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EnOcean

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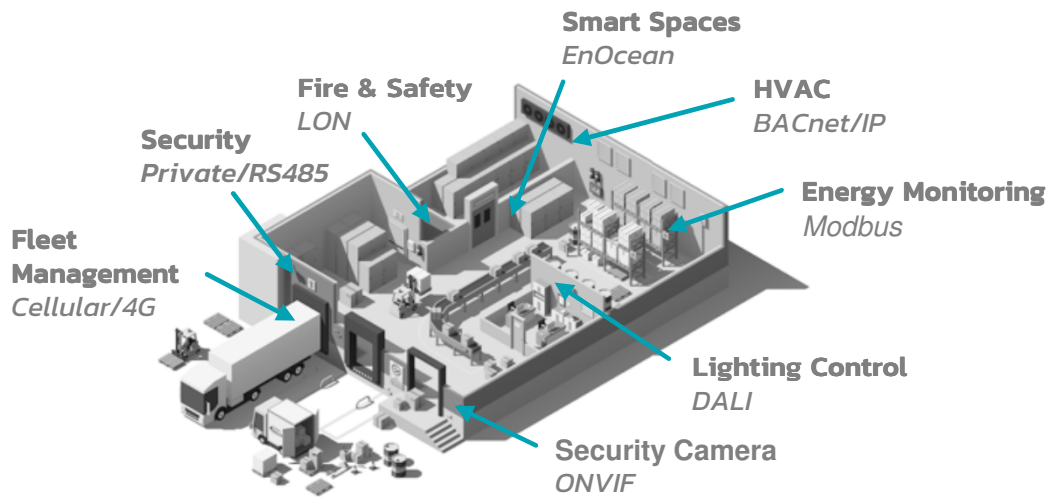
<https://www.linkedin.com/in/richblomseth>

Accelerating Integration of Data Analytics and Building Controls



Technology Integration Drives Smart Building Cost

Typical Commercial Building Systems

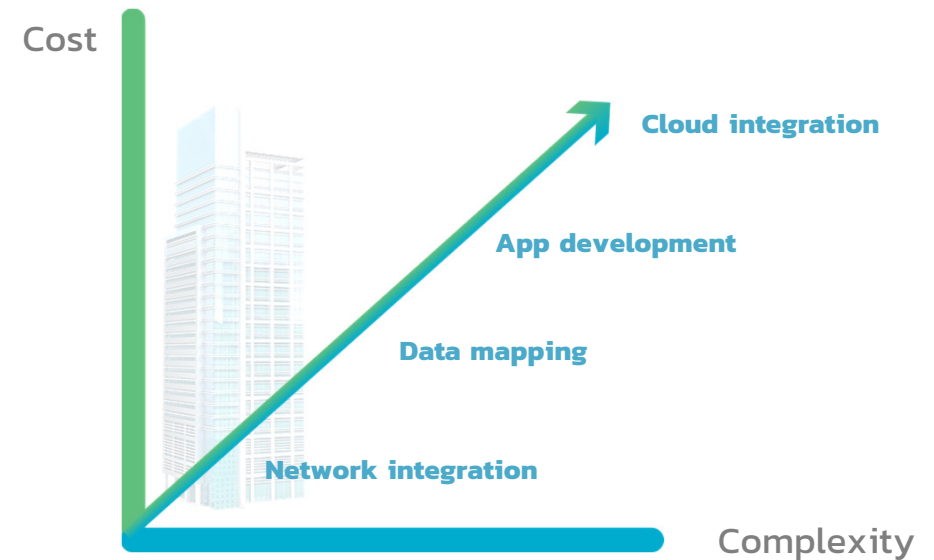


Multiple systems, vendors, & protocols

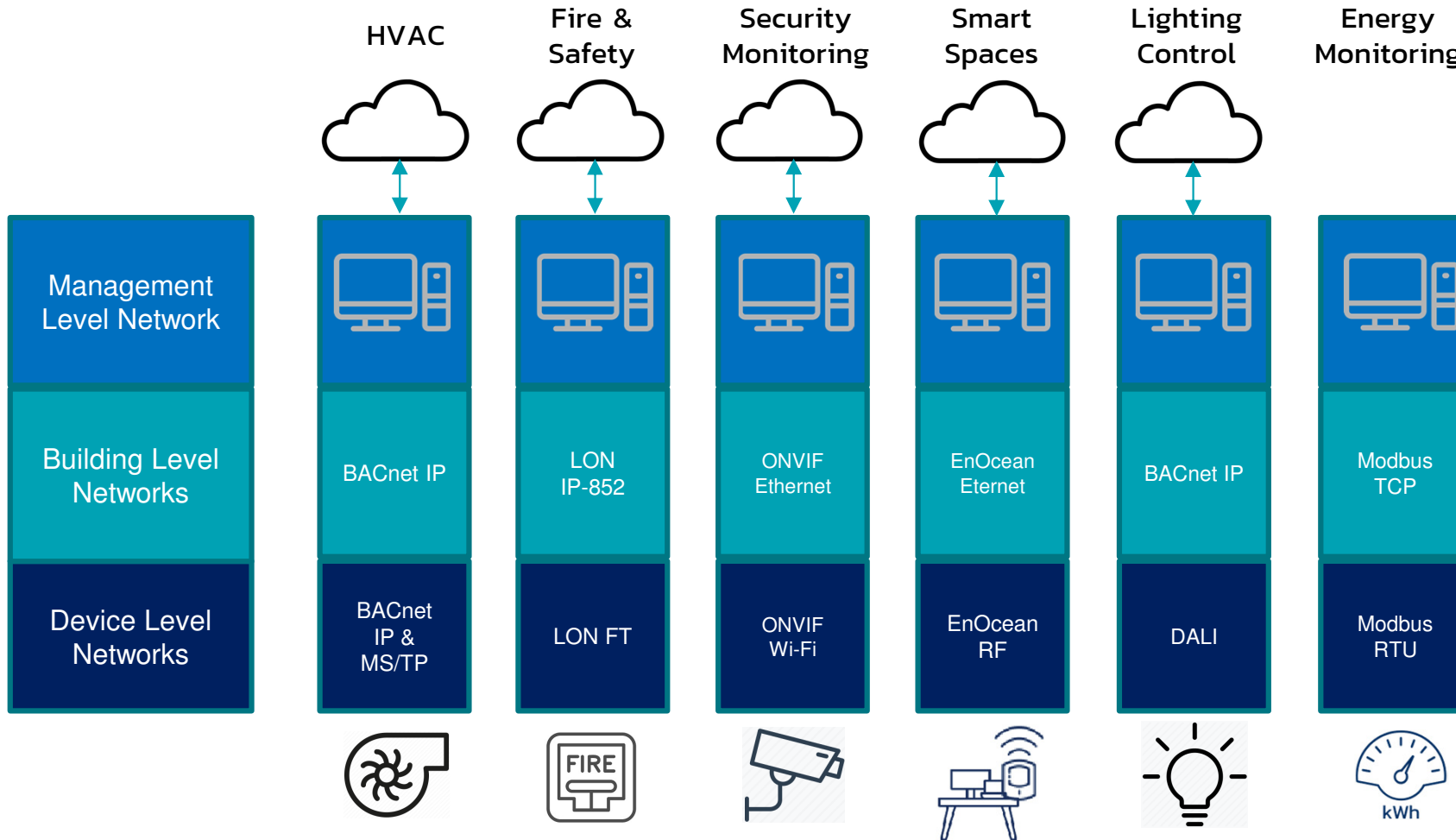
Many Industrial IoT use cases

Energy and space optimization require inputs from multiple systems

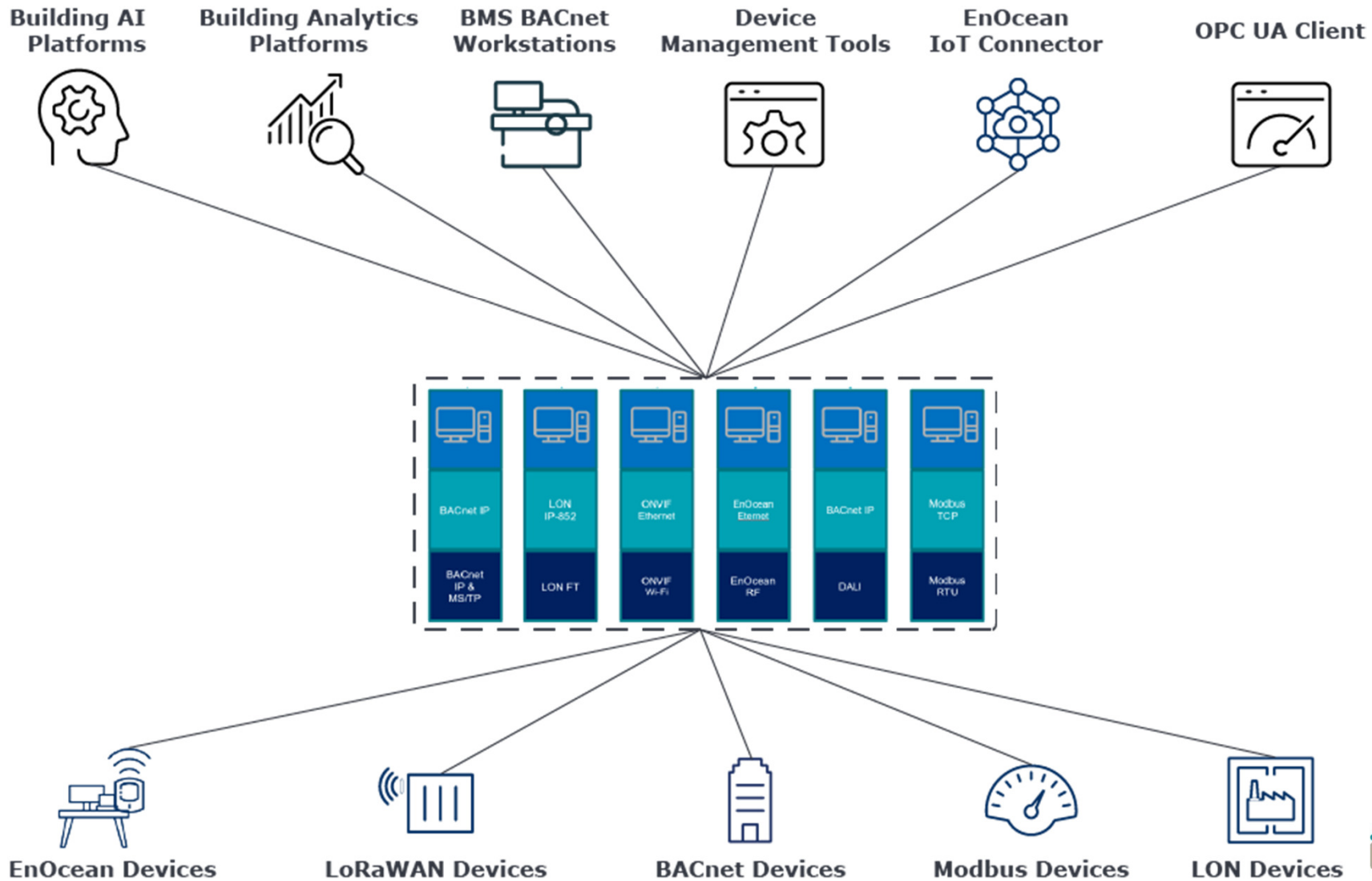
Industrial IoT Use Cases Require Complex and Costly Integration



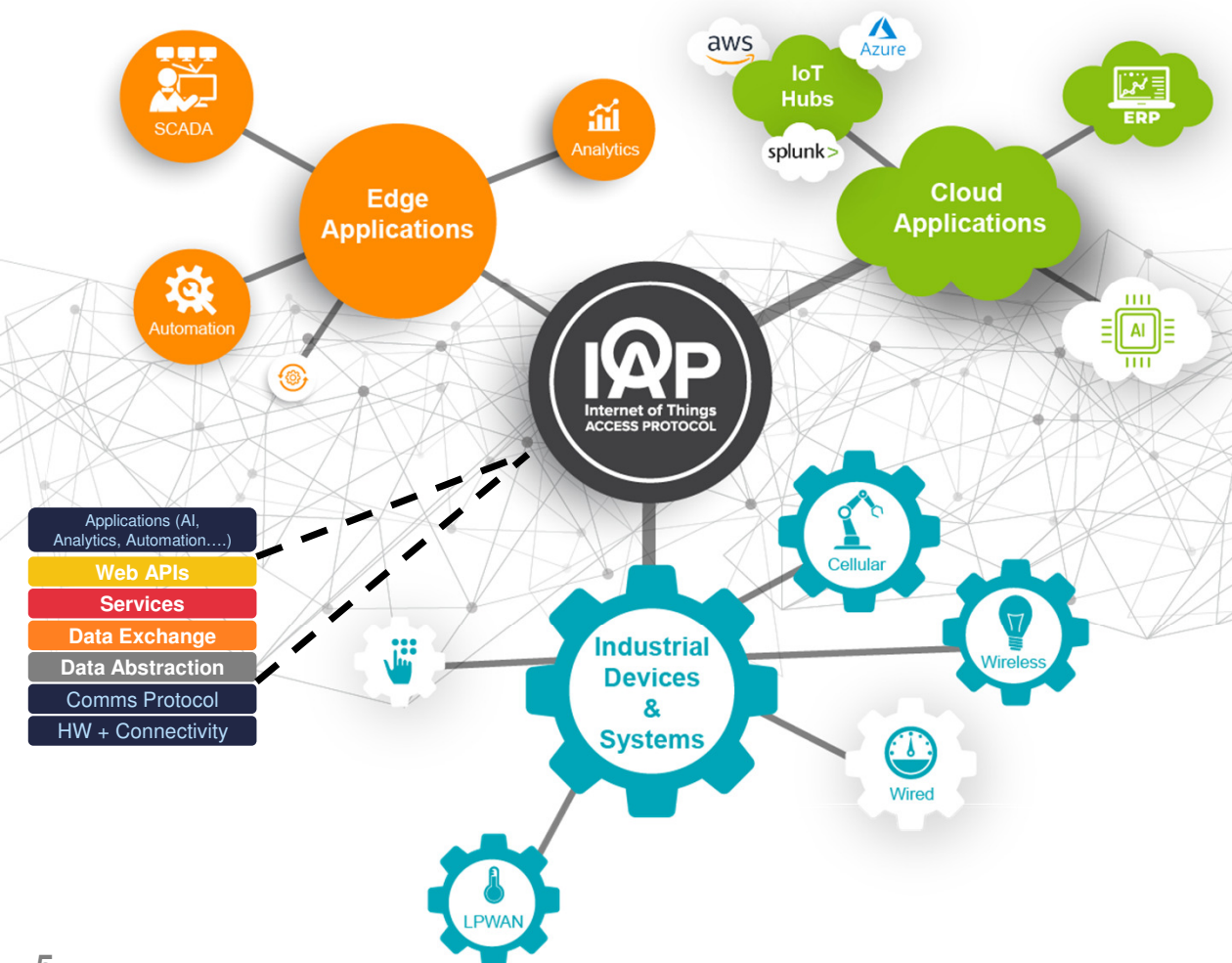
Typical Smart Building Network Architecture



Challenge: Communicating Between the Silos



Case for an Open IoT Centric Data Fabric

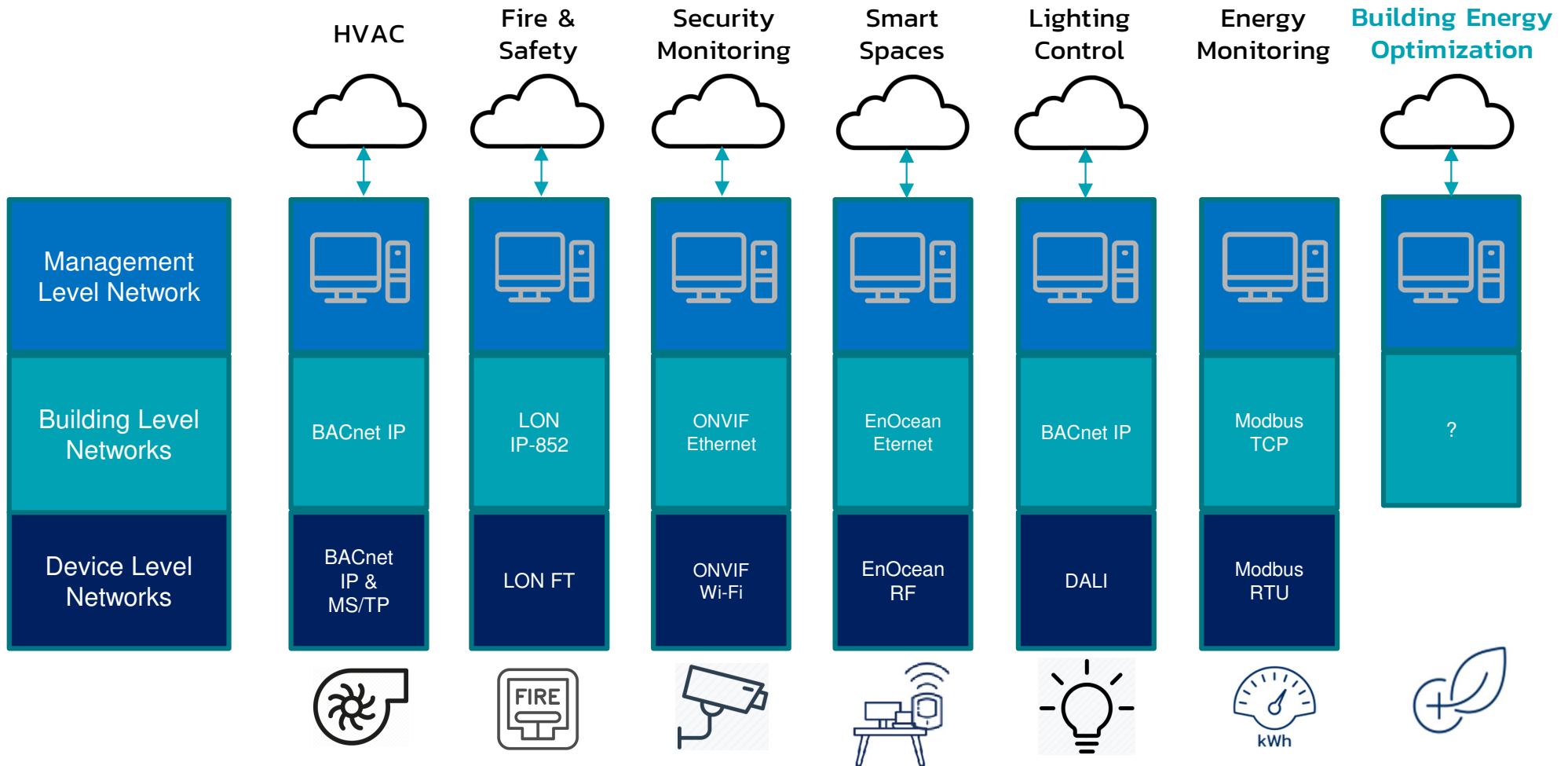


Solution to the integration problem relies on an IoT centric data fabric that...

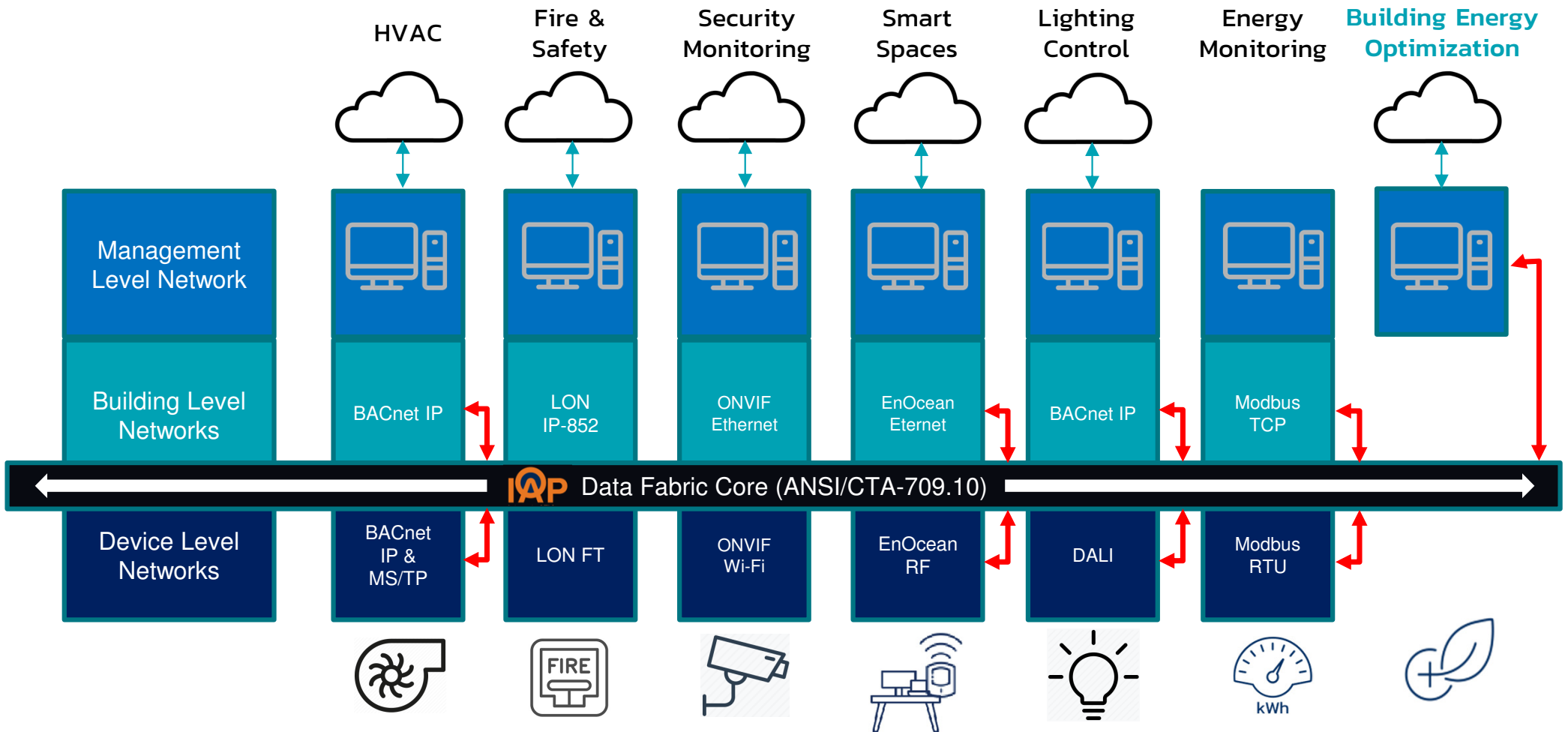
- Seamlessly connects any IoT end points with each other and with clients and applications including energy and space optimization
- Provides access to device data securely from anywhere
- Enables resilient and decentralized edge computing
- Eliminates the need for custom code to support every new device type
- Runs anywhere—sensors, controllers, gateways, edge servers, or cloud servers

IAP is an open ANSI/CTA standard – ANSI/CTA-709.10

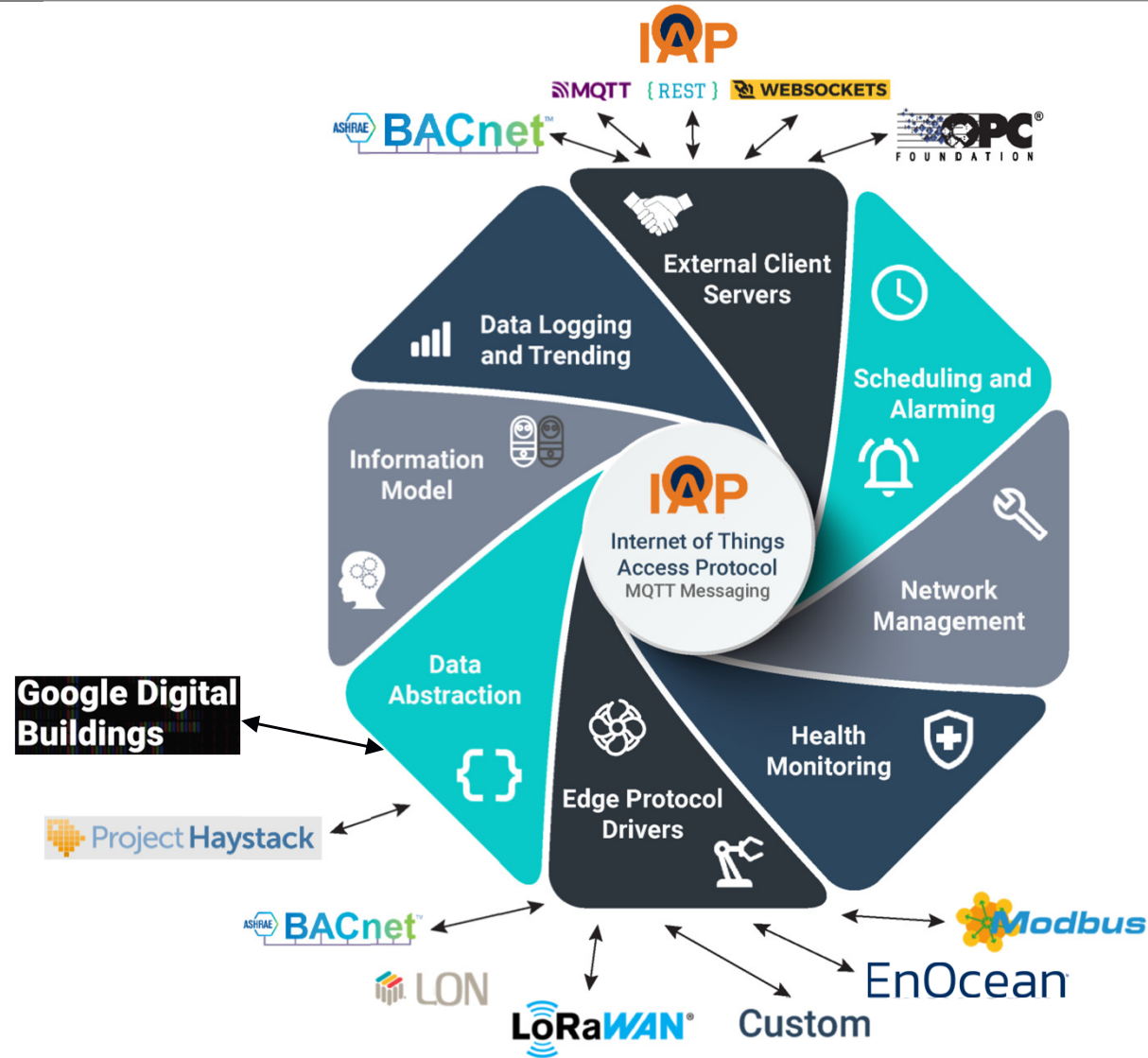
Owner Request: Make the Building Sustainable



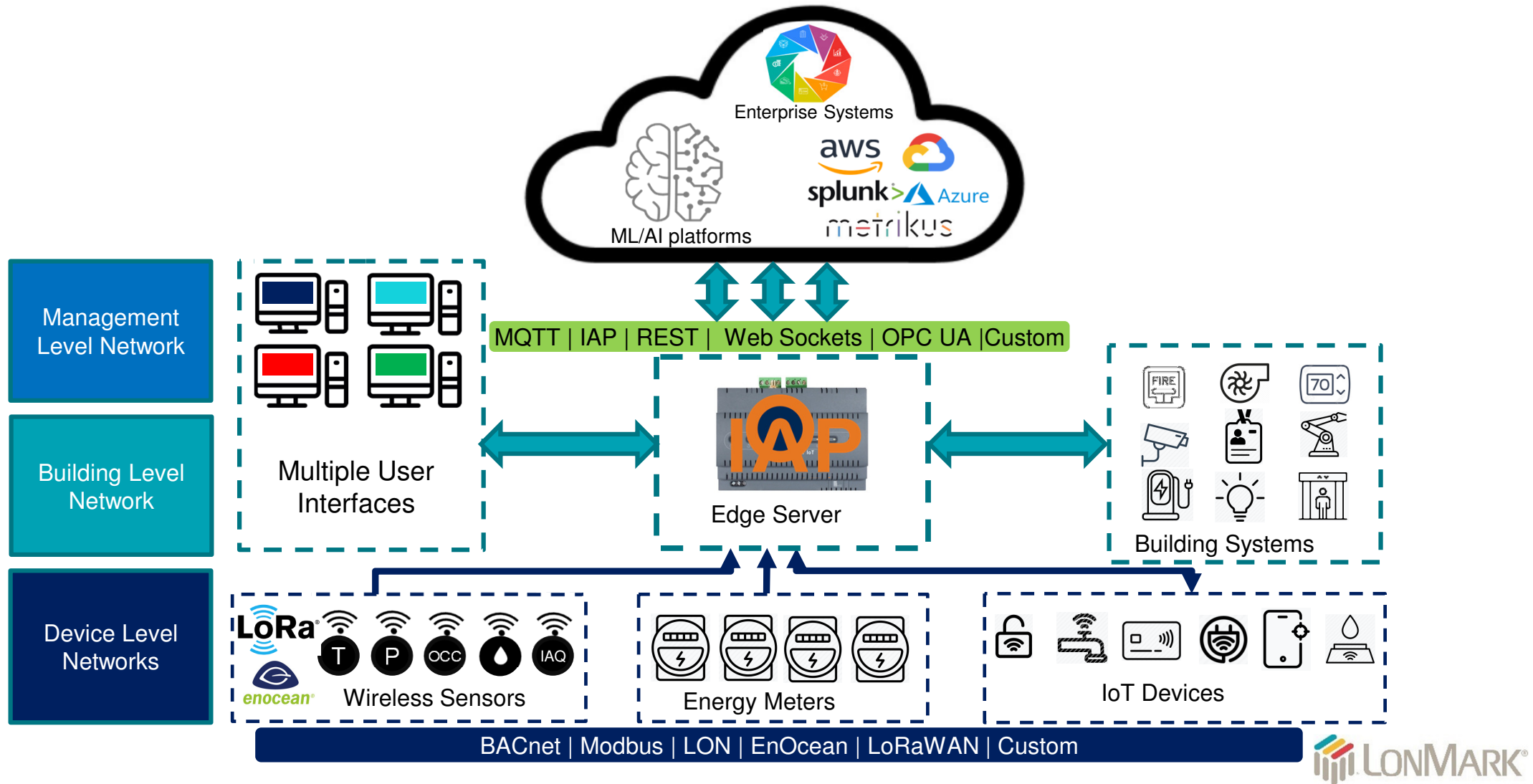
Solution: Use IAP as a Common Data Fabric



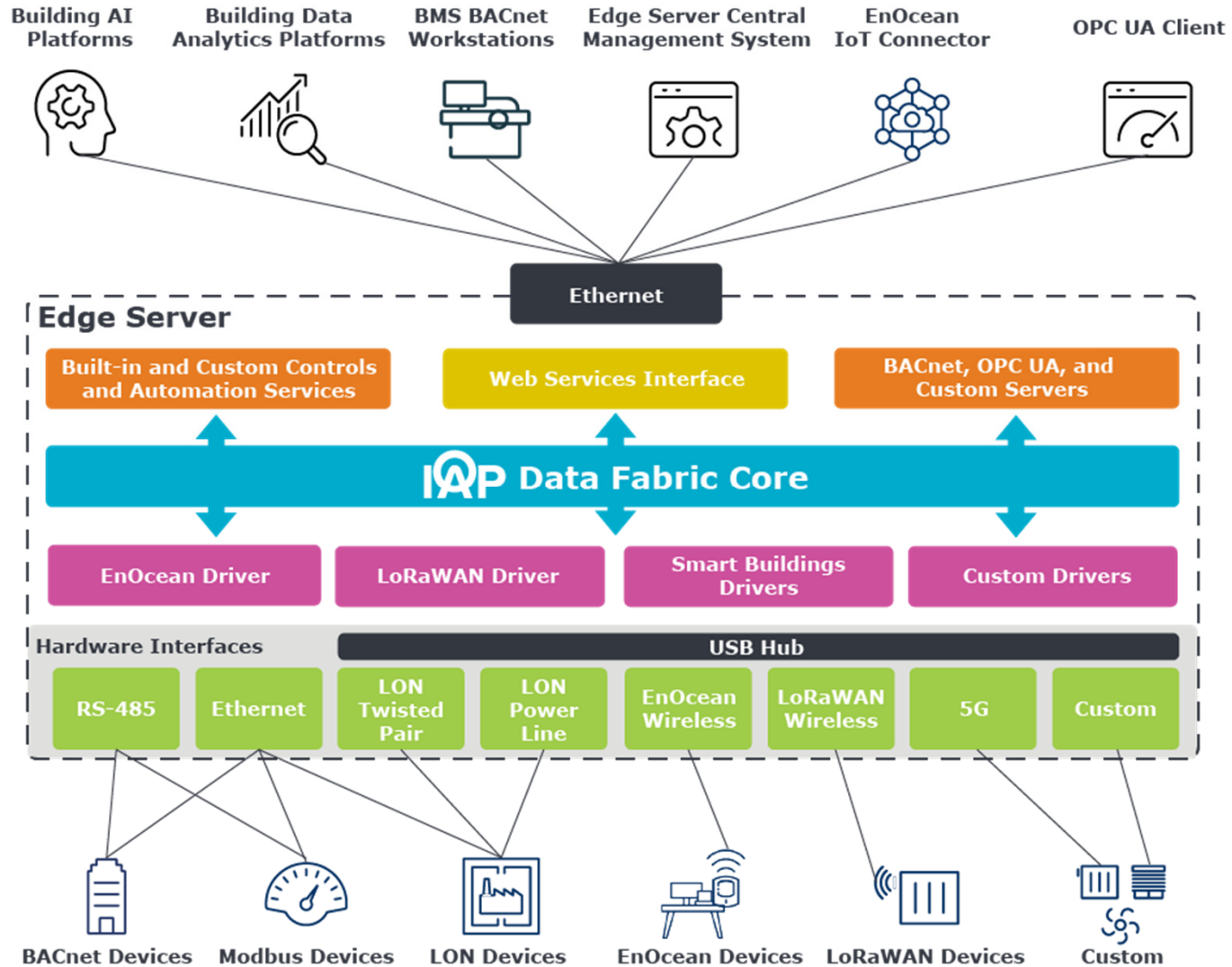
IAP Overview



Network Architecture with IAP

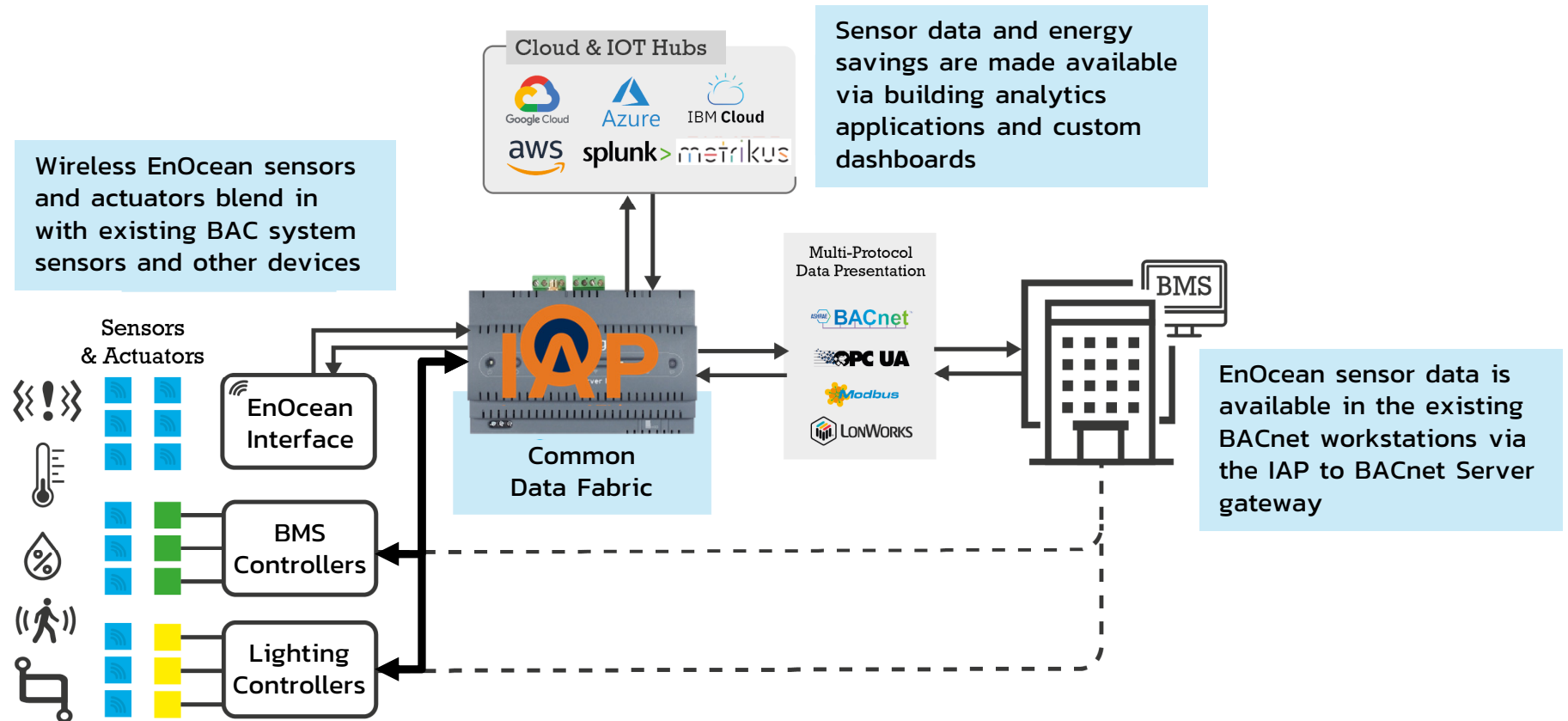


IAP Edge Server Open Architecture

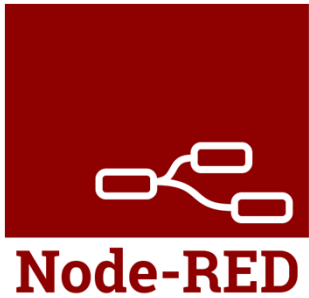


Integrate New Technology into BAC Systems

Example of EnOcean and BAC system integration using IAP



Example 1: Streaming IAP Data to Google Cloud



The screenshot shows the Node-RED web interface in a browser window. The URL is <https://10.0.0.113/cms/#/dashboard>. The interface includes a top navigation bar with "DEFAULT", "SEQ", and "NEW DASHBOARD" tabs. Below this is a "Sequencing" header and a "Node-RED" section. The main workspace displays a flow with the following nodes:

- Two "glp/+/+/fb/dev/+/+/cfg" nodes (connected).
- A "glp/+/+/ev/data" node (connected).
- An "MQTT DP Filter" node (running).
- A "DP Throttle" node.
- A "pubsub" node.
- A "Filter Dp Update" node.
- A "Dp Throttle Update" node.

The "MQTT DP Filter" node is highlighted with a blue box containing the following JSON payload:

```
topic: "DIO-01/Digital Input/0/nvoDI/value"
payload: {"data":100,"deviceHealth":"normal"}
```

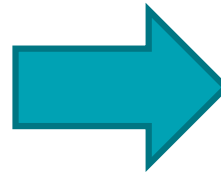
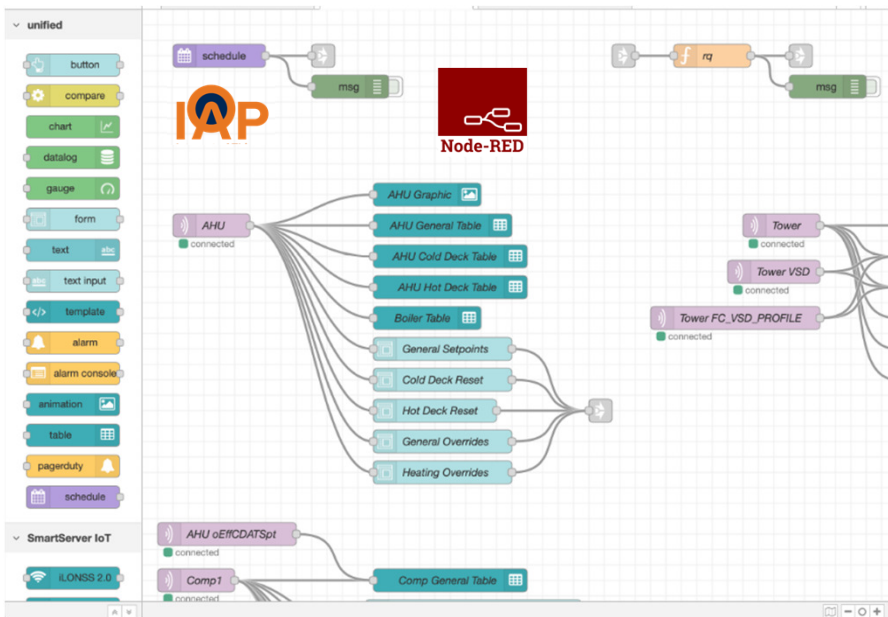
The right-hand side of the interface features a "debug" console showing a log of messages. The messages are JSON objects with the following structure:

```
{
  topic: "DIO-01/Digital Output/1/nvIDO",
  payload: {"data":{"value":0,"state\..."},
  _msgid: "e052ae1d.05d75"
}
```

Other messages in the log include:

- Topic: "DIO-01/Digital Output/2/nvIDO", payload: {"data":{"value":0,"state\..."}, _msgid: "36be3ee.815abc2" }
- Topic: "MS-01/Lamp/0/nvoLampFb/value", payload: {"data":0,"deviceHealth":"norm...", _msgid: "85353def.31073" }
- Topic: "Tstat-01/AV/7/Room Temperature", payload: {"data":83.5,"deviceHealth":"n...", _msgid: "81674ace.1b06a8" }
- Topic: "Tstat-01/AV/39/Occupied Heat Setpoint", payload: {"data":83.5,"deviceHealth":"n...", _msgid: "81674ace.1b06a8" }

Example 2: Partner-Created Open-Source Tool Set



The screenshot shows a web dashboard for an 'Air Handler'. The top navigation bar includes 'Home > Air Handler'. Below the navigation, there are three tabs: 'Graphic', 'Setpoints', and 'SA Reset'. The 'Graphic' tab is active, displaying a 3D cutaway view of the air handler unit with temperature and humidity readings: 72.5 °F, 75.2 °F, 67.7 °F, 74.9 °F, and 0%.

General

Scheduled Occupancy	Unoccupied
Effective Occupancy	Unoccupied
Supply Fan Command	Off
Supply Fan Status	Off
Supply Fan Alarm	Normal
Supply Fan Run Hours	2043.0 hr
Return Air Temperature	72.5 °F
Return Air Humidity	71.2 %
Outside Air Temperature	75.2 °F
Outside Air Humidity	71.8 %

Cold / Hot Deck

Cooling Enabled	Off
Cold Deck Air Temperature	67.7 °F
Cold Deck Setpoint	55.0 °F
Heating Enabled	Off
Hot Deck Air Temperature	74.9 °F
Hot Deck Setpoint	75.0 °F
Hot Water Valve	0.0 %

Boiler

Boiler Command	Off
Hot Water Pump Command	Off
Hot Water Pump Status	Off
Hot Water Pump Alarm	Normal
Hot Water Supply Temperature	144.9 °F
Hot Water Return Temperature	147.6 °F

IAP – Getting Started

Consumer
Technology
Association



https://shop.cta.tech/products/https-cdn-cta-tech-cta-media-media-shop-standards-2020-ansi-cta-709-10-final_1-pdf

Consumer Technology Association

TOPICS WHO WE ARE RESOURCES GET INVOLVED JOIN CTA

Consumer Technology Association

ANSI/CTA-709.10

September 2021

Web Services for Control Networking Protocol (ANSI/CTA-709.10)

This standard is for software developers and web-page authors. It documents two APIs: IoT Access Protocols (IAP)/MQ, which uses MQTT (Message Queuing Telemetry Transport) as the transport protocol, and IAP/REST (Representational State Transfer), which uses REST over HTTP or HTTPS.

Available to Everyone \$0 ADD TO CART

- IAP is an open ANSI/CTA standard – ANSI/CTA-709.10
- IAP documentation is available at <https://edgedocs.enocean.com/>
- Open-source IAP application examples: <https://github.com/izot/smartserver-iot>
- Edge Server information: <https://www.enocean.com/en/product/smartserver-iot/>

Questions & Answers

EnOcean

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