Vertical Solutions Working Group

August 25, 2020

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Agenda

TIBCO Software Inc. will present how Project AIR leverages EdgeX Foundry Framework to enable a centralized access and management of IoT devices, efficient processing and storage of IoT derived data, and support for running analytics both at the edge and in the cloud.

Meeting recording & slides to be posted to:
https://wiki.edgexfoundry.org/display/FA/Vertical+Solutions+Working+Group
PROJECT AIR™
Intelligent insights from device to boardroom
Prepared TIBCO LABS™
August 2020
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TIBCO Unique Differentiators

TIBCO’s strong position and capabilities on Integration, Data Management, Analytics and Process Management

- Based on Connected Intelligence Platform
- Extensible template with no coding
- Anywhere & Everywhere

- 100+ Connectors
- Data Virtualization
- Any Data

- Correlate Business Data with Process Performance
- Predictive Models
What is TIBCO LABS™

- **Innovation program** available via the Office of the CTO to TIBCO customers and partners
  - Free!
- **Jointly discover** how new tech can be utilized within an organization.
  - Relevant use cases
  - Potential business value
- **Work together** on creating innovative solutions in areas such as blockchain, AI/ML, IoT, Cloud, and AR/VR.
  - POC, joint research, workshop, new technology showcases
  - Short cycles - fast results (2-8 weeks)
TIBCO LABS™: Continuous Innovation

Cloud Starters
Quickly build native cloud applications

Discover
Discover business processes from operational data

Cloud Conversations
Have a conversation with your enterprise data

Dovetail
Make blockchain smart contracts smarter

Auto ML for Data Science
Auto ML workflows for the generation of applications

AIR
Streamline IoT from the edge to the cloud

Journey (Q3 2020)
Engage with customers in new ways and exceed all expectations

ART
Augmented Reality (AR) with real time data for enterprise apps

GraphBuilder
Construct graph entities to leverage relationships in your data
TIBCO’s IoT Track Record - Mercedes’ Competitive Edge comes from its Data

Mercedes-AMG Petronas F1 Motorsport

Performance Optimization

Race Data
- Every car in every race
- GPS to the inch

Mercedes Car Data
- R&D testing

Analytics
- Engineering optimization
- Race analysis
- Race operations

How data analytics helped Lewis Hamilton win the Formula One drivers’ championship

ComputerWeekly.com

A Formula One car is an ‘Internet of things’ in itself!

Data from the Cars

Copolous amounts of data are captured from cars during R&D, and from 300+ sensors on each car during a race.

Visual Analytics + AI / Machine Learning + Simulation are used in car design, setup, operations and strategy.

During R&D on Gearbox, measurements are made in nanoseconds across gearbox metrics, assessed in milliseconds (15 ms to change gear).

- Brakes
- Tyres
- Fuel / Energy Storage
- Aerodynamics / Drag / Downforce
- Engine Temperature

In Formula 1 (F1) racing, a thousandth of a second can make the difference between qualifying or failing to qualify.

300 Sensors

2MB/s Peak Throughput

750 Billion Pieces of Data

15GB Unstructured Data per Car

35MB per Car per Lap
• Register and interact with IoT devices (gateways, edge devices, sensors, etc.).

• Process IoT derived data anywhere it is needed (at the edge, gateway, data center/cloud, etc.).

• Agnostic approach to select any cloud provider and edge device while leveraging open source technologies.

• Own, analyze and store IoT data as needed.

• Extensibility in every layer for easy integration with other platforms.
Project AIR™ Value Proposition

Resulting Business Outcomes

- Automation and cost savings
- Risk reduction and visibility
- Active customer engagement
- Improved workflow and automated commerce
Project AIR™ Capabilities

- Connect and extract IoT data for processing
- Data management
- Create triggers to respond to IoT events
- Feed into long term / Big Data repositories for historical analysis
- Visualize and explore IoT data
- Combine IoT data with AI/ML models
- Monitor, measure and react to IoT event via a customizable UX
- Ability to map various end points within the organization
Project AIR™ Features

**Infrastructure**
- Cloud Agnostic Deployment

**Technology Stack**
- Edge to Cloud Ecosystem
  - Edge
  - Cloud
    - Hardware
    - Microservices
    - Apps
    - Transport Protocols
    - Analytics
    - Compute
    - Data stores
    - Analytics

**Extension Points**
- System Pluggability
  - Edge
  - Data Endpoints
  - UI
  - Data Stores
    - Device adapters
    - Device services
    - App services

* = Runs on pre-existing Kubernetes cluster
Enterprise Use Cases Across Industries

**CONNECTED VEHICLES**
Automation of normal driving tasks to improve safety and reduce number of vehicles.

**TELEMETRY**
Deploy active fleet management systems to minimize risks associated with vehicle investment, improving efficiency and productivity while reducing costs.

**COMPLIANCE**
Use IoT data to gain analytical insights on your customers, internal operations and business processes so you can adjust as needed and comply with industry specific regulations.

**AUTOMATION**
Leverage sensors and cameras in combination with event/rule based engines to automate a sequence of steps in various business processes.

**LOGISTICS & SUPPLY CHAIN MGMT**

**AUTOMOTIVE**

**TRANSPORTATION & FLEET MGMT**

**TELECOM**

**MANUFACTURING**

**HEALTHCARE**

**RETAIL & CONSUMER GOODS**

**PREDICTIVE MAINTENANCE**
By leveraging sensors, cameras and analytics, smart factories can reduce failures by automatically creating maintenance timelines, improve strategic planning capabilities and capitalize on cost savings.

**SMART METERING**
Understand when and how many resources are consumed to achieve goal levels of energy efficiency and savings while reducing operational expenses by automating manual tasks.

**ASSET TRACKING**
Easily locate and monitor key assets to optimize logistics, maintain inventory levels, prevent quality issues and improve theft detection.
Project AIR™ Functional Components

- IoT data extraction
- Multi-end point connectivity
- Data streaming, consolidation and storage
- Trigger based event response
- Data Analytics
- Data enrichment with AI/ML models

IoT Devices

Project AIR™ UI

IoT Distributed Architecture
What does an **IoT Distributed Architecture** look like?

Benefits of leveraging Open Source technology

- Open platform unifying IoT edge computing
- Interoperable ecosystem with plug-and-play components
- Accelerate time to market for new data-based services by including new capabilities (AI, ML at the edge)
- Develop IoT edge solutions that can easily adapt to changing business needs
- Interoperability and compatibility
- Cost reduction through economies of scale
- Improve security and system management
- Collaborate with LF Edge and other relevant open source projects to ensure consistency and interoperability across the IoT

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https://docs.edgexfoundry.org/Ch-Intro.html#edgex-foundry-architectural-tenets
Thank you