



# Welcome!

BIM in the DoD-MHS  
(an overview)

BIM for the Field

*What do I need to know about  
the MHS Minimum BIM  
Requirements if I am a Project  
Manager*

February 6, 2012





# Agenda/Topics To Be Covered

- Introduction
- BIM Basics
  - Definition
  - Overview
  - BIM in the Federal Government...
- MHS BIM Objectives
  - FLCM Applications | Enabler
- UFC 4-510-01 (Chapter 20 – BIM)
- Questions

# 60 seconds on DCO usage for the meeting

Main Event:  
Shared Screen

Notes: Dial-in  
Information

Who is  
participating?

Ask a question

Raise your hand

The screenshot shows a meeting window titled "TMA BIM | Connect Pro Meeting" with a "DCO" tab. The main content area displays a "PPMD Welcome v2" slide. The slide features the Military Health System logo (a caduceus with a globe) and the text "STRONG TO SAVE" and "Department of Defense UNITED STATES OF AMERICA". The central message on the slide reads: "Please standby the meeting will start shortly". Below this, it says "Portfolio Planning & Management Division (PPMD)".

On the left side of the meeting window, there is an "Attendee List (1)" showing "MANNING, RUSSELL W Mr. OSD-HA" with a status of "Active". Below the list is a "Chat (Q & A)" window with a "Submit question" button. At the bottom of the meeting window, there is a control bar with buttons for "Talk", "Share", "Stop Sharing", "Full Screen", "Sync", and a progress bar with stages: "Welcome", "Questions", "Slide Set", "Sharing", "Discussion", "Collaboration", and "Finish".

A "Voice Dialin Information" window is open in the top right corner, displaying: "The dial in information for this presentation is: Commercial, 1.877.694.5777 Conference Access Code: 6944507#".



See DCO attendees for list.

# INTRODUCTIONS

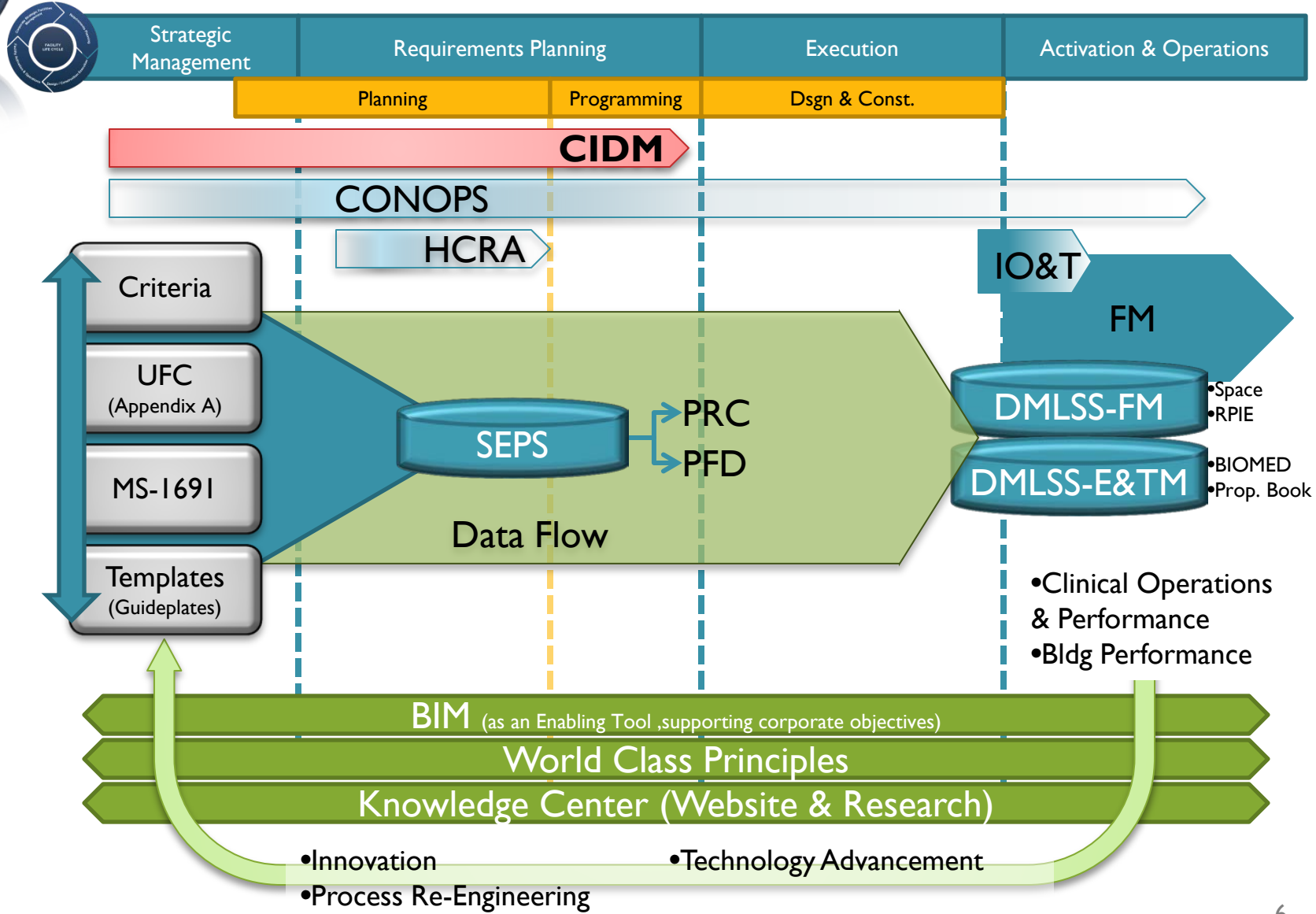


# Introduction – Russ Manning

- DoD Military Health System (MHS)
  - Portfolio Planning and Management Division (PPMD), Capital Planning Branch (CPB)
- Job Relating to BIM:
  - Developing “Corporate” BIM Policy
  - Coordinating BIM across the Facility Life Cycle Management (FLCM)
  - Coordinating with DVA, Kaiser Permanente and Sutter Health in the Healthcare BIM Consortium (HBC) with BIM Software Developers – what do we really need for FLCM



# Capital Planning Across the FLCM





## Introduction – DoD MHS

- DoD Military Health System (MHS)
- Approximately 77million GSF of facilities:
  - Hospital Facilities – 59
  - Medical Clinic Facilities – 364
  - Dental Clinic Facilities – 282
  - Veterinary Facilities – 288
  - Multiple Medical Research Laboratories
- Approximately \$12B currently in design or construction
- Approximately \$1B annual capital investment

# Introduction – Many Delivery Platforms





# Introduction – Many Locations

- Pick a location...DoD's MHS has likely provided care there
- Direct Patient Care of Service Members & Families
- Veterans
- Humanitarian Aid
- Disaster Relief
- Infectious Disease Response
- War Zone Casualty Care
- Etc.



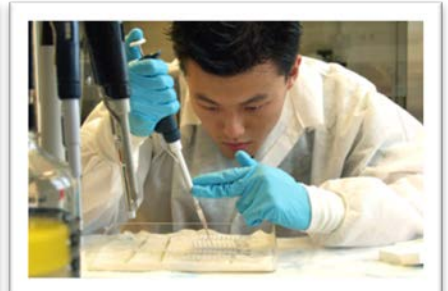
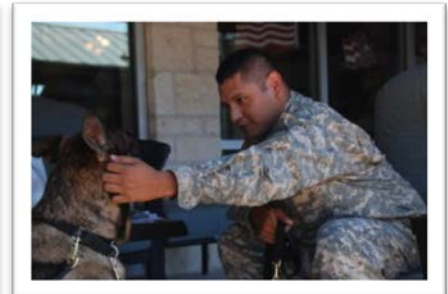


# Introduction – Big Picture Reality

It is not about this...



...this supports what it is about.



It is about the delivery of healthcare...



# Introduction – DoD MHS

- BIM's value as an enabling tool to support our FLCM and better exchange data/information.
- **Historically:**
  - Project by Project Basis (fragmented approach)
  - Have had BIM in contracts since 2005
  - Incremental and Objective Driven Approach.
  - All construction projects over \$5M are utilizing BIM in varying degrees.
- **Currently:**
  - **Healthcare System Approach**
  - Corporate BIM Policy in UFC 4-510-01 – minimum BIM requirements, directly related to our “corporate” BIM Objectives.
  - Required on all FY13 Projects and Beyond – **all designs started this fall**



# BIM DEFINITIONS



# BIM Basics – Definition (GSA)

*Building Information Modeling is the development and use of a multi-faceted computer software data model to not only document a building design, but to simulate the construction and operation of a new capital facility or a recapitalized (modernized) facility. The resulting Building Information Model is a **data-rich, object-based, intelligent and parametric digital representation of the facility, from which views appropriate to various users' needs can be extracted and analyzed to generate feedback and improvement of the facility design.***

<http://www.gsa.gov/portal/content/105075>



# BIM Basics - Definitions

The image is important....



The data & information is even more important!



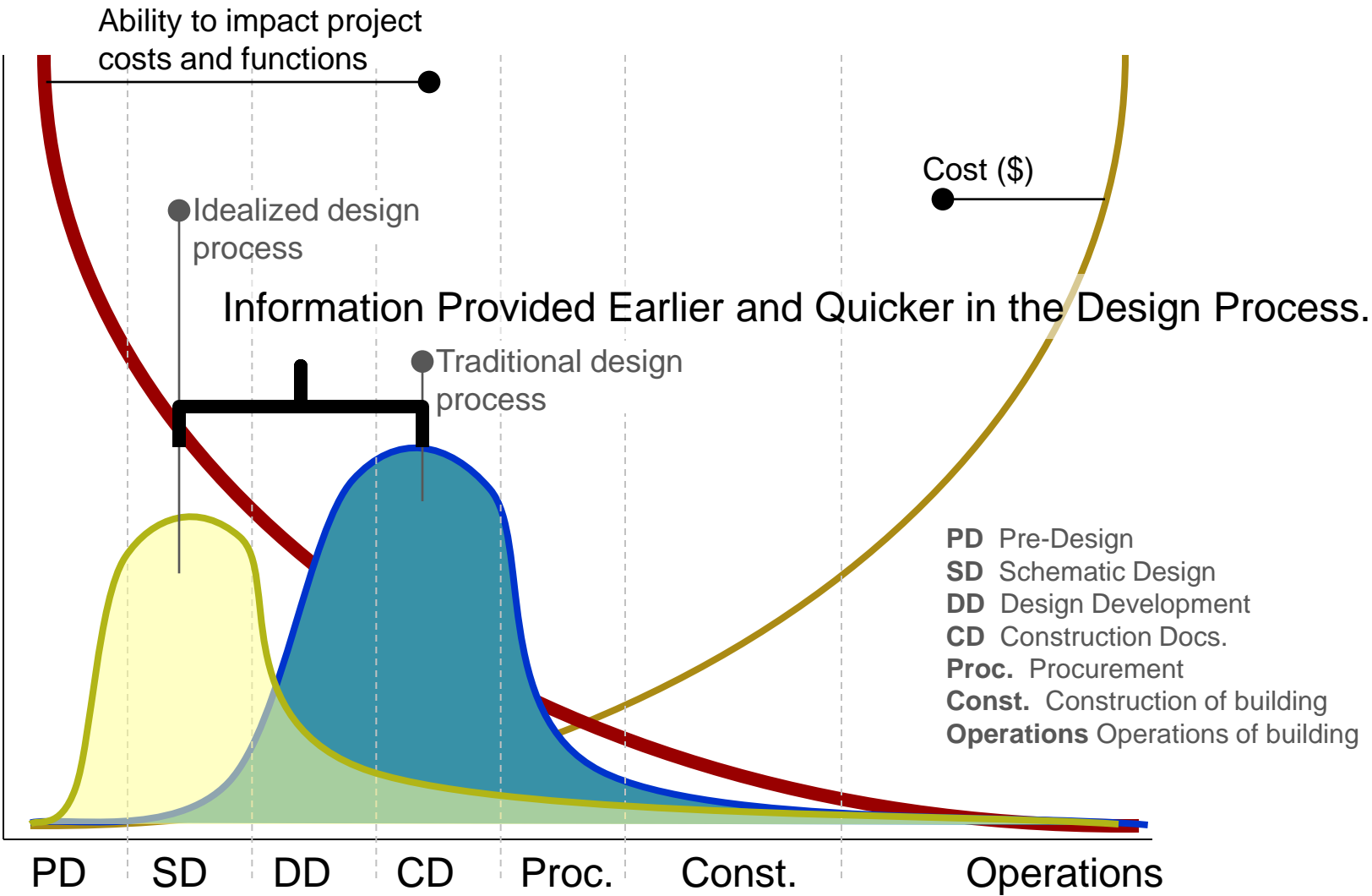


# BIM Basics - Definition

- data-rich
- object-based
- intelligent and parametric digital representation of the facility
- Supports:
  - views appropriate to various users' needs can be extracted and analyzed
  - generate feedback
  - improvement of the facility design & construction

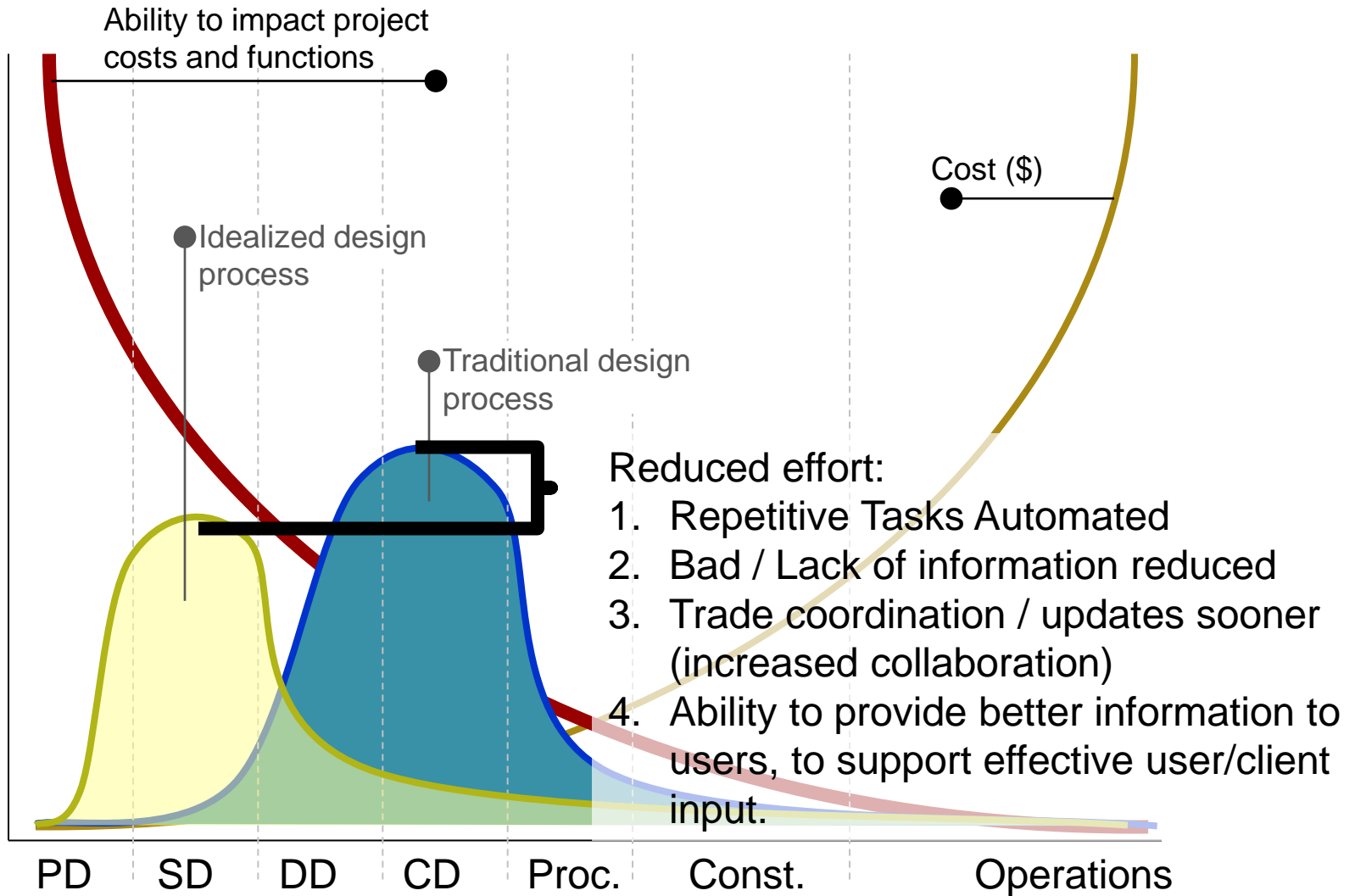


# BIM Basics - Overview



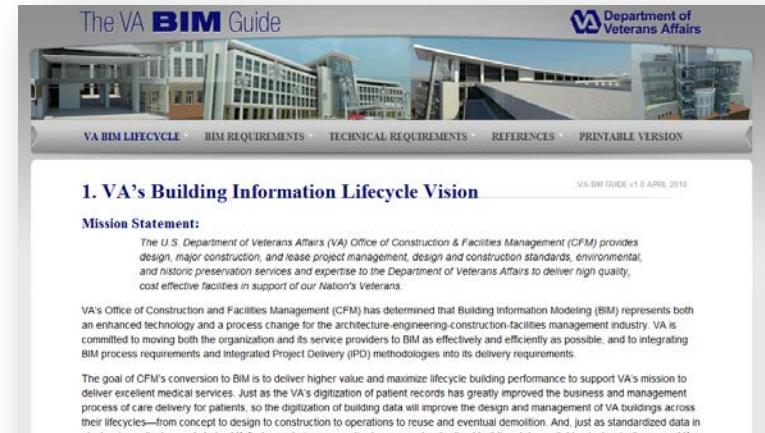


# BIM Basics - Overview

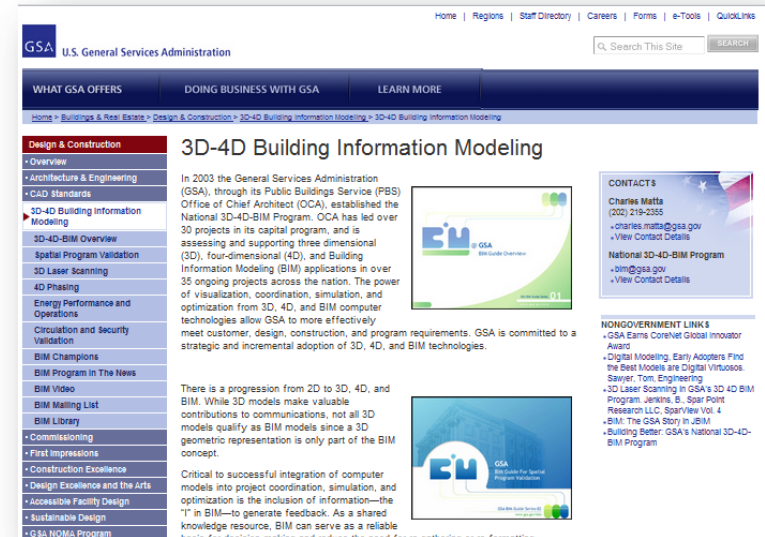


# BIM – Other Federal Agency Use

- GSA
- VA
- DoD – USACE Centers of Standardization
- FAA
- NIH
- DoE
- DOI



<http://www.cfm.va.gov/til/bim/BIMGuide/>





# BIM – Broader AEC Healthcare

- System Owners:
  - Kaiser Permanente
  - Sutter Health
  - Etc.
- System Owner Supporters | Team Members:
  - Healthcare Designers
    - Ellerbe Becket, HDR, HKS, HOK, LAD, RLF, TJD/JI, etc.
  - Healthcare Builders
    - Balfour Beatty, Clark, Mortenson, Turner, etc.



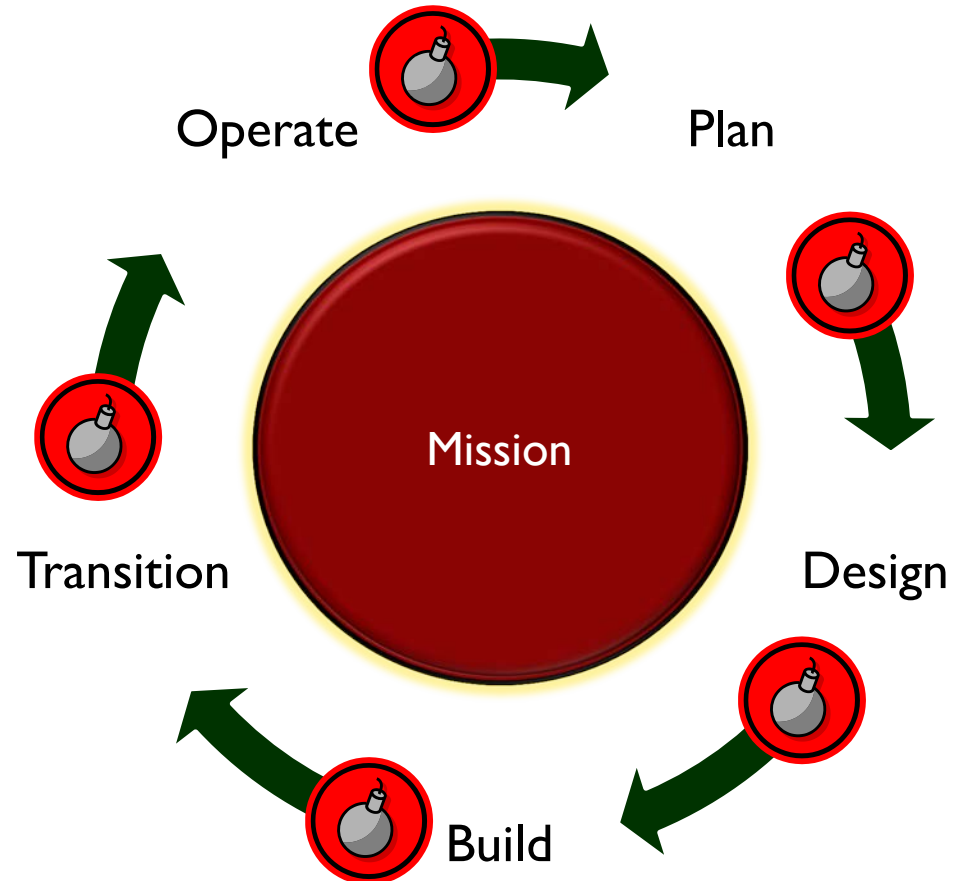
The perspective of looking at the facility capital investment holistically – from inception to grave. The capital investment is not just the planning, design and construction effort. While important, they are dwarfed by the rest of the FLCM.

## **FACILITY LIFE CYCLE MANAGEMENT (FLCM)**



# BIM Basics – FLCM Information

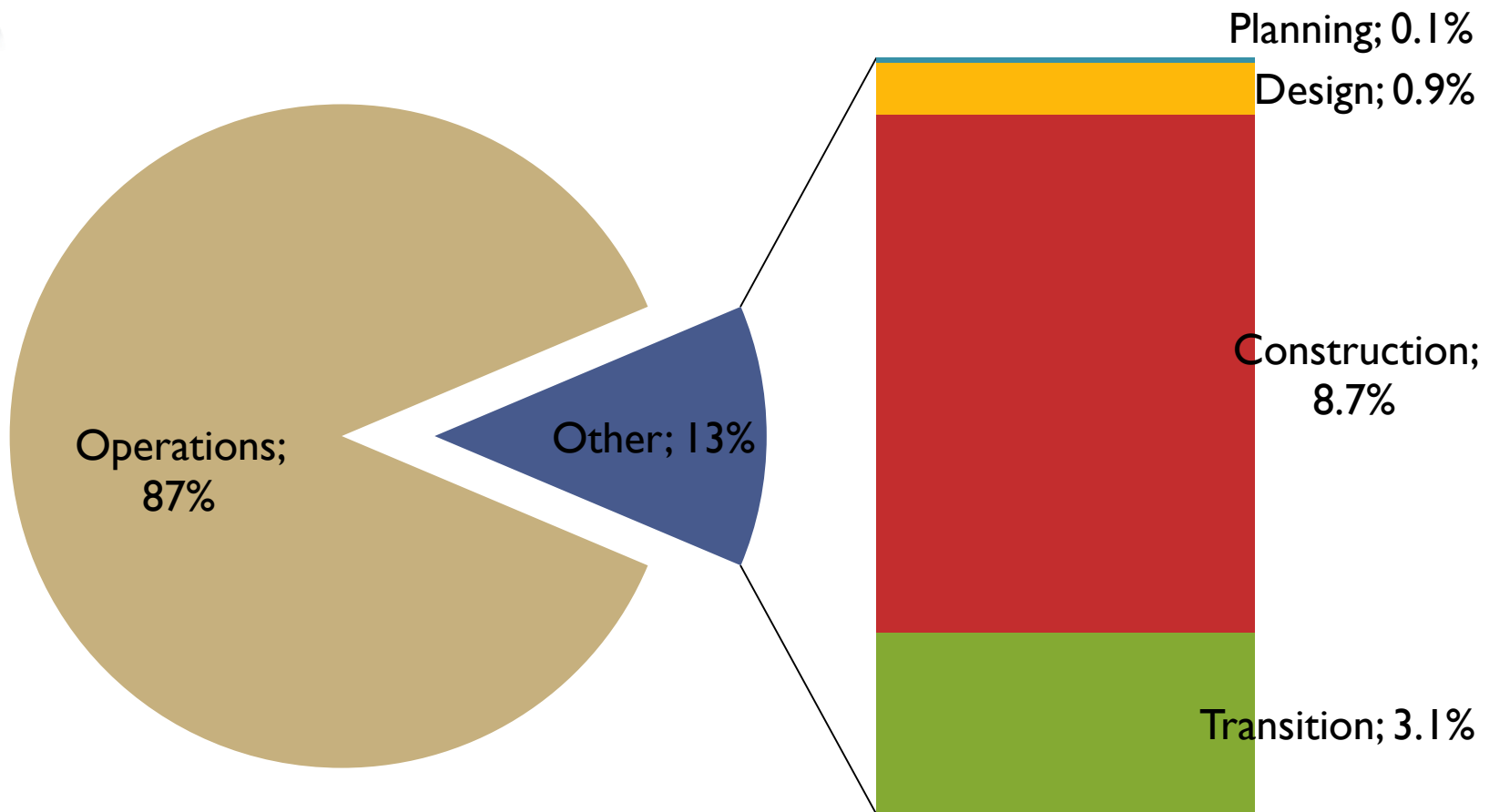
**Goal:**  
Continuous  
Data Flow –  
reducing  
waste of  
redundant  
effort





# BIM FLCM

(effort by cost)





# BIM FLCM

- BIM solutions that ignore the FLCM miss the value.
- BIM Platforms that don't support FLCM (at least ability to exchange information) are nothing more than new legacy systems.
  - We have too many of those already...



Q: Why is the MHS implementing minimum BIM standards?

A: The owner is the one entity responsible for the continuum of the capital asset and its maintenance as it supports the delivery of healthcare.

## **DOD-MHS BIM OBJECTIVES**



# MHS BIM Objectives

- Currently 10 Objectives – Grouped in Bands:
  - Level of Detail (LOD) Clarity
  - Validation / Simulation
  - Integration to DMLSS-FM and DMLSS-ET&M
  - Energy Optimization
  - Planning Feedback Loop
  - Transition Support
  - FLCM Interoperability



# MHS BIM Objectives - LOD

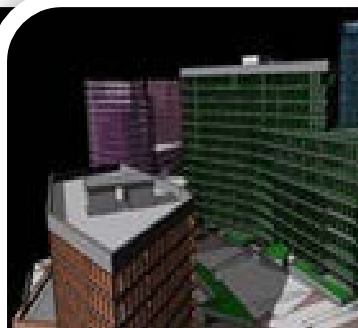
1

- Providing clear expectations for team on level of detail for each submittal associated with the BIM
  - Standardized expectations of information to reduce confusion. (AIA, BuildingSmart, VA, etc.)
  - Stretch goal: Synchronize with VA and others in the healthcare industry | with broader AEC industry

100



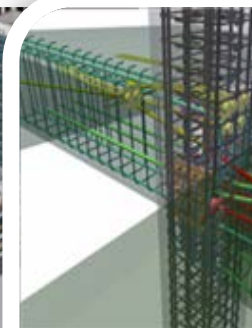
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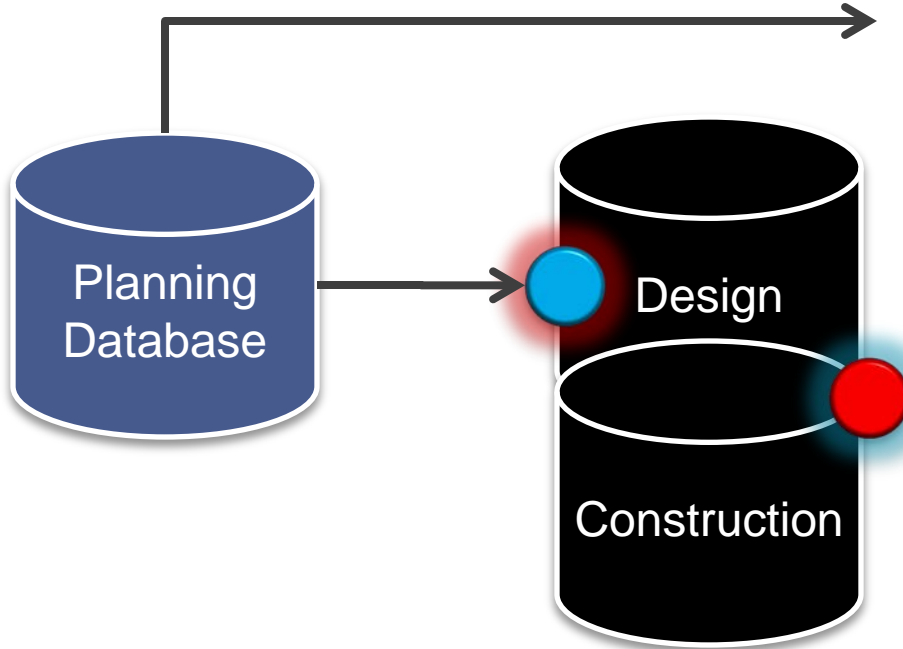
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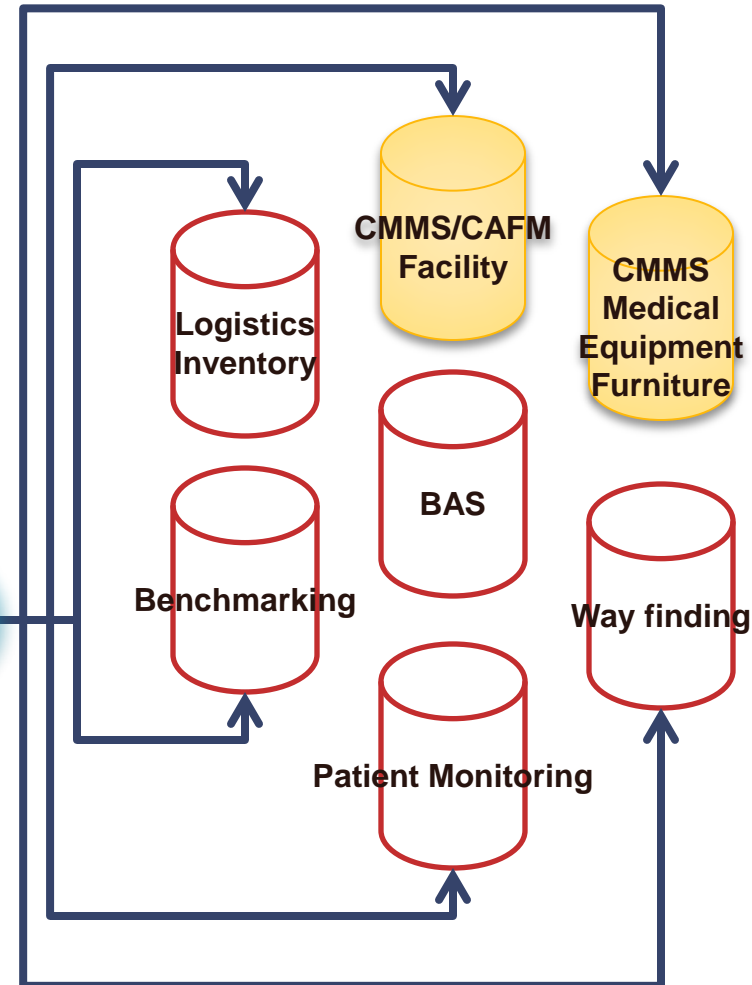
# MHS BIM Objectives - Validation

## Choke Points:

- Importing Data to use in Model.
- Exporting Data from Model to use.



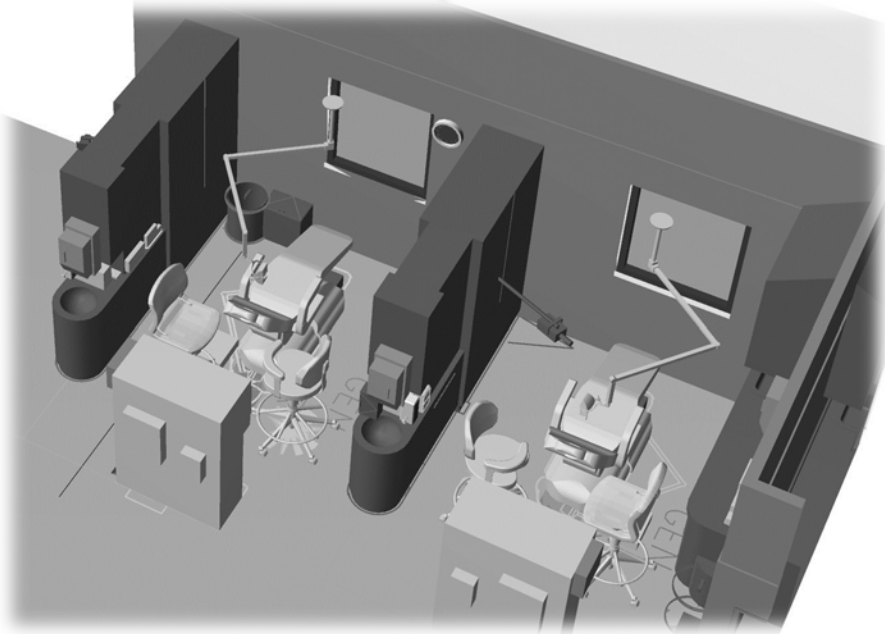
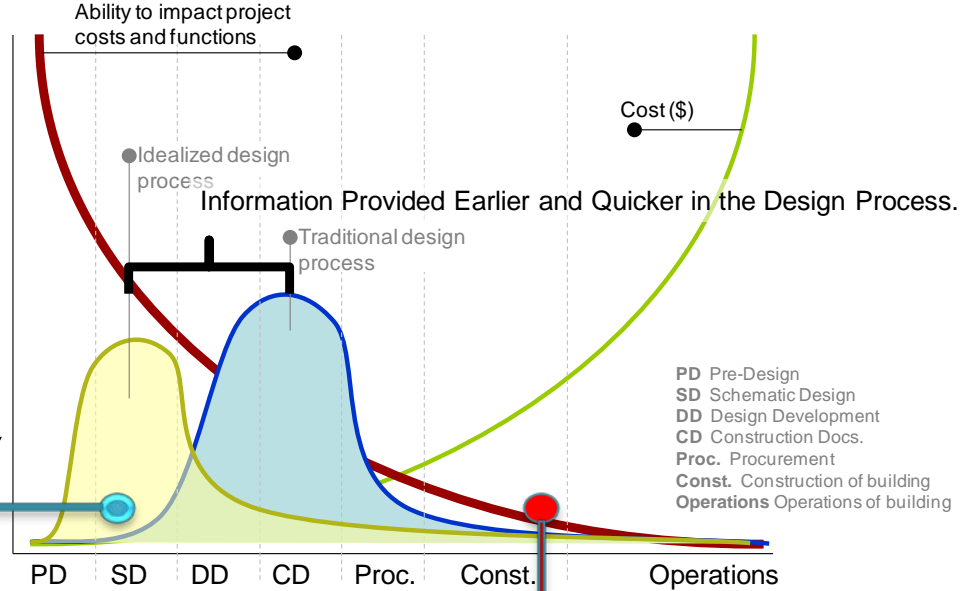
The data flow is an Iterative Process, not an event





# Validation

When we get clarity on plan today



When we got clarity before.



# MHS BIM Objectives - Validation

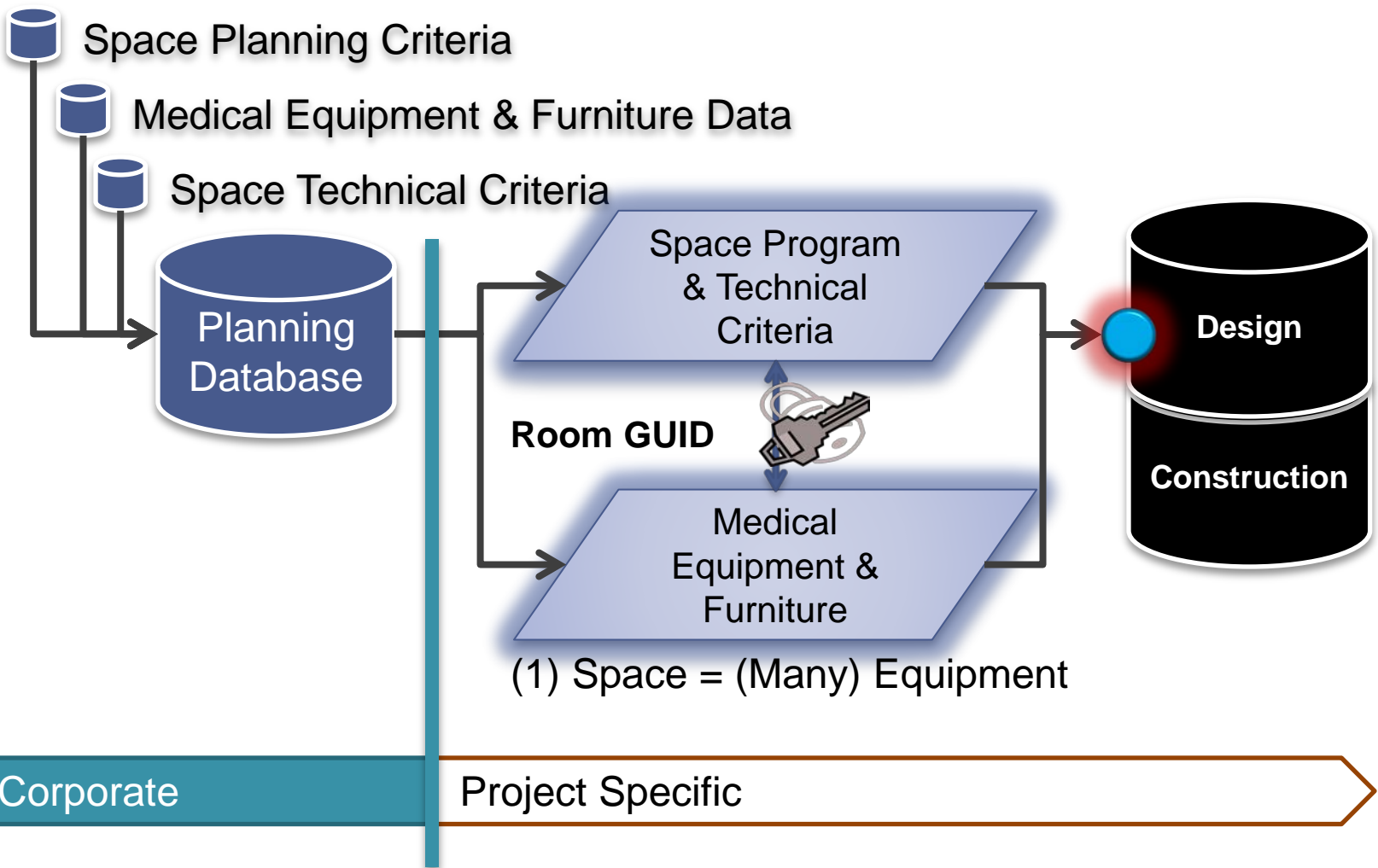
2

- Automate the validation process – Program for Design (PFD) and Project Room Contents (PRC)
  - Real Time (or much closer)
  - Increase Accuracy & Confidence
  - Reduce redundant effort
- Requires bringing SEPS data to the BIM
  - Internal or External Linkage

3

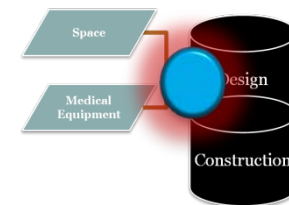


# MHS BIM Objectives - Validation

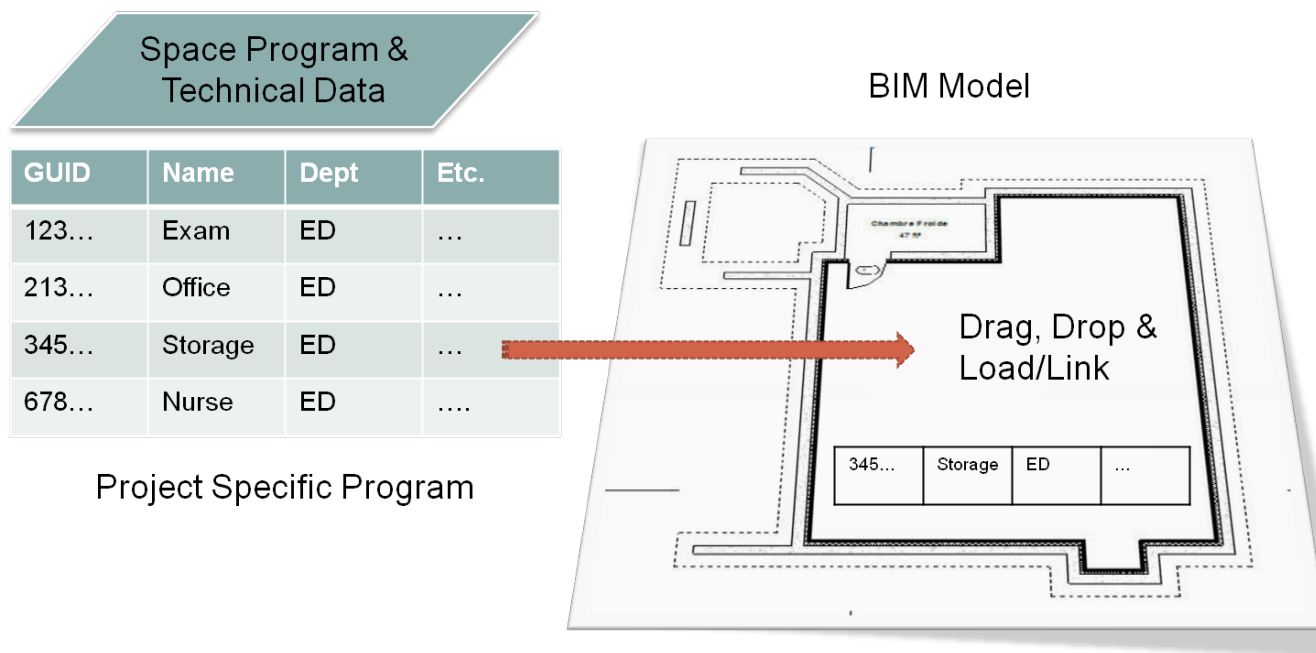




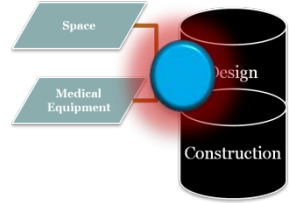
# MHS BIM Objectives Validation



- Relate Contractual Program Requirements (Planning Program for Design [PFD]) to model

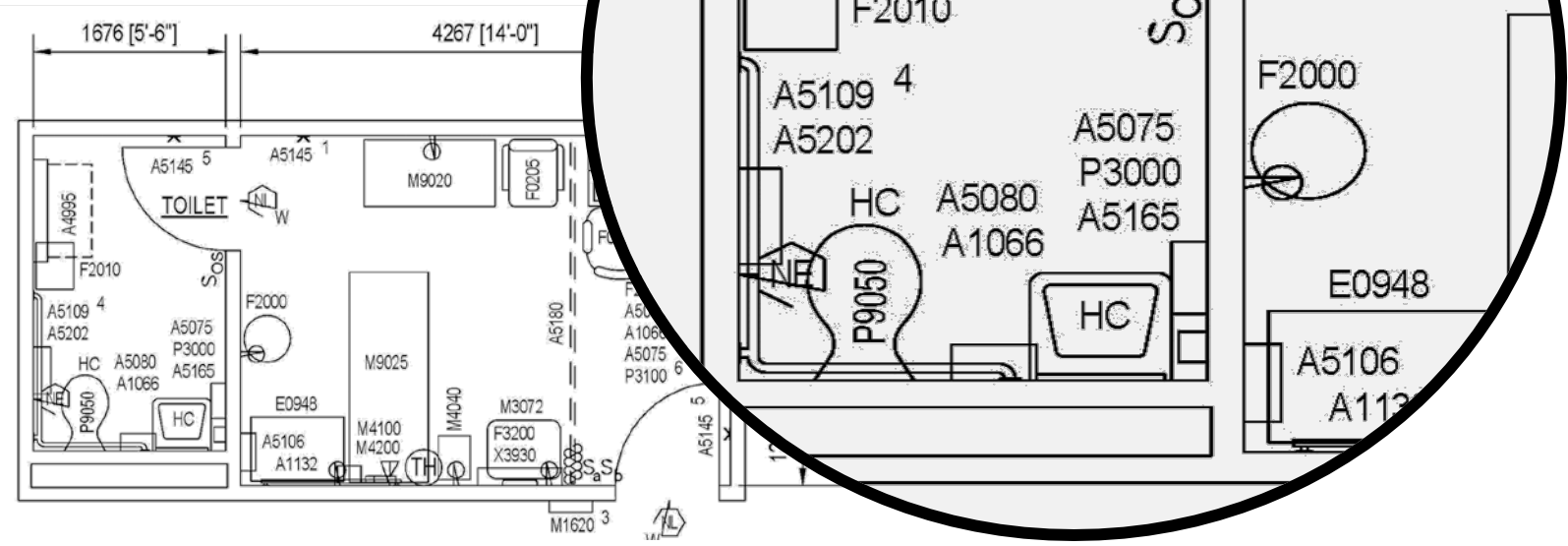


- Other viable solutions welcome



# MHS BIM Objectives Validation

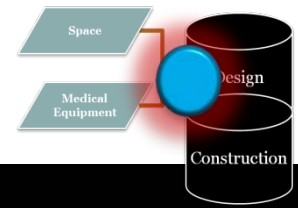
- **Example:** Plan/sheet view automatically displays selected parametric variable (e.g. JSN or SPECNO)
- Has been a contractual requirement for decades



Existing Requirements



# MHS BIM Objectives Validation



## SEPS BIM Tool

Automating Healthcare Design with Revit

# Autodesk®

Developed by Design + Construction Strategies

SEPS Import Example



# MHS BIM Objectives - DMLSS

4

- Support transfer of critical data into DMLSS-FM for operations
  - Streamline process (info available at BOD)
  - Reduce effort required
  - Increase accuracy

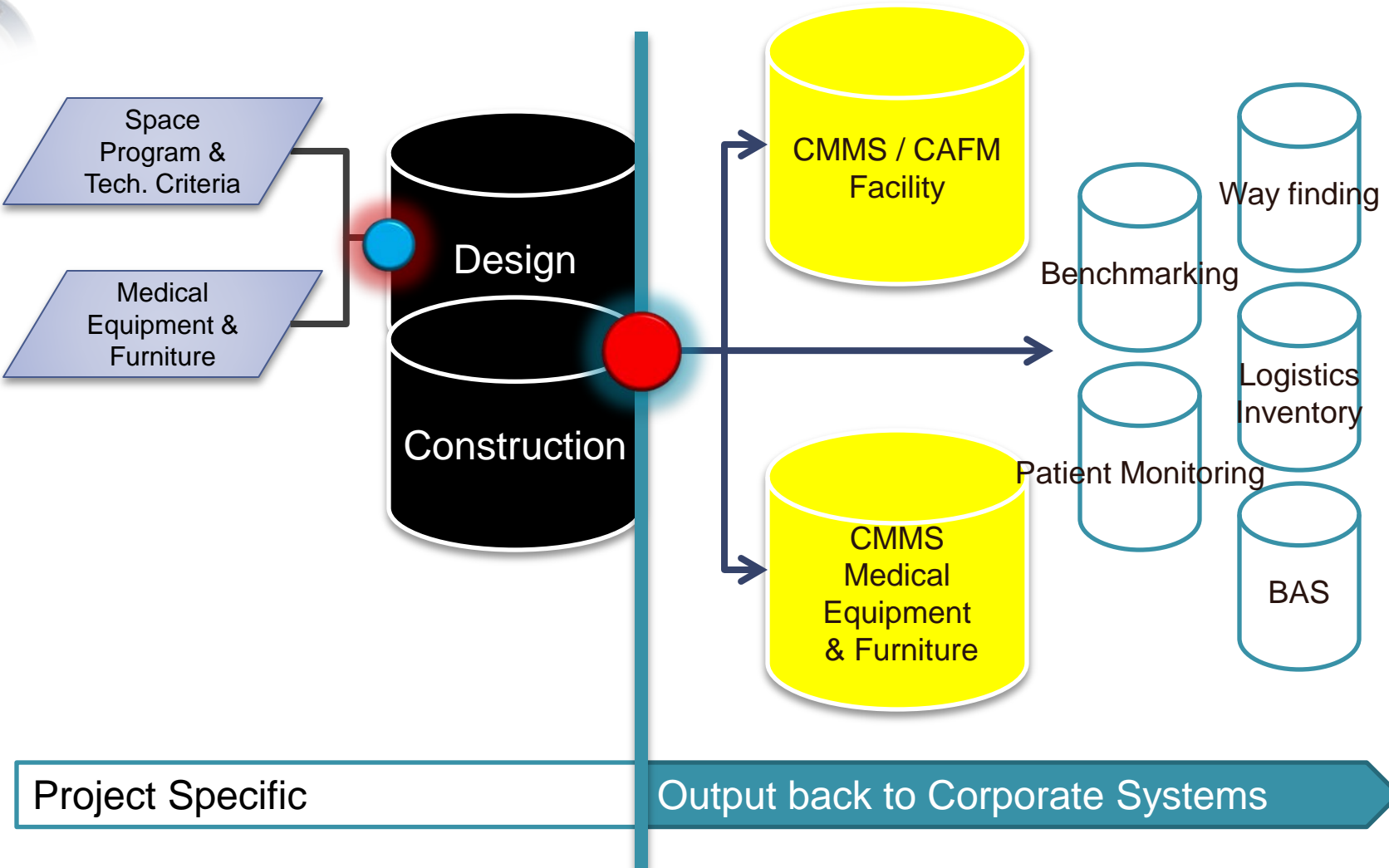
5

- Support transfer of critical data into DMLSS-EM&T for operations
  - Streamline process
  - Reduce effort required
  - Increase accuracy
  - Support IO&T



# MHS BIM Objectives - DMLSS

Data to Operations

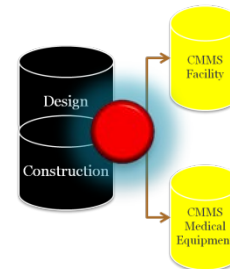


Project Specific

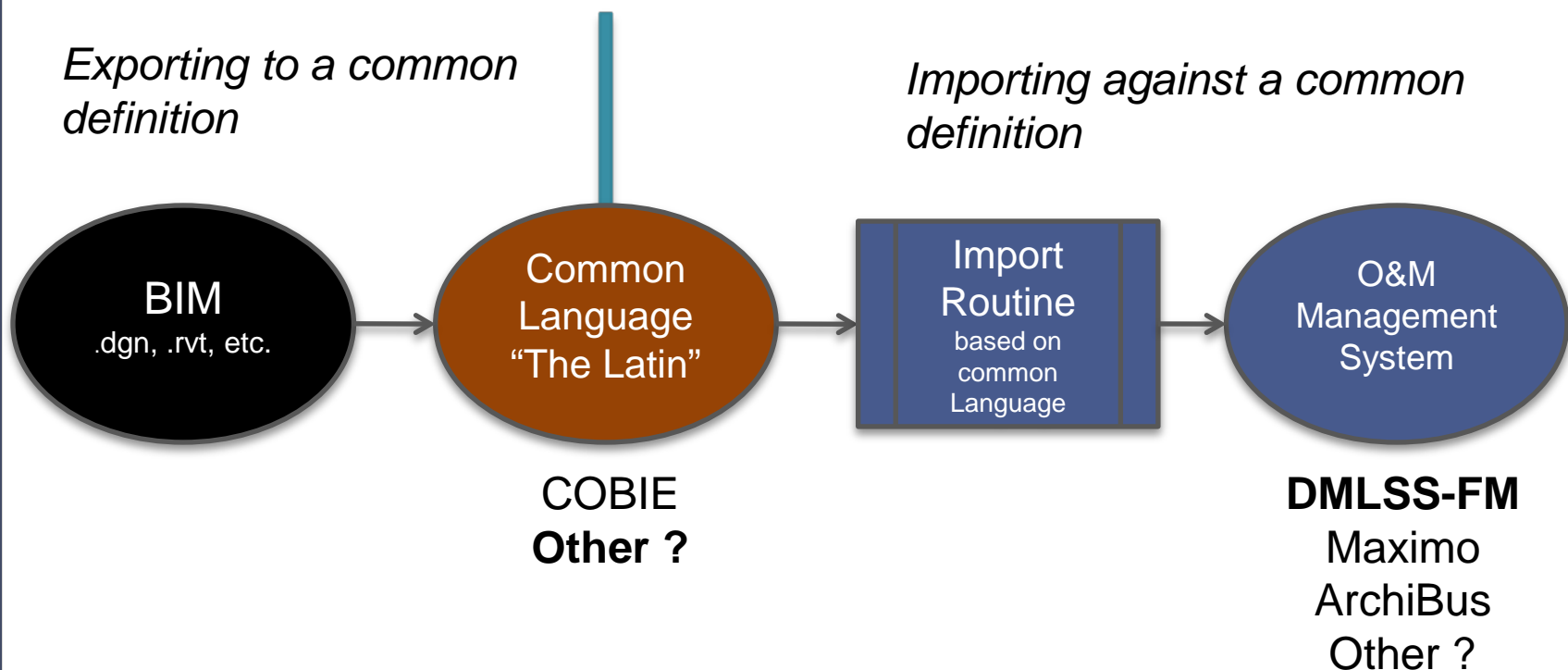
Output back to Corporate Systems



# MHS BIM Objectives DMLSS

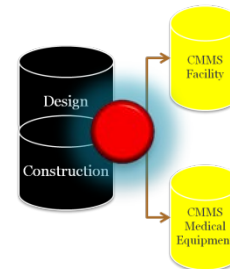


- Automate the data population of computerized maintenance management software (CMMS)

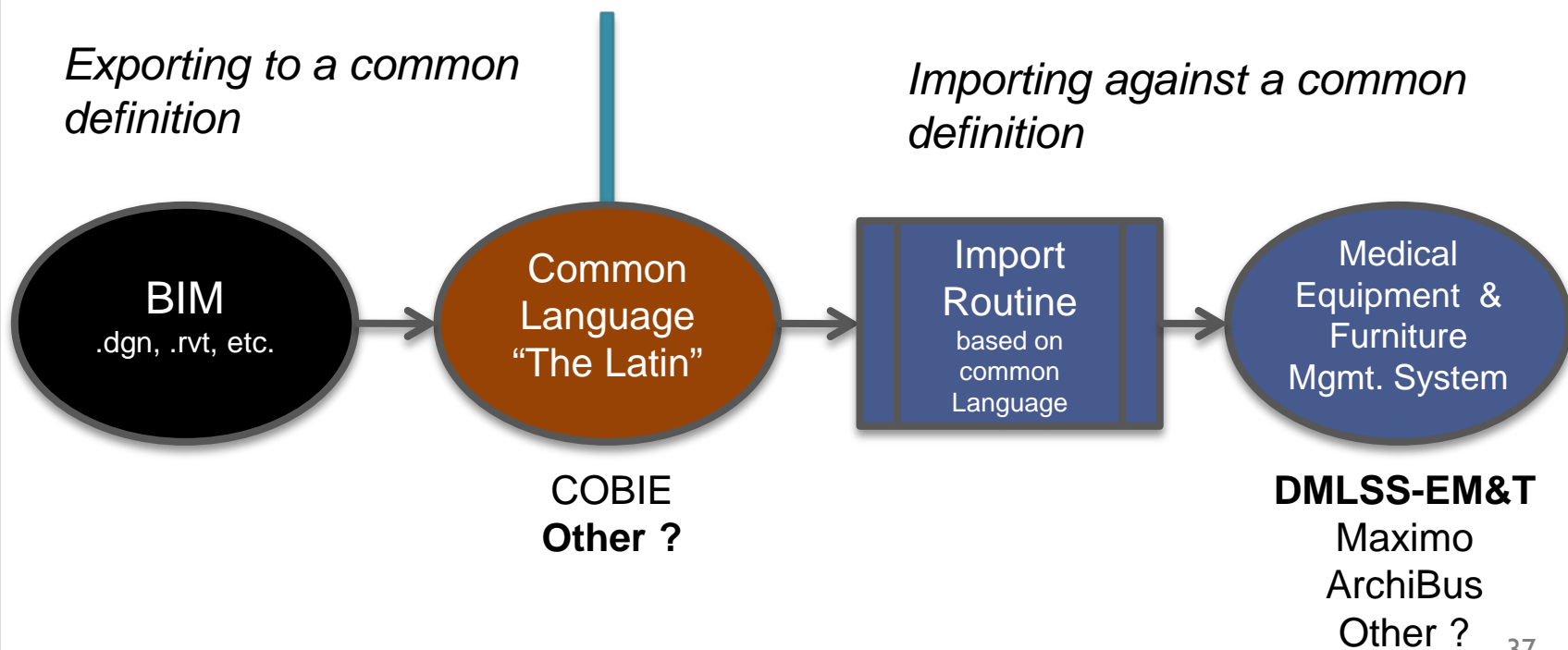




# MHS BIM Objectives DMLSS



- Automate import of equipment and furniture data process (FFE / Initial Outfitting)
  - Includes building system and medical equipment & furniture





# MHS BIM Objectives - Energy

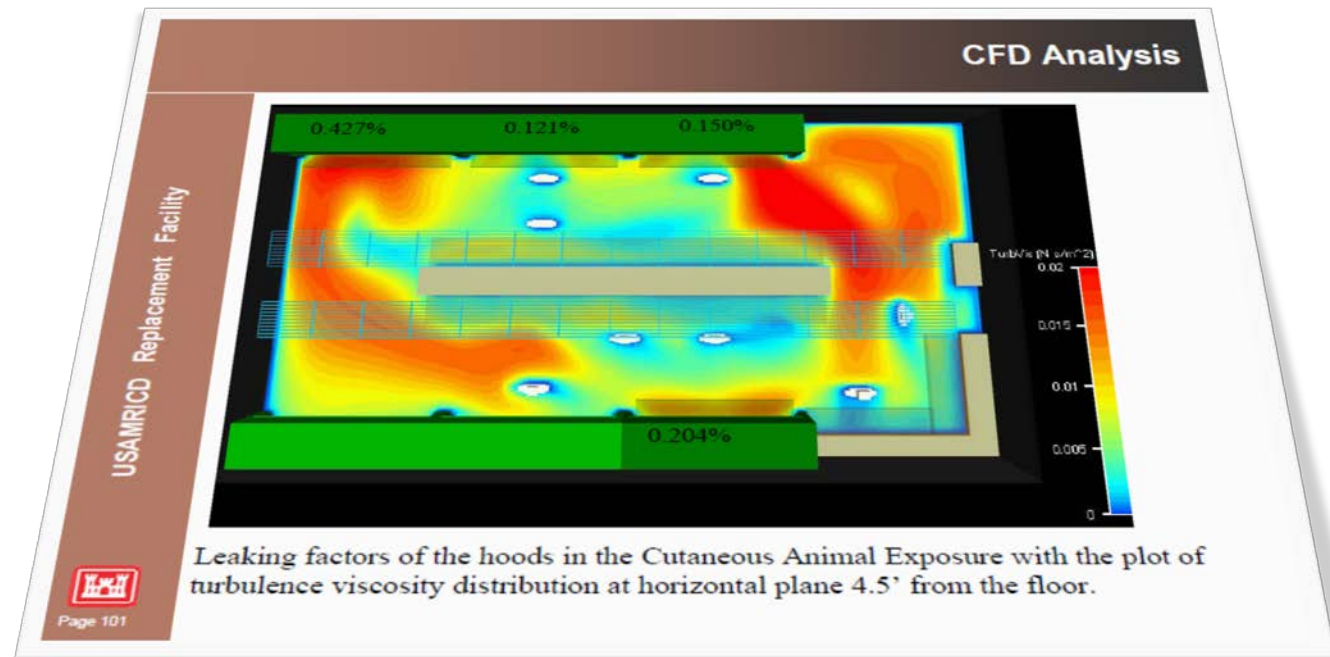
## 6

- Support more effective energy analysis, planning, design, fabrication and operations
  - Support integration of energy data and interoperability of data to energy analysis modeling software
  - Increase timeliness of energy analysis to allow better integration into design process
- Increase efficiency of fabrication and assembly
  - Support transfer of critical data into DMLSS-FM for operations
  - Streamline process (info available at BOD)
  - Reduce effort required
  - Increase accuracy



# MHS BIM Objectives - Energy

- Process flow to analysis programs such as Trace 700, HAP, CFD, etc.
- Lighting and Day Lighting Applications





# MHS BIM Objectives - Planning

- Inform the planning process

- Criteria
- Guideplates
- Net to Gross
- Costing
- Utilization
- Capacity

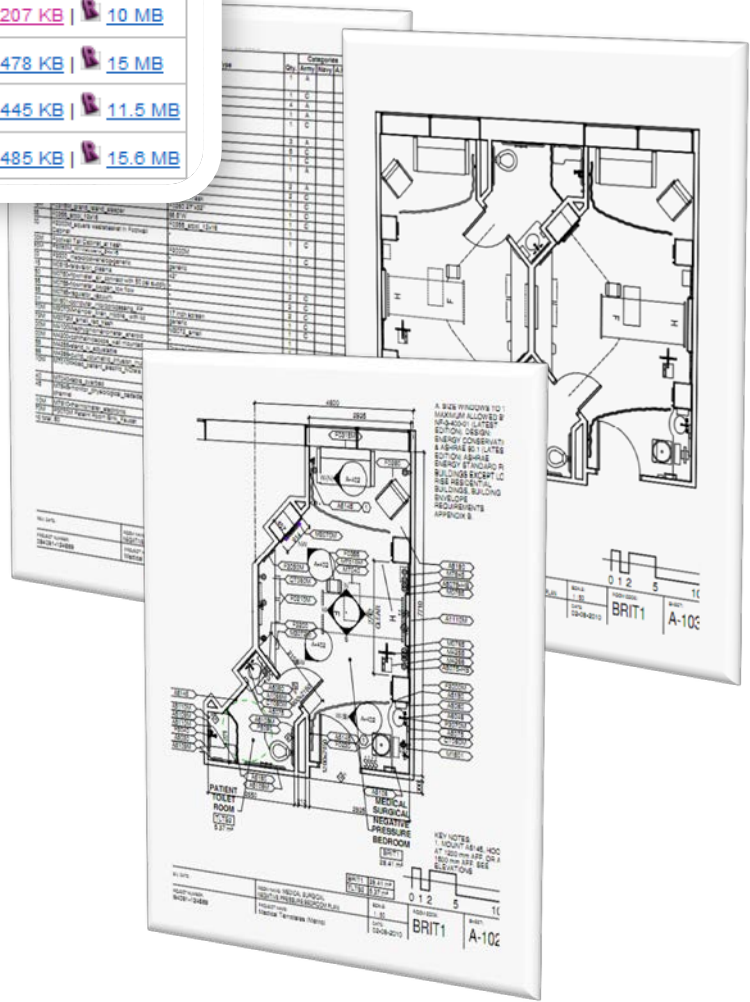
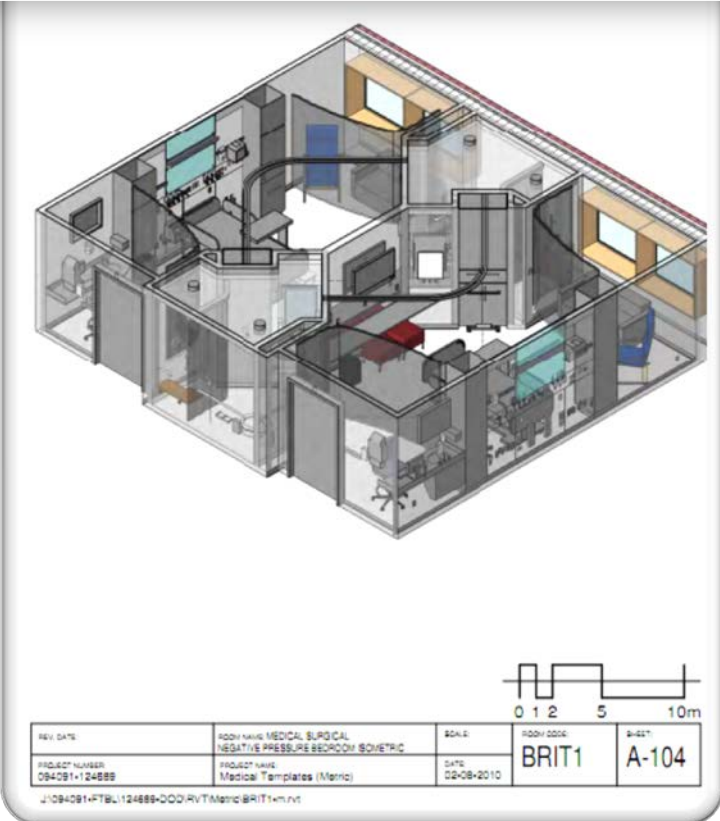


7



# MHS BIM Objectives - Planning

On-Call Room (DUTY1/TLTS1) <b>NEW</b>	10-12-2011	185 KB    207 KB    10 MB
Exam Room, ENT (EXEN1) <b>NEW</b>	10-12-2011	245 KB    478 KB    15 MB
Exam Room (EXRG1) <b>NEW</b>	10-12-2011	236 KB    445 KB    11.5 MB
Exam, Screening (EXRG4) <b>NEW</b>	10-12-2011	232 KB    485 KB    15.6 MB





# MHS BIM Objectives - IO&T

8

- Support the **initial outfitting** procurement process
  - Sequence phasing
  - Programming of IO
- Support the **transition** process
  - Sequence / phasing support
  - Inform users – familiarization with new spaces and training



# MHS BIM Objectives - Interoperability

- Support and Insist on BIM solutions that support the interoperability AEC information.
  - Participate in AEC industry dialog on degrees of interoperability – get technology focused on solutions that support the FLCM work.

9

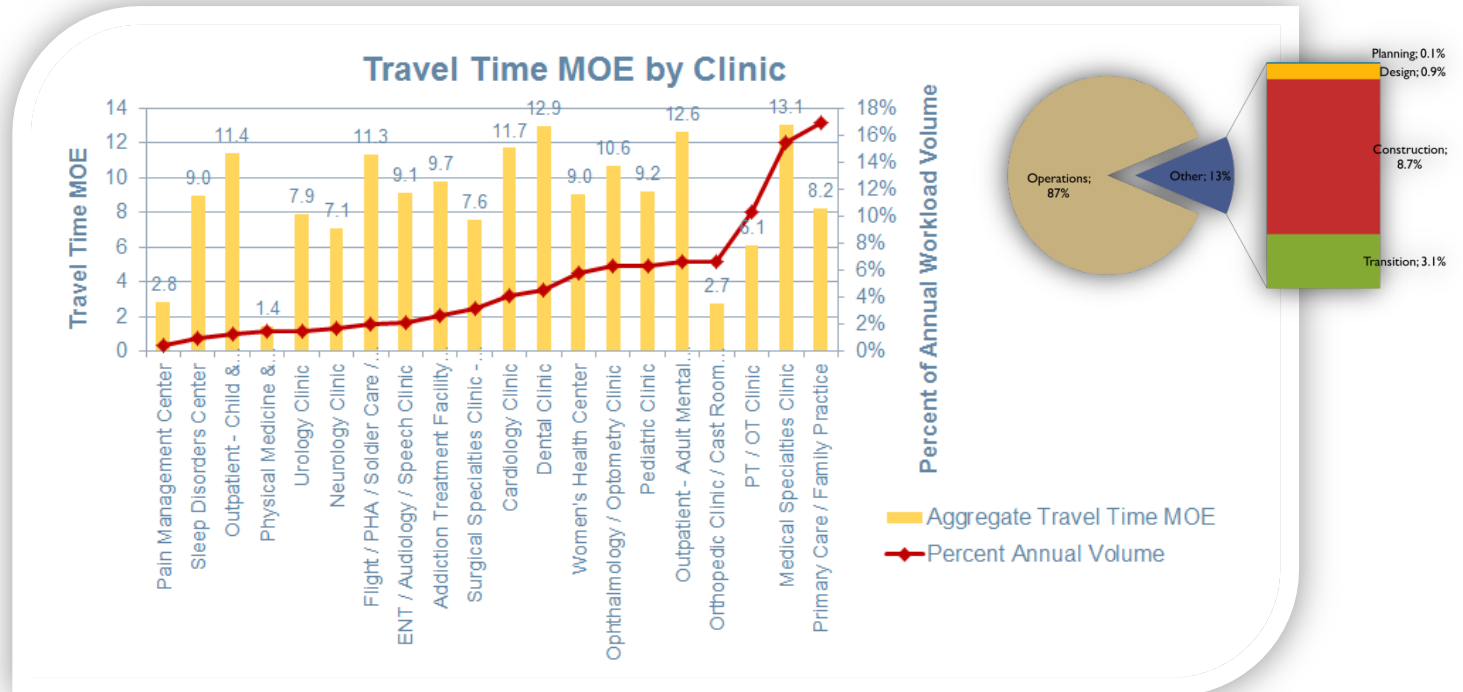




# MHS BIM Objectives – Support Simulation

10

- Support simulation efforts relating to planning and access healthcare process and association with facility solutions.





Chapter 20 describes requirements and provides details on minimum requirements. Located in [www.wbdg.org](http://www.wbdg.org) site: [http://www.wbdg.org/ccb/DOD/UFC/ufc\\_4\\_510\\_01.pdf](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_510_01.pdf)

## **DOD UFC 4-510-01**

### **DESIGN: MEDICAL MILITARY FACILITIES**

## **CHAPTER 20 BIM**



# UFC 4-510-01 Chapter 20

- Minimum Requirements
  - Built on the USACE BIM contract language for non-platform specific BIM tools.
- Defines DoD-MHS FLCM characteristics
  - Key data points to support objectives
- Starts the process to align with VA efforts
- Works towards supporting a greater information flow with the broader US healthcare system
- Works support bigger picture national disaster relief coordination of information for healthcare.



# UFC 4-510-01 Chapter 20



- Attributes Defined:

- Project Level

- Room Level

- PFD

- UFC Appendix A

- Object Level

- Real Property Installed Equipment (RPIE)

- Medical Equipment & Furniture (MIL-STD 1691) - PRC

- Reports / Queries Defined

- Internal vs External Options for Data

PIP #001 | 2010

Parameter Name	Description	Type	Character	Response Authority
Barcode	Unique barcode number assigned - no duplicates	Text	20	Note 1, 9
Capacity_Unit	Capacity of the piece of RPIE (e.g. BTUs, Tons, kVA, etc). Must be a valid capacity from the "DALSS Capacity Unit" table	Text	20	Note 1
Capacity_Value	The value of the capacity based on the "Capacity_Unit" associated	Text	11	Note 1
Catalog_No	RPIE item catalog number by manufacturer	Text	20	Note 1
Equipment_Head	Head associated with RPIE item. Must be a valid head in the "DALSS Head" table	Text	20	Note 1
Facility_Subsystem	DALSS RPIE Hierarchy subsystem	Text	60	Note 1, 9
Facility_System	DALSS RPIE Hierarchy system	Text	60	Note 1, 9
Index_Number	Unique identifier assigned by the medical treatment facility (MTF) - no duplicates	Text	25	Note 1, 9
Installation_Date	Date of installation	Date	DDMMYYYY	Note 1
Life_Expectancy	Expected operational life in years of the RPIE item	Integer		Note 1
Manufacturer	RPIE item manufacturer	Text	40	Note 1
Model	RPIE model number	Text	20	Note 1
Nomenclature	Generic name used for managed equipment in the DALSS RPIE Hierarchy	Text	40	Note 1, 9
PM_Parent	Pre-entire maintenance schedule required on this item, but must be done with maintenance of a parent item	Text	1	Note 1
PM_Required	If maintenance is required on the parent RPIE item's "Index_No" here	Text	25	Note 1

27

PIP #001 | 2010

Subject: UFC 4-510-01 Update (M Requirements)

Status: FINAL DRAFT

NOVEMBER 26, 2010

Parameter Name	Description	Type	Character	Response Authority
PM_Method	Preventive maintenance schedule required Y = yes, or N = No	Text	1	Note 1
QA_Method	R = random, A = automatic; associated with government maintenance over life of RPIE item (Quality Assurance)	Text	1	Note 1, 9
QC_Method	R = random, A = automatic; associated with government maintenance over life of RPIE item (Quality Control)	Text	1	Note 1, 9
Risk_Assignment	Risk value assigned to the piece of equipment leading to the criticality of the individual piece of RPIE. Must be a valid DALSS Risk Assignment value	Text	25	Note 1, 9
Serial_No	RPIE serial number	Text	20	Note 1
Specification_Unit	Unit of measure for the RPIE item (e.g. amperes, volts, hertz, etc.)	Text	20	Note 1
Specification_Value	The value of the specification based on the "Specification_Unit" associated	Text	11	Note 1
Total Items 23				
Warranty_Labor_Expiration	Date on which the terms of the warranty for labor end	Date	DDMMYYYY	Note 1
Warranty_Parts_Expiration	Date on which the terms of the warranty for parts end	Date	DDMMYYYY	Note 1
Warranty_Start	Date the warranty starts for the RPIE item	Date	DDMMYYYY	Note 1
Warranty_Vendor	Vendor organization that holds the warranty responsibility	Text	40	Note 1
Total Items 30				

28

# MHS Facilities Websites

TRICARE HOME

OCFO HOME

PPMD Portfolio Planning & Management Division

About PPMD | Policy & Criteria | Research & Tools | Events

Portfolio Planning and Management Division (PPMD) was created in 2002 to serve as the focal point for all issues pertaining to the acquisition, sustainment, renewal and modernization of the full range of facilities within the Department of Defense (DoD) TRICARE Military Health System (MHS).  
> [Read More](#)

What's new on the PPMD Website? Click on the video below to find out!

News & Announcements

- PPMD FAQs
- Project Points of Contact (Acq. Branch)
- New World Class Facility Checklists
- New The guide-plates and space planning criteria have moved to the Whole Building Design Guide (WBDG.org).
- New Overview of Energy Management Requirements (See [Sustainability Policy](#))
- HFSC meetings. (See [Events-HFSC](#))

Search via Google

only search PPMD Site

Time Keeper (DAJ)

Related Documents

<http://www.tricare.mil/ocfo/ppmd/index.cfm>

World-Class Facilities *beta*

MILITARY HEALTH SYSTEM | U.S. Department of Defense

Home | Knowledge Center | World-Class Toolkit | Executive Dashboard | Contact Us

World-Class Facilities

The Portfolio Planning and Management Division of the Office of the Secretary of Defense, Health Affairs is committed to delivering world-class medical facilities that support a care experience that is patient- and family-centered, compassionate, convenient, equitable, safe, and always of the highest quality. This site is a place of learning and sharing for everyone involved in making this happen.

Enjoy the use of tools developed specifically for this endeavor. Learn from the vast amount of information compiled here. Post your thoughts and perseu others.

Become a part of the World-Class movement.

WORLD-CLASS UPDATES NEW!

The World-Class Checklist (BETA) is now available. To use the Checklist or learn more about it, visit the [World-Class Checklist](#) on this site.

NEWS

Navy Program Increases Operational Stress Awareness  
Posted 2 December 2010 | 12:28 pm  
While both operational tempo and mission issues continue to remain in

EVENTS

- 14 Dec: CIM
- 30 Dec: CPC Budget Workgroup
- 30 Dec: CPC Project Workgroup
- 13 Jan: CPC Budget Workgroup
- 13 Jan: CPC Project Workgroup

Full Calendar

CONNECT (click a logo to visit connections)

DKO DEFENSE ONLINE

DCO A DODS CENTER SOURCE

TAGS (click a word to see related pages)

QUICK LINKS

[www.mhsworldclassfacilities.org](http://www.mhsworldclassfacilities.org)



Go to BIM for MHS



# Questions



More info at:

<http://www.tricare.mil/ocfo/ppmd/guideplates.cfm#Tools-BIM>