National BIM Standard – United States

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Board of Direction
buildingSMART alliance
Agenda

• Structure
  – Organizations
  – Project Committee
    • Subcommittees/workgroups

• NBIMS-US Ballot Cycle

• Version 2

• Version 3

• Future
The buildingSMART alliance

The Industry’s One-Stop Source for Information on BIM & the Built Environment

The buildingSMART alliance™ is a unique organization helping to make the North American real property industry more efficient by leading the creation of tools and standards that allow projects to be built electronically before they are built physically using Building Information Modeling.

buildingSMART alliance Strategic Goals

- Build Strong Industry Presence
- Create Alliance of Industry Participants
- Support Development of Candidate Open Standards
- Develop Consensus Infrastructure for Open Standards
- Educate Industry In Use of Open Standards
Alliance Sponsors

COBie Education Sponsor

The Change Agents in the Facilities Industry
Memorandums of Agreement

Memorandums of Understanding
The National BIM Standard - US
Core Principles for NBIMS-US

• Standards
  – Critical for accomplishing interoperability

• Global Perspective
  – While there are differences, the majority is common between markets and regions
  – Many in AECOO industry are multinational – should re-tool as little as possible

• Flexibility
  – We need to establish the foundational principles as soon as possible – however things will change over time.
Core Principles for NBIMS-US

A **Building Information Model (BIM)** is a digital representation of physical and functional characteristics of a facility. 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.
Core Principles for NBIMS-US

“A basic premise of BIM is collaboration by different stakeholders at different phases of the life cycle of a facility to insert, extract, update or modify information in the BIM process to support and reflect the roles of that stakeholder. The BIM is a shared digital representation founded on open standards for interoperability.”

United States National BIM Standard V1, P1 Jan 2008
Defining Scope of NBIMS-US

- Remains a work in progress
  - Started as buildings
  - Now includes infrastructure
- The standards are not just IFC
- Intend to provide tools to expand and maintain the standards in perpetuity
- There is enough to be in place now to be of value – many are using
BIM Use Cases

1. Existing Conditions Modeling
2. Site Analysis
3. Architectural Programming
4. QTO
5. Cost analysis
6. LCC Analysis
7. Specification production
8. Design Authoring and Briefing
9. Sustainability (LEED) Evaluation
10. Engineering Analysis
11. Energy Analysis
12. Structural Analysis
13. Lighting Analysis
14. Mechanical Analysis
15. Other Engineering Analysis
16. Building System Analysis
17. 3D Coordination
18. 3D Control and Planning
19. Site Utilization Planning
20. Product Library
21. Product Selection
22. Perform procurement
23. Manufacturers Information (Incl. LCA)
24. Code compliance checking
25. Design Reviews
26. Consistency control
27. Construction System Design
28. Digital Fabrication
29. Phase Planning (4D Modeling)
30. Commissioning
31. Record Modeling
32. Asset Management
33. Space Management and Tracking
34. Disaster Planning / Emergency Preparedness
35. Building (Preventative) Maintenance Scheduling
36. Security & Key Management
37. Telephone move/add/change management
38. Way finding
39. FM Documentation
40. Maintenance & Repair Information
# “Process Room” Structure

## Design
- Existing Conditions Modeling
- Site Analysis
- Architectural Programming
- Quantity Take Off
- Cost Analysis
- Life Cycle Costing
- Specification Production
- Design Authoring & Briefing
- Sustainability LEED Planning
- Engineering Analysis
- Energy Analysis
- Structural Analysis
- Lighting Analysis
- Mechanical Analysis
- Other Engineering Analysis
- Building System Analysis
- 3D Coordination
- 3D Control & Planning
- Site Utilization Planning
- Design Reviews

## Procure
- Product Library
- Manufacturers Information
- Product Selection
- Perform Procurement
- Construction Systems Design
- Phase Planning (4D)
- Commissioning
- Code Validation
- Digital Fabrication

## Assemble
- Space Management
- Building Maintenance Scheduling
- Security / Key Management
- Way finding
- Telephone Management
- FM Documentation
- Record Modeling
- Maintenance & Repair Information

## Operate
- Life Cycle Costing
- Quantity Take Off
- Site Utilization Planning
- Design Reviews

*Note: The image includes a diagram with interconnected boxes representing processes.*
Where Does Content Come From?

International Standards

National Standards
- NBIMS-US
- NBIMS-CANADA
- NBIMS-China?

Association Guidelines
GSA Guidelines
AIA Guidelines
I2SL Guidelines
IFMA Guidelines

Member Companies
Member Companies
Member Companies
Schedule & Ballot Cycle

Proposal for NBIMS-US Schedule and Cycle
Version 2

- Practical
- A Guide and a Tool
- Accessible
- Overcome Obstacles
- Understood
- *The place to go*
NBIMS-US Content Model

A. Reference Standards
   A.1. ISO Standards
   A.2. Normative Standards
   A.3. Conformance Specifications
   A.4. Test Suite

B. Information Exchange Standards
   B.1. Information Exchanges
   B.2. Reference Processes
   B.3. Reference Specifications
   B.4. Reference Examples

C. Guidelines and Applications
   C.1. Contract Specifications
   C.2. Best Practice Guides
   C.3. Open Standards based Applications
V2 Contents

• FOREWORD
• ACKNOWLEDGEMENTS
• 1 SCOPE
• 2 REFERENCE STANDARDS
• 3 TERMS AND DEFINITIONS
• 4 INFORMATION EXCHANGE STANDARDS
• 5 PRACTICE DOCUMENTS
V2 Reference Standards

- ISO 16739, Industry Foundation Class 2X3 – February 2006
- OmniClass™ Table 13 – Spaces by Function – May 2011
- OmniClass™ Table 21 – Elements – February 2011
- OmniClass™ Table 22 – Work Results – April 2011
- OmniClass™ Table 23 – Products – June 2011
- OmniClass™ Table 32 – Services – June 2011
- OmniClass™ Table 36 – Information – June 2010
V2 - Terms & Information Exchanges

TERMS AND DEFINITIONS

• Introduction to Terms and Definitions

INFORMATION EXCHANGE STANDARDS

• Introduction to Information Exchange Standards

• Construction Operations Building Information Exchange – Version 2.26

• Design to Spatial Program Validation

• Design to Building Energy Analysis

• Design to Quantity Takeoff for Cost Estimating
Progress and Impact of NBIMS-US™ V2

While V2 only 2% complete it has had a significant impact on BIM practice

- Most vendors support IFC
- Several certified under 2.0
- COBie used internationally
- Execution plan widely used
- OmniClass growing in use

First 3,000 users are from 70+ countries
The Movie

Available on the front page of NBIMS-US™
Version 3
Open Standards For BIM

**NBIMS-US™ - Version 3**

- Version 3
- Project Committee
  - Chris Moor, AISC – Chair
  - Jeff Ouellette, Nemetschek Vectorworks - Vice Chair
  - Connor Christian, Kiewit Construction – Secretary
- Ballot proposals started June 3, 2013
- Close Mid – August 2013
Subcommittees & Workgroups – V3

- Technical
- Implementation
- Terminology
- Product Development
- Standard Practice
- Market Education

Six Working Groups
Organizational Structure

Subcommittees

Workgroups

Product Development

Technical Standard Practice Implementation Terminology

Marketing & Education

National BIM Standard

Content Development

Ideas & Concepts

Ballot Development

Ballot Submittals and Voting

Acceptance to NBIMS

Adoption
NBIMS-US: TOC Proposal

- Reference Standards
- Information/Data Exchange Standards
- Standard Practice & Process
- Best/Proven Practice Documents
- NBIMS Publications
- Education, Promotion, References, Usage
International Memorandums of Understanding
The Road to International Standards

International BIM Standard

National BIM Standard NBIMS-US
National BIM Standard NBIMS-CANADA
National BIM Standard NBIMS-ROK

Association Guidelines
GSA Guidelines
AIA Guidelines
I2SL Guidelines
IFMA Guidelines

Member Companies
Member Companies
Member Companies
Need New Strategy For International Sharing

Step 1 - Promote Awareness

- Association Ballot Proposals
- International Ballot Proposals
- International Candidate

NBIMS-US V2

- Association Ballot Proposals
- International Ballot Proposals
- International Candidate

NBIMS-US V3

- Association Ballot Proposals
- International Ballot Proposals
- International Candidate

NBIMS-US V4

- Association Ballot Proposals
- International Ballot Proposals
- International Candidate
Need New Strategy For International Sharing

Step 2 – Integrate

- NBIMS-US V2
- NBIMS-US V3
- NBIMS-US V4

- NBIMS-ROK V2
- NBIMS-ROK V3
- NBIMS-ROK V4

International Candidate
International Ballot Proposals
Roadmap - BIM Use Cases

**Design**
- Existing Conditions Modeling
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- Consistency Control

**Assemble**
- Space Management
- Building Maintenance Scheduling
- FM Documentation
- Record Modeling
- Maintenance & Repair Information

**Operate**
- Asset Management
- Security / Key Management
- Disaster Planning / EM Preparation
- Supply Chain Management
- Telephone Management

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Information Flow
The Future – beyond V3...
Long, Long Journey...
Stephen A. Jones, McGraw Hill Construction
Board of Direction
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