DRAFT
WHITE PAPER
BIM Implementation by Federal Agencies

I. BACKGROUND

Building Information Modeling (BIM) is fast becoming an essential element in project delivery and facilities management of any real estate portfolio. The general consensus of industry, academia, and government is that BIM is the way of the future for collaboration in design, construction, operation, and maintenance of facilities and infrastructure. The true functionality of BIM is not as an information-based virtual building modeling technique and technology, but as information-based, interoperable business lifecycle management processes. In this regard, the ability to present designs in 3, 4, or more dimensions, with data and information links to physical features is only a tool in the process, not the end result.

At present, there are multiple software vendors using differing platforms pushing BIM oriented solutions and applications. This has led to incompatibility problems, from the use of varying file formats and technology standards.

The costs to firms implementing BIM include not only the software and hardware costs involved, but also the costs of training; organizational, workflow, and process changes; and cultural shifts. Compound this with multiple incompatible platforms and programs and the burden on all firms becomes significant and to small and mid-size firms potentially damaging. A decision to implement only one BIM solution becomes a gamble that could prove fatal. This is borne out by numerous firms that implemented various early CAD solutions only to see later developments make their choice obsolete. To add to this problem clients deciding to accept deliverables developed in only one software, which forces firms to start selecting which clients to support (limiting competition). Such clients are also taking the gamble that their software selection will survive the "rivalry" process. If not their incompatible products may become unusable in the future.

Clients benefit if sophisticated computer modeling is built on an open standards platform enabling the seamless and accurate exchange of digital data across programs from different software developers. To foster interoperability in BIM software and systems, various international governmental organizations, the Open Geospatial Consortium (OGC) and buildingSMART Alliance (associations, vendors, government entities, etc.) are formally working together to "develop and ensure" interoperability in BIM software and systems. National BIM Standards (based on Industry Foundation Class (IFC) models, parts of which are International Standards Organization (ISO) certified) have been published. Certain BIM software and application vendors have received certification that their products are IFC-compliant.

II. FEDERAL AGENCY CHOICES

Agencies have three reasonable choices they can make for implementing BIM:
1. Do nothing until the interoperability issues are resolved
2. Select a specific software for all or certain deliverables
3. Require all or certain deliverables be provided using software and applications that are IFC-compliant (National BIM Standards).

III. ISSUES FOR EACH FEDERAL AGENCY CHOICE

Doing nothing – eliminates the risks and costs associated with BIM utilization, but also the benefits associated with the BIM, including superior documentation at reduced effort and cost, early visualization of design (improves alternatives selection and problem identification), better communication for all parties, and enhancing the efficiency and effectiveness of design staffs.
Using specific software – provides BIM benefits, eliminates interoperability issues and facilitates lifecycle use and design reuse, but limits competition and creates the significant risk of complete loss of products and investment if software selected does not last or interoperability accommodations force changes that no longer support earlier versions.
Using any "compliant" software - provides BIM benefits and minimizes (but does not eliminate) interoperability issues, while opening competition and providing the opportunity for continued us of deliverables regardless of which vendors survive the competition for BIM supremacy.

IV. CONCLUSION

Requiring "compliant" deliverables is the logical choice, at this time. It provides Agencies with BIM benefits during development and later use and reduces potential risks, with minimal deliverables cross use complications. Competition is increased and impacts on potential designers limited. In addition, such action will force BIM vendors to become compatible and enhance interoperability.