

Construction Operations Building Information Exchange (COBIE)

COBIE allows the exchange of IFC-based facility management data. A meeting was held 20 Feb 08 at the U. S. Army, Corps of Engineers, Chicago District Office to discuss the implementation of COBIE. This page documents the results of that meeting and provides links to presentations and handouts that might be of interest to those using COBIE.

On-Site Participants	Affiliation
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Roy Morris	NAVFAC Atlantic
Nick Nisbet	AEC3 UK Ltd
John Przybyla	Woolpert, Inc.
Louise Sabol	Design + Construction Strategies
Harry Singh	Woolpert, Inc.
John Sullivan	AutoDesk
Jim Watson	MACTEC
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Teleconference Participants	Affiliation
Bill Brodt	NASA HQ
Lars Christensen	buildingSMART (Norway)
Pat Conroy	MicroMain
Dianne Davis	AEC InfoSystems
Kathryn George	TMA Systems
David Hammes	Overseas Buildings Operations
Glenn Hunt	Peripheral Systems, Inc. (PSI)
John Johnson	TMA Systems LLC
Kerry Joels	TMA Systems, LLC
Mike McSween	Bentley Systems
Janos Maros	Graphisoft
Richard See	Digital Alchemy
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Renee Tietjen	Dept of Veterans Affairs
John Williams	Peripheral Systems, Inc. (PSI)

Introduction

Approaches to development of interoperable standards were presented. COBIE is a loosely-linked standard that fully empowers private enterprise to assist in the implementation of solutions that meet contractually defined end-user requirements. A loosely-linked standard ensures that contractors' ability of the contract requirements to be met does not depend on specific product versions. In addition, the loose linkage of requirements to implemented products allows 3rd party implementers to fully engage in a supporting role.

Download: Introduction (http://www.wbdg.org/pdfs/cobie_introduction.pdf)

Download: Overview (http://www.wbdg.org/pdfs/cobie_overview_pres.pdf)

Coordinated Federal Specification

The implementation of COBIE requirements at federal government agencies is being supported by the implementation of standard contract language that is being coordinated among all major federal builders, including those previously identified. A copy of the current draft specification (version 2) was presented during the meeting. The specification provides language to be inserted into design, construction, design-build, commissioning, and maintenance contracts. The specification also identifies for the specification writer where coordinating paragraphs should be added to related contract clauses.

Download: Draft Federal Specification
(http://www.wbdg.org/pdfs/cobie_specification_sections.pdf)

Federal Implementation Status

Federal agencies described their implementation of the COBIE spreadsheet solution. The stage of these implementations is described below. Agencies presented in order of strength of current adoption.

- a. Overseas Buildings Operations currently requires COBIE as part of all design-build BIM deliverables.
- b. Corps of Engineers includes COBIE as an optional O&M handover format. Specific Corps' Districts are currently considering the mandatory implementation of COBIE.

- c. General Services Administration currently requires COBIE as part of their BIM specifications on five pilot projects.
- d. Naval Facilities Engineer Command will be updating its guide specification for Operations & Maintenance Support Information to include COBIE deliverables. NAVFAC is currently conducting an extensive project survey that includes requirements for capture of various systems and component attributes. Such information will help inform the requirement for the future specification of COBIE property set data.
- e. The Department of Veterans Affairs is currently pilot testing the use of COBIE on a new hospital project.
- f. National Aeronautics and Space Administration is planning to pilot COBIE at several centers during FY08.

Space Accounting Specification Harmonized

COBIE information exchange requirements include asset management data as well as Operations and Maintenance data. Of critical concerns to those receiving buildings is the knowledge of the amount of space devoted to specific functions within the building. Two organizations that have been promoting space planning calculation methods have recently completed an effort to harmonize their space planning calculation methods. International Facility Management Association (IFMA) and the Building Owners and Managers Association (BOMA) have begun to publish their joint standard. The first of these harmonized standards to be published is American Society of Testing and Materials (ASTM) E1836 "Standard Classification for Building Floor Area Measurements for Facility Management."

Currently there are several optional COBIE columns related to space measurement standards the default calculation method for these columns of data is the joint IFMA/BOMA standard. If agencies wish to use the COBIE data format to capture space measurements standards, they may now do so by amending the coordinated COBIE specification language.

Software Implementation Tools

IFC implementations of COBIE in ifcXML and ifcEXPRESS were presented. The draft COBIE Model View Definition was presented. Computer software that translates between ifcXML, ifcEXPRESS, and the spreadsheet implementation was demonstrated during the meeting. The use of model server technology to validate the data exchange was also discussed.

Download: COBIE draft Model View
(http://www.wbdg.org/zips/cobie_working_2008_html.zip)

Download: ifcXML to COBIE translator
(http://www.wbdg.org/zips/cobie_working_2008_html.zip)

Software Implementation Issues

There were four topics that will be of interest by those testing compliance with the draft COBIE Model View. These topics are:

- a. The software supplying COBIE data will need to report consistent Globally Unique Identifiers (GUID's) across different versions of the data. Designers' will primarily export COBIE data from BIM software as a result the GUID's from early design stages must match those for the same entity in later COBIE exports. For Computerized Maintenance Management System (CMMS) vendors, COBIE exports used for maintenance and repair updates will need to keep that CMMS's GUID to ensure that updated data can be matched back into the correct CMMS record. These external system ID's may be kept in COBIE "external system reference" fields.
- b. COBIE requirements enforce strongly-typed product data. Implementation of the IFC Coordination View has shown that some BIM software does not correctly abstract "product types" from individual products. A "first-order" check of the ability of BIM software to correctly identify the type of product from a specific instance of the product can be accomplished in the COBIE spreadsheet by looking to see if there are fewer records in the COBIE "Register" worksheet than in the COBIE "Component" worksheet. CMMS system vendors participating in the COBIE project to date have not identified any problems meeting this requirement.
- c. Data in the COBIE "component" worksheet (i.e. named equipment, tagged building components, and data provided in schedules) must be identified by room. Given that standard algorithms for determining spatial relationships are widely used, even models that do not include strongly-typed space relationships should be able to easily meet this requirement. CMMS system vendors participating in the COBIE project to date have not identified any problems meeting this requirement.
- d. Finally, COBIE begins to allow owners to specify common classifications across their buildings using the OmniClass taxonomy. When providing COBIE data from the design-side a property with each space, system, and equipment type are required. Given that BIM and CMMS systems employ systems that manage entity attributes, this is not considered to be a major hurdle for software system implementations.

Software Certification Meeting

A follow-up meeting has been scheduled for those vendors implementing COBIE to demonstrate their capabilities. BIM vendors will be asked to demonstrate the export of COBIE data as part of defined design or design-build contract deliverables. CMMS vendors will be asked to demonstrate their "new building" import routine as well as their process for management of work order "round trips" for COBIE data. To obtain further information on this meeting, as it is organized please contact NIBS to ask that your name be included on the mailing list.