Adopter Series

Discover why industry leaders choose EdgeX

February 23, 2021
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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

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
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

... 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

Inventory & Fulfillment
Intelligent inventory and assortment with optimized fulfillment 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

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

Associates & Management
Intuitive mobile applications that mirror integrated store processes and roles, making work easier and more efficient for associates
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
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
**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.
**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.
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
- Digital Displays / Electronic Shelf Labels
- Checkout Fraud Detection
- Equipment Monitoring
- Work Order & Repair Tracking
- In-Store Consumer Behavior & Response
- Near Store Consumer Behavior & Response
- Inventory Monitoring
- Event AI Staffing Adjustments
- AI-based Inventory & Replenishment Adjustments
- External Factors (e.g. Weather events)
- COVID Monitoring
- Near Store Consumer Behavior & Response
Get involved with ORRA:

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