Building Information Management/Modeling (BIM) Phased Implementation Plan & Facility Electronic Operations and Maintenance Support Information (eOMSI)

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BIM Program Manager
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Phased BIM Implementation Plan

Agenda:

• Background

• Requirements

• Deliverables

• Way Ahead
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; this was not THE solution

• Realizing software was not the answer, we began to look at the facility lifecycle data requirements across the command
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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
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• We found that, during design and construction, Capital Improvements generated +90% of the 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.
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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
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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)
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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
Phased BIM Implementation Plan

Policy:


Purpose:

Provide overall NAVFAC policy and guidance on implementation of Building Information Management and Modeling (BIM) deliverables, roles, and responsibilities
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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
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) projects require eOMSI only
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)
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NAVFAC BIM:

- eOMSI FDW (DOR & KTR)
- BIM PxP (DOR)
- FC 1-300-09N (DOR)
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
  - Matrix Components
  - Matrix Use

- **Section 3 – Required Asset Fields Tab**
- **Section 4 – KTR Sample Facility Data File Tab**
- **Section 5 – KTR Facility Data File Tab**
What is eOMSI FDW?

• Excel Spreadsheet
• Identifies Mastersystems, Systems and Subsystems of a Project
• Lists all Installed Assets for Facility
• Easy To Use = YES
  o If you can use Excel you can use the FDW
• Living Project Document
  o Never break up the tabs
  o Updated throughout the Project from Design through BOD
eOMSI Facility Data Workbook

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
Phased BIM Implementation Plan

- Third Tab of eOMSI FDW
- Provides detail for each Asset Field
- Informative Only

<table>
<thead>
<tr>
<th>REQUIRED FACILITY ASSET FIELDS</th>
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<tbody>
<tr>
<td><strong>Position</strong></td>
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<tr>
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<td>2</td>
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</table>
KTR Facility Data File Tab

- Fifth Tab of eOMSI FDW
- KTR completes FDW based on Mastersystems, Systems & Subsystems selected by DOR
- Public Works Reviews during defined submittal schedule
- Final FDW @ BOD, modified by DPW for MAXIMO upload

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
<th>AssetNum</th>
<th>Description</th>
<th>Long Description</th>
<th>MASTERSYSTEM</th>
<th>SYSTEM</th>
<th>SUBSYSTEM</th>
<th>Building Number</th>
<th>Asset Quantity</th>
<th>Replacement Cost</th>
<th>Contract Number</th>
<th>Task/Delivery Order Number</th>
<th>Warranty Expiration Date</th>
<th>Installation Date</th>
<th>Room Number</th>
<th>Manufacturer</th>
<th>Model</th>
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</table>

**Explanation**
- Asset identification used by the KTR to uniquely identify assets or equipment (e.g., FAN001, AHU002)
- Primary Asset Name (100 Character Limit)
- Additional Relevant Information (e.g., size, capacity, limits, etc... (1000 Character Limit)
- Reference values from Model & Facility Data Matrix tab (MASTERSYSTEM)
- Reference values from Model & Facility Data Matrix tab (SYSTEM)
- Reference values from Model & Facility Data Matrix tab (SUBSYSTEM)
- Current Building # in MAXIMO for renovation work
- Will be provided by GVT for new construction
- Quantity in correct unit of measure as defined in UOM field of the Model & Facility Data Matrix
- Installed cost (material and labor) from schedule of values, bid proposal, etc.
- Provided by GVT

**Reference values**
- From Model & Facility Data Matrix tab (MASTERSYSTEM)
- From Model & Facility Data Matrix tab (SYSTEM)
- From Model & Facility Data Matrix tab (SUBSYSTEM)
### Phased BIM Implementation Plan

A10 – D50 Typical Mastersystems for Navy MCON, Major Renovation, or Facility Systems Replacement Projects (<5’ line)

<table>
<thead>
<tr>
<th>Description</th>
<th>Listname</th>
<th>UOM</th>
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<tbody>
<tr>
<td>A10 - FOUNDATIONS</td>
<td>MASTERSYSTEM</td>
<td>SF</td>
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<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>
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<td>B30 - ROOFING</td>
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<tr>
<td>C10 - INTERIOR CONSTRUCTION</td>
<td>MASTERSYSTEM</td>
<td>SF</td>
</tr>
<tr>
<td>C20 - STAIRS</td>
<td>MASTERSYSTEM</td>
<td>RISER</td>
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<td>C30 - INTERIOR FINISHES</td>
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<td>D10 - CONVEYING</td>
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<td>D20 - PLUMBING</td>
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<tr>
<td>D30 - HVAC</td>
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<td>D40 - FIRE PROTECTION</td>
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<tr>
<td>D50 - ELECTRICAL</td>
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</tbody>
</table>
### Phased BIM Implementation Plan

#### J10 – Q10 Typical Mastersystems for Utilities Projects

<table>
<thead>
<tr>
<th>Description</th>
<th>Listname</th>
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<tbody>
<tr>
<td>J10 - Electric Utilities</td>
<td>MASTERSYSTEM</td>
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<tr>
<td>K10 - Potable Water Utilities</td>
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<td>EA</td>
</tr>
<tr>
<td>K20 - Non-Potable Water Utilities</td>
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</tr>
<tr>
<td>K30 - Fire Protection Water Utilities</td>
<td>MASTERSYSTEM</td>
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</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>
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</tr>
<tr>
<td>L30 - Domestic Hot Water Utilities</td>
<td>MASTERSYSTEM</td>
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</tr>
<tr>
<td>L40 - Chilled Water Utilities</td>
<td>MASTERSYSTEM</td>
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</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>
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<tr>
<td>M30 - Oily Wastewater Utilities</td>
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</tr>
<tr>
<td>M40 - Storm Water Utilities</td>
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</tr>
<tr>
<td>N10 - Natural Gas Utilities</td>
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<tr>
<td>N20 - Propane Utilities</td>
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<tr>
<td>P10 - Compressed Air Utilities</td>
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</tr>
<tr>
<td>Q10 - Multiple Commodity Utilities</td>
<td>MASTERSYSTEM</td>
<td>EA</td>
</tr>
</tbody>
</table>
Phased BIM Implementation Plan

Done with Design, now we’re into construction

BIM Deliverables for Construction defined in the following specifications:

1. **UFGS 01 78 24.00 20** FACILITY ELECTRONIC OPERATION AND MAINTENANCE SUPPORT INFORMATION (eOMSI)

2. **UFGS 01 78 23** OPERATION AND MAINTENANCE (O&M) 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.
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 required facility asset fields. File will be converted to a flat file and uploaded to Maximo to create the new assets
eOMSI Manual

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
Principal eOMSI Elements

NAVFAC eOMSI:

- eOMSI Spec 01 78 24.00 20
- eOMSI Facility Data Workbook (FDW)

- OMSI Spec 01 78 23
- eOMSI Manuals
Cost of eOMSI & BIM Deliverables

• The implementation of subject 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
Phased BIM Implementation Plan

BIM/eOMSI Actions To Complete:

- UFGS 01 78 23 OPERATION AND MAINTENANCE DATA
- UFGS 01 78 00 CLOSEOUT SUBMITTALS
- UFGS 01 30 00 ADMINISTRATIVE REQUIREMENTS
- DB RFP
- BMS: CI DB and DBB processes
- Data Storage Requirements
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 the BIM Program