



National Institute of
BUILDING SCIENCES
Facilities Information Council
National BIM Standard

Charter for the
**National Building Information Model (BIM) Standard Project of the
buildingSMARTalliance™**
December 8, 2008

Key Definitions and NBIM Standards Premises

The NBIMS Project Committee (The Project or The Committee) is the organization responsible for designating and managing BIM-related standards for the United States building industry

The NBIM Standard (NBIMS) is the published body of works designated and managed by the NBIMS Project Committee.

Building Information Model: A Building Information Model (BIM)¹ is a digital representation of physical and functional characteristics of a facility. A BIM can represent viewpoints – graphically and in text and table form, of a building from any practitioner perspective – Architect, Specifier, Engineers, Fabricators, Leasing Agents, General Contractors and so on. As such, it serves as a **shared knowledge resource** for information about a facility forming a reliable basis for decisions during its life cycle from inception onward.

Vendor and User Domains: The definition of BIM recognizes that vendor solutions (the so called “BIM software”, but also for example software for project management, cost estimating, and specification) all offer different sets of strengths for authoring, processing, display, extraction, transformation and decision support and promote different capabilities. The NBIMS Project is the forum where, through standards, the community enables them to connect with each other no matter whether the application software is about **complementary** building information activities (such as structural engineering), or **upstream and downstream information applications** (such as urban planning or energy analysis).

The buildingSMART alliance™ recognizes that the NBIMS Project will need to involve different stakeholders, who act at different phases of the life-cycle and who want to insert, extract, update or modify information for some use. Each stakeholder or participant in any capital project will possess their own corporate information infrastructure to house and process these common sets of information over time.

Thus, as the life cycle of a facility progresses, a BIM – logically, physically and virtually -- defines the cumulative, shared knowledge resource containing many different kinds of information from many different application platforms. Site plans, energy management, permitting documents, subsurface infrastructure, building massings, building system and

¹ Any vendor will promote their specific definition of lifecycle information support based on the capabilities of their software. The definition was developed with participation of practitioners using various building information software.

components, detailed fabrication plans, leases and tenant information, and building evacuation plans can all fall under this definition.

Collaboration and Information Sharing: Also under the definition of BIM, there emerges a second premise that is the requirement for collaboration and transparent information sharing by different stakeholders at different phases of the life cycle of a facility. When inserting, extracting, updating, or modifying information to support and reflect the roles that a stakeholder requires to do their work, the buildingSMART alliance, through the NBIMS Project will become the forum to promote market driven innovation, while also promoting market competition through the development and ultimate adoption of collaboration and information sharing standards. These Standards will be vendor agnostic and independent of any corporate information infrastructure. This premise promotes the highest and best use case for market adoption and significantly reduces risk when viewed by market actors associated with moving to an interoperable strategy.

The National Building Information Modeling Standard: In Version 1 – Part 1 NBIMS began to define the approaches and ways the community at large has chosen to foster vendor independent approaches for sharing and collaboration. Generally, the practices defined are based on open standards for interoperability. More needs to be accomplished. Taking this foundation from the general to any specific business project, any building software application (or part thereof) from any vendor will ultimately need to enable essential information flows via service components that can find, bind and publish the information a user needs. If information coming in or going out of an application is destined to be a shared and be the collaborative graphic and information resource for building lifecycle management, then certain foundations for sharing and collaboration need to be established, agreed to by the community and implemented by the vendors that serve the community. (By foundations we mean the syntactic, semantic, software, communications and social, contractual, political, and organizational factors that enable information to flow.)

To enable interoperability means making possible capabilities for information sharing, finding and publishing with some or all of the following characteristics:

- Ubiquitous access to reliable, user driven decision-quality information,
- Data immediately available to those who need it,
- Discovery of data without pre-existing knowledge of it,
- Priorities for establishment of: relevance, timeliness and accessibility,
- Freedom to tailor implementations and outputs, allow deployments to be scaled appropriately,
- Mix and match software vendors capabilities and performance distinctiveness depending on need, and
- Reliability, fault-tolerance, security.

NBIMS Scope: The fractionated elements of the North American market are not waiting for buildingSMARTalliance™ and the NBIMS Project to act on behalf of their respective memberships and customers. Thus we have a plethora of existing information standards either available for use or in some phase of development: standards like AGCxml, Industry Foundation Class (IFC), the mostly equivalent sets of standards for Industrial Automation and Capital Equipment, OmniClass™, Guideline 120, the Unified Approach for Measuring Office Space, Standard Method of Measurement For Building Elements, GSA, Veterans Administration, US Coast Guard, and US Corps of Engineers Agency Specific Building Standards, and the International Code Council's Code-Checking Standards to name just a few. Add to this that

vendors currently compete on the basis of their particular internal and proprietary data formats, and the murky, complex, and deep roots of the NBIMS Project challenges emerge.

NBIMS Components: The premises, in conjunction with the approved definition of BIM call for a process that realizes the full societal, economic benefits of integrating electronic Architect/Engineer/Contractor (AEC) resources into commercial and institutional processes. The NBIMS Project is the means to accelerate market assimilation of AEC and BIM interoperability through a collaborative standards process with focus on those features that extend the knowledge base of information approaches that provide benefits for all at all levels of practice, requirement and business. Taken together, the NBIMS Project is a member-approved process that encourages collaboration among and between Alliance members to define, document, and implement open specifications that solve AEC interoperability problems. The NBIMS Project exists to enable a fast, effective, inclusive, user-driven process to develop, test, demonstrate, and promote the use of the NBIMS through its various components including:

- NBIMS Project developed Standards and Specifications including any technical document that details interfaces or encodings that build support for the interfaces or encodings in a vendor's products and services such that when these are implemented by two different software engineers working independently, the resulting components plug and play, that is they work together without further debugging.
- Business and Technical Best Practices - official positions of the membership and often provide supporting technical and implementation information for NBIMS adopted specifications and standards.
- Utilization, by reference, of standards and specifications of other organizations that fit the BIM definition and can meet industry problems and challenges
- NBIMS itself documents the standards baseline and focuses on the relationships between the components. It consists of the approved specifications and best practices documents.

NBIMS Project Purpose

The primary purpose of the NBIMS Project is to harmonize, align, reference or otherwise develop the use of advanced open standards and mainstream computing techniques to enable the full integration of any AEC data type and the processing resources that act with these data in accordance with Article 2 of the buildingSMARTalliance™ Charter. Toward this end, the NBIMS Project shall seek to:

(i) Involve developers and users of AEC information resources, including vendors, integrators, government agencies, standards organizations, academia, research institutions, and individuals in collaborative development of interoperable information processing specifications across the building life cycle, and support the Alliance's objective of advancing the widespread use of interoperability and the coordinated use of innovative information technology (IT) by the nation's fragmented building industry.

(ii) Synchronize BIM and related building life cycle software applications and information with current and emerging information technology standards based on open and interoperable systems; and

(iii) Provide a consensus-based industry forum that promotes cooperative business development initiatives by users, vendors and research institutions;

(iv) Provide a reasonable basis to assure users that purchasing decisions for software and related technologies are conformant with the standards and specifications approved by or referenced in NBIMS;

(v) Perform other related research and experimentation in, and implementation techniques for improving business processes within the NBIMS Project community using open systems standards.

Organization

The National BIM Standard Project is, managed by the buildingSMARTalliance™. The National BIM Standard Project shall be comprised of a Planning Committee, a Technical Committee, and an Interoperability Program.

Planning Committee

The role of the Planning Committee (PC) will be to administer the business affairs and agenda and supply oversight of the Technical Committee (TC). The PC will be composed of Alliance Sponsor-level members, a NIBS staff representative, and Special Advisors at-large. The PC will have an elected Chair, Vice-Chair and Secretary, elected annually by the Alliance BOD. Two Technical Committee members who are nominated and elected by the TC will represent the TC on the PC. Specific functions of the Planning Committee include:

- (i) Strategic planning regarding the NBIMS development of open standards that have the greatest possible chance of being adopted in the market.
- (ii) Ratification of all parts of NBIMS including specifications, encodings, development plans, release schedules, conformance testing plans, recommended practices and any other major documents produced by the Technical Committee;
- (iii) Final acceptance of any implementation specifications as reported out of the Technical Committee;
- (iv) Development of NBIMS Project message and strategic positioning within the AEC and IT communities;
- (v) Providing assistance to the Alliance's formulation of education and outreach strategies and programs;
- (vi) Election of Board of Direction members; and
- (vii) Maintenance of policies and procedures that establish the Planning Committee's internal organization and process, subject to the review and approval of the Board of Direction. Such organization and process may involve the creation of such subcommittees, ad hoc working groups, or task forces as necessary.

Technical Committee

The role of the Technical Committee (TC) within the NBIMS Project will be to develop standards or process submissions of candidate standards. The TC shall be composed of Alliance members and shall be divided into Voting TC Members, Non-Voting TC

Members and TC Guests. Voting TC Members shall be \$1,000-level and higher Alliance Members with an active voting history; Non-Voting TC Members shall be Alliance Members; TC Guests need not be Alliance Members but must be invited by Alliance Members and approved by the TC Chair. The TC shall have a Chair, Vice Chair and Secretary nominated by the PC and elected by the Voting TC Members. The Chair oversees the implementation of technical and consensus processes to meet the mission of the Alliance including but not limited to assignment of candidate standards to working groups for review and recommendation to the TC body that are in response to industry requirements, implement procedures to develop and test possible standards for consensus balloting, publication and other maintenance activities. Subject to the oversight of the Planning Committee, the Technical Committee shall have the authority to perform the following functions:

- (i) Development of standards (specifications, best practices and other documents) through a cooperative consensus process involving Alliance Members;
- (ii) Creation of its own internal organization and process, subject to the review and approval of the Planning Committee. Such organization and process may involve the creation of Task Forces, Special interest Groups (SIGs), Working Groups and Subcommittees as the Technical Committee deems necessary; and
- (iii) Presentation of version drafts of any candidate specification or other possible standard for public comment, or to the Planning Committee for approval as a part of the NBIMS.
- (iv) Development of specification templates, terms, versioning, naming of profiles, schemas and application profiles
- (v) Development of accepted IT architectures and process methods and AEC domain practices to undertake technical work to build, test and approve interoperable standards.

Interoperability Program

The primary purpose of Interoperability Program (IP) is to provide a rapid, hands-on, collaborative engineering environment for bringing candidate standards forward for TC consideration. The IP addresses one or more of the following objectives:

- Produce and test candidate implementation specifications for building information interoperability;
- Perform research on the use of other information and technology standards for relevance and ability to help solve building information interoperability problems;
- Develop and test prototype interoperable infrastructures based on existing and new specifications;
- Demonstrate the work performed during a given initiative.

The IP shall have a Chair, Vice Chair and Secretary appointed by the Planning Committee.

Agreement and Acceptance: Member Organizations, Special Advisors and Invited Guests agree to participate in an open and democratic process to produce the United States National Building Information Modeling Standard. The products that are produced shall be shared freely with all members of the Alliance and when approved by the membership, with the general public.

Wherever possible, consensus industry and international standards development efforts will be recognized, incorporated and coordinated with the NBIM Standard so that the Standard is usable by multinational organizations.

All Committee members believe and agree that the development of this standard will help improve the competitiveness of the construction industry and the efficiency and effectiveness of government agencies of the United States and similar international efforts, by helping to ensure that through thoughtful standards development processes will become business arrangements and shared information resources that can be employed throughout the life-cycle of a constructed facility.

Work accomplished toward NBIMS, but outside of the processes defined above, and that are included or referenced by NBIMS, shall remain the property of the individual participant or organization that submitted them for approval. Acknowledgement of their contribution shall be provided as noted below.

It is our intent to distribute freely the resulting standards and other work of the NBIMS committees for use in defining and implementing the National BIM Standard.

All work included in the NBIMS, not otherwise identified, and shall be copyrighted in the form of the collected National Building Information Model Standard by the National Institute of Building Sciences, not for its gain but for protection of the development teams' efforts from uncontrolled external use. This copyright in the collection shall not supersede or interfere with any copyright held by member organizations in the content of individual source documents that may be included expressly or by reference, with or without attribution in the National Building Information Model Standard. NIBS shall not exercise this copyright held in the collection against the interests that any member organization may have in the underlying source documents or standards that may be contributed towards or included expressly or by reference, with or without attribution in the National Building Information Standard.

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Credit shall be given to all NBIMS Committee members in an acknowledgement
statement provided with each publication, written, oral or electronic:

*The National Building Information Model Standard is the product of a team effort
made possible by the following participating member organizations and
companies: (Organizations listed below). The Standard was prepared under the
coordination of the National Institute of Building Sciences for the good of the
construction and related industries as a whole.*