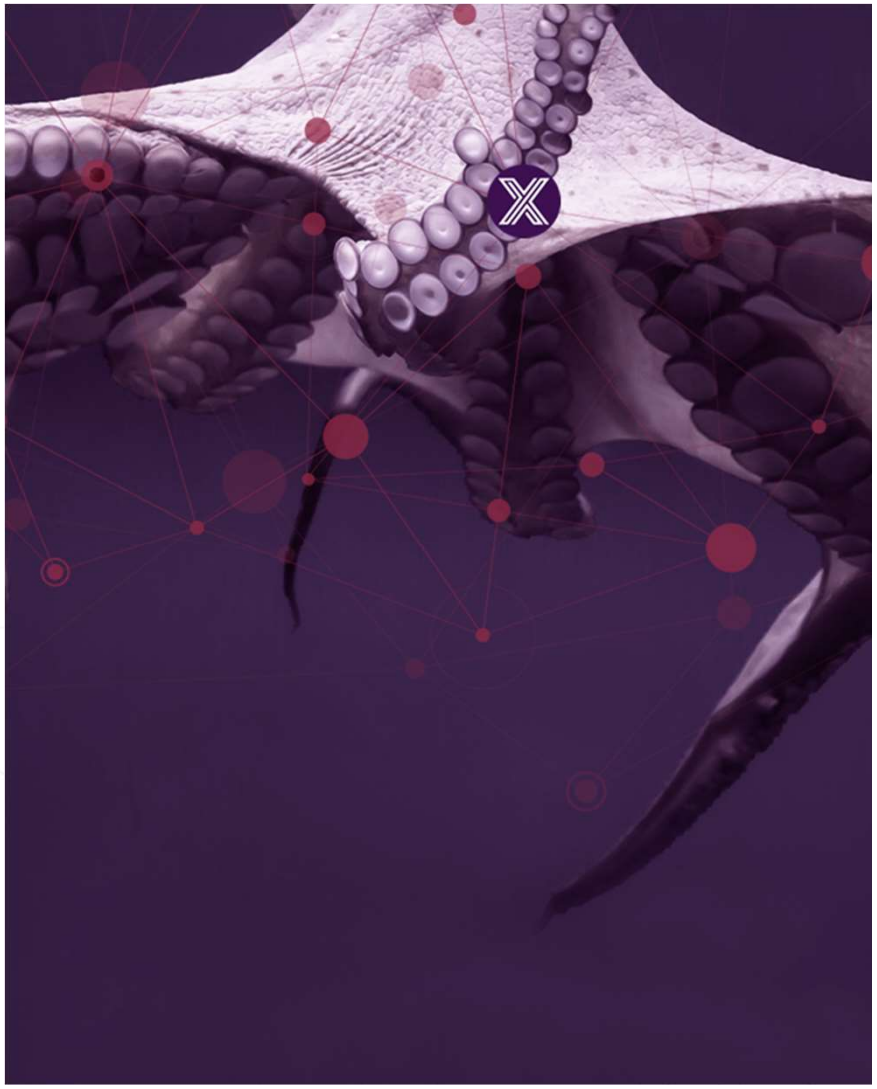
EDGE X FOUNDRY™

Vertical Solutions Working Group

August 25, 2020

TSC chair:
Jim White (IOTech) – jim@iotechsys.com

Working Group Co-chairs:
Camilo Dennis (Intel) – camilo.a.dennis@intel.com
Henry Lau (HP) – henry.lau@hp.com



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EDGE X FOUNDRY™

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

TIBCO®

PROJECT AIR™

Intelligent insights from device to boardroom

Prepared TIBCO LABS™

August 2020

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TIBCO®

TIBCO Unique Differentiators

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

OPEN ARCHITECTURE

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

DATA ACCESS & PREPARATION

- 100+ Connectors
- Data Virtualization
- Any Data

POINT & CLICK ANALYTICS

- Correlate Business Data with Process Performance
- Predictive Models

What is TIBCO LABS™

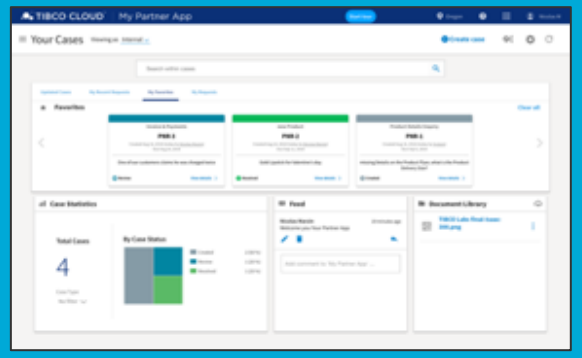
- **Innovation program** available via the Office of the CTO to TIBCO customers and partners
  - Free!
- **Jointly discover** how new tech can be utilized within an organization.
  - Relevant use cases
  - Potential business value
- **Work together** on creating innovative solutions in areas such as 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

Innovation by TIBCO LABS™

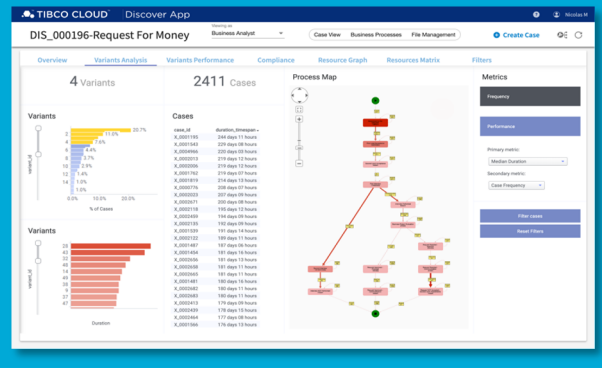
Cloud Starters

Quickly build native cloud applications



Discover

Discover business processes from operational data

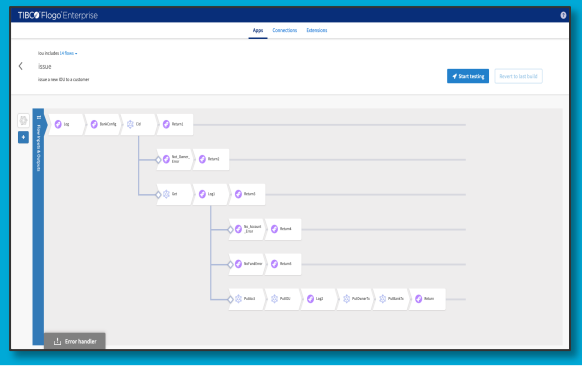


Cloud Conversations

Have a conversation with your enterprise data

Dovetail

Make blockchain smart contracts smarter



Auto ML for Data Science

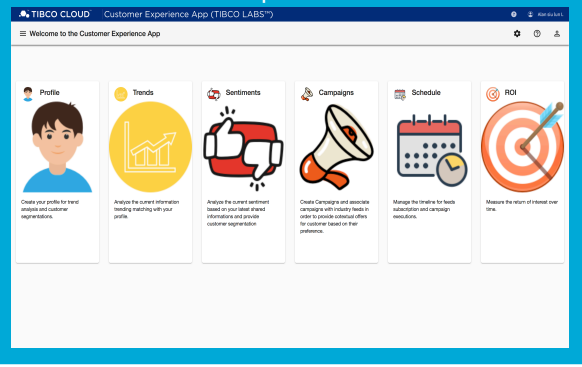
Auto ML workflows for the generation of applications

AIR

Streamline IoT from the edge to the cloud

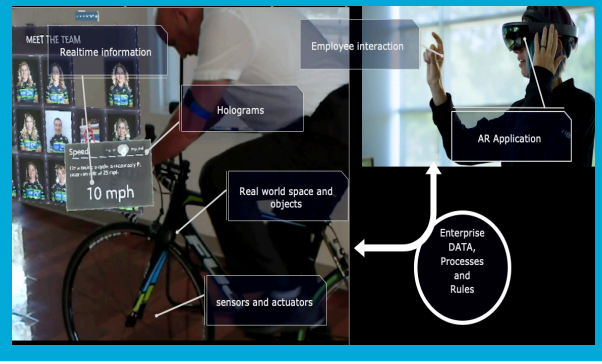
Journey (Q3 2020)

Engage with customers in new ways and exceed all expectations



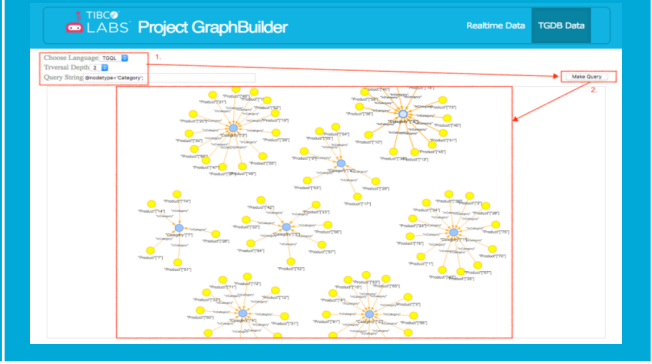
ART

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

1/9

Data from the Cars

Copious 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

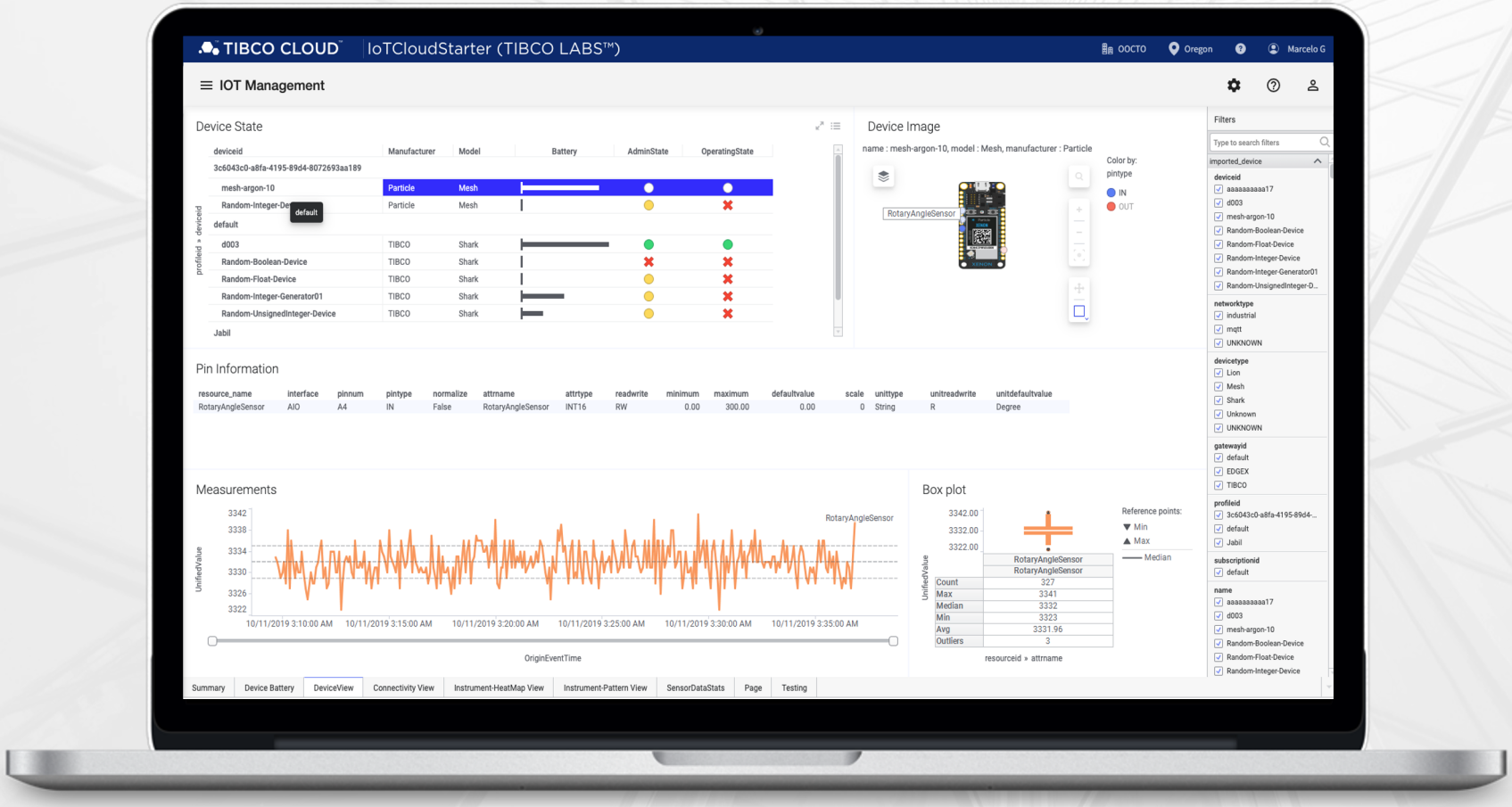
During R&D on Gearbox, measurements are made in nanoseconds across gearbox metrics, assessed in milliseconds (15 ms to change gear)

- 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.

TIBCO LABS™ Project AIR™

Intelligent insight from device to boardroom



Template that customers can take and extend

- **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.

Innovation by TIBCO LABS™

Project AIR™ Value Proposition

Register and Interact with IoT Devices + **Process IoT Data Regardless of Source**

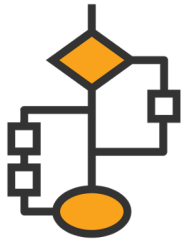
Resulting Business Outcomes

- **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

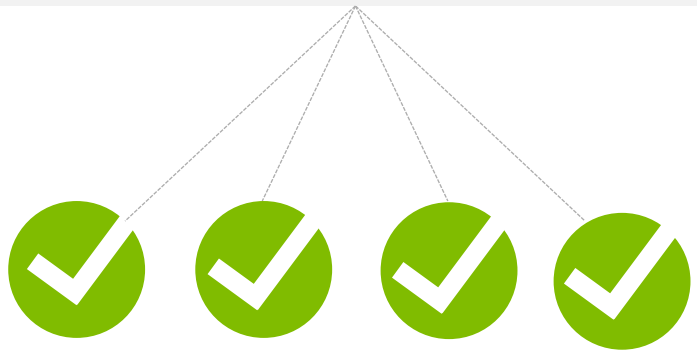
Monitor, measure and react to IoT event via a customizable UX

Ability to map various end points within the organization

Project AIR™ Features

Infrastructure

Cloud Agnostic Deployment

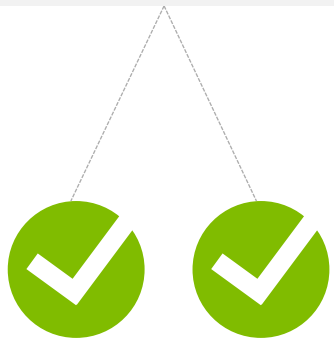


AWS Azure* GCP* On-Prem*

* = Runs on pre-existing Kubernetes cluster

Technology Stack

Edge to Cloud Ecosystem



Edge

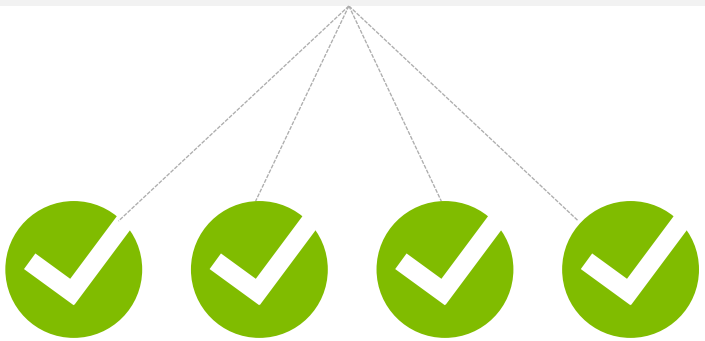
- Hardware
- Microservices
- Apps
- Transport Protocols

Cloud

- Microservices
- Compute
- Data stores
- Analytics

Extension Points

System Pluggability



Edge

- Device adapters
- Device services
- App services

Data Endpoints

UI

Data Stores

Enterprise Use Cases Across Industries

CONNECTED VEHICLES

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

TELEMETRY

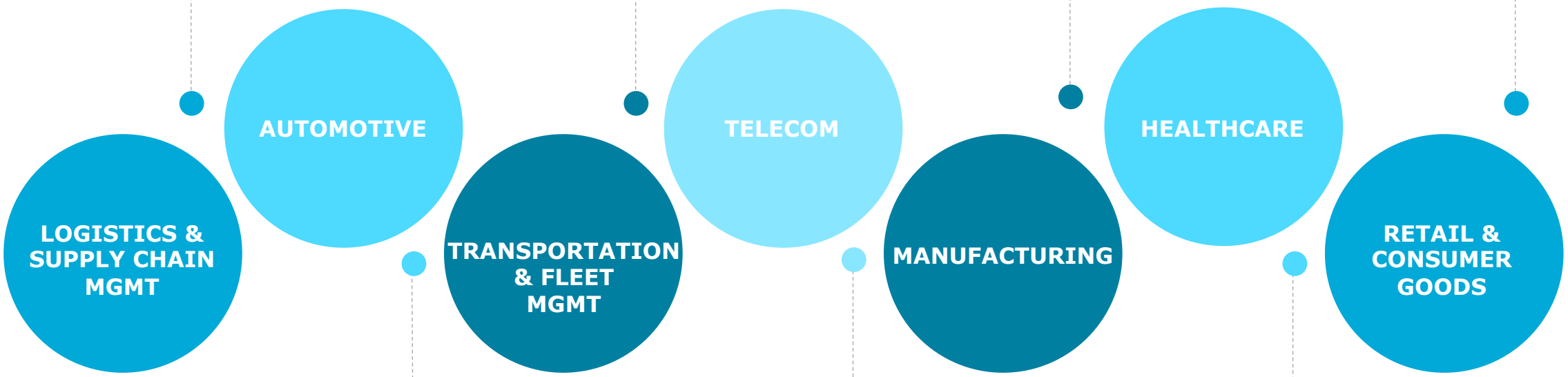
Deploy active fleet management systems to minimize risks associated with vehicle investment, improving efficiency and productivity while reducing costs.

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.



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.

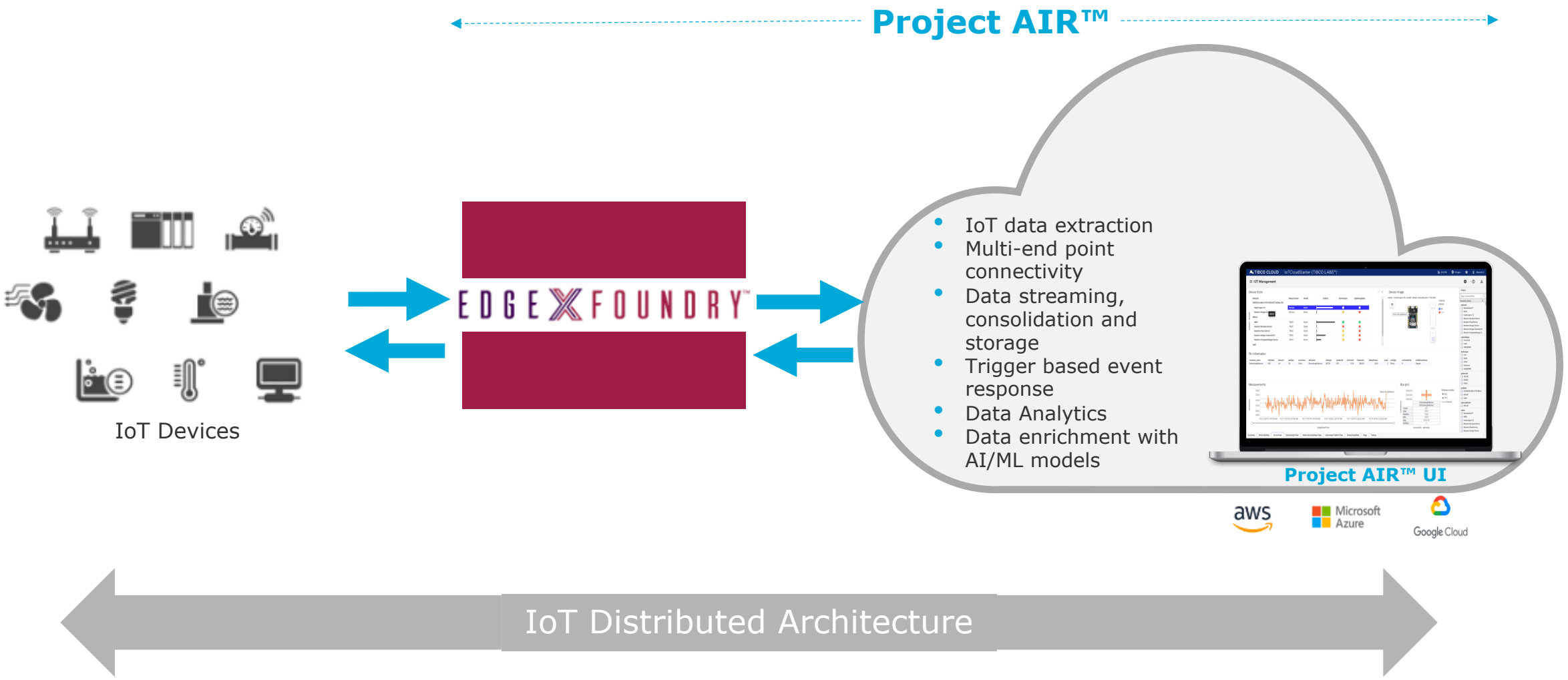
SMART METERING

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.

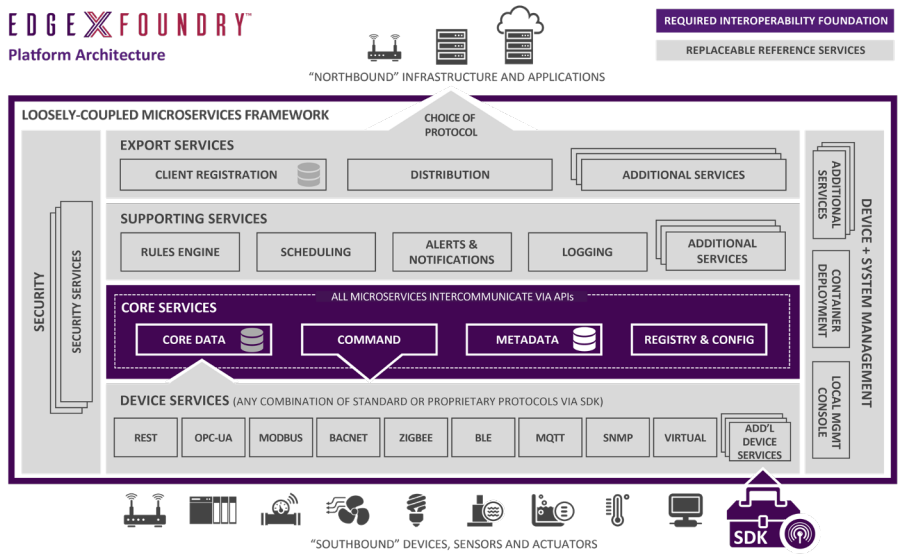
Project AIR™ Functional Components



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



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

Available Resources

TIBCO LABS™ page

https://www.tibco.com/tibco-labs

GitHub

https://github.com/TIBCOSoftware/labs-air/

TIBCO Community

https://community.tibco.com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Thank you
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