Building Information Management and Modeling (BIM) & Facility Electronic Operations and Maintenance Support Information (eOMSI) Training

October 2015
1. NAVFAC Phased BIM Implementation Plan

2. eOMSI Facility Data Workbook (FDW)

3. eOMSI/OMSI Specifications Package

4. FC 1-300-09N BIM Requirements
Phased BIM Implementation Plan

• BIM is a process that generates, collects and maintains data throughout the lifecycle of a facility

• NAVFAC’s BIM process began looking at software; but this was not THE solution

• Realizing software was not the answer, we began to look at facility lifecycle data requirements across the command
Phased BIM Implementation Plan

Top Level Life Cycle Process Map

- Create end to end process map
- Establish current data exchange points to include:
  - Applications
  - Hand offs
  - Data entry
  - Storage
Phased BIM Implementation Plan

• We found that, during design and construction, Capital Improvements generated +90% of facility data to support Public Works’ facility lifecycle maintenance mission.

• As a result of facility data mapping, NAVFAC’s BIM evolved into a collaboration between Capital Improvements and Public Works Business Lines.

• This led to the development of our BIM Definition and BIM Goal.
Phased BIM Implementation Plan

BIM Definition:

• To develop a comprehensive strategy for collecting, managing, and sharing required data / information to accurately support facility life cycle from early planning to building disposal

BIM Goals:

• **Standardize** data processes and data format for facility life cycle sustainment
• Data entered once, used repeatedly, used consistently and maintained current
Phased BIM Implementation Plan

What BIM is for NAVFAC:

• **eOMSI Data Deliverables** for facility life cycle sustainment, restoration and modernization (SRM)

• Part I: eOMSI Manuals:
  1) Product and Drawing Information
  2) Facility Information

• Part II: eOMSI Facility Data Workbook (FDW)
Phased BIM Implementation Plan

What BIM is **Not** for NAVFAC:

- A specific software solution e.g. REVIT, Bentley, etc.
- NAVFAC will not require industry to purchase specific software, BIM solution is vendor neutral for parametric modeling
- A modeling solution
Policy:


Purpose:

Provide overall NAVFAC policy and guidance on implementation of Building Information Management and Modeling (BIM) deliverables, roles, and responsibilities
Phased BIM Implementation Plan

Applicability (ECB 2014-01):

Applies at all Navy Installations, Joint Bases, Department of Defense (DoD) Agencies, or Field Activities where NAVFAC PW is the maintenance provider of the facility that meet the following requirements:

1) New construction greater than or equal to $1M
2) Major renovation greater than or equal to 50% of the Plant Replacement Value or greater than or equal to $3M
3) In-House Design Bid Build (DBB) teams presently not required to use BIM due to limited network capacity and capability

Design-Build (DB) projects require BIM & eOMSI
A/E Design-Bid-Build (DBB) projects require BIM & eOMSI
IH Design-Bid-Build (DBB) require eOMSI only
Phased BIM Implementation Plan

NAVFAC eOMSI:

eOMSI Spec 01 78 24.00 20

OMSI Spec 01 78 23

eOMSI Facility Data Workbook (FDW)
eOMSI Manuals
3D Parametric Modeling Becomes Effective FY16

1. **eOMSI Facility Data Workbook (FDW)** - Excel workbook which contains the Model & Facility Data Matrix (used to define Mastersystems, Systems and Subsystems included in the Model and associated Level of Detail (LOD))

2. **BIM Project Execution Plan (PxP)** – A quality control document for Design-Build projects completed by the DOR that identifies BIM objectives, goals, & modeling applications.

3. **Facilities Criteria (FC) 1-300-09N NAVY AND MARINE CORPS DESIGN PROCEDURES** – It contains definitions, minimum modeling requirements, submittals, & reviews for the DOR to follow during design of 3D parametric models. The **FC 1-300-09N** will be referenced in the Design-Build Request for Proposals (RFP)
Phased BIM Implementation Plan

NAVFAC BIM:

- eOMSI FDW (DOR, KTR & FMD/FMS)
- BIM PxP (DOR)
- FC 1-300-09N (DOR)
Cost of eOMSI & BIM Deliverables

• The implementation of eOMSI & BIM deliverables will not increase the cost of doing business with NAVFAC:

  • A majority of A/E firms and construction contractors utilize parametric modeling (since 2005); by NAVFAC implementing this technology it improves efficiencies between Gov’t & industry

  • By formalizing 3D parametric modeling & facility data requirements, NAVFAC standardizes electronic deliverables across the command for industry to incorporate

• Electronic Deliverables:
  • eOMSI Manuals – Current requirement, no cost impact
  • eOMSI Facility Data Workbook – Existing data KTR currently provides Gov’t in a new format (spreadsheet), no cost impact
  • 3D parametric model - Industry standard, now a standard NAVFAC Gov’t requirement, no cost impact
NAVFAC BIM/eOMSI page is a WORK IN PROGRESS. It is located at the Whole Building Design Guide http://www.wbdg.org/bim/navfac_bim.php

Refer to this page for updates to our program
1. …This revision enables better life cycle management and reduced total ownership costs of our facilities by improving the transition of facilities from CI to PW in the field. …The eOMSI Spec and FDW continue to be revised as we receive feedback from the field to improve our eOMSI/ Building Information Management & Modeling (BIM) process.

2. …The purpose of this letter is to emphasize the importance of continued cooperation between CI and PW in the field to enforce this specification and utilize the information during the design, construction, operations, and maintenance of our facilities; specifically inputting inventory data into Maximo. Inventory and data management in MAXIMO should not be considered as a new requirement.

3. …Please ensure your command's full support for this training and use of this improved eOMSI specification. We need to properly enforce eOMSI on our contracts, thoroughly review and accept the deliverables, and most importantly utilize the information effectively by incorporating inventory data into MAXIMO to support ongoing life cycle management.
You may start hearing “BIM” or “BIMM”

NAVFAC BIM page: http://www.wbdg.org/bim/navfac_bim.php

Building Information Management and Modeling
(Building Information Management/Modeling)

Pronunciation: /bɪm/

1. (Industry Process, Acronym) A BIM is a shared knowledge resource for information about a facility forming a reliable basis for decisions during its life-cycle; defined as existing from earliest conception to demolition.

“What Analogous to GIS, it is a facility level information system.”

What does BIM have to do with eOMSI and PW?

Everything & Nothing

Starting FY16, CI will begin to utilize BIM to model new projects and BIM will generate eOMSI data.

For the foreseeable future
PW will not utilize the BIM model, only the data.
What is eOMSI?

Electronic Operation and Maintenance Support Information: Contractor provided facility asset information that helps the Facility User and PWD Staff effectively Operate, Maintain and Repair a Facility.
eOMSI Concept

Collaboration between PW and CI

- Minimal amount of effort during design phase
- Establishes contact between Public Works (PW) and Capital Improvements (CI)

Encourages Feedback

- Gives PW a voice in the design process to provide lessons learned and feedback to CI

Consistent Data

- Provides consistent verifiable data
Data provided by the contractor during construction:

- From facility information in design drawings and construction submittals
- From data gathered during field verification

Provides information for the facility user and the Public Works staff to maintain and operate the facility

eOMSI is process that connects CI and PW data streams. Standardization of this information will:

- reduce duplicated efforts
- increase the accuracy and completeness of information
- reduce the total cost of ownership
New assets will be created in bulk. Time consuming manual entry not required.

Current State vs Future State

- How are we currently loading assets?
  - Manually, one at a time as necessary
    - Labor intensive
    - Higher opportunity for error
- How will eOMSI make things better for PWD?
  - Ensures that FMD/FMS is involved from the beginning.
    - Enables maintenance feedback to CI
    - Strengthens communication
  - Ensures all assets are ID’ed and properly uploaded
Principal eOMSI Elements

**eOMSI**

- **eOMSI Manual**
  - Detailed document containing product and drawing information and facility information

- **eOMSI Facility Data Workbook**
  - Excel workbook inventory list of assets with required data fields. File will be converted to a flat file and uploaded to Maximo to create the new assets
Product & Drawing Information
- Operation and Maintenance Data
- Record Drawings
- Utility Record Drawings

Facility Information
- General Facility & System Description
- Basis of Design
- Floor Plans
- Floor Coverings, Wall & Ceiling Surfaces
- Windows
- Roofing
- HVAC Filters
- Plumbing Fixtures
- Lighting Fixtures
- Equipment Listing
- System Flow Diagrams
- Valve List
- Riser Diagrams
- DOR will select the Mastersystem, System and Subsystem data records during Design Phase
- Construction Contractor (KTR) will complete the records with the assistance of the government
What is eOMSI FDW?

• Excel Spreadsheet
• Identifies Mastersystems, Systems and Subsystems of a Project
• Lists all Installed Assets for Facility
• Easy To Use = YES
  • If you can use Excel you can use the FDW
• Living Project Document
  • Never break up the tabs
  • Updated throughout the life of the Project from Design through BOD
Available on Whole Building Design Guide
http://www.wbdg.org/bim/navfac_bim.php

• Section 1 – Instructions Tab
  • Worksheet Overview

• Section 2 – Model & Facility Data Matrix Tab
  • Completed by the DOR

• Section 3 – Required Facility Asset Fields Tab
  • Maximum of 17 data fields per subsystem

• Section 4 – KTR Sample Facility Data File Tab

• Section 5 – KTR Facility Data File Tab
Tab 1
Instructions

Tab 2
Model & Facility Data Matrix (DOR)

Tab 3
Required Facility Asset Fields

Tab 4
KTR Sample Facility Data File

Tab 5
KTR Facility Data File (KTR)
General Workflow

• Design Phase:
  • Model & Facility Data Matrix Tab:
    • DOR defines Mastersystems and Systems
    • DOR (with FMD assistance) refines the Matrix by identifying the Mastersystems, Systems, Subsystems throughout Design Phase

• Construction Phase:
  • KTR Facility Data File Tab:
    • KTR populates as equipment is installed & facility is built
    • FMD Reviews eOMSI FDW and with CI CM field verifies a sample list of Mastersystems, Systems, & Subsystems
• Layout Mimics Workflow
• Notes (Letters) and Keys (Numbers)
Model & Facility Data Matrix Tab

• Matrix Components

• How to Use the Matrix
  • Selecting Mastersystems, Systems and Subsystems
  • Filtering out Unused Systems

• Who Is Responsible for the Matrix
  • DOR maintains the Matrix; coordinated with FMD/FMS

• What is the Matrix Used For?
  • 1st step in defining eOMSI MAXIMO data
  • Q/C check of design elements
  • Specification cross check
A10 – D50 Typical Mastersystems for Navy MCON (<5’), Major Renovation, or Facility Systems Replacement

<table>
<thead>
<tr>
<th>Description</th>
<th>Listname</th>
<th>UOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>A10 - FOUNDATIONS</td>
<td>MASTERSYSTEM</td>
<td>SF</td>
</tr>
<tr>
<td>A20 - BASEMENT CONSTRUCTION</td>
<td>MASTERSYSTEM</td>
<td>SF</td>
</tr>
<tr>
<td>B10 - SUPERSTRUCTURE</td>
<td>MASTERSYSTEM</td>
<td>SF</td>
</tr>
<tr>
<td>B20 - EXTERIOR ENCLOSURE</td>
<td>MASTERSYSTEM</td>
<td>SF</td>
</tr>
<tr>
<td>B30 - ROOFING</td>
<td>MASTERSYSTEM</td>
<td>SF</td>
</tr>
<tr>
<td>C10 - INTERIOR CONSTRUCTION</td>
<td>MASTERSYSTEM</td>
<td>SF</td>
</tr>
<tr>
<td>C20 - STAIRS</td>
<td>MASTERSYSTEM</td>
<td>RISER</td>
</tr>
<tr>
<td>C30 - INTERIOR FINISHES</td>
<td>MASTERSYSTEM</td>
<td>SF</td>
</tr>
<tr>
<td>D10 - CONVEYING</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
<tr>
<td>D20 - PLUMBING</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
<tr>
<td>D30 - HVAC</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
<tr>
<td>D40 - FIRE PROTECTION</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
<tr>
<td>D50 - ELECTRICAL</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
</tbody>
</table>
### J10 – Q10 Typical Mastersystems for Utilities Project

<table>
<thead>
<tr>
<th>Description</th>
<th>Listname</th>
<th>UOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>J10 - Electric Utilities</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
<tr>
<td>K10 - Potable Water Utilities</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
<tr>
<td>K20 - Non-Potable Water Utilities</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
<tr>
<td>K30 - Fire Protection Water Utilities</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
<tr>
<td>K40 - Salt Water Utilities</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
<tr>
<td>L10 - Steam Utilities</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
<tr>
<td>L20 - High Temp Hot Water Utilities</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
<tr>
<td>L30 - Domestic Hot Water Utilities</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
<tr>
<td>L40 - Chilled Water Utilities</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
<tr>
<td>M10 - Sanitary Sewer Utilities</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
<tr>
<td>M20 - Industrial Wastewater Utilities</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
<tr>
<td>M30 - Oily Wastewater Utilities</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
<tr>
<td>M40 - Storm Water Utilities</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
<tr>
<td>N10 - Natural Gas Utilities</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
<tr>
<td>N20 - Propane Utilities</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
<tr>
<td>P10 - Compressed Air Utilities</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
<tr>
<td>Q10 - Multiple Commodity Utilities</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
</tbody>
</table>
Required Asset Fields Tab

• Third Tab of eOMSI FDW
• Provides an explanation of each Asset Field
• Informative Only, nothing to edit

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
<th>Responsible Party</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AssetNum</td>
<td>KTR</td>
<td>Asset identification used by the KTR to uniquely identify assets or equipment (e.g. FAN001, AHU003)</td>
</tr>
<tr>
<td>2</td>
<td>Description</td>
<td>KTR</td>
<td>Primary Asset Name (100 Character Limit)</td>
</tr>
<tr>
<td>3</td>
<td>Long Description</td>
<td>KTR</td>
<td>Additional Relevant Information (e.g. size, capacity, limits, etc...) (1000 Character Limit)</td>
</tr>
<tr>
<td>4</td>
<td>MASTERSYSTEM</td>
<td>DOR</td>
<td>Reference values from Model &amp; Facility Data Matrix tab (MASTERSYSTEM)</td>
</tr>
<tr>
<td>5</td>
<td>SYSTEM</td>
<td>DOR</td>
<td>Reference values from Model &amp; Facility Data Matrix tab (SYSTEM)</td>
</tr>
<tr>
<td>6</td>
<td>SUBSYSTEM</td>
<td>DOR</td>
<td>Reference values from Model &amp; Facility Data Matrix tab (SUBSYSTEM)</td>
</tr>
<tr>
<td>7</td>
<td>Building Number</td>
<td>GVT</td>
<td>Current Building # in MAXIMO for renovation work. Will be provided by GVT for new construction</td>
</tr>
<tr>
<td>8</td>
<td>Asset Quantity</td>
<td>KTR</td>
<td>Quantity in correct unit of measure as defined in UOM field of the Model &amp; Facility Data Matrix</td>
</tr>
<tr>
<td>9</td>
<td>Replacement Cost</td>
<td>KTR</td>
<td>Installed cost (material and labor)</td>
</tr>
<tr>
<td>10</td>
<td>Contract Number</td>
<td>GVT</td>
<td>Provided by GVT</td>
</tr>
<tr>
<td>11</td>
<td>Task/Delivery Order Number</td>
<td>GVT</td>
<td>Provided by GVT</td>
</tr>
<tr>
<td>12</td>
<td>Warranty Expiration Date</td>
<td>KTR</td>
<td>MM/DD/YYYY</td>
</tr>
<tr>
<td>13</td>
<td>Installation Date</td>
<td>KTR</td>
<td>MM/DD/YYYY</td>
</tr>
<tr>
<td>14</td>
<td>Room Number</td>
<td>KTR</td>
<td>Room Number of installed equipment</td>
</tr>
<tr>
<td>15</td>
<td>Manufacturer</td>
<td>KTR</td>
<td>Manufacturer name of installed equipment</td>
</tr>
<tr>
<td>16</td>
<td>Model</td>
<td>KTR</td>
<td>Model number of installed equipment</td>
</tr>
<tr>
<td>17</td>
<td>Serial #</td>
<td>KTR</td>
<td>Serial number of installed equipment</td>
</tr>
</tbody>
</table>
Sample KTR Facility Data File Tab

- Fourth Tab of eOMSI FDW
- Provides KTR with an example
- Informative Only, nothing to edit

<table>
<thead>
<tr>
<th>Position</th>
<th>Asset Name</th>
<th>Description</th>
<th>Long Description</th>
<th>Reference System</th>
<th>Reference Values from Model &amp; Facility Data Matrix (tab)</th>
<th>Current Building or Measure for renovation work, will be provided by GVT for new construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>030-000</td>
<td>FOUNDATION WALL FOOTINGS</td>
<td>FOUNDATION WALL FOOTINGS</td>
<td>FOUNDATION WALL FOOTINGS</td>
<td>AM - FOUNDATIONS</td>
<td>AM-80 - FOUNDATIONS</td>
<td>AM-80 - FOUNDATIONS</td>
</tr>
<tr>
<td>030-001</td>
<td>FOUNDATION</td>
<td>FOUNDATION</td>
<td>FOUNDATION</td>
<td>AM - FOUNDATIONS</td>
<td>AM-80 - FOUNDATIONS</td>
<td>AM-80 - FOUNDATIONS</td>
</tr>
<tr>
<td>030-002</td>
<td>ROOF</td>
<td>ROOF</td>
<td>ROOF</td>
<td>AM - FOUNDATIONS</td>
<td>AM-80 - FOUNDATIONS</td>
<td>AM-80 - FOUNDATIONS</td>
</tr>
</tbody>
</table>

Sample KTR FACILITY DATA FILE

Each facility component or piece of equipment will be a new row. Refer to Model & Facility Data Matrix for guidance on which fields are applicable to specific components & equipment.
### KTR Facility Data File Tab

- **Fifth Tab of eOMSI FDW**
- **KTR completes FDW based on Mastersystems, Systems & Subsystems selected by DOR**
- **Final FDW is modified by DPW FMS into a flat file for MAXIMO upload**

<table>
<thead>
<tr>
<th>Position</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>AssetNum</td>
<td>Description</td>
<td>Long Description</td>
<td>MASTERSYSTEM</td>
<td>SYSTEM</td>
<td>SUBSYSTEM</td>
<td>Building Number</td>
<td>Asset Quantity</td>
<td>Replacement Cost</td>
<td>Contract Number</td>
<td>Task/Delivery Order Number</td>
<td>Warranty Expiration Date</td>
<td>Installation Date</td>
<td>Room Number</td>
<td>Manufacturer</td>
<td>Model</td>
<td>Serial #</td>
</tr>
<tr>
<td><strong>Explanation</strong></td>
<td>Asset identification used by the KTR to uniquely identify assets or equipment (e.g. FAN001, AHU002)</td>
<td>Primary Asset Name (100 Character Limit)</td>
<td>Additional Relevant Information (e.g. size, capacity, limits, etc...) (1000 Character Limit)</td>
<td>Reference values from Model &amp; Facility Data Matrix tab (MASTERSYSTEM)</td>
<td>Reference values from Model &amp; Facility Data Matrix lab (SYSTEM)</td>
<td>Reference values from Model &amp; Facility Data Matrix lab (SUBSYSTEM)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reference values from Model &amp; Facility Data Matrix tab (MASTERSYSTEM)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reference values from Model &amp; Facility Data Matrix lab (SYSTEM)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reference values from Model &amp; Facility Data Matrix lab (SUBSYSTEM)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Current Building # in MAXIMO for renovation work. Will be provided by GVT for new construction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Quantity in correct unit of measure as defined in UOM field of the Model &amp; Facility Data Matrix</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Installed cost (material and labor) from schedule of values, bid proposal, etc.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Provided by GVT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Each facility component or piece of equipment will be a new row. Refer to Model & Facility Data Matrix for guidance on which fields are applicable to specific components & equipment.
## DBB: eOMSI Submittal Process

### Design Bid Build (DBB) eOMSI Process

<table>
<thead>
<tr>
<th>Project Initiation</th>
<th>Design Development</th>
<th>Pre-Final Design</th>
<th>Final Design</th>
<th>Award/Kick-off</th>
<th>Coordination Meeting</th>
<th>50% Construction</th>
<th>60-90 days prior to BOD</th>
<th>100% Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PM</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Determine eOMSI requirement with FMD/FMS</td>
<td>Obtain eOMSI Facility Data Workbook (FDW) on WBDG &amp; complete for initial submittal</td>
<td>Collaborate with FMD/FMS, edit eOMSI spec &amp; attach completed eOMSI FDW as PDF for submittal</td>
<td>Collaborate with FMD/FMS, complete final eOMSI spec &amp; attach completed eOMSI FDW as PDF for submittal</td>
<td>Provide Final eOMSI FDW Excel file to CM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DOR/DM</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Meet with DOR/DM, review eOMSI FDW and provide input on eOMSI FDW</td>
<td>Meet with DOR/DM, review eOMSI FDW and provide input on eOMSI FDW</td>
<td>Meet with DOR/DM, review eOMSI FDW and provide input on eOMSI FDW</td>
<td>Review eOMSI Manuals &amp; FDW, provide feedback and attend field verification meeting</td>
<td>Review eOMSI Manuals &amp; FDW, provide feedback and attend field verification meeting</td>
<td>Manage eOMSI FDW, upload to Maximo</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FMD / FMS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assign FMD/FMS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Provide Final eOMSI FDW Excel file to KTR &amp; address scheduling</td>
<td>Attend meeting</td>
<td>Forward submittal to FMS/KTR and attend field verification meeting</td>
<td>Forward submittal to FMS/KTR and attend field verification meeting</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Complete eOMSI Manuals and eOMSI FDW for systems installed; field verify selective sampling</td>
<td>Set up meeting</td>
<td>Complete eOMSI Manuals and eOMSI FDW for systems installed; field verify selective sampling</td>
<td>Submit final eOMSI Manuals &amp; eOMSI FDW</td>
</tr>
<tr>
<td><strong>CM</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Contractor (KTR)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### DB: eOMSI Submittal Process

<table>
<thead>
<tr>
<th>DB eOMSI Process</th>
<th>RFP Finalization</th>
<th>Post Award Kick-Off</th>
<th>Coordination Mtg</th>
<th>Design Development</th>
<th>Pre-Final Design</th>
<th>Final Design</th>
<th>50% Construction</th>
<th>60-90 days prior to BOD</th>
<th>100% Construction (BOD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RFP Designer</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PM</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Determine eOMSI requirement with FMD/FMS</td>
<td>Identify FMD/FMS to KTR &amp; KTR DOR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>KTR DOR / Construction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attend meeting and schedule eOMSI coordination meeting</td>
<td>Setup and Conduct Meeting</td>
<td>Obtain eOMSI Facility Data Workbook (FDW) on WBDG &amp; complete for initial submittal</td>
<td>Collaborate with FMD/FMS thru CM, edit eOMSI spec &amp; attach completed eOMSI FDW as PDF for submittal</td>
<td>Collaborate with FMD/FMS thru CM, edit eOMSI spec &amp; attach completed eOMSI FDW as PDF for submittal</td>
<td>Complete eOMSI Manuals and eOMSI FDW for systems installed; field verify selective sampling</td>
<td>Complete eOMSI Manuals and eOMSI FDW for systems installed; field verify selective sampling</td>
<td>Submit final eOMSI Manuals &amp; eOMSI FDW</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CM</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Address eOMSI scheduling</td>
<td>Attend meeting</td>
<td>Coordinate between KTR &amp; FMD/FMS &amp; DM</td>
<td>Coordinate between KTR &amp; FMD/FMS &amp; DM</td>
<td>Coordinate between KTR &amp; FMD/FMS &amp; DM</td>
<td>Forward submittal to KTR &amp; FMD/FMS and attend field verification meeting</td>
<td>Forward submittal to KTR &amp; FMD/FMS and attend field verification meeting</td>
<td>Forward final submittal to FMS</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FMD / FMS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assign FMD/FMS</td>
<td>Attend meeting (optional)</td>
<td>Attend meeting</td>
<td>Meet with KTR DOR; review eOMSI FDW and provide input on eOMSI FDW</td>
<td>Meet with KTR DOR; review eOMSI FDW and provide input on eOMSI FDW</td>
<td>Meet with KTR DOR; review eOMSI FDW and provide input on eOMSI FDW</td>
<td>Meet with KTR DOR; review eOMSI FDW and provide input on eOMSI FDW</td>
<td>Review eOMSI Manuals &amp; FDW, provide feedback and attend field verification meeting</td>
<td>Review eOMSI Manuals &amp; FDW, provide feedback and attend field verification meeting</td>
<td>Manage eOMSI FDW, upload flatfile to Maximo</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PURPOSE:
To obtain organized data of the actual items and equipment provided in construction, for transfer of this data into MAXIMO for maintenance and operation purposes, & as a record for the Facility Manager’s use.

SCOPE:
• Use this same section for DBB and DB
• ECB 2014-01: Defines project thresholds that require eOMSI:
  • Use for new construction greater than or equal to $1M
  • Use for Major renovation greater than or equal to 50% of the Plant Replacement Value or greater than or equal to $3M
• If meets threshold, use BOTH UFGS 01 78 24.00 20 and UFGS 01 78 23, OPERATION AND MAINTENANCE (O&M) DATA
• If not, just use 01 78 23, O&M DATA
  • Have PW FMD inventory/review items for MAXIMO input
### PART 1 GENERAL
1. References
2. Definitions and Abbreviations
3. eOMSI Meeting Schedules
4. Submittal Scheduling
5. Units of Measure
6. Submittals

### PART 2 PRODUCTS
1. **eOMSI Files Format:**
   - eOMSI Manual Organization
   - eOMSI Manual Compact Disk Label
2. **eOMSI Manual**
   - Product and Drawing Information
   - Facility Information
3. **eOMSI Facility Data Workbook (FDW)**

### PART 3 EXECUTION
1. Field Verification
## Section Notes to the Designer

### Tailoring Options:
- DBB
- DB
- eOMSI Facility Data Workbook (FDW)
- Commissioning Authority
- NAVFAC EURAFSWA
- NAVFAC FE

### Section Organization:
- eOMSI Manual
- eOMSI FDW

### When to use the eOMSI Facility Data Workbook (FDW):
- Set up for use with NAVY MAXIMO facilities only right now!
- Marine Corps interested but awaiting their requirements/specifics
- Not required for Army and Air Force facilities

---

ECB 2014-01
$ LIMITS!
Contact your NAVFAC PW Facility Management Division (FMD) who will assist CI team to edit Section and FDW!

How To Download eOMSI Facility Data Workbook (FDW)

2. Locate 01 78 24.00 20 in the UFGS Number column.
3. Select the eOMSIFacilityDataWorkbook.zip link in the Graphic Hyperlink column.
4. Save the .ZIP file to your desktop or network share
5. Extract the eOMSI Facility Data Workbook from the .ZIP file to your project folder.
1.1 References:
- FC 1-300-09N Navy and Marine Corps Design Procedures (April 2015)

1.2 Definitions used in Section and FDW:
- eOMSI Manual
- eOMSI Facility Data Workbook (FDW)
- Systems
- CADD
- KTR (used in FDW)
1.3 eOMSI Meetings

- Describes the meetings required throughout Construction (and Design for DB only)
- Contains tailoring for easy pre-editing of DB and DBB, and for Commissioning Authority and Facility Data Workbook

1.3.1 Pre-Construction Meeting (for DBB) or Post-Award Kickoff Meeting (for DB):

- Ensure all parties understand what is required to put together the eOMSI Manuals, and fill in FDW throughout construction
- Ensure parties understand when submittals of the FDW must be provided
- Include eOMSI submittals in the construction schedule
1.3.2 eOMSI Manual and FDW Coordination Meeting:

- **Who to include in this meeting:**
  - Key Contractor personnel:
    - eOMSI FDW Preparer
    - QC Manager
  - Commissioning Authority (if applicable)
  - Government DM
  - Government CM
  - NAVFAC PW FMD/FMS on project

- **Schedule initial meeting to clarify requirements and resolve issues**
  - Have more if needed as part of regular QC meetings
1.3.3 Facility Turnover Meetings:

- References NAVFAC Red Zone (NRZ) in UFGS 01 30 00 ADMINISTRATIVE REQUIREMENTS or UFGS 01 31 19.05 20 POST AWARD MEETINGS

- Ensures the eOMSI Manuals and FDW become part of Red-Zone checklist, and are received
1.4 Submittal Scheduling

Describes what to provide for the three eOMSI submittals and when:

1.4.1 eOMSI, Progress Submittal:
- When construction is 50% complete
- Ensures Contractor is putting together the Manuals and completing the FDW as construction progresses
- Ensures components and systems are documented before being covered up/enclosed in walls, foundation

1.4.2 eOMSI, Prefinal Submittal:
- eOMSI Manual and FDW should be complete
- The size (& length) of the project determines when to submit:
  - Smaller projects 60 days prior to BOD (suggested)
  - Larger projects 90 days prior to BOD
- If it is not complete, send it back!
1.4 Submittal Scheduling/1.5 Units of Measure

1.4.3 eOMSI, Final Submittal:
- Manuals and FDW must be complete and accurate
- Submit at BOD

1.4.4 Final eOMSI Submittal Translation: (if applicable)
- Only applies to Overseas locations with languages other than English

1.5 Units of Measure:
- Imperial or Metric
1.6 Submittals

• Standard UFGS Submittals Article
• eOMSI Manual and Facility Data Workbook (FDW) Submittals
  • Level of completion and what needs to be submitted from paragraph 1.4 SUBMITTAL SCHEDULING

- eOMSI, Progress Submittal
- eOMSI, Prefinal Submittal
- eOMSI, Final Submittal
PART 2: PRODUCTS

2.1 eOMSI FILES FORMAT

2.2 eOMSI MANUALS

2.3 eOMSI FACILITY DATA WORKBOOK (FDW)
2.1 eOMSI Files Format

Administrative-type requirements for Manuals and FDW:

- Number of copies
- CD or DVD
- eOMSI Manuals as PDFs
- eOMSI FDW in Excel

2.1.1 eOMSI Manual Organization:

- Bookmarked by:
  - Product and Drawing Information
    - Organize by CSI MasterFormat numbering System and Titles
  - Facility Information

2.1.2 eOMSI Manual CD Label and Disk Holder or Case
2.2 eOMSI Manuals

- 2.2.1 Product and Drawing Information
- 2.2.2 Facility Information
2.2.1 Product and Drawing Information

Compiled and organized Product Data (i.e. cut sheets), Certifications, Data Packages, and approved Shop Drawings submitted in the technical spec sections

2.2.1.1 O&M Data:

• From UFGS 01 78 23, OPERATION & MAINTENANCE DATA: Remember to edit these paragraphs for what is in the project!

• Paragraph 1.7 describes the Data Package content, i.e.:
  • Operating Instructions
  • Safety Precautions and Hazards
  • Normal Operations
  • Emergency Operations
  • Preventive Maintenance
  • Submittal Data
  • Warranty Information

• Moving training requirements from 01 78 24.00 20 to here
2.2.1.2 Record Drawings:

• Copy of PDF of the Record Drawings (if prepared by Contractor)
  • For DBB, use paragraph and coordinate with UFGS 01 78 00 if the Contractor is preparing the Record Drawings;
  • For DBB, delete this paragraph if A/E doing Record Drawings by PCAS
  • Always use for DB
  • Record Drawing preparation IAW FC 1-300-09N & UFGS 01 78 00

2.2.1.3 Utility Record Drawings:

• Using Record Source Drawings, show and document details of actual installation of utility systems; annotate and highlight the eOMSI information in PDF Format for the manual
  • Utility Schematic Diagrams
  • Enlarged Connection and Cutoff Plans
2.2.2 Facility Information

Drawing Schedules with Manufacturer’s Data

Remember to edit these paragraphs for what is in the project!

2.2.2.1 General Facility and System Description
  • Function of the facility
  • Edit systems

2.2.2.2 Basis of Design
  • Use for DB Only
  • Provide a copy of the final Basis of Design

2.2.2.3 Floor Plans

2.2.2.4 Floor Coverings, Wall Surfaces, & Ceiling Surfaces
2.2.2.5 Windows

2.2.2.6 Roofing

2.2.2.7 HVAC Filters

2.2.2.8 Plumbing Fixtures

2.2.2.9 Lighting Fixtures

2.2.2.10 Equipment Listing
   • Major equipment list

2.2.2.11 System Flow Diagrams
   • Normal Operations

2.2.2.12 Valve list

2.2.2.13 Riser Diagrams
2.3 eOMSI Facility Data Workbook (FDW)

• NOTES:
  • Contact FMD/FMS for guidance and assistance in editing FDW and identifying the Mastersystems, Systems, and Subsystems!
  • For DBB, preliminarily edit FDW and attach to this section (electronically in PDF package)
  • For DB, DOR edits the section, & coordinate with NAVFAC PW FMD/FMS
  • Brackets and tailoring in paragraphs for DBB and DB

• Description of Tabs:
  • Instructions Tab
  • Model & Facility Data Matrix Tab
  • Required Asset Fields Tab
  • KTR Sample Facility Data File Tab
  • KTR Facility Data File Tab
3.1 Field Verification

Verify data in the Workbook to what’s installed!

- Perform at **50%** construction completion to ensure accuracy and capture items that will be covered up by finishes, etc.

- Perform no less than **60 days** prior to BOD to ensure all items captured and accurate

- **Sample** data by choosing 5 Mastersystems and 5 items under each of them (Who chooses items for verification?)
  - Modify and Choose Project Systems to Sample (Conveying, Plumbing, HVAC, Fire Protection, & Electrical)

- Must be **100%** accurate, or need to redo!
• UFGS 01 78 23, OPERATION AND MAINTENANCE DATA
  • Currently in Final Tri-Service review
  • Target AUG 2015 Release
  • Moved training requirements from 01 78 24.00 20 to here
  • Referenced from 01 78 24.00 20 for Operation and Maintenance Data
  • Contains alternative paragraph for O&M Manuals if 01 78 24.00 20 is not used

• UFGS 01 78 00 CLOSEOUT SUBMITTALS
  • Under full revision by USACE
  • Major revision to As-Built, Record Drawings and Record Model with reference to FC 1-300-09N
  • Change published in July 2015 release while revision continues - defined Record and As-Built Drawings and reference FC 1-300-09N
• **UFGS 01 30 00 ADMINISTRATIVE REQUIREMENTS**
  • Updated Availability of Source Files for Record Drawings
  • Under Revision with targeted August 2015 Release

• **DBB SAES: COMPLETED**
  • Updated to require FDW for DBB AE Projects

• **FC 1-300-09N DESIGN PROCEDURES**
  • Level of completion of Facility Data Workbook throughout Design Phases
  • Added BIM Modeling requirements
  • Change 1 published April 2015
  • Change 2 targeted for FY 15 to clarify PxP submittal in phases

• **BMS: CI DB and DBB processes**

• **Data Storage Requirements**
BIM's Impact on IHD

Design Submittals remain unchanged from DOR:
Refer to FC 1-300-09N Design Procedures
  Preliminary Design (CH 12-4.5.3)
  Final Design (CH 12-4.5.4)

BIM Modeling not applicable for IHD
FC 1-300-09N Update: Added Chapter 12-5
Building Information Management/Modeling (BIM) Requirements

• BIM applicability, definitions, procedures & submittals (Section 12-5)

• eOMSI FDW applicability, definition & submittals (Section 12-3.2)

• Instructions to DOR and KTR on how BIM models are developed
Applicability:

- ECB 201-01: Applies to projects at Navy Installations, Joint Bases, Department of Defense (DoD) Agencies, or Field Activities where NAVFAC PW is the maintenance provider that meet the following: $1M New Construction; or 50% PRV Major Renovation

Definitions:

- Project Execution Plan (PxP)
- 3D Parametric Modeling Application
  
  Parametric = Parameter
  Data driven
Definitions:

- Model - Entire facility/building
- Model Element - Individual building components: Walls, Doors, Windows, Pumps, Air Handlers, etc.

Element Data:
- Physical Size - Length, Width, & Height
- Material Definitions - Wood, Metal, Plastic, Color
- Required Facility Asset Fields - up to 17 in eOMSI FDW
Definitions:

• Design Model – 3D parametric model by the DOR
• Record Model – KTR modifies Design Model as facility is constructed & equipment installed
• See Figure 12-4 Drawing and Model Progression
• eOMSI FDW - Excel workbook containing Facility Mastersystems, Systems & Subsystems for PW MAXIMO upload
Procedures:

• Model File Naming Conventions
• Design Model Naming Convention (DOR)
• Record Model Naming Convention (KTR)
Procedures:

• Minimum Modeling Requirements
  • Use of Parametric Modeling software is required
  • Model and Facility Data Matrix
    • Created and Refined throughout Design phase
    • DO NOT break up the spreadsheet!!!
  • One Model for Each Discipline
  • Each discipline model (ARCH, STRUCT, MEP) linked & documented in PxP

• Data driven schedules
  • Finish, Equipment, Lighting, Plumbing & Door Schedules
Submittals:

• Visual Review Report
  • DOR document that compares FDW to Model Elements
  • Ensures all items identified in Model and Facility Data Matrix tab are present in Model
  • Identifies Model Elements that are not selected in the FDW

• Design Clash Detection
  • Confirms DOR conducted clash detection & found no clashing Model Elements

• BIM Submittals are in ADDITION to the submittals we receive for Non-BIM projects
QUESTIONS???