


IoT challenges and EdgeX introduction

Evolving business models and mindsets

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Cloud Solutions Architect
Global Alliances and Service Providers
Dell Technologies Japan

DELLTechnologies



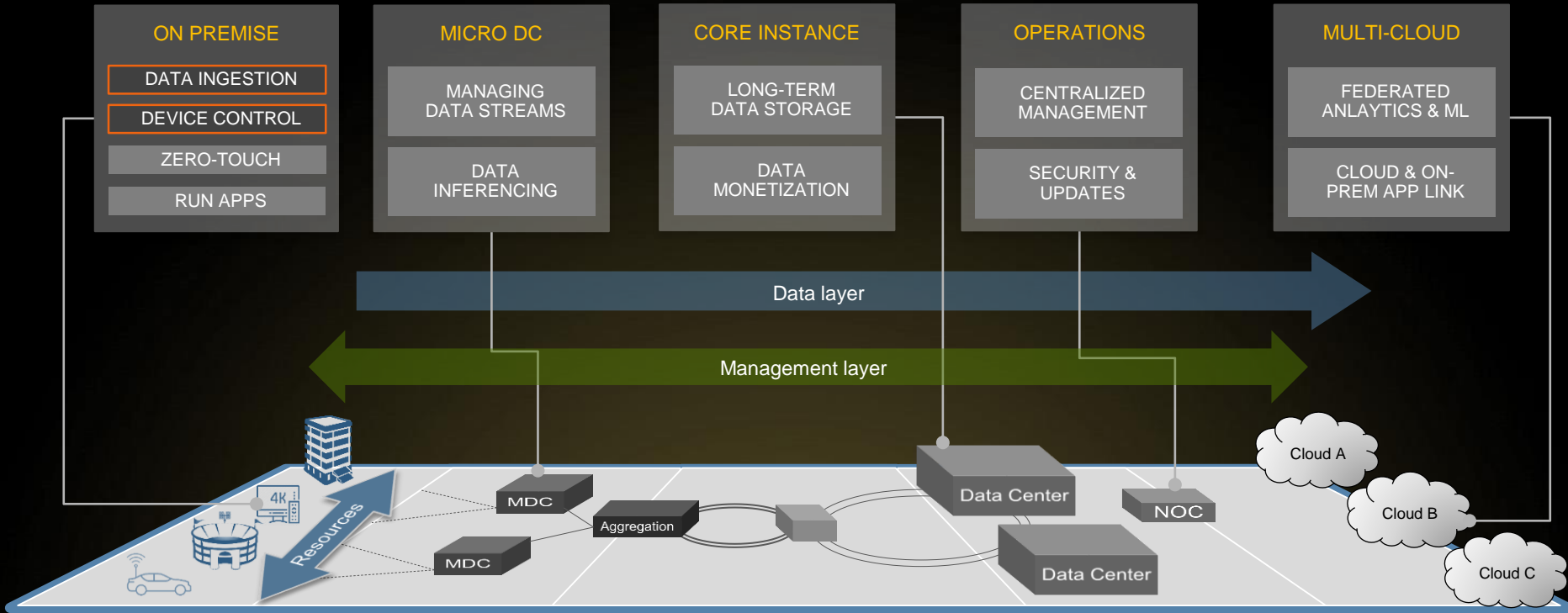
APJ use cases in 2019:

- Manufacturing
- Subway doors / sensors
- Food manufacturer
- Smart lampposts
- Surveillance

Globally:

- Power plants
- Building automation
- Plant process automation
- Retail

Mapping out the IoT & Multi-Edge challenges



Leverage SD-WAN
Overlay Services

Scale Edge Resources
for Demand and Latency

De-risk Future Traffic
Growth and Designs

Improve response times
to near real-time

Manage Performance
Centrally / Key Locations

Implement Application
Policies Faster

EdgeX Foudry

The background features a dark, moody interior of a modern office or boardroom. Large windows offer a panoramic view of a city at night, with lights reflecting on water. Overlaid on this scene are numerous semi-transparent data visualizations, including pie charts and bar graphs. These charts contain various alphanumeric codes such as BNI, HUY, TRG, RDW, FEW, BGY, HRT, RTG, WEF, and RDE, along with percentages like 45%, 10%, 12%, 9%, 8%, 10%, and 8%. The overall aesthetic is high-tech and professional.

An open source IoT solution

EDGE X FOUNDRY™

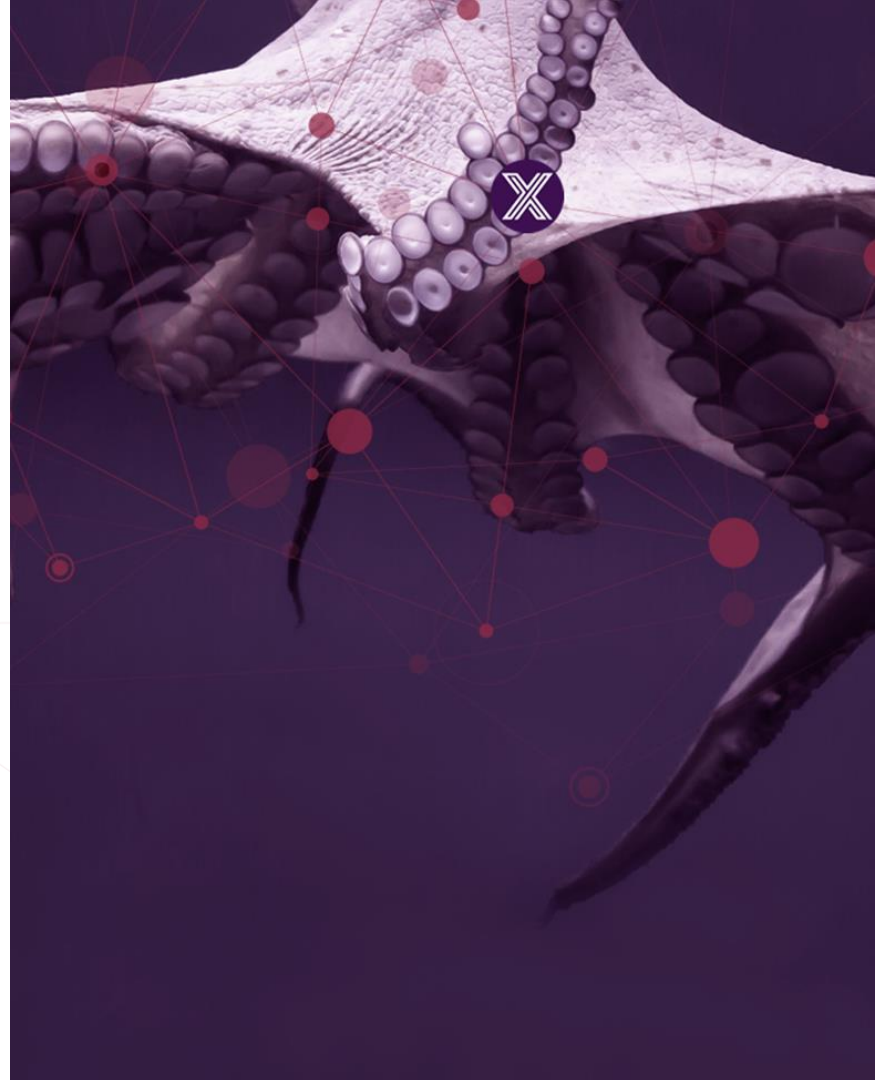
Introducing EdgeX Foundry

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Short history and background

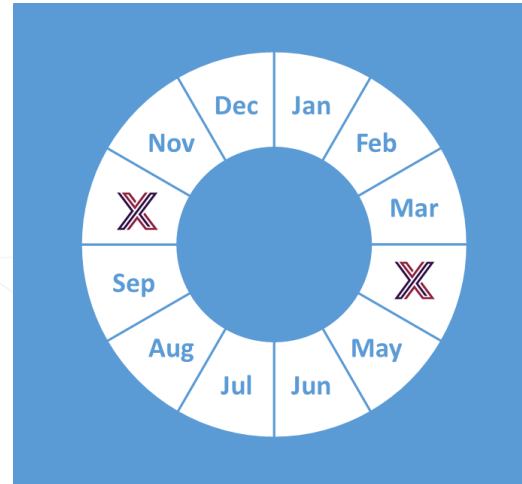
- Chartered by Dell IoT marketing in July 2015
 - A Dell Client CTO incubation project (Project Fuse)
- Designed to meet inter-operable and connectivity concerns at the IoT edge
- Started with over 125,000 lines of Dell code
- Entered into open source through the Linux Foundation on April 24, 2017
- Now with over 2 million container downloads



Jim White

Release Cadence: 2 formal releases a year

- **Barcelona** : Oct 2017
- **California** : Jun 2018
- **Delhi** : Oct 2018
- **Edinburgh** : July 2019
- **Fuji** : Oct 2019
- *Geneva* : *April 2020*
- *Hanoi* : *Oct 2020*
- *Ireland* : *April 2021*
- *Jakarta* : *Oct 2021*





EDGE X FOUNDRY™

Open source

Data ingestion from anywhere

Multi-protocol

Export to any cloud / DC

Containers / microservices

Doesn't require an agent

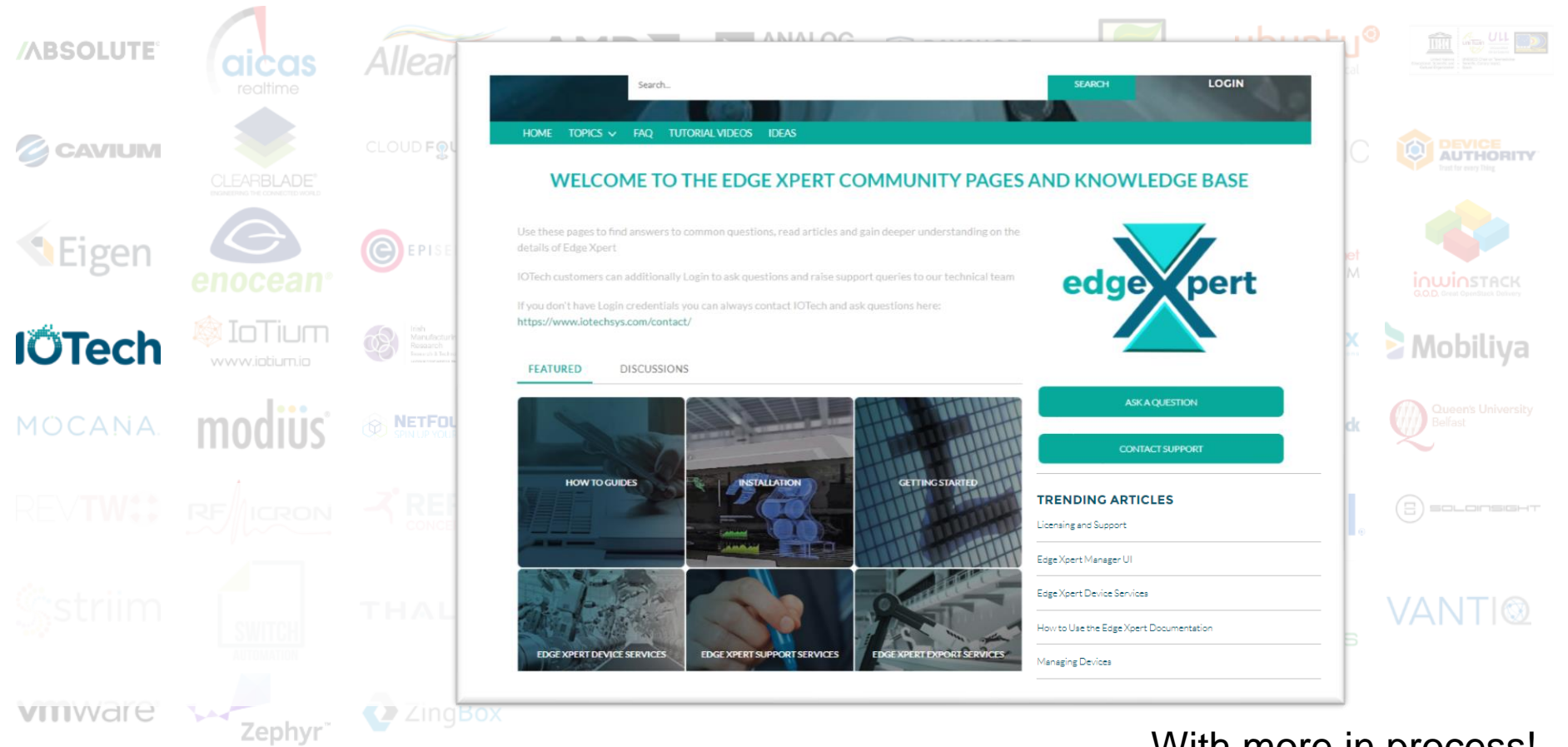
<https://www.edgexfoundry.org/>

Now Backed by 75+ Members



With more in process!

Now Backed by 75+ Members



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HOME TOPICS ▼ FAQ TUTORIAL VIDEOS IDEAS

WELCOME TO THE EDGE XPERT COMMUNITY PAGES AND KNOWLEDGE BASE

Use these pages to find answers to common questions, read articles and gain deeper understanding on the details of Edge Xpert.

IoTech customers can additionally Login to ask questions and raise support queries to our technical team

If you don't have Login credentials you can always contact IoTech and ask questions here:
<https://www.iotechsys.com/contact/>



ASK A QUESTION

CONTACT SUPPORT

FEATURED DISCUSSIONS

- HOW TO GUIDES
- INSTALLATION
- GETTING STARTED
- EDGE XPERT DEVICE SERVICES
- EDGE XPERT SUPPORT SERVICES
- EDGE XPERT EXPORT SERVICES

TRENDING ARTICLES

- Licensing and Support
- Edge Xpert Manager UI
- Edge Xpert Device Services
- How to Use the Edge Xpert Documentation
- Managing Devices

With more in process!

EdgeX Primer - How it works

- A collection of a dozen+ microservices
 - Written in multiple languages (Java, Go, C, ... we are polyglot believers!!)
 - Several commonly used library projects (common domain objects, client libraries, etc.)
- EdgeX data flow:
 - Sensor data is collected by a **Device Service** from a thing
 - Data is passed to the **Core Services** for local persistence
 - Data is then passed to **Export Services** for transformation, formatting, filtering and can then be sent “north” to enterprise/cloud systems
 - Data is then available for edge analysis and can trigger device actuation through Command service
- REST communications between services
 - Some services exchange data via message bus (core data to export services and rules engine)
- Microservices are deployed via Docker and Docker Compose



REST



BACNET



BLE



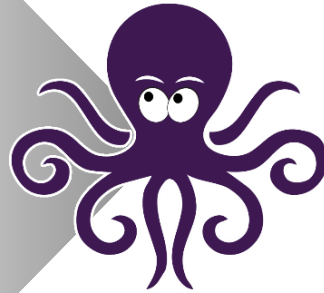
MODBUS

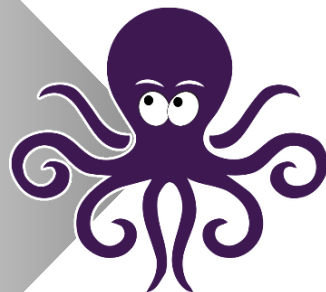
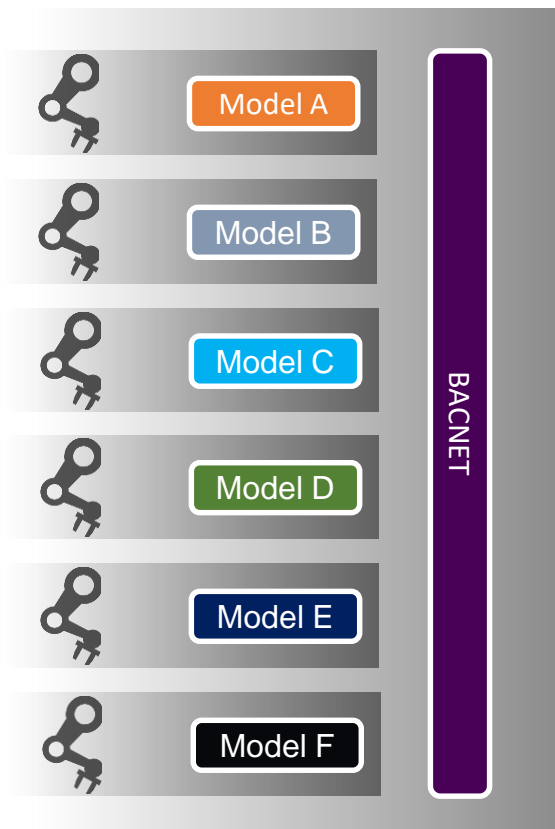


OPC-UA



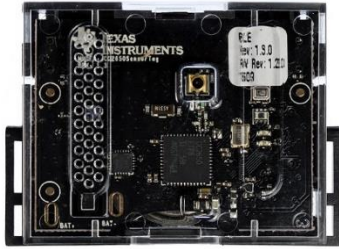
MQTT





Templates:

How to get data FROM and how to send commands TO connected sensor devices



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manufacturer: "Dent Instruments"
model: "PS5000"
description: "Power Scout Meter"
labels:
  - "Network"
  - "Industrial"
  - "Meter"
  - "PowerScout"
resources:
  name: B0L1
  description: "I1 Individual Phase Power."
  attributes:
    (MidiRegister: "M02P")
  properties:
    value:
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        unit:
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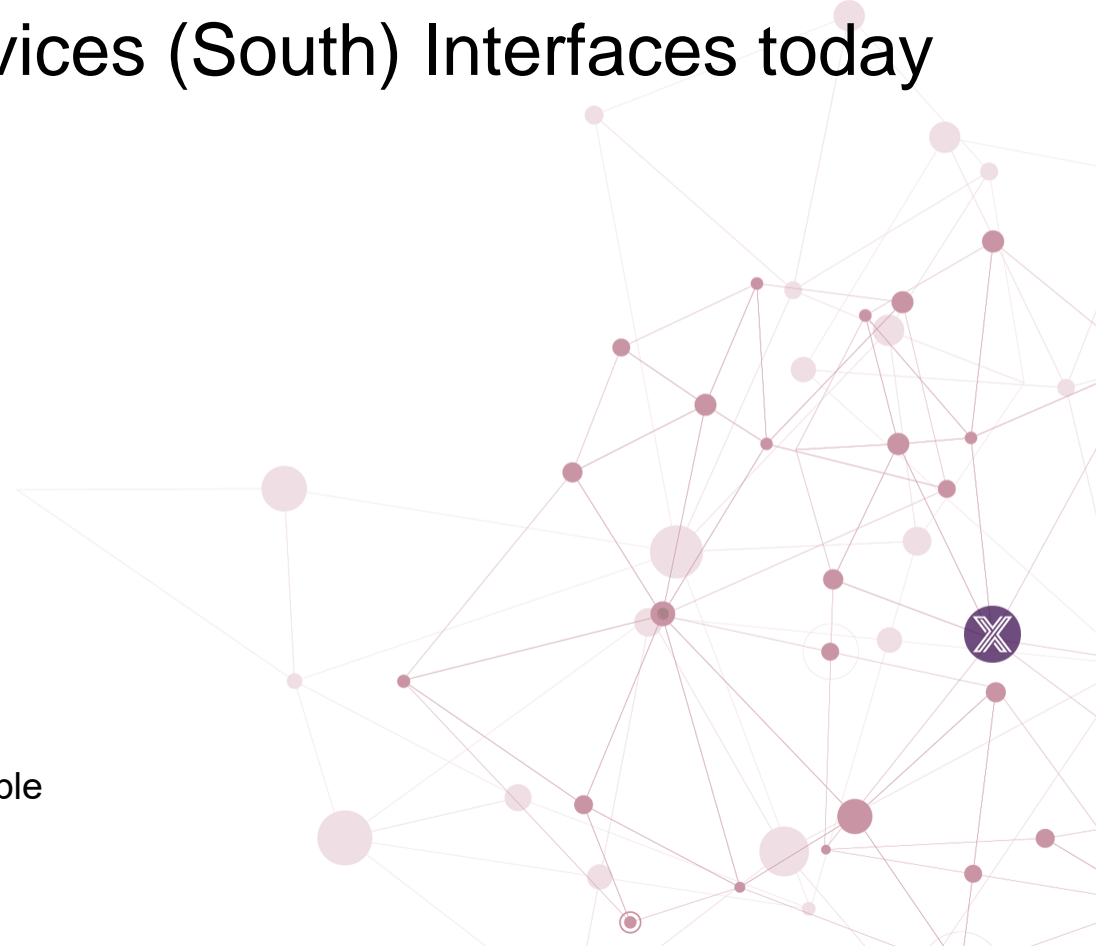
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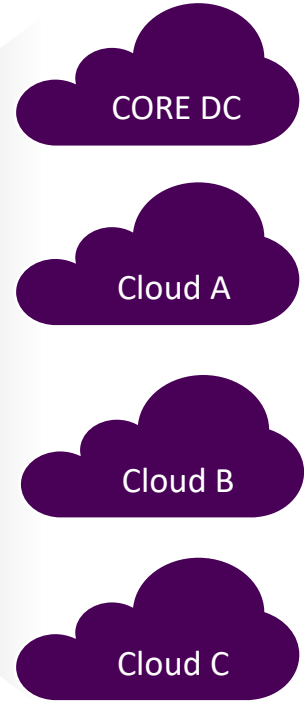
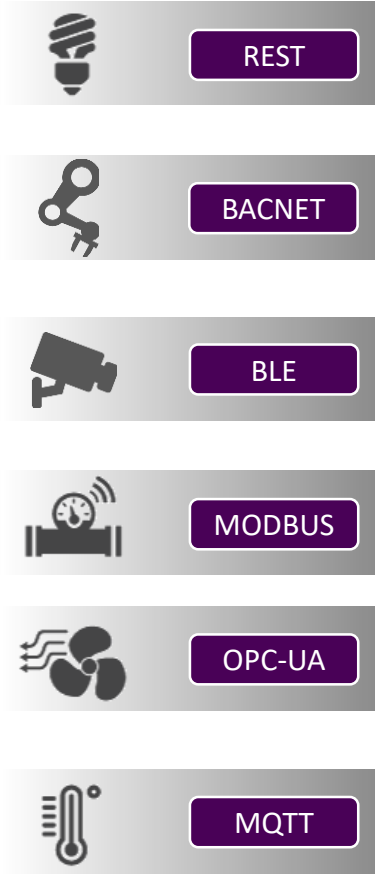
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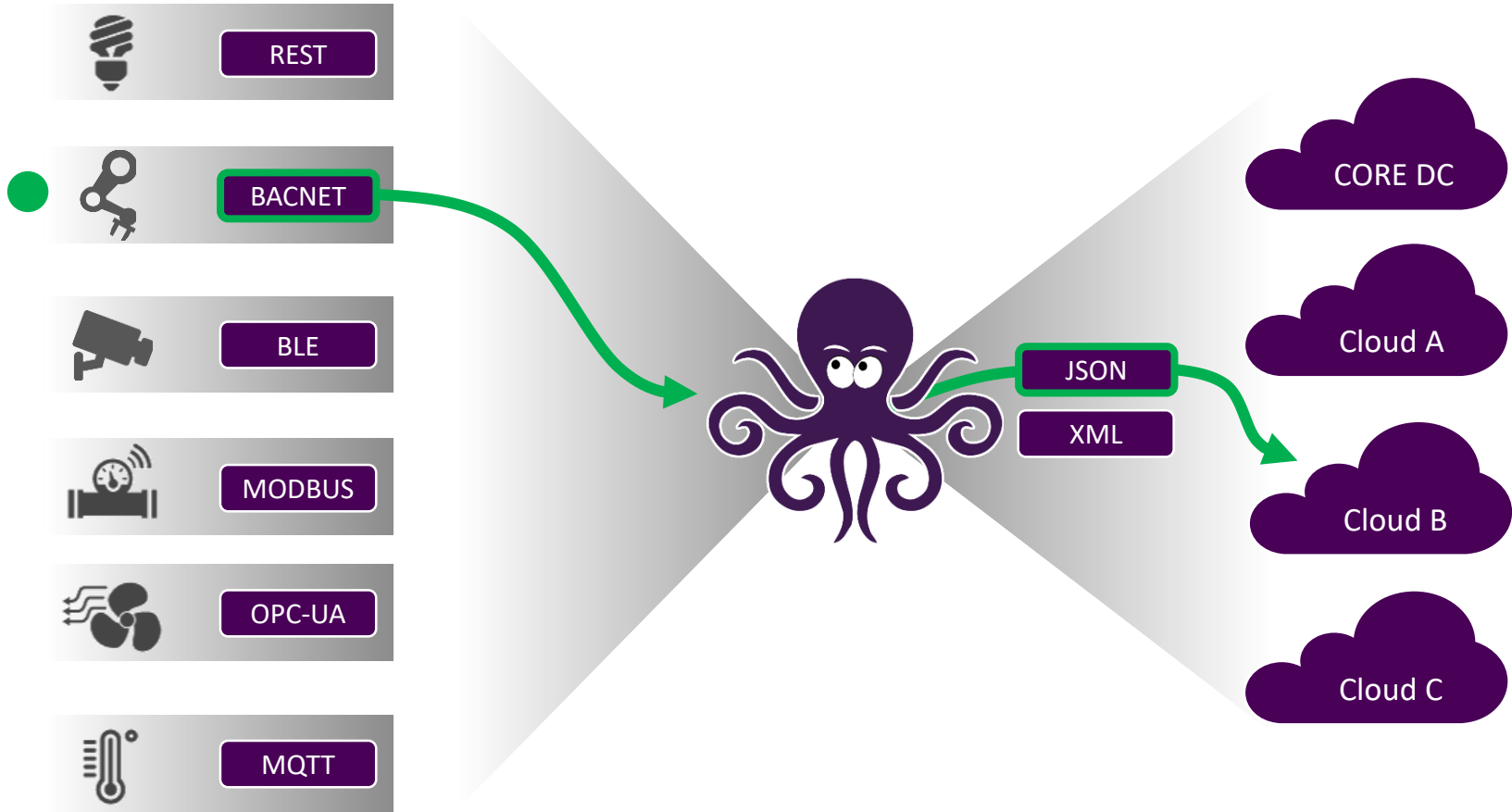


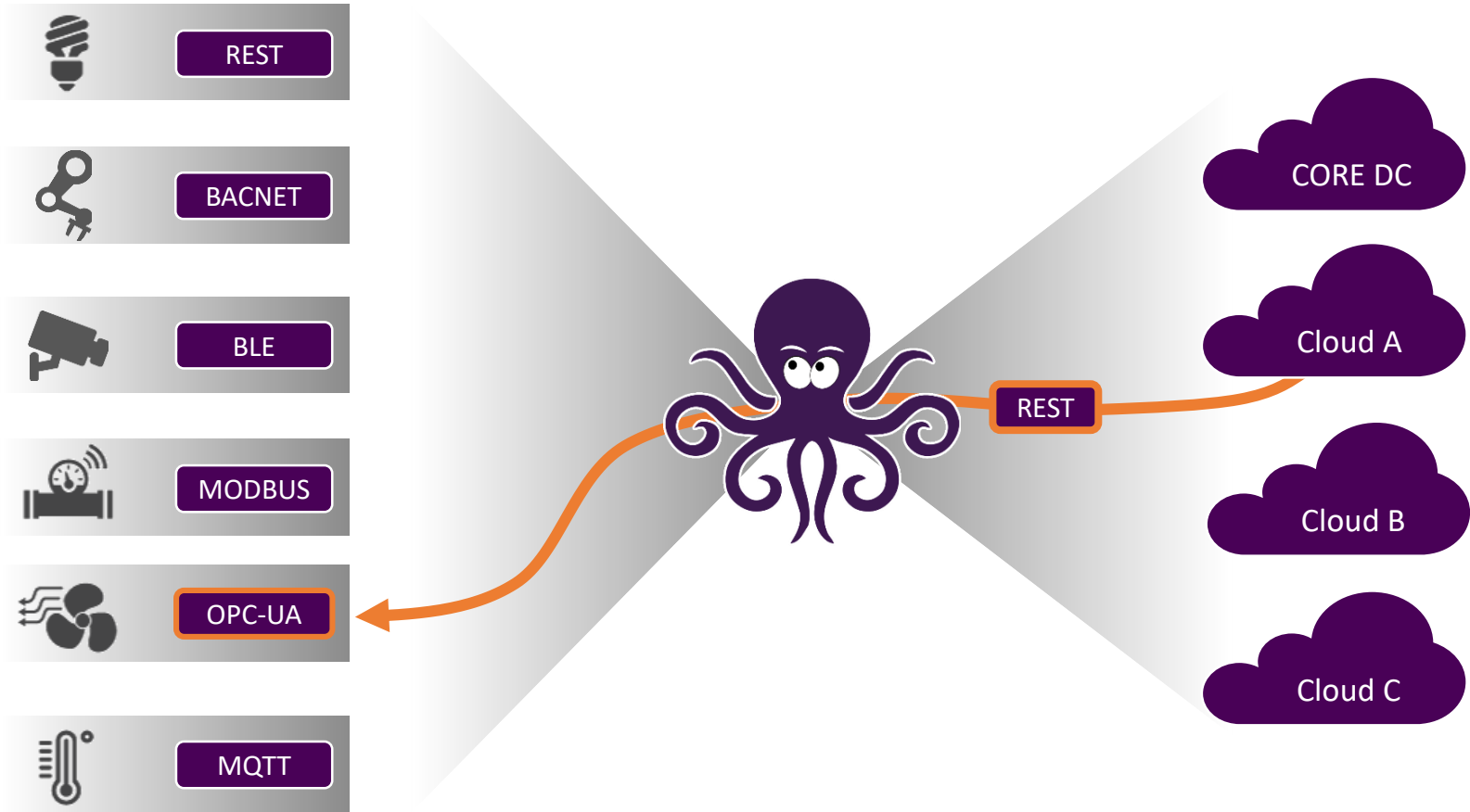
Supported Device Services (South) Interfaces today

- REST
- Modbus
- BACNet
- MQTT
- OPC-UA
- SNMP
- BLE
- Device Service SDK's in Go and C available









Just like the “One ring” from Lord of the Rings

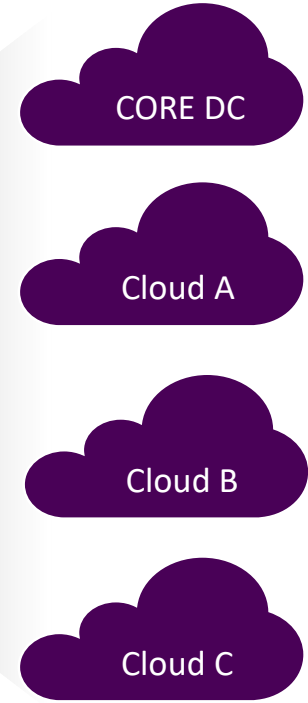
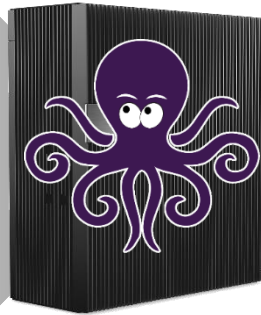
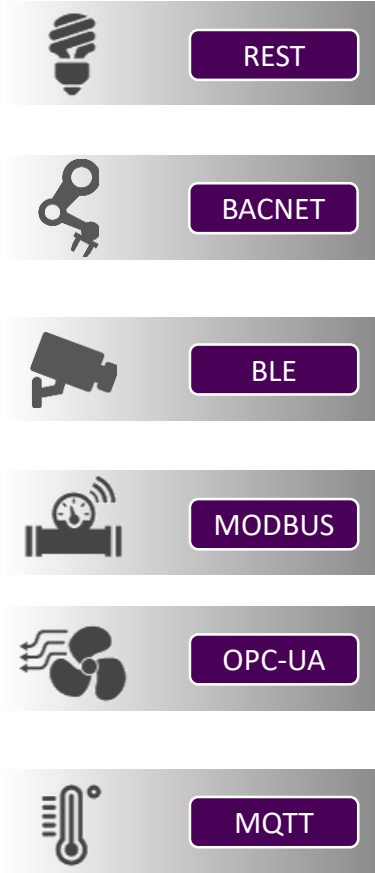
One API to control any device

- Has the commands available for any managed device
- Use one API interface to control all Edge devices
- Commands triggered automatically (based on rules) or from external systems

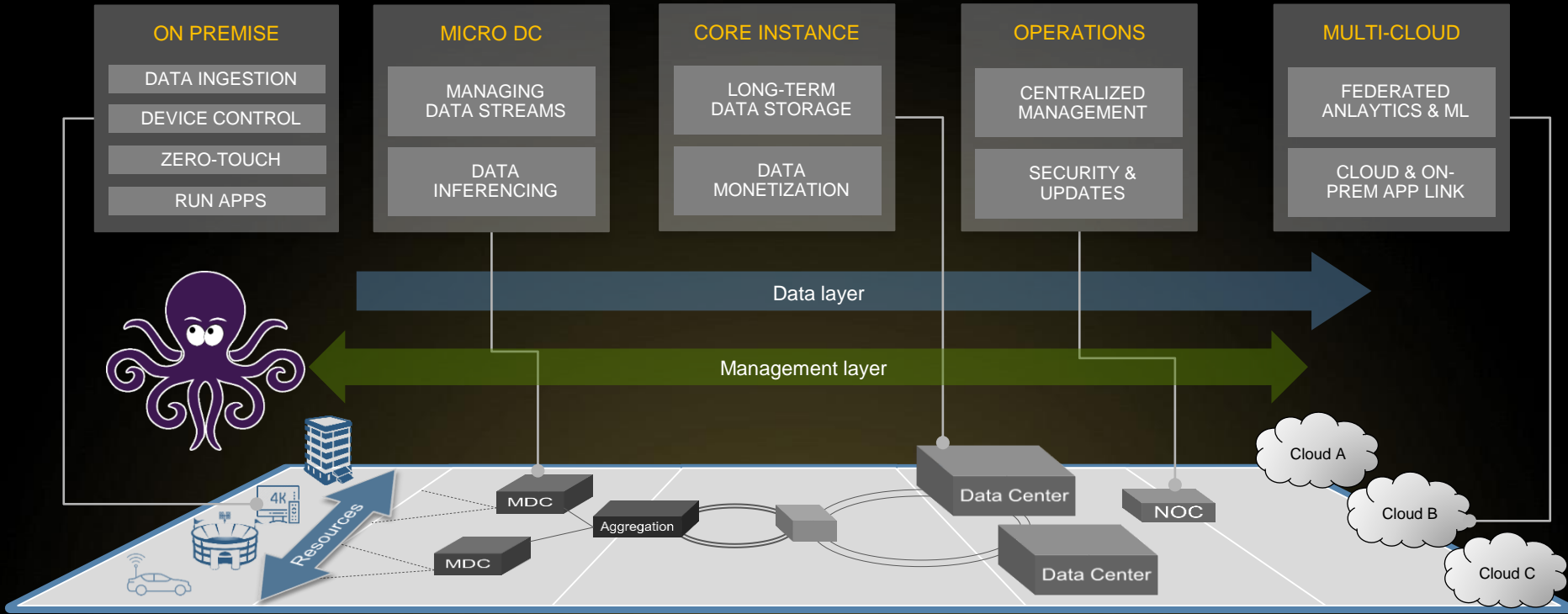


Supported Export (Northbound) Interfaces today

- HTTP/HTTPS
- MQTT/MQTTS
- Google IoT Core
- Azure IoT Hub
- XMPP
- ThingsBoard IoT
- Brightics IoT
- AWS



Location of EdgeX Foundry in the ecosystem map



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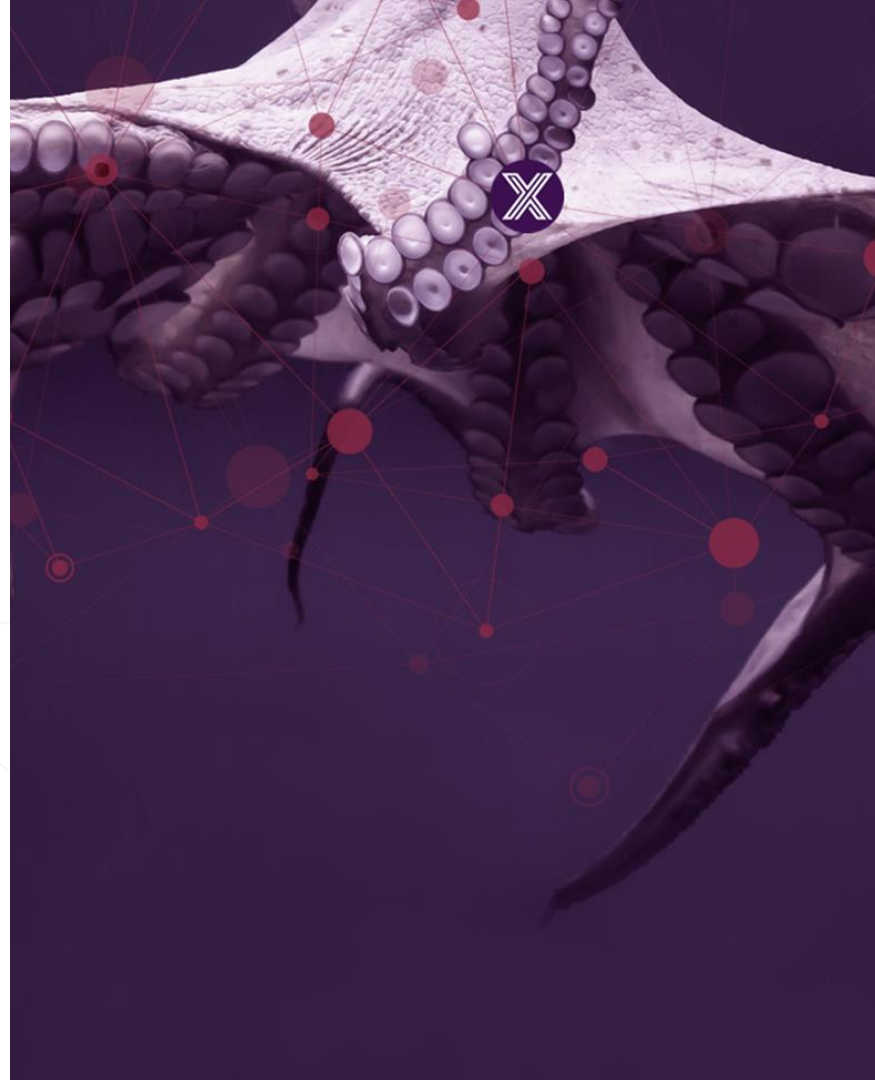
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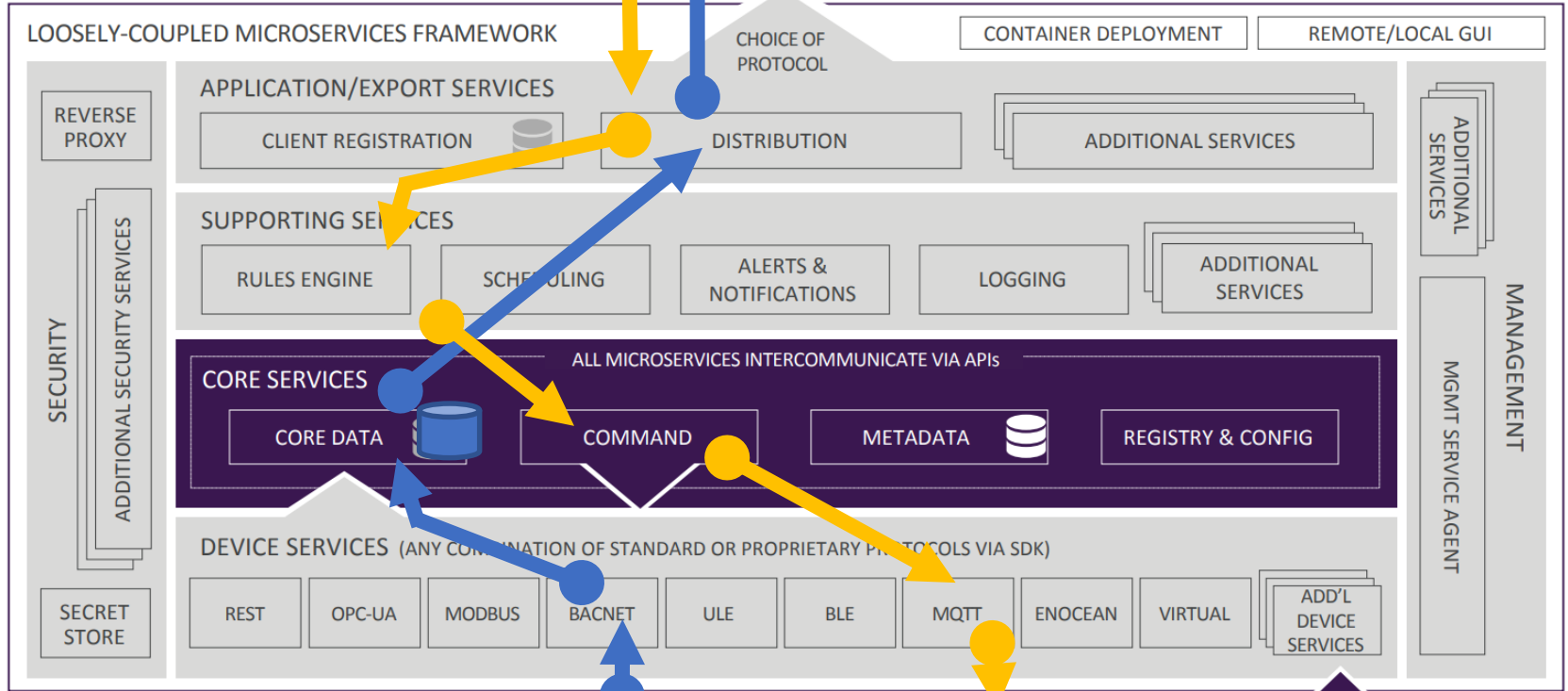
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REQUIRED INTEROPERABILITY FOUNDATION

REPLACEABLE REFERENCE SERVICES



It's 102°C



Stop the machine

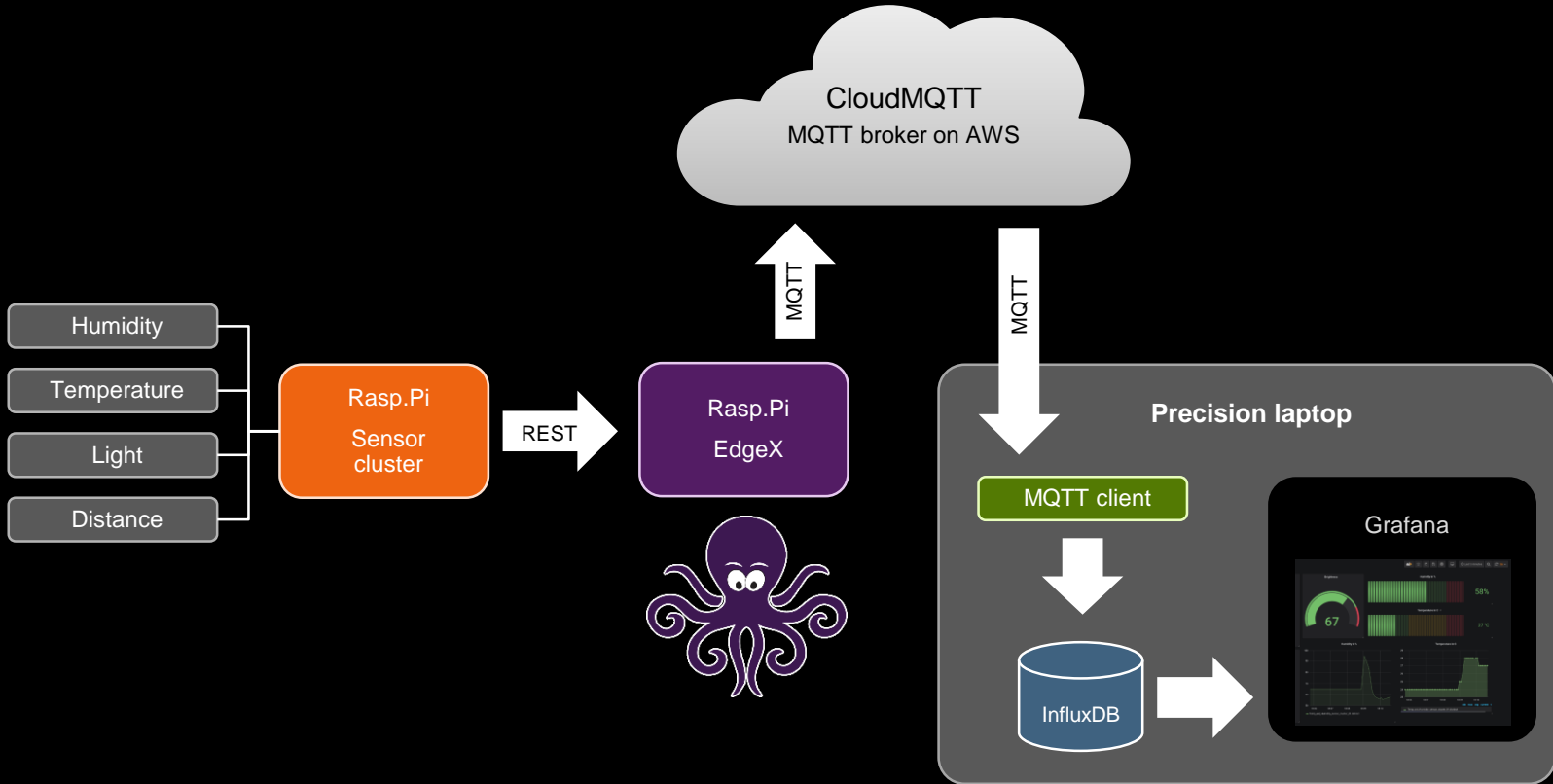


"SOUTHBOUND" DEVICES, SENSORS AND ACTUATORS

EdgeX Foundry demo



Demo environment: Logical diagram



Video of a similar demo is available here:

<https://youtu.be/WKsGv5UVftk>

EdgeX Foundry quick start



<http://jonamiki.com/2019/10/11/download-install-and-run-edgex-foundry-in-5-min-on-ubuntu-18-04-server/>

D  **LEMC**