



**Asia-Pacific  
Economic Cooperation**

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**2013/SOM3/SCSC/WKSP2/007**

Session 3

## **National BIM Standard – United States**

Submitted by: McGraw-Hill Construction



**Joint APEC-ASEAN Workshop - How  
Building Information Modeling Standards  
Can Improve Building Performance  
Medan, Indonesia  
24-25 June 2013**



# National BIM Standard - United States™

*an initiative of the* **National Institute of Building Sciences**  
buildingSMARTalliance™

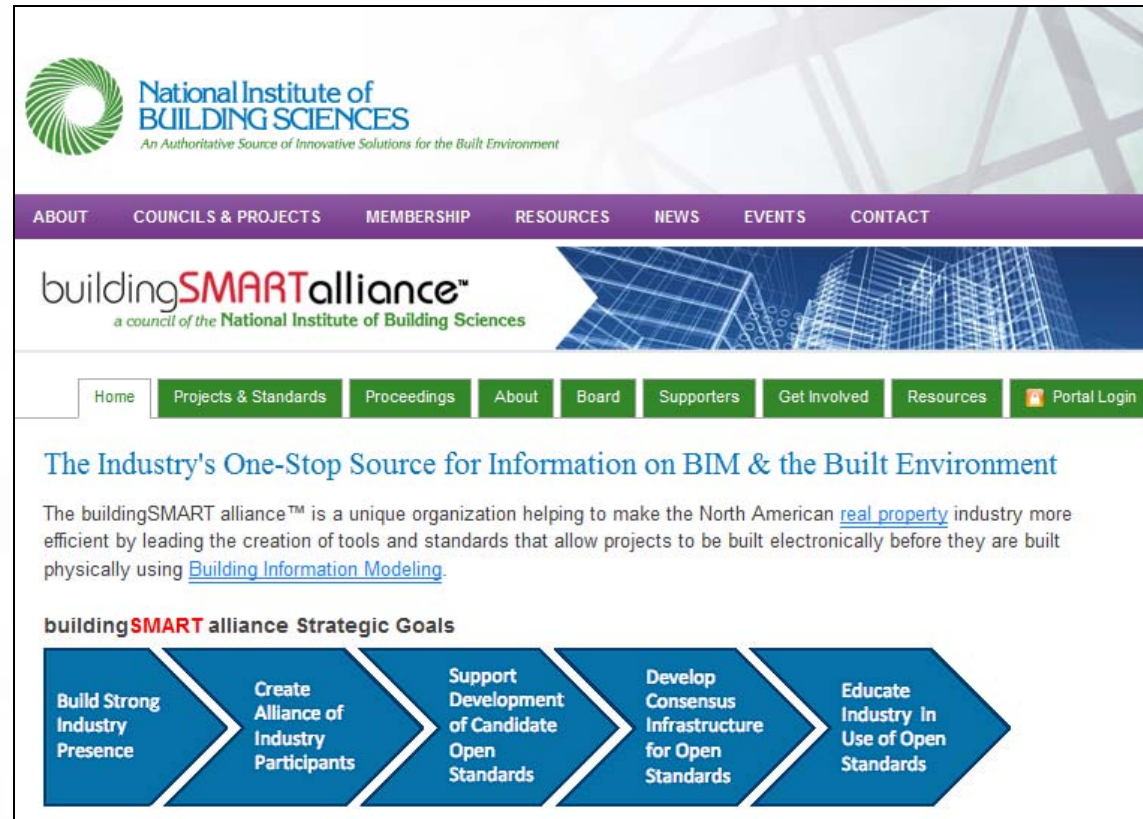
Stephen A. Jones, McGraw Hill Construction  
Board of Direction  
buildingSMART alliance



## Agenda

- **Structure**
  - Organizations
  - Project Committee
    - Subcommittees/workgroups
- **NBIMS-US Ballot Cycle**
- **Version 2**
- **Version 3**
- **Future**

# The buildingSMART alliance



The screenshot shows the homepage of the buildingSMART alliance website. At the top left is the logo for the National Institute of Building Sciences, described as "An Authoritative Source of Innovative Solutions for the Built Environment". A purple navigation bar contains links for ABOUT, COUNCILS & PROJECTS, MEMBERSHIP, RESOURCES, NEWS, EVENTS, and CONTACT. Below this is the buildingSMART alliance logo, with the tagline "a council of the National Institute of Building Sciences". A secondary navigation bar includes Home, Projects & Standards, Proceedings, About, Board, Supporters, Get Involved, Resources, and Portal Login. The main content area features the heading "The Industry's One-Stop Source for Information on BIM & the Built Environment" and a paragraph explaining the alliance's mission to make the North American real property industry more efficient through Building Information Modeling. At the bottom, a section titled "buildingSMART alliance Strategic Goals" is represented by a sequence of five blue chevron arrows pointing right, each containing a goal: "Build Strong Industry Presence", "Create Alliance of Industry Participants", "Support Development of Candidate Open Standards", "Develop Consensus Infrastructure for Open Standards", and "Educate Industry in Use of Open Standards".

**National Institute of BUILDING SCIENCES**  
*An Authoritative Source of Innovative Solutions for the Built Environment*

ABOUT COUNCILS & PROJECTS MEMBERSHIP RESOURCES NEWS EVENTS CONTACT

buildingSMARTalliance™  
a council of the National Institute of Building Sciences

Home Projects & Standards Proceedings About Board Supporters Get Involved Resources Portal Login

## 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



US Army Corps  
of Engineers



Autodesk



COBie Education  
Sponsor

## The Change Agents in the Facilities Industry


# Memorandums of Agreement



# Memorandums of Understanding



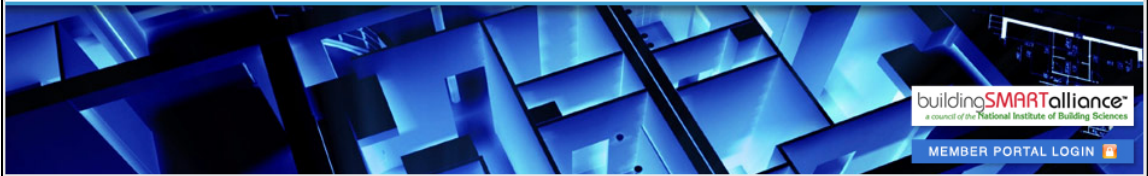
# The National BIM Standard - US



ABOUT | CONTACT | © COPYRIGHT

## National BIM Standard-United States™ Version 2

an initiative of the National Institute of Building Sciences buildingSMART alliance™



buildingSMART alliance™  
a council of the National Institute of Building Sciences

MEMBER PORTAL LOGIN

The National BIM Standard-United States™ (NBIMS-US™) provides consensus based standards through referencing existing standards, documenting information exchanges and delivering best [business practices for](#) the entire built environment. With open BIM standards we can build detailed models then deliver accurate products that can be used during commissioning and operation to ensure facility functionality throughout the life of the facility and to deliver high performance, carbon neutral, and net zero energy based facilities. [Read more](#)

SHARE | FOLLOW

View an INTRODUCTION TO THE NBIMS-US™ V2

### NEWS


[VIEW ALL](#)

**NBIMS-US™ V3 Ballot Submission Period Now Open**  
June 5, 2013

**Get Ready to Improve the National BIM Standard – United States**  
April 23, 2013

**New Agreement Ensures Plumbing Engineers Are Represented in NBIMS-US™**  
March 22, 2013

### SPONSORS



**ACCESS THE NBIMS-US™ V2**

buildingSMART alliance™ members, please log in below to access the standard with new interactive navigation features.

Not a member? Please click on the button "NON BSA MEMBER ACCESS" to access an Adobe [PDF version](#) of NBIMS-US™ V2.

#### bSa Member Login

Login Name

Password

Log In

[Forgot password?](#)

[NON-BSA MEMBER ACCESS](#)

**Get Involved with the NBIMS-US™**  
The key to success and longevity of a standard is long-term care and feeding...[read more](#)



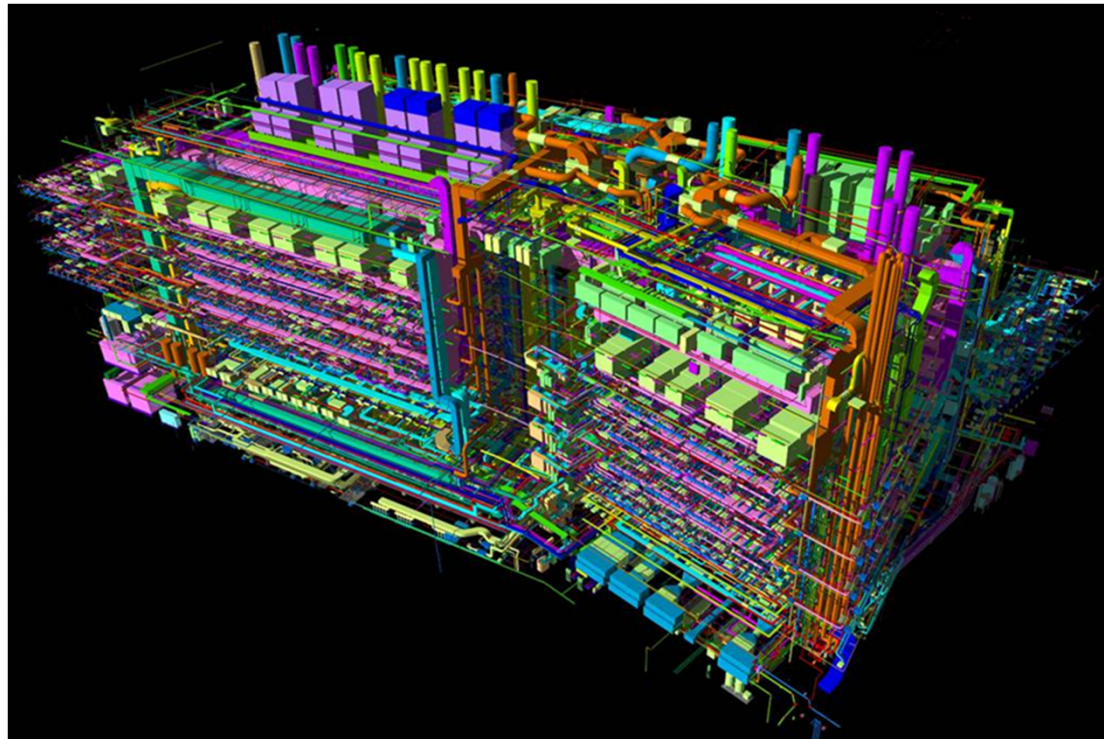
# Core Principles for NBIMS-US

- 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

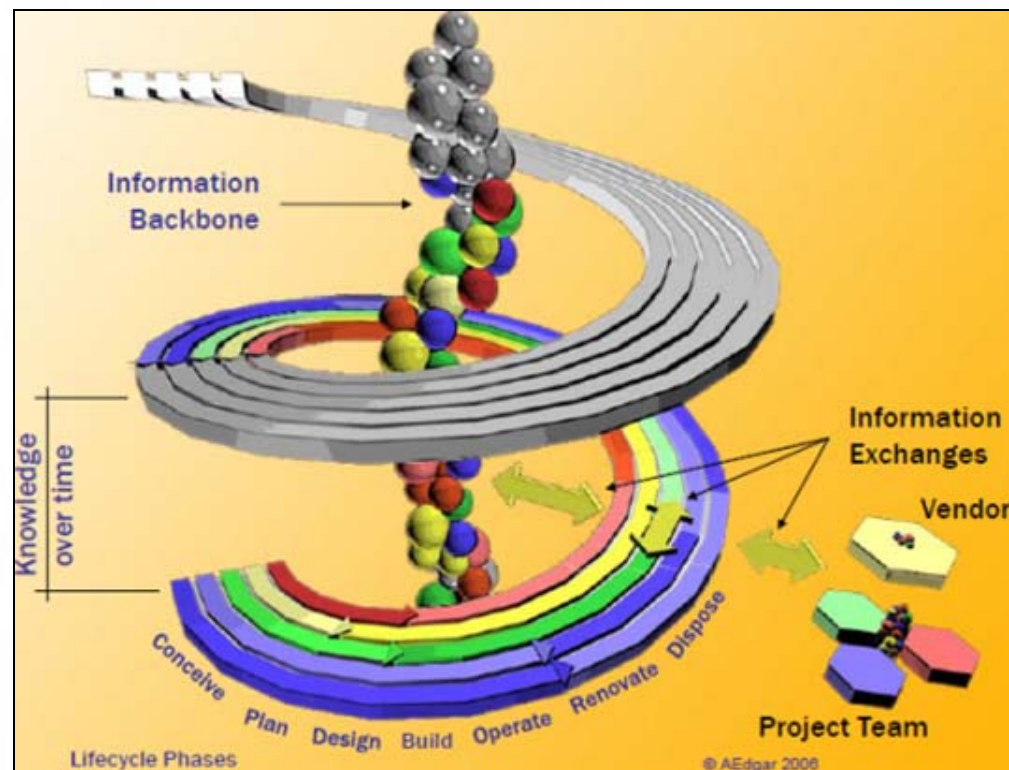
A **Building Information Model (BIM)** is a digital representation of physical and functional characteristics of a facility. As such it serves as a **shared knowledge resource** for information about a facility forming a **reliable basis for decisions** during its life-cycle from inception onward.



# 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

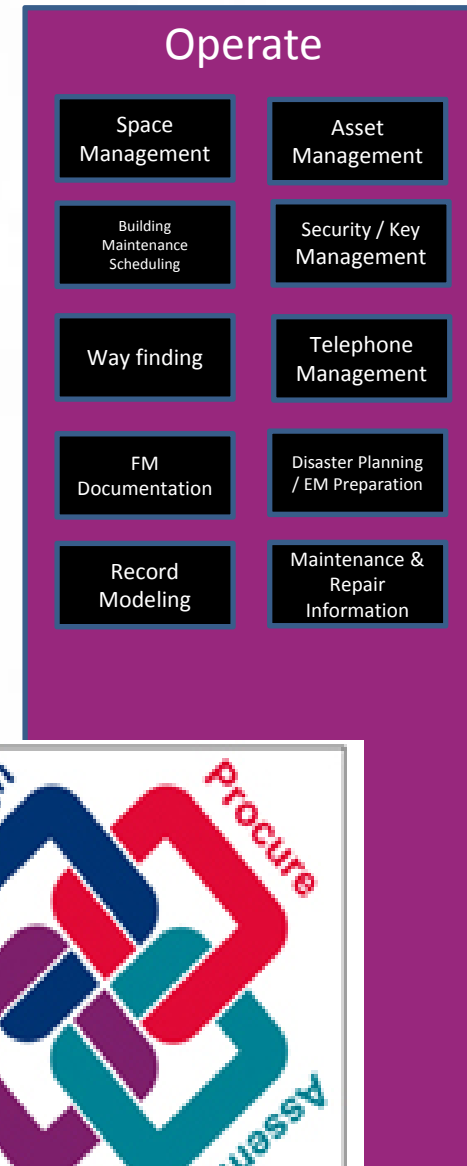
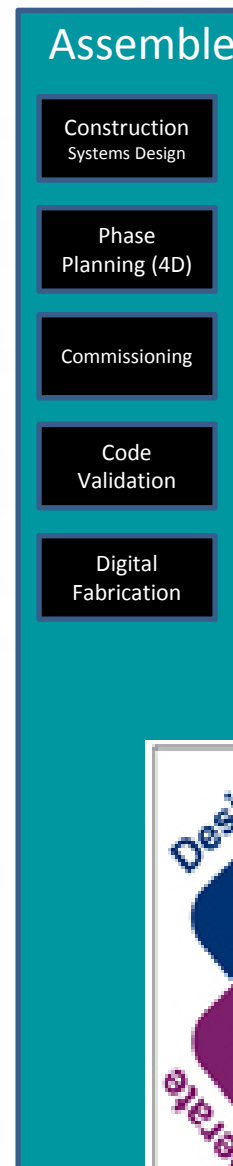
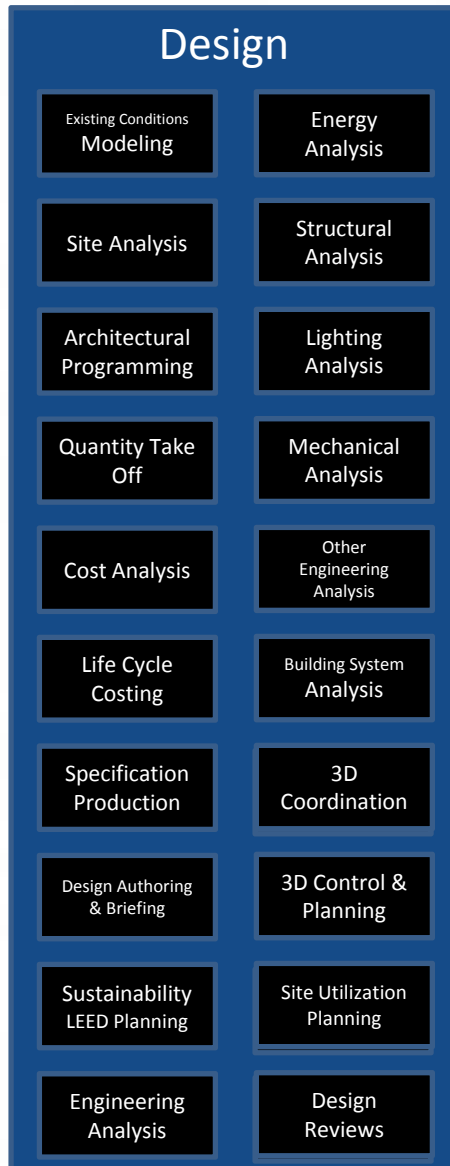
- Remains a work in progress
  - Started as buildings
  - Now includes infrastructure
- The standards are not just IFC
- Intend to provide tools to expand and maintain the standards in perpetuity
- There is enough to be in place now to be of value – many are using



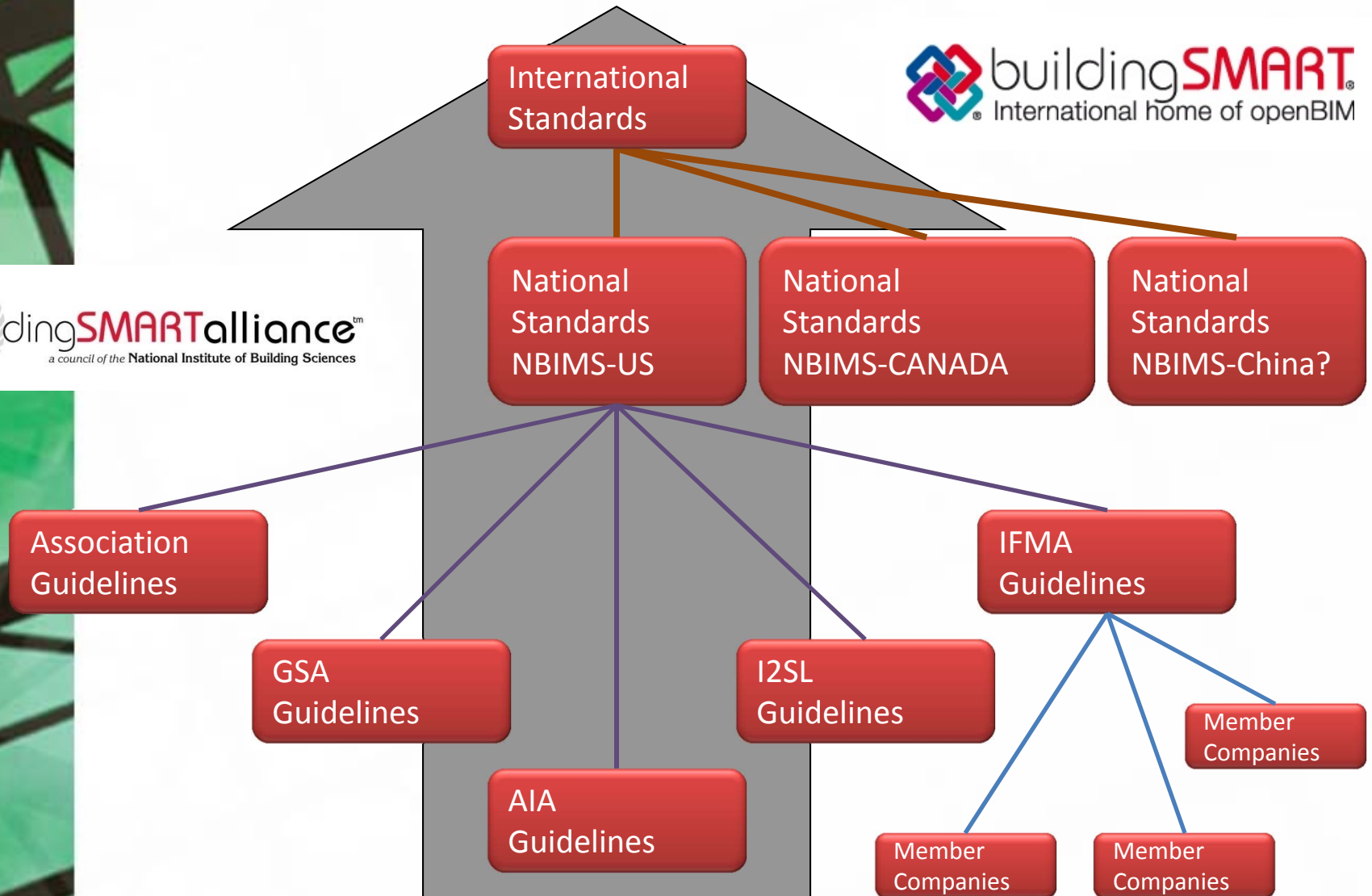
# BIM Use Cases

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

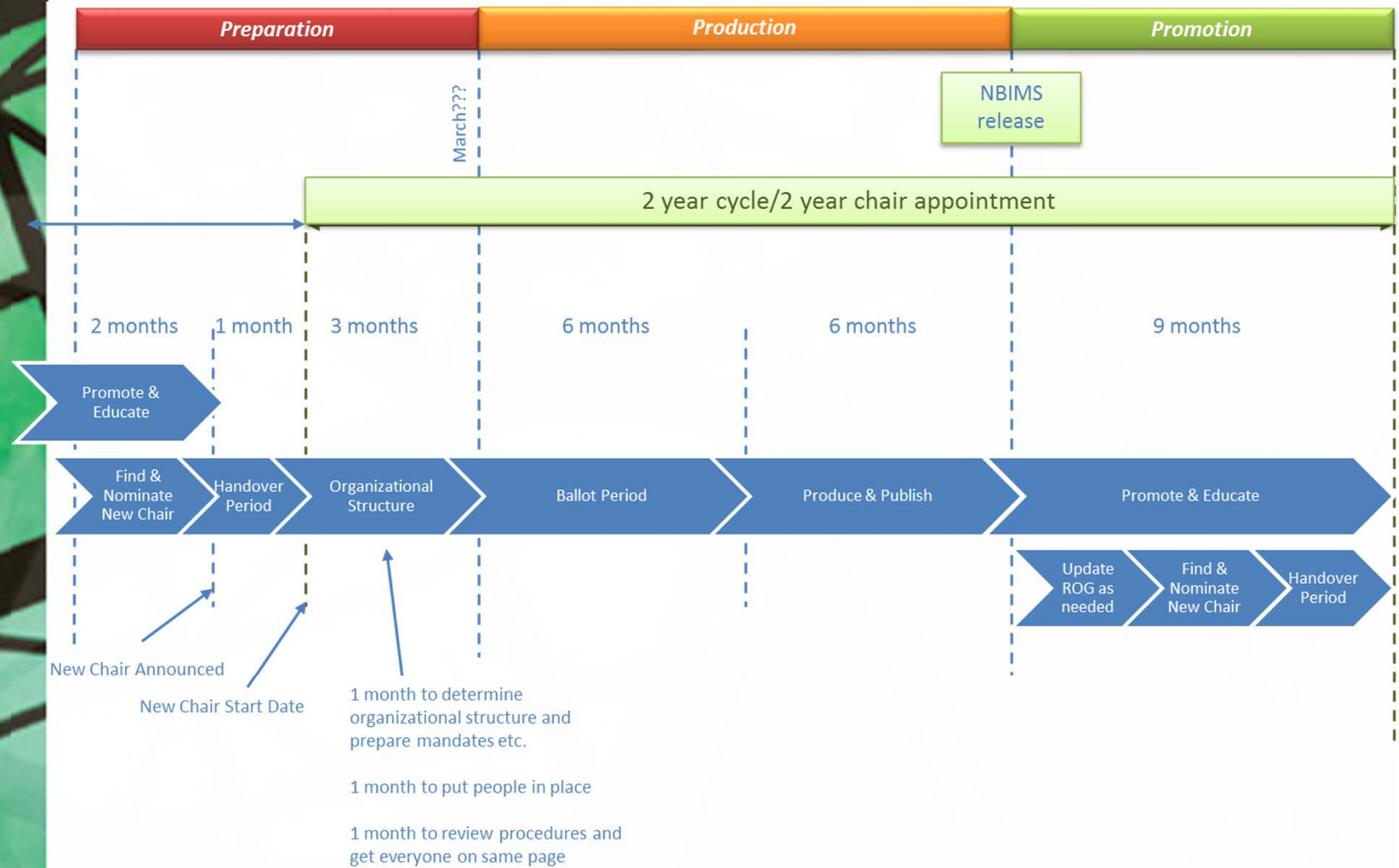
# “Process Room” Structure



# Where Does Content Come From?



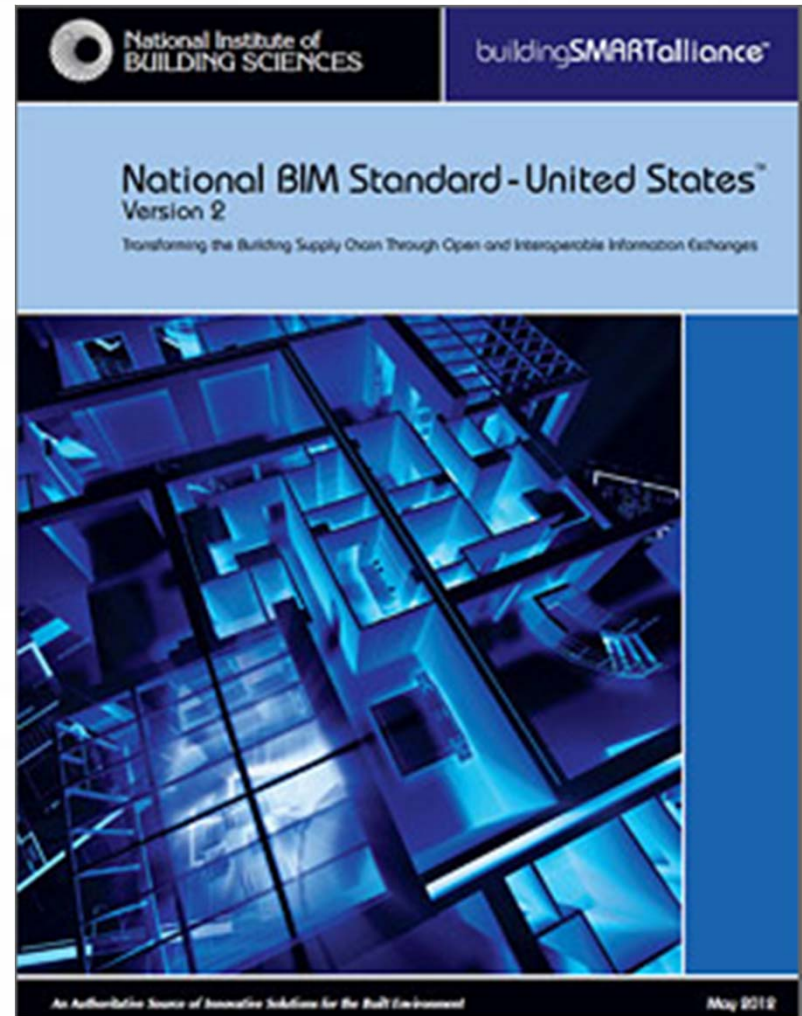
# Schedule & Ballot Cycle



**Proposal for NBIMS-US Schedule and Cycle**

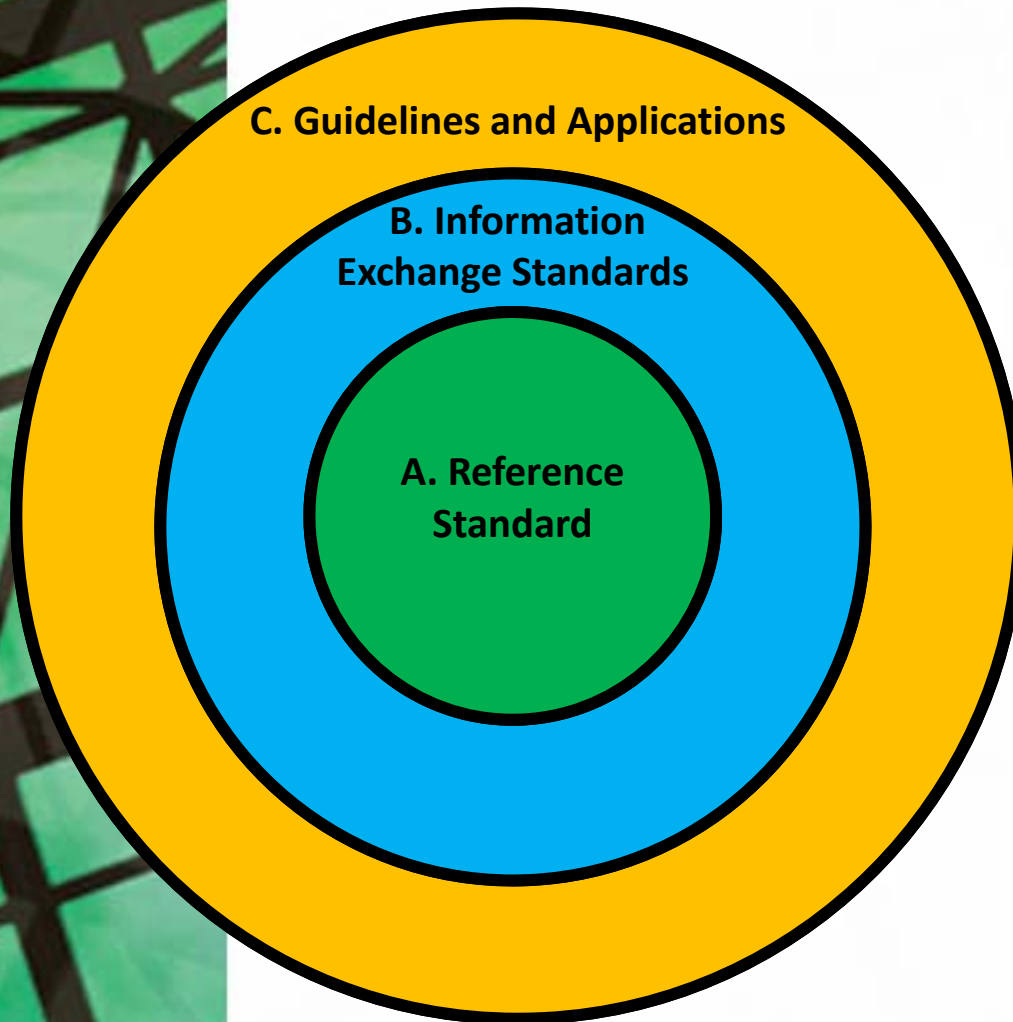
# Version 2

- 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**
- **6 ANNEX A - NBIMS-US Project Committee Rules of Governance – January 2011**
- **7 ANNEX B - National BIM Standard-United States™ Version 1 – Part 1 – December 2007**



## V2 Reference Standards

- **ISO 16739, Industry Foundation Class 2X3 – February 2006**
- **World Wide Web Consortium Extensible Markup Language Specification and Validation 1.0, Fifth Edition – November 2008**
- **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**
- **International Framework for Dictionaries Library/ buildingSMART Data Dictionary – December 07, Revised May 2012**



# 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



Available on the front page of NBIMS-US™



# National BIM Standard - United States™

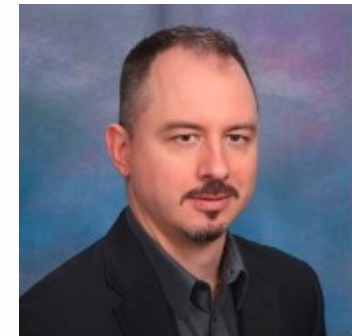
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## Version 3

# 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

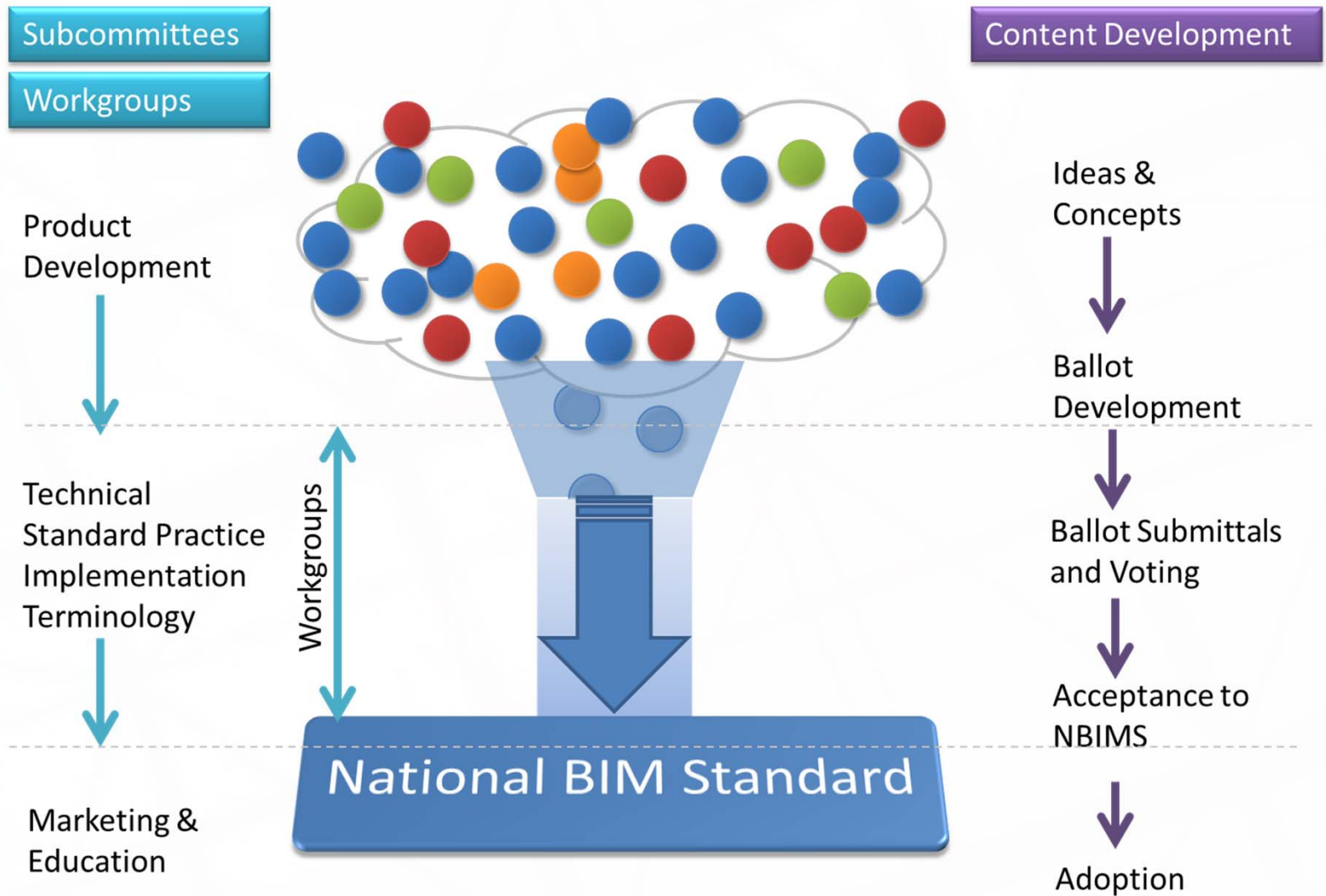
Product  
Development

Standard  
Practice

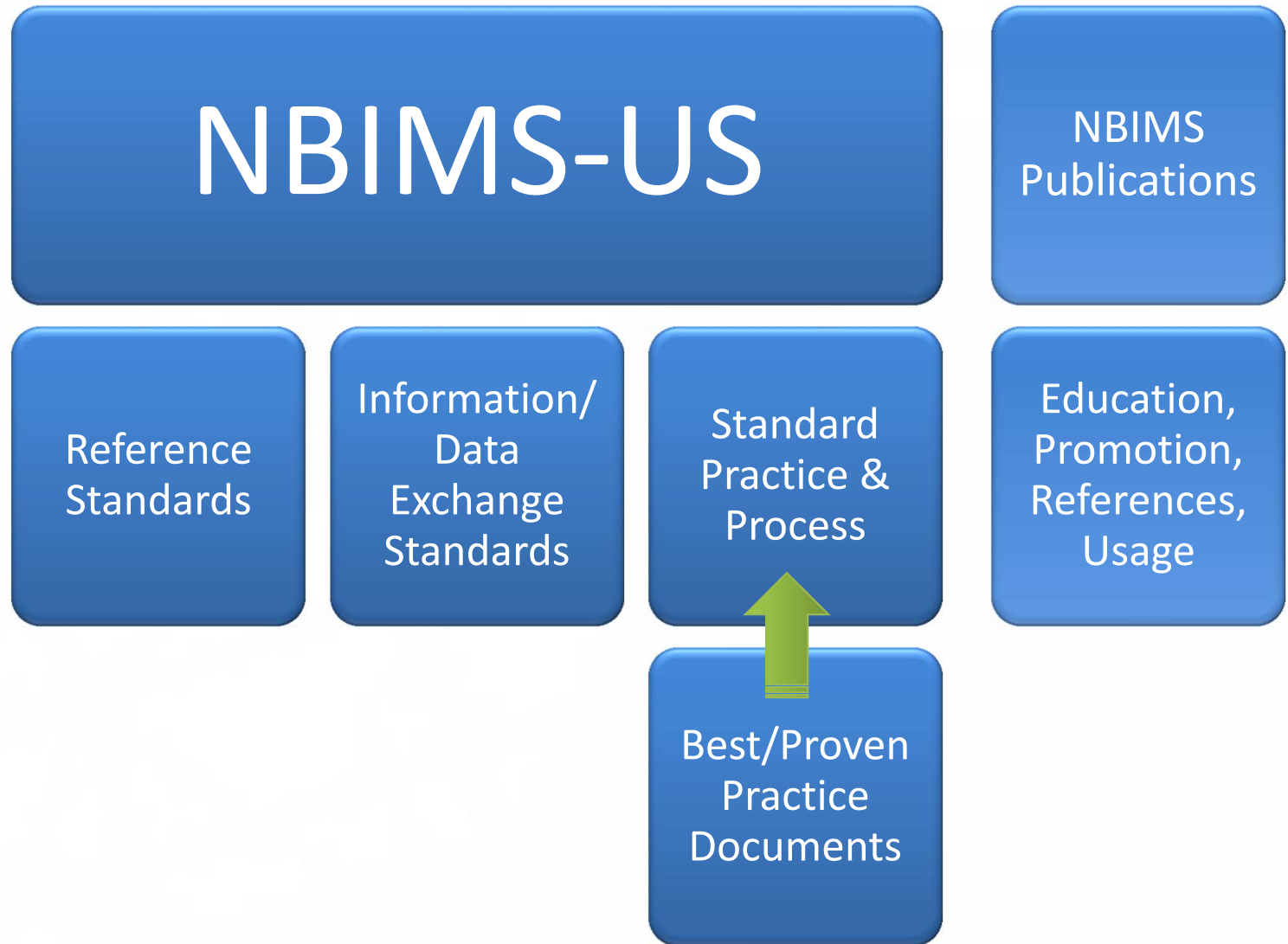
Market  
Education

Six Working Groups

# Organizational Structure



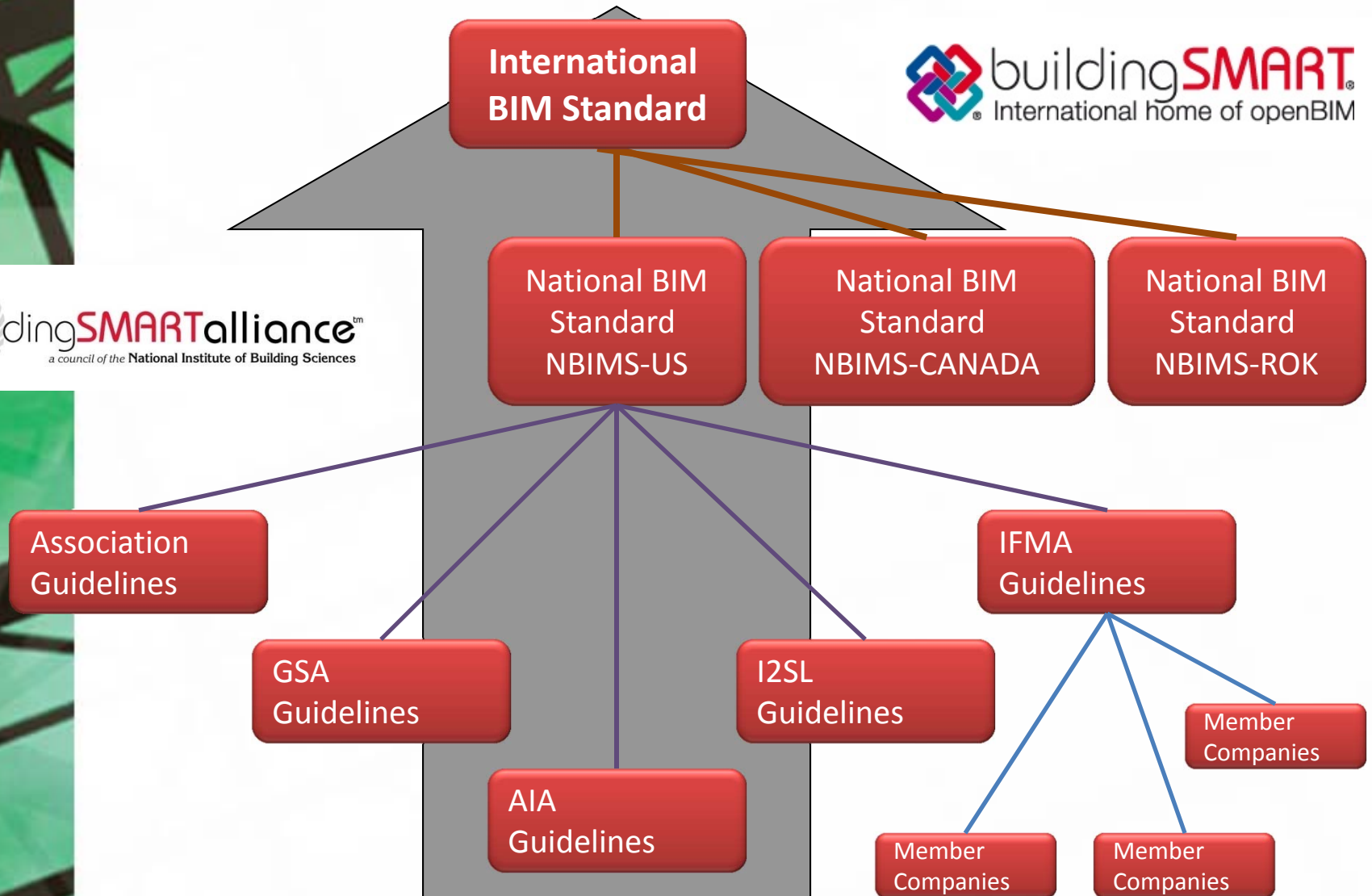
# NBIMS-US: TOC Proposal



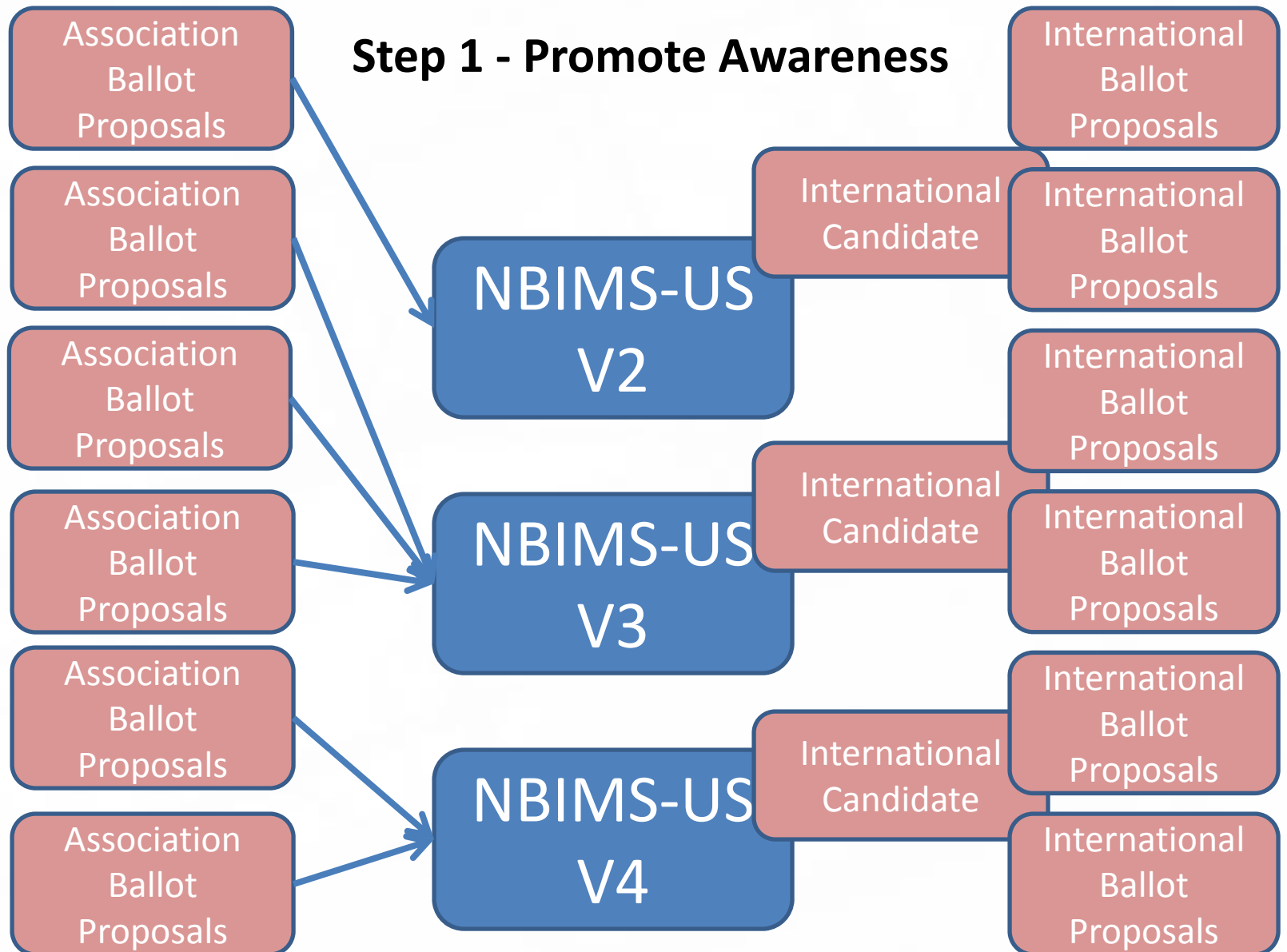
# International Memorandums of Understanding



# The Road to International Standards

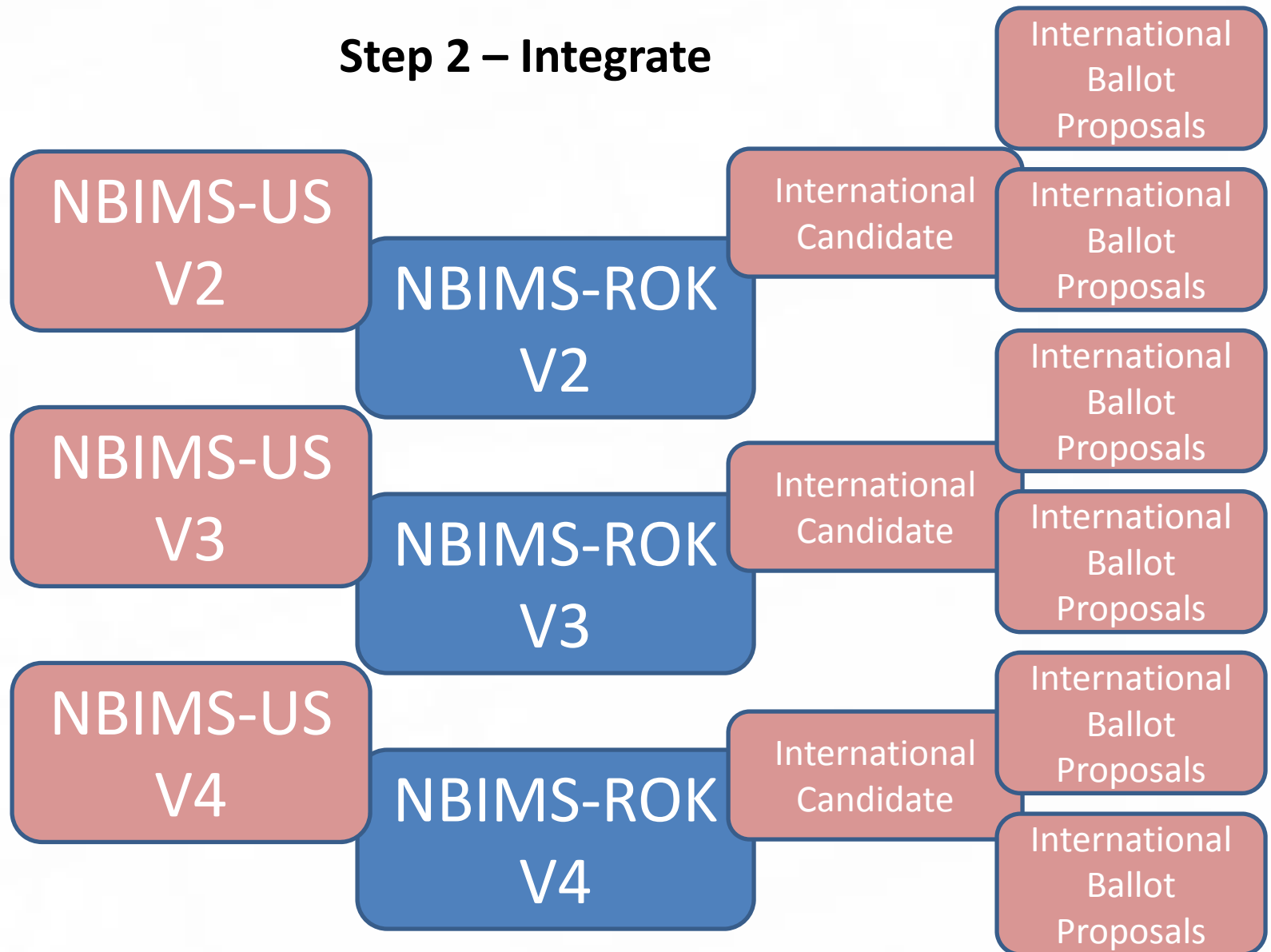


# Need New Strategy For International Sharing

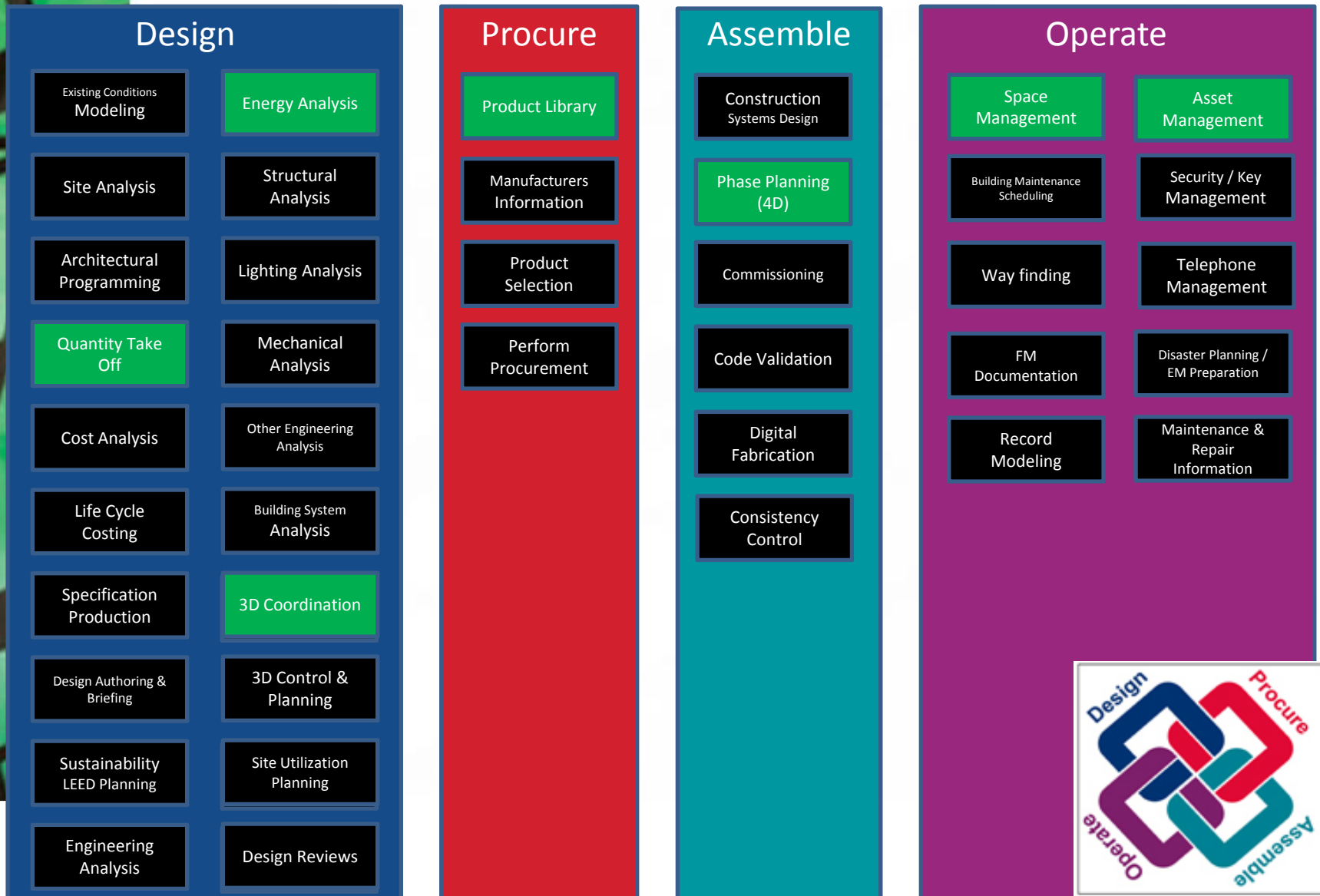


# Need New Strategy For International Sharing

## Step 2 – Integrate



# Roadmap - BIM Use Cases



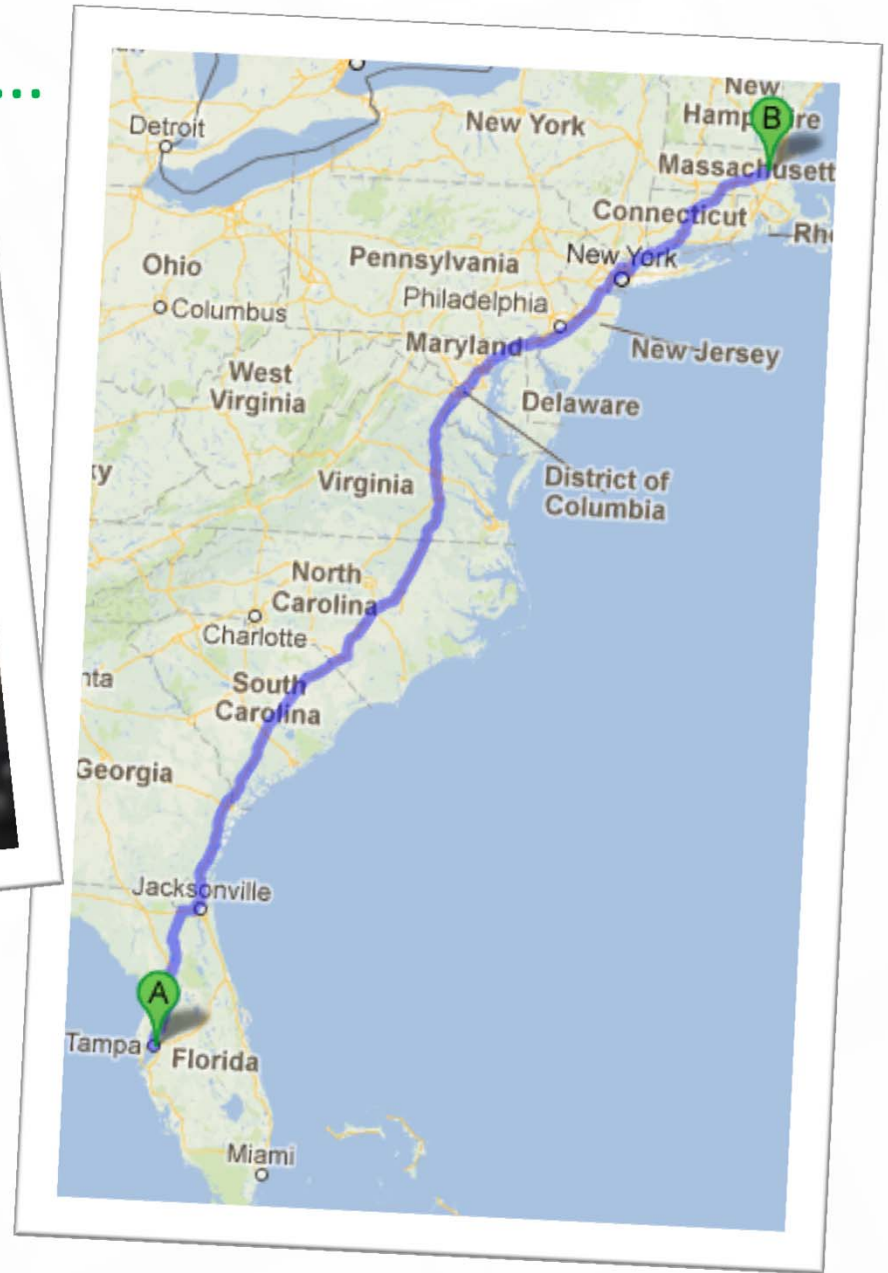
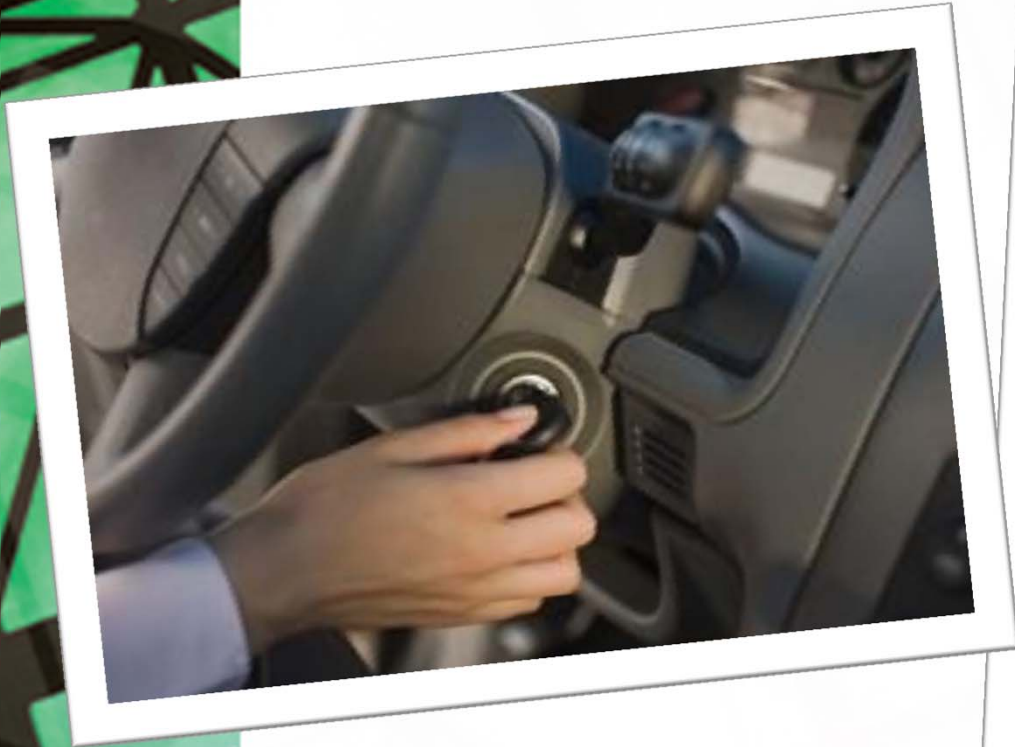
← Information Flow →



# The Future – beyond V3...



# Long, Long Journey...



# THANK YOU !



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