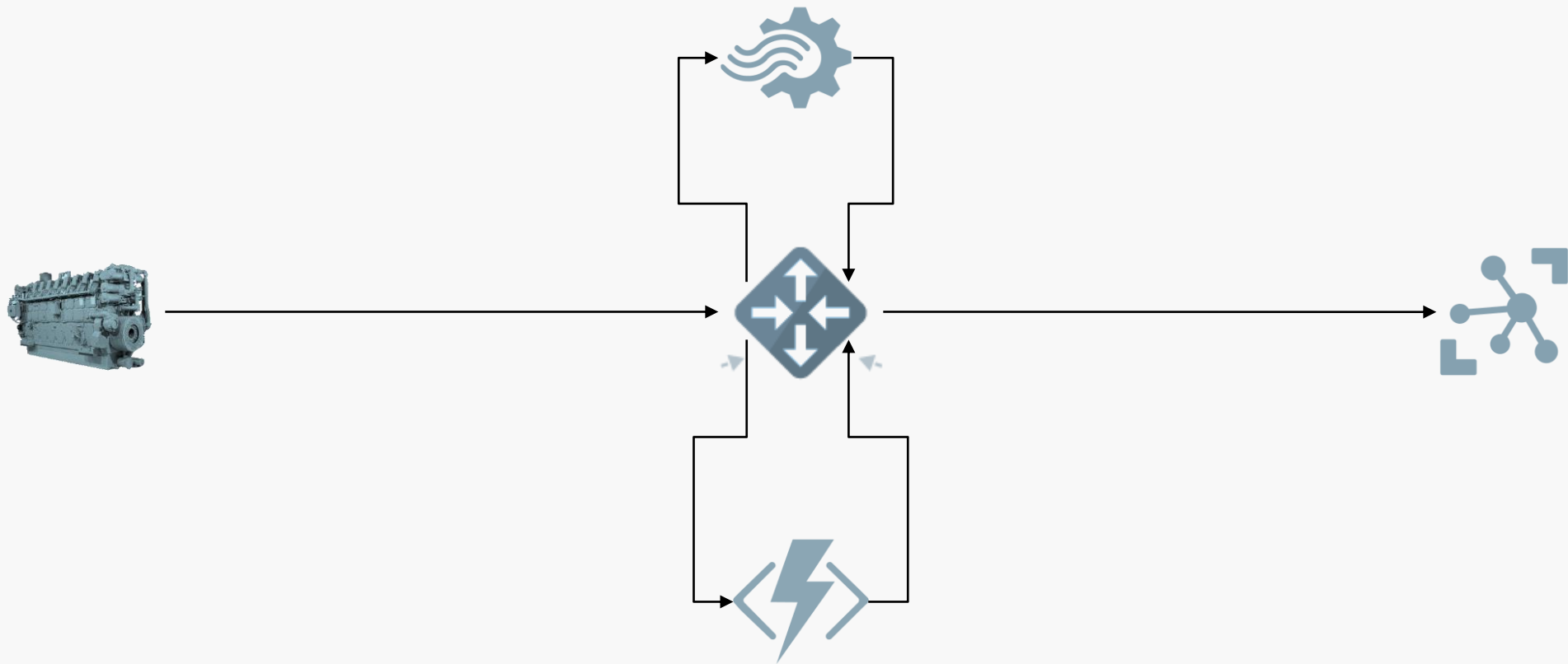
Edge Device

- Container based modules
- Azure Functions
- Azure Stream Analytics
- Azure Machine Learning
- Cognitive Services
- Cross-platform

- Offline / Synchronized Device Twins
- Local Storage
- Cloud Management & Deployment
- High Availability / Fault Tolerance
- Cloud Dev/Test Support



Demo



Almost done...

Key Takeaways

| | |
|----------------|---|
| Easy | Easily connect and manage your IoT devices |
| Scalable | Establish bi-directional communication with billions of IoT devices |
| Business Ready | Leverage IoT through Dynamics 365 |
| Extend | Get more business value by leveraging Azure services |
| Edge | Insights and actions on the edge |

Thank You



@egrootenboer



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<http://blog.eldert.net/>

AT THE ENTRANCE AFTER THE LAST SESSION OF THE DAY



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EVALUATION FORM.

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