Maintenance Management Information eXchange Model (MMIXM)

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Aviation Information World – Forecasting the Future

What Is MMIXM?

MMIXM will be an FAA data standard to support the exchange of Operations & Maintenance information between NAS systems. The use of standardized maintenance data will increase data quality and availability between stakeholders, enabling operational benefits such as increased efficiencies and situational awareness.

MMIXM is developed in accordance with the standards and best practices of existing data models in use at the FAA.
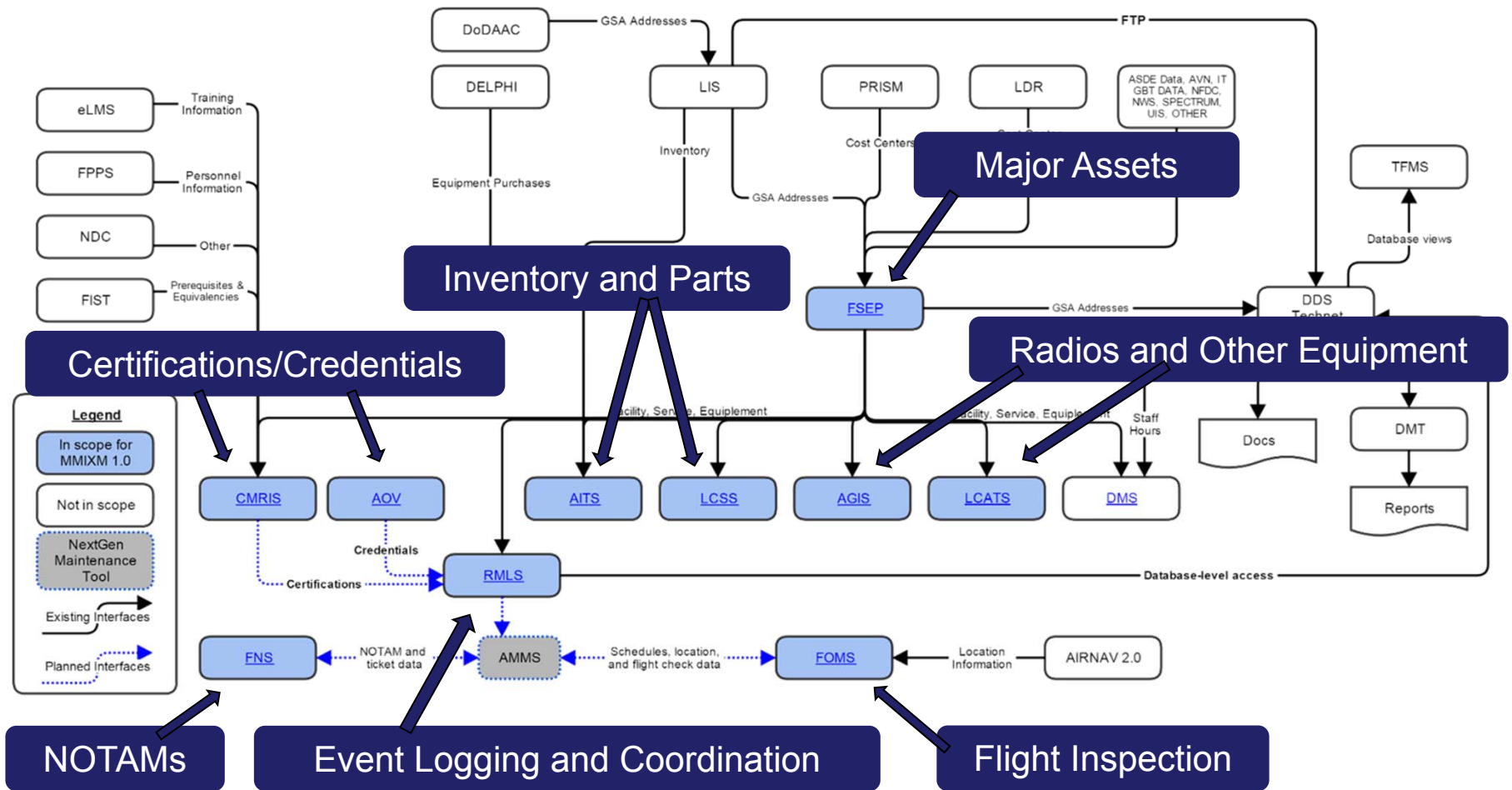
What Will MMIXM Do?

Improve quality of data exchange between existing systems and provide a foundation for a new generation of maintenance-related systems.

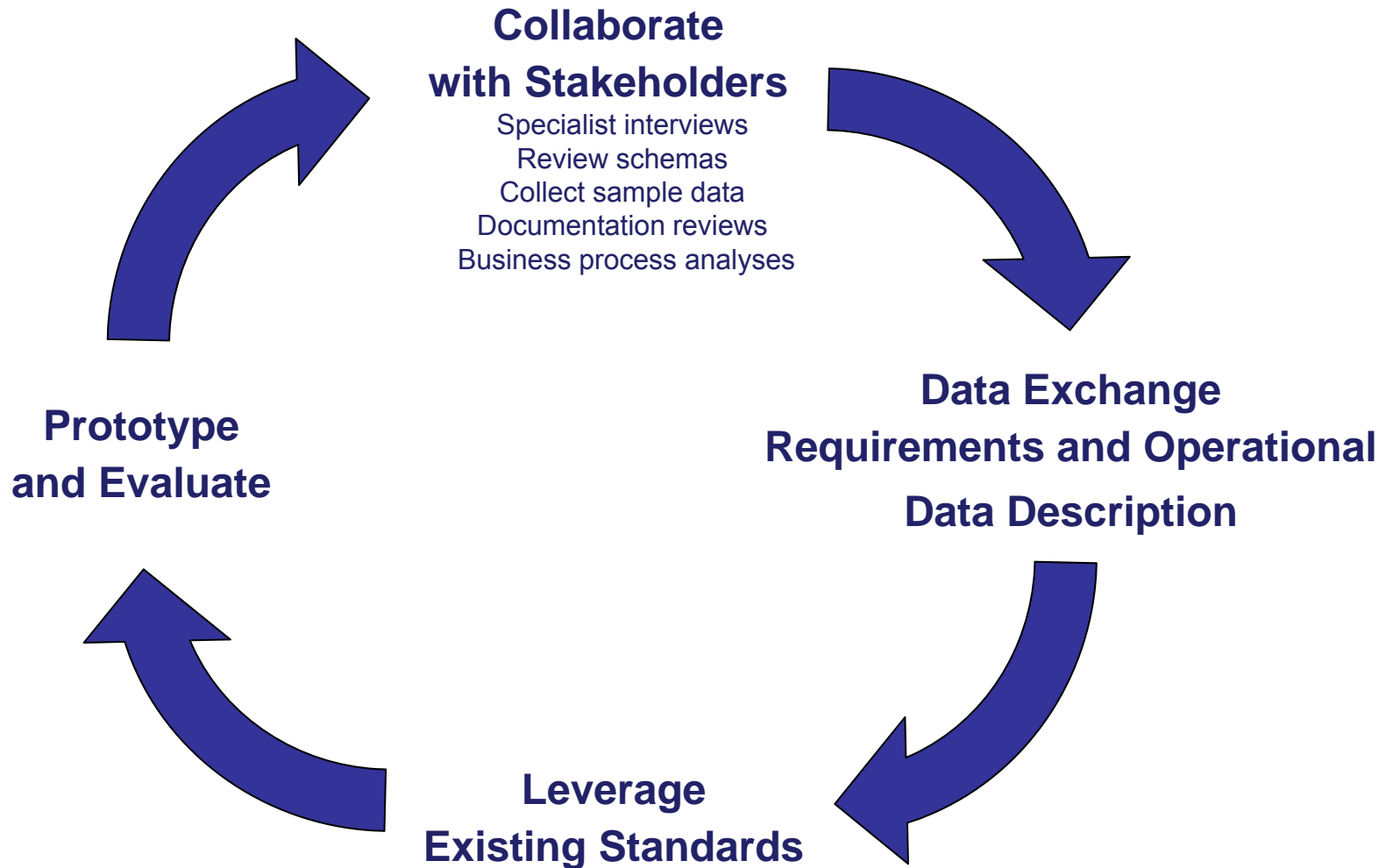MMIXM-enabled capabilities could include:

- Instant and accurate asset details
- Instantly view hierarchy of parts for any system, down to the lowest replaceable unit
- Automated coordination of maintenance activities and outages
- Instant access to all asset documentation
- Instant geo-mapping of outage information
- Automated identification of available ATSS personnel

MMIXM v1.0 Systems-of-Interest

Approach to Developing the MMIXM Standard

**Collaborate
with Stakeholders**
Specialist interviews
Review schemas
Collect sample data
Documentation reviews
Business process analyses

**Data Exchange
Requirements and Operational
Data Description**

**Leverage
Existing Standards**

**Prototype
and Evaluate**

Operational Data Description Process

MMIXM Conceptual Model

Process Flow Diagrams

Develop process flow diagrams from representative maintenance scenarios

Explicit identification of data exchange elements from automated or manual interfaces

Operational Data Description

Naming Conventions

Data Dictionary

Organizational Hierarchy

Existing Schemas

Bottom-up review of existing schemas of individual systems

Identify data elements based on general understanding of interactions between systems

MMIXM v1.0 Sample Process Flow
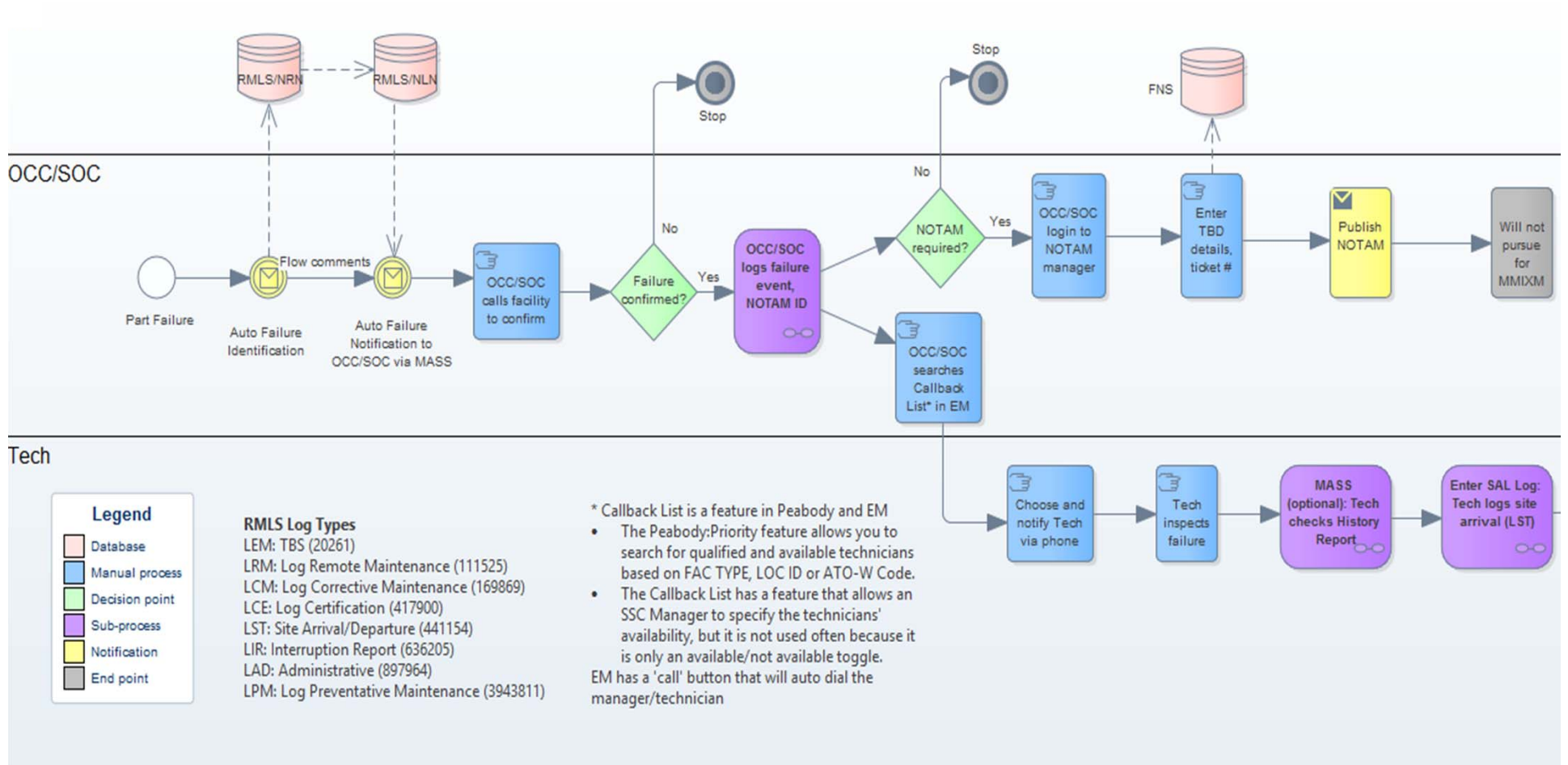
Part Failure Scenario – Initial Process

Leveraging External Standards

FOR:

- Harmonization
- Consistency
- COTS support
- Speed of development
- Don't reinvent the wheel
  – Mature/proven

AGAINST:

- Size
- Complexity
- Dependencies
- Not invented here
  – Instability
  – Low Adoption

Leveraging External Standards

- National Information Exchange Model (NIEM)
  - Core model has general concepts applicable to many domains
    - Address
    - Time
    - Location
    - Schedules
    - Associations

- MIMOSA
  - Open information standard for Operations and Maintenance

- AIXM and FIXM contain "shared" concepts with other exchange models
  - Shared concepts include:
    - Units of Measure
    - Navigation Equipment
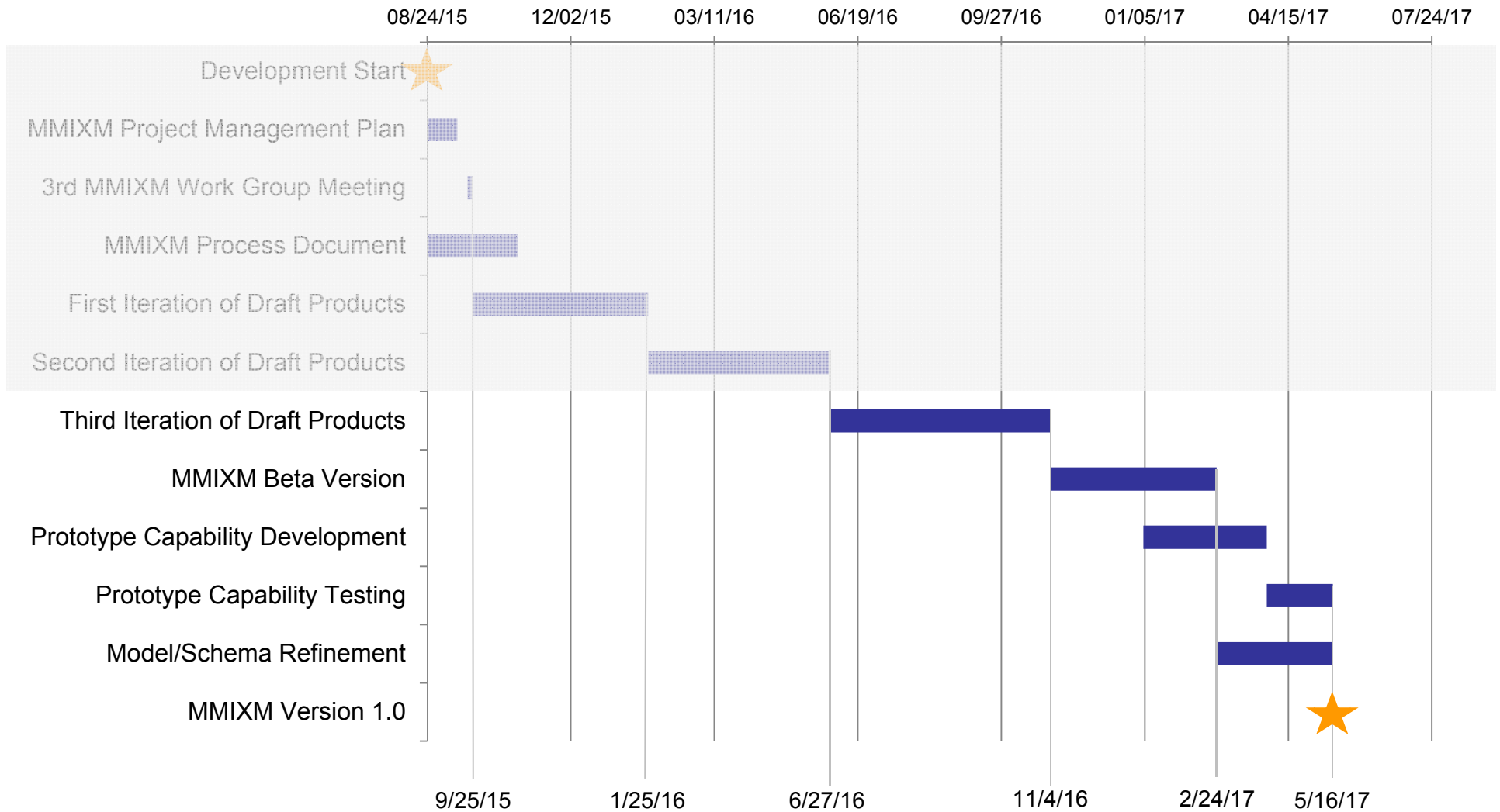   - Runway
    - Airport

Challenges

- Getting sufficient input and feedback from stakeholders
  - Input includes existing schemas, data exchange requirements, and sample data so that we can map their data to MMIXM and provide sample messages
  - The more feedback from stakeholders the better!

- Accommodating semantics from different FAA organizations
  - Developing a common language to support intercommunication

- Building a general standard that accommodates legacy FAA systems

Current Shortfalls

- Multiple methods for identifying assets
- Incomplete asset information is available in many systems, including part revision numbers
- Inconsistent location information for assets
- Performance reports lack standardization between organizations
- Difficult to identify available maintenance staff
- Imprecise and inconsistent data
- Field staff must manually transfer and cross-check data between various systems

- ***Bottom line: Field staff spends too much time on administrative chores due to limited automation and standardization***

MMIXM v1.0 Development Schedule

	08/24/15	12/02/15	03/11/16	06/19/16	09/27/16	01/05/17	04/15/17	07/24/17

Development Start

MMIXM Project Management Plan

3rd MMIXM Work Group Meeting

MMIXM Process Document

First Iteration of Draft Products

Second Iteration of Draft Products

Third Iteration of Draft Products

MMIXM Beta Version

Prototype Capability Development

Prototype Capability Testing

Model/Schema Refinement

MMIXM Version 1.0

9/25/15	1/25/16	6/27/16	11/4/16	2/24/17	5/16/17

Questions?