Improving Asset Tracking & Management with an IoT-enabled RFID Solution

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Introduction to ESI
Enterprise Sensor Integration
ESI is an intelligent IIoT Computing platform that connects IoT devices and data along with business processes and people across an enterprise to support IIoT ecosystem management, enhanced operational awareness, asset management, process automation, data analytics and business intelligence.
Key Capabilities

- **Sensor Agnostic Middleware**
  - Ability to interface with any type of sensor (RFID, GPS, motion, temp, shock, humidity, Mesh BLE, transponders, etc.)
  - Scales vertically and horizontally

- **Global Asset Track & Trace**
  - Map-centric digital twin
  - Position Location Information (PLI)
  - Calibration tracking & expiry dates

- **Workflow Ecosystems**
  - Auto inventory, auto replenishment,
  - Auto receiving, parts attrition
  - Work in Process (WIP) tracking
  - Composite freezer management
  - Asset security

- **Reports**
  - User, Calibration, Assets, Tag, Tools, FOD etc.
  - Customizable
  - On-demand and scheduled

- **Events Engine**
  - Triggers, events, actions
  - Alerts and notifications

- **Supports ERP, MRP & MES Integration**
  - Oracle, SAP, Solumina, etc.

- **Tapestry Device Management**
  - Data Collection – Billions of transactions daily
  - Device configurations and revisions
  - Filters data set at the Edge
Challenges & Opportunities
in an IoT-Rich Operational Environment
Challenges & Opportunities

Connecting your world with the Industrial Internet of Things (IIoT)

IIoT Ecosystems

- Optimize Time
- Reduce Cost
- Improve Velocity
- Improve Compliance

Challenge of Managing IIoT

RFIDJOURNAL VIRTUAL EVENTS
**Challenges & Opportunities**

Connecting your world with the Industrial Internet of Things (IIoT)

**IIoT Ecosystems**

- Connects critical data providers and edge sensors
- Introduces GPIO to the ecosystem allowing for autonomous self-healing actions
- Enables predictive troubleshooting
- Enables enhanced intelligence as a connected ecosystem

**Optimize Time**

**Reduce Cost**

**Improve Velocity**

**Improve Compliance**
Challenges & Opportunities

Connecting your world with the Industrial Internet of Things (IIoT)

IloT Ecosystems

- Optimize ________________Time
- Reduce Cost
- Improve Compliance

IIoT Ecosystems

- Asset track & trace
- Out of stock avoidance
- Mission Generation (AGE)
- Improve alignment of resources
- Inventory by exception

What Time

1. Manufacturing
2. Aircraft turn
3. Maintenance
4. Readiness
5. Supply Chain
6. Resource
7. Process
8. Inventory
9. asset availability
10. etc...

Challenge of Managing IIoT

- Reduce Cost
- Improve Velocity
- Improve Compliance
Challenges & Opportunities

Connecting your world with the Industrial Internet of Things (IIoT)

IIoT Ecosystems

- **Optimize Time**
- **Reduce Cost**

- Process automation
- Disruption management
- Increased accountability
- Supply chain automated ecosystem
- Time to locate assets, parts and tools
- Improved manpower utilization
- Improved workflow tracking

- **Improve Velocity**
- **Improve Compliance**
Challenges & Opportunities

Connecting your world with the Industrial Internet of Things (IIoT)

IIoT Ecosystems

- Optimize Time
- Reduce Cost
- Improve Velocity

- Process automation
- Increased accountability
- Supply chain optimizing ecosystem
- Disruption management
- Alerts and notifications
- Data accuracy
- Improved asset, part & tool visibility

Improve Compliance
Challenges & Opportunities

Connecting your World with The Industrial Internet of Things

IloT Ecosystems

- Optimize Time
- Reduce Cost
- Improve Velocity
- Improve Compliance

- Improve Metrology
  - Calibration due
  - Inspection date
- Reduce risk of out-of-compliance usage
  - Alerts & notifications
  - Map visual for each asset or tool
  - Time to locate assets, parts and tools

Challenge of Managing IoT
Challenges & Opportunities – What are yours???

IoT Ecosystem for Success: Key Enablers

Enterprise Vision + Funding + Intention = TRANSFORMATION

- **Corporate Sponsorship**
  (BoD, CEO, CFO, CTO, etc.)
- **Where do we want to be?**
  - Vision
  - Goals
  - Objectives
- **Where are we now?**
  - Assessment
  - Gap analysis

Develop a transformation road map to close the gaps
Let us help in achieving your goals & minimizing your challenges

Tell Us Your Challenges & Opportunities

List your top 5 - 10 Challenges & Opportunities

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Challenges & Opportunities

**DEFENSE**
- Cybersecurity
- IIoT Ecosystems
- Reduce Cost
- Accurate & Timely information
- Tool Management
- Resource utilization
- Improved Mission Generation
- Leveled maintenance
- Trust partnerships
- High performance
- Global scalability
- Technical debt
- IoT Security
- Velocity

**AEROSPACE**
- IIoT Ecosystems
- Turn Times
- Reduce Cost
- Accurate & Timely information
- Tool Management
- Resource utilization
- Trust partnerships
- High performance
- Global Scalability
- Infrastructure
- IoT Security
- Cybersecurity
- Increased velocity
- Supply Chain
Use Cases & IOT Ecosystems
In this vignette, the mechanic doing maintenance at the aircraft needs a tool to complete a repair, and initiates a tool request from his mobile device connected to the Wi-Fi or cellular service.

The request is pulled up in the ESI tool management module at the tool crib, where the crib worker pulls the tool, and provides it to the expediter.

The expediter, in turn, delivers the tool plane side where the mechanic verifies the tool, serial number and serviceability on his mobile device, and accepts custody of the tool.

The mechanics then complete the repair, and the aircraft backs away from the gate (or maintenance area) and returns to a revenue-generating status.

The mechanic returns the tool or conducts a mobile handoff of the tool to another authorized mechanic. Continuous accountability combined with enabled sensors can provide the last known electronically reported location to assist in FOD control.

This ecosystem reduces the turn times, cost, and enhances tool compliance traceability and accountability.
Use Case: Fleet Utilization at the Asset Level

The following is a textual description for the fleet utilization use case:

- The fleet utilization use case represents the movement across the operational space over time, based on a mission.

- In this example, we have selected a C-Duct Pump asset group. When looking at a collection of assets or an “Asset Group” you begin to notice the amount of history-based utilization.

- When you combine this with the deep local insights of a first line supervisor or maintenance supervisor, the digital twin becomes an opportunity for optimizing location of assets and maintenance leveling. Plus it helps determine the quantities of assets needed to accomplish the task across a site or the entire enterprise.

- This use case can be applied to vehicles, assets, and tools and more.
Use Case: Fleet Utilization – All Tracked Assets
Use Case: Fleet Utilization – Boom Lift, 60FT Propane
Use Case: Fleet Utilization – Past 5 Days Utilization History
Use Case: Fleet Utilization – For Specific Boom Lift, 60FT
Value Proposition

- Award-Winning
- Total Asset Visibility
- High Availability
- Scalability – Stream Processing
- High Performance
- Enterprise-Class
- Cloud-Enabled
- IoT Ecosystems
- Improved Cost Performance
- Edge Computing
- Improved Velocity
- Process Automation
- Centralized Infrastructure Management
- ERP, MRP & MES Integration
Why Are Ecosystems So Important?

- Promotes *momentum* gains across your operations & manufacturing footprint
- Defines current workflows enabling advance insights across organizational boundaries
- Takes advantage of your *deep local insights* to determine automation touchpoints to *increase velocity, drive down cost, and enable ramp-to-rate efficiencies*
- Identifies *triggers* to generate *events* that drive *actions*
- *Reduces cost, minimizes disruption* by creating integrations capable of increased efficiency, and optimization that is greater than the sum of its parts
Transforming Your Business

CHALLENGES
- Increasing Velocity
- Reducing Cost
- Resource Utilization
- Improving Compliance

PARADIGM SHIFT
- Infrastructure Improvements
- Process Automation
- **IoT Ecosystem Creation**
- Alerts & Notifications
- Automated Asset Track & Trace
- Inventory in Motion
- Improved Accountability

RESULTS
- **Improved data collection**
- Reduced manual intervention
- **Advanced control systems**
- Improved disruption response times
- Increased Velocity
- **Improved compliance**

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Thank you for attending our presentation!
The Boeing ESI Team

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THANK YOU