BUILDING INNOVATION 2018
National Institute of BUILDING SCIENCES
CONFERENCE & EXPO

National Institute of Building Sciences

Provider Number: G168

Technology Enabled Facility Lifecycle Data Management

TU-2B

Stephen DeVito
Ralph Kreider, Ph.D.
Kurt Maldovan

9 Jan 2018

10:15 AM- 11:45 AM

CONTINUING EDUCATION AIA

Credit(s) earned on completion of this course will be reported to AIA CES for AIA members. Certificates of Completion for both AIA members and non-AIA members are available upon request.

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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

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Course Description

This panel discussion will present how to work with owners to *develop strategies* to transition from *documents to data* and work processes *to convert facility management data requirements into design and construction standards*. This presentation will also use *real world examples* to leverage building information modeling *(BIM), model-based barcoding* and *mobile technologies to capture data* from design, construction and commissioning, and eventually *hand over facility data* for owner's operation and maintenance needs. Various *trends*, *emerging standards*, *tools*, *techniques* and *work processes* will be discussed.

CONTINUING EDUCATION AIA

Learning Objectives

At the end of the this course, participants will be able to:

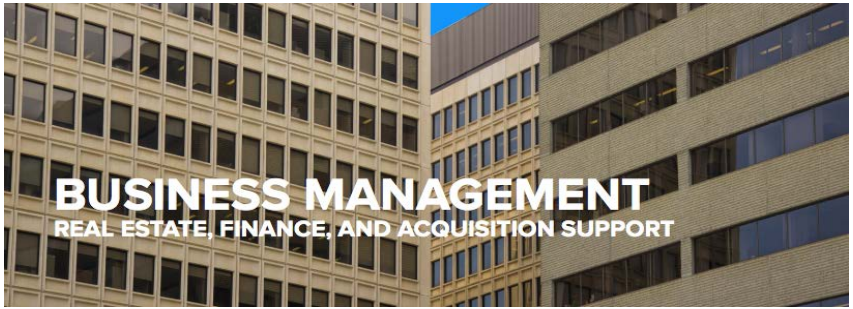
1. Understand current industry data standards and BIM- integrated Facilities Management Protocol

1. Understand what different Federal Agencies are doing with respect to data transfer and facilities management

1. Determine how BIM and early facility manager engagement can lead to facility operations at substantial completion

2. Determine actionable steps to move your organization forward with respect to data capture, analysis, and integration

procon:consulting



procon:consulting

Stephen DeVito
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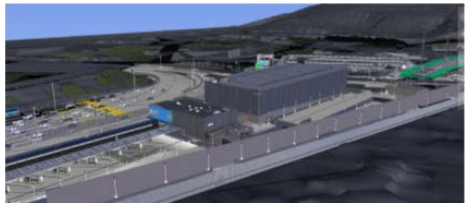
National BIM Standard - United States®
an initiative of the National Institute of Building Sciences buildingSMARTalliance®

GSA®

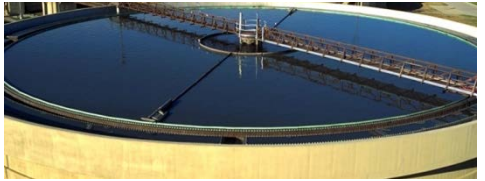
NASA

CBEI CONSORTIUM for BUILDING ENERGY INNOVATION



Solutions for a More Connected, Sustainable World

1. Scientific and technical
2. Development planning, permitting and consulting
3. Architecture, design and engineering
4. Procurement and project/ construction management
5. Commissioning and start-up
6. Construction, operations and maintenance
7. Optimization, resiliency and decommissioning



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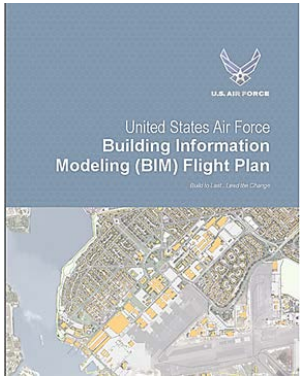
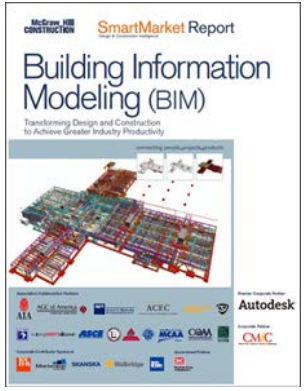
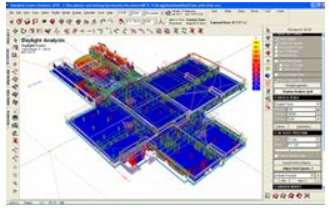
Kurt Maldovan

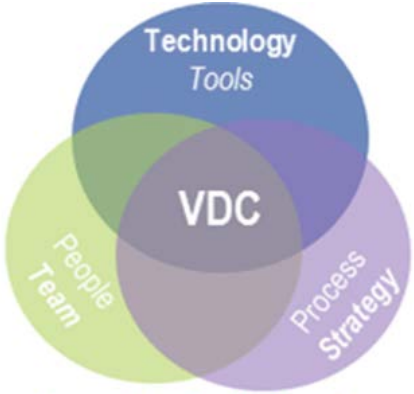
Director of VDC

kurt.maldovan@jacobs.com

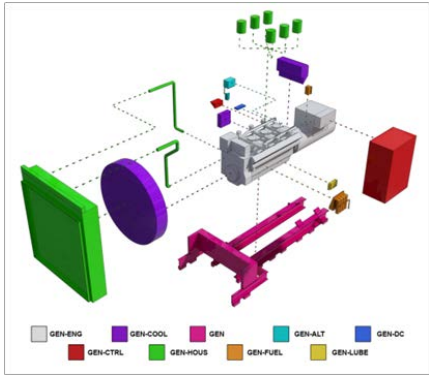






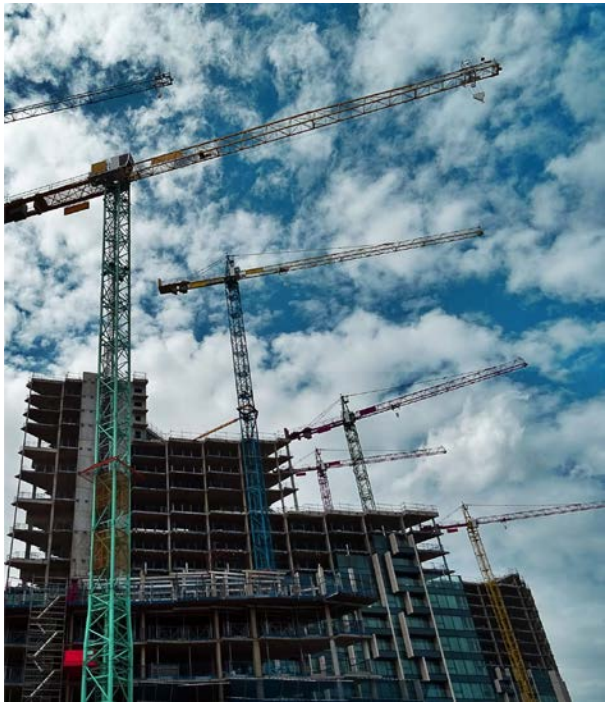


Leveraging Technology On Globally Integrated Teams

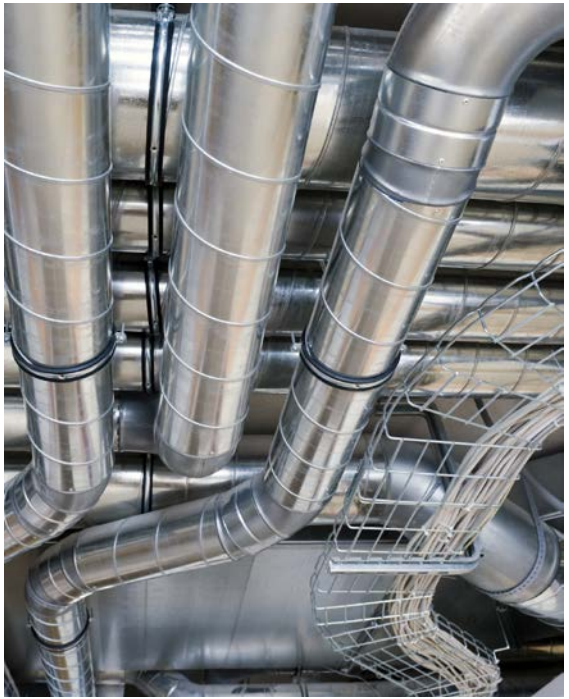


MBP

Transforming the Built Environment
One Relationship at a Time



Project/Construction Management

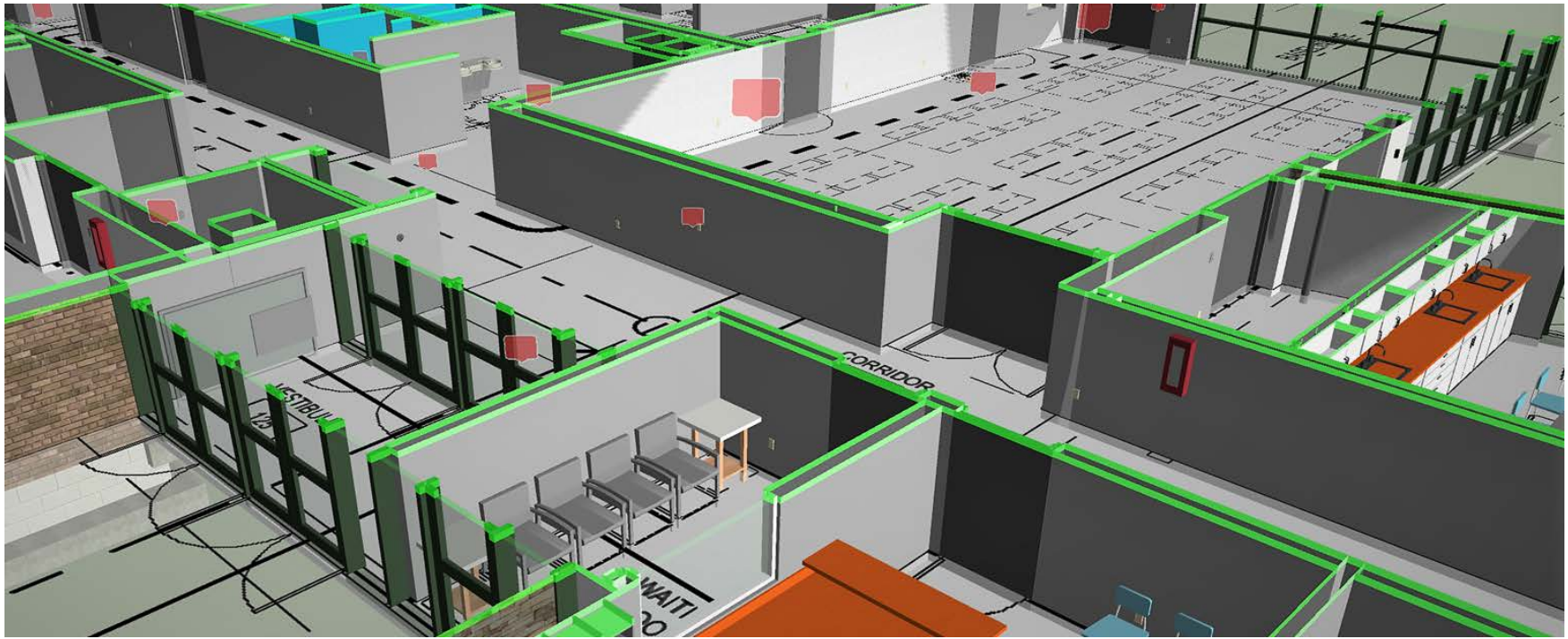


Building Commissioning

Project Controls

MBP

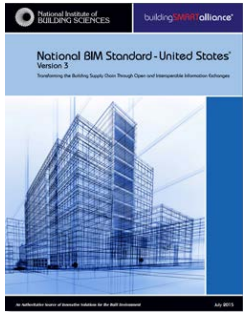
Transforming the Built Environment
One Relationship at a Time



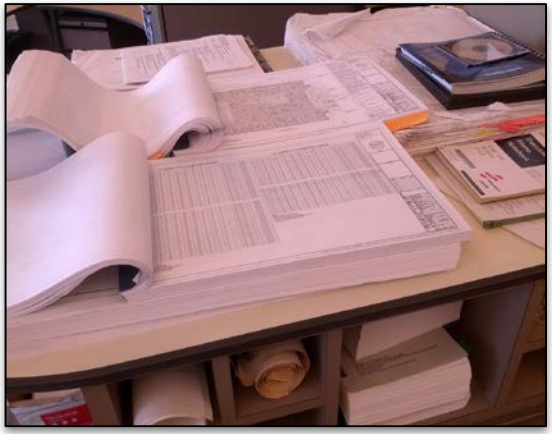
Model Review - From Paper to Pixels

Ralph Kreider
Director of Digital Facilities
rkreider@mbpce.com

MBP



FACILITY NAME FLOOR NAME ROOM NAME ASSET TYPE ASSET CLASSIFICATION MANUFACTURER MODEL NUMBER WARRANTY LABOR WARRANTY PARTS INSTALLATION DATE SERIAL NUMBER SYSTEM NAME SPARE PARTS WARRANTY START DATE WARRANT END DATE REPLACEMENT COST SCHEDULED MAINTENANCE TAG NUMBER BAR CODE ASSET ID ASSET NAME ASSET LOCATION JOB PLAN PREVENTIVE MAINTENANCE PLAN NAME FREQUENCY BUILDING NUMBER DRAWING NUMBER FACILITY TYPE FACILITY CLASSIFICATION UNIFORMAT CODE ASSEMBLY CODE MASTERFORMAT CODE HVAC ZONE GROSS SQUARE FEET RENTABLE SQUARE FEET DEPARTMENT ORGANIZATION CODE SITE NAME PROJECT NAME PHASE NAME ELEVATION HEIGHT DESCRIPTION SPACE TYPE GROSS AREA NET AREA EXPECTED LIFE SHAPE SIZE COLOR FINISH GRADE MATERIAL ASSEMBLY PARENT ASSEMBLY CHILD PART NUMBER SET NUMBER TOOLS REQUIRED MATERIALS REQUIRED ENERGIZED DATE MANUFACTURER'S ROUTINE MAINTENANCE MANUFACTURER INSTRUCTIONS



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9-E-1 Symbols.dwg	12/15/2000 7:28 AM	AutoCAD Drawing	192 KB
9-E-2 Subbasement Lighting.dwg	11/20/2000 11:46 ...	AutoCAD Drawing	204 KB
9-E-3 Subbasement Power.dwg	11/20/2000 11:50 ...	AutoCAD Drawing	528 KB
9-E-4 Basement Power.dwg	11/20/2000 11:52 ...	AutoCAD Drawing	318 KB
9-E-5 1st Floor Lighting.dwg	11/20/2000 11:55 ...	AutoCAD Drawing	649 KB
9-E-6 1st Floor Power.dwg	11/20/2000 11:57 ...	AutoCAD Drawing	582 KB
9-E-7 2nd Floor Lighting.dwg	11/20/2000 11:59 ...	AutoCAD Drawing	573 KB
9-E-8 2nd Floor Power.dwg	10/24/2005 9:53 AM	AutoCAD Drawing	393 KB
9-E-9 3rd Floor Power.dwg	11/20/2000 12:03 ...	AutoCAD Drawing	335 KB
9-E-10 4th Floor Lighting.dwg	11/20/2000 12:05 ...	AutoCAD Drawing	488 KB
9-E-11 4th Floor Power.dwg	11/20/2000 12:07 ...	AutoCAD Drawing	345 KB
9-E-12 5th Floor Lighting.dwg	11/20/2000 12:09 ...	AutoCAD Drawing	434 KB
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9-E-15 6th Floor Power.dwg	11/20/2000 12:17 ...	AutoCAD Drawing	380 KB
9-E-16 Penthouse Lighting.dwg	11/20/2000 12:19 ...	AutoCAD Drawing	195 KB
9-E-17 Penthouse Power.dwg	11/20/2000 12:21 ...	AutoCAD Drawing	259 KB
9-E-18 Roof Lighting and Power.dwg	11/20/2000 12:23 ...	AutoCAD Drawing	292 KB
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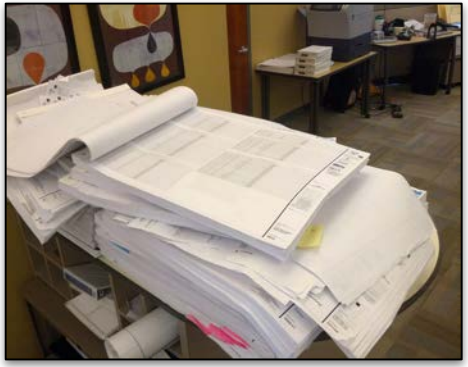
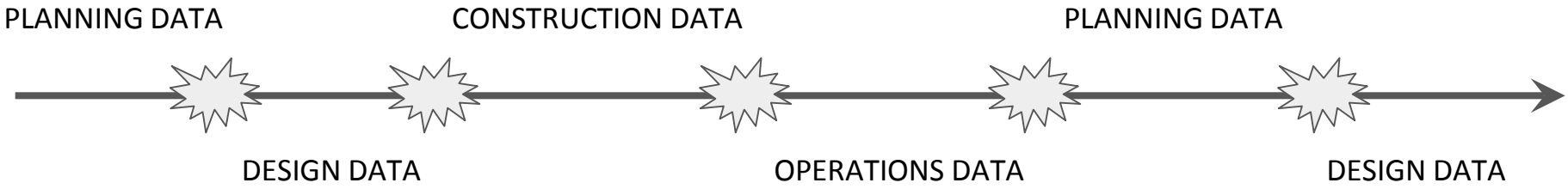



PLANNING DATA
CONSTRUCTION DATA
PLANNING DATA
DESIGN DATA
OPERATIONS DATA
DESIGN DATA

DEVELOP INFO

LOSE INFO

RECREATE INFO

LOSE INFO AGAIN

RECAPTURE INFO

PHYSICAL BUILDING SURVEYS

RECOMMISSIONING

RINSE & REPEAT

SURVEY COST

RECOMMISSIONING COST

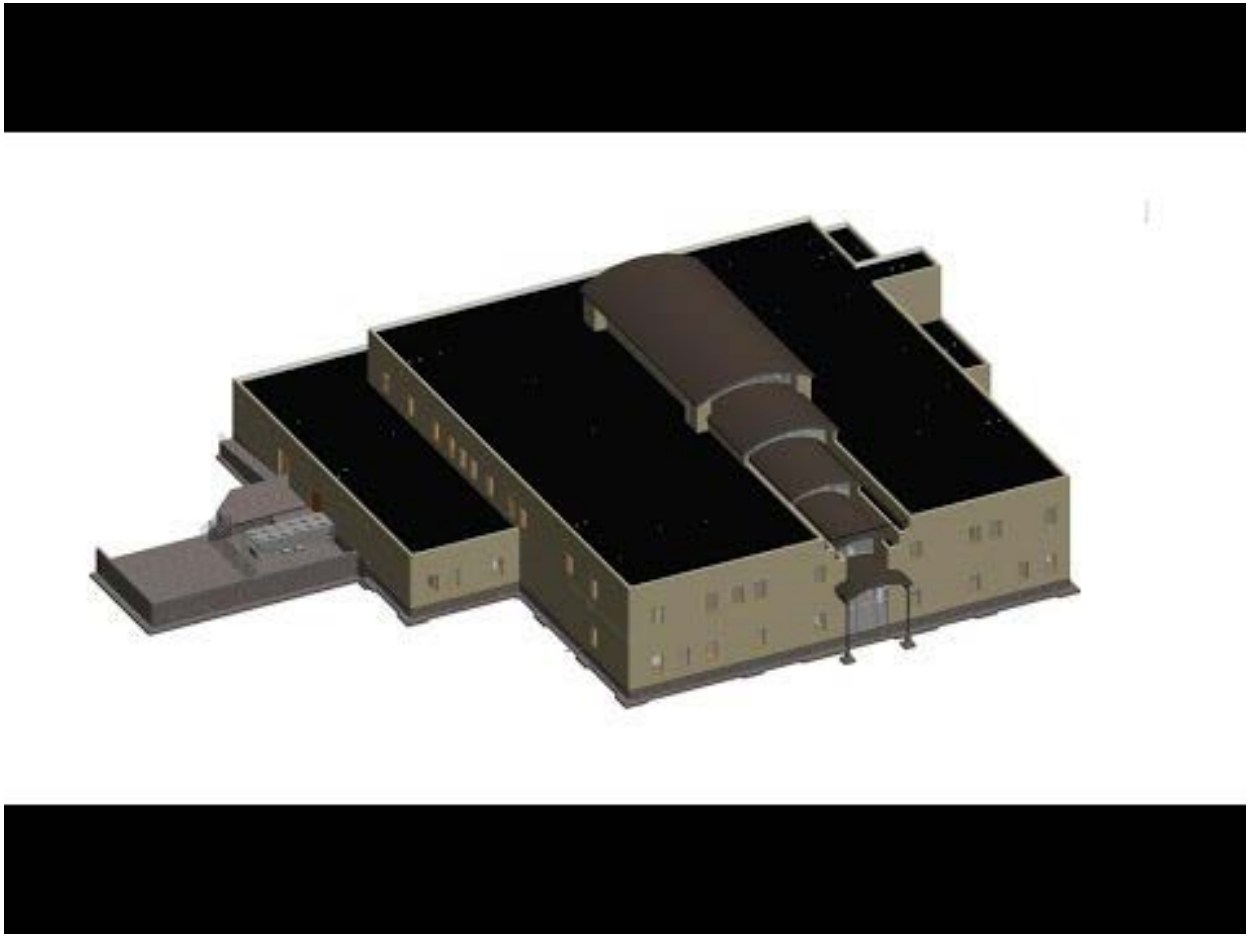
O&M COST

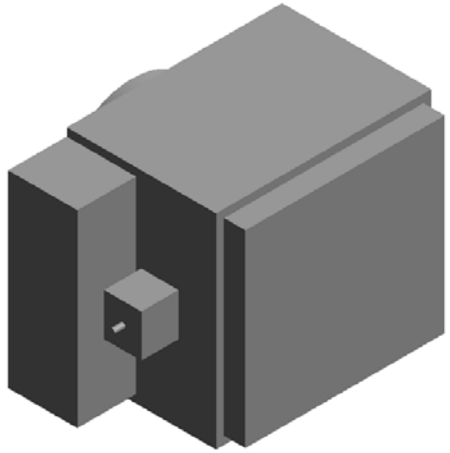
NOT KNOWING WHAT YOU OWN!

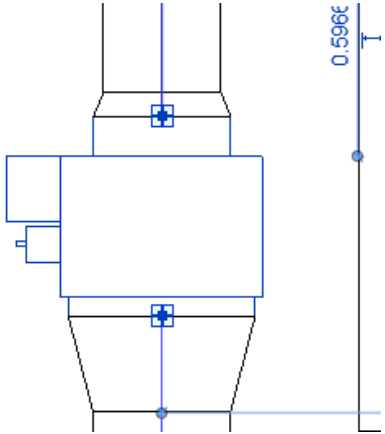
BUILDING INFORMATION MANAGEMENT


BIM
CONSTRUCT
BUILDING
INFORMATION
MODELING
FILES
DESIGN
MANAGEMENT
MAINTAIN
PLAN
INFRASTRUCTURE
GENERATION
REPRESENTATION
DECISION
PLACES
SOFTWARE
DIGITAL

BUILDING INFORMATION MODEL







Properties

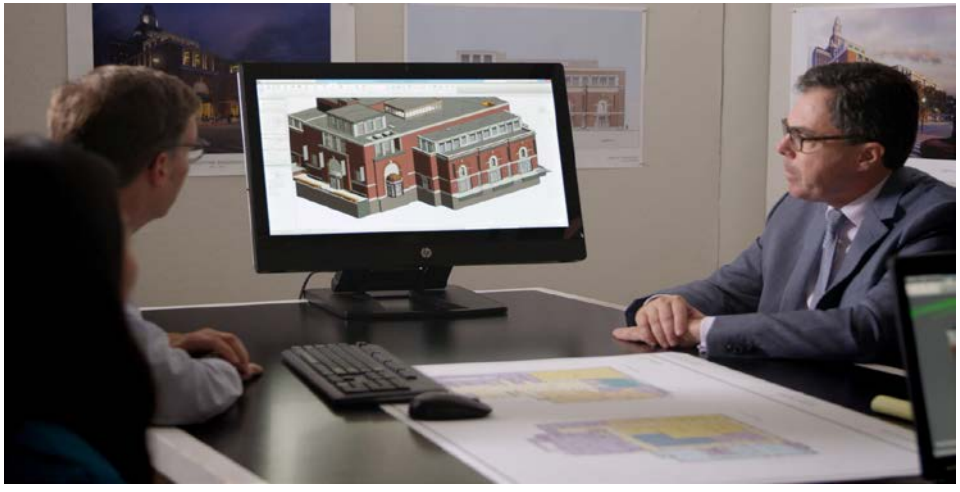
M_VAV Unit - Single Duct
350 mm

Mechanical Equipment (1) | Edit Type

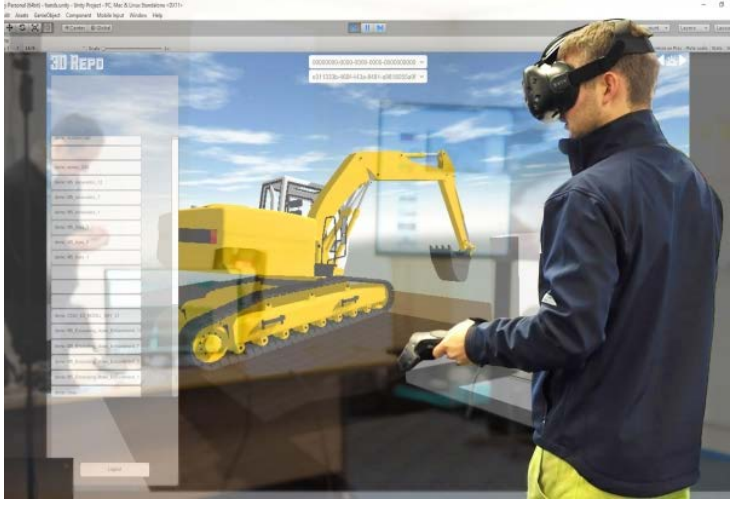
Constraints	
Level	Level 1
Host	Level : Level 1
Offset	3.2155
Electrical - Loads	
Mechanical	
Supply Air Pressure Drop	19.90 Pa
System Classification	Supply Air
System Name	Mechanical Supply Air 1
Mechanical - Flow	
Air Flow	425.00 L/s
Identity Data	
Image	
Comments	
Mark	A-03
Uniform Code	
Phasing	
Phase Created	New Construction
Phase Demolished	None
Data	
Other	
TagNumber	QQ
InstallationDate	InstallationDate
SerialNumber	SerialNumber
WarrantyStartDate	WarrantyStartDate
BarCode	BarCode
AssetIdentifier	AssetIdentifier

Properties help | Apply

System Browser - Clinic_MEP.rvt | Properties




Miron
Miron


3D Repo

IBM MAXIMO

TRIRIGA® An IBM Company

AUTODESK® REVIT®

Bentley® Sustaining Infrastructure

ARCHIBUS

AUTODESK® AUTOCAD®

GRAPHISOFT® ARCHICAD

TMASYSTEMS

AUTODESK® BIM 360™

DOCS TEAM PLAN GLUE FIELD OPS

AssetWORKS

PlanGrid

AUTODESK NAVISWORKS

assemble

revizto™

BLUEBEAM

iConstruct FOR AUTODESK™ NAVISWORKS™

SYNCHRO SOFTWARE

ecodomus

DIGITAL USE CASES AND PREFERRED TOOLS ©

3D VISUALISATION & COMMUNICATION
Enscape, Fuzor, Autodesk Live

VR & AR SOFTWARE
Iris VR, Fuzor, Autodesk Stingray

MOBILE 3D REVIEW
BIM 360 Glue, Revitzo, Fuzor, BIM anywhere, Rendra, Dalux

ASSET MANAGEMENT
Maximo, Tririga, Assetworks, ArchiBus, TMASystems, FM:Systems

DOCUMENT MANAGEMENT SYSTEM (COMMON DATA ENVIRONMENT)
Aconex Field, A360 Teams, Newforma, A360C4R

AUTOMATION
Dynamo, iConstruct, Flux, Kiwi Codes, UNIFI, Xrev, Coins, RTV Tools, Autodesk Model Checker, Colour Splasher

AS-BUILT HANDOVER DOCUMENTATION
Zutec, Dome Connect, WebFM

3D DESIGN *(ARCHITECTURAL)*
Autodesk Revit, ArchiCad

3D REVIEW & COORDINATION & CLASH DETECTION
BIM 360 Glue, A360 Teams, Fuzor, BIM collab, Revitzo, BIM Track, Solibri Model Checker, Navisworks Manage

2D ACCESS / MARKUP TOOLS
Field Wire, Bluebeam Revu, ShapeDo, Procore, PlanGrid, Drawboard Bullclip

CONNECTED CONSTRUCTION FIELD DATA
Field Wire, OnTarget, Fieldlens, Procore, BIM 360 Glue, Aconex Field

DATA VISUALISATION
Tableau, Kibana Elastic

4D PLANNING
Asta Power Project, Synchro, Navisworks Simulate/ Manage, Fuzor Construction, C3D Interactive

5D COSTING
CostX, Rib iTWO, C3D Interactive

6D FACILITIES MANAGEMENT
Ineni & iViva Workds, EcoDomus, VEO

Ridley

INFORMATION STANDARDS

What information do you need?

What format should it be?

When do you need it?

FACILITY NAME FLOOR NAME ROOM NAME ASSET TYPE ASSET CLASSIFICATION MANUFACTURER MODEL NUMBER WARRANTY LABOR WARRANTY PARTS INSTALLATION DATE SERIAL NUMBER SYSTEM NAME SPARE PARTS WARRANTY START DATE WARRANT END DATE REPLACEMENT COST SCHEDULED MAINTENANCE TAG NUMBER BAR CODE ASSET ID ASSET NAME ASSET LOCATION JOB PLAN PREVENTIVE MAINTENANCE PLAN NAME FREQUENCY BUILDING NUMBER DRAWING NUMBER FACILITY TYPE

INFORMATION STANDARDS

Web Technologies

HTML

USB

UNIVERSAL SERIAL BUS

DRIVE THE COST OF HARDWARE DOWN

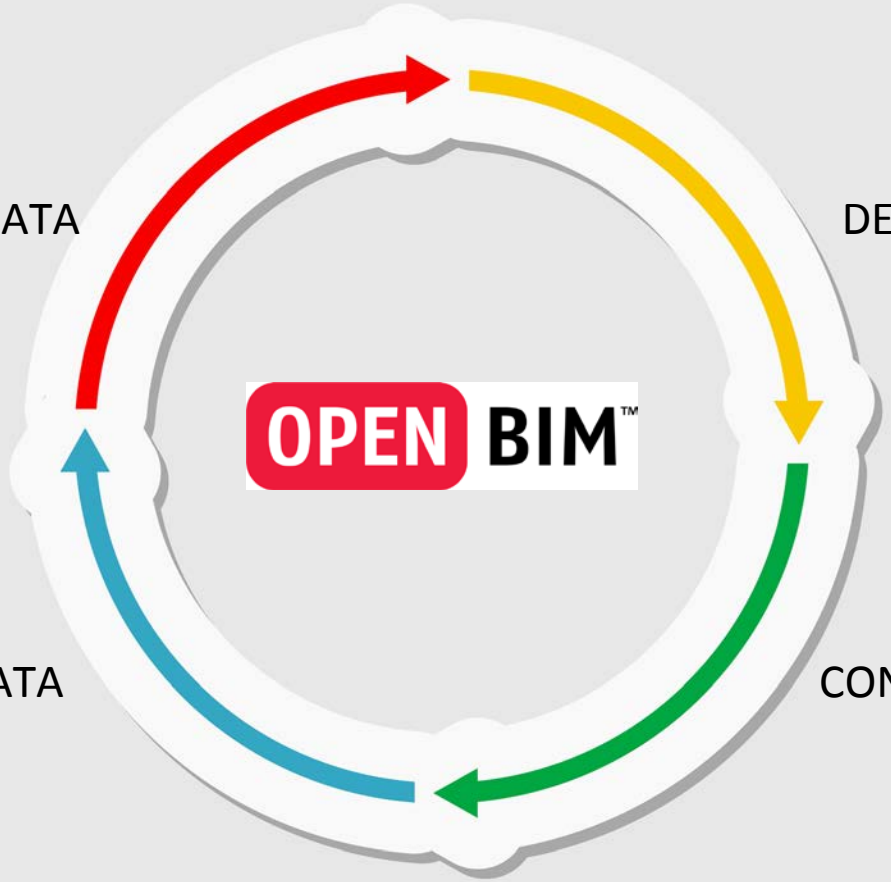
DRIVE THE COST OF SOFTWARE DOWN

DRIVE THE COST OF LABOR DOWN

CREATE MARKETS TO SERVE BUSINESS

PLANNING DATA

DESIGN DATA



OPERATIONS DATA

CONSTRUCTION DATA

National BIM Standard - United States®

an initiative of the National Institute of Building Sciences buildingSMARTalliance®

buildingSMART®

OPEN BIM™

BIMFORUM

The US chapter of buildingSMART International

COBie

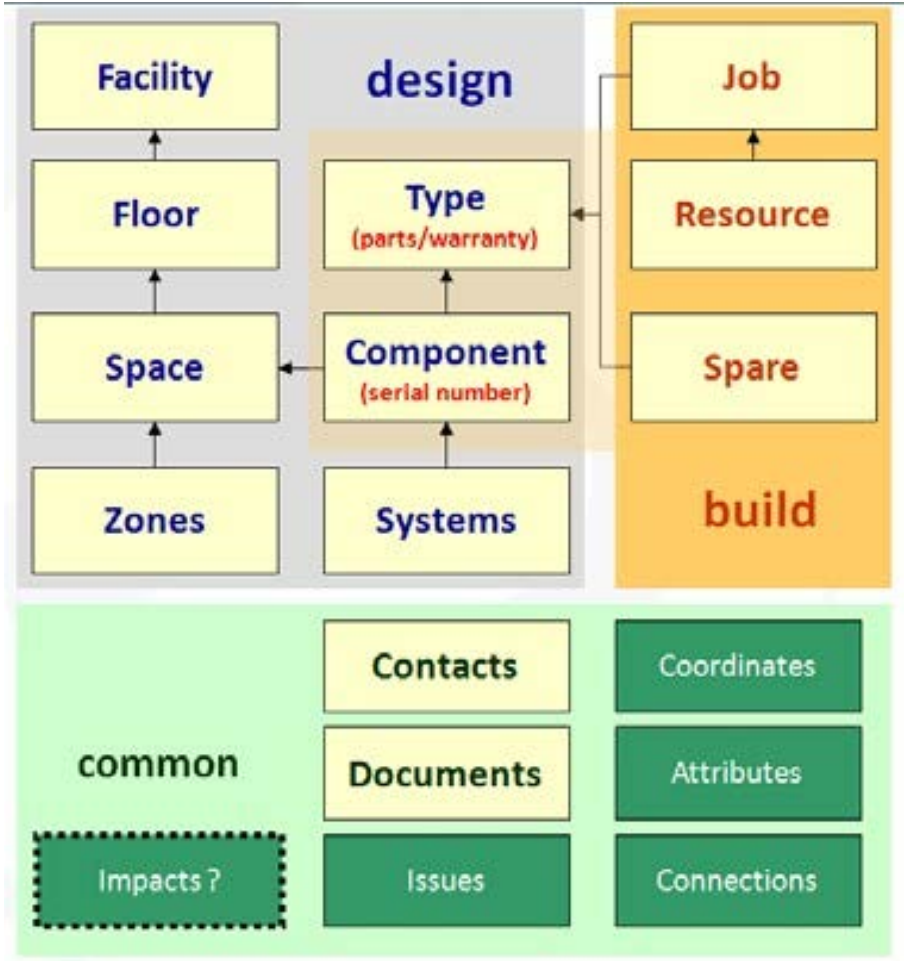
Construction to **O**perations **B**uilding **i**nformation **e**xchange

Performance Based Contract Specification

Required Data

Required Format of Data

When Data is Due


Facility
design
Job
Floor
Type
(parts/warranty)
Resource
Space
Component
(serial number)
Spare
Zones
Systems
build
common
Contacts
Coordinates
Documents
Attributes
Impacts ?
Issues
Connections

“The electric light did not come from the continuous improvement of the candle”

-Oren Harari

WHY IS DATA DRIVEN DECISION MAKING IMPORTANT?

WHAT IS THE OPTIMAL CURRENT STATE?

WHAT IS THE REALITY CURRENT STATE?

WHAT IS THE FUTURE STATE?

WHAT ARE YOU DOING NEXT?

WHAT YOU CAN DO TOMORROW

Think About Lifecycle Information

Google “COBie Academy”

Get Involved in BIMForum

Talk to People

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This concludes The American Institute of Architects Continuing Education Systems Course

National Institute of BUILDING SCIENCES

Provider Number: G168

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