BU11562 - Owner / Operator-Driven BIM Libraries for Project, Facility, and Asset Management

Tony Rinella Director, SBI•bimSCORE
Kimon Onuma President and Founder, Onuma Inc.
Calvin Kam CIFE, Stanford University & Founder, SBI•bimSCORE

Class summary

This class will present case studies of inventive Building Information Modeling (BIM) approaches adopted by 2 very different facility owners. Each one pushed beyond incremental BIM adoption to rethink workflows, develop BIM object libraries, and transform project processes. See results of their efforts presented from theoretical and practical perspectives. A large healthcare facilities owner integrates BIM libraries and standards throughout the project lifecycle. Their BIM library objects embody design requirements; data management protocols; local/global best practice standards to improve reliability and efficiency of BIM for design, delivery, and facility management with support; and additional capabilities such as 3D stereoscopic viewing, way-finding, and seamless data-sharing with facilities management (FM) applications. An international developer/operator shifts the focus of BIM organization from component-type hierarchies to elements representing installation and construction processes as performed on site, informing better cost and prefabrication analysis.

Key learning objectives

- New Owner-driven approaches to leverage additional value from BIM investments.
- Produce BIM better fit to support intended purposes, improve reliability, efficiency, and quality assurance.
- Coordinate Facility Design Requirements with Facility Maintenance Needs.
- Clarify Facility Data Requirements for design, construction, and FM

Acknowledgements/Credits

Thanks to

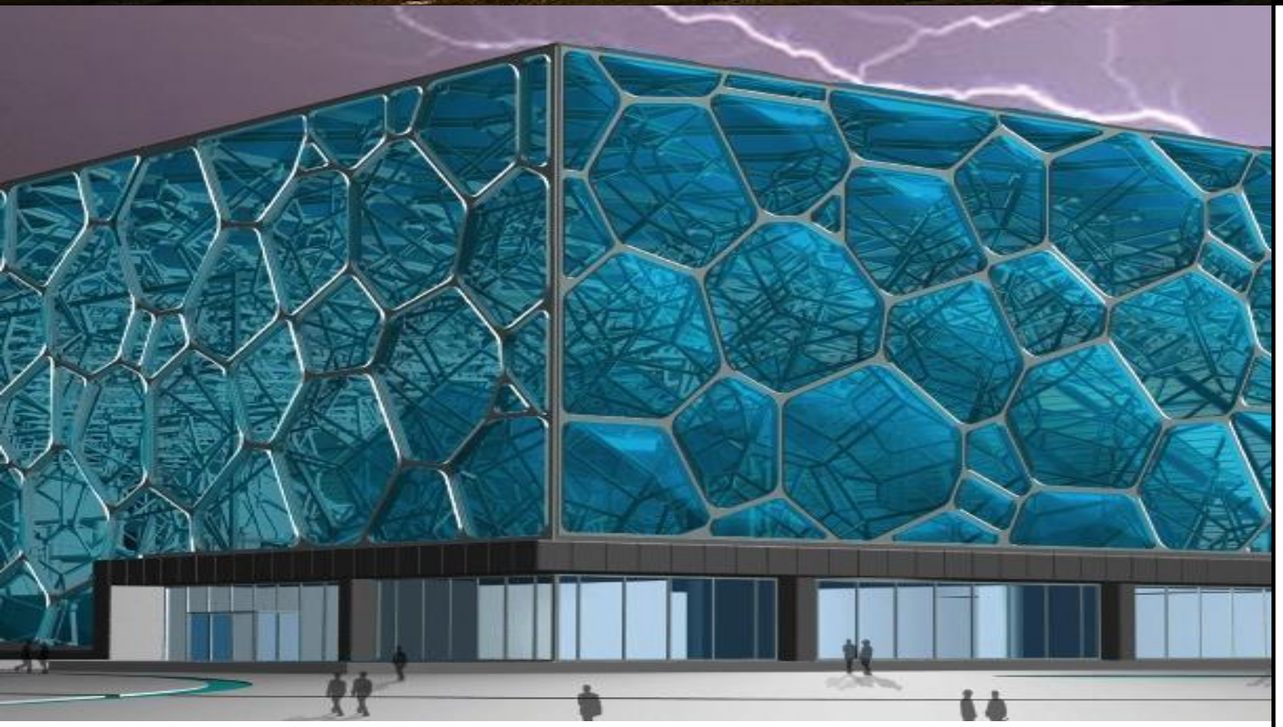
- CIFE, Stanford University
- MOH Holdings

- SBI•bimSCORE
- Axes Studios
- EcoDomus
- Onuma, Inc.

Time to Chime In !

By show of hands, how many here are primarily:

- Owners / Facility Managers
- Builders
- Designers
- Software / Hardware Solutions Developers
- Consultants
- Educators
- Chefs



Developing Processes that Connect People to Information

Efficiently connecting field personnel with the right information at the right time is a major challenge especially with the enhanced reliance upon BIM for this project. Remote access to the BIM became the solution. A project dashboard was created that linked anyone with internet access to the entire project information library. Touch screen plan room computer interfaces all but replaced paper drawings in the project site office, reducing printing costs by over 50%. All models and plans were uploaded and all details were linked electronically to speed access.

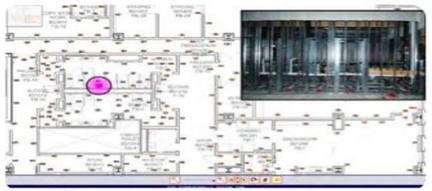
Information made it to the field quickly through touch screen terminals and tablet computer interfaces. An immense project information wall containing the digitally produced site logistics plan was reviewed by all tradespersons in a daily planning meeting. This plan graphically communicated deliveries and work planned for the day, helping to deliver 400,000 CM self-performed work hours without a single recordable safety incident.

Plan room computer dashboard interface

Touch screen plan room computers replace paper drawings

Field tablets connect directly to the cloud

Field computer dashboard interface

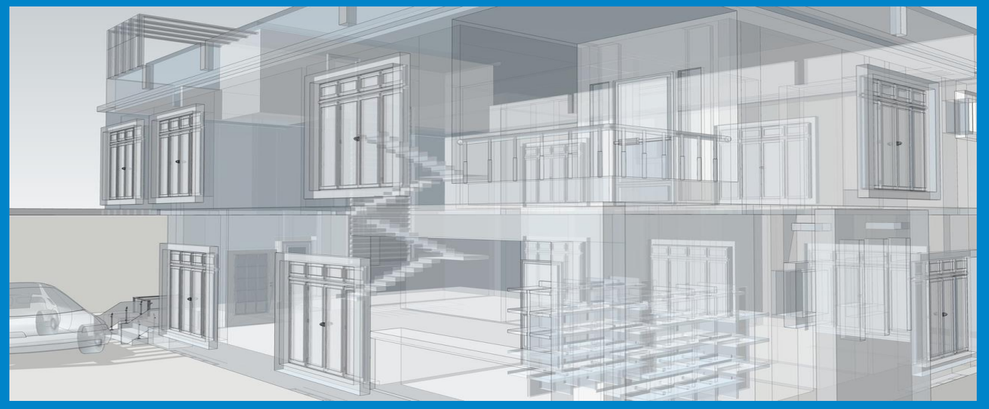


In-wall documentation for facilities maintenance

Electronic closeout and O&M interface for facilities maintenance

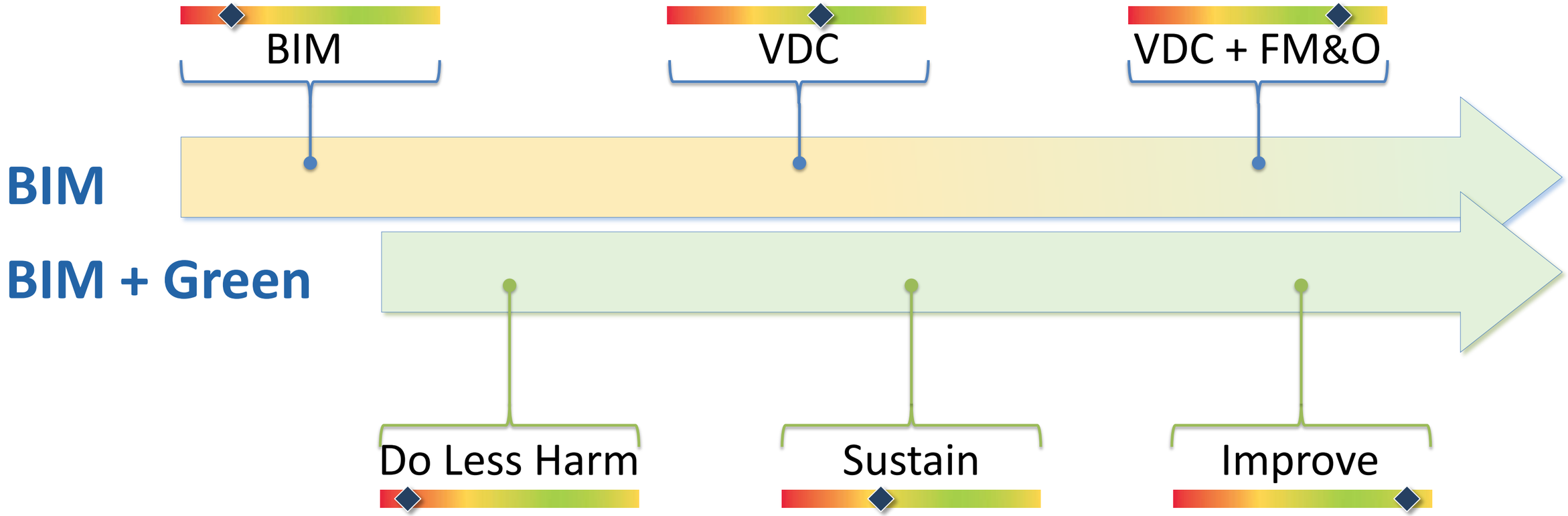
AIA

2005 | 2013



Integrating BIM and Green Building Objectives

Improve BIM Adoption and Sophistication

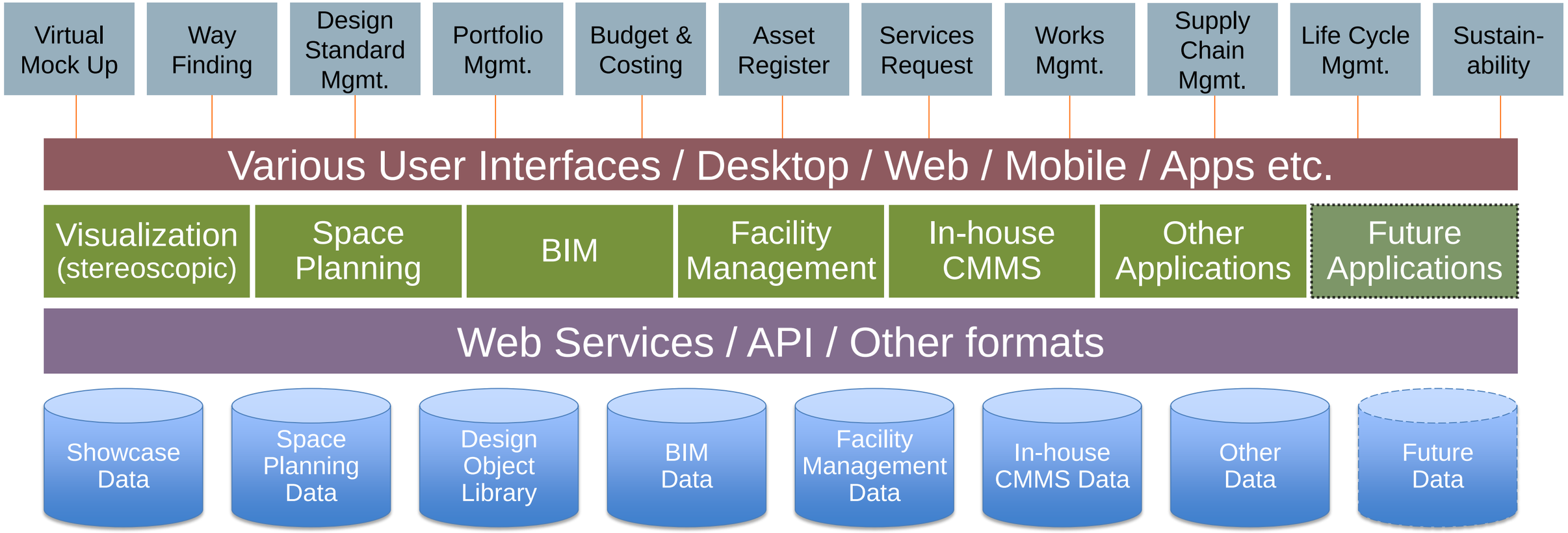


Accelerate and Track Green Building Accomplishments

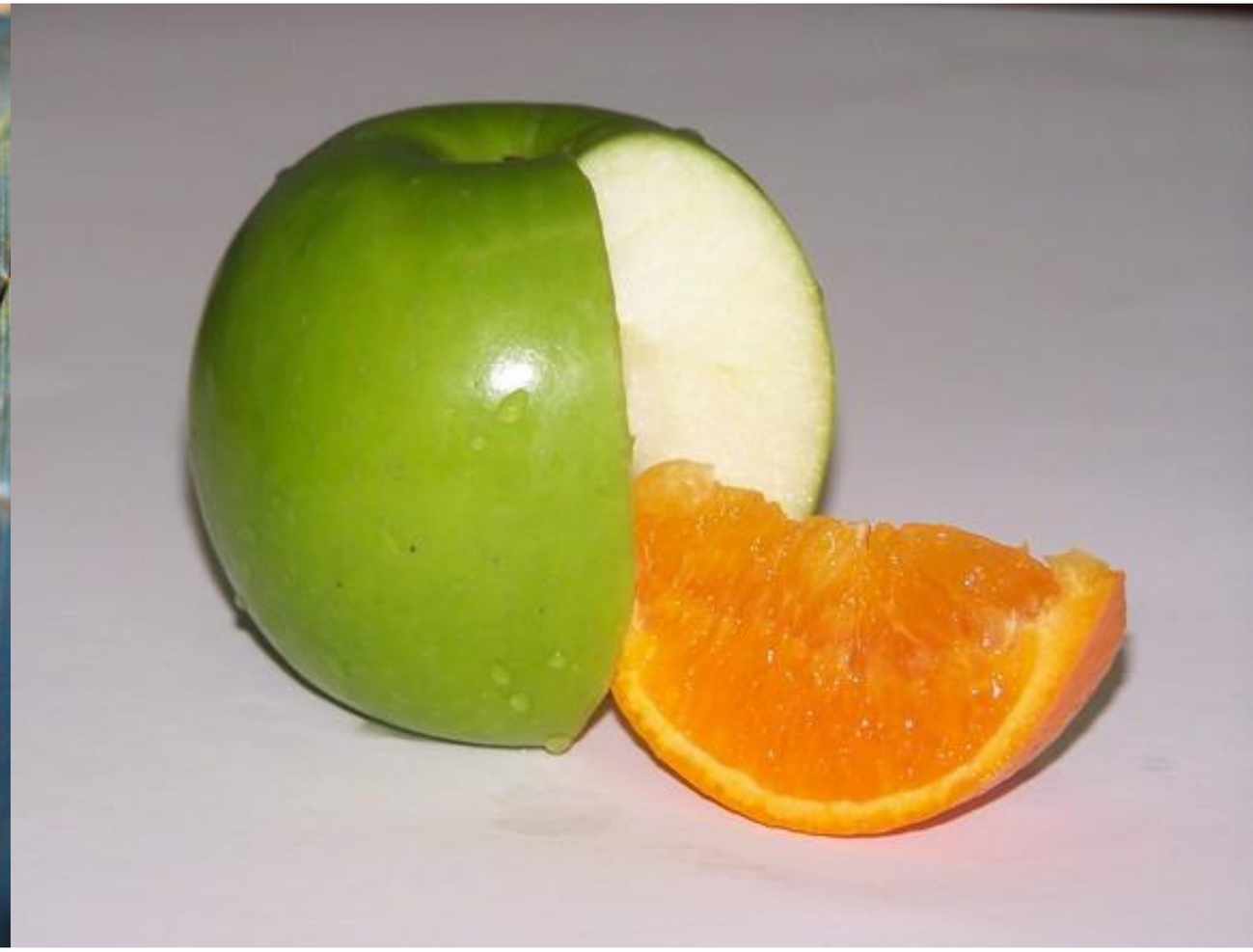
Process and Data Platform


LOVETHISPIC.COM

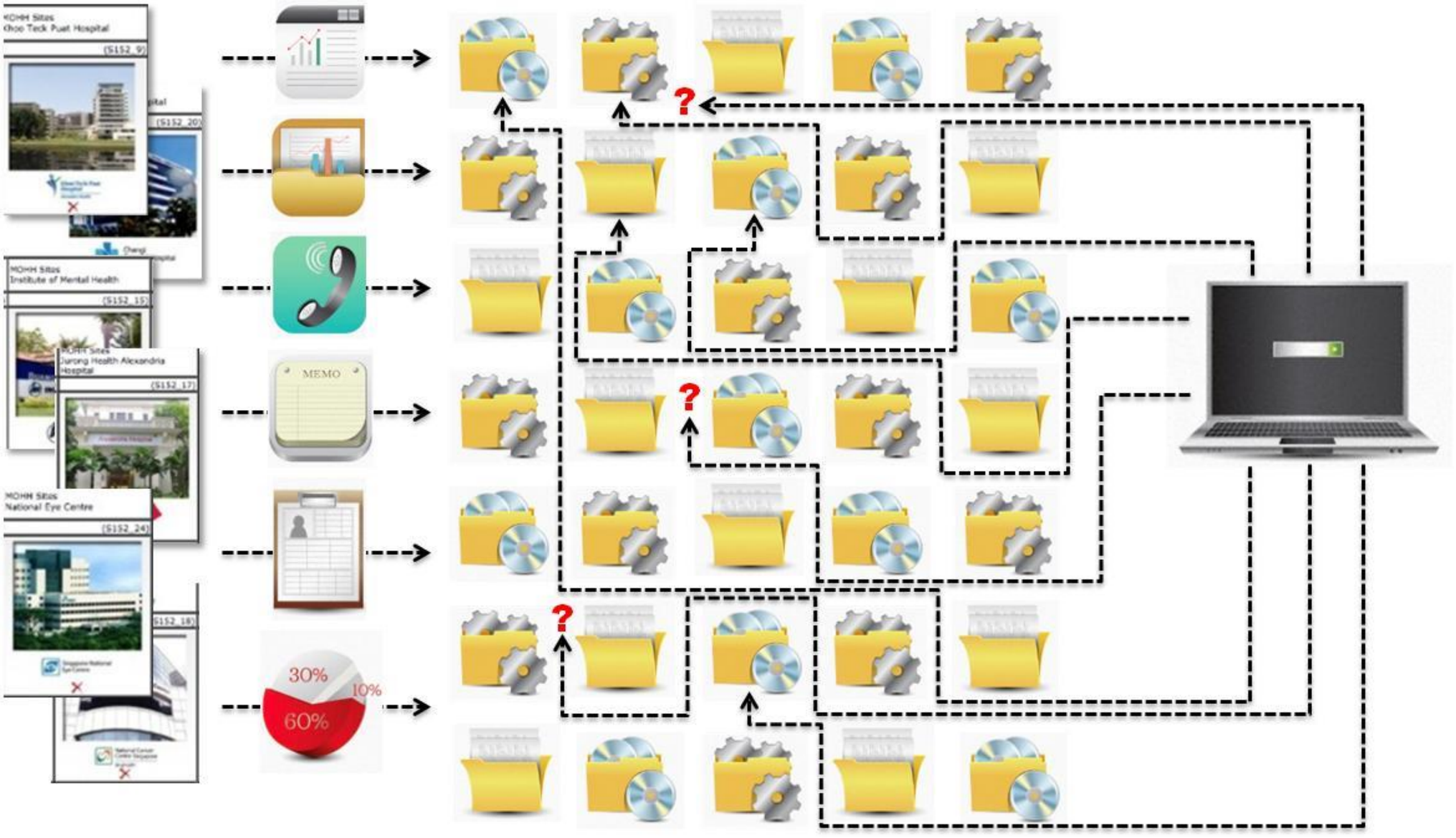
Process and Data Platform



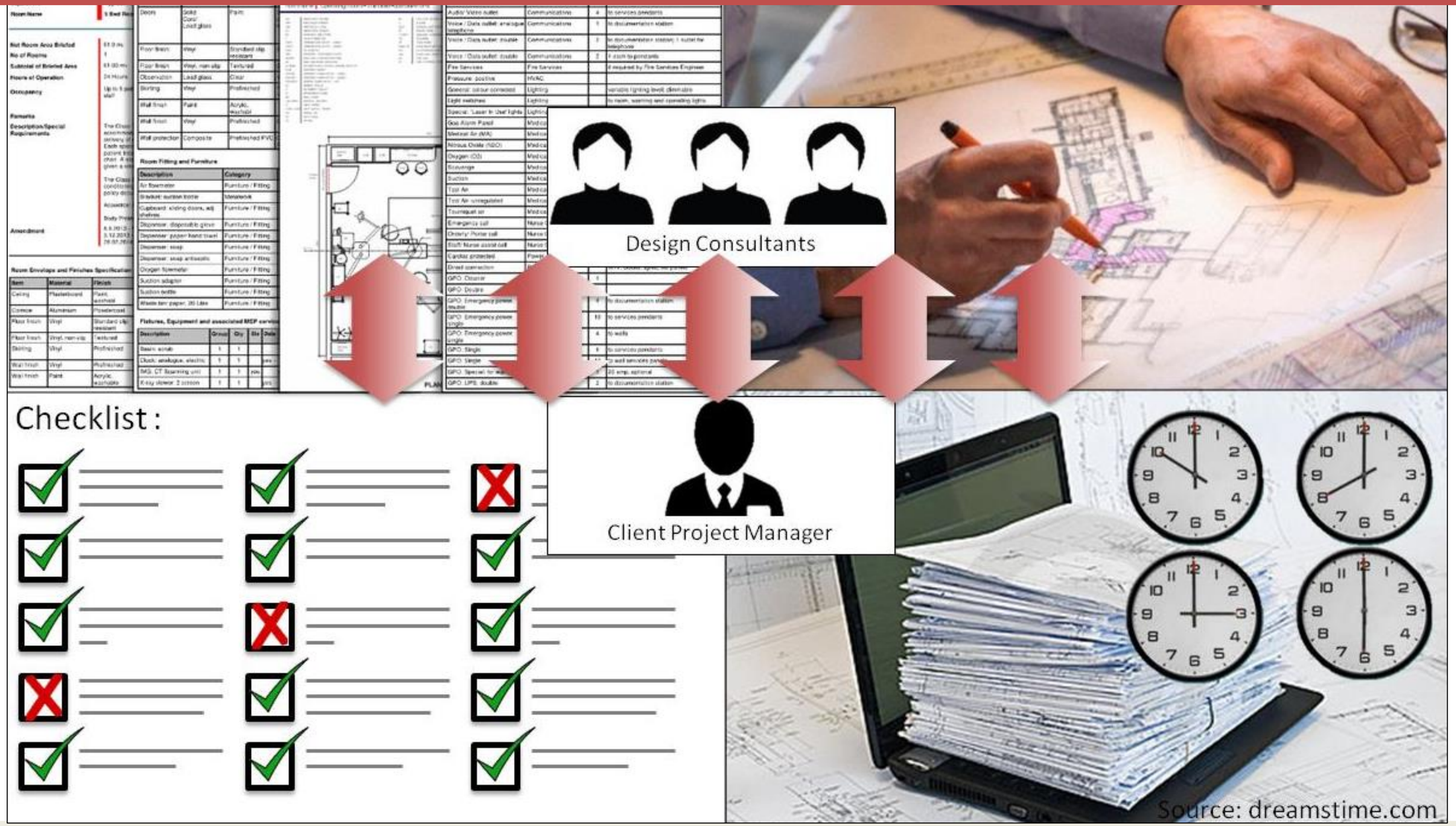
MOH HOLDINGS axes studios ecodomus ONUMA strategic buildinginnovation



Inefficient Data Location Processes



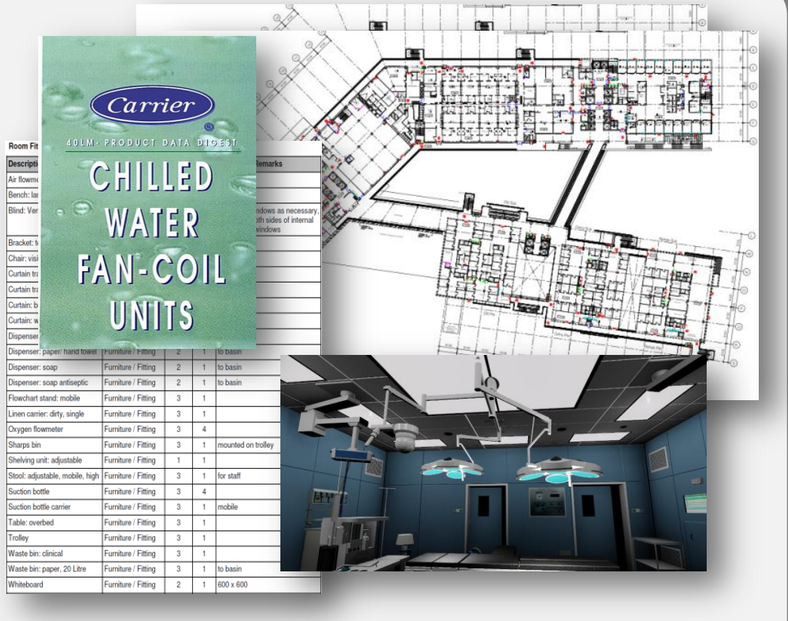
Inefficient Management of Requirements



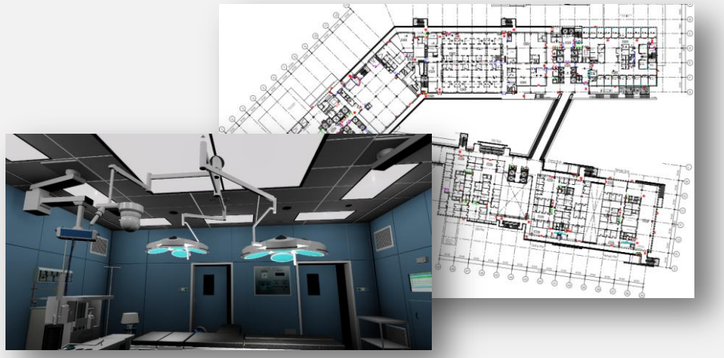
Piecemeal Approach to Communication

Architects

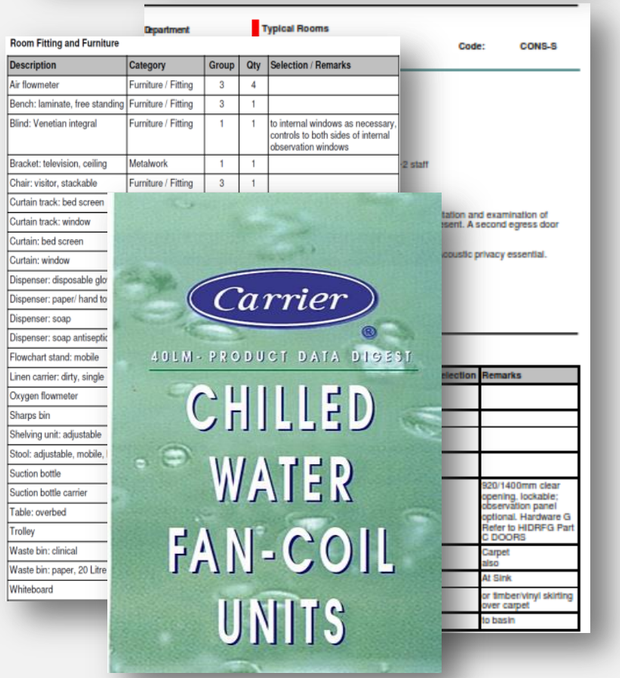
Engineers



Healthcare Professionals



Facility Manager



FM Team

Maintenance Team

Inadequate Faciity Maintenance Information

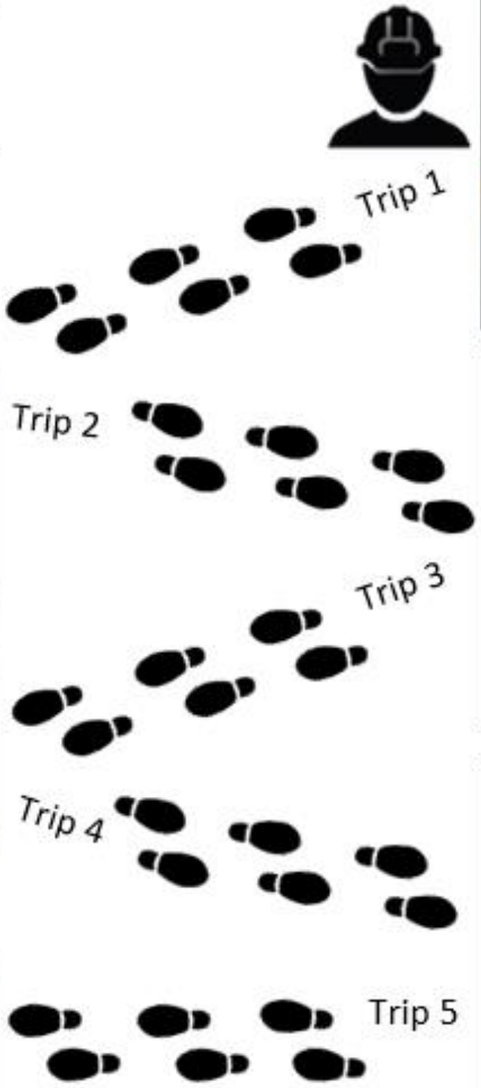
Adjusted the thermostat, but Room 3216 is **still too warm**

Control panel functions properly

A **ladder is needed** to inspect the Fan Coil Unit

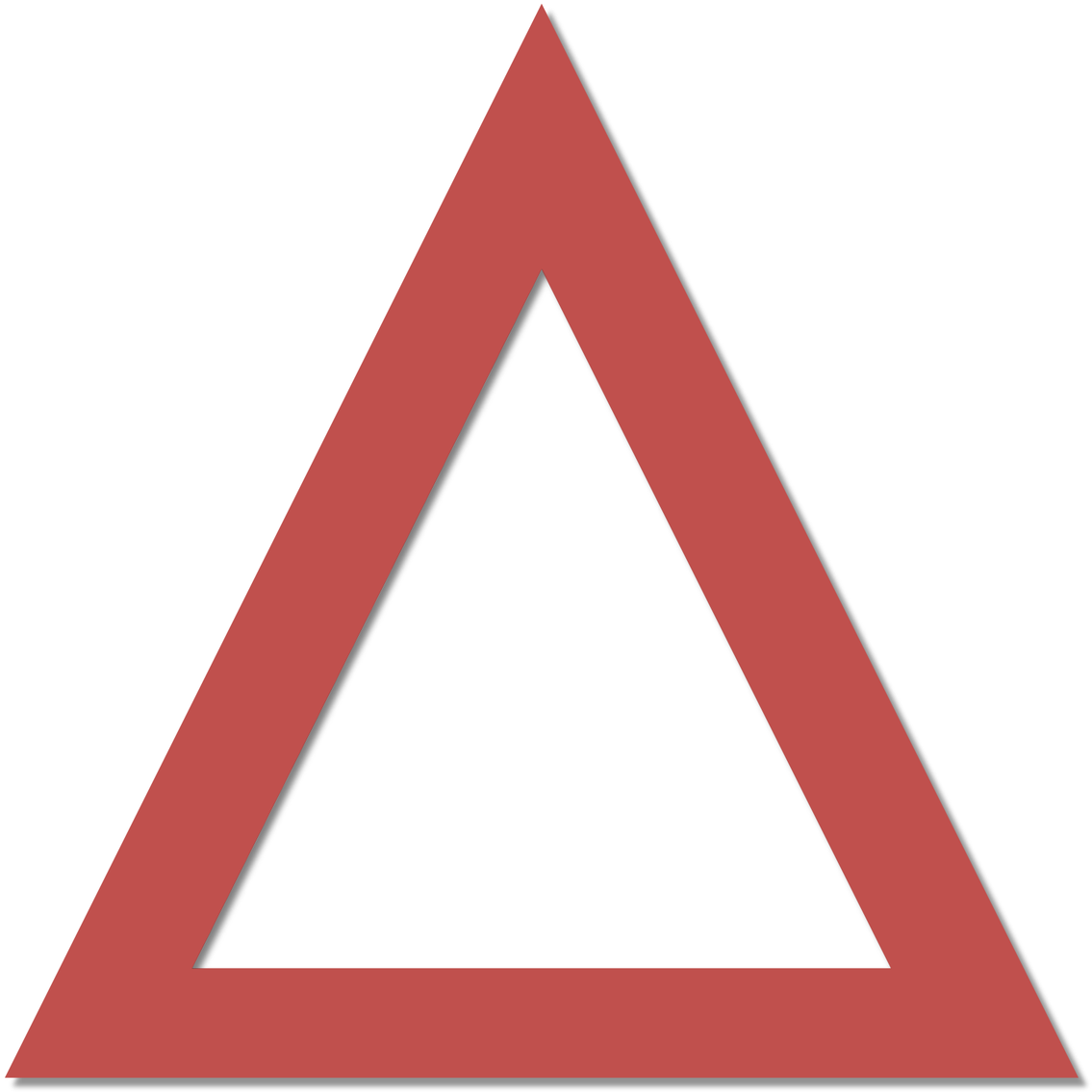
Inspection of Fan Coil Unit confirms the blower **motor must be replaced**

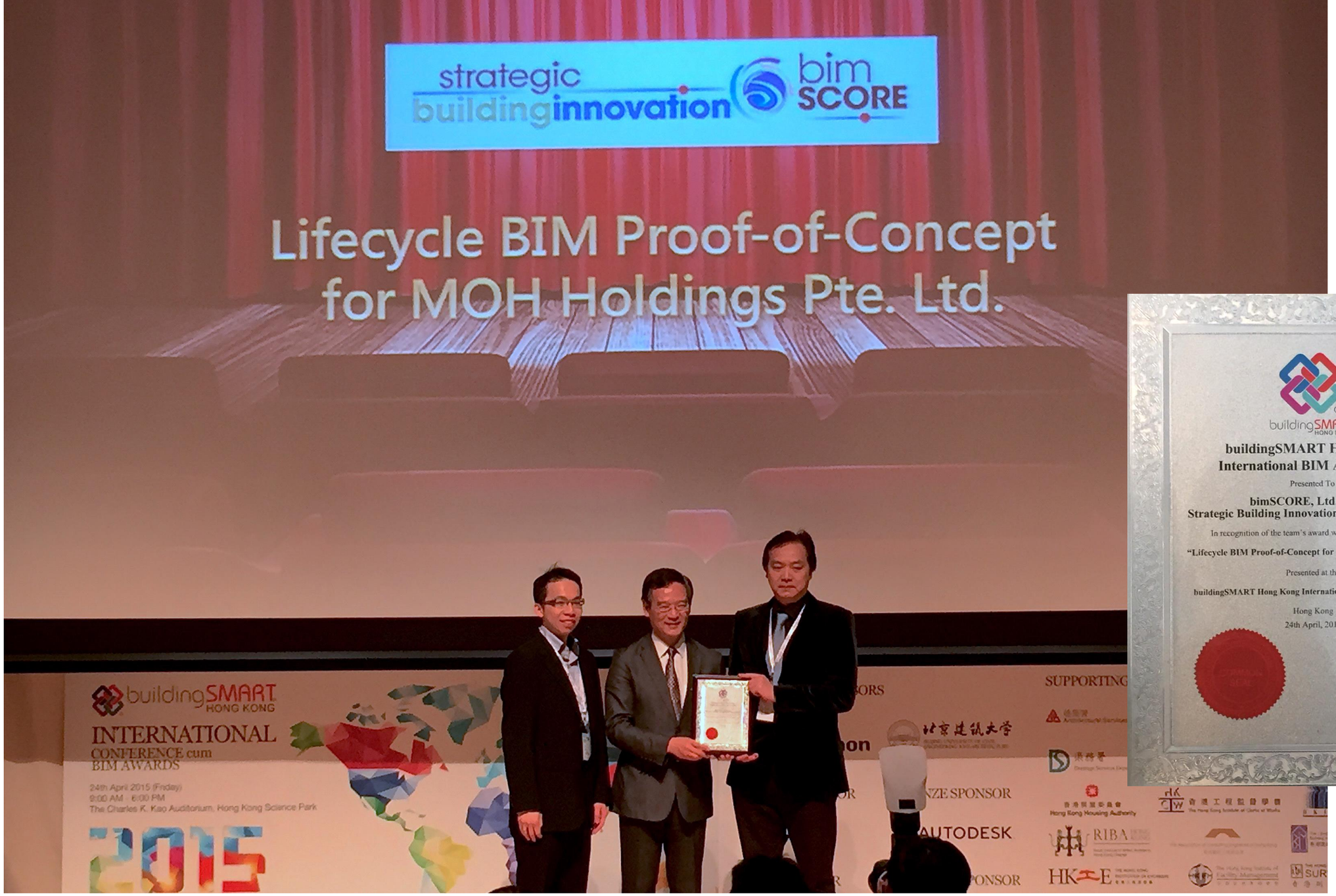
Replace the blower motor and mark the **issue resolved**



Search for model number in Fan Coil Unit spec & **acquire the needed motor**

Source: [1] cardinalheating.com, [2] flccontracting.com, [3] perrinmfg.com





buildingSMART HONG KONG

buildingSMART Hong Kong
International BIM Award 2015

Presented To

bimSCORE, Ltd. D.B.A.
Strategic Building Innovation (SBI•bimSCORE)

In recognition of the team's award winning project entitled

"Lifecycle BIM Proof-of-Concept for MOH Holdings Pte. Ltd."

Presented at the

buildingSMART Hong Kong International BIM Conference 2015

Hong Kong
24th April, 2015

Nelson Ho, Founding Chairman

Law Hon-wah, Honorary Secretary

Maintain Standards | Publish Standards | Design | Verification | Induction | Use

Challenges

BIM Library Approaches

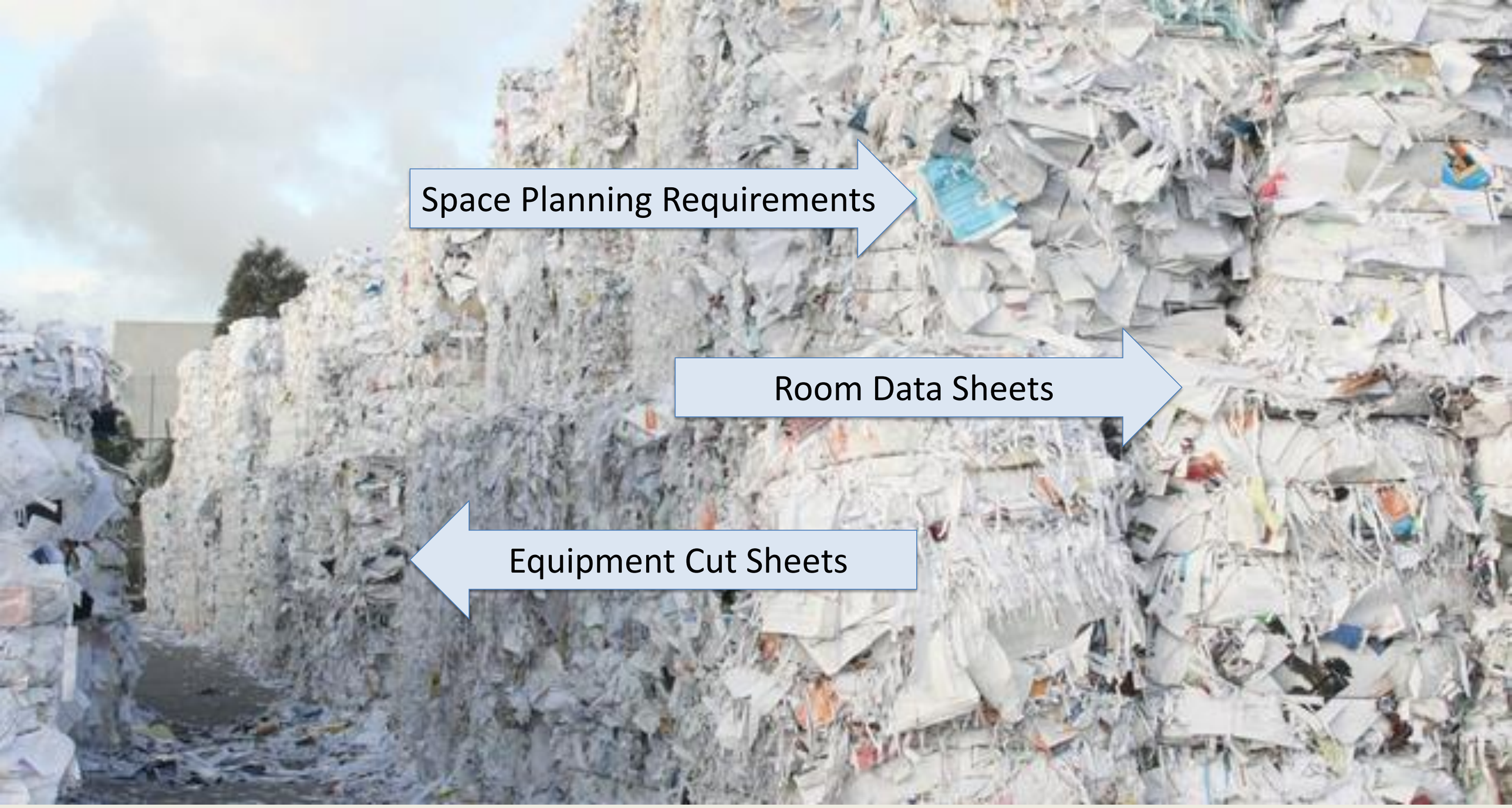
Maintain Standards | Publish Standards | Design | Verification | Induction | Use

Challenges

Maintenance of Many

Data Sheets & Drawings

Unpredictable Standards


Space Planning Requirements
Room Data Sheets
Equipment Cut Sheets

Time to Chime In !

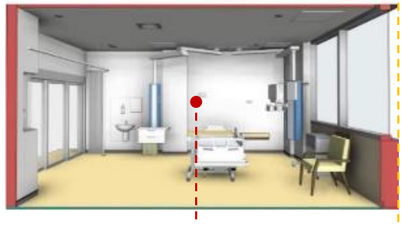
How many here work with space planning requirements?

How are these published:

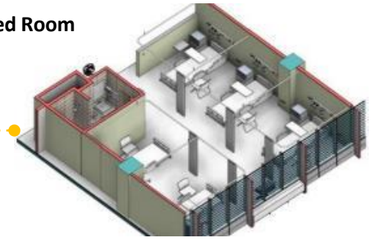
- Binders?
- PDF?
- Vulcan Mind Meld?
- Online Requirements Documents?
- BIM Library Objects?
- Interactive Online Planning Systems?
- What standards?

Typical Rooms

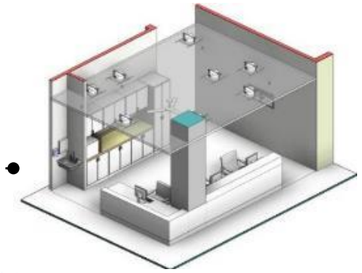
ICU



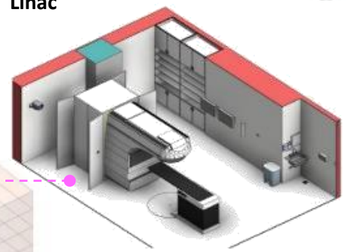
5 Bed Room



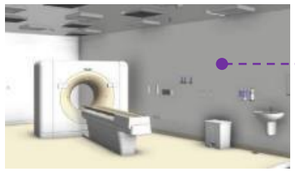
Nurse Station



Linac

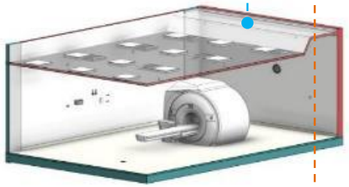


CT Scanner



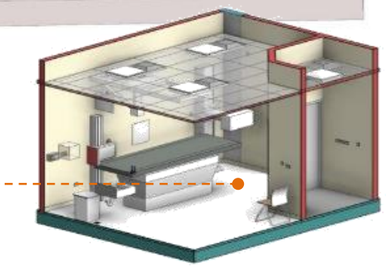
OT-5

MRI

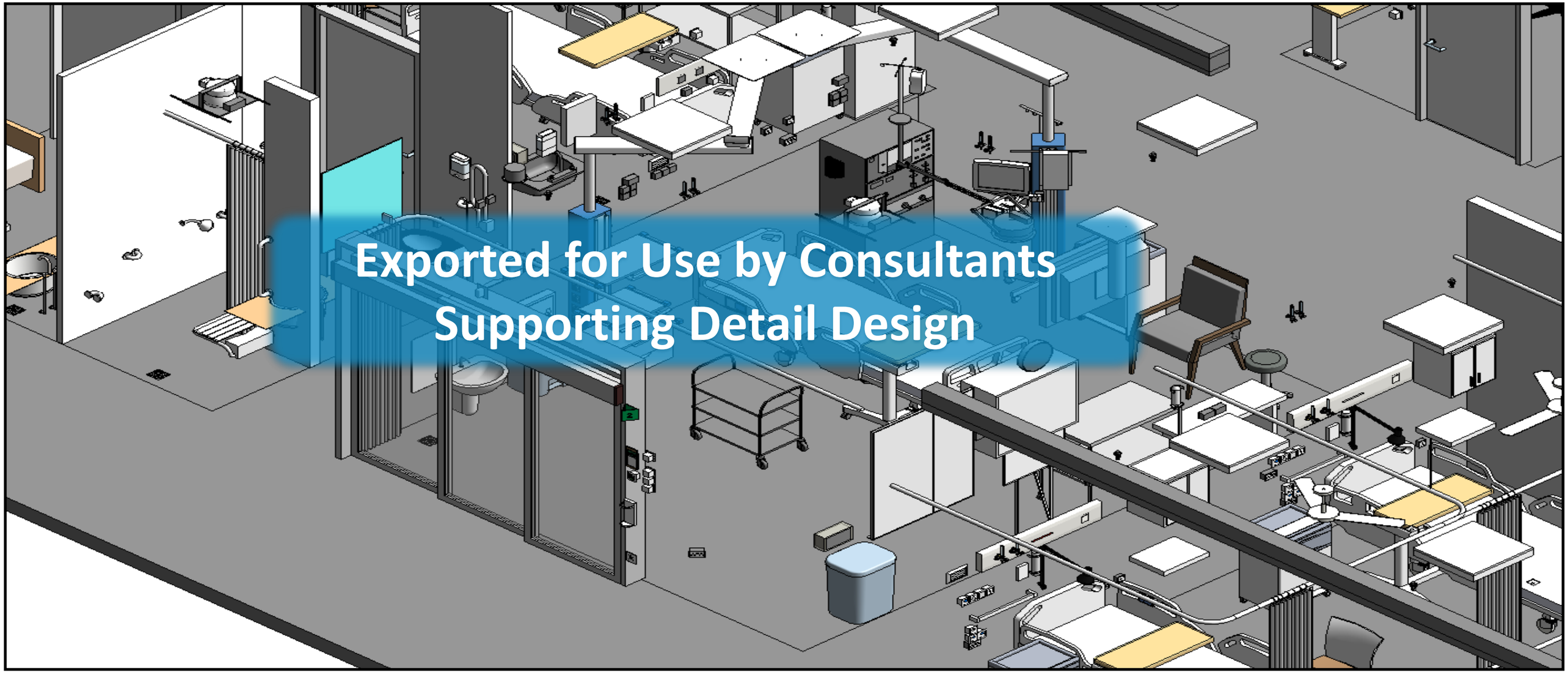


Single Bedder

X-Ray



Requirements Published via Data + Web Services

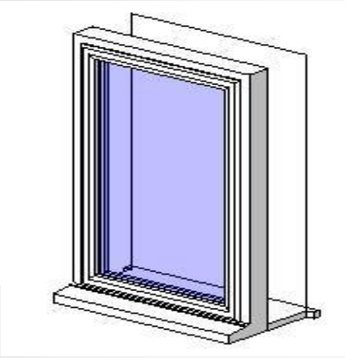


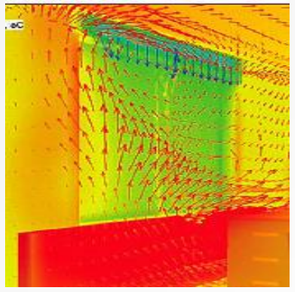
Over 280 Design Objects

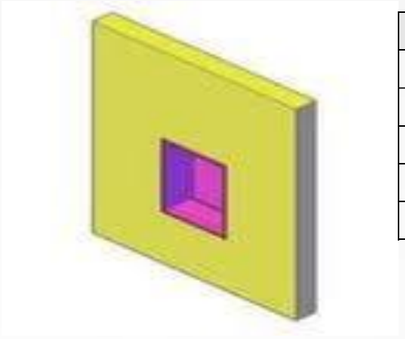
Maintain Standards | **Publish Standards** | Design | Verification | Induction | Use

Challenges	Accomplishments
Maintenance of Many	**Single Source**
Data Sheets & Drawings	Design Object Library
Unpredictable Standards	Client BIM Standard

Object Library Part Parameters







Field Name	Data Type	Size
OperationType	Text	50
FrameDepth	Number	Double
FrameThickness	Number	Double
PanelPosition	Text	50
ShapeAspectStyle	Text	50

FORM Width, Height, Color, Style

The geometry and materials of a designed part

FUNCTION U-Factor, Structural Strength

The requirements or intentions for a designed part

BEHAVIOR Actual Heat Gain / Loss, Structural Deflection

The performance of a part in the context for which it is designed.

Source: CIFE, Stanford University

Component Settings: 61 - 01-1502 - 01-1502-Electric Patient Beds

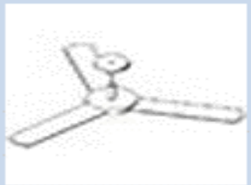
General | Attachments | Display

Name:	01-1502 - 01-1502-Electric Patient Beds Cr
Length:	1.017
Width:	2.551
Height:	0.878
Elevation Above Ground:	0
Angle:	-90
Mirror:	
Quanity:	1
Secondary Space Association:	(Please select space)
Department:	(Mixed Values)
Type:	01-1502 - 01-1502-Electric Patient Beds
Category:	Specialty Equipment
Instance Name (Unique Mark):	01-1502-3

Component Settings: 174 - 10-0302 - 10-0302-Ceiling Fan

General | Attachments | Display

Name:	10-0302 - 10-0302-Ceiling Fan
Length:	1.064
Width:	0.944
Height:	0.305
Elevation Above Ground:	2.695
Angle:	0
Mirror:	
Quanity:	1
Secondary Space Association:	(Please select space)
Department:	(Mixed Values)
Type:	10-0302 - 10-0302-Ceiling Fan
Category:	Electrical Fixtures
Instance Name (Unique Mark):	10-0302-2

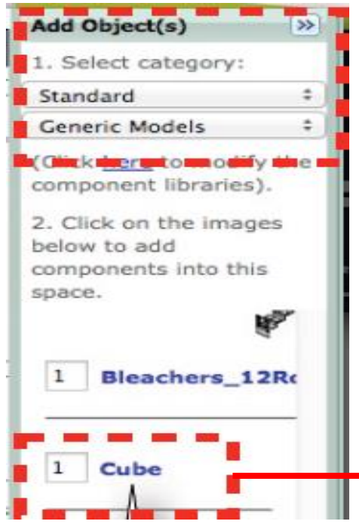


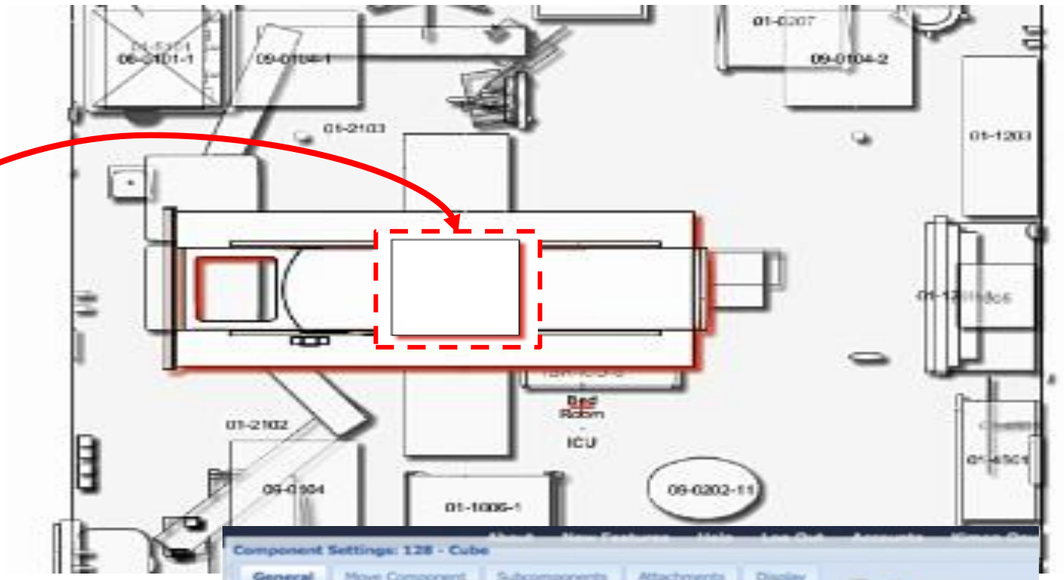
Maintain Standards | Publish Standards | Design | Verification | Induction | Use

Online Library Embodies Standards

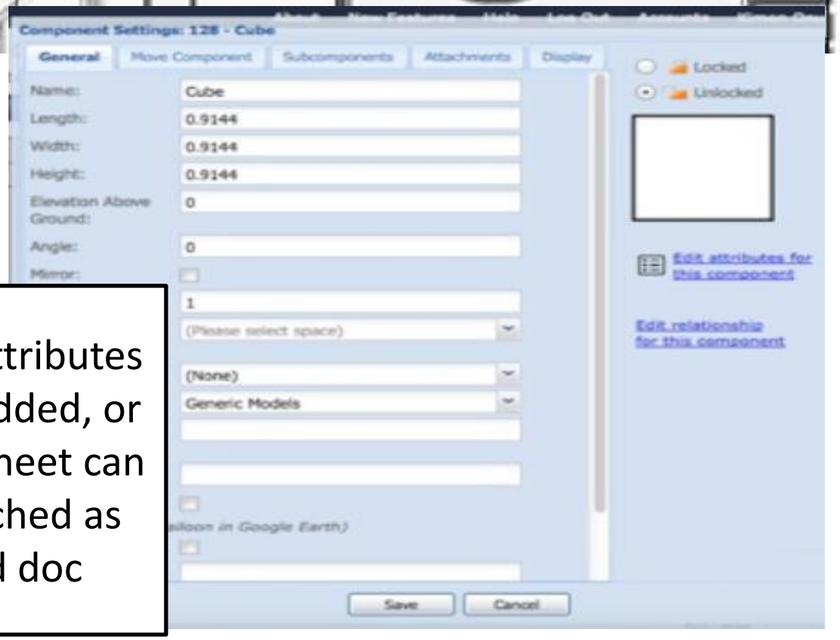
Challenges	Accomplishments
Maintenance of Many	**Single Source**
Data Sheets & Drawings	Design Object Library
Unpredictable Standards	Client BIM Standard

We need to add this Boom Arm in this ICU Room





It is then added as new a requirement and ready to be used by consultants



Object attributes can be added, or the cut sheet can be attached as linked doc

Maintain Standards

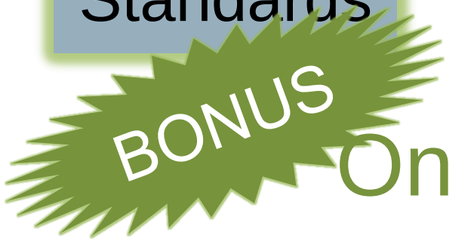
Publish Standards

Design

Verification

Induction

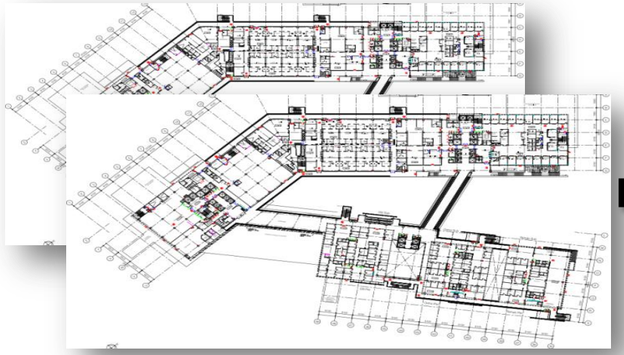
Use



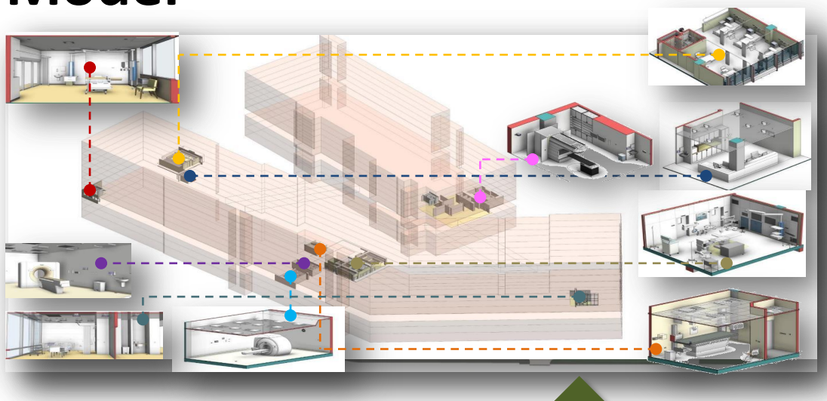
Online Library Embodies **Current** Standards

Challenges	Accomplishments
Maintenance of Many	**Single Source**
Data Sheets & Drawings	Design Object Library
Unpredictable Standards	Client BIM Standard

2D Drawings

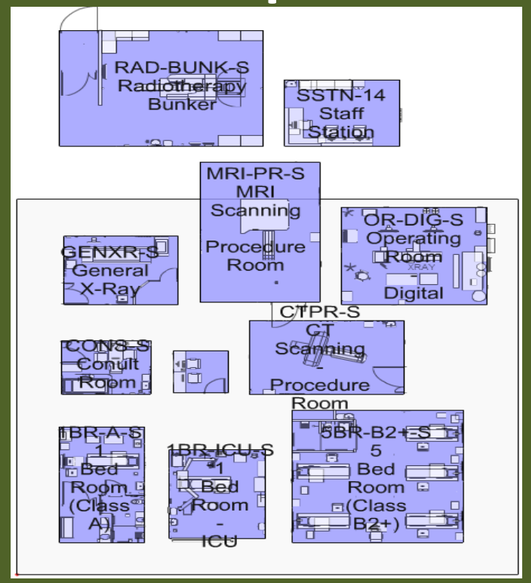


Model



Auto-generated BIM

Room Templates



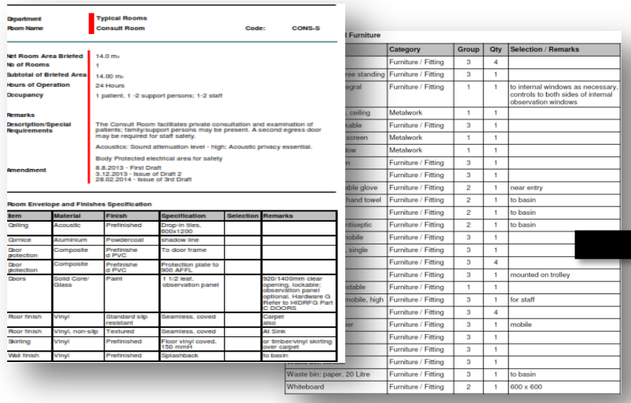
https://www.onuma.com/plan/OPS/modulet/viewSpaceCobieAttribute.php?sysID=

Additional / Free Form Attributes		
Attribute Name	Value	Unit
Windows	Yes	n/a
General Lighting Notes	colour corrected	n/a
Medical Air MA	1	n/a
Oxygen O2	1	n/a
Cornice Finish 01	Pd-SdLn	n/a
Cornice Material 01	Al	n/a
Ceiling Finish 02	Tl	n/a
Ceiling Material 02	Pb	n/a
Skirting Finish 02	FE	n/a
Skirting Finish 01	Pf-FlV	n/a
Skirting Material 02	V	n/a
Skirting Material 01	V	n/a
Wall Protection Finish 02	LA	n/a
Wall Protection Finish 01	Pf-PVC-CrGd	n/a
Wall Protection Material 02	MDF	n/a
Wall Protection Material 01	Co	n/a
Wall Finish 02	Acr-W	n/a
Wall Material 02	P	n/a
Floor Finish 02	TX	n/a
Floor Material Alt	Cp	n/a
Floor Material 02	V-Ns	n/a
Clear Ceiling Height	3000	n/a
Room Description	The Class B2+ Bedroom will be provided with an Ensuite and airconditioning; no TV or phone services are provided (refer to MOH policy documents for information).	n/a

BIM Space & Equipment sheets

Model and Space Requirements Integrated in Cloud

Room Data Sheets



Department	Typical Rooms
Room Name	Consult Room
	Code: CONS-S
Net Room Area Briefed	14.0 m²
No of Rooms	1
Subtotal of Briefed Area	14.00 m²
Hours of Operation	24 Hours
Occupancy	1 patient, 1 -2 support persons; 1-2 staff
Remarks	
Description/Special Requirements	The Consult Room facilitates private consultation and examination of patients; family/support persons may be present. A second egress door may be required for staff safety. Acoustics: Sound attenuation level - high; Acoustic privacy essential. Body Protected electrical area for safety
Amendment	8.8.2013 - First Draft 5.12.2013 - Issue of Draft 2 28.02.2014 - Issue of 3rd Draft

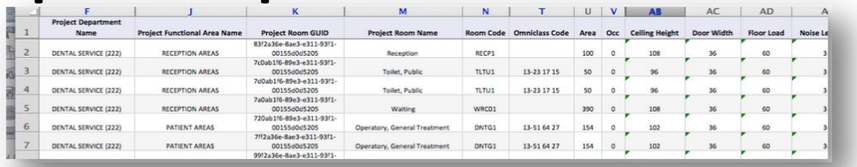
Room Envelope and Finishes Specification

Item	Material	Finish	Specification	Selection	Remarks
Ceiling	Acoustic	Prefinished	Drop-in tiles, 600x1200		
Cornice	Aluminium	Powdercoat	shadow line		
Door protection	Composite	Prefinishe d PVC	To door frame		
Door protection	Composite	Prefinishe d PVC	Protection plate to 900 AFFL		
Doors	Solid Core/ Glass	Paint	1 1/2 leaf, observation panel		920/1400mm clear opening, lockable/ observation panel optional. Hardware G Refer to HDRFG Part C DOORS
Floor finish	Vinyl	Standard slip resistant	Seamless, coved		Carpet also
Floor finish	Vinyl, non-slip	Textured	Seamless, coved		Air Sink
Skirting	Vinyl	Prefinished	Floor vinyl coved, 150 mmH		or timber/vinyl skirting over carpet
Wall finish	Vinyl	Prefinished	Splashback		to basin

Furniture

	Category	Group	Qty	Selection / Remarks
	Furniture / Fitting	3	4	
ree standing	Furniture / Fitting	3	1	
egral	Furniture / Fitting	1	1	to internal windows as necessary, controls to both sides of internal observation windows
, ceiling	Metalwork	1	1	
uble	Furniture / Fitting	3	1	
screen	Metalwork	1	1	
ise	Metalwork	1	1	
n	Furniture / Fitting	3	1	
	Furniture / Fitting	3	1	
ible glove	Furniture / Fitting	2	1	near entry
hand towel	Furniture / Fitting	2	1	to basin
	Furniture / Fitting	2	1	to basin
ntiseptic	Furniture / Fitting	2	1	to basin
obile	Furniture / Fitting	3	1	
, single	Furniture / Fitting	3	1	
	Furniture / Fitting	3	4	
	Furniture / Fitting	3	1	mounted on trolley
stable	Furniture / Fitting	1	1	
mobile, high	Furniture / Fitting	3	1	for staff
	Furniture / Fitting	3	4	
er	Furniture / Fitting	3	1	mobile
	Furniture / Fitting	3	1	
	Furniture / Fitting	3	1	
	Furniture / Fitting	3	1	
Waste bin; paper, 20 Litre	Furniture / Fitting	3	1	to basin
Whiteboard	Furniture / Fitting	2	1	600 x 600

Space Requirements



	F	J	K	M	N	T	U	V	AB	AC	AD	A
1	Project Department Name	Project Functional Area Name	Project Room GUID	Project Room Name	Room Code	Omniclass Code	Area	Occ	Ceiling Height	Door Width	Floor Load	Noise Le
2	DENTAL SERVICE (222)	RECEPTION AREAS	83f2a36e-8ae3-e311-93f1-00155d0d5205	Reception	RECP1		100	0	108	36	60	3
3	DENTAL SERVICE (222)	RECEPTION AREAS	7c0ab1f6-89e3-e311-93f1-00155d0d5205	Toilet, Public	TLTU1	13-23 17 15	50	0	96	36	60	3
4	DENTAL SERVICE (222)	RECEPTION AREAS	7d0ab1f6-89e3-e311-93f1-00155d0d5205	Toilet, Public	TLTU1	13-23 17 15	50	0	96	36	60	3
5	DENTAL SERVICE (222)	RECEPTION AREAS	7a0ab1f6-89e3-e311-93f1-00155d0d5205	Waiting	WRC01		390	0	108	36	60	3
6	DENTAL SERVICE (222)	PATIENT AREAS	720ab1f6-89e3-e311-93f1-00155d0d5205	Operatory, General Treatment	DNTG1	13-51 64 27	154	0	102	36	60	3
7	DENTAL SERVICE (222)	PATIENT AREAS	7f72a36e-8ae3-e311-93f1-00155d0d5205	Operatory, General Treatment	DNTG1	13-51 64 27	154	0	102	36	60	3
			99f2a36e-8ae3-e311-93f1-									

	A	D	E	F	G	K	Q	R	S	T	AA	AB
1	Project Room GUID	JSN	UMDNS	QTY	Cost	Content Name	Weight	Height	Width	Depth	Hertz	BTU Per I
3	720ab1f6-89e3-e311-93f1-00155d0d5205	A1066		1	83	Mirror, Float Glass, With SS Frame	22	36	18	1		0
4	720ab1f6-89e3-e311-93f1-00155d0d5205	A5075		1	16	Dispenser, Soap, Disposable	2	11	5	4		0
5	720ab1f6-89e3-e311-93f1-00155d0d5205	A5077		1	45	Dispenser, Hand Sanitizer, Hands-Free	2	15	7	6	0	0
6	720ab1f6-89e3-e311-93f1-00155d0d5205	A5077		1	45	Dispenser, Hand Sanitizer, Hands-Free	2	15	7	6	0	0
7	720ab1f6-89e3-e311-93f1-00155d0d5205	A5080		1	87	Dispenser, Paper Towel, SS, Surface Mounted	4	9	13	7		0
8	720ab1f6-89e3-e311-93f1-00155d0d5205	A5080		1	87	Dispenser, Paper Towel, SS, Surface Mounted	4	9	13	7		0
9	720ab1f6-89e3-e311-93f1-00155d0d5205	A5106	14-423	1	70	Waste Disposal Unit, Sharps w/Glove Dispenser	5	25	13	6	0	
10	720ab1f6-89e3-e311-93f1-00155d0d5205	A5145		1	31	Hook, Garment, Double, SS, Surface Mounted	0	2	4	2		0
11	720ab1f6-89e3-e311-93f1-00155d0d5205	D0670	11-165	1	8337	Console, Treatment Unit, Dental Operatory		73	44	32	60	0

Maintain Standards

Publish Standards

Design

Verification

Induction

Use

Better Reliability & Productivity

Challenges	Accomplishments
Maintenance of Many	**Single Source**
Data Sheets & Drawings	Design Object Library
Unpredictable Standards	Client BIM Standard

Maintain Standards

Publish Standards

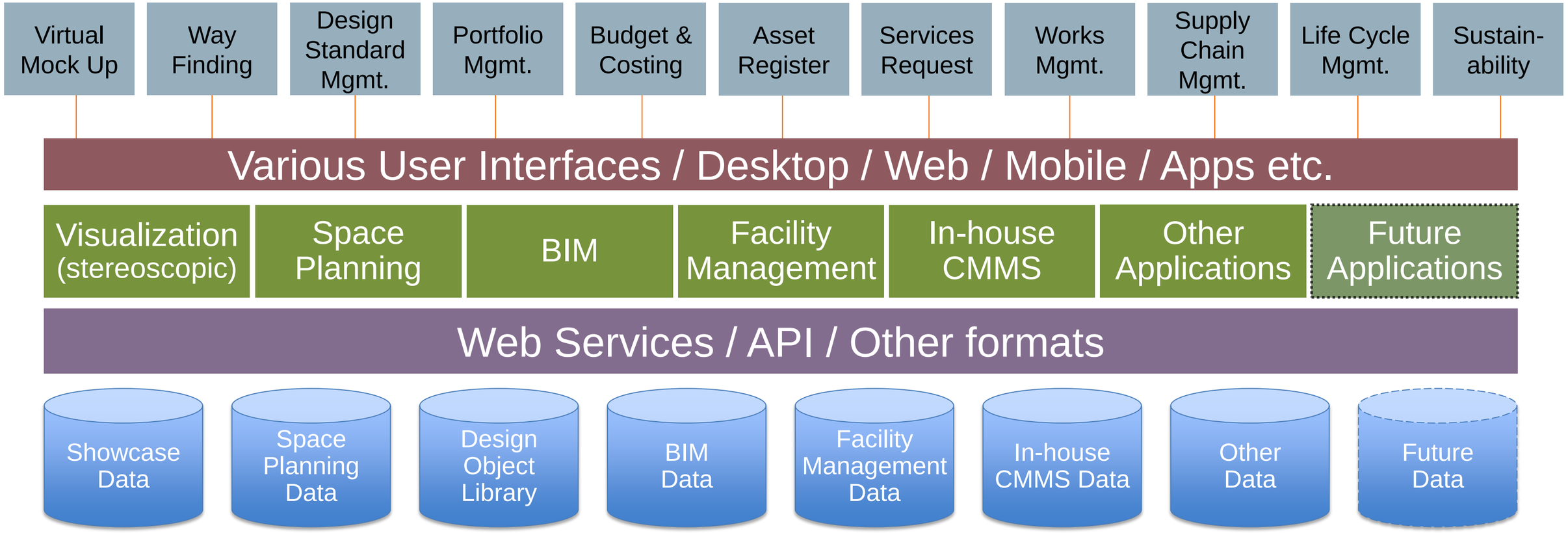
Design

Verification

Induction

Use

Process and Data Platform



MOH HOLDINGS axes studios ecodomus ONUMA strategic buildinginnovation

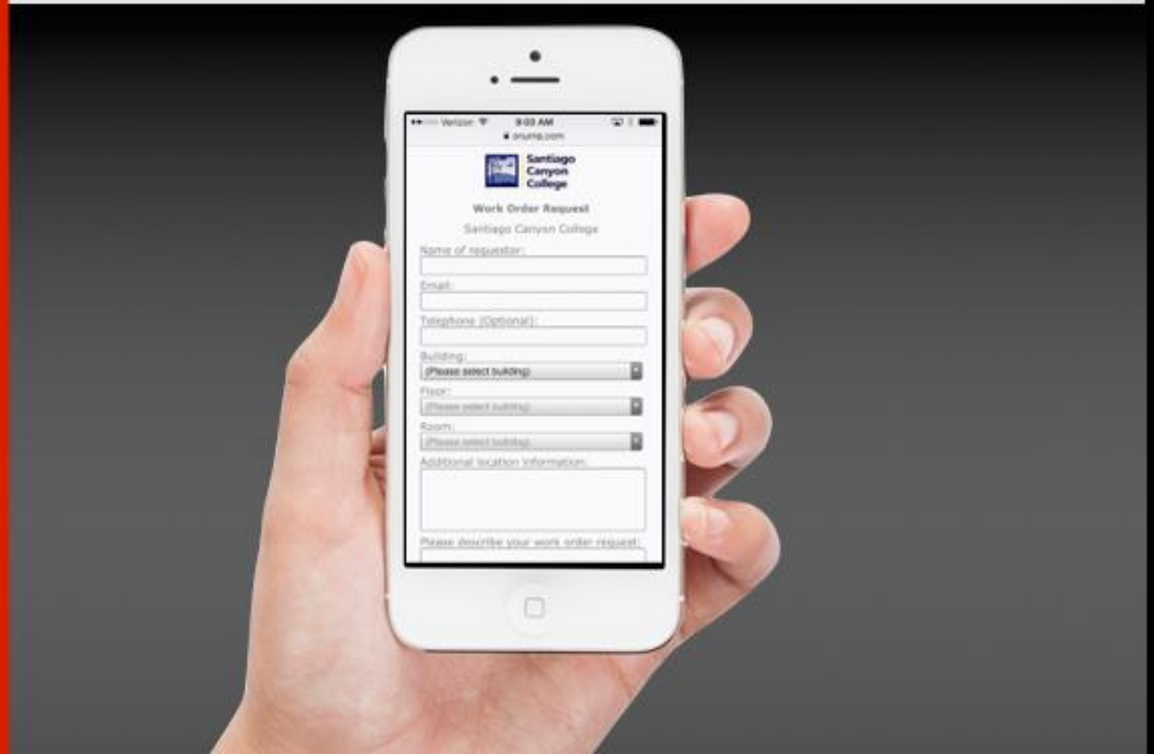
SEPS 2BIM

Space and Equipment Planning (SEPS)

Kimon Onuma, Onuma Inc.
KG@Onuma.com

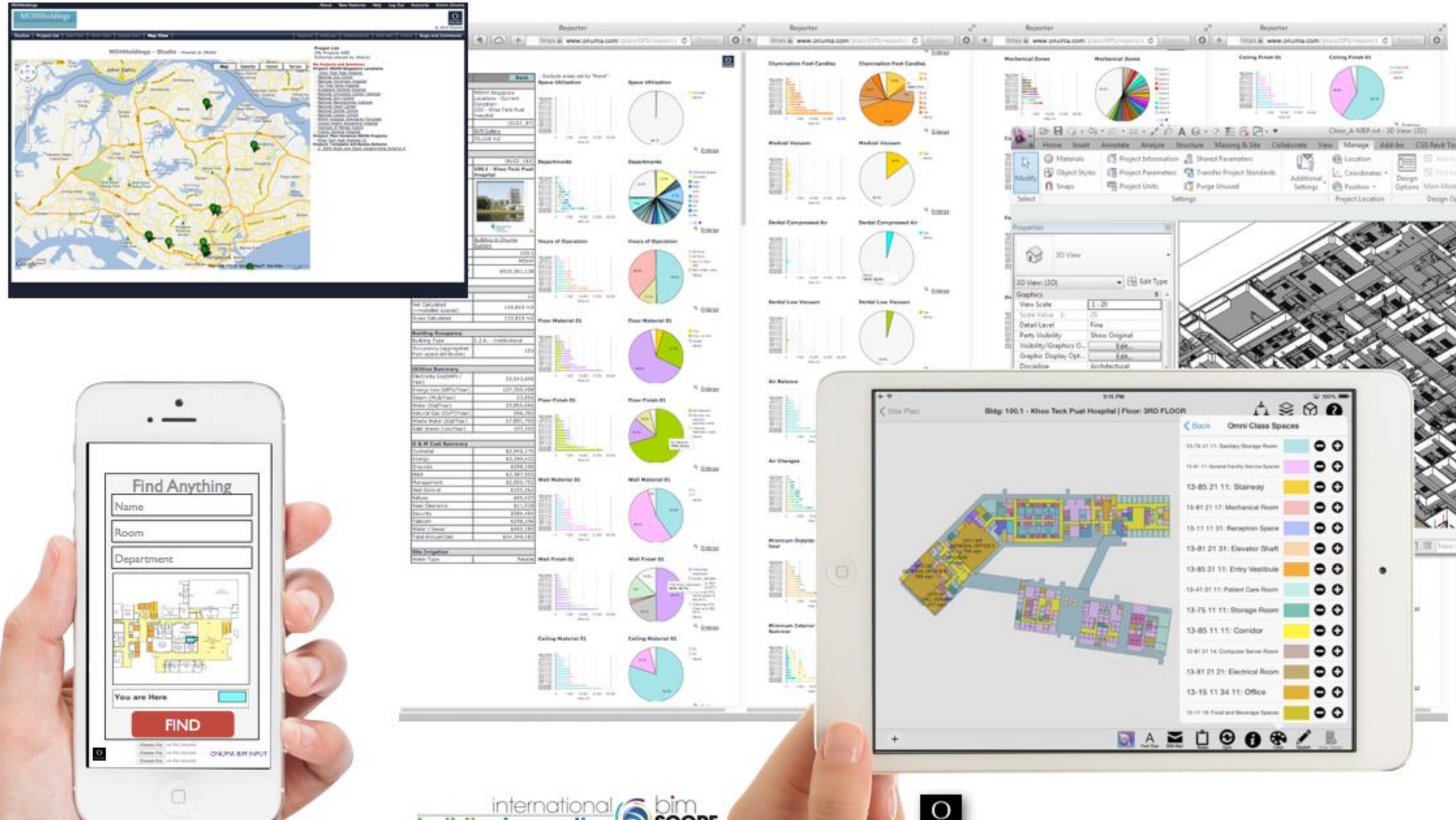
Las Vegas, Nevada Dec. 1, 2015


STRUCTURAL
STRUCTURAL


Santiago Canyon College
Work Order Request
Santiago Canyon College
Name of requestor:
Email:
Telephone (Optional):
Building:
(Please select building)
Floor:
Room:
Additional location information:
Please describe your work order request:

MOH HOLDINGS

Singapore Ministry of Health Holdings



international buildinginnovation bim SCORE

ONUMA

NATIONAL ACADEMY OF SCIENCES

THE NATIONAL PRESS CLUB

Andrew Schoenbach, Budget Systems, OMB, MAX.gov | Gary M. Fischer, AIA, OCFM, Department of Veterans Affairs | Russell Manning, PhD, LEED AP, Department of Defense -DHA | Shahid N. Shah, OMB Budget Systems Branch and MAX.gov | Kimon Onuma, FAIA, ONUMA, Inc.

Presentation at National Academy of Sciences

Award at The National Press Club

Oct. 20, 2015 Washington, DC Oct. 21, 2015

Asset Leadership Network

SEPS 2BIM

FED iFM

MILITARY HEALTH SYSTEM
STRONG TO SAVE

Department of Veterans Affairs

140,000,000 SF

Department of Defense, Military Health System

70,000,000 SF

Department of Defense Military Health System Healthcare

Global Healthcare Platform

Solution Needed for Life Cycle

Strategy

Portfolio

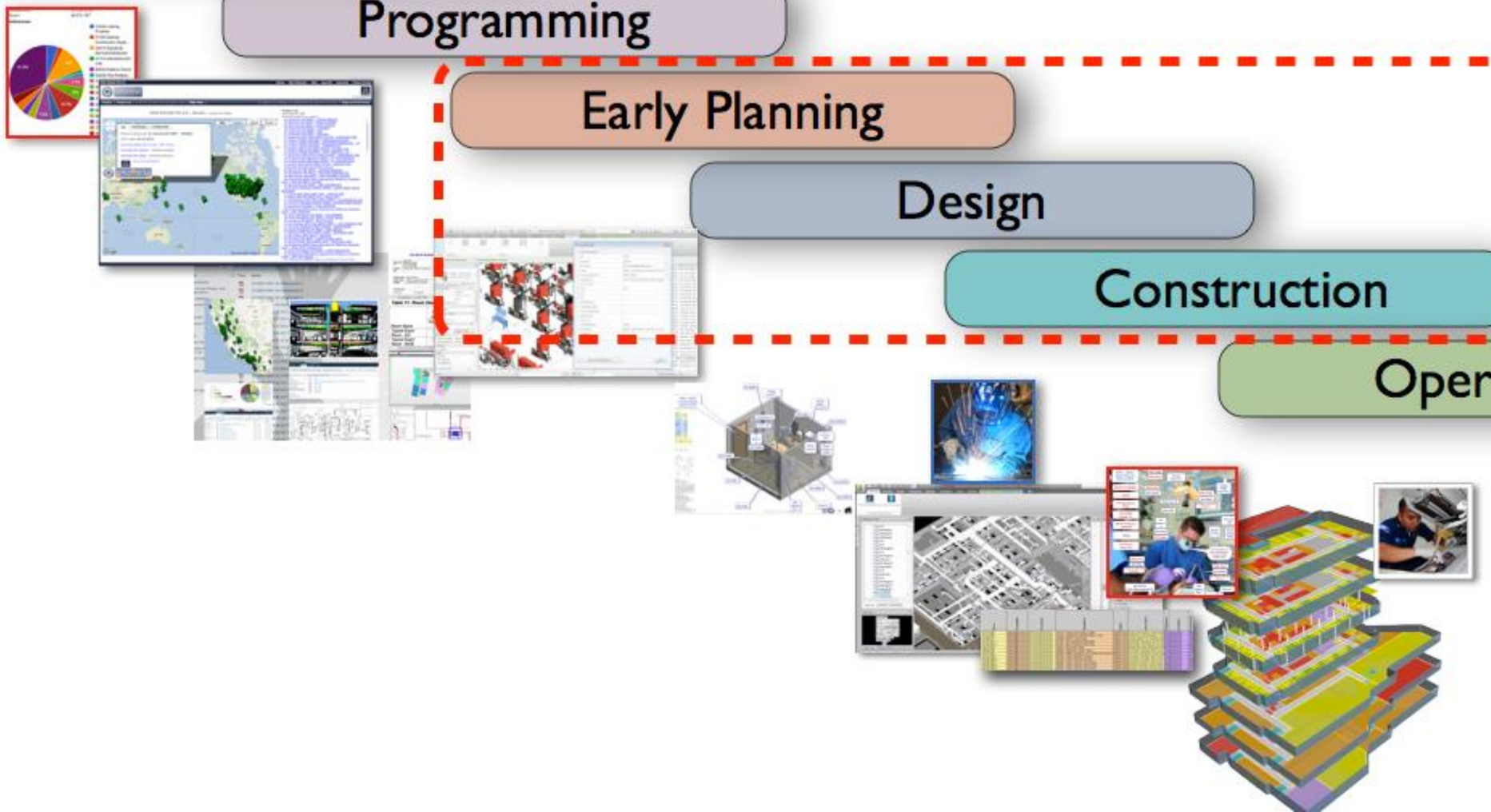
Programming

Early Planning

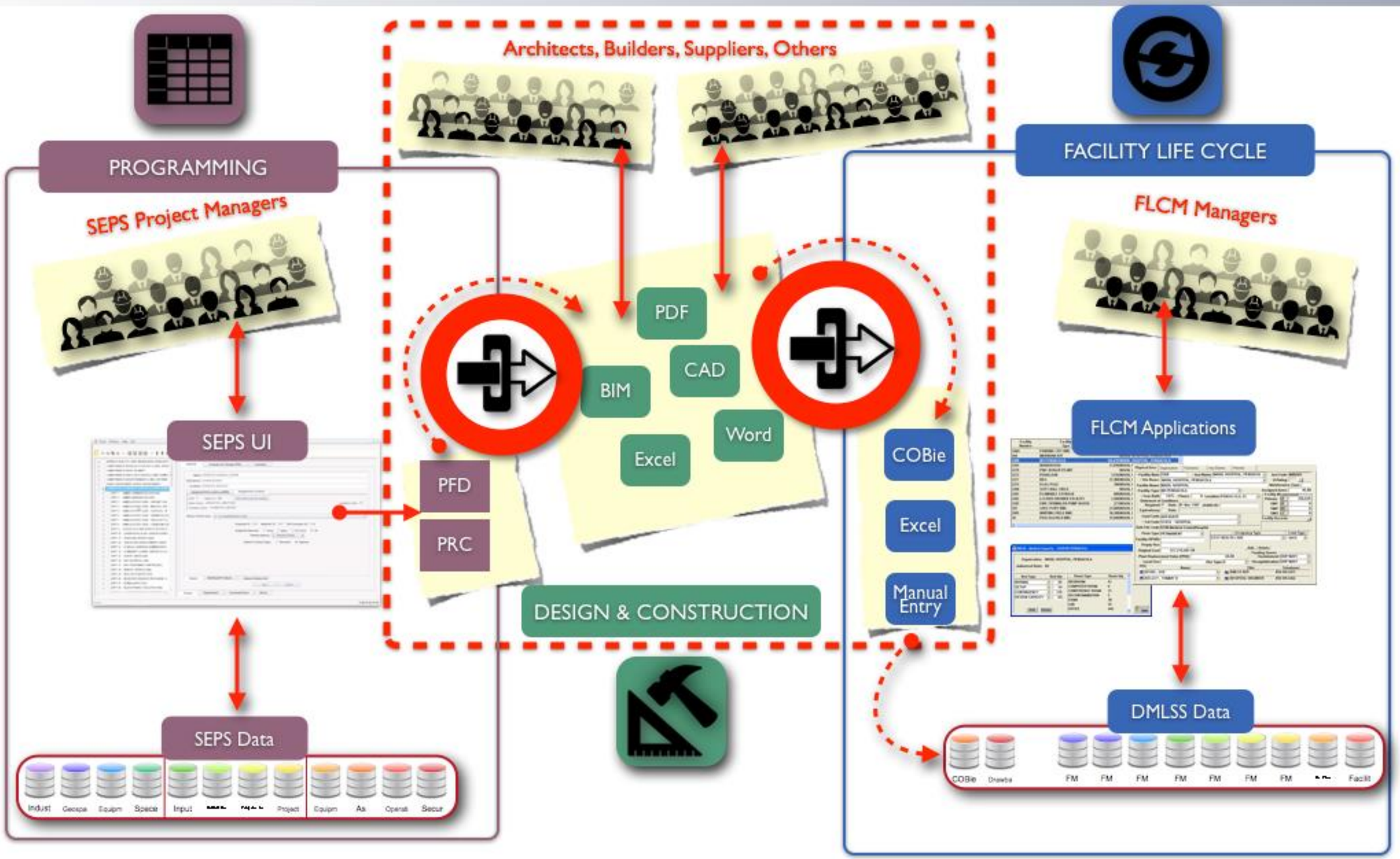
Design

Construction

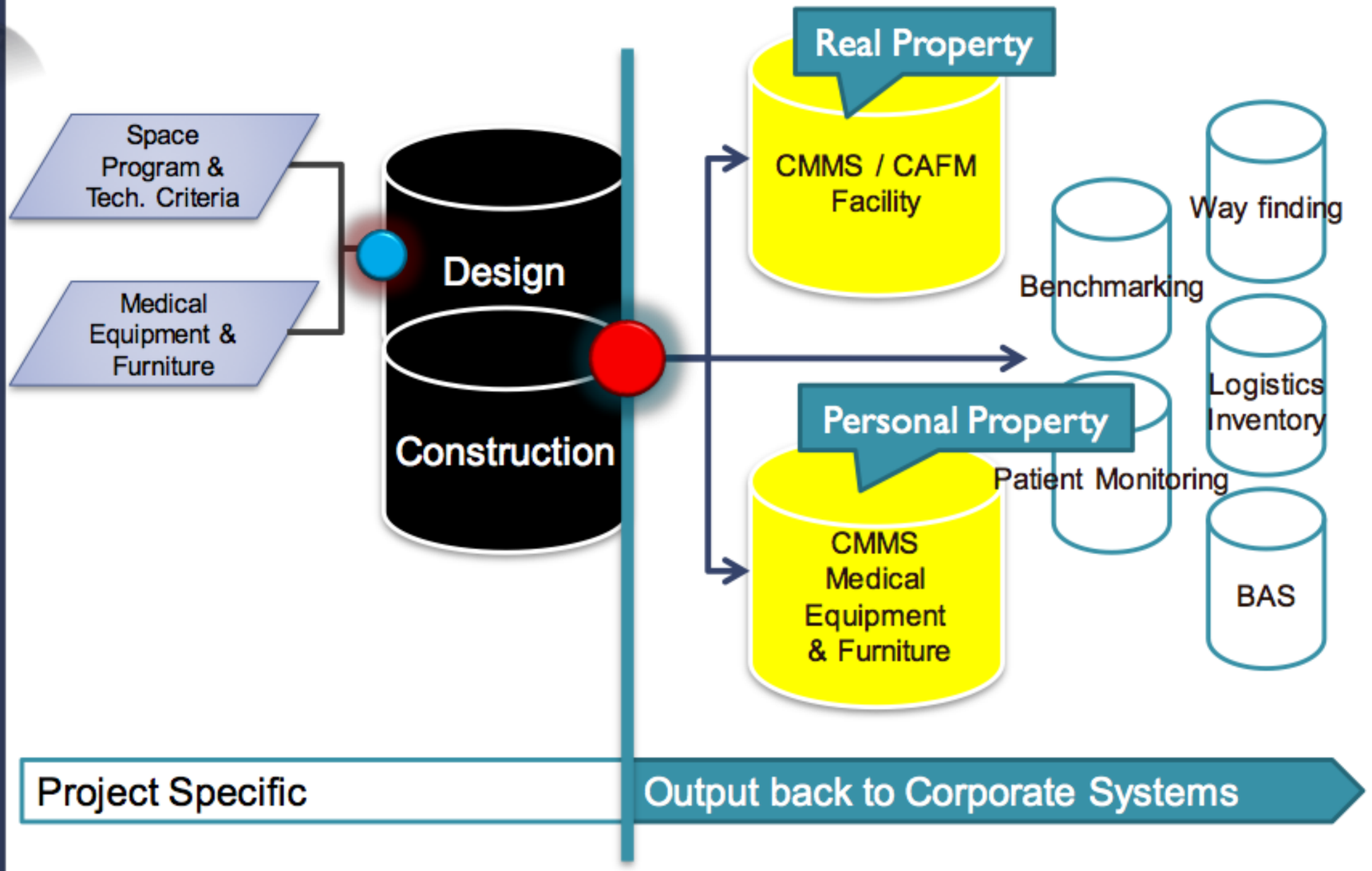
Operations



Current Silos and Handoff



Solving the Handoff to Operations



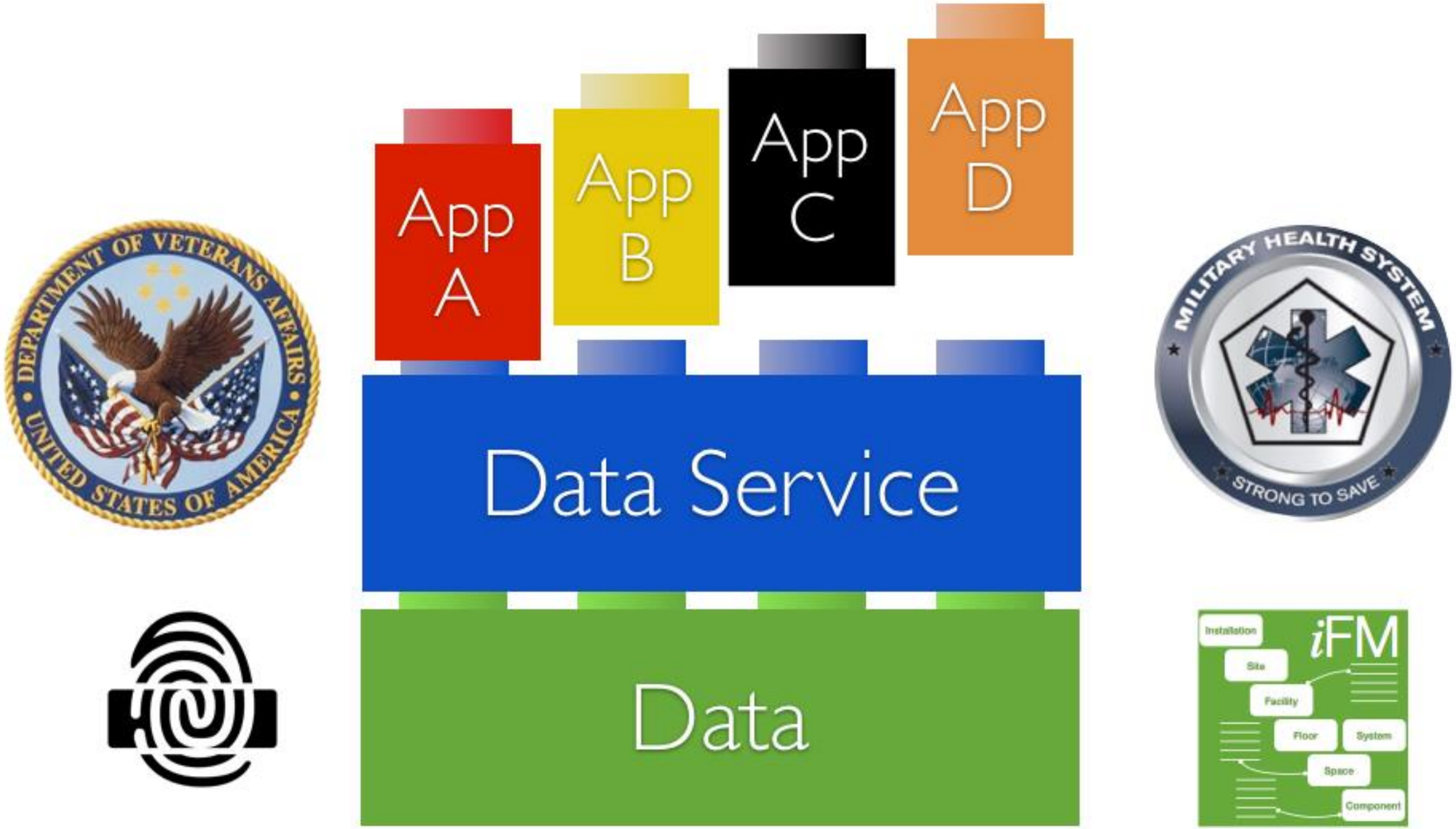
MANY SCALES


JSN D0685
Ceiling Finish:T1
Ceiling Height 102 Inches
JSN D600
Wall Finish: G
JSN DO685
JSN12345
3-126-3-L
Air Balance 4
Filtration 14%
JSN X6600
Dental Low Vac
Power Outlets 63/RC
JSN DO685
JSN 9060
JSN DO685
JSN D9060
JSN D7090
JSN D600
Task Lighting 26 F
Floor: SV
SEPS 2BIM
VA
U.S. Department of Veterans Affairs
Military Health System
Welcome to the Space and Equipment Planning System (SEPS)
DEPARTMENT OF VETERANS AFFAIRS
MILITARY HEALTH SYSTEM

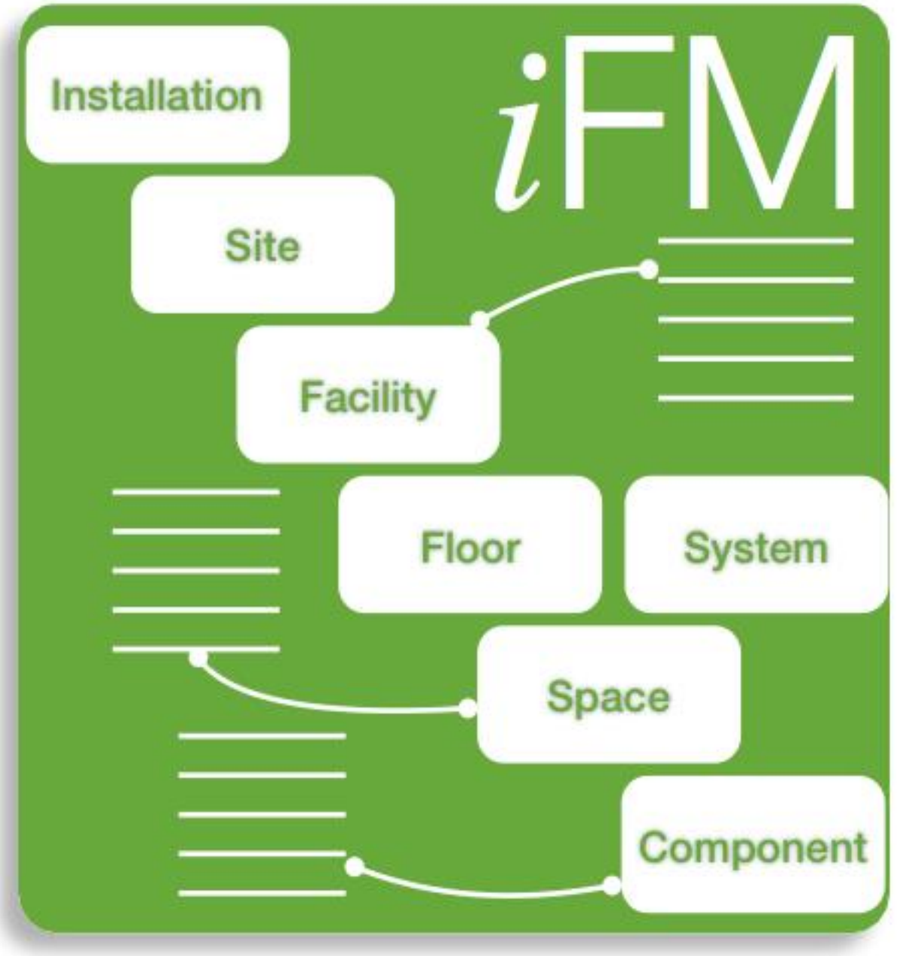
SAME DATA

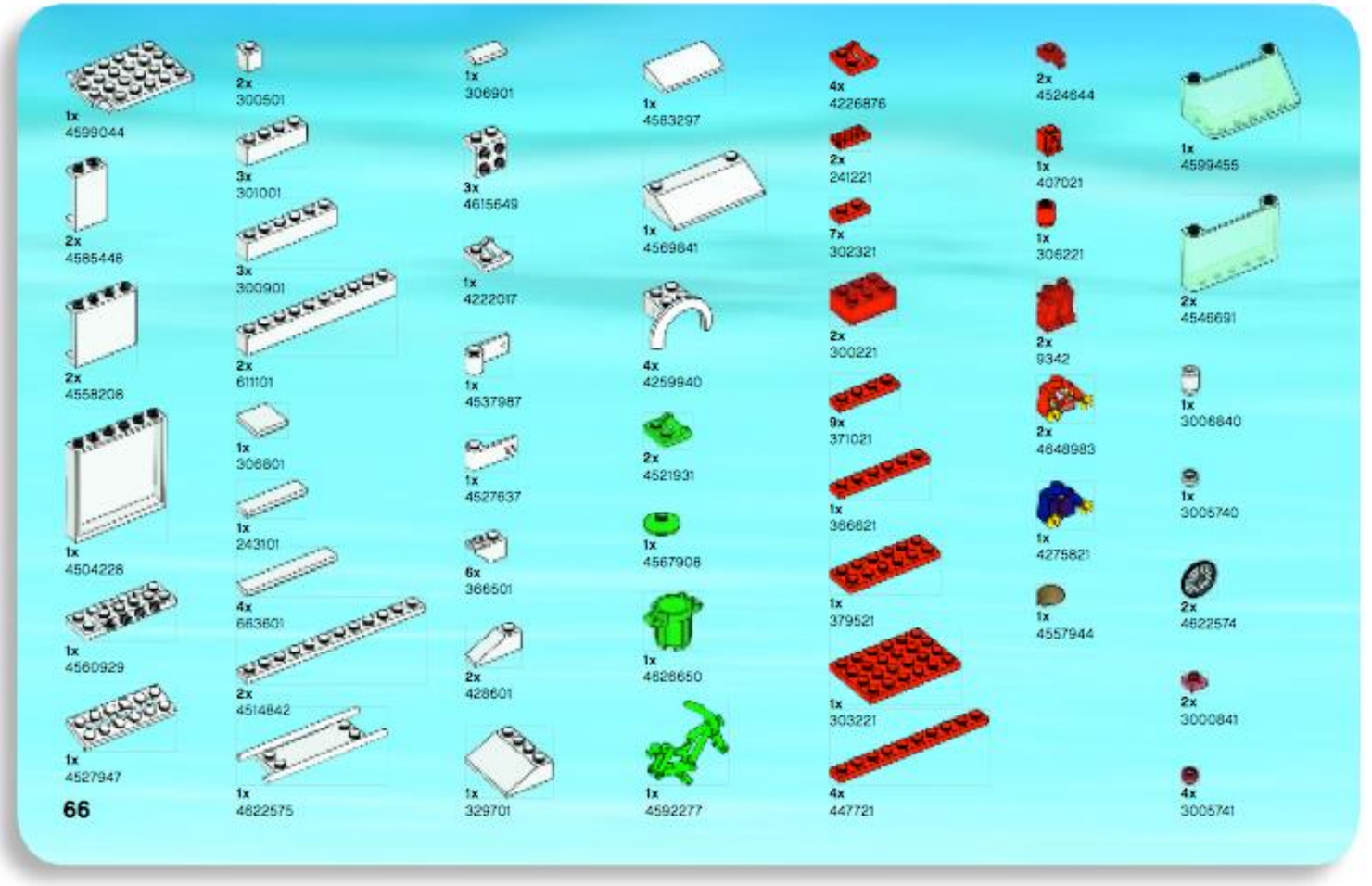

Work Order Request
Santiago Canyon College
BIM Information (Object)

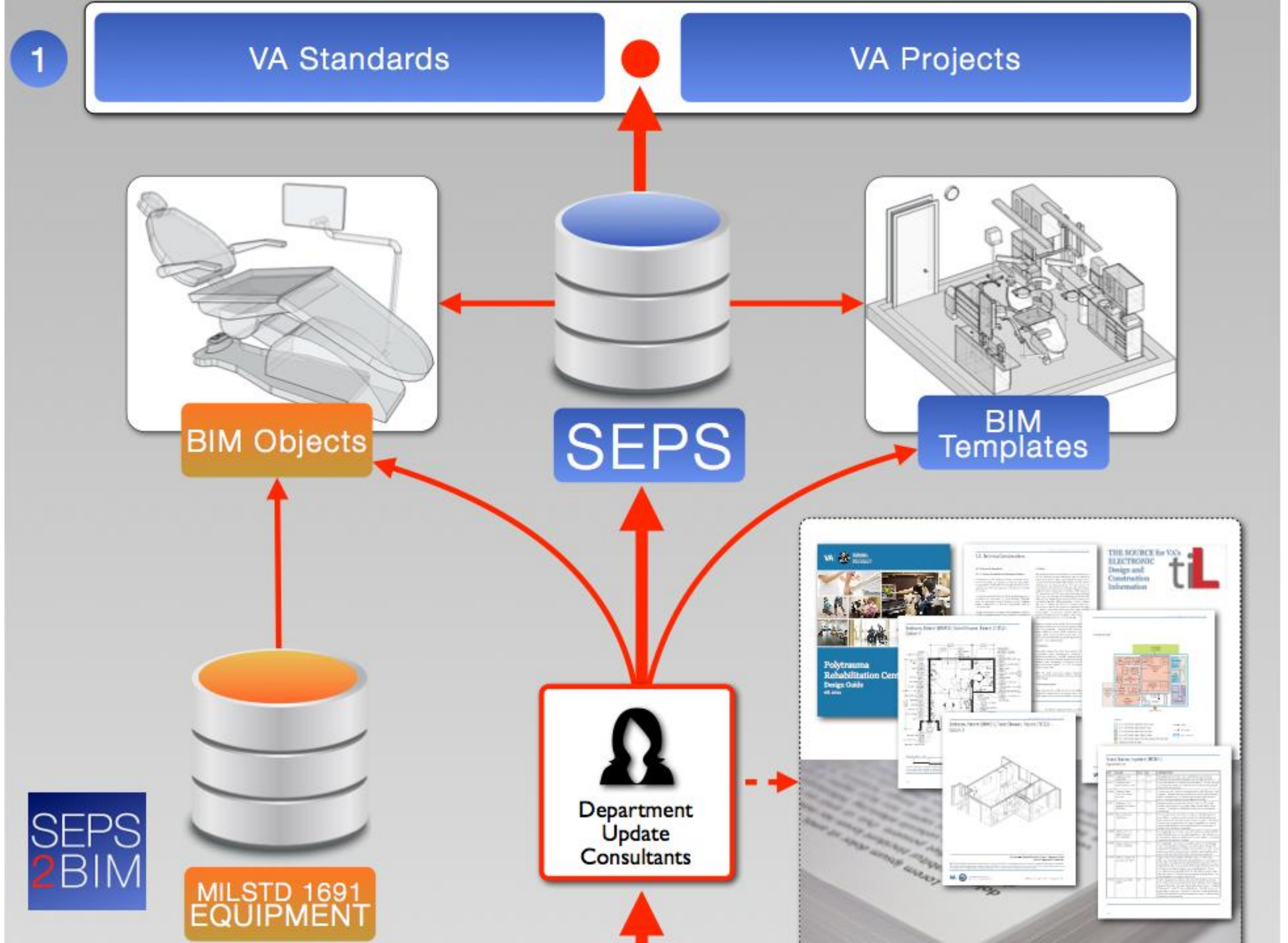
Data Layer and Data Service



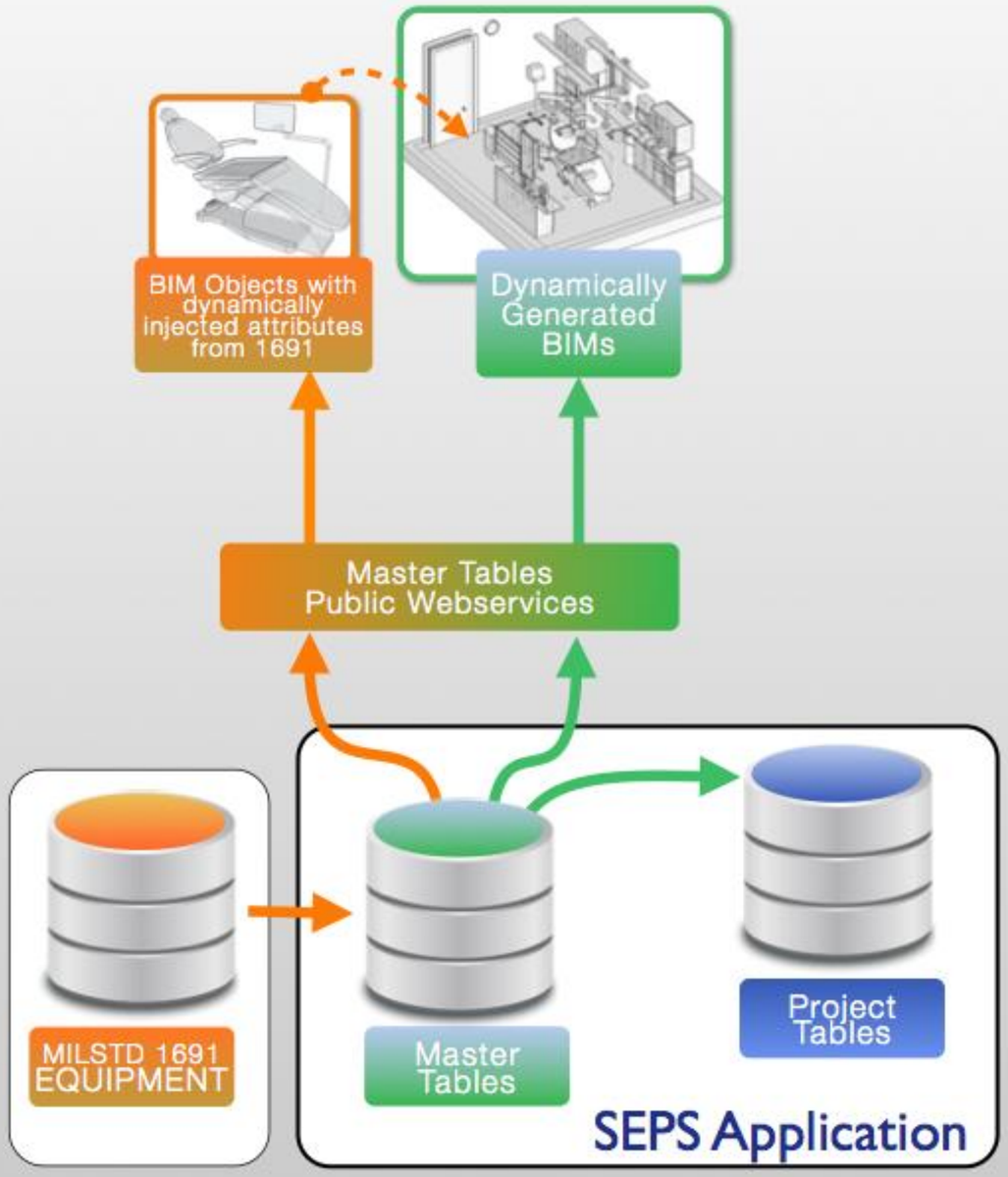
MODULAR & SCALABLE



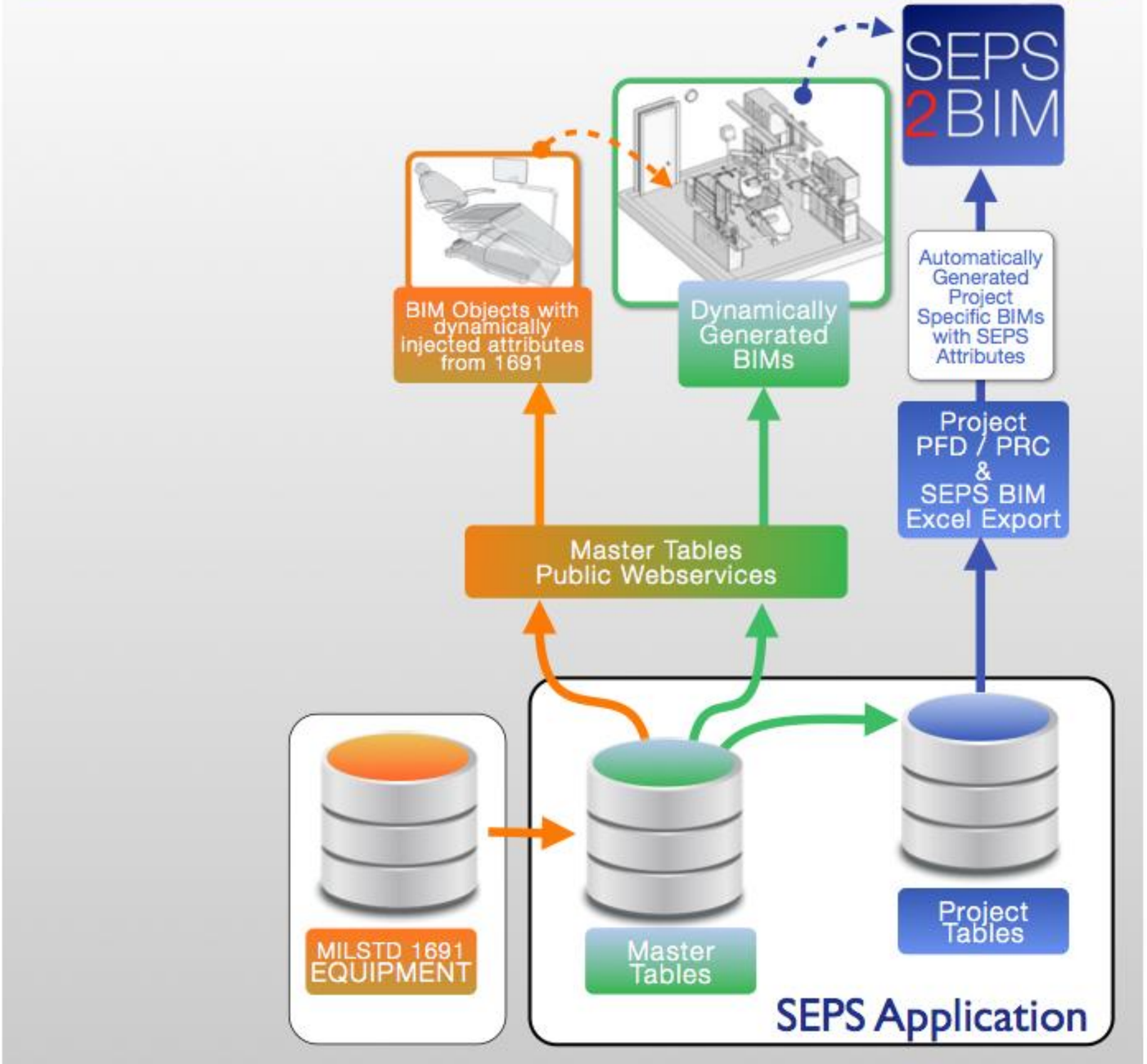



1
VA Standards
VA Projects
BIM Objects
SEPS
BIM Templates
SEPS 2BIM
MILSTD 1691 EQUIPMENT
Department Update Consultants

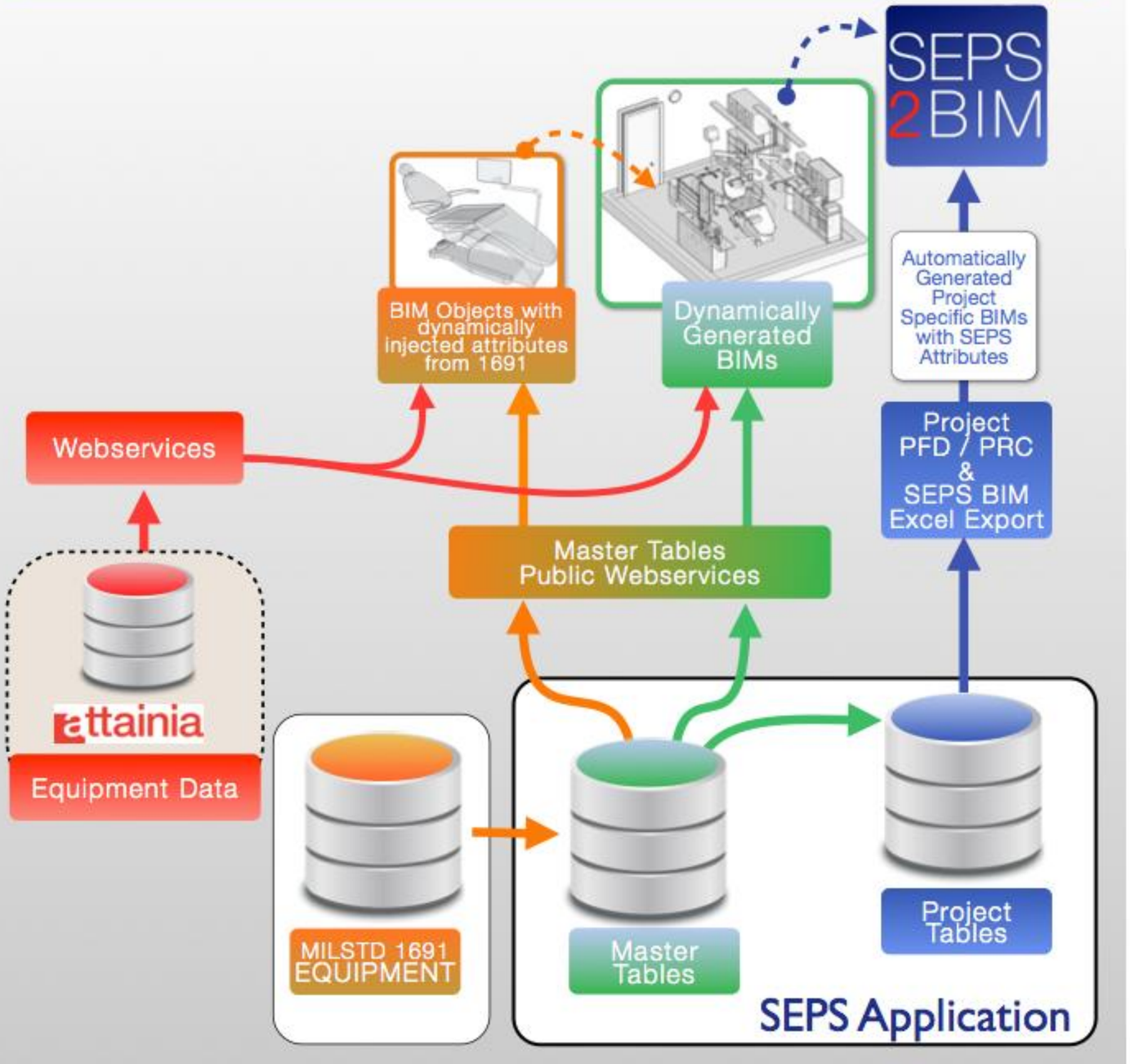
1691 + SEPS Webservices to BIM



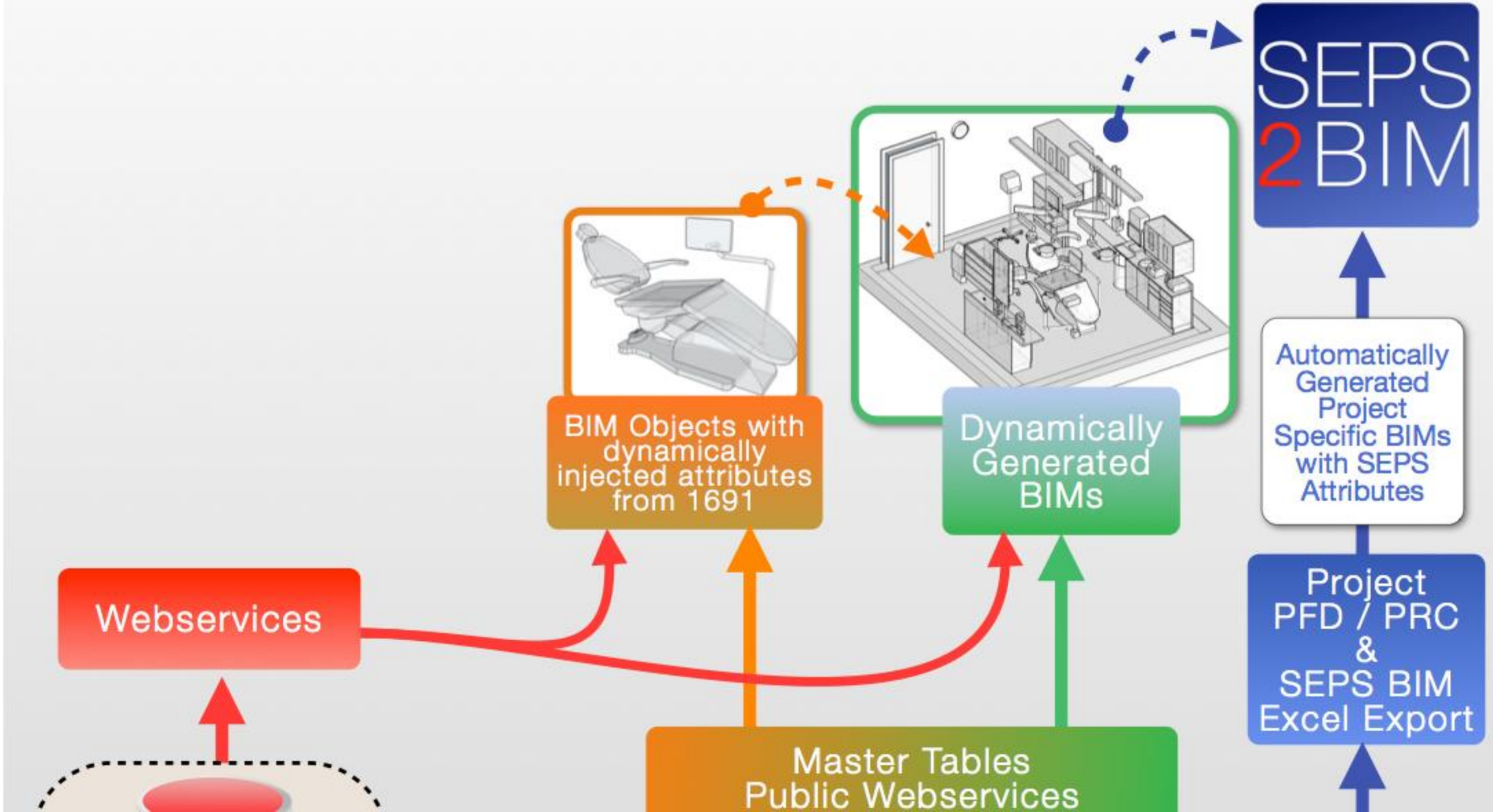
1691 + SEPS Webservices to BIM

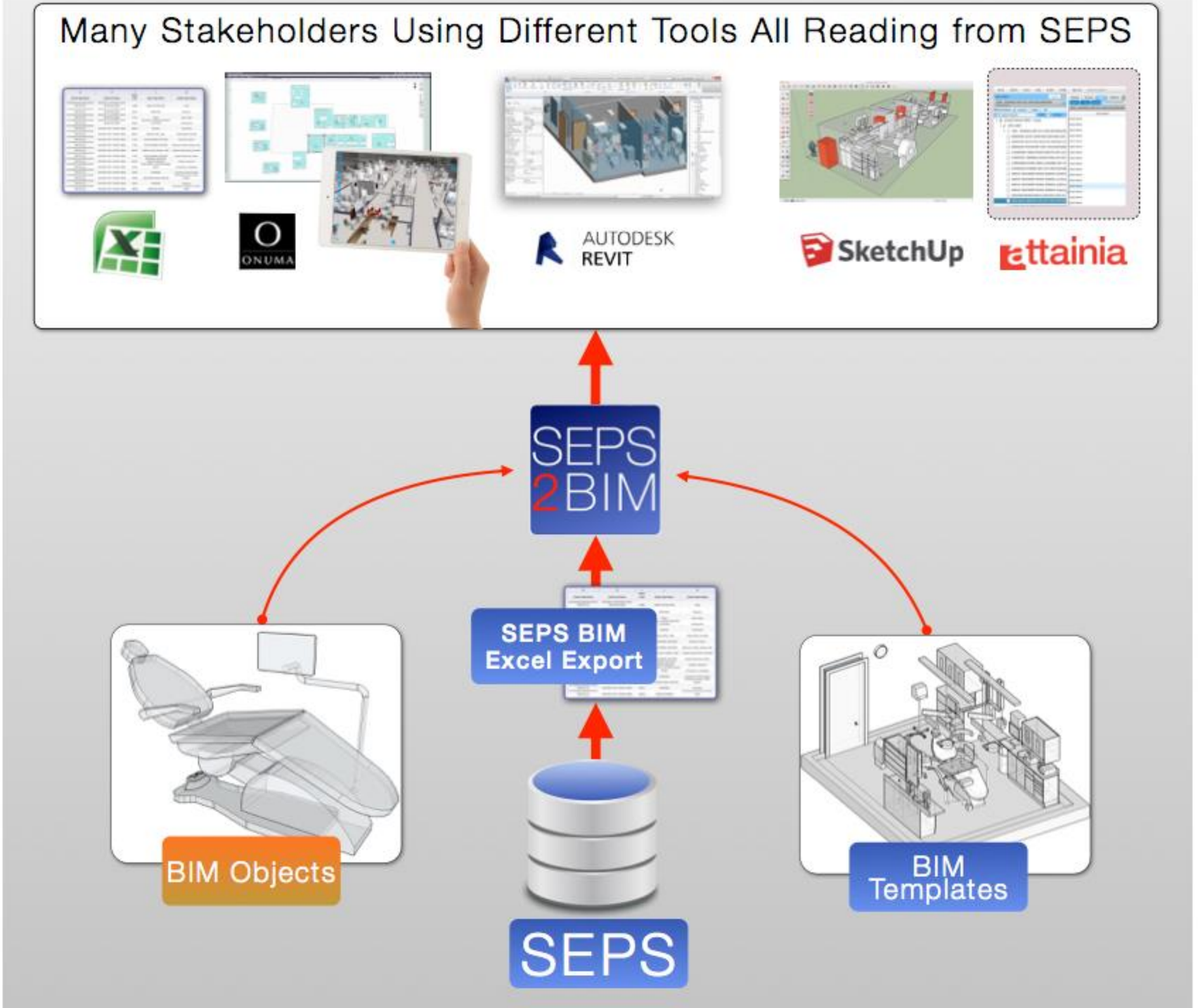


1691 + SEPS Webservices to BIM



1691 + SEPS Webservices to BIM




Many Stakeholders Using Different Tools All Reading from SEPS
ONUMA
AUTODESK
REVIT
SketchUp
ttainia
SEPS
2BIM
SEPS BIM
Excel Export
BIM Objects
BIM
Templates
SEPS

SEPS 2BIM TEMPLATES

ONUMA

BUILD TEMPLATES LIVE

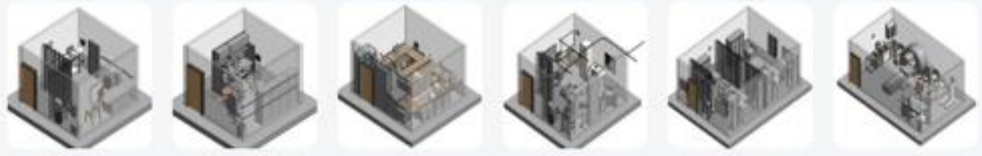
Build ONUMA Templates Live

Use the online utility to connect live to SEPS and output BIM templates directly from SEPS data.

- OR –

Download Static ONUMA BIM Templates

NOTE: These are static "snapshot" templates created in April & May, 2015
They are used as the basis for future updates to VA Departments and for dynamically generated BIM Templates. Since criteria data from SEPS is constantly being updated it is recommended that users generate a "fresh" ONUMA BIM Template using the online utility:
To create current layout and content ONUMA room templates use the Space and Equipment Aggregator Utility.



SEPS 2 BIM OBJECTS TEMPLATES TOOLS Space & Equipment Departments Projects TRAINING EVENTS

SEPS 2BIM TEMPLATES

AUTODESK REVIT

BUILD TEMPLATES LIVE

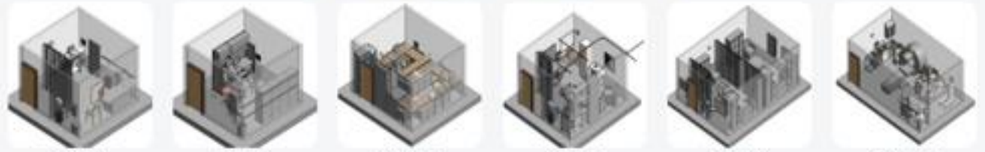
Build Revit Templates Live

Use the online utility to connect live to SEPS and output BIM templates directly from SEPS data.

- OR –

Download Static Revit BIM Templates

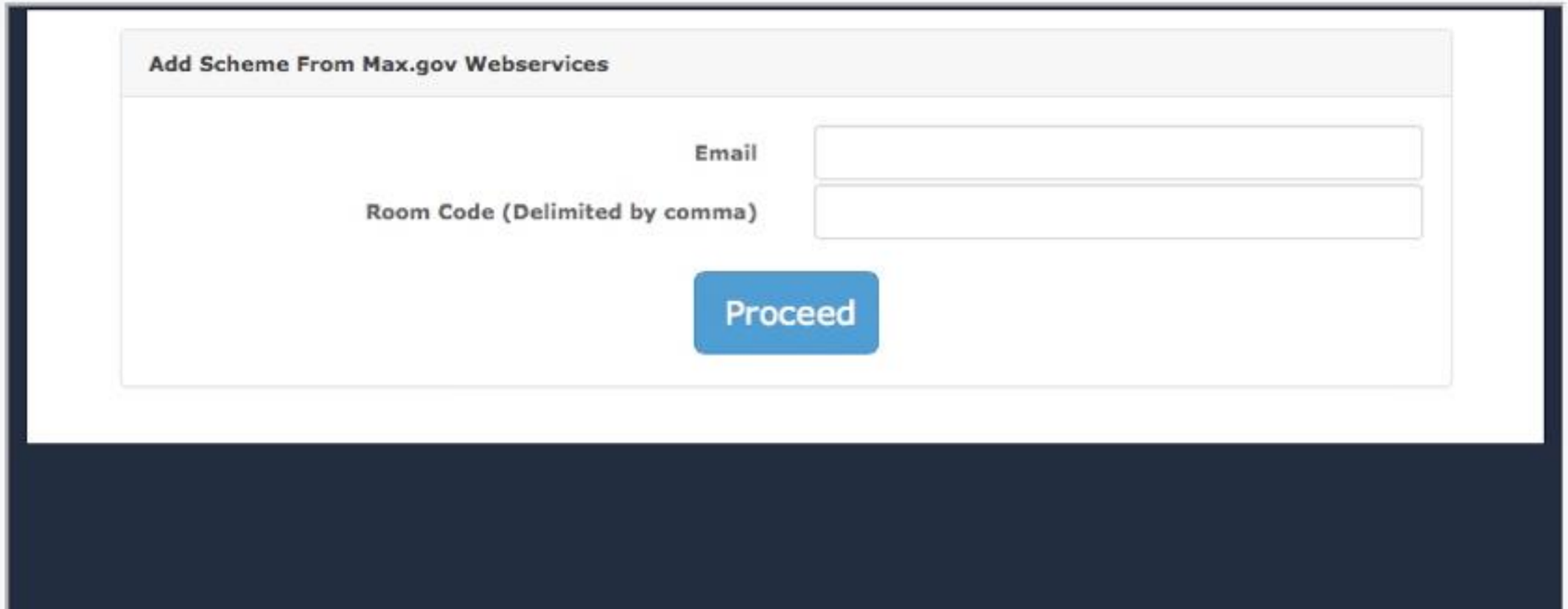
NOTE: These are static "snapshot" templates created in April & May, 2015
They are used as the basis for future updates to VA Departments and for dynamically generated BIM Templates. Since criteria data from SEPS is constantly being updated it is recommended that users generate a "fresh" Revit BIM Template using the online utility:
To create current layout and content Revit room templates use the Space and Equipment Aggregator Utility.



SEPS2BIM.org

Space & Equipment Aggregator
Create BIM Templates with Spaces & Equipment from SEPS Live

SEPS 2BIM TEMPLATES



onuma.com

SEPS 2BIM

Ground Floor

Select a BIM Template

How Fresh is This BIM?

Created On: Nov 12, 2015

Today Is: Nov 12, 2015

This BIM is: 0 Days Old!

1 Spaces / 130 NSF

36 Pieces of Equipment

View This BIM in 3D on iPAD

Create Fresh BIM from SEPS !

Export to:

Revit BIMXML

SketchUp BIMXML

Excel Rooms

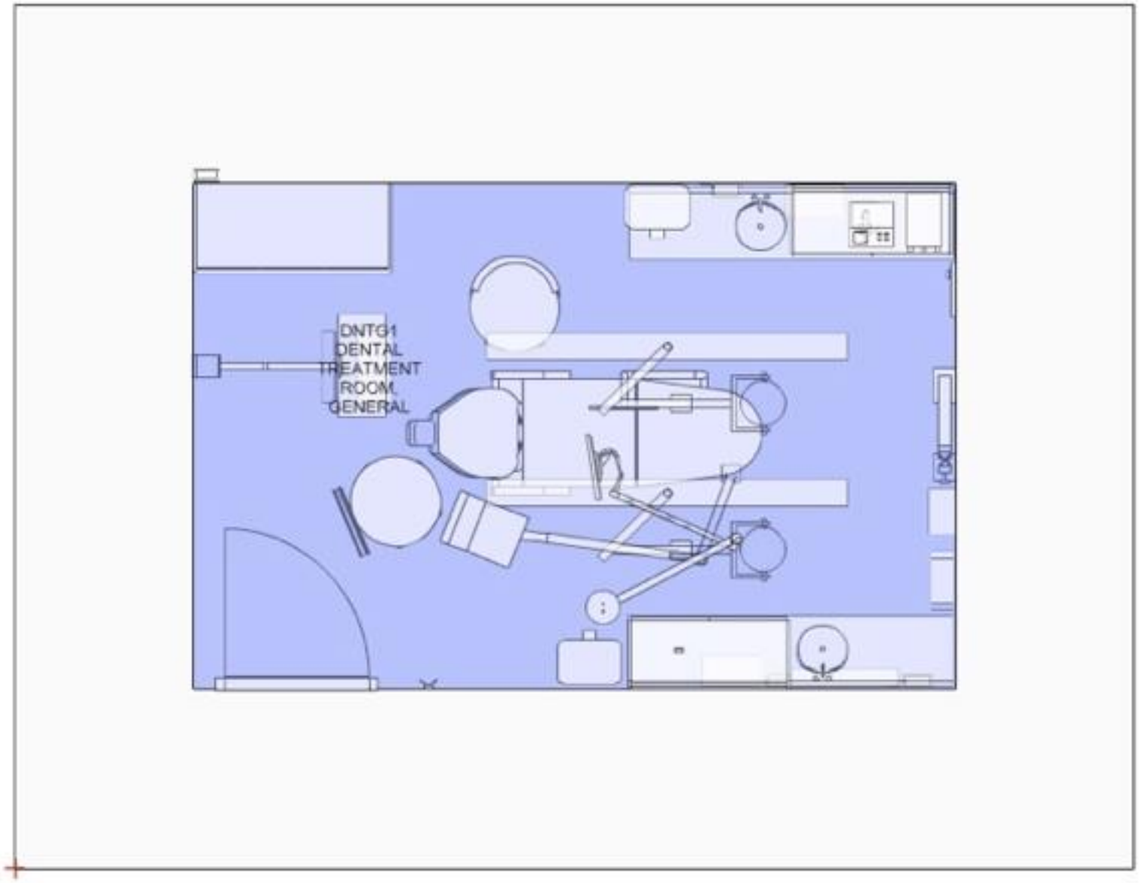
Excel Equipment

Excel COBie

Plug-Ins

Email this BIM

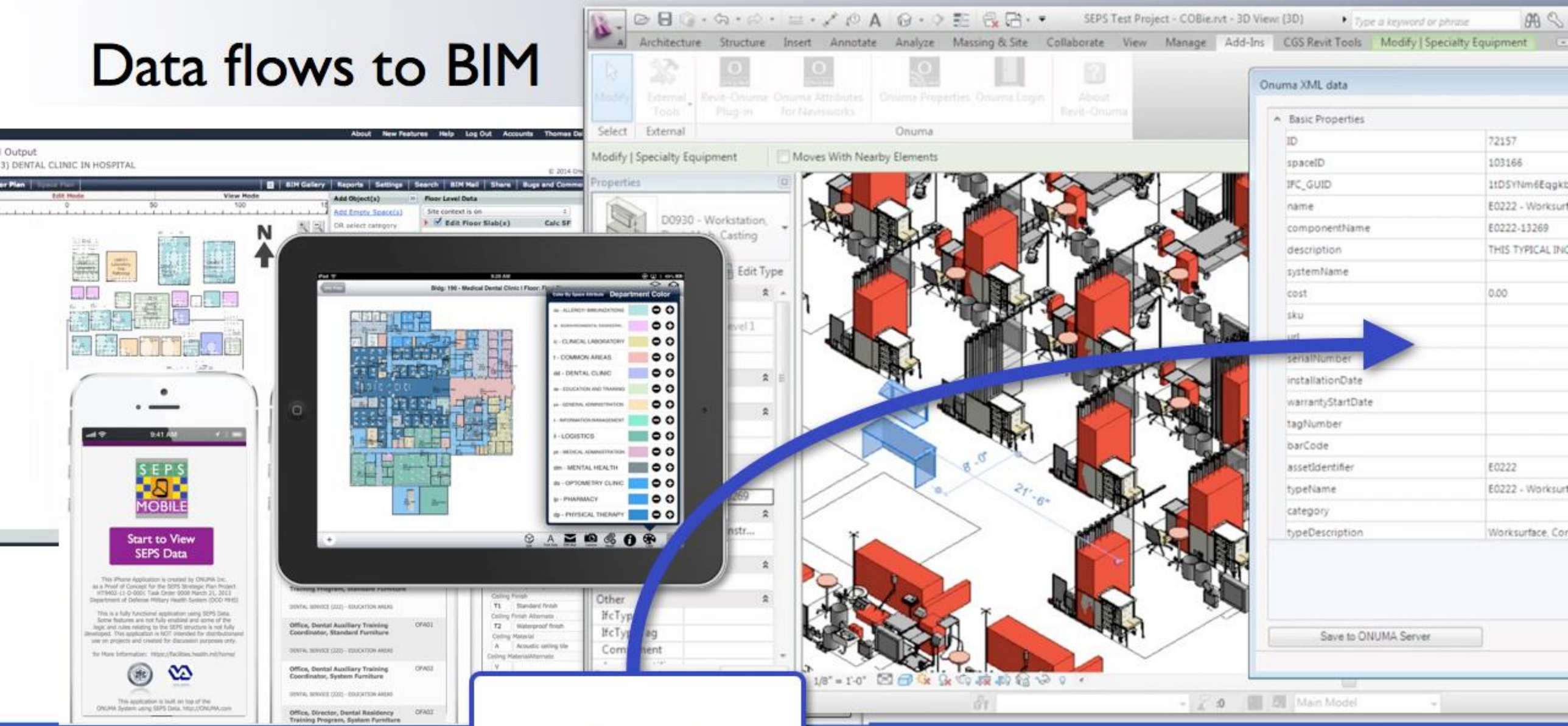
https://goo.gl/K4q18s

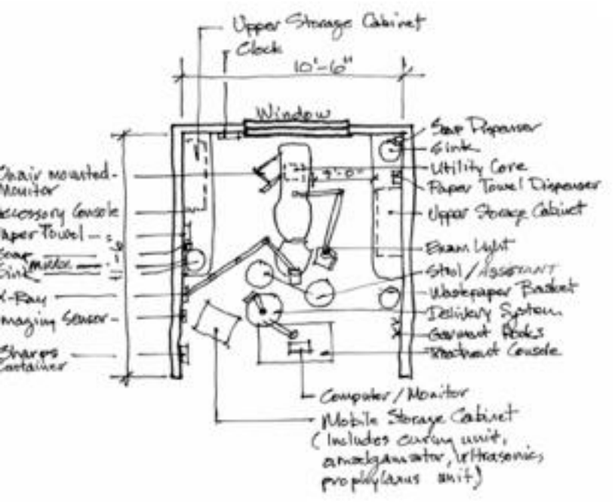


Preset Views

DNTG1

Data flows to BIM



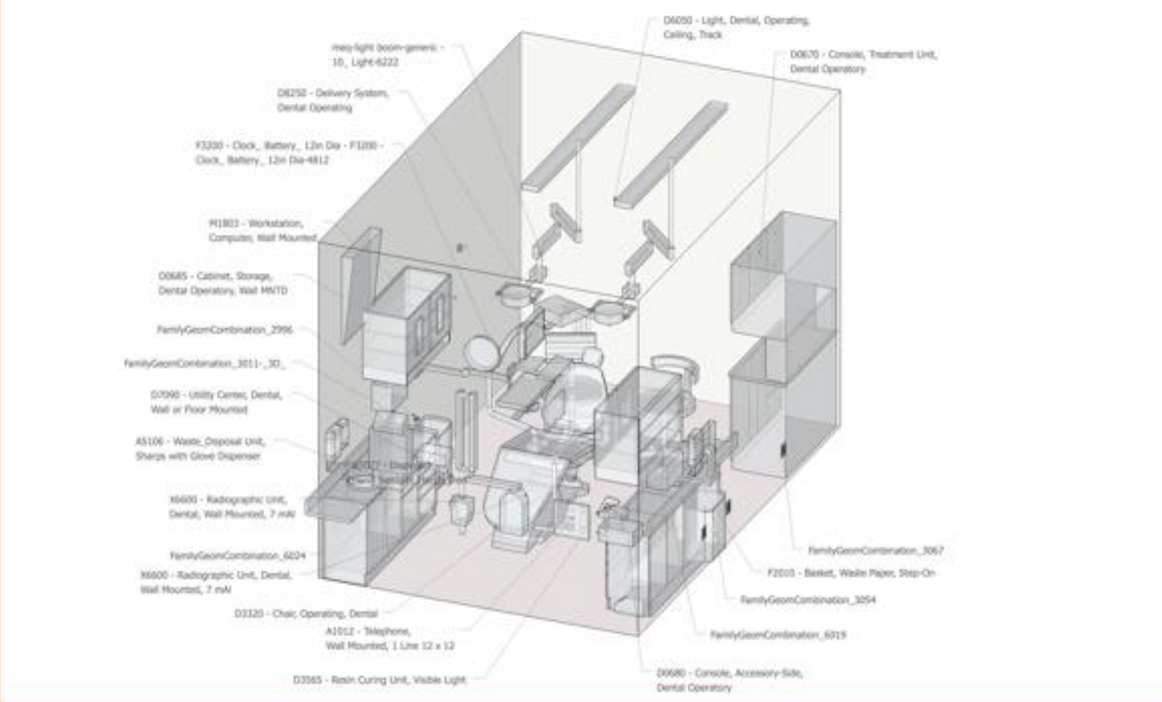


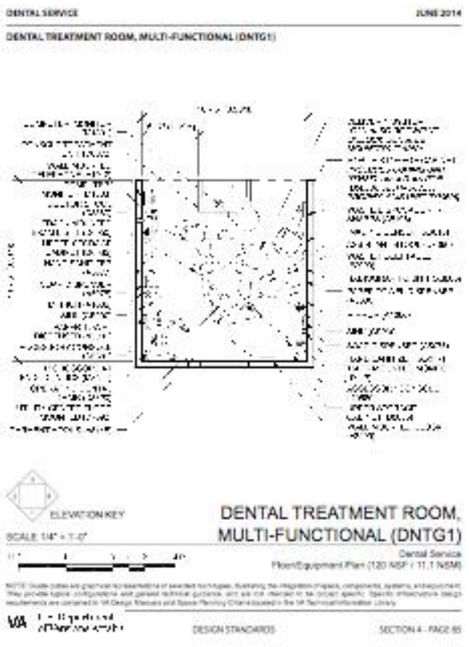
19 Rooms

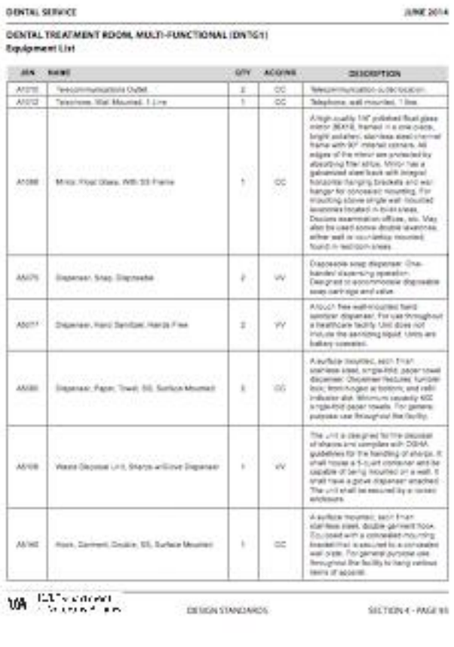
494 Equipment

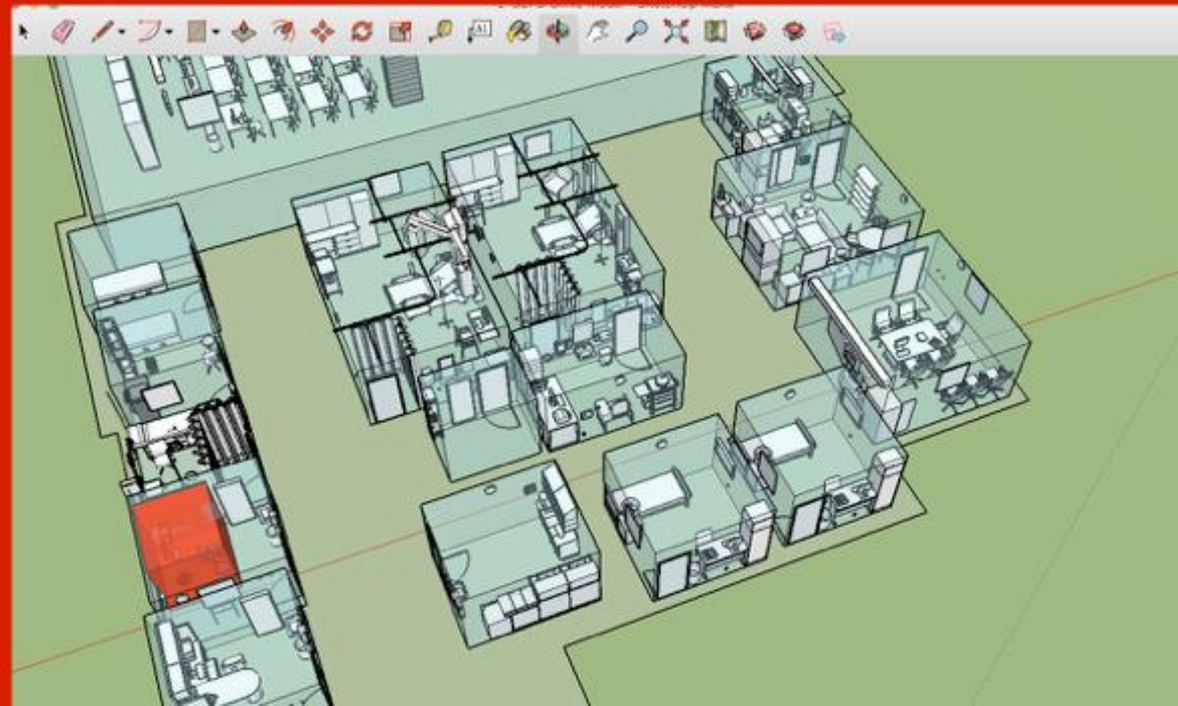
14,820 Data Points

Typical Healthcare Facility... Millions of Data Points









Properties

A5106 - Waste_Disposal Unit, Sharps with Glove Dispenser
A5106 - Waste_Disposal Unit, Sharps with Glove Dispenser 13"x 5

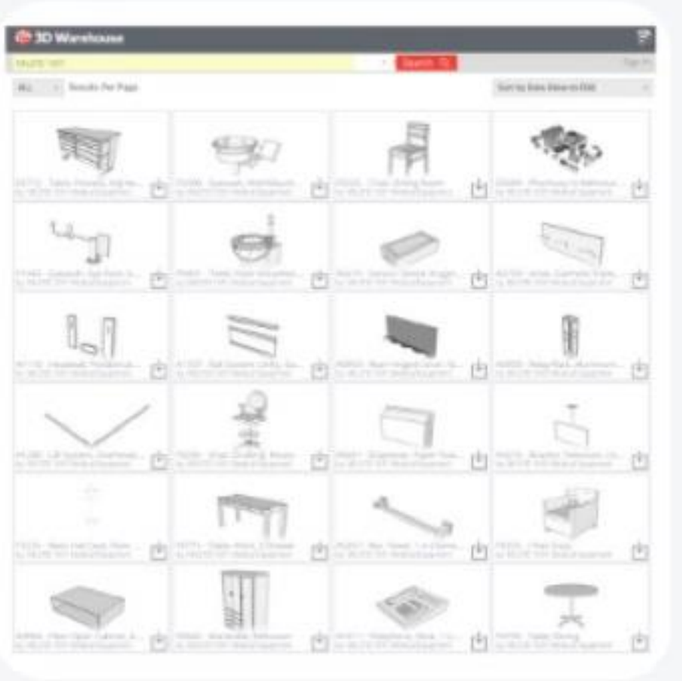
Specialty Equipment (1) | Edit Type

Comments	
Mark	A5106-14
Phasing	
Phase Created	New Construction
Phase Demolished	None
Other	
IfcType	A5106 - Waste Disposal U...
IfcTypeTag	
Component	
ifcGUID	2q7YcRAAr37ayixLZRtMeI
JSN	A5106
Logistics Category	C
NSN	6530
Unite of Issue	EA
Name	A5106 - Waste Disposal U...
Description	The unit is designed for t...
Cost	NULL
Weight	5
UMDNS	14-423

Same Data in Revit

ONUMA

Object Libraries Aligned with MILSTD 1691



REVIT

Objects used in Revit. Originally created by US Army Corps of Engineers, extended by VA SEPS to BIM Project, and from VA Department update projects. Total of ~900 objects as of May 4, 15.

ONUMA

Objects used in the Onuma System and aligned with Revit. Total of ~900 Objects as of May 4, 2015. Used in the:
Space & Equipment Aggregator
Department Aggregator
Project Generator

SketchUp

Objects used in the SketchUp, and aligned with the Onuma System and Revit. As of May 4, 2015:
~900 Objects on 3D Warehouse

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Username Password Sign In

Attainia

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Find, select, plan, budget and purchase capital equipment. Learn More

FACILITATORS

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SUPPLIERS

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Healthcare Equipment Currently Planned

$34,971,013,837

50 NEW Products This Week View All

Our Community

Jones Lang LaSalle at Beaumont Hospitals

FHN

NWH Northern Westchester Hospital — Expertise • Technology • Humanity

Vail Valley Medical Center

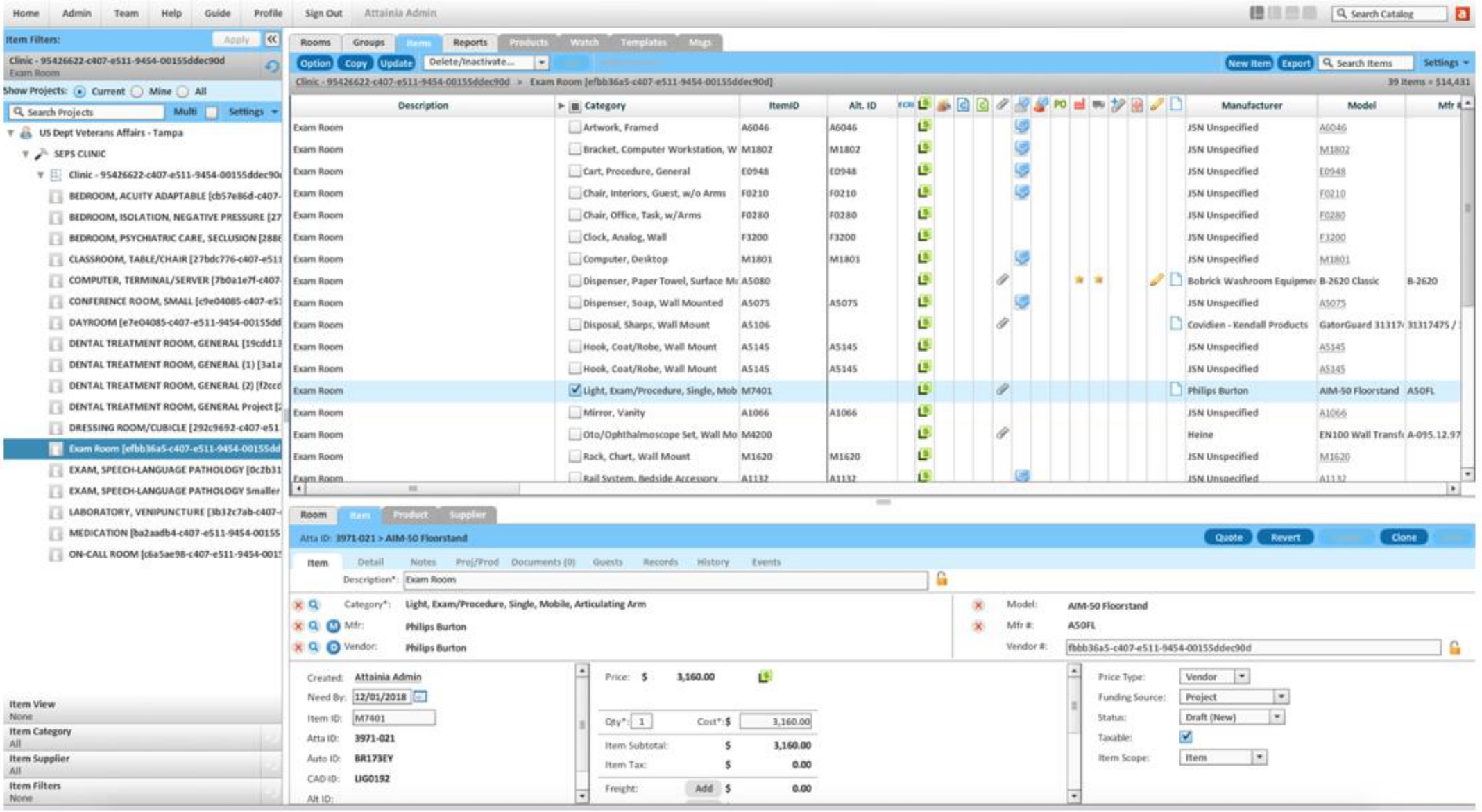
Partner with us

Steelco Instrument Washers & Sterile Processing Equipment Now Available Through Attainia.

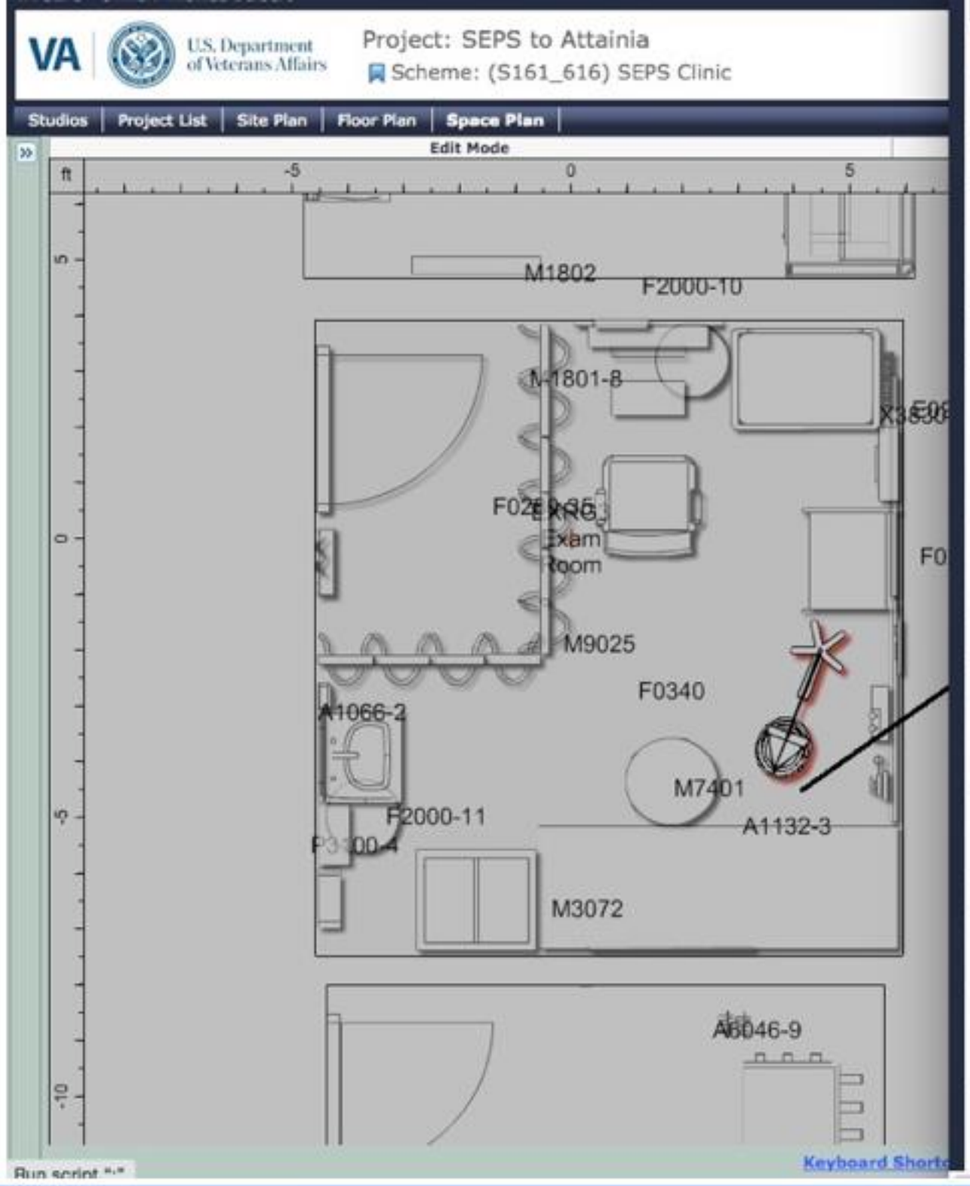
Savant Automation Partners with Attainia to Provide Easy Access to their Mobile Robot Technology.

Christie Veinviewer Vein Imaging Devices Now Available in Attainia's Equipment Planning Catalog System.

More from our Newsroom



Attainia Medical Equipment Database



attainia

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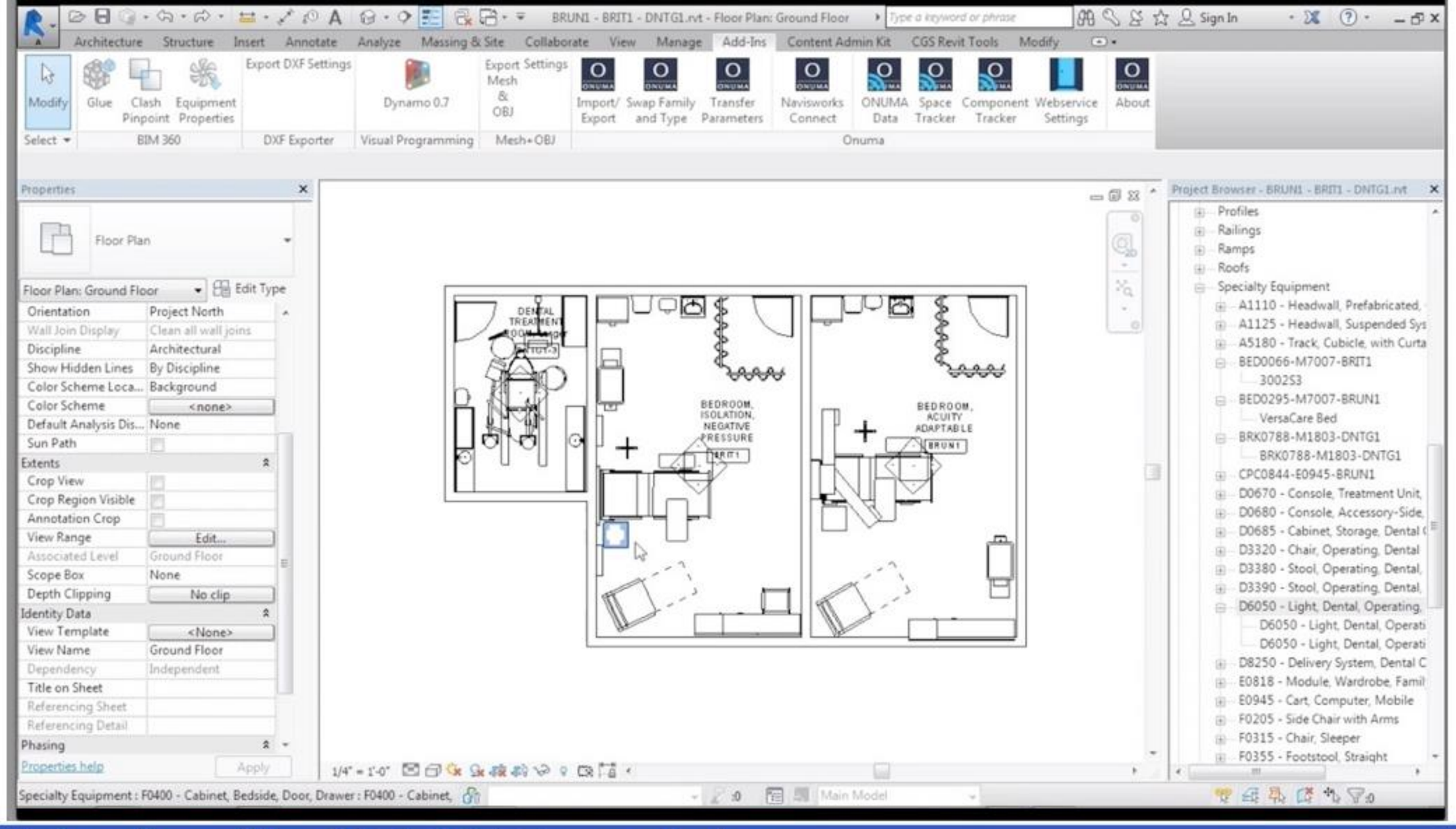
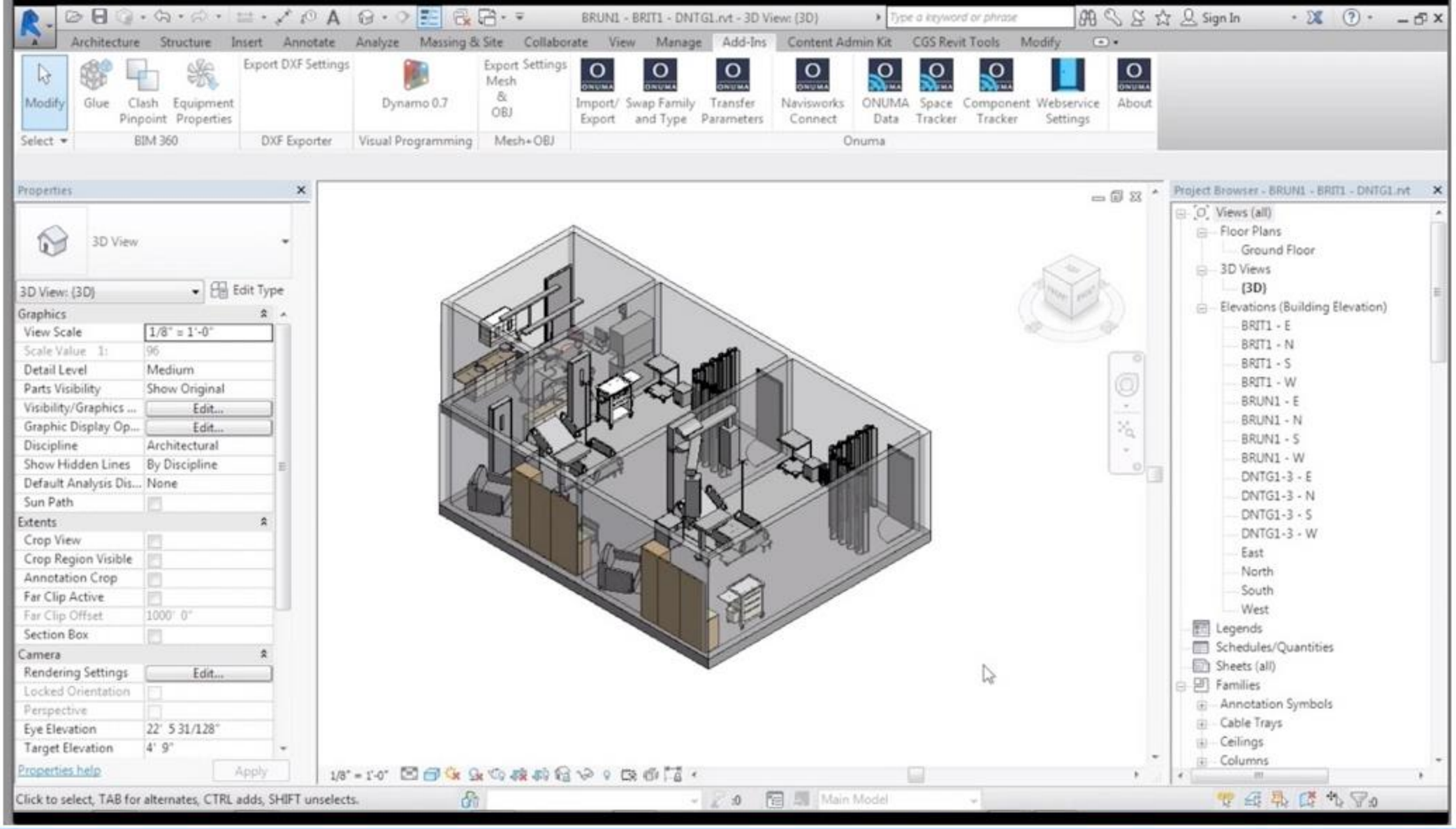
AttaID	5460-003
CADID	LIG0215
AutoID	BX400AT
JSN	M7401
SepsGuid	fbbb36a5-c407-e511-9454-00155ddec90d
Location	
Organization	Onuma, Inc.
AttaOrgID	8030147922
Project	SEPS Clinic
AttaProjectID	8030897713
Building	Unassigned
Level	Unassigned
Department	CLINIC
Room	EXAM ROOM
Product	
Description	Light, Exam, Mobile, Spotlight, Mobile Stand
Category	Light, Exam/Procedure, Single, Mobile, Gooseneck Arm
Mfr	Sunnex Inc
Model	PF Series
MfrNumber	PF2006-32
Vendor	Sunnex Inc
VendorNumber	PF2006-32
Type	
ArchCode	Soft Deleted-Deleted
Medical	Medical
BidGroup	Unassigned
Custom1	Unassigned
Custom2	Unassigned
Furnish	O
Install	O
Scheduling	
AreaPhase	Unassigned
NeedBy	2016-10-01
LeadTime	75
ItemStatus	Draft (New)
Visibility	Active
Financial	
ItemScope	Item
ItemQty	1
Taxable	1
ItemCost	942
ItemSubtotal	942

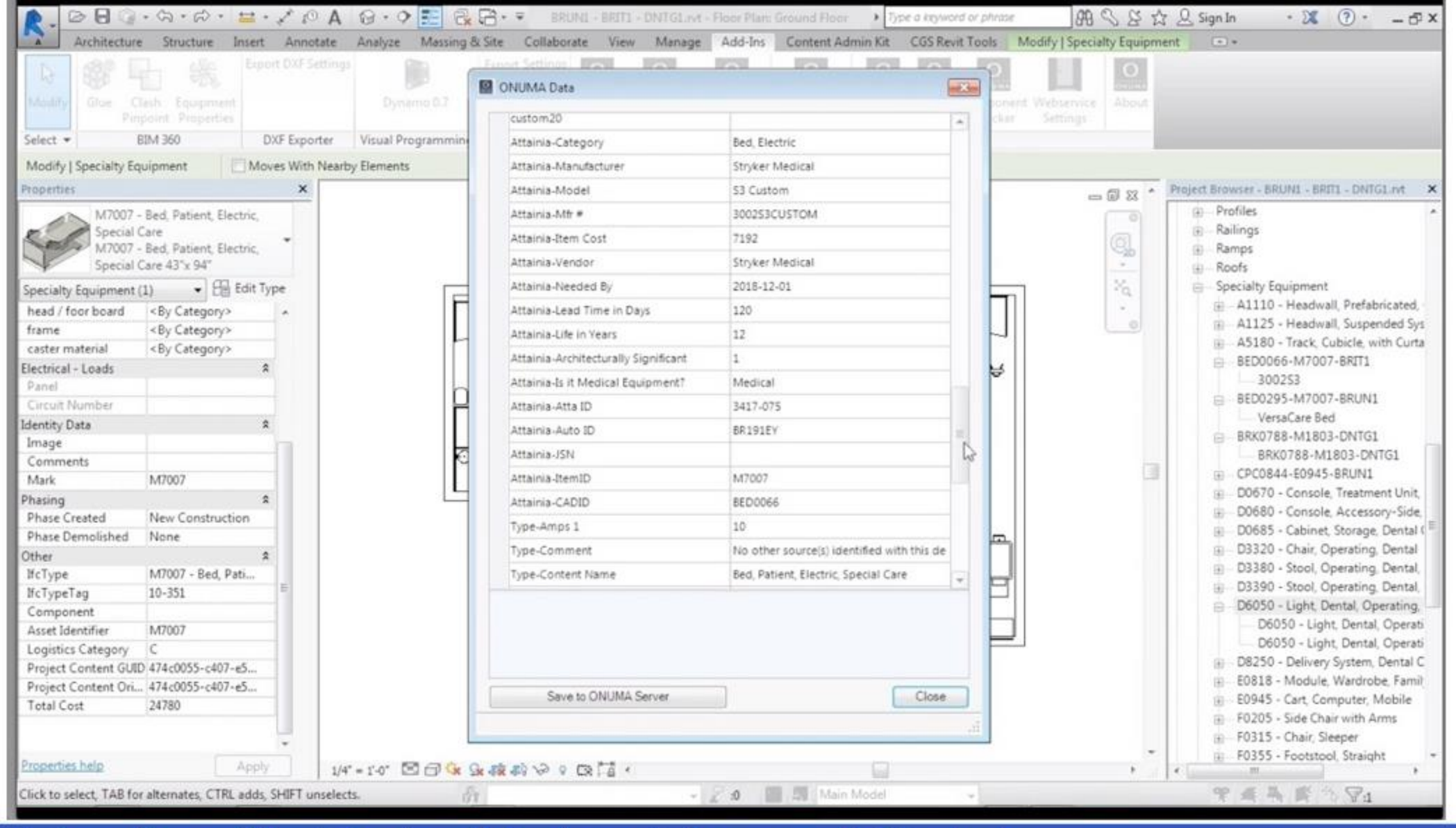
Attainia Medical Equipment Linked to SEPS



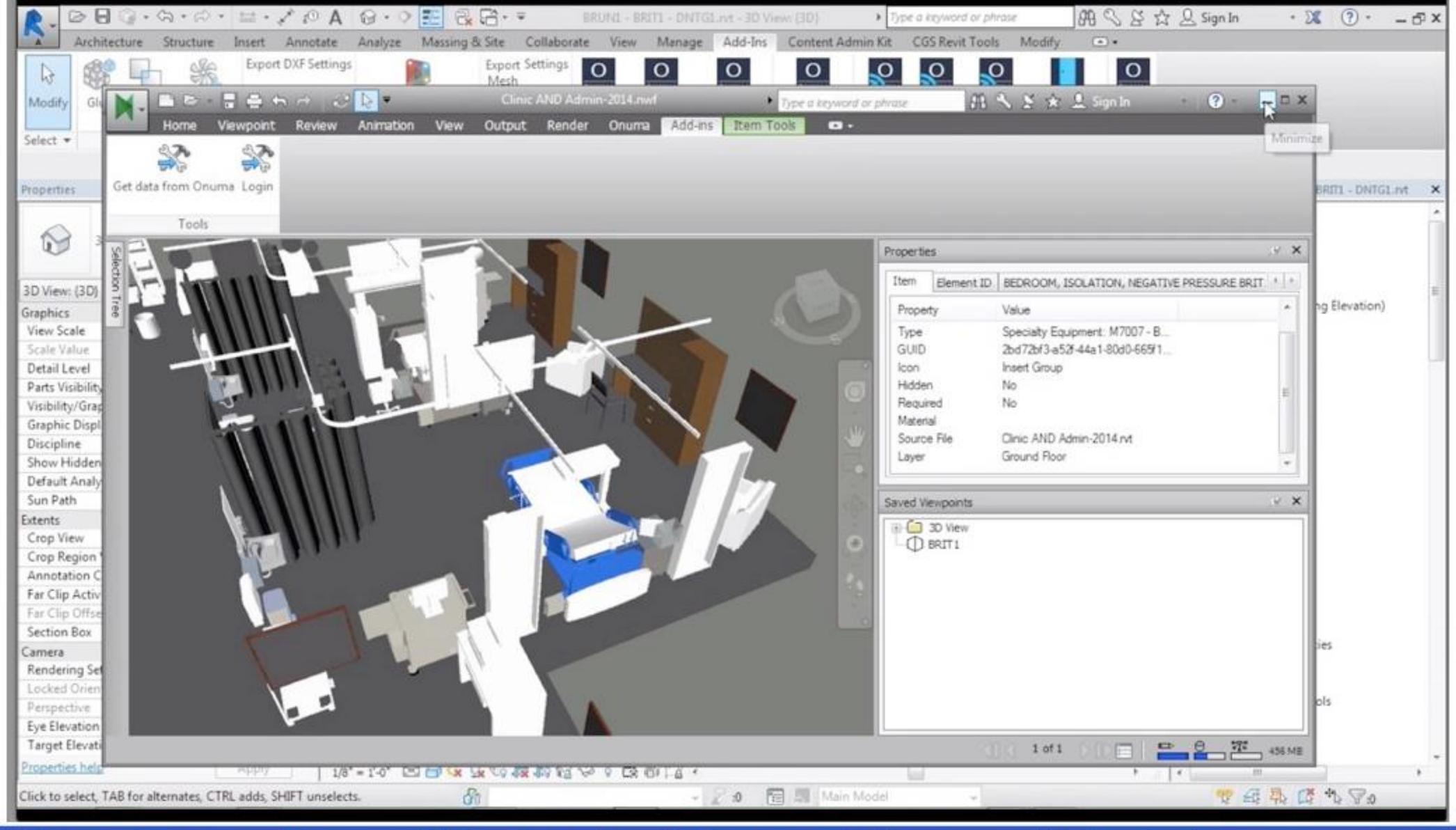
Revit with SEPS Templates



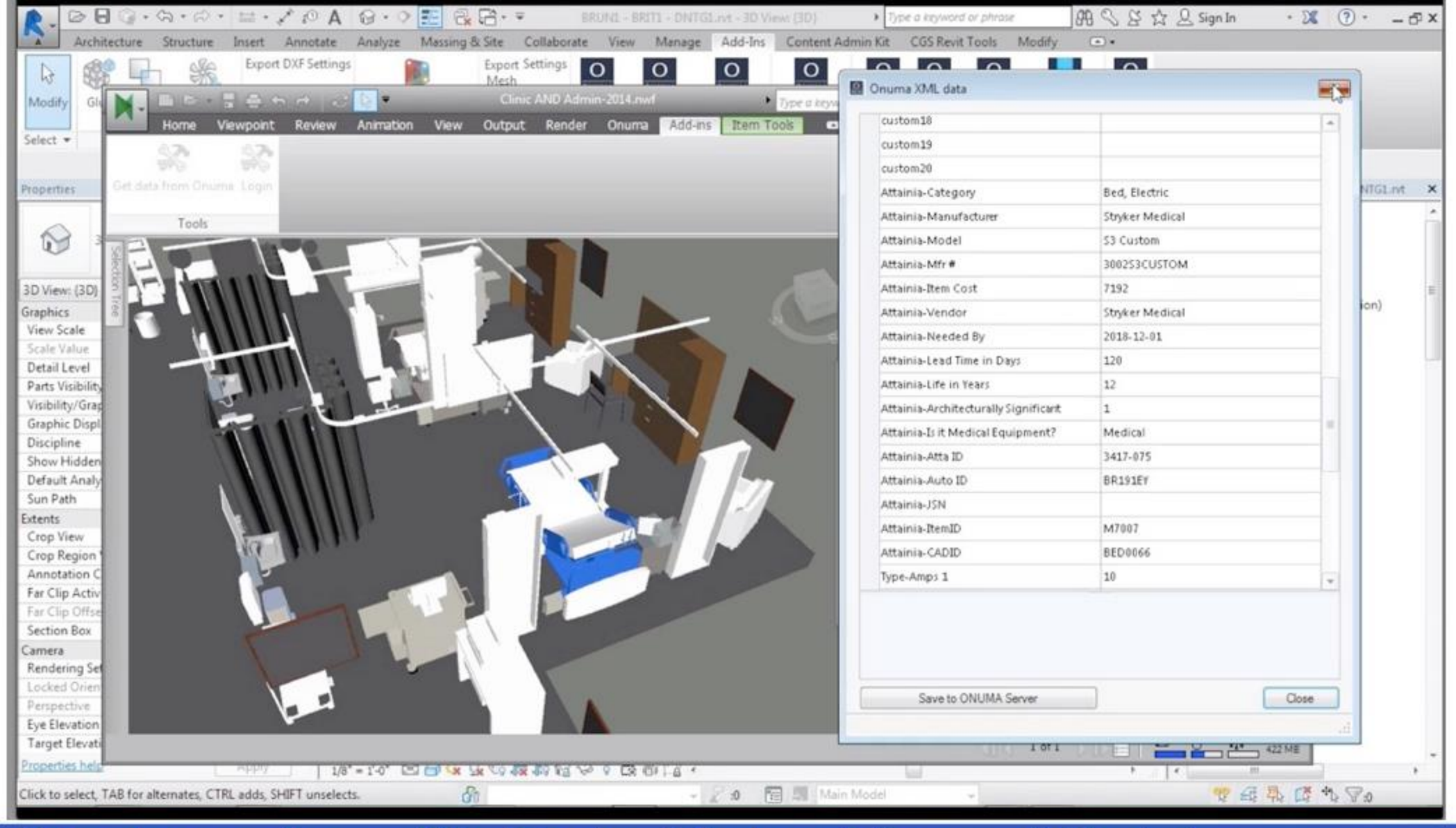
Revit with SEPS Templates



Revit with Data Linked from Attainia



Navisworks with Data Linked from Attainia



Navisworks with Data Linked from Attainia

iFM MANY SCALES

Facility Life Cycle Data

MANY USER - SIMPLE ACCESS TO COMPLEX DATA

Customers

Executives

Facilities

Architect

Contractors

A

B

C

D

E

iFM | FED iFM | Presentations | Applications | Sign Up | FAQ

FED iFM

Federal Integrated Facilities

Government Agencies and FED iFM

VA | NASA

Your Agency Name Here

Government agencies have major problems managing facility data in disparate monolithic systems. FED iFM started by looking at how to address this problem within the Department of Defense Military Health System. FED iFM builds a platform of shared services with modular facility life cycle solutions. ROI reports identified significant savings potential compared to the current monolithic systems that are in place.

FEDiFM.org

An Open Platform for All

Owners	Staff	Customers	Administrators	Operators	Many More...
How many square feet are in my portfolio worldwide?	This equipment is not working.	Where is the nearest hospital with an MRI?	How do we schedule room use?	Where is the faulty equipment?	Consultants Architects Engineers Developers Vendors, etc.

The facility industry today is ready for a change. Tremendous shifts in technology in the last few years create the potential for cost and time savings for owners of facilities.

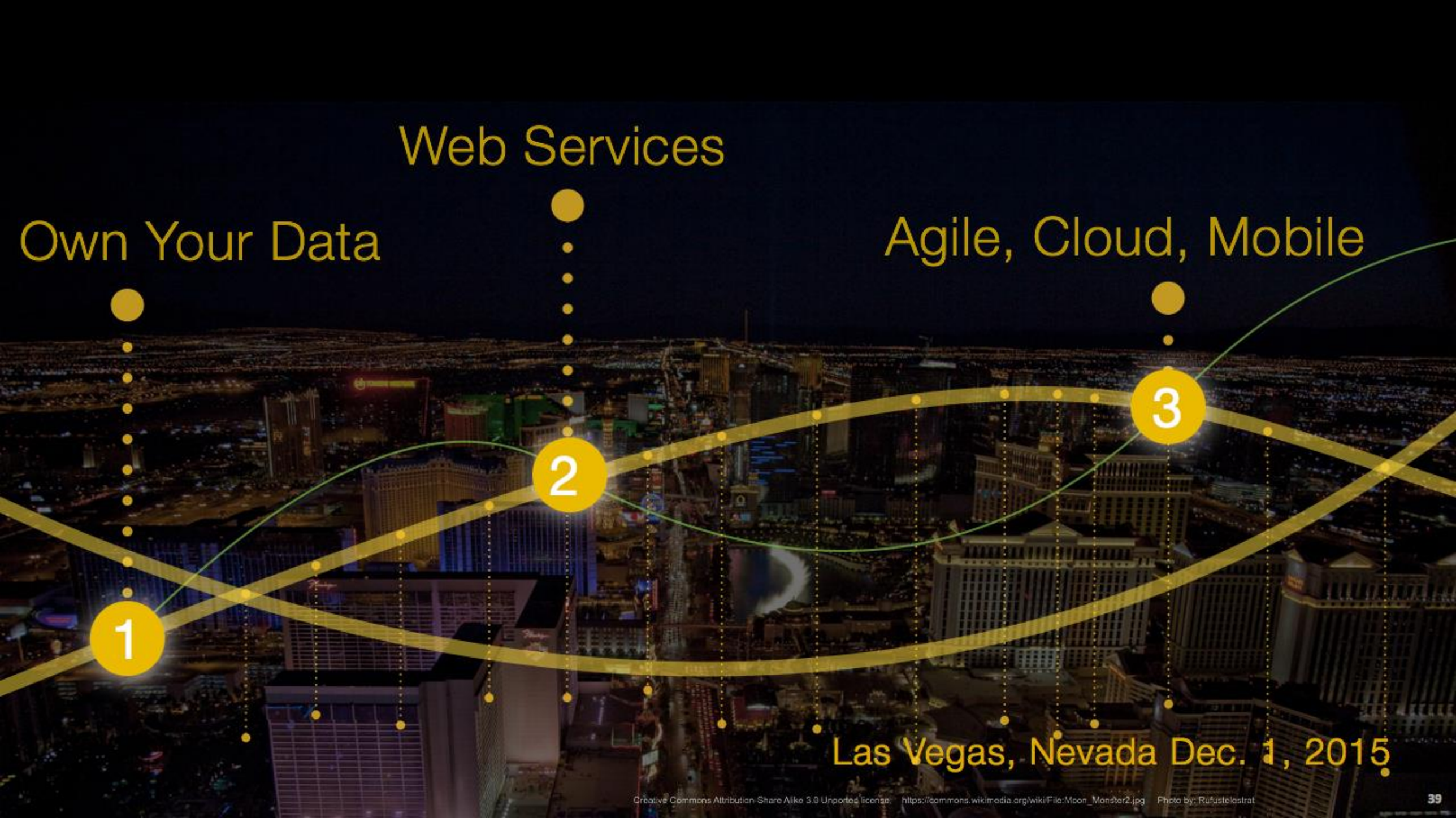
iFM was a two year effort initiated by a project through the National Institute of Building Sciences. The initial focus was on government healthcare facilities, but the findings apply to any facility owner. The next stage is to identify opportunities for other owners to participate in iFM with an initial focus on federal agencies for FED iFM.

iFM enables all users regardless of skill level or tools to view the same data. Based on who the user is, actionable information is made accessible to them. Some users have access to a subset of information, others have access to read and write to the full set of information. iFM simplifies the access to complex data, and enables a modular versus a monolithic approach to creating applications.

No More Stovepipes - Own Your Data

Owners are faced with similar challenges. Different tools are used across the life cycle of facilities, the data is duplicated and it is not synchronized. Information is often trapped in monolithic applications that have either been created in house or off the shelf, with limited ability to link other applications. This creates problems as owners need to make decisions that cut across stovepipes. iFM can break the stovepipes and eliminate dependency. iFM uses existing web security protocols to allow data to be safely stored and shared between authorized internal and external stakeholders.

SEPS 2BIM



LINKS

http://FEDiFM.org

http://SEPS2BIM.org

http://www.cfm.va.gov/til/seps2bim.asp

https://home.facilities.health.mil

http://onuma-BIM.com

Kimon Onuma, FAIA
KG@Onuma.com

Maintain Standards | Publish Standards | Design | Verification | Induction | Use

Challenges

Manual

Compliance Checking

Does the model fail to comply with…

- Design Requirements
  - **Space Planning** e.g. Room size outside of acceptable area range.
  - **Code** e.g. ADA compliance failures
  - **Operations** e.g. Equipment selection outside accepted list

- Data Requirements
  - **Missing data** e.g. lacks data needed to support LoD functions
  - **Incorrect data** e.g. power requirement outside of reasonable range
  - **Incorrect data format** e.g. text where number required

Time to Chime In !

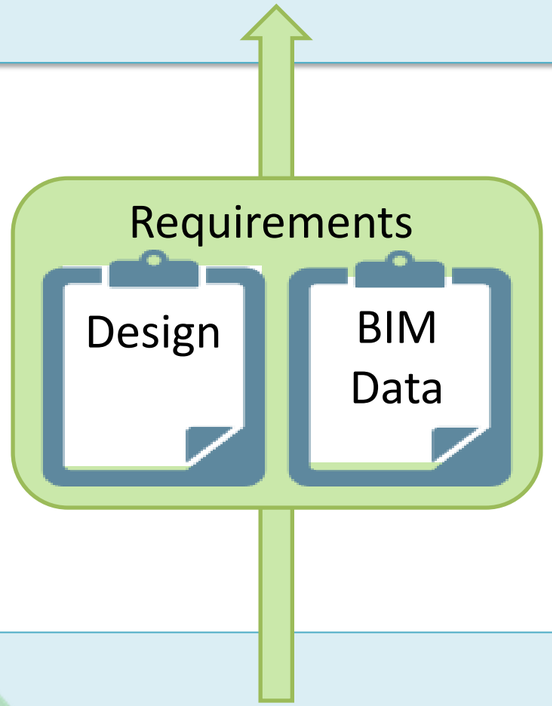
By show of hands, how many here require BIM as a deliverable?

How long do you invest in verifying each (average) model?

- We never do that!
- A few hours?
- A few days?
- A week or more?
- Longer, oh much longer…

OWNER

Requirements

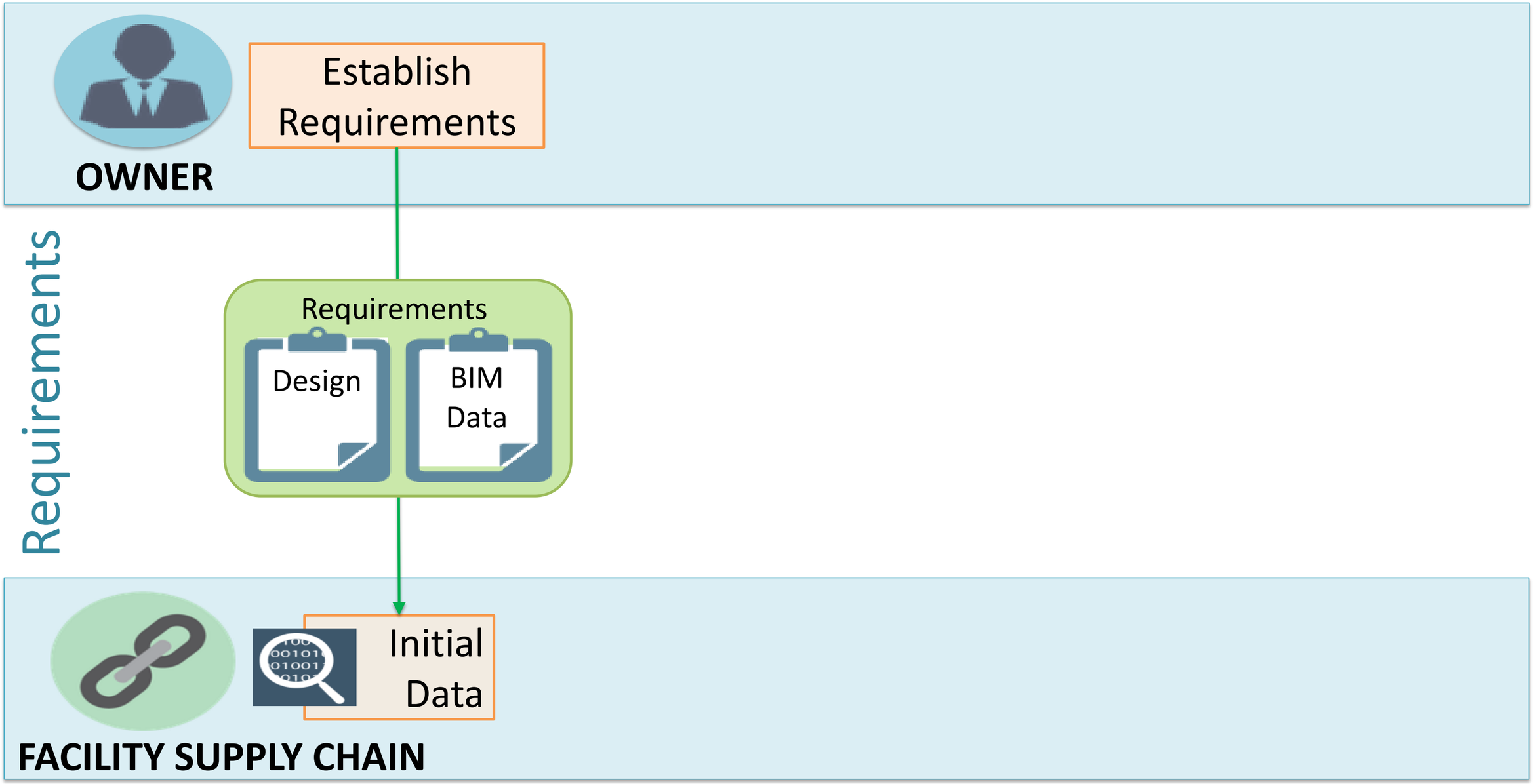


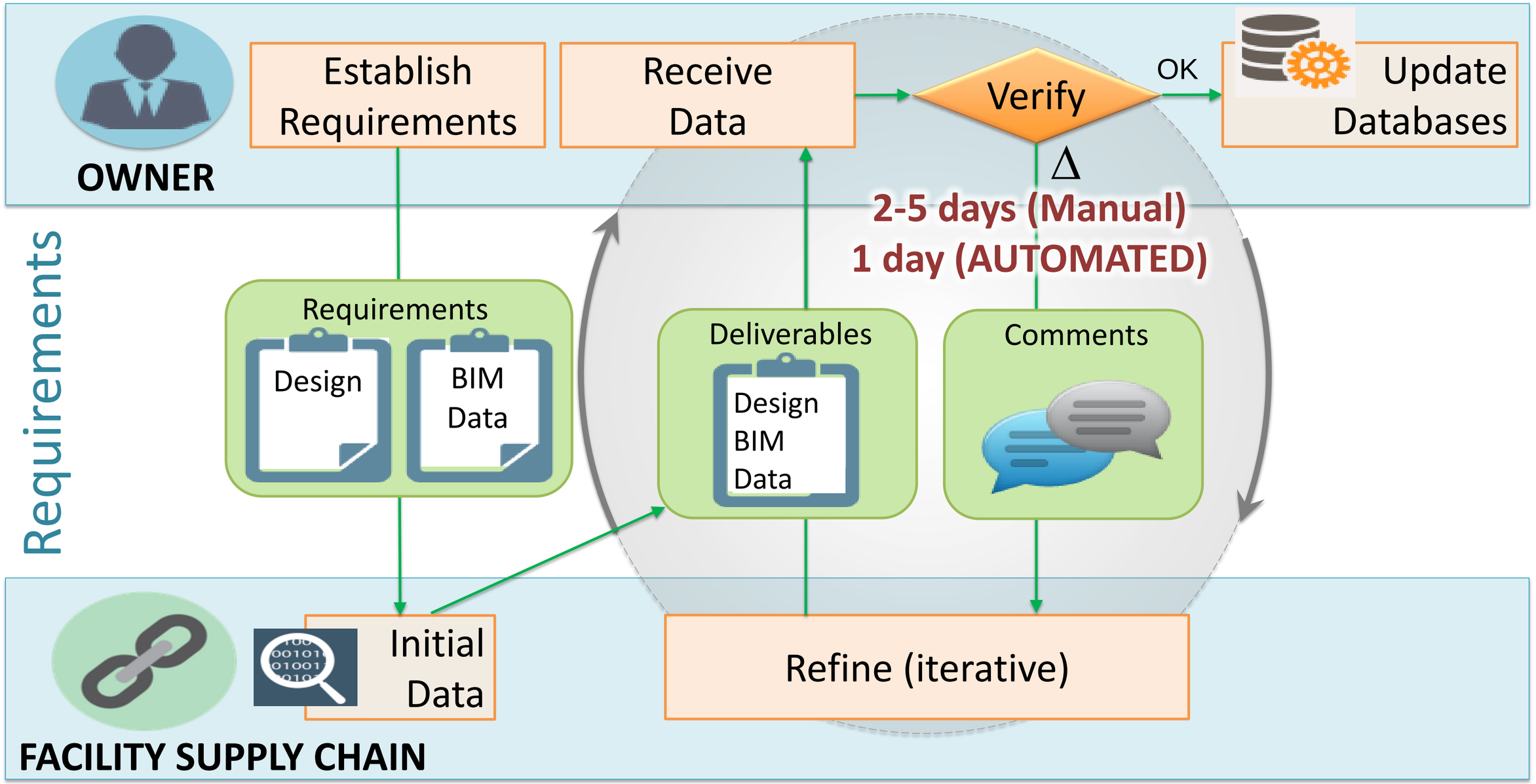
Do these deliverables meet my needs?

If not, what is wrong?

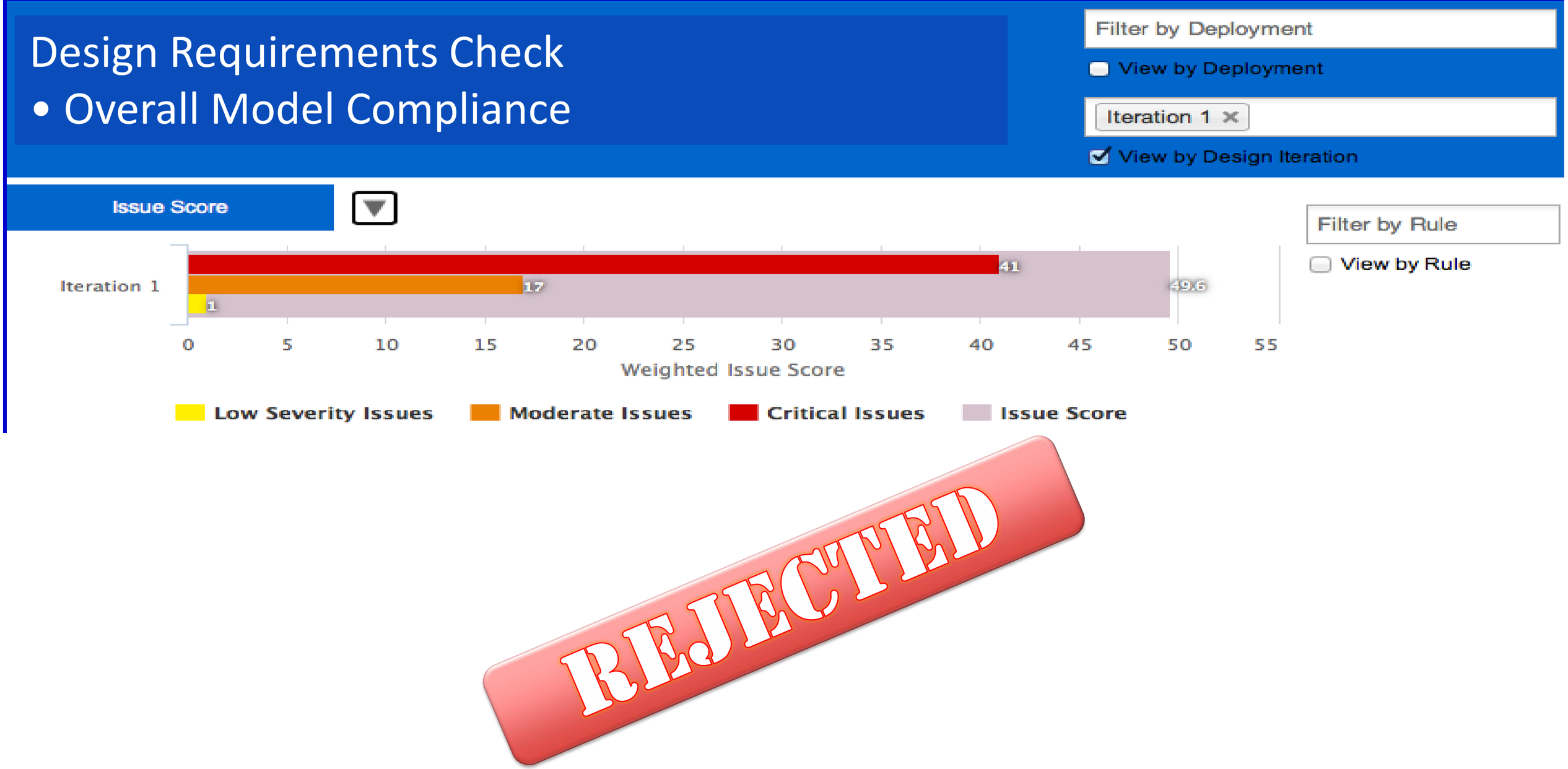
How long will verification take?

FACILITY SUPPLY CHAIN


Establish Requirements
OWNER
Requirements
Requirements
Design
BIM Data
Initial Data
FACILITY SUPPLY CHAIN


OWNER
Establish Requirements
Receive Data
Verify
OK
Update Databases
Δ
2-5 days (Manual)
1 day (AUTOMATED)
Requirements
Requirements
Design
BIM Data
Deliverables
Design
BIM
Data
Comments
Initial Data
Refine (iterative)
FACILITY SUPPLY CHAIN

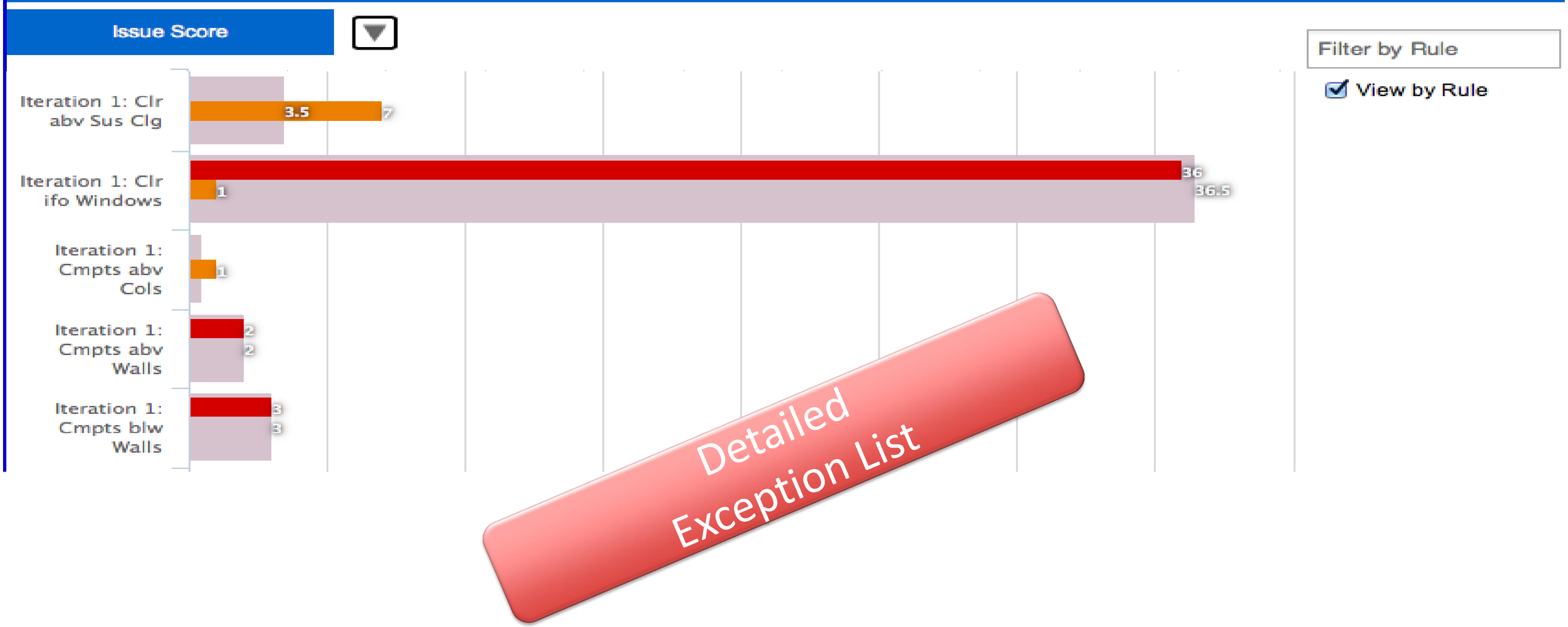
Design Requirements Check
- Overall Model Compliance



REJECTED

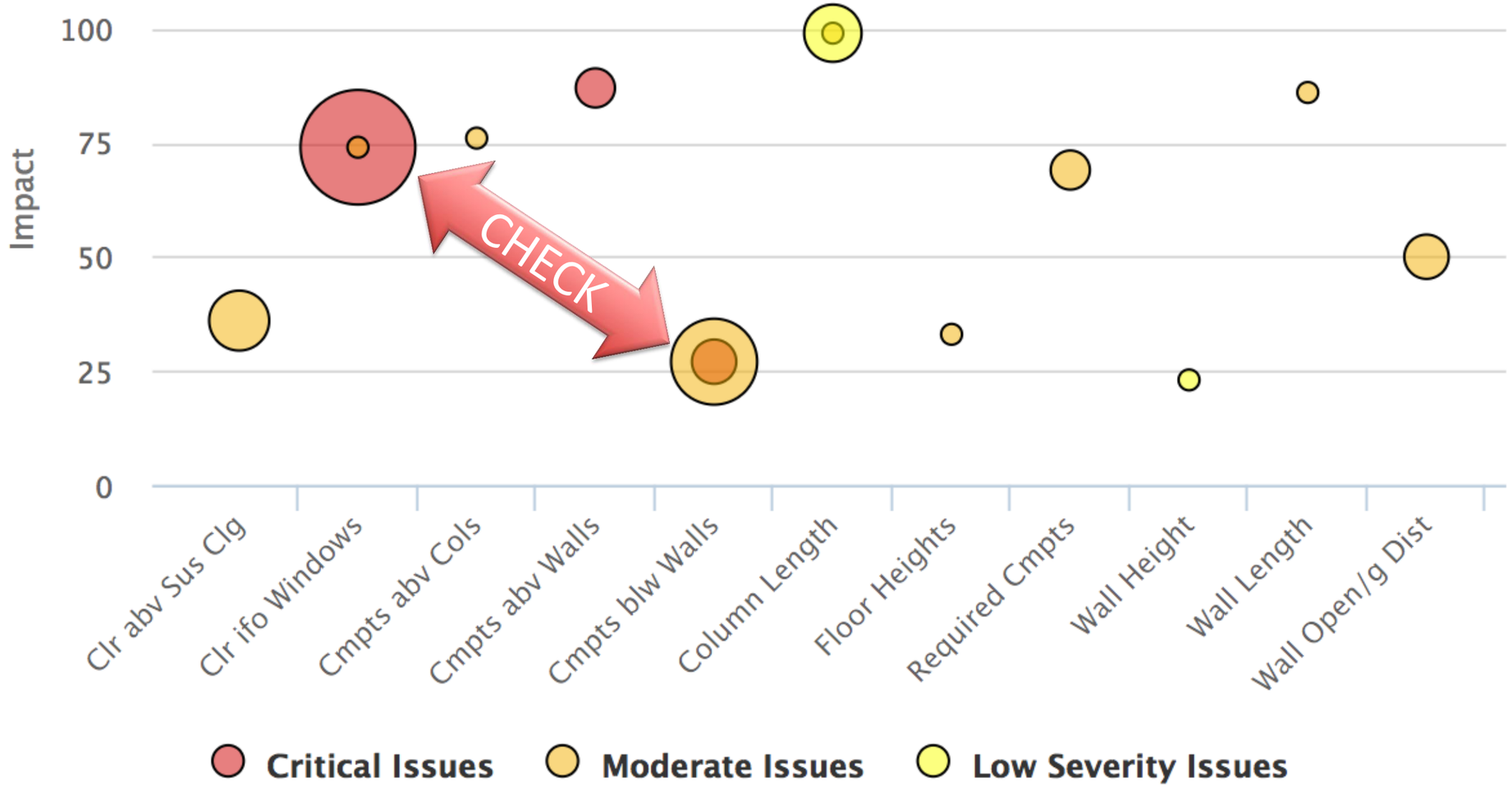
Design Requirements Check

- Rule by Rule Compliance



Design Requirements Check

- Alternative Data Presentations



Benefits & Performance

AUTOMATION

- ✓ Distillation of requirements into rule sets with standard language
- ✓ Rapid automated requirements verification processes
- ✓ Dashboard views for overview and detailed intervention

Action	Time Required		Time saved
Design Validation	weeks	hours	**weeks**
Data Verification	days	hours	**days**

Maintain Standards | Publish Standards | Design | Verification | Induction | Use

Challenges	Accomplishments
Manual	**Automated**
Compliance Checking	Attribute Verification

Rooms / Design Objects	Air Terminals	Casework	Communication Devices	Doors	Electrical Fixtures	Fire Alarm Devices	Furniture	Generic Models	Lighting Devices	Lighting Fixtures	Nurse Call Devices	Plumbing Fixtures	Security Devices	Specialty Equipment	Sprinklers	Windows	**Total Design Objects (No.) in each room**	**Total Design Objects (%) in each room**
1BR-A-S	3	1	2	2	22	0	13	12	4	14	4	18	0	20	6	0	**121**	**12.2%**
1BR-ICU-S	2	1	4	1	36	0	8	13	2	6	5	3	4	40	4	0	**129**	**13.0%**
5BR-B2+_S	1	5	2	1	32	0	28	26	7	23	21	10	0	46	9	0	**211**	**21.3%**
CONS-S	2	1	1	1	9	0	10	3	1	5	4	2	1	23	2	0	**65**	**6.6%**
CTCR-S	2	0	2	1	5	0	4	2	1	1	0	0	0	4	1	1	**24**	**2.4%**
CTPR-S	6	0	0	0	15	2	2	9	1	9	3	2	0	19	4	1	**73**	**7.4%**
GENXR-S	5	0	1	2	17	0	1	6	2	6	2	2	0	18	3	1	**66**	**6.7%**
MRI-PR-S	6	0	0	1	7	0	2	5	1	13	3	1	0	7	6	1	**53**	**5.3%**
OR-DIG-S	9	2	4	0	9	2	14	0	8	12	0	0	9	20	6	0	**95**	**9.6%**
RAD-BUNK-S	10	8	1	2	25	6	1	1	1	14	1	2	2	15	6	0	**95**	**9.6%**
SSTN-14	0	8	2	0	11	0	8	2	2	8	1	1	1	10	5	0	**59**	**6.0%**
Total																	**991**	

Maintain Standards | Publish Standards | Design | Verification | Induction | Use

Right Data | Right Format

Challenges	Accomplishments
Manual	**Automated**
Compliance Checking	Attribute Verification

Maintain Standards | Publish Standards | Design | Verification | Induction | Use

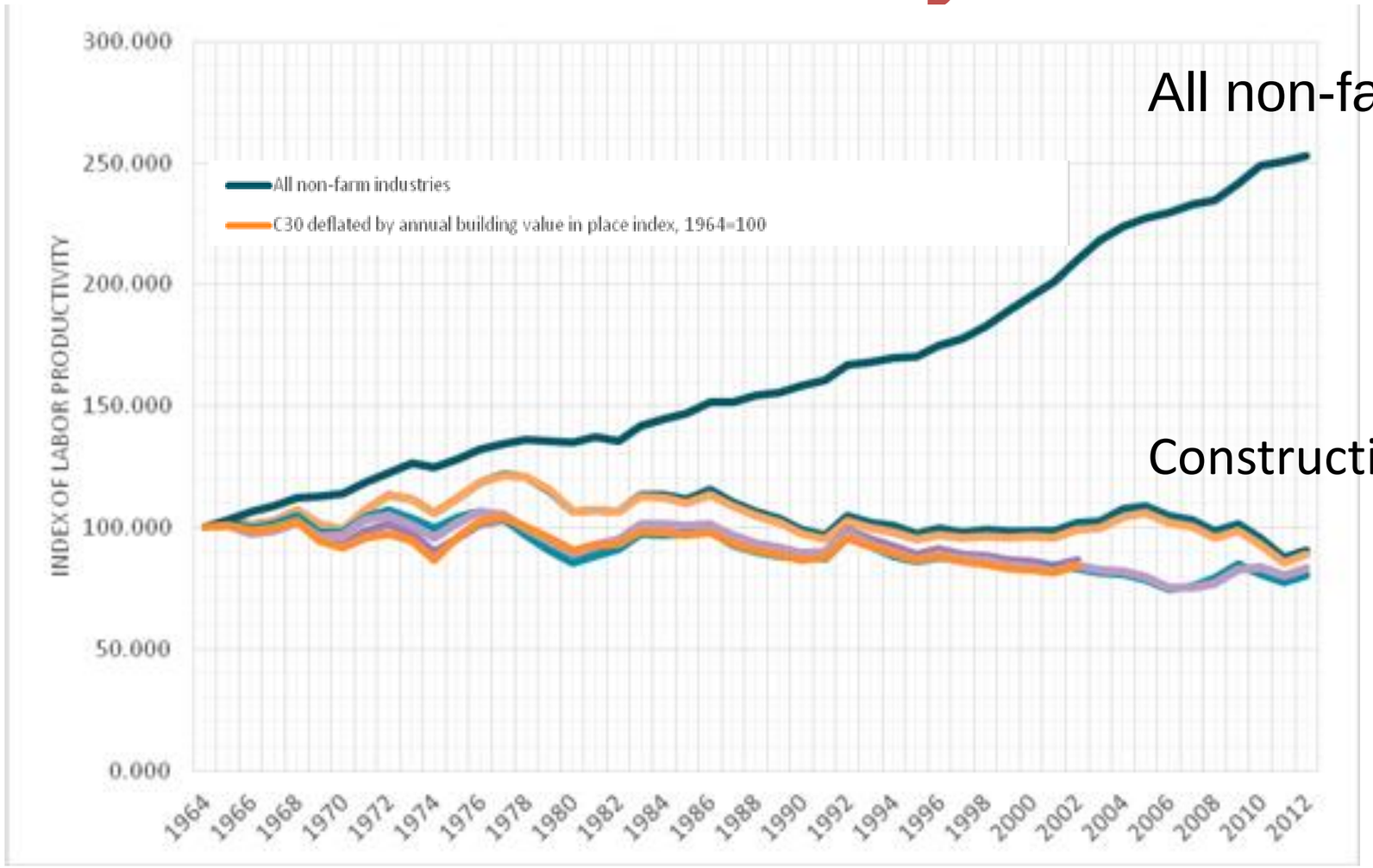
Challenge

BIM-centric Model

Organized for Modeling Process

Ignores Construction Hierarchies

Productivity

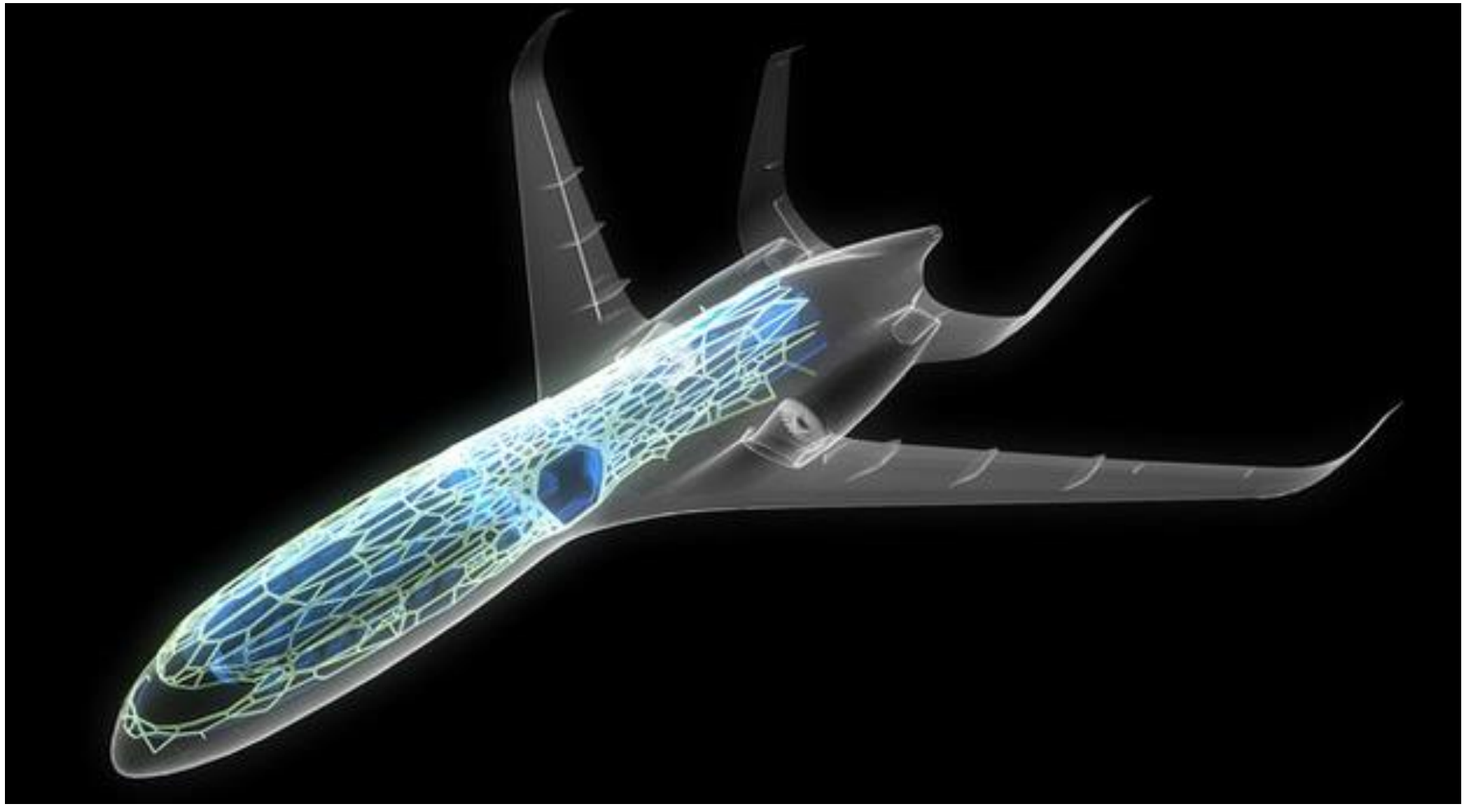


Former CIFE Director: Paul Teicholz PhD
Source: http://www.aecbytes.com/viewpoint/2013/issue_67.html

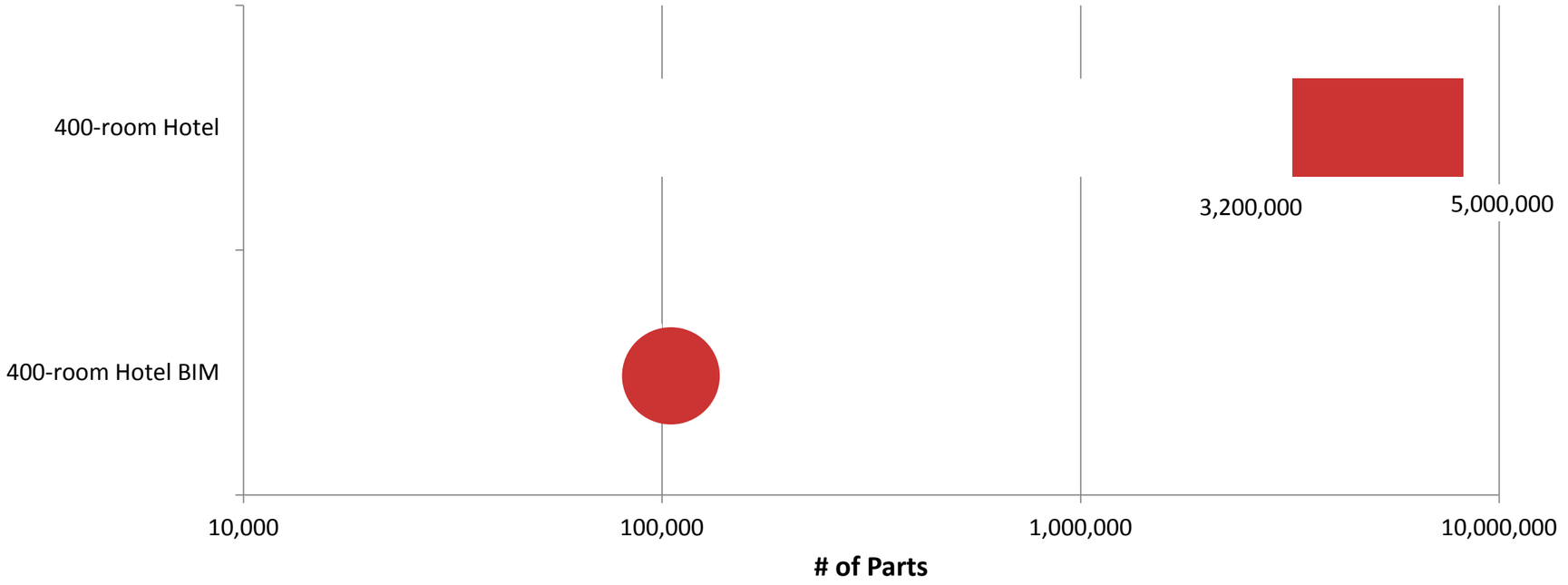
Source: CIFE-Stanford

Aerospace: A380 — 6,000,000 Parts

“Using composites, we will mould all the parts together at the same time, so our perception of what a single part is will change” (BBC news, 2014)



Parts in a Hotel



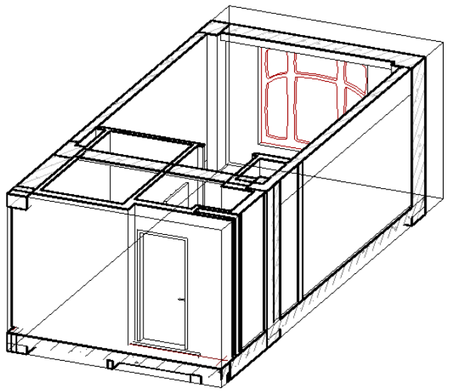
Source: CIFE-Stanford

Typical Hotel Guestroom

Hospital Bathroom

Prefabricated Hospital Bathroom

of Parts
8,350 – 12,650



# of Parts
4,000

# of Parts
60

For 440 Bathrooms:

98.5% Reduction

from 1,700,000 to 25,000

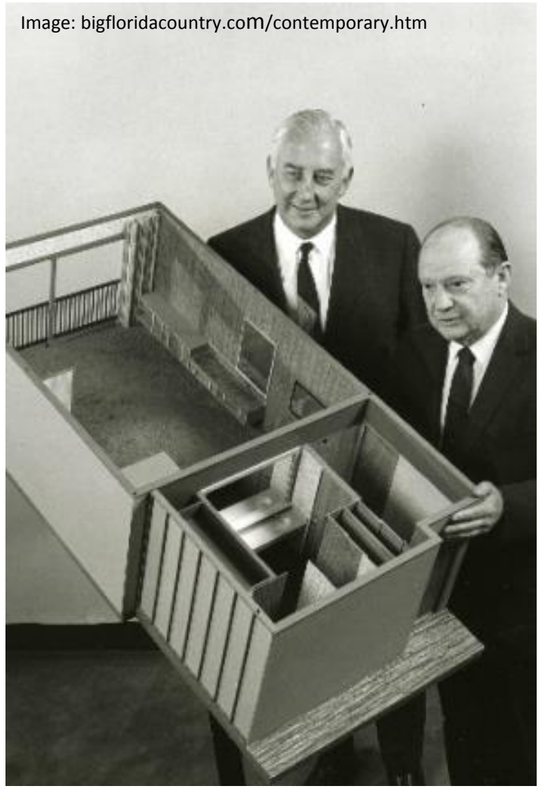
Source: CIFE-Stanford

1971

Disney Contemporary Resort Prefab Modular Guestrooms

40 Modules per Week

Image: bigfloridacountry.com/contemporary.htm



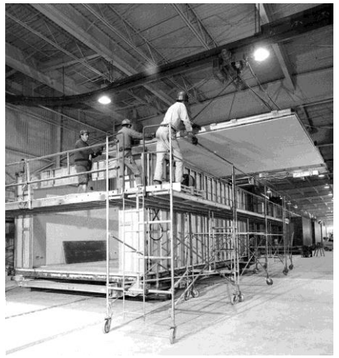


Image: youtu.be/fIF6mc9SQA0?t=53s

Image: disneyparks.disney.go.com/blog/2011/09/histories-of-disneys-contemporary-and-polynesian-resorts/

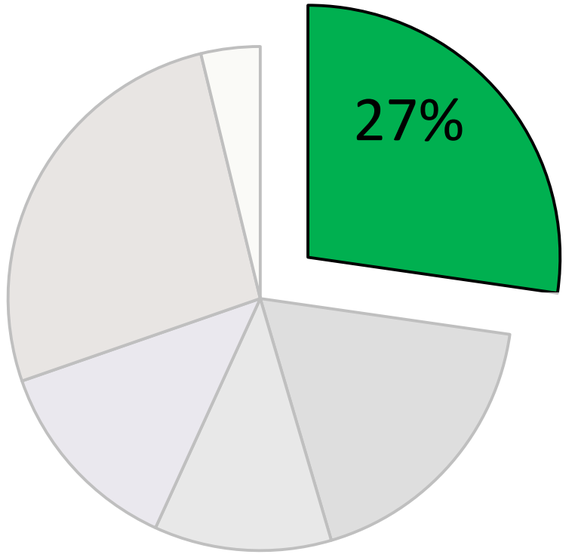
Schedule

Concrete

5 days

Rebar Bending

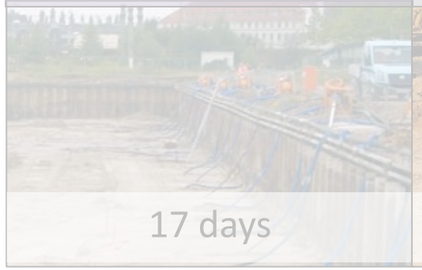
35 days



Scaffolding & Formwork

36 days

Dewatering



17 days

Earthwork

15 days

Base Slab

24 days

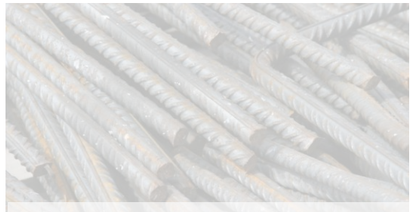
Source: CIFE-Stanford

Cost

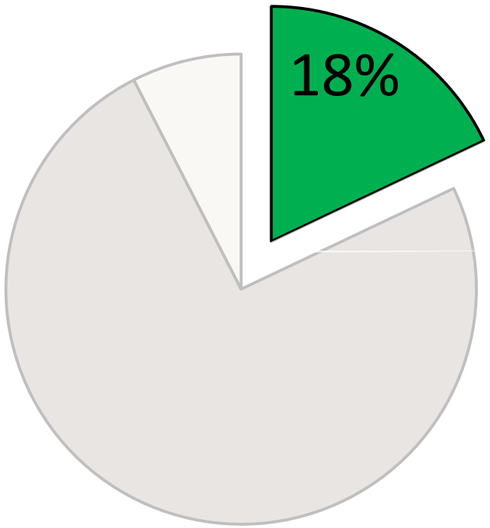
Concrete

$8,400

Steel Reinforcement



$83,000



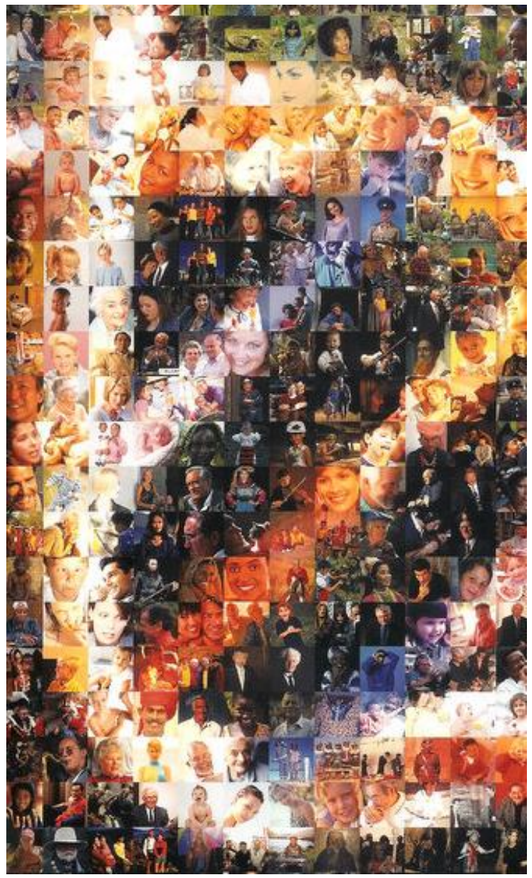
Temporary Plywood Formworks

$ 20,000

Source: CIFE-Stanford

Decoding The Human Structure

Human Genome	Chromosomes	Genes	Nucleotide Pairs
1	46	~20,000	~3 billion



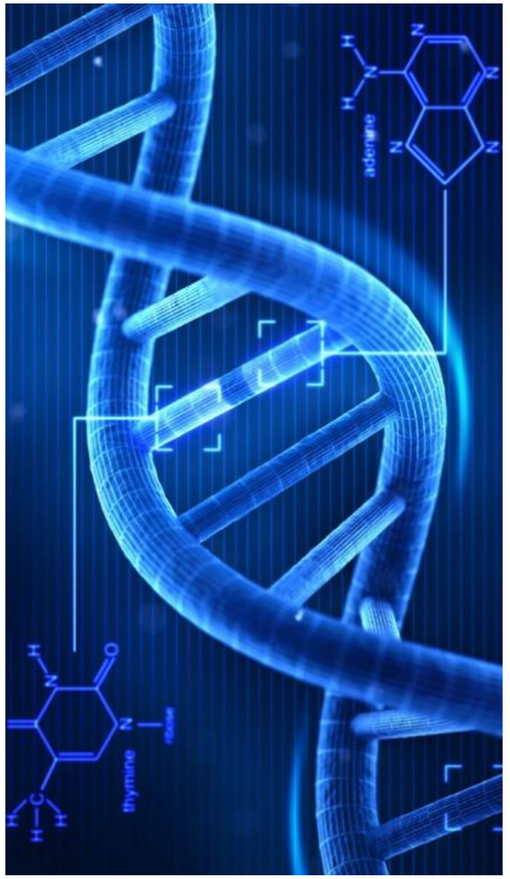



Image: (1) Nature.com (2)wallpaperup.com (3) blogs-images.forbes.com (4) lawprofessors.typepad.com

Decoding A Hotel

Project	Major Systems	Assemblies	Parts
1	**3**	**>50**	**>3 million**
700-Room Hotel	**Structural, Façade, MEP**	**Foundations, Slabs, Beams, Columns, Walls, Curtain Walls, Façade Panels, Windows, Roofing, Doors, etc…**	**Concrete, Rebar, Wire Mesh, Decking, Splices, Waterproofing, Studs, Ties, etc…**

Source: SBI - bimSCORE

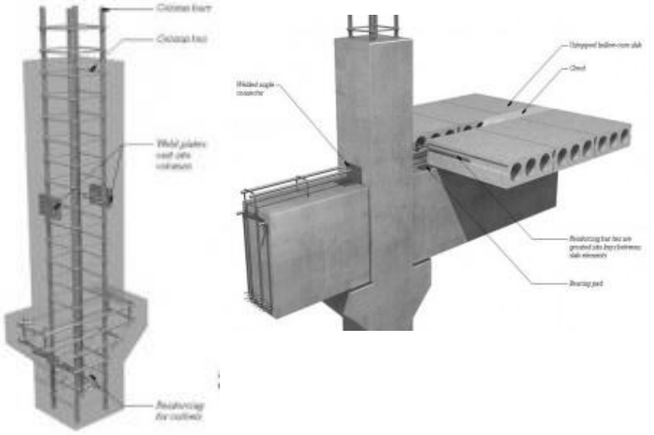
Prefabrication

Cast-in-Place Column

100’s of parts

Precast Column

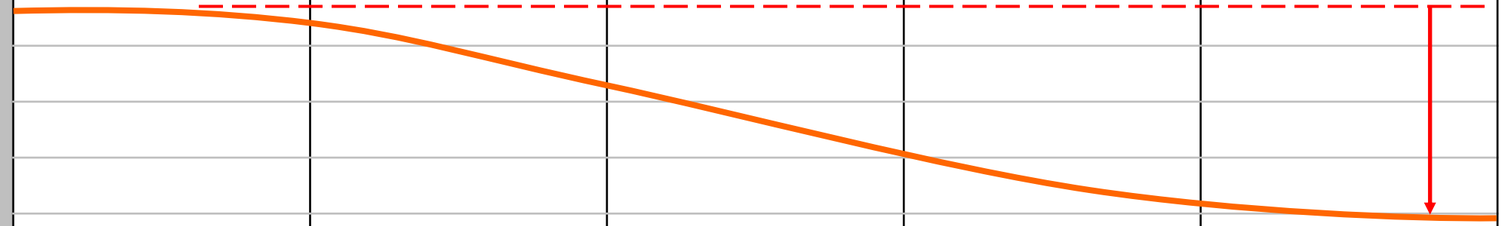
10 parts



Source: SBI - bimSCORE

Prefabrication

	Concept Design	Schematic Design	Design Development	Construction Document	Construction
Total Parts Count					



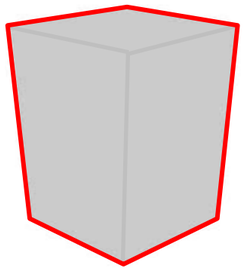
Source: SBI - bimSCORE

Prefabrication

Concrete Rectangular Column

1 parts To 150+ parts

or



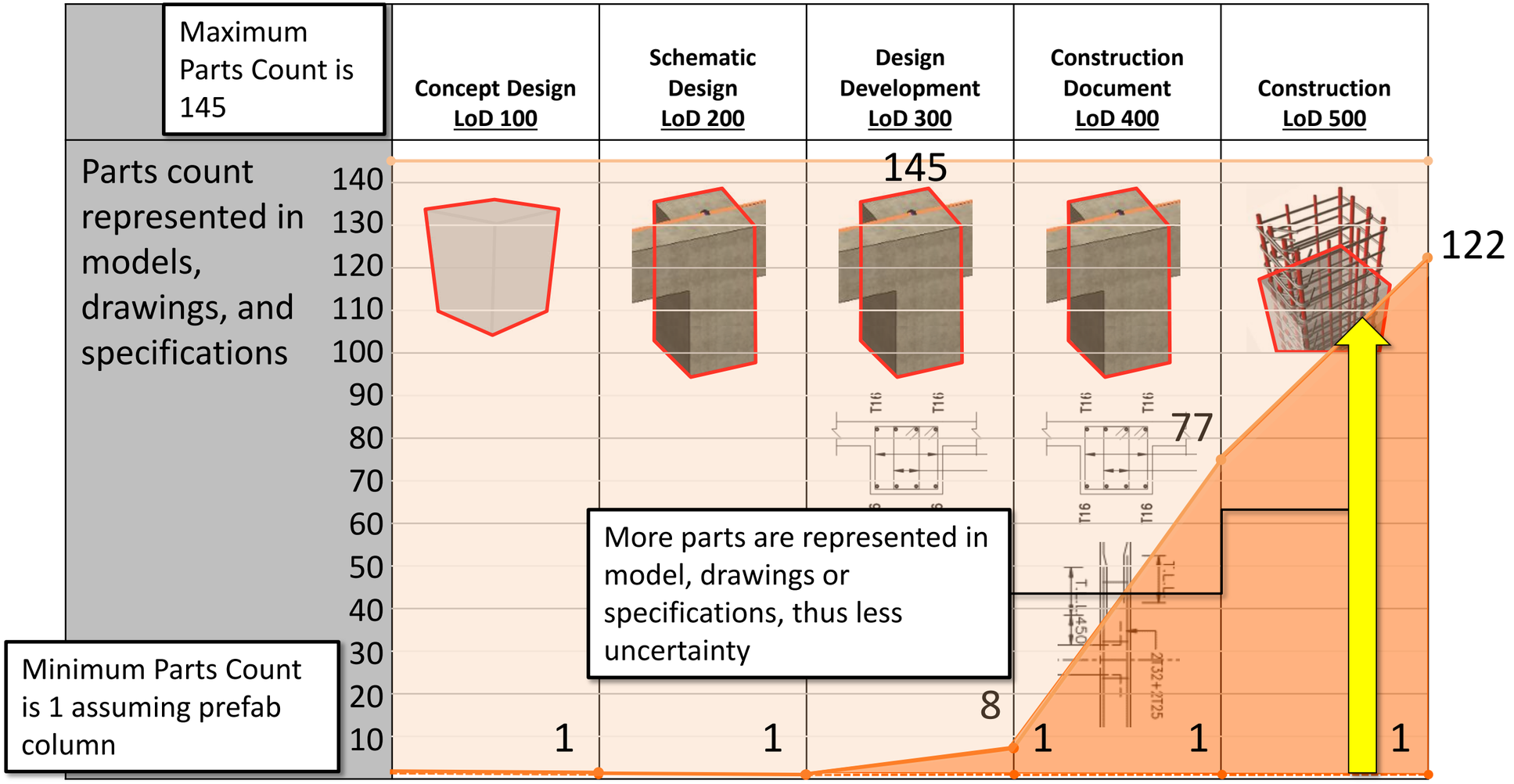
LoD 200

Steel Wide Flange Column

2 parts To 60+ part

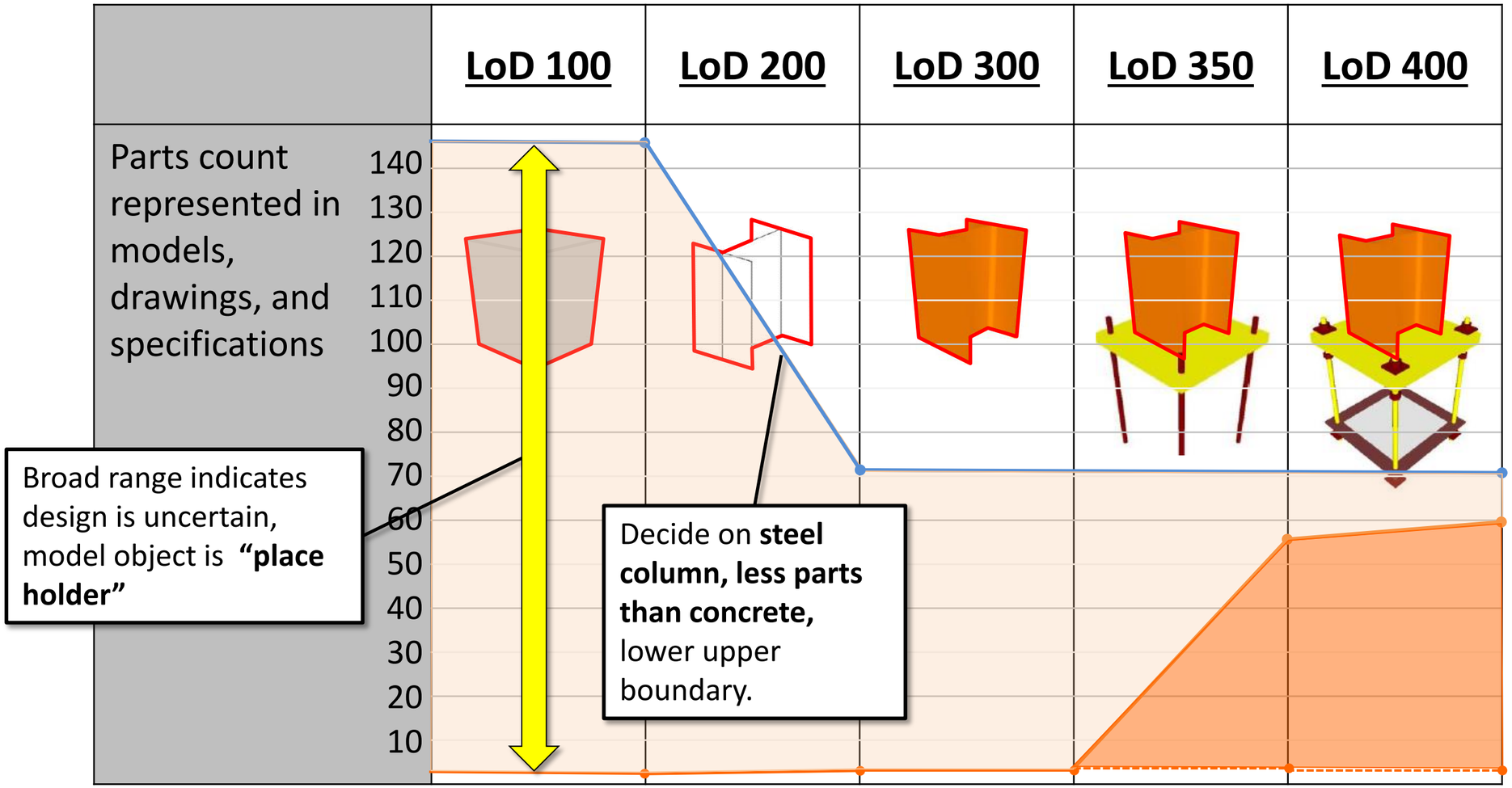
Source: SBI - bimSCORE

Design as Measured by Part Range



Source: SBI - bimSCORE

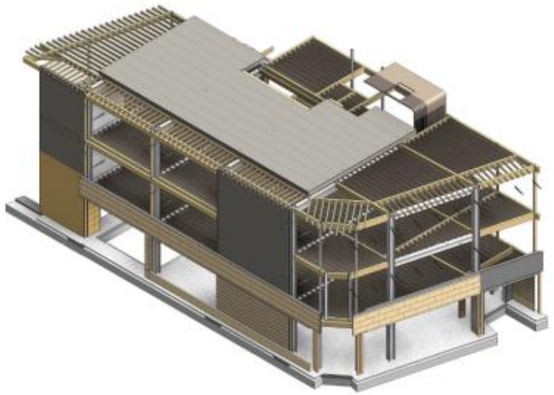
Design as Measured by Part Range

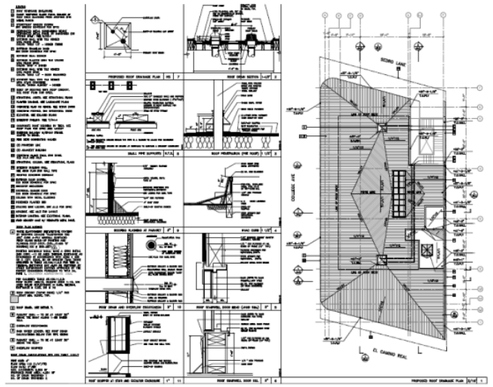


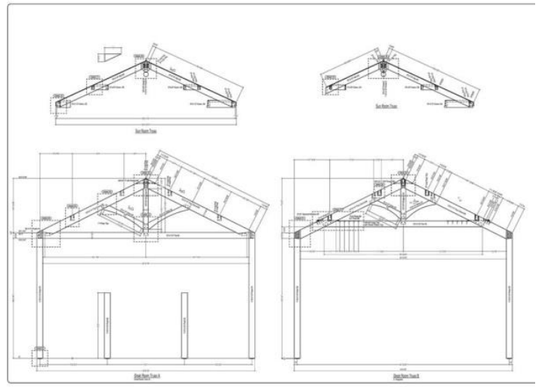
Source: SBI - bimSCORE

Deliverables

4000 sf Mixed-Use @ Schematic Design Phase







2%

in BIM

5%

in 2D Drawings

0%

in Shop Drawings

34%

in specifications
or other sources

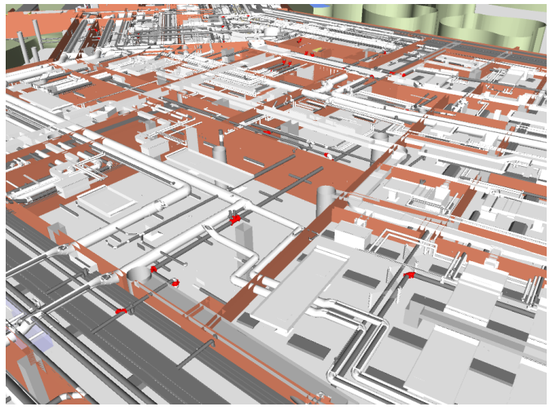
60%

undocumented
and/or determined
in field

Source: SBI - bimSCORE

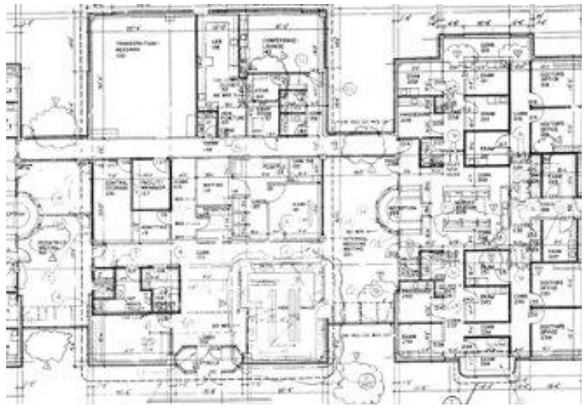
Design as Measured by Part Range

750-room Hotel @ Design Development Design Phase



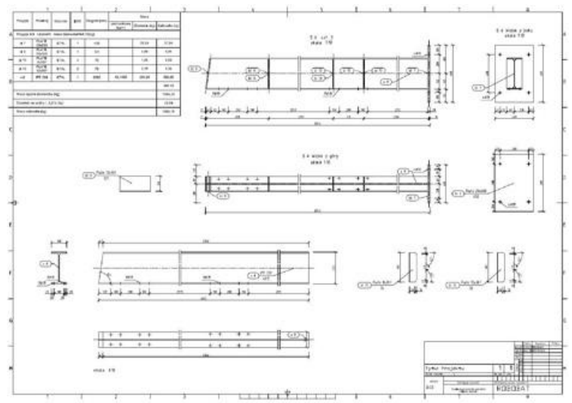
0.5%

in BIM



13%

in 2D Drawings



0%

in Shop Drawings

18%

in specifications or other sources

68%

undocumented and/or determined in field

Source: SBI - bimSCORE

Maintain Standards | Publish Standards | Design | Verification | Induction | Use

Challenge	Accomplishment
BIM-centric Model	**Construction-Oriented**
Organized for Modeling Process	Organized for Building Process
Ignores Construction Hierarchies	Supports Assembly Analysis

Getting the MOST from BIM

Conventional	Typical	Advanced	Best	Innovation

Image sources: [1] dailyrecord.co.uk [2] planespotters.net [3] nasa.gov [4] amagico.com Concept Source: Strategic Building Innovation

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Tony Rinella Director, SBI•bimSCORE
Kimon Onuma President and Founder, Onuma Inc.
Calvin Kam CIFE, Stanford University & Founder, SBI•bimSCORE