

# SAME – 2017

A Federal Portfolio leveraging BIM + Energy Performance



**Public Buildings Services & GSA IT**  
*Charles Matta, FAIA*

# Guiding Principles

## for Building Information Management

- ❑ Open Standards
- ❑ Ensure no (or negligible) impact on competition in AE selections
- ❑ Managing facility data through life cycle
- ❑ Mobile enabled

# Actions in support of the Guiding Principles

- ❑ GSA policy
- ❑ Commissioner's memo on Deliverables
- ❑ CFR - GIS, 2D/CIFM, BIM, SDM integration, NCMMS
- ❑ Building Information Managers & Specialists
- ❑ Expand BIM requirements to ALL\* vendor deliverables
- ❑ Industry (Building & IT: ACT- IAC) Outreach
- ❑ Security Compliance



# BIM Program Overview

- National 3D – 4D – BIM Program
  - 2003: Program founded
  - 2007: First BIM Guides published
    - Ongoing updates and additions
    - First project requirements
    - Spatial program validation for final concepts
  - 2014: Updated project requirements
  - 2015: Central Facility Repository (CFR) established

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# BIM Program Implementation

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## Principles

Open standards and vendor neutrality

- Industry Foundation Classes (IFC)
- Construction Operations Buildings information exchange (COBie)

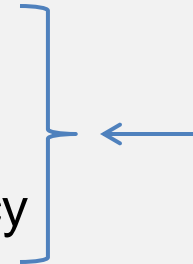
Leadership and Community

- NIBS/ buildingSMART alliance
- National BIM Standard-US
- International MOA's on BIM
- GSA BIM Guide Series

## Implementation

- Pilot Projects
- GSA Standards
- GSA National policy

US National Standards





# Central Facility Repository Vision

The Central Facility Repository (CFR) will house all CURRENT building information necessary for PBS's to effectively and efficiently execute the PBS strategic core mission to "Plan, Build, Operate".



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# GSA Policy

- Deliverable requirements include:
  - Standardized facility asset data in Industry Foundation Class and native BIM
  - All phases of capital project from design concept documents, to construction bid set documents, to construction as-builts
  - All build-to-suit leases and leased buildings where GSA is negotiating a purchase option
- Signed August 2015

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# GSA Standards

- The *Facilities Standards for the Public Buildings Service (P-100)* establishes design standards and criteria for new buildings, major and minor alterations, and work in historic structures
  - GSA P100 Requirements
    - BIM Execution Plan
    - BIM Scorecard
    - BIM-based project deliverables (BIM and CAD)
    - Update existing BIM's
  - GSA BIM Guides
    1. 3D-4D-BIM Overview
    2. Spatial Program Validation
    3. 3D Laser Scanning
    4. 4D Phasing
    5. Energy Performances
    6. Circulation & Security Validation
    7. Building Elements
    8. Facility Management



# Office of Facility Management

- **PBS-P100, Facilities Standards for the Public Buildings Service, Issued March 2015,**
- **All new construction and major modernization projects** are required to have a BIM deliverable submitted to GSA throughout the facility lifecycle.
- **BIM models must also include GSA's standardized NCMMS data in open standard COBie** format, to be used throughout the operations and maintenance activities of the facility.



# Mitchell H. Cohen U.S. Courthouse & U.S. Post Office

## Camden, New Jersey

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### **Delivery Method:**

As-built of Existing Building

### **BIM Contractor:**

AECOM

### **CMMS/BAS Contractor:**

View By View; EcoDomus

**Built:** 1932, 1994 (annex)

**BIM Completed:** 2013 **Size:** 300,000 ft<sup>2</sup>

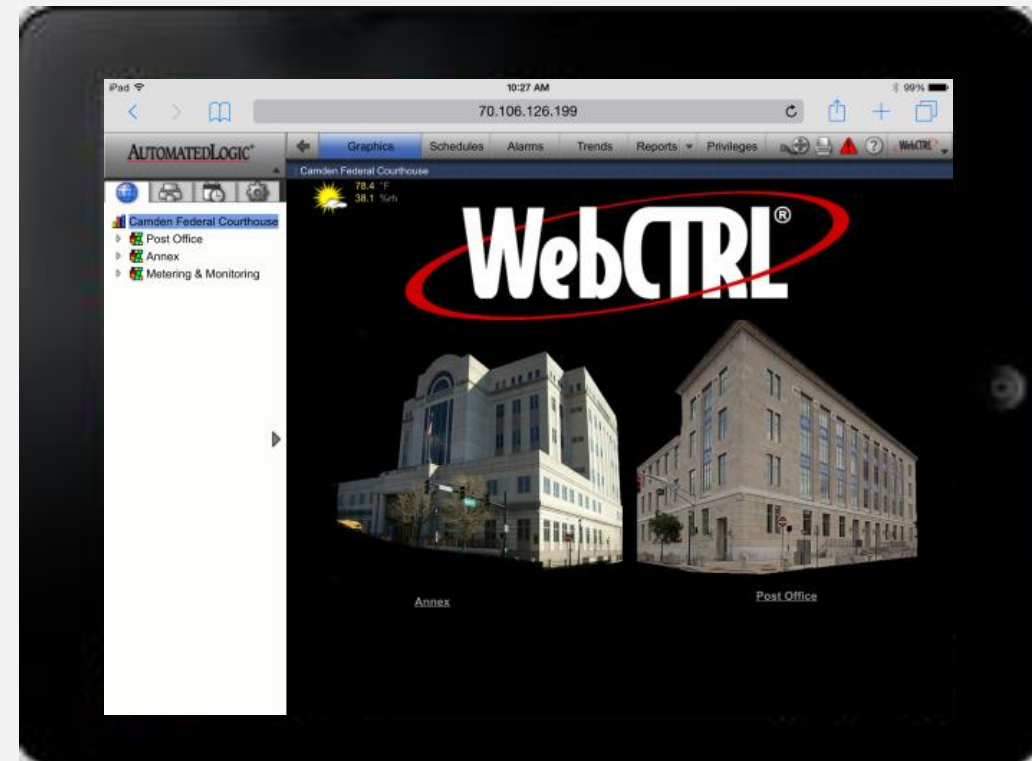
# Cohen Courthouse & Post Office

## GOALS:

- Proof of Concept “BIM for FM”
- Proof of Concept “Continuous Commissioning”
- Dynamically link common building element information from separate systems onto a common platform
- Provide building mechanics with tool to better perform daily operations
- Provide building managers with a tool to better analyze operational data

# Cohen Courthouse & Post Office

- Pilot Program to Test Drive BIM for O&M
- 2009-2010 As Built BIM Model
  - Modeled existing conditions of both buildings.
  - 30's Historic Post Office, 90's Courthouse Annex
- 2011-2013 CMMS/BAS Implementation
  - Connect both buildings into a singular BAS
  - Real-time back and forth updates (1-5 min)
  - Focus on user interface
  - Minimal training; iPad app
- No Longer Theory



# Summary & Moving Forward

- ❑ BIM deliverables for an owner organization translates into all business lines can manage building information single-source-of truth throughout the building lifecycle
- ❑ Object modeling in a BIM reflects an integrated design of the building envelope and systems, with a broader set of energy models incorporated in the design-engineering
- ❑ BIM allows greater prediction of energy use in the facility as energy modeling better matches actual energy consumption
- ❑ Design intent in a BIM carries into the facility operations allowing optimal energy use through integrated IoT sensors that shut off during non occupancy or activate a shielding mechanism during peak heat gain
- ❑ BIM and IT systems integration allows greater application of the original modeling intent via integrated solutions for facility management



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# Q&A