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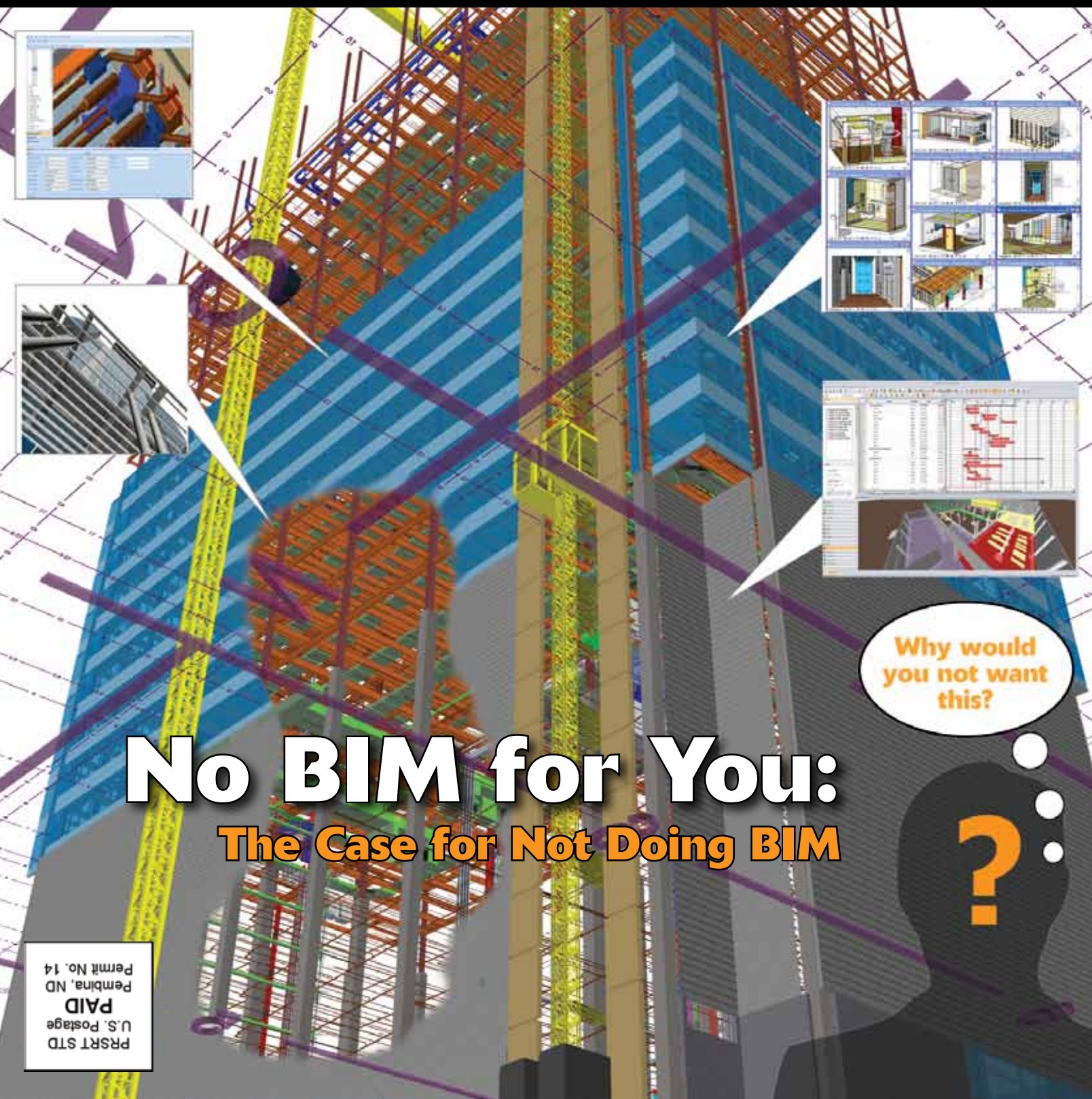

No BIM for You:

The Case for Not Doing BIM

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A Report from the 7th AIA TAP Building Connections

By Kristine Fallon, FAIA; Stephen Hagan, FAIA; Calvin Kam, PhD, AIA; Tony Rinella, Assoc. AIA; and David Scheer, AIA, of the AIA Technology in Architectural Practice (TAP) Knowledge Community

THE 7TH AMERICAN INSTITUTE OF ARCHITECTS (AIA) Technology in Architecture Practice (TAP) Building Connections meeting was held on December 10, 2010, in Washington, D.C. The Federal Facilities Council hosted the event at The Keck Center of the National Academies. Lynda Stanley, Hon., AIA, Executive Director of the Federal Facilities Council, coordinated the meeting.

Building Connections invited those, "in the interoperability trenches to convene and update each other on their progress and challenges in 2010." Technology veterans and newcomers were welcomed to the conversation and engaged with key building information modeling (BIM) authoring tool vendors to share their views about interoperability. Proponents of initiatives that were identified as potentially overlapping discussed how each initiative adds value. Three primary topics were focused on at the event: *Lifecycle BIM: Defining the Roadmap; Interoperability: How to Overcome 10 years of Roadblocks*; and *What is the Role of Standards-giving Organizations in the Emerging BIM Ecosystem?*

THE ORIGINS AND HISTORY OF BUILDING CONNECTIONS

Building Connections: The 1st Congress on Digital Collaboration in the Building Industry was held on April 30, 2004, by AIA's TAP advisory group in the AIA Boardroom in Washington, D.C. There were over 60 invited participants representing the AIA, other professional and industry organizations, building owners, standards organizations, software companies and academia.

The 2004 Building Connections invitation framed the focus for that first year and for the six subsequent Building Connections Congresses: "These are a one-day, by-invitation-only coordination summit among the leading building industry associations, government agencies, software companies and academic institutions. Our purpose is to make connections, harmonize overlapping or competing efforts and find areas of common ground and opportunities for collaboration. The Congress also showcases existing successful data exchange standards, defined as ones that have achieved acceptance and are being used by target business communities."

OWNERS' VOICES FOCUS ON BIM FOR FACILITY MANAGEMENT

Major owners are actively demanding BIM-utilization to support both improvements in project delivery and post-construction efficiencies. Specific areas of interest are technology solutions, improved work flow, open standards and best practices for facility operation and energy management.

The focus of the 2010 session was, "What do major owners want in BIM for facility management?" It featured eight public and institutional owners from the United States and Europe, including representatives from the Public Buildings Service of the U.S. Department of Defense (DoD); the U.S. Department of State (DOS) Overseas Building Operations; Sandia National Laboratories; the U.S. Department of Veterans Affairs (VA); the U.S. General Services Administration (GSA); the State of Wisconsin; the Smithsonian Institution; TriCare; and Norway's public buildings service, Statsbygg.

Another highlight was when representatives of GSA, including Charles Matta, Calvin Kam, Peggy Yee, Stephen Hagan and Robert Keady, talked about GSA's 10 pilot projects underway to support a number of BIM to facility management (FM) business cases. The projects involve an array of BIM and FM applications and build upon different industry data standards and application programming interfaces. GSA is also developing a national equipment standard based on the OmniClass Construction Classification System (OmniClass), the Construction Operations Building information exchange (COBie) and the Industry Foundation Classes (IFC). Additionally, GSA is finalizing a draft *GSA BIM Guide on Facility Management* that will be available for expert review.

Birgitta Foster, who is with Sandia National Laboratories, was another highlight of the event. She articulated the business-case and value of BIM for FM. VA's Renee Tietjen and DoD's Russ Manning laid out a vision for public and private healthcare owners to collaborate and demand BIM-based facility management that would address VA and DOD's unique

During the TAP Building Connections meeting, technology newcomers and veterans share their views on BIM and interoperability.

requirements. Bob Clarke and Bill May, both from DOS, reinforced the importance of effective programming and scalable solutions. They also showcased innovative uses for social media and Second Life, a free three-dimensional virtual world where users can socialize, connect and create using free voice and text chat, to promote design collaboration and knowledge dissemination that bridges geographical separation. All eight owners in attendance acknowledged the value of Building Connections and agreed to continue to broaden their collaborations.

INDUSTRY-WIDE STANDARDS FOR FM

Several industry-wide standards critical to achieving the goal of improving facilities management through the use of BIM were described.

COBie: Bill East, of the U.S. Army Corps of Engineers, presented this standard, which is designed as a platform for the handover of facility management information from the design/construction phase to the facility management phase of a project.

The National BIM Standard™: Chuck Eastman, from the Georgia Institute of Technology, spoke about some of his recent work on interoperability standards, focusing on the *National BIM Standard*™ (NBIMS). This included discussions on CIS/2, which is a standard structured data format, like IFC (see below), for the steel industry that is promulgated by the American Institute of Steel Constructors (AISC). Eastman said that he and his team are working to fix some problems and extend the exchanges supported by CIS/2. For a number of years they have been working on supply chain interoperability efforts for the Precast Prestressed Concrete Institute. This has resulted not only in IFC-based interoperability standards but also extensions to the IFC model and new design-to-fabrication software for the precast concrete industry.

In discussing NBIMS, Eastman also provided background on the IFC. He described this standard as an extensible, highly-redundant and robust platform that allows building information to be represented in many ways. Model view definitions have become an accepted way to specify the information content and mappings to specific IFC entities so that special purpose information exchanges via IFC become highly reliable. GSA's *BIM Guide Series 02 - Spatial Validation* is an example of this.

Simplified ifcXML. Kimon Onuma, of Onuma Inc., spoke in support of Simplified ifcXML. XML is widely-used in applications such as Microsoft Office, so ifcXML allows designers to build information models from spreadsheets. Onuma described a statement from ESRI, a vendor of geographic information system (GIS) solutions, outlining three "philosophies" of data access:

1. Desktop (for example, Revit);
2. Server mode with "thin" clients (for example, Oracle) using lightweight data sets for easy transfer; and
3. Federated (for example, GIS).

Onuma spoke of bimXML, which allows users to build a "mashup" of tools to create situation-specific model views. It provides a lightweight alternative to IFC. ifcXML is in the process of development and does not contain geometry yet, giving rise to "simplified" ifcXML, as it has been termed by Thomas Liebich, current leader of the IAI Model Support Group specifying the IFC standard. Onuma said he believes that the buildingSMART alliance™ should be more open to non-IFC standards to bring more developers into the arena, improving speed to market and making it "dead simple" for developers to link to BIM-data in various forms.[1]

At Building Connections, industry experts discuss lifecycle BIM, how to overcome roadblocks and the role of standards-giving organizations.

Speakers share updates on their BIM-related work.

TECHNOLOGY VENDORS RESPOND TO OWNERS NEEDS

The vendors that participated in the meeting were Technical Sales International, EastCoast CAD/CAM, QuickPen, Graphisoft, Autodesk, Onuma Inc., EcoDomus, Nosyko AS, Solibri, Inc. and IBM Maximo® Asset Management. Kristine Fallon, from Kristine Fallon Associates, Inc., launched the conversation by requesting vendors' responses to the roadblocks identified by the owners and what technical issues they encounter when interfacing design and construction models for use in facility management. Discussions touched on the need for owners to clearly establish requirements to meet their business needs.

Chuck Eastman made closing statements for this session and offered a challenge to find ways of working more closely together. He said, "I would like to know how to make it as easy as possible to work with software companies. Richard See, of Digital Alchemy, has developed web tools to make the collaboration easier on raw IFC. How can we do incremental implementations without coming to software companies every year with new requirements?"

BUILDING CONNECTIONS FOR THE FUTURE

For an extended report on the 2010 Building Connections and to contact the AIA TAP Advisory Group with your ideas, email tap@aia.org or visit www.aia.org/tap. ■

FOOTNOTE

1. The Alliance is working to address this and does support interim approaches to accomplish the job until the international standards are fully supported by all vendors.