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

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Phased BIM Implementation Plan

Agenda:

- Background

- Requirements

- Deliverables

- Way Ahead

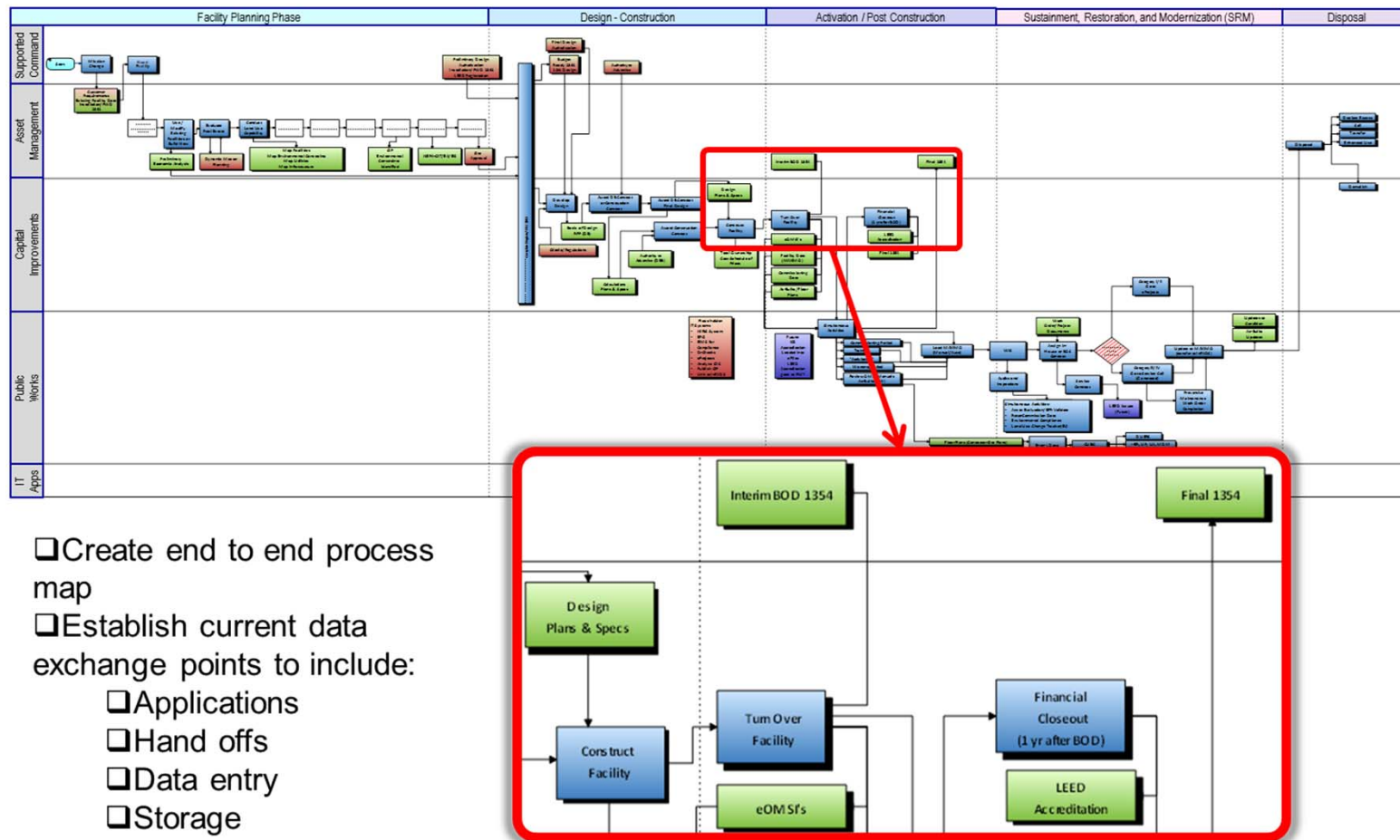# Phased BIM Implementation Plan

- 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 <u>Not</u> 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:

ECB 2014-01 - NAVFAC's Building Information Management and Modeling (BIM) Phased Implementation Plan, October 2015

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

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

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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)

eOMSI Facility Data Workbook (FDW)

Available on Whole Building Design Guide
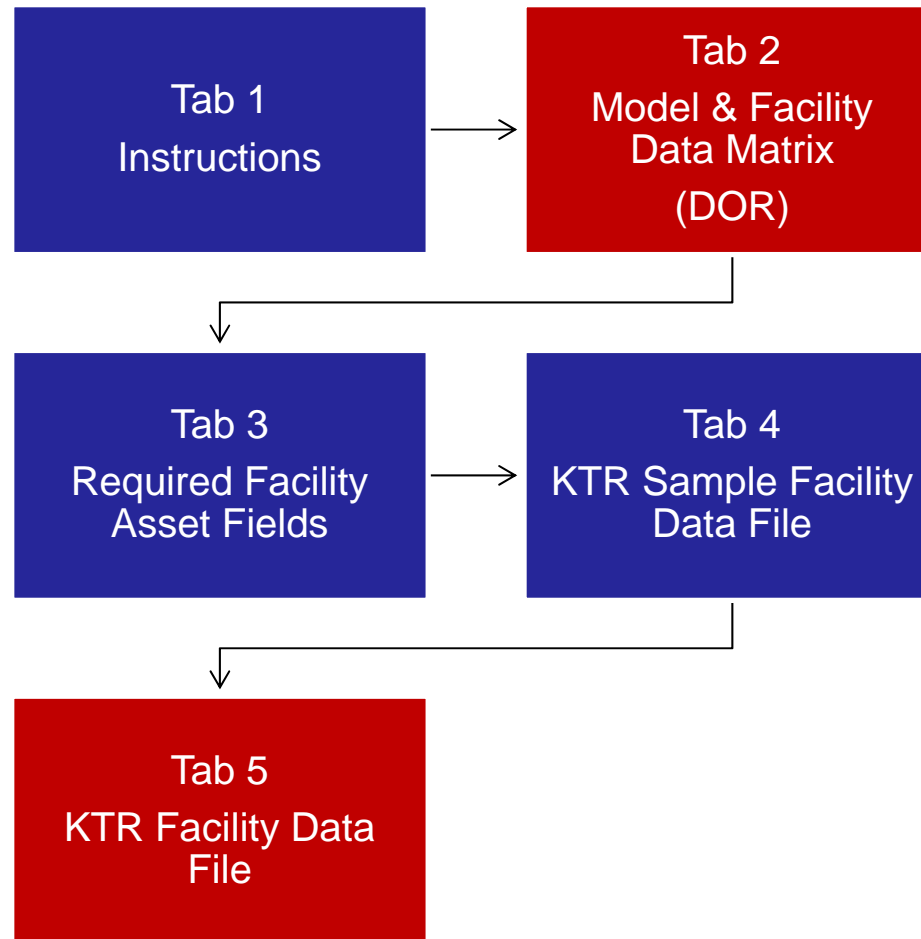http://www.wbdg.org/bim/navfac_bim.php

- ## 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

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┌─────────────────┐        ┌─────────────────┐
│     Tab 1       │        │     Tab 2       │
│                 │───────▶│ Model & Facility│
│  Instructions   │        │   Data Matrix   │
│                 │        │     (DOR)       │
└─────────────────┘        └─────────────────┘
         │                          │
         ▼                          │
┌─────────────────┐        ┌─────────────────┐
│     Tab 3       │        │     Tab 4       │
│ Required Facility│──────▶│ KTR Sample Facility│
│  Asset Fields   │        │   Data File     │
└─────────────────┘        └─────────────────┘
         │                          │
         ▼                          │
┌─────────────────┐
│     Tab 5       │
│ KTR Facility Data│
│      File       │
└─────────────────┘
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- Third Tab of eOMSI FDW

- Provides detail for each Asset Field

- Informative Only

REQUIRED FACILITY ASSET FIELDS

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

- 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

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.

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Name	AssetNum	Description	Long Description	MASTERSYSTEM	SYSTEM	SUBSYSTEM	Building Number	Asset Quantity	Replacement Cost	Contract Number	Task/Delivery Order Number	Warranty Expiration Date	Installation Date	Room Number	Manufacturer	Model	Serial #
Explanation	Asset identification used by the KTR to uniquely identify assets or equipment (e.g. FAN001, AHU003)	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	Provided by GVT	MM/DD/YYYY	MM/DD/YYYY	Room Number of installed equipment	Manufacturer name of installed equipment	Model number of installed equipment	Serial number of installed equipment

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

Description	Listname	UOM
A10 - FOUNDATIONS	MASTERSYSTEM	SF
A20 - BASEMENT CONSTRUCTION	MASTERSYSTEM	SF
B10 - SUPERSTRUCTURE	MASTERSYSTEM	SF
B20 - EXTERIOR ENCLOSURE	MASTERSYSTEM	SF
B30 - ROOFING	MASTERSYSTEM	SF
C10 - INTERIOR CONSTRUCTION	MASTERSYSTEM	SF
C20 - STAIRS	MASTERSYSTEM	RISER
C30 - INTERIOR FINISHES	MASTERSYSTEM	SF
D10 - CONVEYING	MASTERSYSTEM	EA
D20 - PLUMBING	MASTERSYSTEM	EA
D30 - HVAC	MASTERSYSTEM	EA
D40 - FIRE PROTECTION	MASTERSYSTEM	EA
D50 - ELECTRICAL	MASTERSYSTEM	EA

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J10 – Q10 Typical Mastersystems for Utilities Projects

Description	Listname	UOM
J10 - Electric Utilities	MASTERSYSTEM	EA
K10 - Potable Water Utilities	MASTERSYSTEM	EA
K20 - Non-Potable Water Utilities	MASTERSYSTEM	EA
K30 - Fire Protection Water Utilities	MASTERSYSTEM	EA
K40 - Salt Water Utilities	MASTERSYSTEM	EA
L10 - Steam Utilities	MASTERSYSTEM	EA
L20 - High Temp Hot Water Utilities	MASTERSYSTEM	EA
L30 - Domestic Hot Water Utilities	MASTERSYSTEM	EA
L40 - Chilled Water Utilities	MASTERSYSTEM	EA
M10 - Sanitary Sewer Utilities	MASTERSYSTEM	EA
M20 - Industrial Wastewater Utilities	MASTERSYSTEM	EA
M30 - Oily Wastewater Utilities	MASTERSYSTEM	EA
M40 - Storm Water Utilities	MASTERSYSTEM	EA
N10 - Natural Gas Utilities	MASTERSYSTEM	EA
N20 - Propane Utilities	MASTERSYSTEM	EA
P10 - Compressed Air Utilities	MASTERSYSTEM	EA
Q10 - Multiple Commodity Utilities	MASTERSYSTEM	EA

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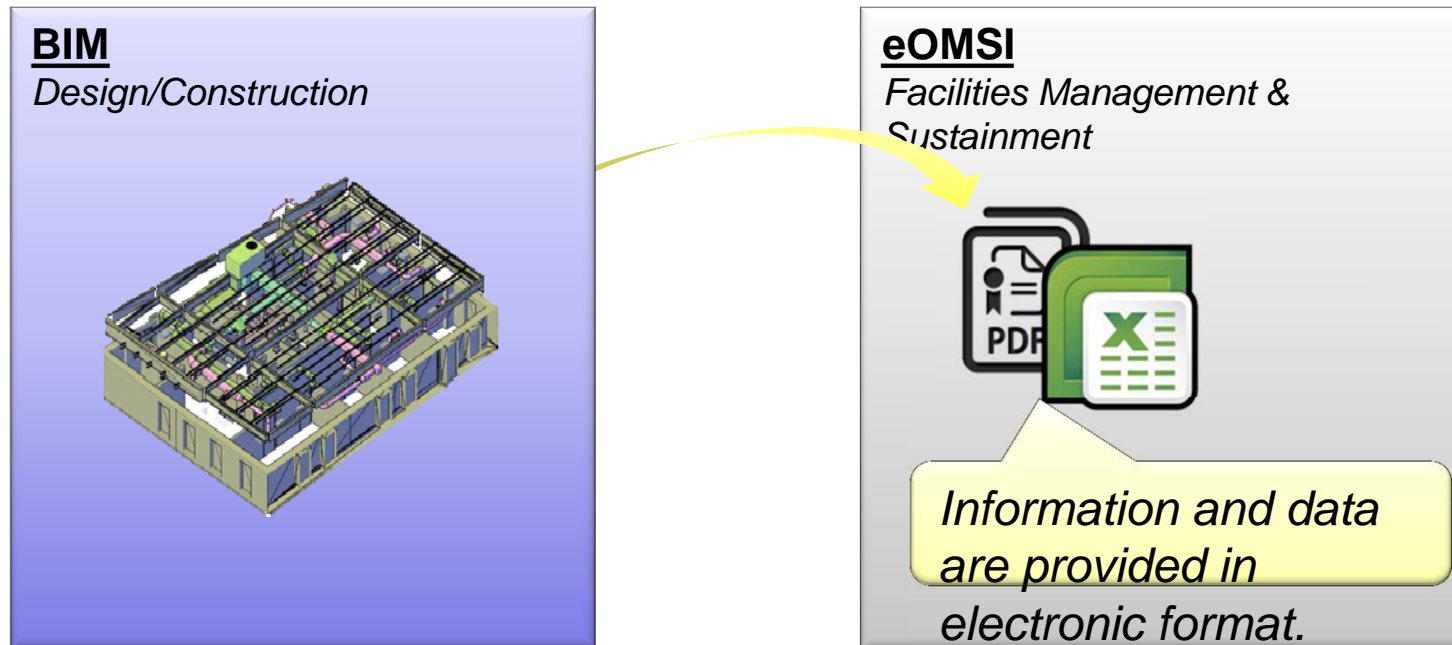
Done with Design, now we're into construction

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.

BIM
Design/Construction

eOMSI
Facilities Management & Sustainment

Information and data are provided in electronic format.

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
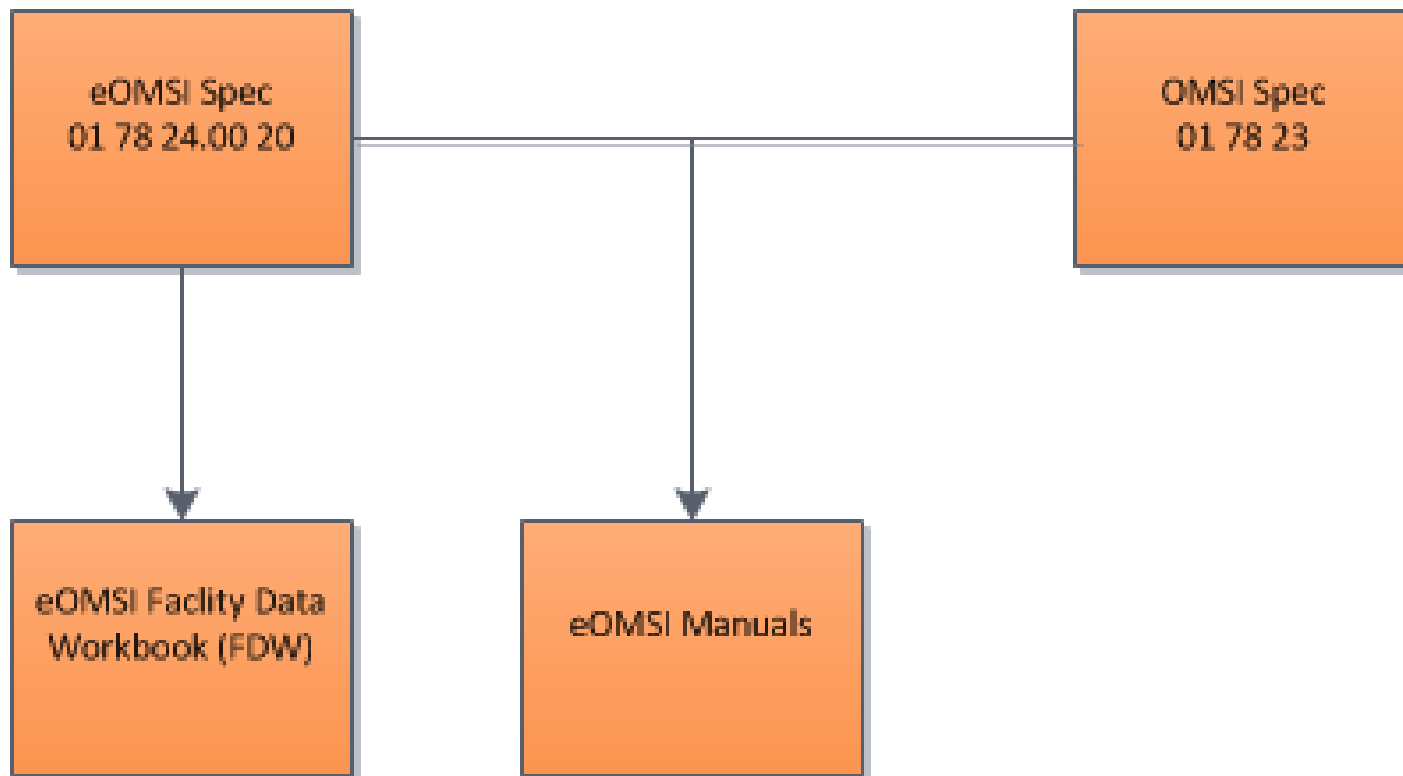- Record Drawings
- Utility Record Drawings

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:

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

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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**

Phased BIM Implementation Plan

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