Commerce Project Business Update

Seoul F2F
April 30th, 2019
Agenda

1. Status of the Commerce Project
2. Review London ORI Materials for context on positioning
3. Enumerate Use Cases underway
4. Introduce technical topics
Commerce Project Charter

• Increase utilization of EdgeX Foundry and related OSS efforts in retail and commerce environments
• Reduce cost and complexity of solution deployments
• Decrease time required to evaluate and deploy new IOT use cases
Typical Activities

• Retailer presentations on IOT challenges, opportunities and vendor requirements

• Review retail use cases and needs that EdgeX Foundry can address (example: T-logs)

• Mapping of retail value chains to understand parties required for OSS enablement, distribution and support

• Prioritization of development and contribution for EdgeX Foundry roadmap/backlog
Commerce Project Status

• Have been recruiting to our ORI since before NRF in January
• First partner recruiting effort in London (March)
  • 50 attendees from 30 companies
  • Broad swath of the ecosystem
• Had some calendaring snafus (mine) and then during the groups.io organization
• CTO of Vitamin Shoppe has agreed to speak soon on IOT and in-store innovation challenges – open to use case consideration
• While starting small, already creating some important connections
Commerce Project Challenges

• Still trying to figure out how to corral our recruits effectively for regular meeting awareness
• Walking the fine line between promoting use cases that are too simple, vs too complex
• Clear ask around roles of participation
  • Chicken and Egg: participate when there is demand vs need participation to enable demand
Retail EdgeX Value Chain

Notes: create version with EdgeX stack diagram, indicating missing pieces and missing vendors that are required for a full solution.
London ORI materials

Posted at https://wiki.edgexfoundry.org/display/FA/Commerce+Project
Use Cases Underway

• Loss Prevention at Checkout (Intel)
• Computer Vision based Vending (Intel)
• New: Inventory Management (From CP)
• New: Airport multi-vendor integrations (From CP)
Technical Topics

- InfluxDB Ingestion Device Service
  - Take advantage of all the TIG stacks and mindshare
  - Proposed: Line Protocol device service
  - Simultaneously: I need to put some positioning together on EdgeX vs InfluxDB
    - For example: when do we coach to pass data first through EdgeX, or first through InfluxDB for performance reasons?
Technical Topics (part 2)

• Data Sharing / Message Bus enhancements:
  • Application vs Device, or Subscriber vs Publisher?
  • Permissioned Data Sharing
  • Tiered / Federated EdgeX instances
Technical Topics (part 3)

• Industry Standards Alignment
  • Ontology alignments
    • OMG / Retail
    • ACRIS
  • CNCF CloudEvents
OMG Retail

• Reached out in April to OMG Retail Team
  • OMG’s ethos is on semantics and ontologies
  • Former NRF ARTS standards are stagnating
  • But there is enthusiasm to co-work with EdgeX for standards work moving forward

• Coincidentally Doug Migliori reached Commerce Project from OMG Retail, among other

• Doug’s observations:
  • Many orgs, many schemas, need a framework to help scale speed using existing standards
  • Biggest problem are conflicting ontologies

• Led us to consider his proposal for cross-industry meta data and communications
Ontology vs Connectivity

• Basic premise:
  • We are growing the CP to encourage more device and app connectivity with EdgeX
    • (Certification will be an important attribute for co-marketing purposes)
  • Ontology and semantic definitions will be more critical than the basic connectivity
    • Data sharing without writing glue logic and translators for every conflicting definition of “temperature”
  • Need to deep dive on Core Metadata for scale onboarding of broader markets and application interactions
OBEDA™ in EdgeX Services for Cross-Industry Semantic Interoperability

Source: ControlBEAM
Consortia Object Class Comparison

<table>
<thead>
<tr>
<th>Vocabulary Term (English)</th>
<th>GS1 EDI</th>
<th>OMG Retail Ontology</th>
<th>Open Group O-DEF</th>
<th>Schema.org Ontology</th>
<th>ACRIS Ontology</th>
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Source: ControlBEAM
OBEDA in Infrastructure as a Service (IaaS)

Distributed Edge-to-Cloud Computing (M2M2B2B2C)

Proposed Open Standards

Source: ControlBEAM
Consuming and Producing Events through System Processes

Ontology-Based Business Process Modeling (BPM)
Ontology-Based System Modeling

At 10:59 on 10/25/17
the Status of Motor # fan6 is Failing

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Order

Source: ControlBEAM
Integrate Common Application Services in all nodes

Source: ControlBEAM
Utilizing Common Payload Formats within EdgeX Services

Simple queries that use same common format supporting complex queries

Common formats used by Core & Supporting Services (Logging, Messaging, Telemetry)

Events

“the CPU Usage of Device ID 2948... is 32”

“the Status of Process ID 4920... is Invoked”

“the Memory Usage of Device ID 8620... is 64”

Source: ControlBEAM

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Consortia Event Format Comparison

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<tr>
<th>CNCF CloudEvents</th>
<th>GS1 EPCIS</th>
<th>OCF</th>
<th>LWM2M</th>
<th>OBEDA BEAM</th>
<th>EdgeX Logging</th>
<th>EdgeX Telemetry</th>
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Table In Process...

Source: ControlBEAM
CNCF CloudEvents

• CNCF led project to ease data sharing among cloud service providers, and others
• Abstracts to a logical pub/sub + data structure
• Implementations and support available for HTTP, JSON, Webhooks, MQTT, NATS, AMQP
• Standard focuses on self-describing data structures for sharing events between domains
• Maps well to application services, device services
• Could flow deeper into architecture for simplification and consistency of data sharing within EdgeX
• Each cloud service participant will connect to the service hub as either a Retailer, Supplier or Carrier. All attendees will connect as Passengers.

• The listed shops on the attendee UI will be derived from connected Retailer nodes. Each Retailer offers small, medium, and large drinks. As a Passenger places an order for a drink, the originating order is represented by events are consumed by microservices distributed across the connected clouds.

• All produced events are displayed on the right panel - click on a row in the event panel will display the complete JSON-formatted CloudEvent content, which includes Schema.org semantic identifiers with concepts that align fairly well with the ACRIS semantic model. The "type" element comprises the "class", the "subject" element comprises the "object" (class instance), and the "data" element comprises attribute/value pairs.
Thank You – Q&A