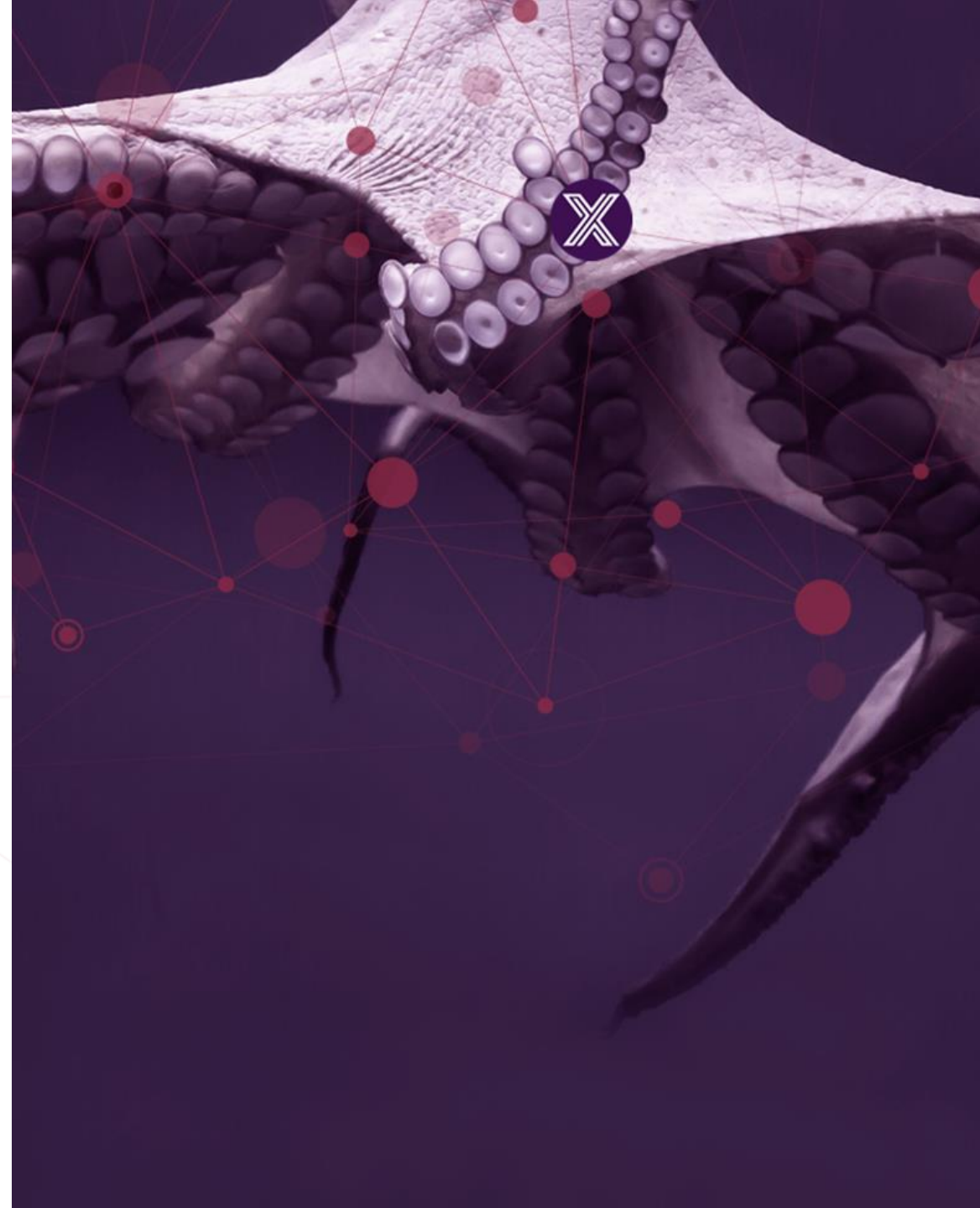# EDGE X FOUNDRY™

Adopter Series

Discover why industry leaders choose EdgeX

February 23, 2021

LF Antitrust Policy Notice

EdgeX Foundry meetings involve participation by industry competitors, and it is the intention of the Linux Foundation to conduct all of its activities in accordance with applicable antitrust and competition laws. It is therefore extremely important that attendees adhere to meeting agendas, and be aware of, and not participate in, any activities that are prohibited under applicable US state, federal or foreign antitrust and competition laws.

Examples of types of actions that are prohibited at EdgeX Foundry meetings and in connection with Linux Foundation activities are described in the Linux Foundation Antitrust Policy available at http://www.linuxfoundation.org/antitrust-policy. If you have questions about these matters, please contact your company counsel, or if you are a member of the Linux Foundation, feel free to contact Andrew Updegrove of the firm of Gesmer Updegrove LLP, which provides legal counsel to the Linux Foundation.

Topic

Introducing the Open Retail Reference Architecture

Representatives from IBM, Intel, HP are to talk about the purpose and goals of ORRA project, and a call to action for more participation.

Meeting recordings, slides, upcoming events:

https://www.edgexfoundry.org/ecosystem/adopter-series/

https://wiki.edgexfoundry.org/display/FA/Vertical+Solutions+Working+Group

Store Transformation at the Edge

Enabled by EdgeX Foundry +
Open Retail Reference Architecture (ORRA)

February 18, 2021

Why are we here? We believe retailers want to...

- Make decisions better – and faster

- Use resources more cost-effectively

- Keep their data – and their customers' data – secure

- Continue to operate their business, even when the network is down

- Manage their business with speed and agility – so they can rapidly respond to changing market conditions

"You have to put new technology in stores. That's just the reality." – Cedric Clark, VP Operations, Sam's Club

"Customer experience is not an initiative. It's a mindset change." – Ruth Crowley, VP Customer Experience Design, Lowe's
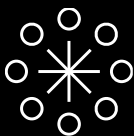
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The Challenge of Existing Architecture

Market conditions have accelerated retailers need to operationalize new capabilities, however existing architectures are a barrier to rapid change
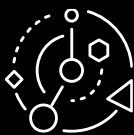
Retail Imperatives

Reduce cost and reinvent stores and operations

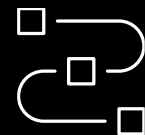**Engage – and delight – customers** to grow topline revenue

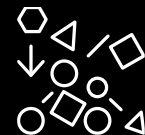**Create agility** across the entire supply chain and channels

Drive business innovation for long term success

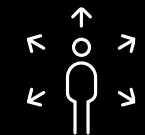## Architectural Barriers

Point to point integration, manual or disconnected processes

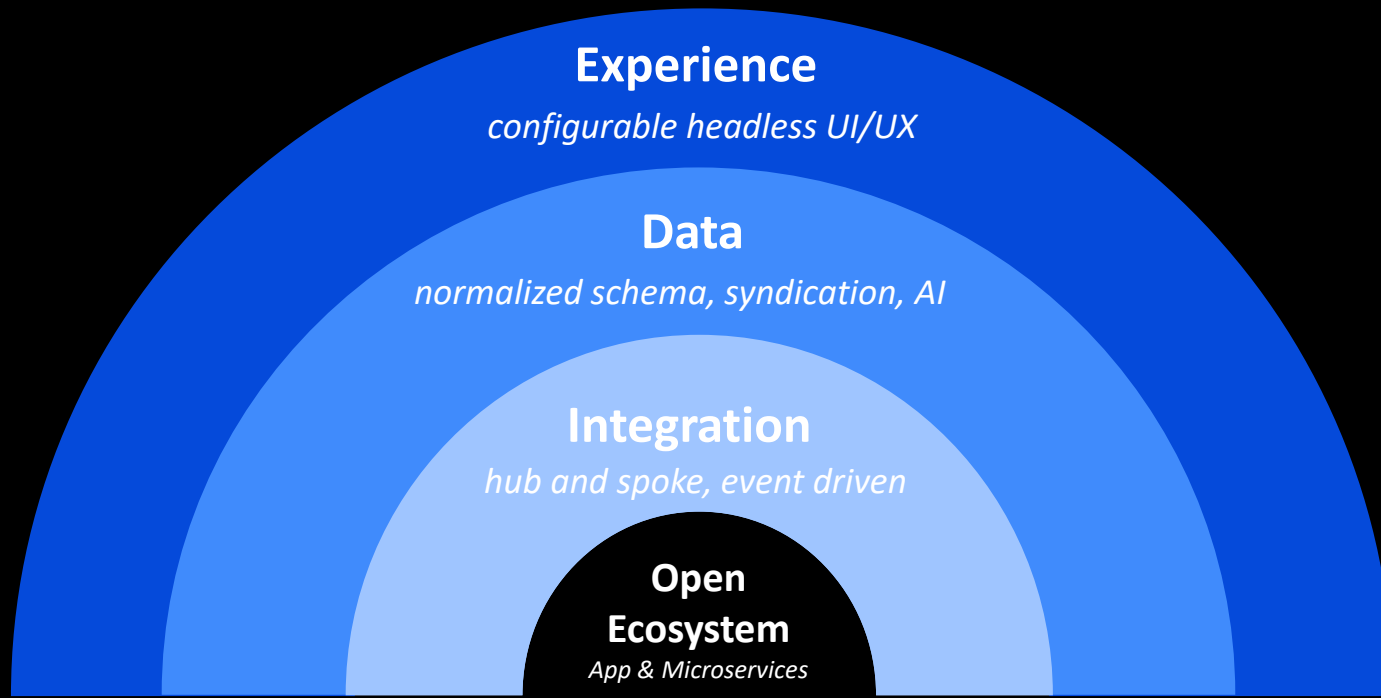**Disconnected data** that limits insights and creates performance blind spots

Single use case monolithic apps, complex processes for associates, inconsistent experiences for customers

Rigid infrastructure, infrequent and costly deployment of new capabilities to stores at the Edge

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Creating a Cohesive Platform with Best-of-Breed Applications is Hard

For disparate applications to work together as a seamless interoperable platform, common layers are required for experience, data and integration, functioning across any deployment pattern

Experience
configurable headless UI/UX

Data
normalized schema, syndication, AI

Integration
hub and spoke, event driven

Open Ecosystem
App & Microservices

Agile Deployment
across all environments and to the Edge

Edge · Private Cloud · IBM Cloud · AWS · Microsoft Azure · Google Cloud
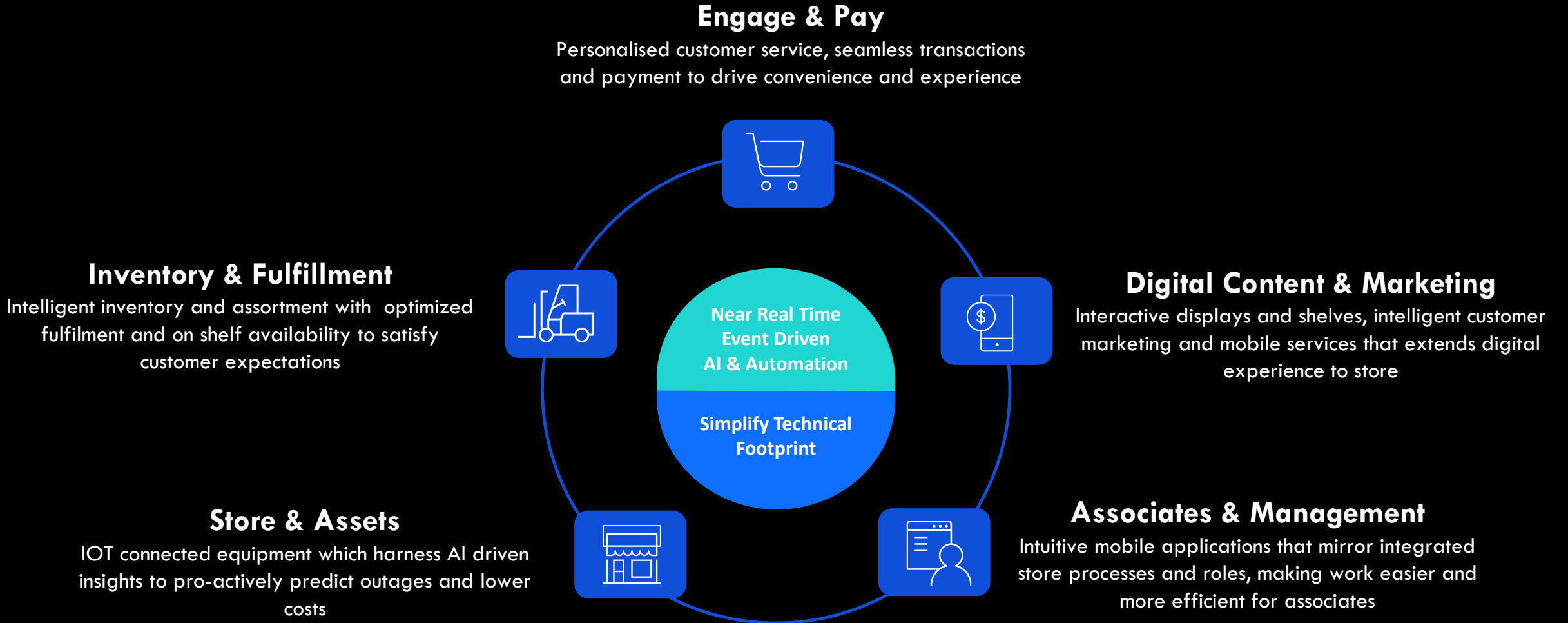
… however, the potential is huge!

✓ IT - Faster lower cost innovation, open ecosystem compatible with existing technology

✓ Retailers - Intelligent workflows, new insights, more efficient operating model

✓ Customers - Seamless omni-channel experiences, greater level of self service

✓ Ecosystem – Added value as part an end-to-end platform

Store Investment Focal Areas

New technology provides new data, faster connectivity...and often adds more complexity

Engage & Pay
Personalised customer service, seamless transactions and payment to drive convenience and experience

Inventory & Fulfillment
Intelligent inventory and assortment with optimized fulfilment and on shelf availability to satisfy customer expectations

Digital Content & Marketing
Interactive displays and shelves, intelligent customer marketing and mobile services that extends digital experience to store

Store & Assets
IOT connected equipment which harness AI driven insights to pro-actively predict outages and lower costs

Associates & Management
Intuitive mobile applications that mirror integrated store processes and roles, making work easier and more efficient for associates

Near Real Time Event Driven AI & Automation

Simplify Technical Footprint

Edge Computing...

… places *enterprise* applications closer to where the data is created, and where actions need to be taken

Open Retail Reference Architecture (ORRA): Enabling an Open Retail Ecosystem

- **What is ORRA?**

  - A common application deployment platform for edge-based retail solutions and IOT devices

  - A community based on open-source software principles that supports cloud-native development practices and consistent integration methods

- **Why ORRA?**

  - A collaborative effort led by industry tech leaders who believe that open, accessible solutions will accelerate iteration, flexibility, and innovation at scale

  - Aligned with EdgeX Foundry, Open Horizon, Secure Device Onboarding (SDO), and Open Retail Initiative

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Open Retail Reference Architecture

- An open-source platform implementation to enable distribution of Retail solutions across Cloud, Edge Servers, and Edge Devices as appropriate for the needs of the solution
- Plug-ready to commercial retail cloud services and edge solutions to support a wide range of use-cases
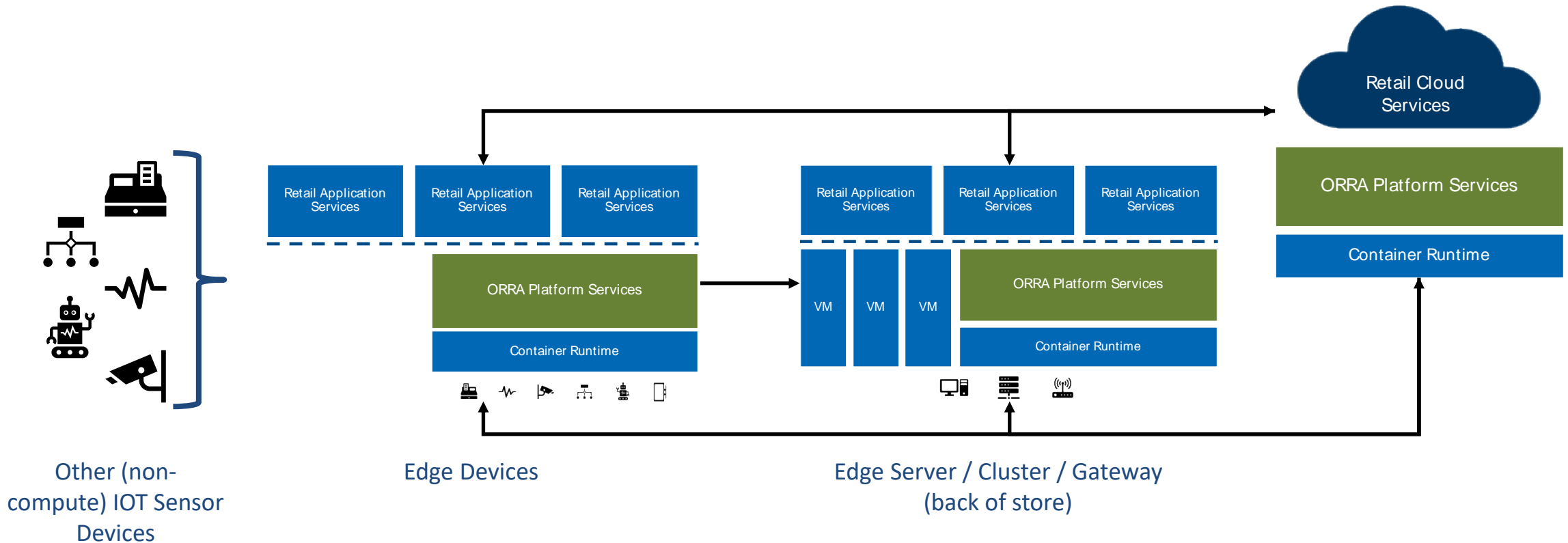
Key drivers for Edge Computing in Store

Ephemeral Data:

Time sensitivity of data collected at sources, does not make sense to transfer to cloud or data center for processing

Latency:

Operating applications with (almost) real-time requirements in the cloud is not easily possible

Security and Confidentiality:

Applications that require particularly high protection level, to protect collected data from unauthorized access and falsification
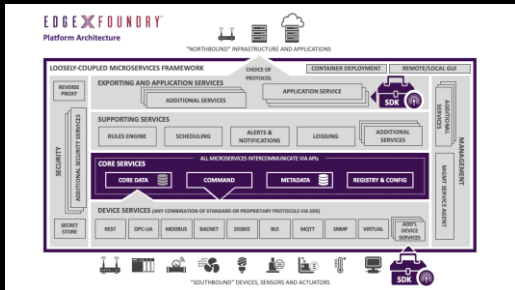
Low cost of entry & platform maturity:

Convergence of compute, storage and networking on the edge, small form factor, less dependence of backroom server infrastructure
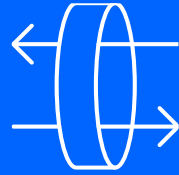
High bandwidth connectivity based on SDWAN and 5G also offer deployment choices at the Network / Telco Edge

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LF Edge

EdgeX Foundry

What is it?

Highly flexible open-source software framework that facilitates interoperability between heterogeneous devices and applications at the IoT Edge

Why EdgeX Foundry?

Consistent foundation for security and manageability regardless of use case

Your data where you want it

Faster time to value with a modern architecture that is easy to scale

Reduce integration risks and costs through large global community of compatible vendors

Minimize development time by leveraging community skills and resource sharing
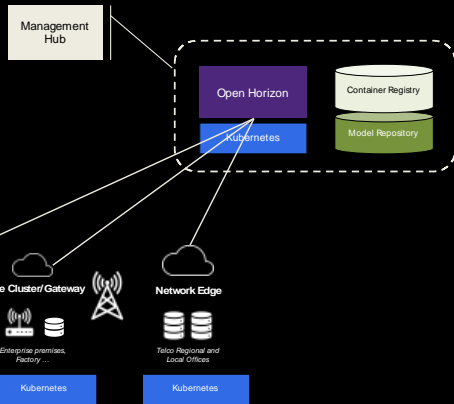
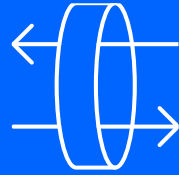Open ecosystem

Client Value

Open, vendor-neutral platform speeds developer and technology providers time to market by providing modular reference services for device-data ingestion, normalization, analysis and sharing in support of new IoT data services and advanced edge computing applications

LF Edge

Open Horizon

What is it?

Full lifecycle Edge platform to create, deploy, run, secure, monitor, maintain and scale business logic applications & AI analytics across Edge deployments

Why Open Horizon?

Policy driven lifecycle actions eliminate manual & repeated tasks across 10,000s of Edge locations

Edge-Native programming model

Offline operations

Multi-tenancy

Consistent support for Edge Servers, Gateways & Devices

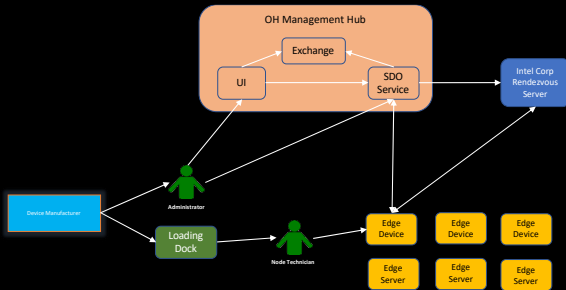Docker & Kubernetes container technology foundation

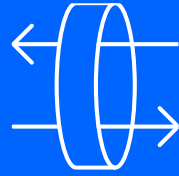Open ecosystem

Client Value

Improves business outcomes in real-time with resilience and security by placing enterprise business logic and AI applications closer to where data is created and acted on in the store

February 23, 2021

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LF Edge

Secure Device Onboarding

What is it?

Secure, zero-touch automated on-boarding of edge devices to avoid any IT skills in remote and distributed edge locations

Why SDO?

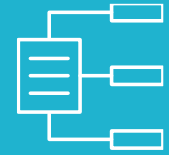Easier, faster, less expensive, and secure onboarding of devices

Enables Build-to-Plan Model

Allow target platform to be selected "late" in the supply chain, at first power-on Offline operations
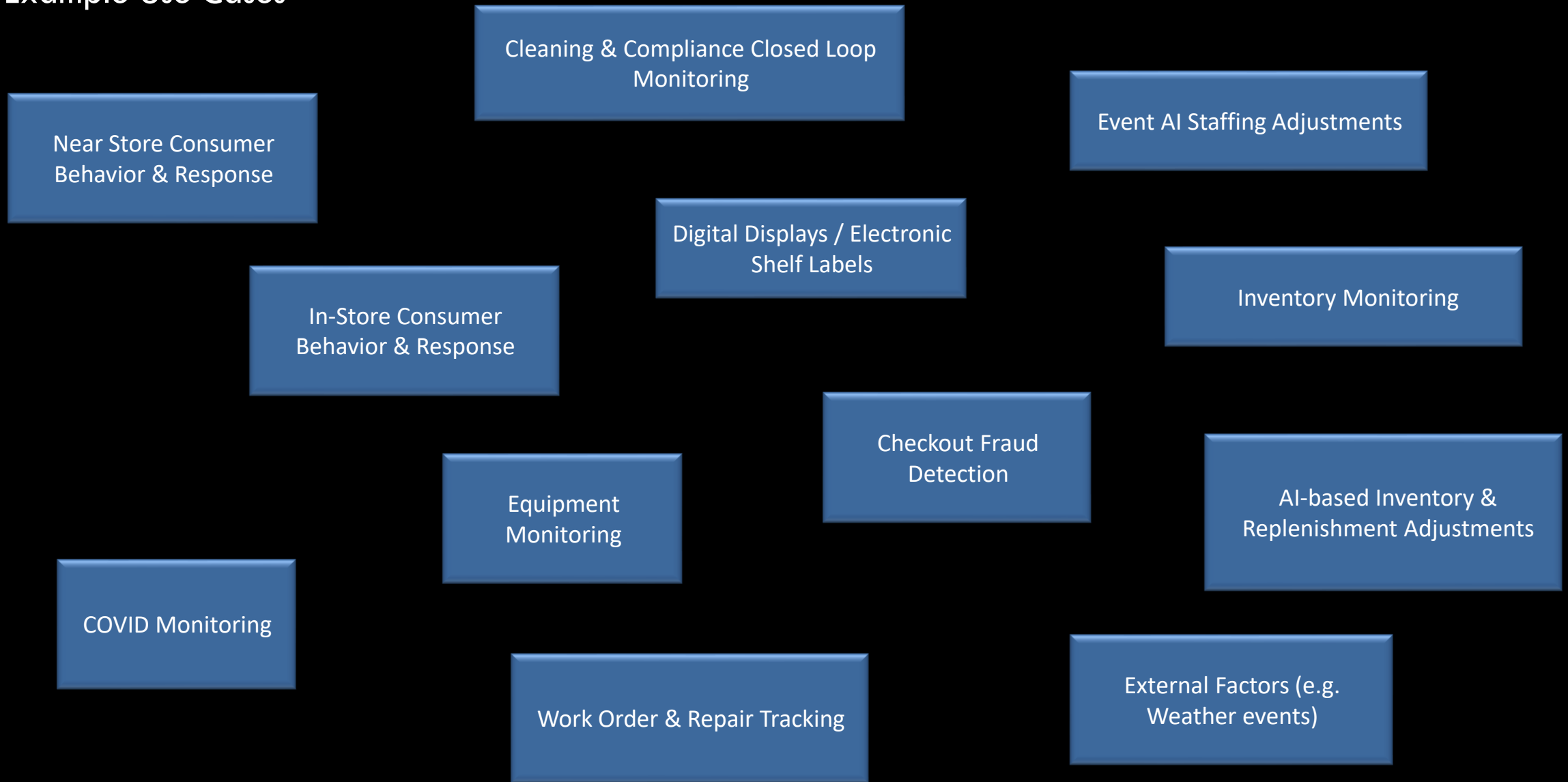
Works with existing cloud services

Open ecosystem

Client Value

Accelerate provisioning of edge devices and servers in the store, with greater security, and removing the cost of skilled labor

Example Use Cases

Cleaning & Compliance Closed Loop Monitoring

Event AI Staffing Adjustments

Near Store Consumer Behavior & Response

Digital Displays / Electronic Shelf Labels

Inventory Monitoring

In-Store Consumer Behavior & Response

Checkout Fraud Detection

Equipment Monitoring

AI-based Inventory & Replenishment Adjustments

COVID Monitoring

Work Order & Repair Tracking

External Factors (e.g. Weather events)

Get involved with ORRA:

https://wiki.edgexfoundry.org/display/FA/Open+Retail+Reference+Architecture

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Thank you