Maintenance Management

Information Exchange Model (MMIXM)

Primer

MMIXM Development Team

**Version 1.0.0**

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Prepared for:

**Federal Aviation Administration**

**NAS Integration Support Group, Operations Support**

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# Introduction

This document is intended to introduce FAA Maintenance stakeholders to the Maintenance Management Information Exchange Model (MMIXM), including context, scope, and current status of development. The target audiences for the MMIXM Primer are FAA Maintenance stakeholders that publish or consume maintenance data or intend to do that in the future.

This document will be updated as MMIXM evolves. The *Maintenance Management Information Exchange Model (MMIXM) Modeling Guidance* document is also included in version 1.0.0.

# Introduction to MMIXM

## What is MMIXM?

MMIXM is an information exchange model intended to capture the current and future data exchange requirements of FAA maintenance systems and stakeholders. MMIXM will be used to exchange information between systems within the FAA Operations & Maintenance (O&M) environment by leveraging concepts similar to those of the System Wide Information Management (SWIM) concept, i.e., harmonized data exchange between numerous disparate systems. An information exchange model is necessary to enable this integration and provide the architecture for data exchange between different systems.

## MMIXM Drivers

The FAA’s Technical Operations Services unit (AJW Tech Ops) is responsible for developing the definition, justification, and implementation of MMIXM as a NAS Maintenance data standard. The FAA is responsible for the maintenance of National Airspace System (NAS) facilities and equipment. This involves field technicians, certifications and training, asset management, resource allocation and planning, schedules, monitoring and logging activities. Numerous standalone systems and databases are used to manage these different facets of the FAA O&M environment. The coordination and data exchange between these systems is still largely a manual process. The development of MMIXM is driven by the desire within the FAA to integrate and streamline the way data is exchanged between these systems, using automation to assist stakeholders with coordination.

# MMIXM Release Candidate v1.0.0 Overview

## MMIXM Release Candidate v1.0.0 Resources

MMIXM v1.0.0 includes User/Schema Documentation, the Logical Model, and the Physical Model. The following summarizes the names and descriptions of the documentation:

* MMIXM User/Schema Documentation
  + Folder name: *Schema Documentation/*
* MMIXM Logical Model
  + Filename: Logical Model/MMIXM\_LogicalModel\_v1.0.0.eap
* MMIXM Physical Model
  + Folder name: *Schemas/*
* MMIXM Sample XML
  + Folder name: *Sample MMIXM Data/*
* MMIXM Source-to-Target Mappings
  + Folder name: *Other Documentation/Mapping Documents/*

Current dissemination of MMIXM status updates and deliverables are through email to identified FAA Maintenance System stakeholders. Stakeholders can also receive updates and explore the entire MMIXM model (including user-friendly HTML documentation) via the MMIXM website (<https://www.mmixm.aero/>). To be included in future MMIXM releases and/or outreach efforts, please contact MMIXM support at MMIXM-Support@dot.gov.

## MMIXM v1.0.0 Scope

MMIXM v1.0.0 focuses on a subset of NAS systems (listed in Appendix B) and their requirements. These requirements include the following concepts and types of information:

* Asset Information
* Asset Monitoring
* Qualifications (includes specifically Credentials and Certifications)
* Event Logging
* Reference Material

The full list of systems included for MMIXM v1.0.0 is found in [1]. Future versions of MMIXM will iteratively increase scope and include additional systems/concepts.

## MMIXM Release Candidate v1.0.0 Key Points

MMIXM remains in an early phase of development. During this time stakeholder review and feedback are necessary in order to progress the model and ensure all stakeholder data exchange requirements are addressed in future versions of the model. The following key points highlight the progress of the model and where it would be beneficial for stakeholders to focus their review:

* Asset Information
  + The model accounts for operationally deployed assets, along with inventoried assets, in the Asset package of the model. These include operational assets that are in the Facility, Service and Equipment Profile (FSEP) database, as well as assets managed by the Logistics Center Support System (LCSS) and Life Cycle Asset Tracking System (LCATS). Additional stakeholder engagement is needed to fully understand the data exchange requirements and ensure needs are addressed.
* Asset Monitoring
  + The Asset Monitoring package captures data exchange requirements for *Enterprise Service Monitoring* (ESM). It also incorporated the message structures for status monitoring of various FAA SWIM Services.
* Qualifications
  + The Qualifications package captures the data exchange requirements for the integration of CMRIS-CTS, Air Traffic Safety Oversight Service (AOV), and Remote Monitoring and Logging System (RMLS) information.
* Event Logging
  + The RMLS system contains logging information required for other systems and expected to be exchanged in the future. The EventCoordination package considers the exchange of RMLS logging information. Currently the model only includes base RMLS information; additional understanding of the requirements and what consumers need is required.
* Reference Material
  + The model currently supports the exchange of reference material associated mostly with assets. Information exchanged includes author, date, and electronic location of reference material.

Please refer to Appendix A to understand which MMIXM packages are relevant to the various in-scope FAA maintenance systems.

# Future Versions of MMIXM

The MMIXM Conceptual Model highlights the scope and breadth of future MMIXM development. Appendix B identifies the FAA Maintenance Systems that are addressed in MMIXM v1.0.0.

# References

[1] Maintenance Management Information Exchange Model (MMIXM) Data Model Description Document. (v1.0.0) – 1 September 2017

# Appendix A: MMIXM Packages

|  |  |
| --- | --- |
| ***Logical Model Package*** | ***Legacy FAA System*** |
| Asset | General asset management. Will be extensible to other FAA enterprise asset management systems in future iterations. Currently focused around FSEP, RMLS, AMS and LCSS (to limited extent) requirements. |
| AssetMonitoring | Focused on Enterprise Service Monitoring (ESM). |
| EventCoordination | Specifically focused on RMLS-NLN. |
| Qualifications | Focused on CMRIS-CTS, AOV, and RMLS integration. |
| ReferenceMaterial | General reference material (primarily for assets). |

# Appendix B: MMIXM v1.0.0 In-Scope Systems

|  |  |
| --- | --- |
| ***Systems to be included in MMIXM v1.0 (some systems may be limited in scope)*** | ***Description*** |
| Facility Service Equipment Profile (FSEP) | The inventory of assets that the FAA owns, maintains, certifies, inspects and coordinates. |
| Remote Monitoring and Logging System National Logging Network (RMLS NLN) | Collects, retrieves and reports information pertaining to maintenance related events. |
| Air Traffic Safety Oversight Service (AOV) | Establishes safety standards and provides independent oversight of the Air Traffic Organization, including management of technician credentials. |
| Automated Inventory Tracking System (AITS) | System of record for personal property and project material asset management across the FAA. |
| Comprehensive Management Resource Information System (CMRIS) | Manages the official records for FAA personnel certifications. MMIXM will focus on technician certifications that are provided by the Certification Tracking System (CTS) module. |
| Logistics Center Support System (LCSS) | LCSS is a non-NAS IT procurement to re-engineer and automate the FAA's logistics management processes. |
| Life Cycle Asset Tracking System (LCATS) | Customized bar coding scanning software system which allow vendors and technicians to provide equipment information through a handheld device. |
| Federal NOTAM System (FNS) | NOTAM management system designed to digitize the collection, dissemination, and storage of NOTAMs. |
| Enterprise Service Monitoring (ESM) | Monitoring and control functions for managing failure modes, service degradation, service level agreements, and quality of service. |