Obtaining and Maintaining Accurate Asset Inventories

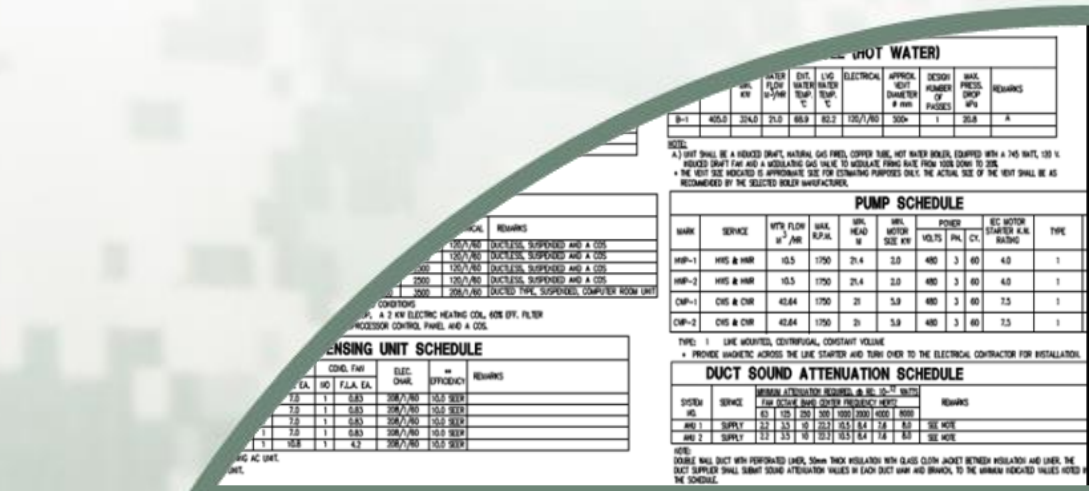
ERDC
Engineer Research and Development Center

Bill East, PhD, PE, F.ASCE

Research Civil Engineer

Construction Engineering Research Lab

13-Nov-13



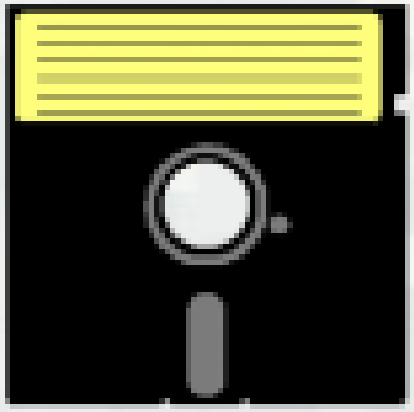
US Army Corps of Engineers®

Note:

While specific commercial products are listed in this presentation that does not constitute an endorsement of these products by the United States Government.

obtaining


Permafile



NEVER FORGET

maintaining

[redacted]

Facilities Management Services

UP Work Order: 2950784

Reported by: [redacted] Reported: 1/16/2009

Department: FMS Work Type: UP

Phone: [redacted] Charge: [redacted]

Location: MI [redacted] Room: EQUIP RM

Work Needed: 1/15 - unit going off on freeze - steam wing heaterleaking. Need MI a/c and s/f to check. Left Don [redacted] a note.

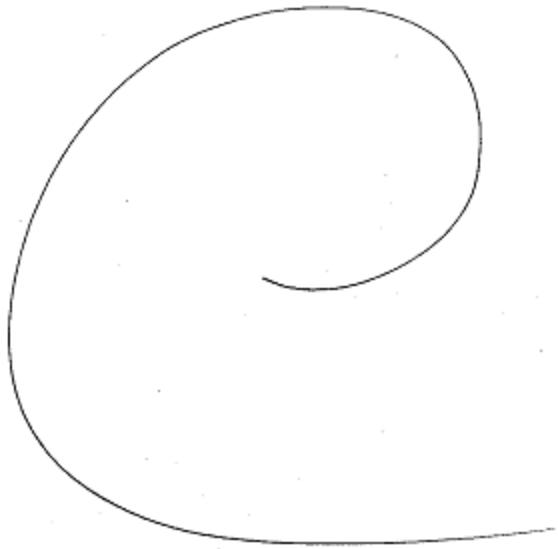
Assignments Shop/Crew: MI Manager: [redacted] Assigned to: [redacted]

Craft: AC

Schedule Start Completion Status: INPRG

Requested: As of: 1/16/2009

Notes:



Akcamete, A. (2011). A formal approach for managing facility change information and capturing change history as part of building information models(BIMs). *Dissertation Abstracts International*, *73*(09).

"who has the keys?"

janitor's closet or medicine prep

"I wonder why it smells weird in this room?"

storage room or bioengineering lab

"I wonder why the floor is bouncy corridor?"

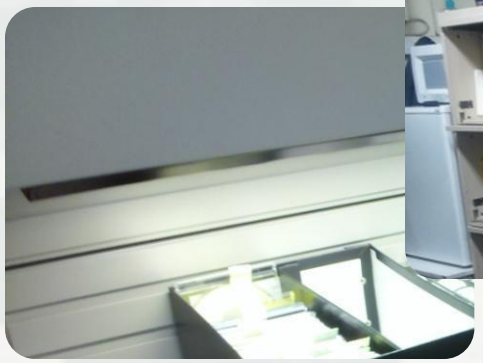
office or x-ray film storage

problem

unusable

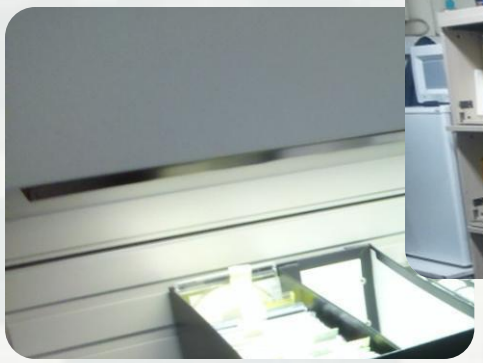
unusable

inaccessible



unusable

inaccessible

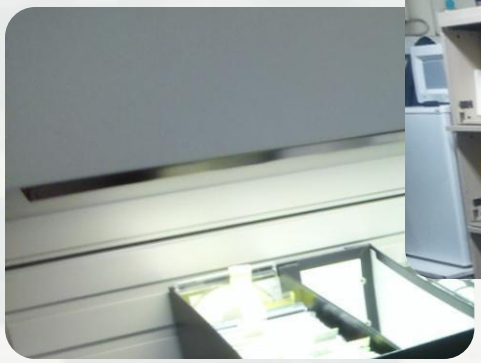


obsolete

NEVER FORGET

unusable

inaccessible

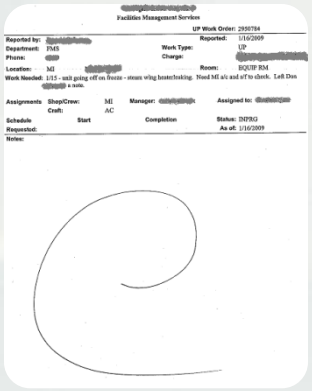


obsolete

NEVER FORGET

unusable

unspecified rqmts



inaccessible

obsolete

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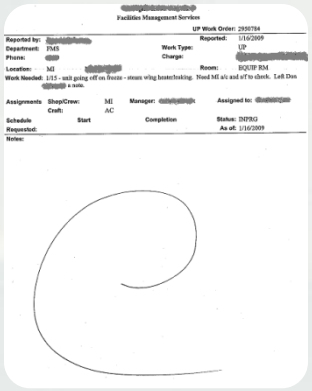

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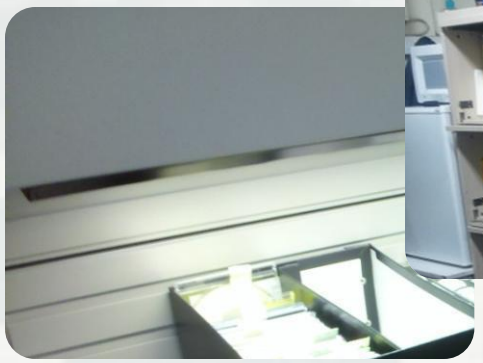
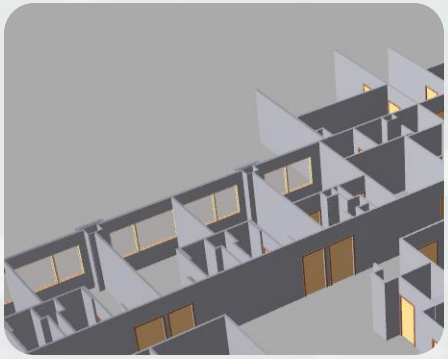


duplicate systems



obsolete

NEVER FORGET

so what!

- duplicative data collection cost
- duplicative IT system cost
- higher energy cost
- excessive facility inventory cost
- misaligned facility inventory cost
- poor flexibility/resilience

approach

- engage C-level management
- catalog requirements
- translate stovepipes
- identify systems of record
- create standards-based exchanges
- implement exchanges

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User Driven - IT System Portfolio Management

my team's contribution

- engage C-level management
- catalog requirements
- translate stovepipes
- identify systems of record
- create standards-based exchanges
- implement exchanges

User Driven - IT System Portfolio Management

requirements


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02225

Maintenance

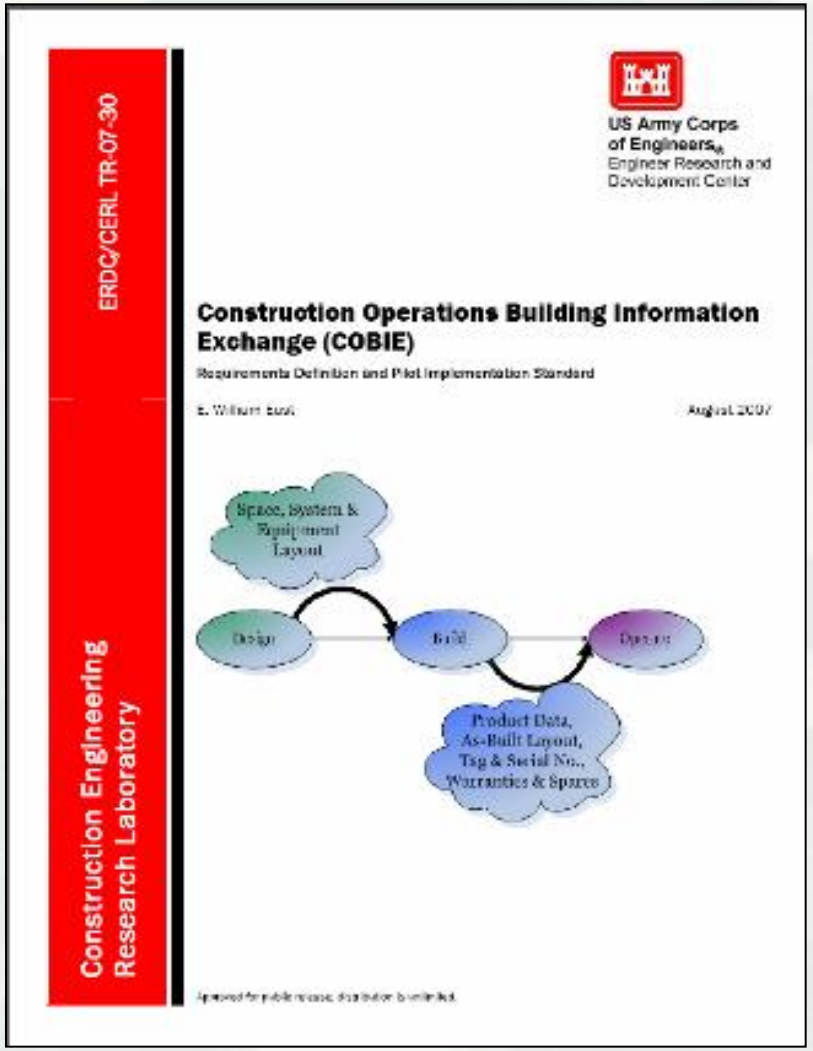
- warranties
- spare/replacement parts
- pm tasks
- resources

Operations

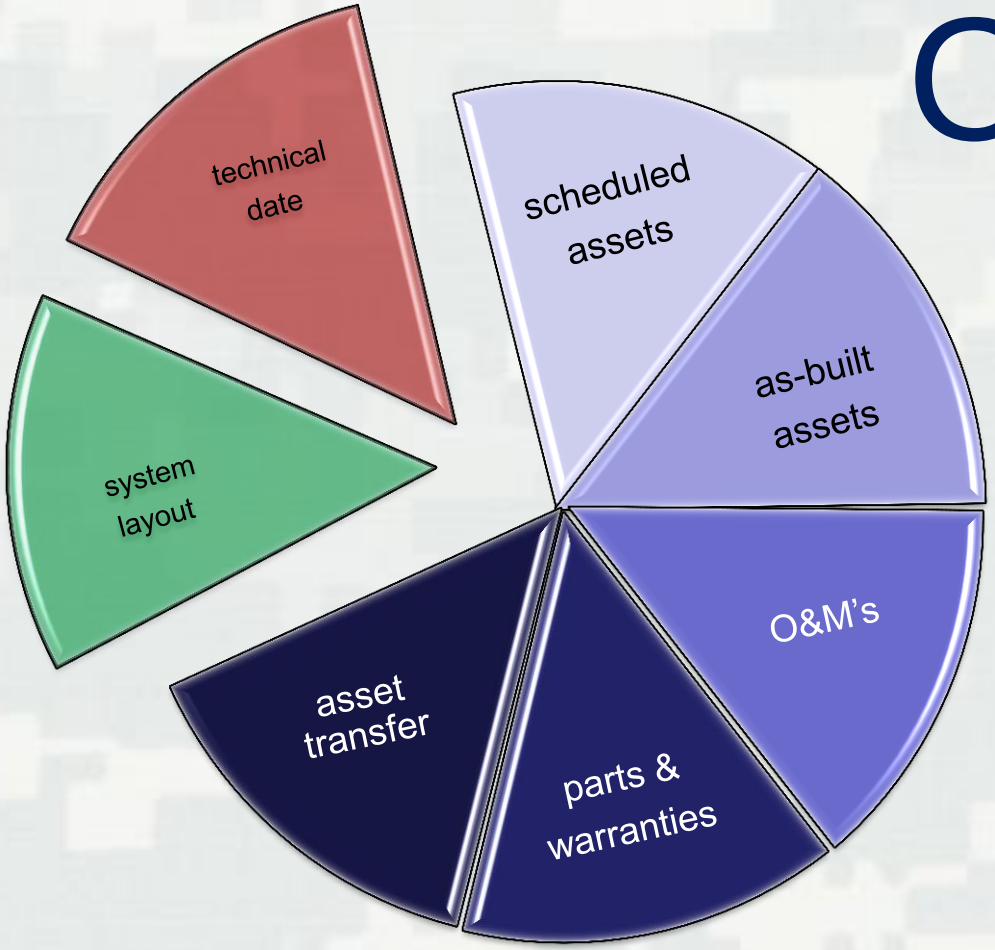
- start-up/shut-down procedure
- trouble-shooting procedures

Assets

- space measurement
- fixed or movable property
- space-function capabilities
- occupancy/zoning



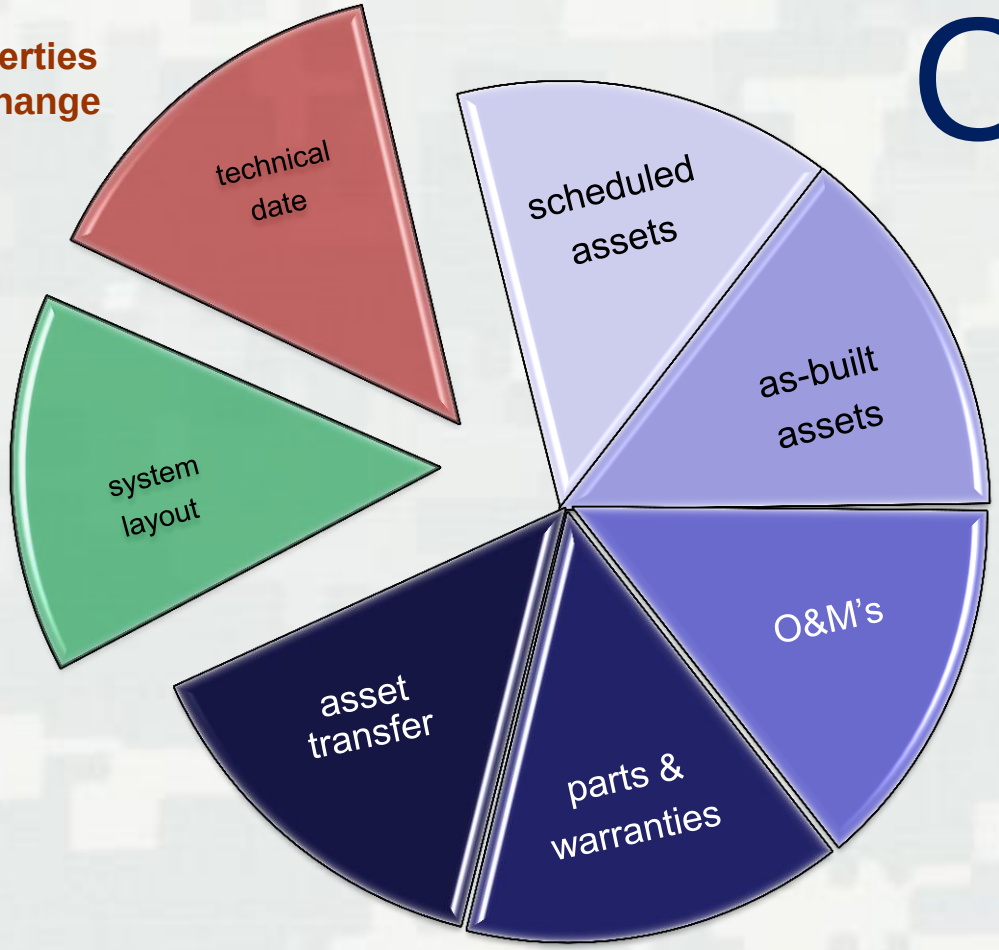
COBie


technical date
scheduled assets
as-built assets
system layout
O&M's
asset transfer
parts & warranties

COBie

Specifiers' Properties information exchange (SPie)

HVACie
Sparkie
Wsie
BAMie



standards

COBie is…

a specification for asset inventory and O&M info

COBie defines…

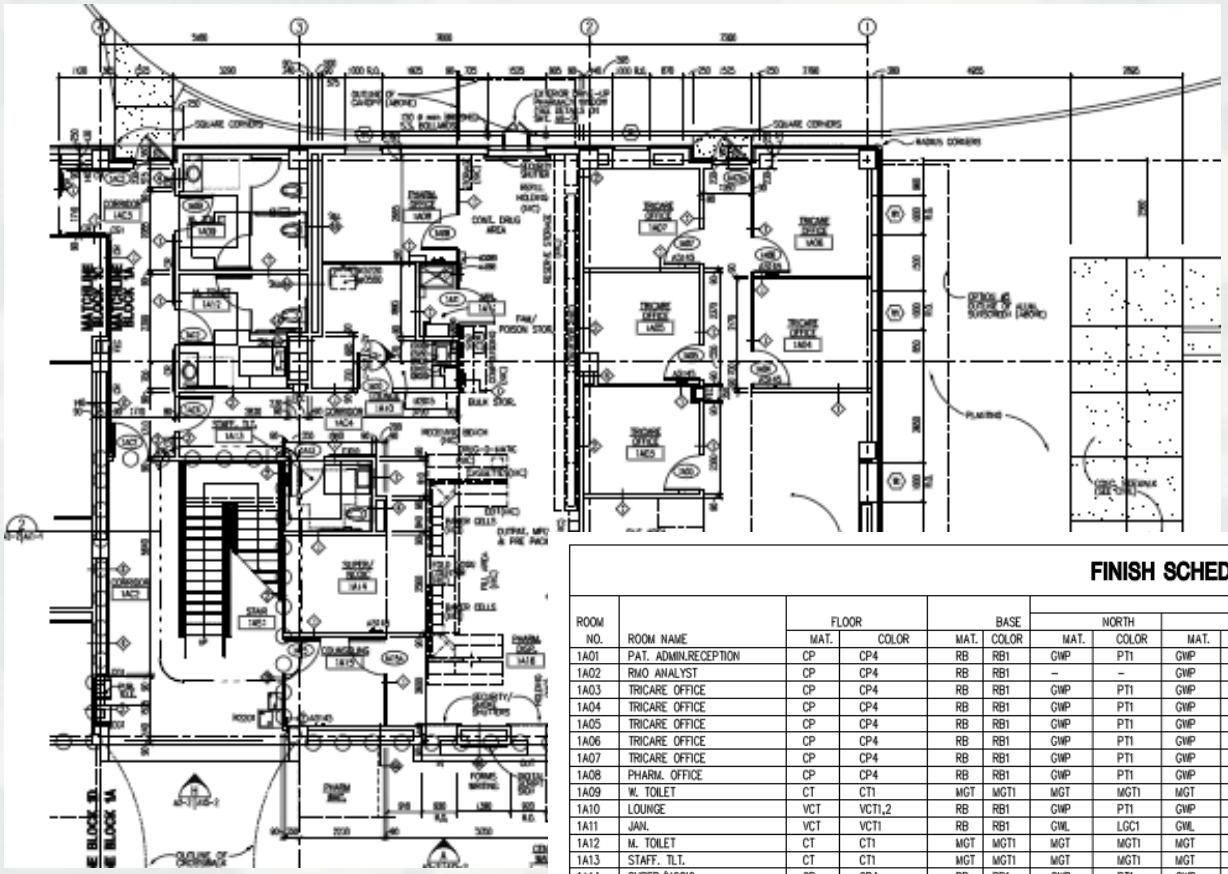
allowed formats

(IFC, ifcXML, SpreadsheetML, COBieLite)

and

minimum content

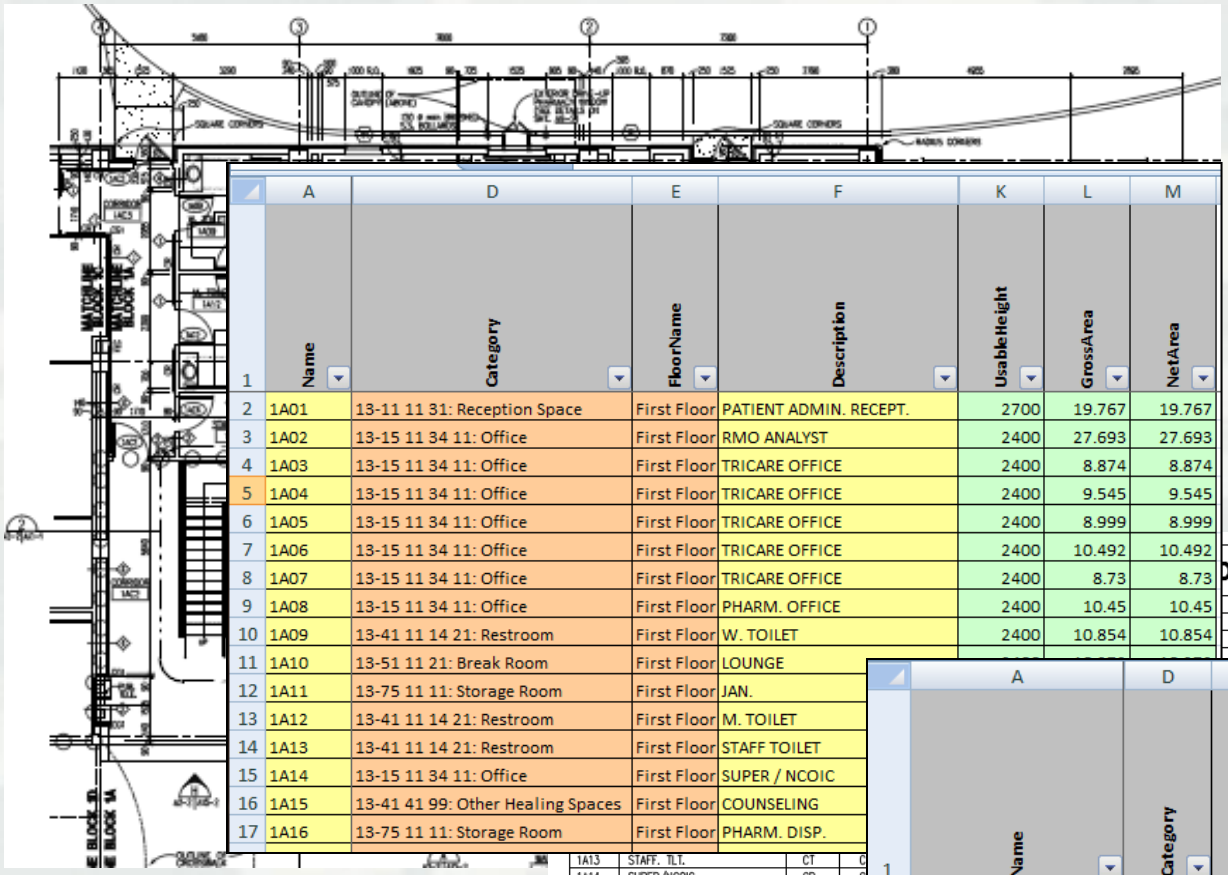
example



FINISH SCHEDULE

ROOM NO.	ROOM NAME	FLOOR MAT.	FLOOR COLOR	BASE MAT.	BASE COLOR	WALLS NORTH MAT.	WALLS NORTH COLOR	WALLS EAST MAT.	WALLS EAST COLOR	WALLS SOUTH MAT.	WALLS SOUTH COLOR	WALLS WEST MAT.	WALLS WEST COLOR	CEILING MAT.	CEILING COLOR	CEILING HEIGHT	REMARKS
1A01	PAT. ADMIN.RECEPTION	CP	CP4	RB	RB1	GWP	PT1	GWP	PT1	–	–	GWP	PT1	ACT	ACT1	2700	
1A02	RMO ANALYST	CP	CP4	RB	RB1	–	–	GWP	PT1	GWP	PT1	GWP	PT1	ACT	ACT1	2400	
1A03	TRICARE OFFICE	CP	CP4	RB	RB1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT1	ACT	ACT1	2400	
1A04	TRICARE OFFICE	CP	CP4	RB	RB1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT1	ACT	ACT1	2400	
1A05	TRICARE OFFICE	CP	CP4	RB	RB1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT1	ACT	ACT1	2400	
1A06	TRICARE OFFICE	CP	CP4	RB	RB1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT1	ACT	ACT1	2400	
1A07	TRICARE OFFICE	CP	CP4	RB	RB1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT1	ACT	ACT1	2400	
1A08	PHARM. OFFICE	CP	CP4	RB	RB1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT1	ACT	ACT1	2400	
1A09	W. TOILET	CT	CT1	MGT	MGT1	MGT	MGT1	MGT	MGT1	MGT	MGT1	MGT	MGT1	ACT	ACT2	2400	
1A10	LOUNGE	VCT	VCT1,2	RB	RB1	GWP	PT1	GWP	PT2	GWP	PT1	GWP	PT1	ACT	ACT1	2400	2
1A11	JAN.	VCT	VCT1	RB	RB1	GWL	LGC1	GWL	LGC1	GWL	LGC1	GWL	LGC1	GWL	LGC1	2400	
1A12	M. TOILET	CT	CT1	MGT	MGT1	MGT	MGT1	MGT	MGT1	MGT	MGT1	MGT	MGT1	ACT	ACT2	2400	
1A13	STAFF. TLT.	CT	CT1	MGT	MGT1	MGT	MGT1	MGT	MGT1	MGT	MGT1	MGT	MGT1	ACT	ACT2	2400	
1A14	SUPER/NCOIC	CP	CP4	RB	RB1	GWP	PT1	GWP	PT1	–	–	GWP	PT1	ACT	ACT1	2400	
1A15	COUNSELLING	CP	CP4	RB	RB1	GWP	PT1	GWP	PT2	GWP	PT1	GWP	PT1	ACT	ACT1	2400	
1A16	PHARM. DISP.	VCT	VCT1	RB	RB1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT1	ACT	ACT1	2400	
1AC1	CENTRAL WAITING	VCT/CP	CP3/VCT1,2	WD	ST1	GWP/WD	PT1/ST1	GWP/WD	PT1/ST1	GWP/WD	PT1/ST1	GWP/WD	PT1/ST1	GWP	PT1	VAR	1,2,4,7,9,8
1AC2	CORRIDOR	VCT	VCT1,2	WD	ST1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT1	ACT/GWP	ACT1/PT1	VAR	1,2,4,7,9,8
1AC3	CORRIDOR	VCT	VCT1,2	RB	RB1	GWP	PT2	GWP	PT1	GWP	PT1	GWP	PT1	ACT	ACT1	2400	2
1AC4	CORRIDOR	VCT	VCT1	RB	RB1	GWP	PT1	GWP	PT1	–	–	GWP	PT1	ACT	ACT1	2400	
1AC5	CORRIDOR	CP	CP4	RB	RB1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT1	ACT	ACT1	2400	
1AS1	STAIR	VCT	VCT1	WD	ST1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT1	VAR	2,4,9,8
1B01	RECEPT.	CP	CP3	RB	RB1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT2	ACT	ACT1	VAR	4
1B02	SPECIMAN TOILET	CT	CT1	MGT	MGT1	MGT	MGT1	MGT	MGT1	MGT	MGT1	MGT	MGT1	ACT	ACT2	2400	
1B03	BLOOD DRAW	VCT	VCT1	RB	RB1	GWP	PT2	GWP	PT1	GWP	PT1	GWP	PT1	ACT	ACT1	2400	
1B04	LAB	VCT	VCT1	RB	RB1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT1	ACT	ACT2	2700	
1B05	PAT./STAFF TLT.	CT	CT1	MGT	MGT1	MGT	MGT1	MGT	MGT1	MGT	MGT1	MGT	MGT1	ACT	ACT2	2400	
1B06	LAB OFF.	CP	CP4	RB	RB1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT1	ACT	ACT1	2400	
1B07	DRESS	VCT	VCT1	RB	RB1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT1	ACT	ACT1	2400	
1B08	CENTRAL STORAGE	VCT	VCT1	RB	RB1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT1	ACT	ACT1	2400	
1B09	DRESS	VCT	VCT1	RB	RB1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT1	ACT	ACT1	2400	
1B10	STAFF LOUNGE	VCT	VCT1,2	RB	RB1	GWP	PT1	GWP	PT1	GWP	PT2	GWP	PT1	ACT	ACT1	2400	2
1B11	STAFF TLT.	CT	CT1	MGT	MGT1	MGT	MGT1	MGT	MGT1	MGT	MGT1	MGT	MGT1	ACT	ACT2	2400	
1B12	CLN SUPLY&EQUIP.	VCT	VCT1	RB	RB1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT1	ACT	ACT1	2400	
1B13	RECEPT.	VCT	VCT1	RB	RB1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT2	ACT	ACT1	2400	
1B14	SOIL. UTL.	VCT	VCT1	RB	RB1	GWL	LGC1	GWL	LGC1	GWL	LGC1	GWL	LGC1	ACT	ACT1	2400	
1B15	FILM VIEWING	VCT	VCT1	RB	RB1	GWP	PT1	GWP	PT1	GWP	PT1	GWP	PT1	ACT	ACT1	2400	

Spaces & Attributes



	A	D	E	F	K	L	M
1	Name	Category	FloorName	Description	UsableHeight	GrossArea	NetArea
2	1A01	13-11 11 31: Reception Space	First Floor	PATIENT ADMIN. RECEPT.	2700	19.767	19.767
3	1A02	13-15 11 34 11: Office	First Floor	RMO ANALYST	2400	27.693	27.693
4	1A03	13-15 11 34 11: Office	First Floor	TRICARE OFFICE	2400	8.874	8.874
5	1A04	13-15 11 34 11: Office	First Floor	TRICARE OFFICE	2400	9.545	9.545
6	1A05	13-15 11 34 11: Office	First Floor	TRICARE OFFICE	2400	8.999	8.999
7	1A06	13-15 11 34 11: Office	First Floor	TRICARE OFFICE	2400	10.492	10.492
8	1A07	13-15 11 34 11: Office	First Floor	TRICARE OFFICE	2400	8.73	8.73
9	1A08	13-15 11 34 11: Office	First Floor	PHARM. OFFICE	2400	10.45	10.45
10	1A09	13-41 11 14 21: Restroom	First Floor	W. TOILET	2400	10.854	10.854
11	1A10	13-51 11 21: Break Room	First Floor	LOUNGE			
12	1A11	13-75 11 11: Storage Room	First Floor	JAN.			
13	1A12	13-41 11 14 21: Restroom	First Floor	M. TOILET			
14	1A13	13-41 11 14 21: Restroom	First Floor	STAFF TOILET			
15	1A14	13-15 11 34 11: Office	First Floor	SUPER / NCOIC			
16	1A15	13-41 41 99: Other Healing Spaces	First Floor	COUNSELING			
17	1A16	13-75 11 11: Storage Room	First Floor	PHARM. DISP.			

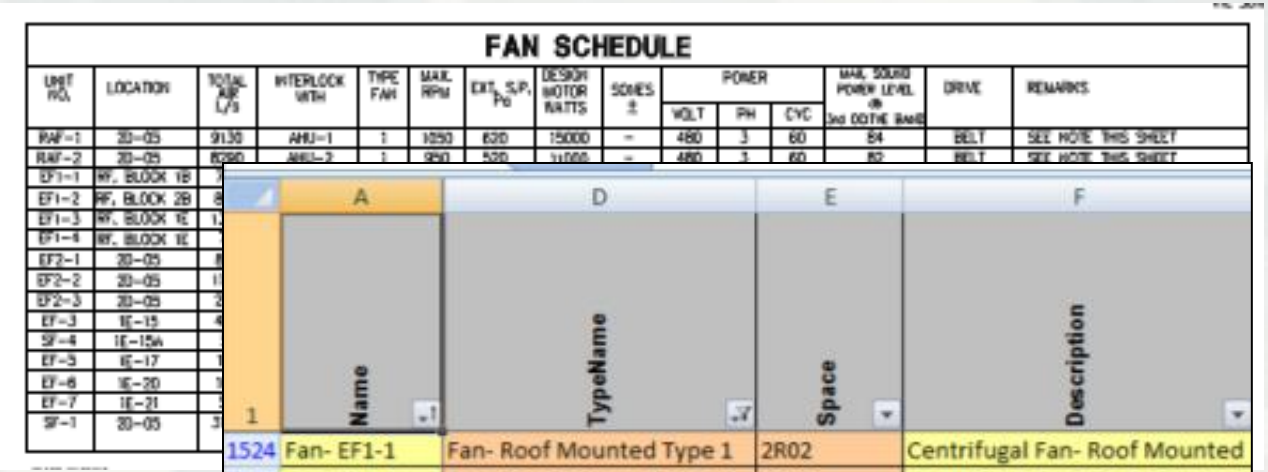
DULE

WALLS						CEILING			REMARKS
EAST	SOUTH		WEST						
COLOR	MAT.	COLOR	MAT.	COLOR	MAT.	COLOR	HEIGHT	
PT1			GWB	PT1	ACT	ACT1	2700	

	A	D	E	F	G	H
1	Name	Category	SheetName	RowName	Value	Unit
58	BaseColor	Requireme	Space	1A05	ROPPE - 40 FAWN - 4" HIGH RUBBER COVE	n/a
59	BaseMaterial	Requireme	Space	1A05	RUBBER BASE	n/a
60	CeilingColor	Requireme	Space	1A05	ARMSTRONG CEILING TILE - CIRRUS TEGULA	n/a
61	CeilingMaterial	Requireme	Space	1A05	ACOUSTICAL CEILING TILE	n/a
62	FloorColor	Requireme	Space	1A05	INTERFACE - CARIBBEAN #3080 ANTIQUA	n/a
63	FloorMaterial	Requireme	Space	1A05	CARPET	n/a
64	WallColor-East	Requireme	Space	1A05	DEVOE # 2W18-2 PRARIE BUFF	n/a
65	WallColor-North	Requireme	Space	1A05	DEVOE # 2W18-2 PRARIE BUFF	n/a
66	WallColor-South	Requireme	Space	1A05	DEVOE # 2W18-2 PRARIE BUFF	n/a
67	WallColor-West	Requireme	Space	1A05	DEVOE # 2W18-2 PRARIE BUFF	n/a
68	WallMaterial-East	Requireme	Space	1A05	GYPSUM WALLBOARD WITH PAINT	n/a
69	WallMaterial-North	Requireme	Space	1A05	GYPSUM WALLBOARD WITH PAINT	n/a
70	WallMaterial-South	Requireme	Space	1A05	GYPSUM WALLBOARD WITH PAINT	n/a
71	WallMaterial-West	Requireme	Space	1A05	GYPSUM WALLBOARD WITH PAINT	n/a

FAN SCHEDULE

UNIT NO.	LOCATION	TOTAL AIR L/s	INTERLOCK WITH	TYPE FAN	MAX. RPM	EXT. S.P. Pa	DESIGN MOTOR WATTS	SONES ±	POWER VOLT	POWER PH	POWER CYC	MAX. SOUND POWER LEVEL dB 3rd OCTAVE BAND	DRIVE	REMARKS
RAF-1	2D-05	9130	AHU-1	1	1050	620	15000	–	480	3	60	84	BELT	SEE NOTE THIS SHEET
RAF-2	2D-05	8290	AHU-2	1	950	520	11000	–	480	3	60	82	BELT	SEE NOTE THIS SHEET
EF1-1	RF, BLOCK 1B	715	AHU-1	2	880	225	370	–	120	1	60	75	BELT	
EF1-2	RF, BLOCK 2B	860	AHU-1	2	775	155	250	–	120	1	60	73	BELT	
EF1-3	RF, BLOCK 1E	1,360	AHU-1	2	925	225	750	–	480	3	60	78	BELT	*
EF1-4	RF, BLOCK 1E	70	AHU-1	2	1485	125	30	–	120	1	60	56	DIRECT	W/ SPEED CONTROLLER
EF2-1	2D-05	810	AHU-2	3	790	215	550	–	208	3	60	73	BELT	*
EF2-2	2D-05	1130	AHU-2	3	615	250	750	–	480	3	60	77	BELT	*
EF2-3	2D-05	270	AHU-2	3	1850	325	370	–	120	1	60	76	BELT	
EF-3	1E-15	450	THERMOSTAT	4	27.5	95	125	13.1	120	1	60	–	DIRECT	
SF-4	1E-15A	50	THERMOSTAT	4	20.6	95	62	13.2	120	1	60	–	DIRECT	
EF-5	1E-17	100	THERMOSTAT	4	20.6	95	62	13.2	120	1	60	–	DIRECT	
EF-6	1E-20	100	THERMOSTAT	4	20.6	95	62	13.2	120	1	60	–	DIRECT	
EF-7	1E-21	50	THERMOSTAT	4	20.6	95	62	13.2	120	1	60	–	DIRECT	
SF-1	2D-05	3100	THERMOSTAT	5	45.5	125	750	23	480	3	60	–	DIRECT	* INTERLOCK WITH SPACE SMOKE DETECTION TO SHUT DOWN FAN ON SMOKE DETECTION



FAN SCHEDULE

UNIT NO.	LOCATION	TOTAL AIR L/s	INTERLOCK WITH	TYPE FAN	MAX. RPM	EXT. S.P. Pa	DESIGN MOTOR WATTS	SONES ±	POWER VOLT	POWER PH	POWER CYC	MAX. SOUND POWER LEVEL dB 3rd OCTAVE BAND	DRIVE	REMARKS
RAF-1	2D-05	9130	AHU-1	1	1050	620	15000	-	480	3	60	84	BELT	SEE NOTE THIS SHEET
RAF-2	2D-05	8290	AHU-2	1	950	520	11000	-	480	3	60	82	BELT	SEE NOTE THIS SHEET
EF1-1	RF, BLOCK 1B	7												
EF1-2	RF, BLOCK 2B	8												
EF1-3	RF, BLOCK 1E	1												
EF1-4	RF, BLOCK 1E													
EF2-1	2D-05	8												
EF2-2	2D-05	1												
EF2-3	2D-05	2												
EF-3	1E-15	4												
SF-4	1E-15A													
EF-5	1E-17	1												
EF-6	1E-20	1												
EF-7	1E-21	1												
SF-1	2D-05	3												

1	A Name	D TypeName	E Space	F Description
1524	Fan- EF1-1	Fan- Roof Mounted Type 1	2R02	Centrifugal Fan- Roof Mounted
1525	Fan- EF1-2	Fan- Roof Mounted Type 2	3R01	Centrifugal Fan- Roof Mounted
1526	Fan- EF1-3	Fan- Roof Mounted Type 3	2R02	Centrifugal Fan- Roof Mounted
1527	Fan- EF1-4	Fan- Roof Mounted Type 4	2R02	Centrifugal Fan- Roof Mounted
1528	Fan- EF2-1	Fan- In Line Type 1	2D05	Centrifugal Fan- In Line
1529	Fan- EF2-2	Fan- In Line Type 2	2D05	
1530	Fan- EF2-3	Fan- In Line Type 3	2D05	
1531	Fan EF-3	Fan- Sidewall Type 2	1E15	
1532	Fan EF-5	Fan- Sidewall Type 3	1E17	
1533	Fan EF-6	Fan- Sidewall Type 3	1E20	
1534	Fan EF-7	Fan- Sidewall Type 3	1E21	
1535	Fan SF-1	Fan- Sidewall Type 1	2D05	
1536	Fan SF-4	Fan- Sidewall Type 3	1E15A	

1	A Name	D Category	E SheetName	F RowName	G Value	H Unit
6772	Design Motor	Requireme	Componen	Fan- EF1-1	370	Watts
6773	Drive	Requireme	Componen	Fan- EF1-1	Belt	n/a
6774	Ext. S.P.	Requireme	Componen	Fan- EF1-1	225	Pa
6775	Frequency	Requireme	Componen	Fan- EF1-1	60	Hertz
6776	Interlock With	Requireme	Componen	Fan- EF1-1	AHU-1	n/a
6777	Max Speed	Requireme	Componen	Fan- EF1-1	880	RPM
6778	Max. Sound Power Level	Requireme	Componen	Fan- EF1-1	75	db
6779	Phase	Requireme	Componen	Fan- EF1-1	1	n/a
6780	Remarks	Requireme	Componen	Fan- EF1-1	n/a	n/a
6781	SONES	Requireme	Componen	Fan- EF1-1	n/a	n/a
6782	Total Air	Requireme	Componen	Fan- EF1-1	715	L/s
6783	Voltage	Requireme	Componen	Fan- EF1-1	120	Volts

Equipment & Attributes

many ways to view COBie data!

DDS.ifc - WordPad

File Edit View Insert Format Help

```
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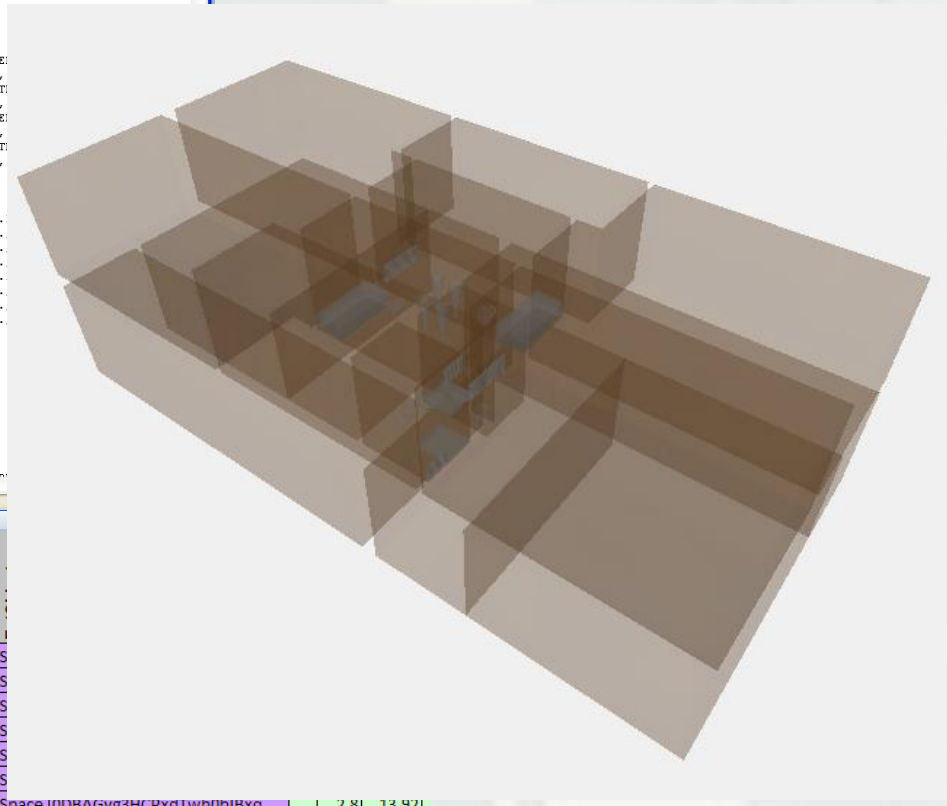
For Help, press F1



	A	D	E	F	G
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2	F1-101	13-51 24 11: General Residential Space	Floor 1	Lounge in flat 1	TriForma
3	F1-201	13-51 24 11: General Residential Space	Floor 1	Lounge in flat 2	TriForma
4	F1-103	13-41 11 14 14: Shower	Floor 1	Shower	TriForma
5	F1-203	13-41 11 14 14: Shower	Floor 1	Shower	TriForma
6	F1-204	13-85 11 11: Corridor	Floor 1	Entrance	TriForma
7	F1-202	13-11 19 11 11: Kitchen	Floor 1	Kitchen-Diner	TriForma
8	F1-102	13-11 19 11 11: Kitchen	Floor 1	Kitchen-Diner	TriForma
9	F1-104	13-85 11 11: Corridor	Floor 1	Entrance	TriForma
10	F2-207	13-41 11 14 11: Bathroom	Floor 2	Bathroom	TriForma
11	F2-107	13-41 11 14 11: Bathroom	Floor 2	Bathroom	TriForma
12	F2-205	13-51 21 11: Bedroom	Floor 2	Bedroom1	TriForma
13	F2-208	13-85 11 11: Corridor	Floor 2	Hallway	TriForma
14	F2-206	13-51 21 11: Bedroom	Floor 2	Bedroom 2	TriForma
15	F2-106	13-51 21 11: Bedroom	Floor 2	Bedroom 1	TriForma
16	F2-108	13-85 11 11: Corridor	Floor 2	Hallway	TriForma

8	F1-102	13-11 19 11 11: Kitchen	Floor 1	Kitchen-Diner	TriForma	IfcSpace	0DBAGyg3HCPxdTwh0bIBxq	2.8	13.92
9	F1-104	13-85 11 11: Corridor	Floor 1	Entrance	TriForma	IfcSpace	1RxyaNqZzDjx4MmfzfzpwN	2.8	19.72
10	F2-207	13-41 11 14 11: Bathroom	Floor 2	Bathroom	TriForma	IfcSpace	09iwDlq3v8XRuPxQTVVQtZ	2.5	6.56
11	F2-107	13-41 11 14 11: Bathroom	Floor 2	Bathroom	TriForma	IfcSpace	2JMEMJb4j6nRYIbsuNlMs2	2.5	6.56
12	F2-205	13-51 21 11: Bedroom	Floor 2	Bedroom1	TriForma	IfcSpace	1gm8lSFWD9thUpBmThMW6x	2.5	22.62
13	F2-208	13-85 11 11: Corridor	Floor 2	Hallway	TriForma	IfcSpace	0pLJQvhsP5sRfRYZvDl4SO	2.5	7.445
14	F2-206	13-51 21 11: Bedroom	Floor 2	Bedroom 2	TriForma	IfcSpace	1e7zS$nAP6f83o456HPh8v	2.5	22.62
15	F2-106	13-51 21 11: Bedroom	Floor 2	Bedroom 1	TriForma	IfcSpace	1ZDMQhNXj6vOp7Co7KkLYA	2.5	22.62
16	F2-108	13-85 11 11: Corridor	Floor 2	Hallway	TriForma	IfcSpace	3FsA6ND79CVRy8pjIPSJjJ	2.5	7.445

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COBie resources?

HOME | ABOUT | CONTACT | SITE MAP | LOG IN | SEARCH

WBDG WHOLE BUILDING DESIGN GUIDE — a program of the National Institute of Building Sciences

DESIGN GUIDANCE | PROJECT MANAGEMENT | OPERATIONS & MAINTENANCE | DOCUMENTS & REFERENCES | TOOLS | CONTINUING EDUCATION | BIM

A–C | D–H | I–R | S–W

- Achieving Sustainable Site Design through Low Impact Development Practices
- Acoustic Comfort
- Aesthetic Challenges
- Aesthetic Opportunities
- Air Barrier Systems in Buildings
- Air Decontamination
- Alternative Energy
- Archaeological Site Considerations
- Assessment Tools for Accessibility
- Balancing Security/Safety & Sustainability Objectives
- Biogas
- Biomass for Electricity Generation
- Biomass for Heat
- Biomimicry: Designing to Model Nature
- Blast Safety of the Building Envelope
- The Bollard: Crash- and Attack-Resistant Models
- The Bollard: Non-Crash and Non-Attack-Resistant Models
- Building Enclosure Design Principles and Strategies
- Building Integrated Photovoltaics (BIPV)
- Building Materials and Furnishings Sustainability Assessment Standards
- Building Science Concepts
- Changing Nature of Organizations, Work, and

Home > *Construction Operations Building Information Exchange (COBie)*

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Construction Operations Building Information Exchange (COBie)

by E. William East, PE, PhD
Engineer Research and Development Center, U.S. Army, Corps of Engineers
Last updated: 04-22-2013

INTRODUCTION

Within This Page
- Introduction
- Description
- Application
- Current Status
- Relevant Codes and Standards
- Templates and Additional Resources

Today, most contracts require the handover of paper documents containing equipment lists, product data sheets, warranties, spare part lists, preventive maintenance schedules, and other information. This information is essential to support the operations, maintenance, and the management of the facilities assets by the owner and/or property manager.

Gathering this information at the end of the job, today's standard practice, is expensive, since most of the information has to be recreated from information created earlier. COBie simplifies the work required to capture and record project handover data.

"Normally it takes us 3 years to get as-builts after the financial closeout of a project. Now I can get a pre-built equipment list before the building even breaks ground? Outstanding!" – Deputy Director, Department of Public Works

The COBie approach is to enter the data as it is created during design, construction, and commissioning, see Figure 1. Designers provide floor, space, and equipment layouts. Contractors provide make, model, and serial numbers of installed equipment. Much of the data provided by contractors comes directly from product manufacturers who can also participate in COBie. *Please see* Project Delivery Teams *for more information.*

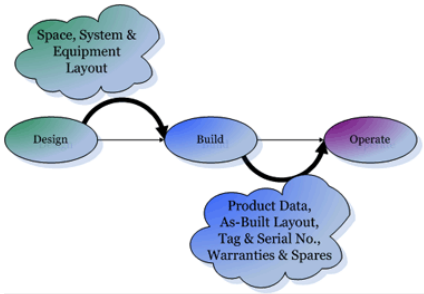
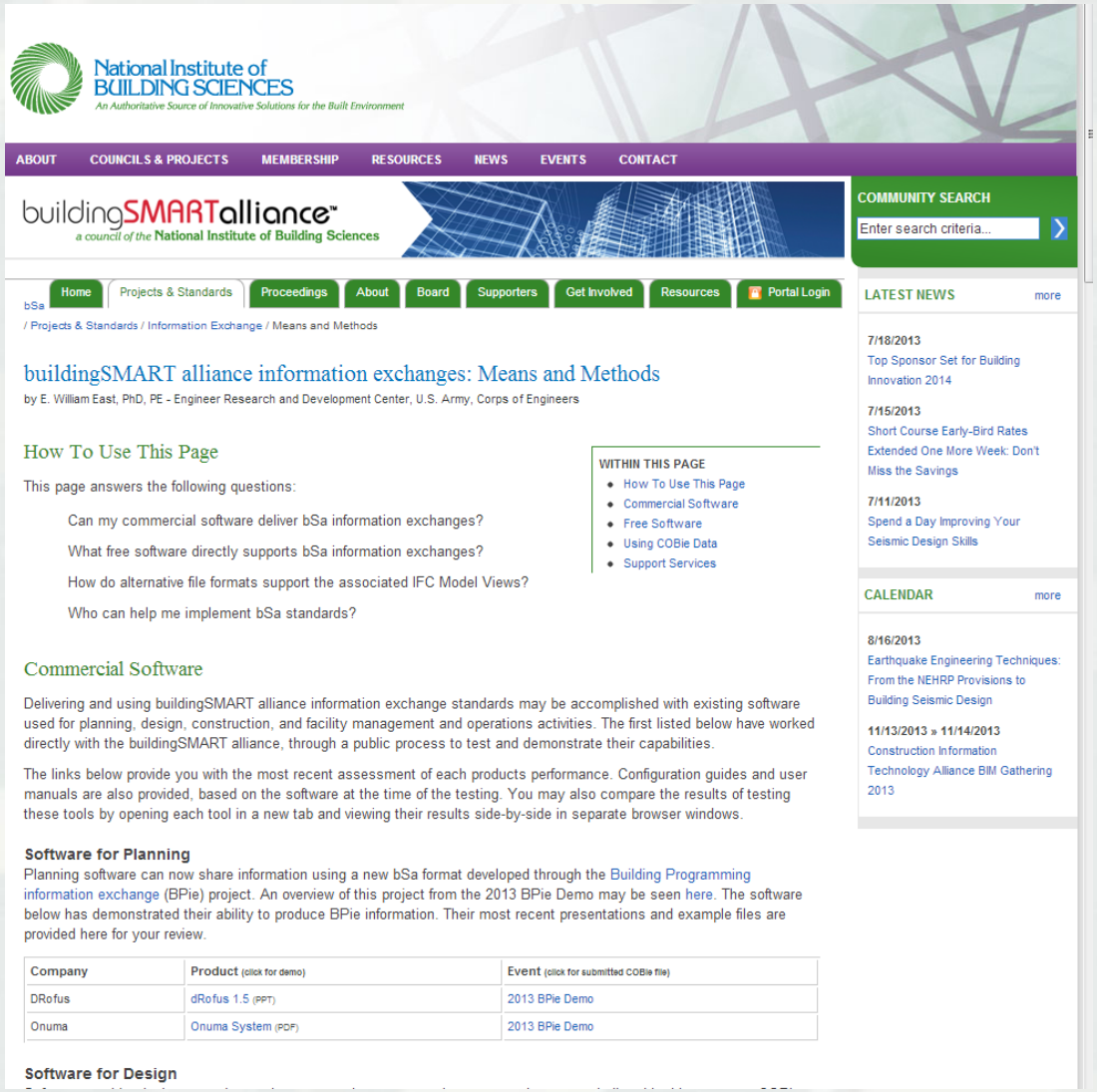


Fig. 1. COBie Process Overview

wbdg.org/resources/cobie.php



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bSa / Projects & Standards / Information Exchange / Means and Methods

buildingSMART alliance information exchanges: Means and Methods

by E. William East, PhD, PE - Engineer Research and Development Center, U.S. Army, Corps of Engineers

How To Use This Page

This page answers the following questions:

- Can my commercial software deliver bSa information exchanges?
- What free software directly supports bSa information exchanges?
- How do alternative file formats support the associated IFC Model Views?
- Who can help me implement bSa standards?

WITHIN THIS PAGE
- How To Use This Page
- Commercial Software
- Free Software
- Using COBie Data
- Support Services

Commercial Software

Delivering and using buildingSMART alliance information exchange standards may be accomplished with existing software used for planning, design, construction, and facility management and operations activities. The first listed below have worked directly with the buildingSMART alliance, through a public process to test and demonstrate their capabilities.

The links below provide you with the most recent assessment of each products performance. Configuration guides and user manuals are also provided, based on the software at the time of the testing. You may also compare the results of testing these tools by opening each tool in a new tab and viewing their results side-by-side in separate browser windows.

Software for Planning

Planning software can now share information using a new bSa format developed through the Building Programming information exchange (BPie) project. An overview of this project from the 2013 BPie Demo may be seen here. The software below has demonstrated their ability to produce BPie information. Their most recent presentations and example files are provided here for your review.

Company	Product (click for demo)	Event (click for submitted COBie file)
DRofus	dRofus 1.5 (PPT)	2013 BPie Demo
Onuma	Onuma System (PDF)	2013 BPie Demo

Software for Design

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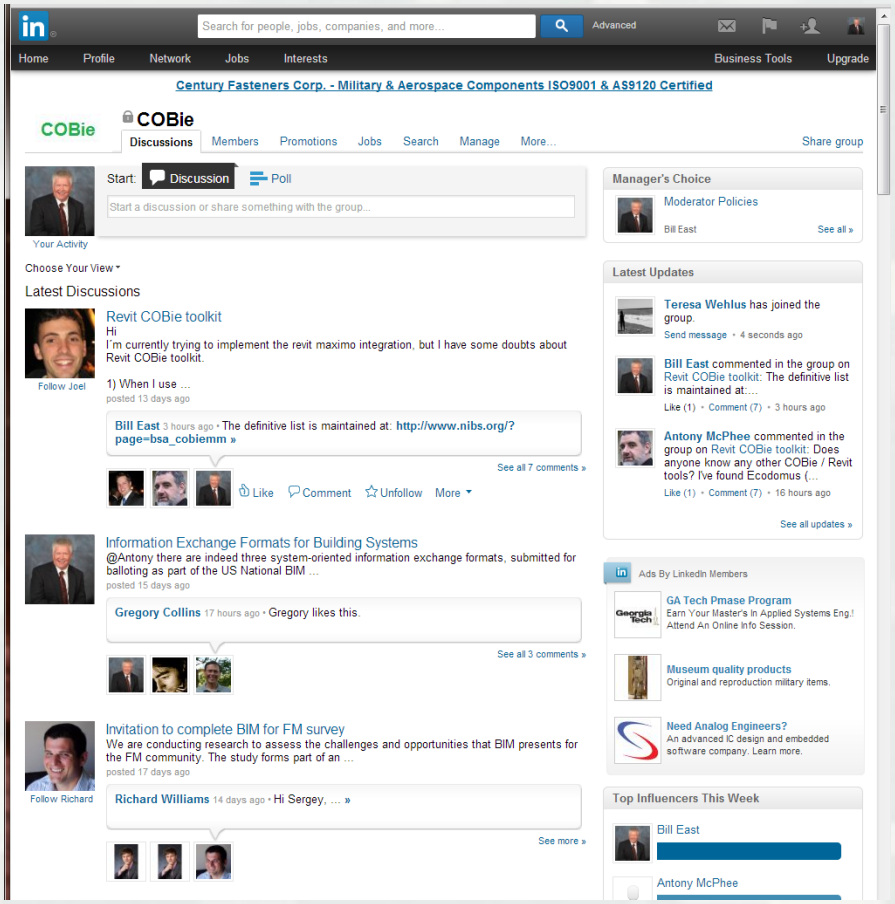
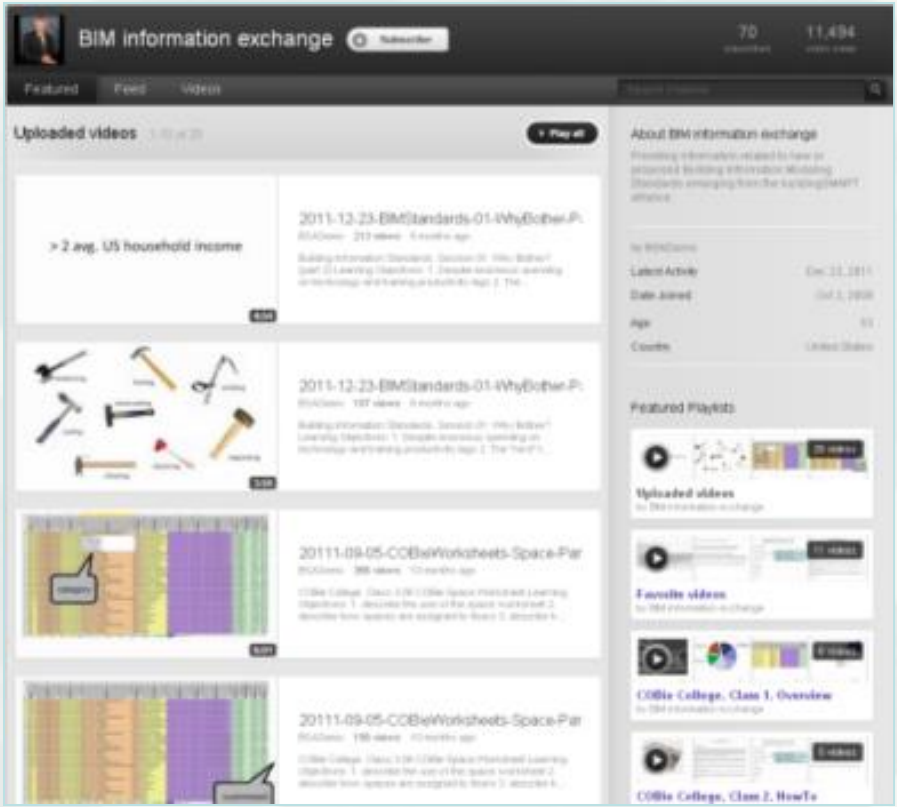
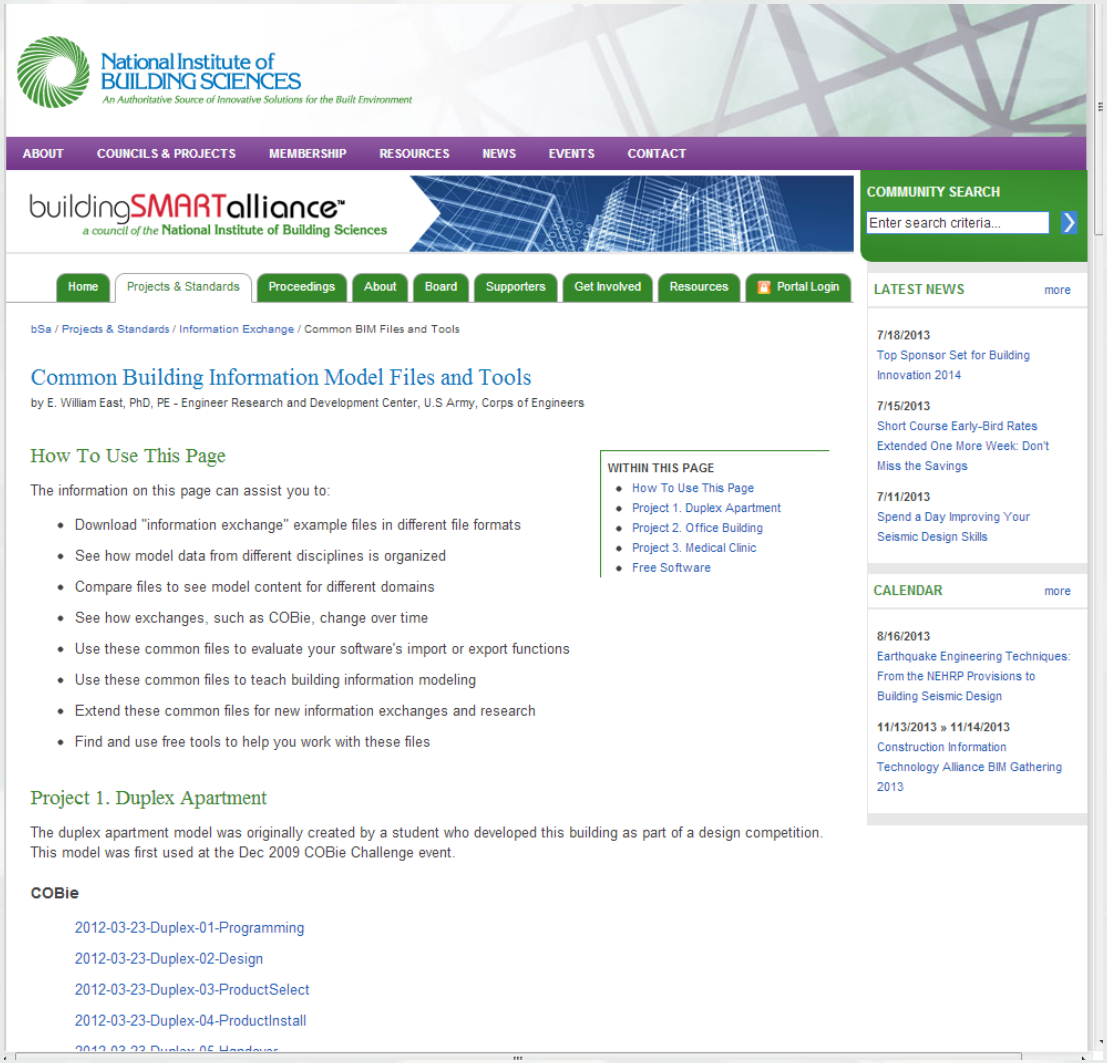


1,881 participants



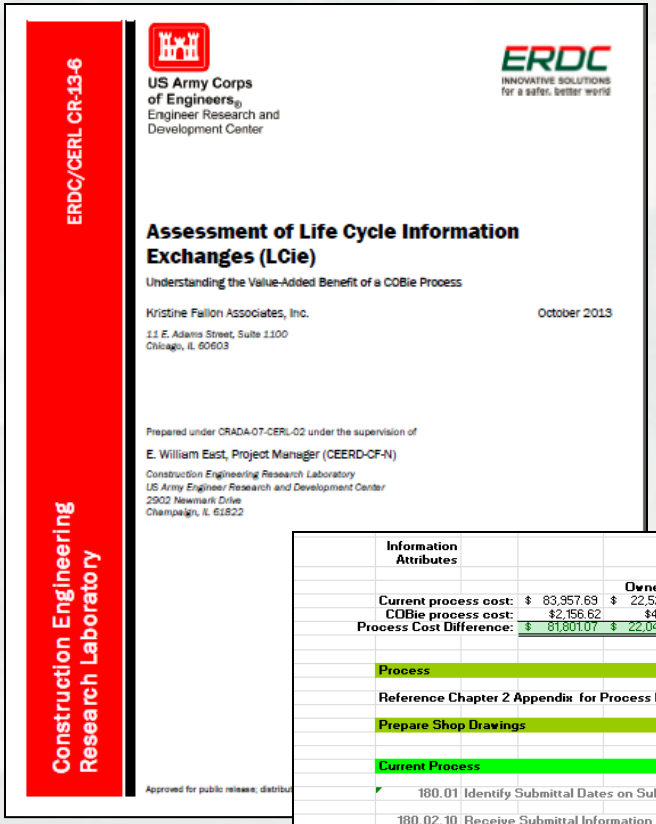
27,955 views

linkedin.com/groups?gid=2638637
youtube.com/user/BSADemo/videos?flow=list&view=0&sort=da



nibs.org/?page=bsa_commonbimfiles

COBie Calculator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Assessment of Life Cycle Information Exchanges (LCie)

Understanding the Value-Added Benefit of a COBie Process

Kristine Fallon Associates, Inc. October 2013

11 E. Adams Street, Suite 1100
Chicago, IL 60603

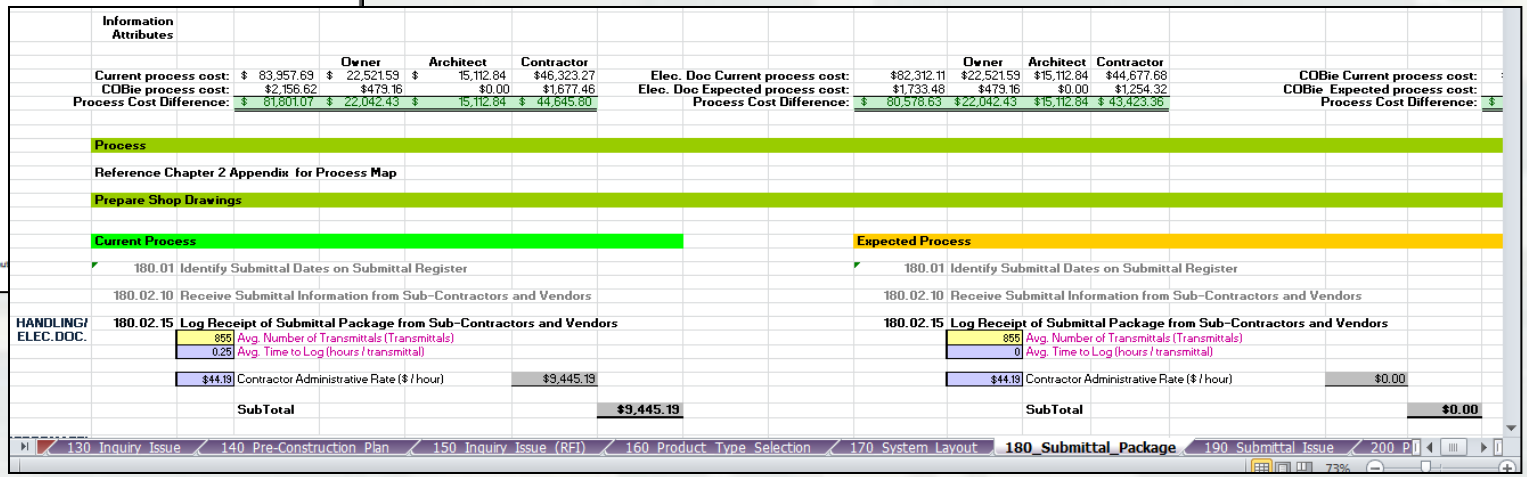
Prepared under CRADA-07-CERL-02 under the supervision of

E. William East, Project Manager (CEERD-CF-N)

Construction Engineering Research Laboratory
US Army Engineer Research and Development Center
2902 Newmark Drive
Champaign, IL 61822

Approved for public release; distribut

Construction Engineering Research Laboratory


Information Attributes

	Owner	Architect	Contractor
Current process cost:	$ 83,957.69	$ 22,521.59	$ 15,112.84	$46,323.27
COBie process cost:	$2,156.62	$479.16	$0.00	$1,677.46
Process Cost Difference:	$ 81,801.07	$ 22,042.43	$ 15,112.84	$ 44,645.80

	Owner	Architect	Contractor
Elec. Doc Current process cost:	$82,312.11	$22,521.59	$15,112.84	$44,677.68
Elec. Doc Expected process cost:	$1,733.48	$479.16	$0.00	$1,254.32
Process Cost Difference:	$ 80,578.63	$22,042.43	$15,112.84	$ 43,423.36

COBie Current process cost:
COBie Expected process cost:
Process Cost Difference: $

Process

Reference Chapter 2 Appendix for Process Map

Prepare Shop Drawings

Current Process			
180.01	Identify Submittal Dates on Submittal Register		
180.02.10	Receive Submittal Information from Sub-Contractors and Vendors		
HANDLING/ ELEC.DOC. 180.02.15	Log Receipt of Submittal Package from Sub-Contractors and Vendors		
855	Avg. Number of Transmittals (Transmittals)		
0.25	Avg. Time to Log (hours / transmittal)		
$44.19	Contractor Administrative Rate ($ / hour)	$9,445.19	
	SubTotal		$9,445.19

Expected Process			
180.01	Identify Submittal Dates on Submittal Register		
180.02.10	Receive Submittal Information from Sub-Contractors and Vendors		
180.02.15	Log Receipt of Submittal Package from Sub-Contractors and Vendors		
855	Avg. Number of Transmittals (Transmittals)		
0	Avg. Time to Log (hours / transmittal)		
$44.19	Contractor Administrative Rate ($ / hour)	$0.00	
	SubTotal		$0.00

130_Inquiry_Issue | 140_Pre-Construction_Plan | 150_Inquiry_Issue_(RFI) | 160_Product_Type_Selection | 170_System_Layout | 180_Submittal_Package | 190_Submittal_Issue | 200_P

http://acwc.sdp.sirsi.net/client/search/asset/1030580

COBie pathway

COBie on new facilities

COBie updates during operations, maintenance, and renovations

updated agency contracts (to do)

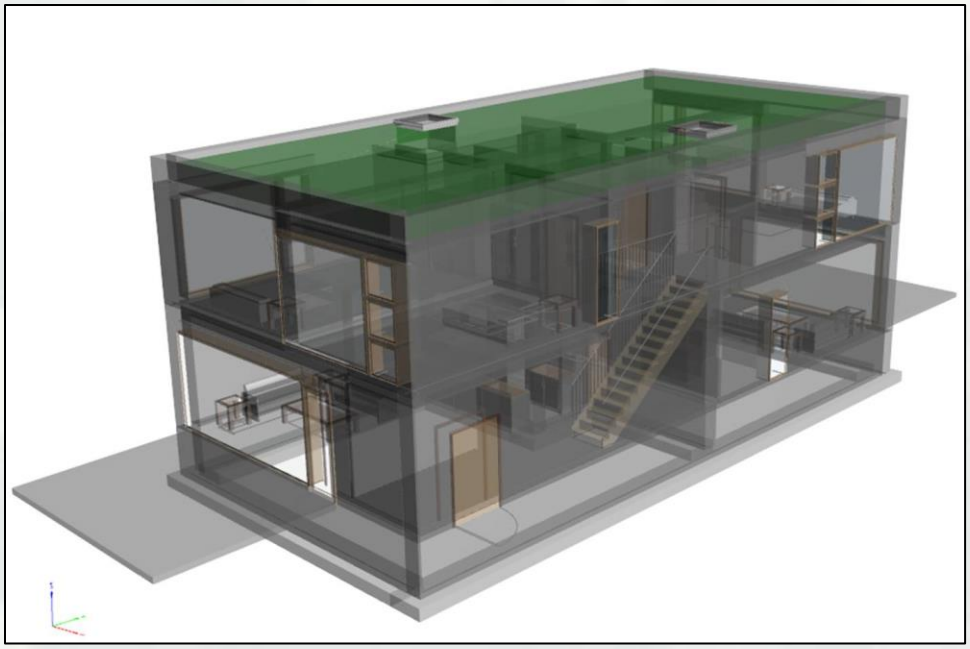
identified asset properties (to do)

integrated IT systems (to do)

updated business processes (to do)

COBie is part of NBIMS-US

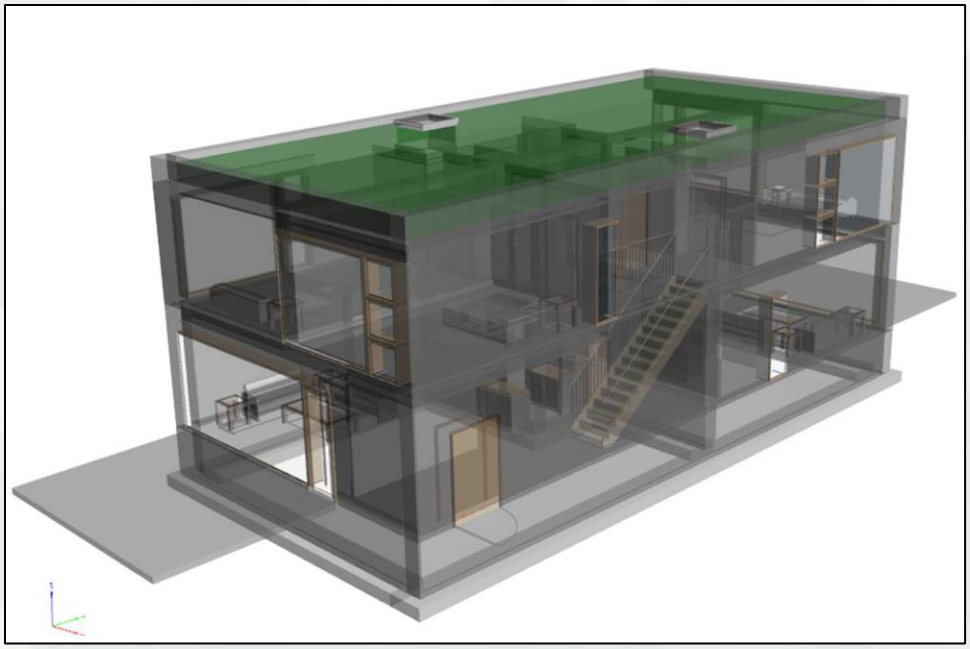
http://www.nibs.org/?page=bsa_infoexchange



Architectural Model

Coordination Model View Definition

http://www.nibs.org/?page=bsa_commonbimfiles

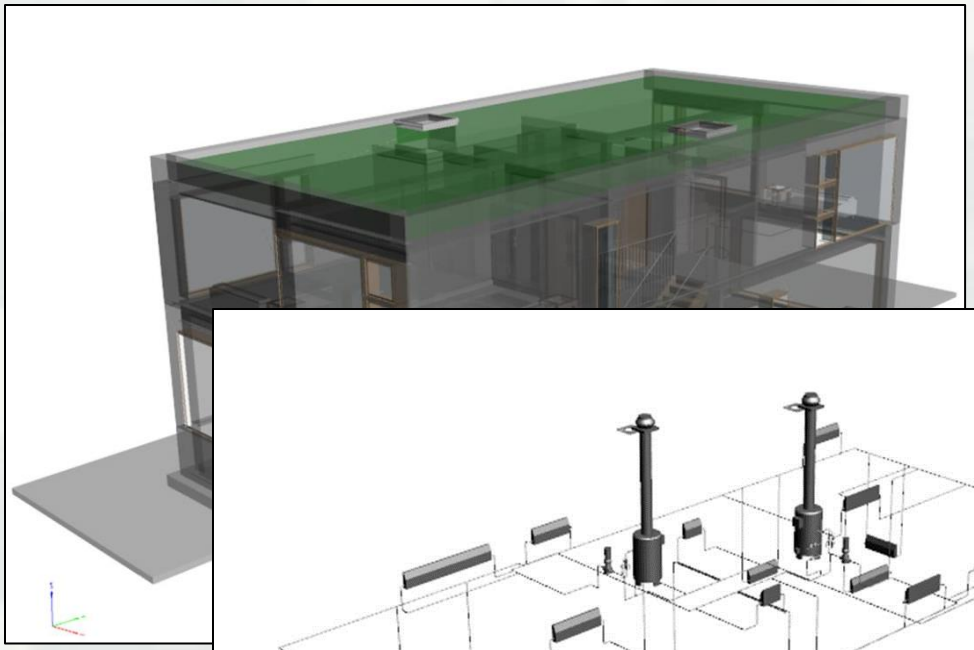


Planning & Architectural Model

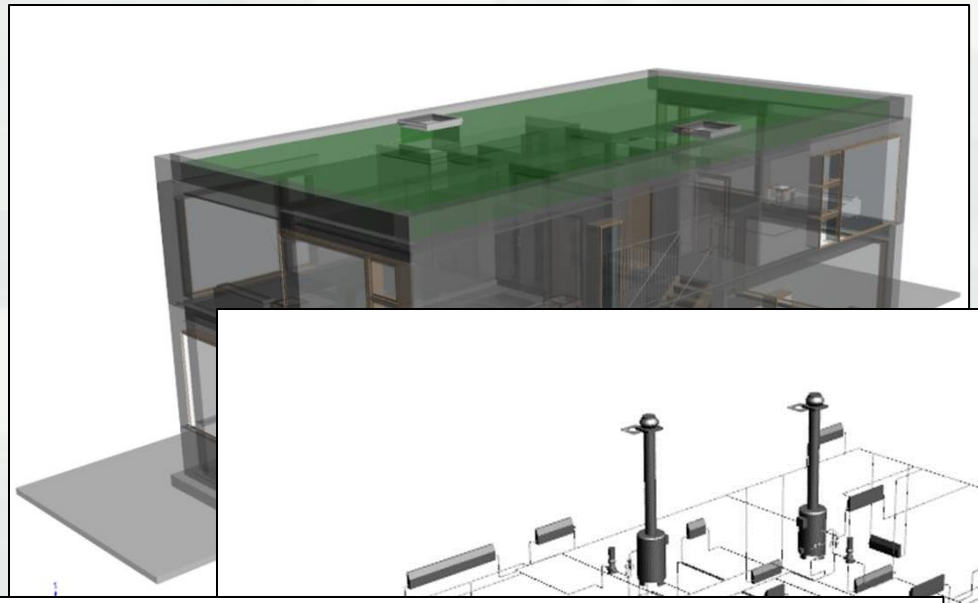
BPie & Coordination Model View Definition

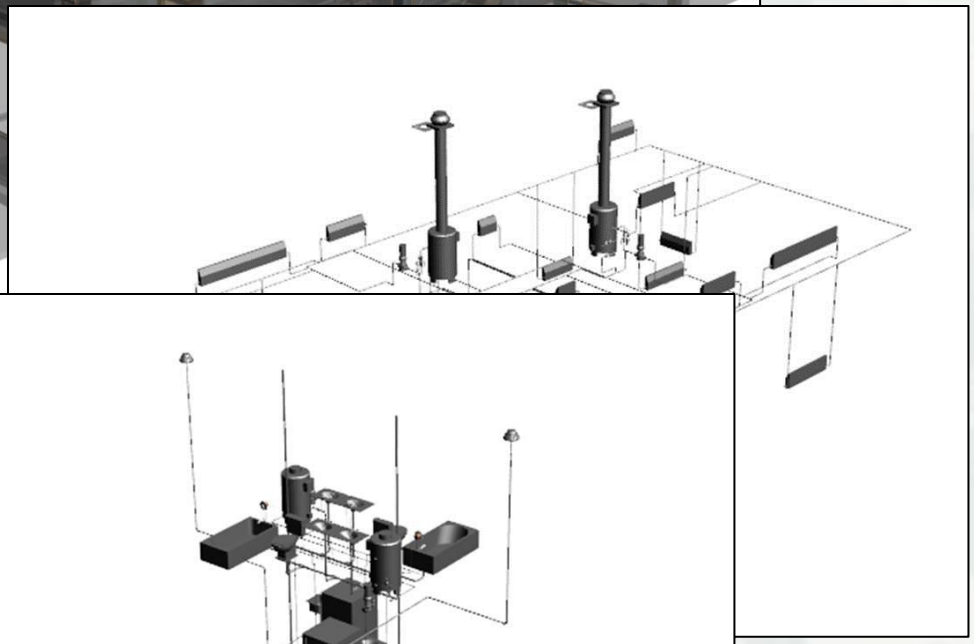
Asset Information

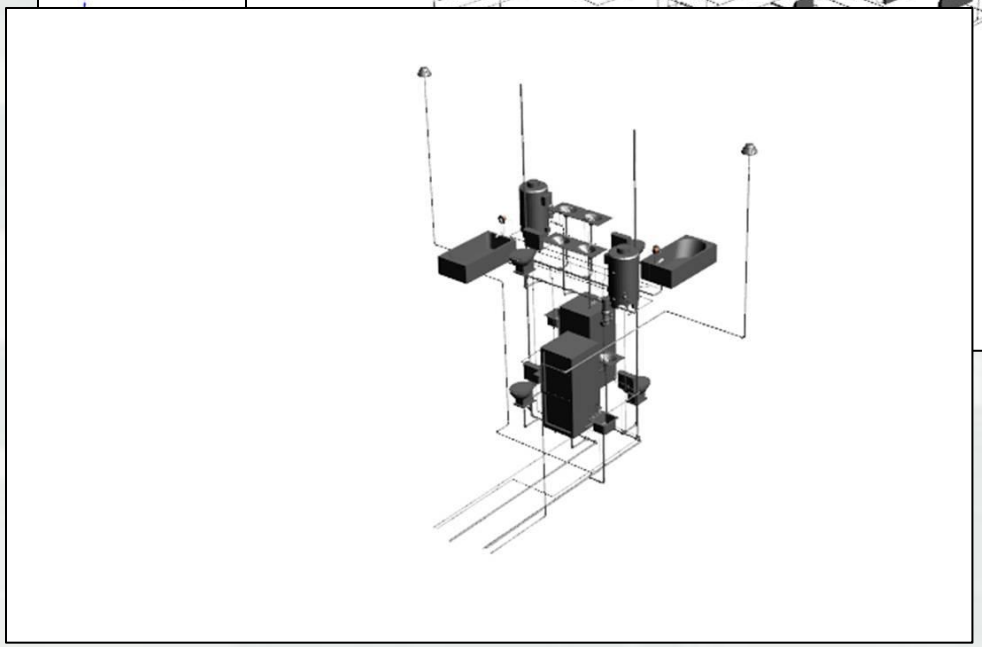
COBie



HVACie







Planning & Architectural Model

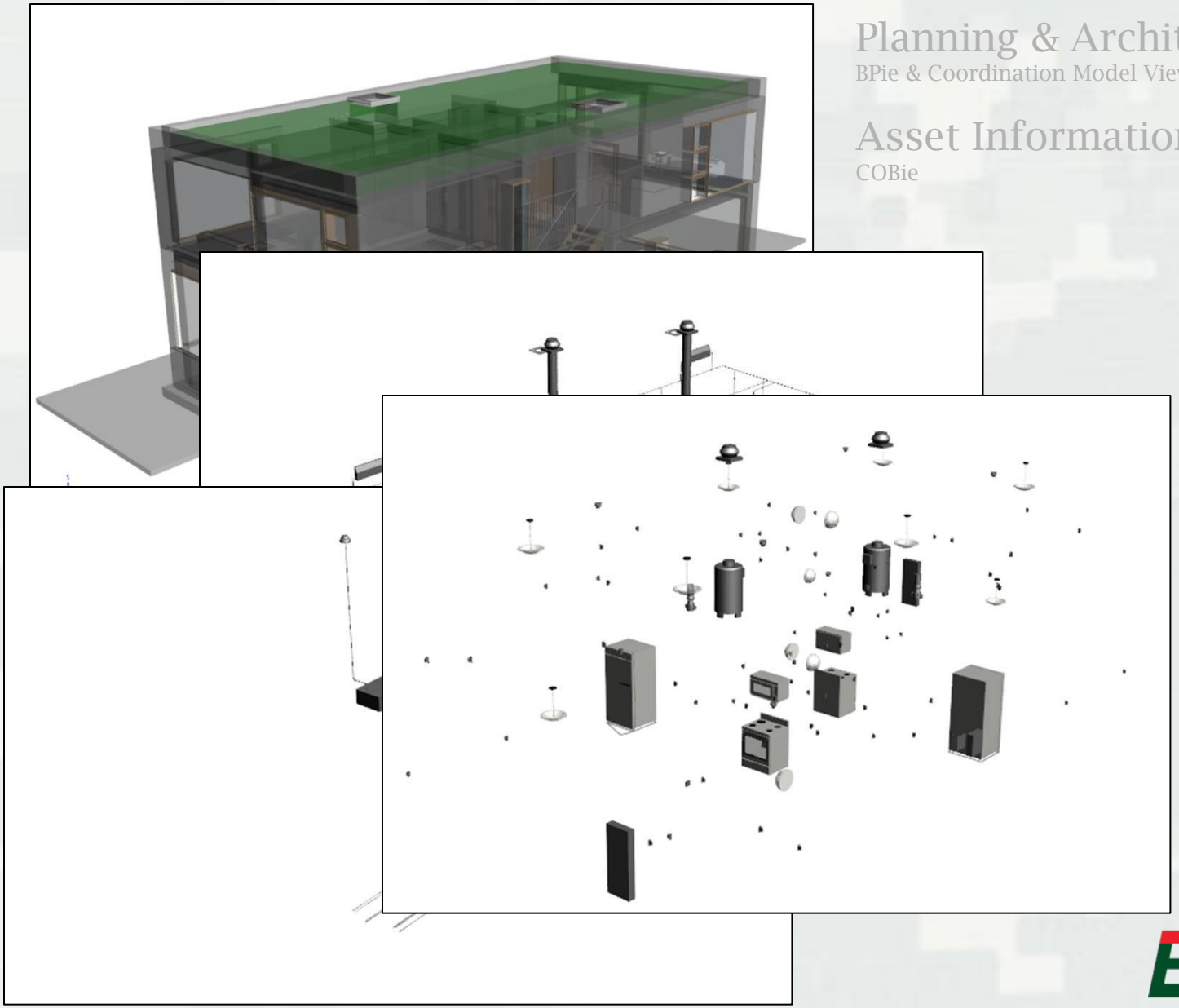
BPie & Coordination Model View Definition

Asset Information

COBie

HVACie

WSie



Planning & Architectural Model

BPie & Coordination Model View Definition

Asset Information

COBie

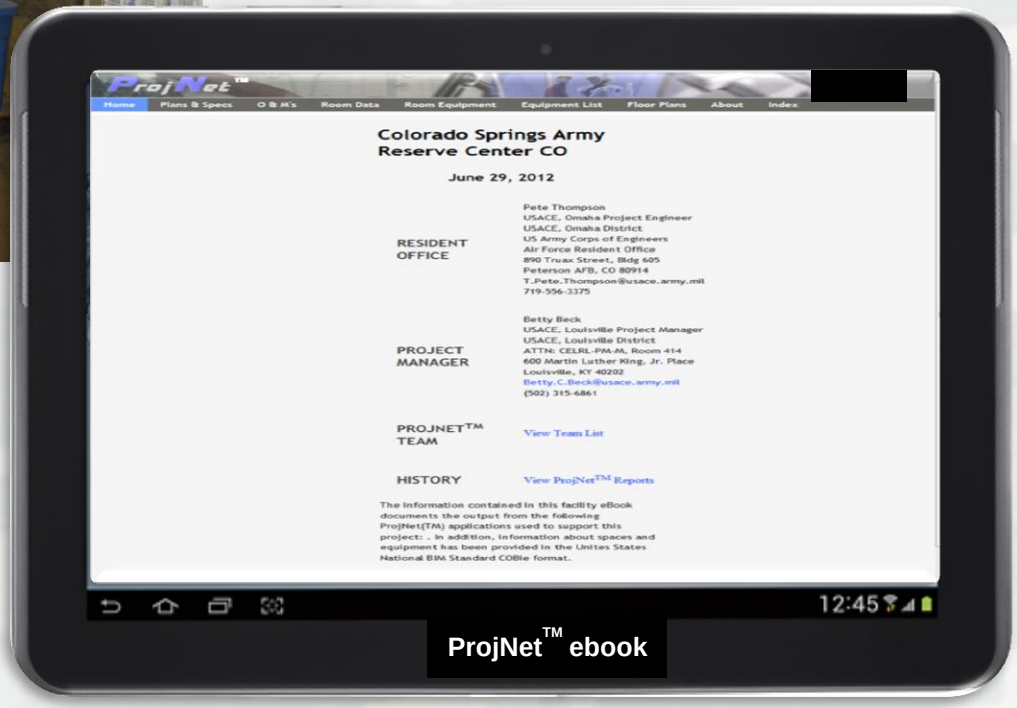
HVACie

WSie

WSie

the owner's choice?

or



ProjNet™ ebook

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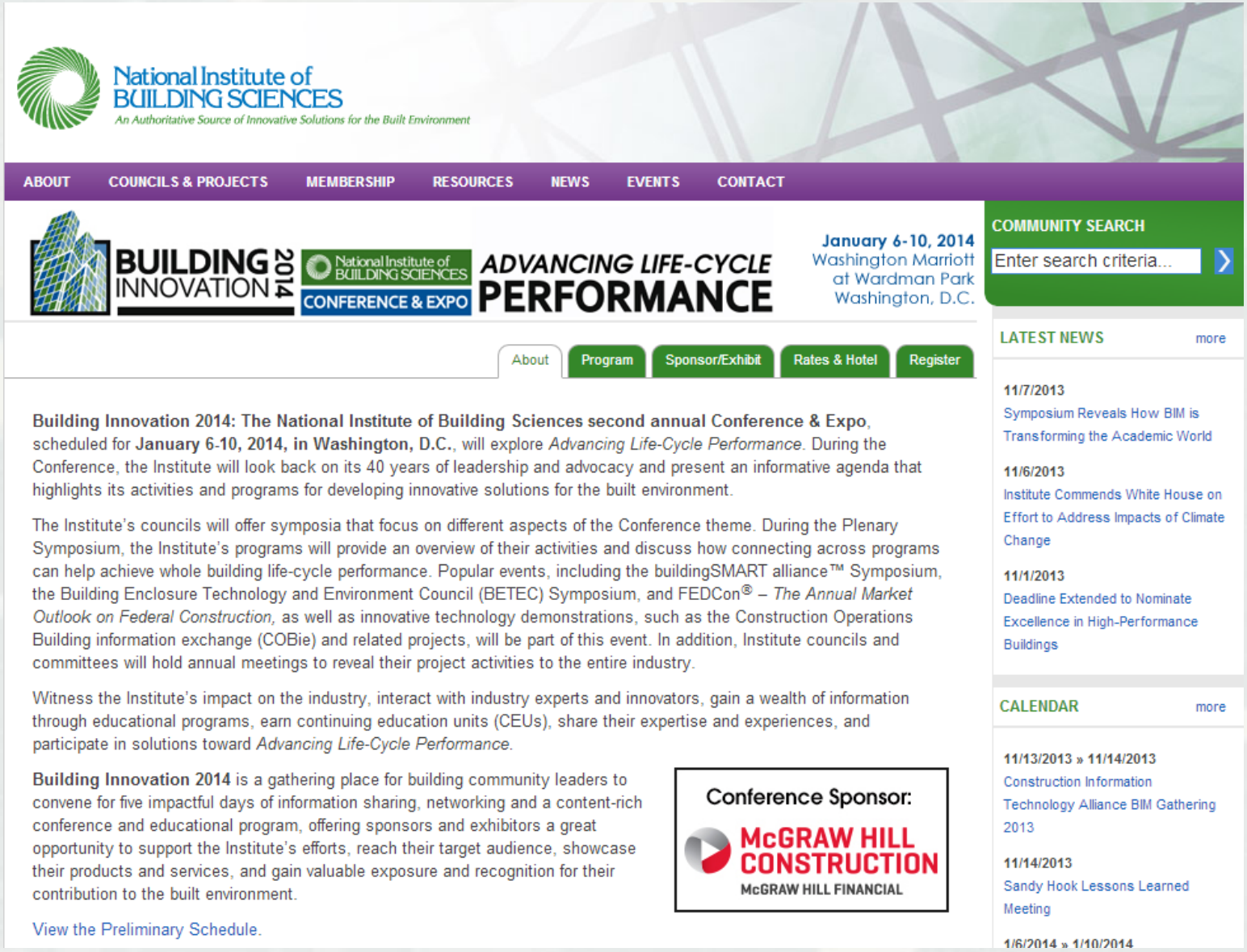

http://www.nibs.org/?page=conference2014

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