



# Introduction to National BIM Standard & NBIMS-US

Deke Smith

Executive Director

buildingSMART alliance



## Agenda

- National Institute of Building Sciences
- Sponsors
- Growth and Potential of BIM
- National BIM Standard Concept
- NBIMS Planned Growth
- Version 2
- Getting to Version 3
- International Approach
- International BIM Standard

# National Institute of Building Sciences (NIBS)



2011 ANNUAL REPORT  
TO THE PRESIDENT OF THE UNITED STATES

# WBDG WHOLE BUILDING DESIGN GUIDE

**JBIM** Journal of Building Information Modeling  
An official publication of the National Institute of Building Sciences  
buildingSMART alliance™

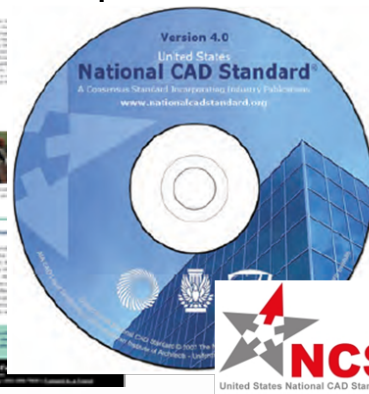
Spring 2012

**When To Become Improving Lowering**

**Building Science** MONTHLY E-NEWSLETTER

**THE INSTITUTE IN ACTION**  
Building Industry Urges Congress for Support Economic Stimulus

**SECURITY & DISASTER PREPAREDNESS**  
World Trade Center Recommendations Come



**buildingSMARTalliance™**  
a council of the National Institute of Building Sciences

ABOUT BSA | WHY JOIN? | GET INVOLVED | PROJECTS | STANDARDS | NEWS/EVENTS | INTERACT | CONTACT

**bSa Collaboration Portal**

**National BIM Standard - United States™ Version 2**  
Transforming the Building Supply Chain Through Open and Interoperable Information Exchanges

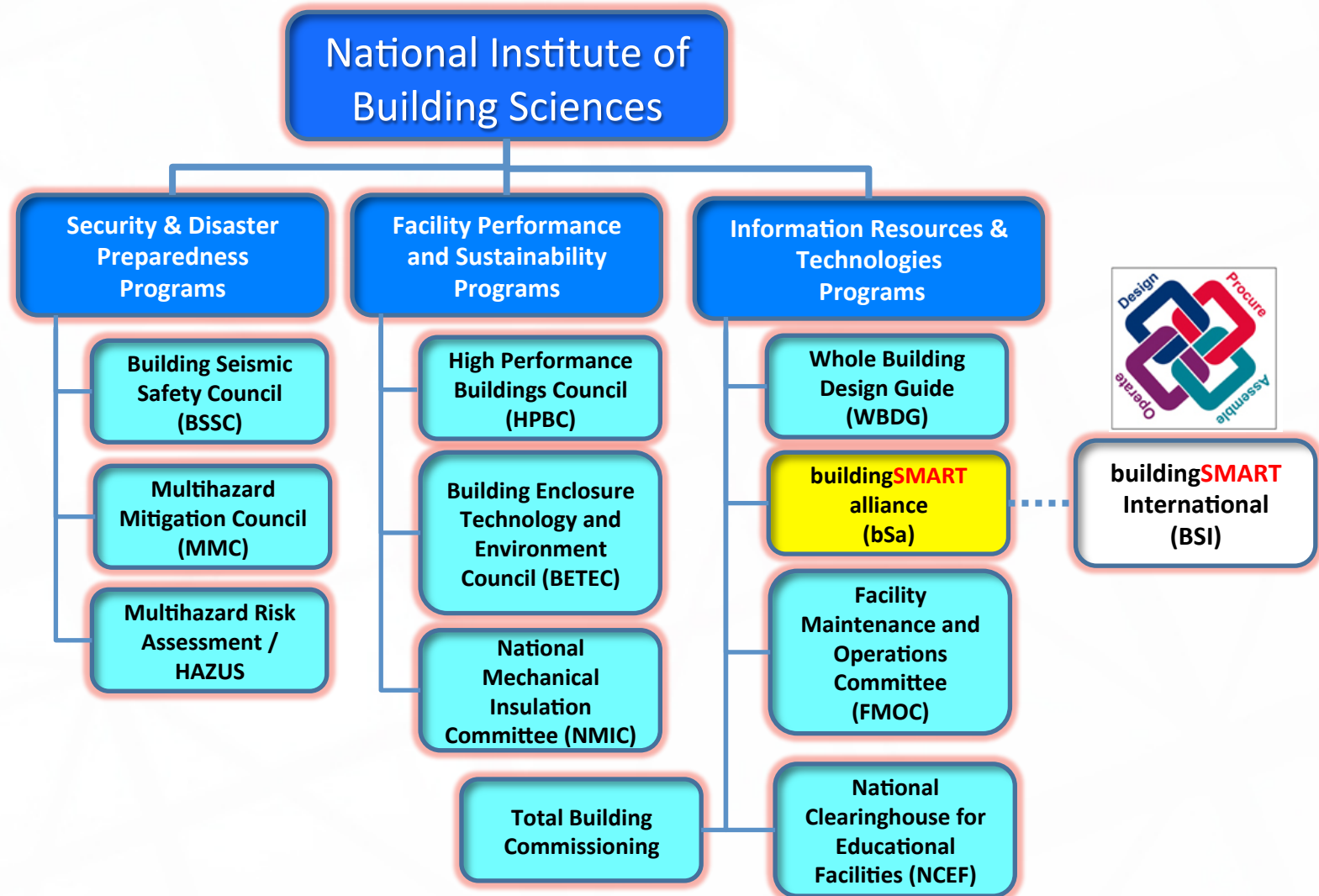
**National BIM Standard - United States™ Version 1 - Part 1 Overview**  
Transforming the Building Supply Chain

**National BIM Standard - United States™**  
an initiative of the National Institute of Building Sciences buildingSMARTalliance™

**FINAL REPORT | DECEMBER 2009**



# Institute Organization and Programs



# Alliance Sponsors

Government



A/E



\$50k

Associations



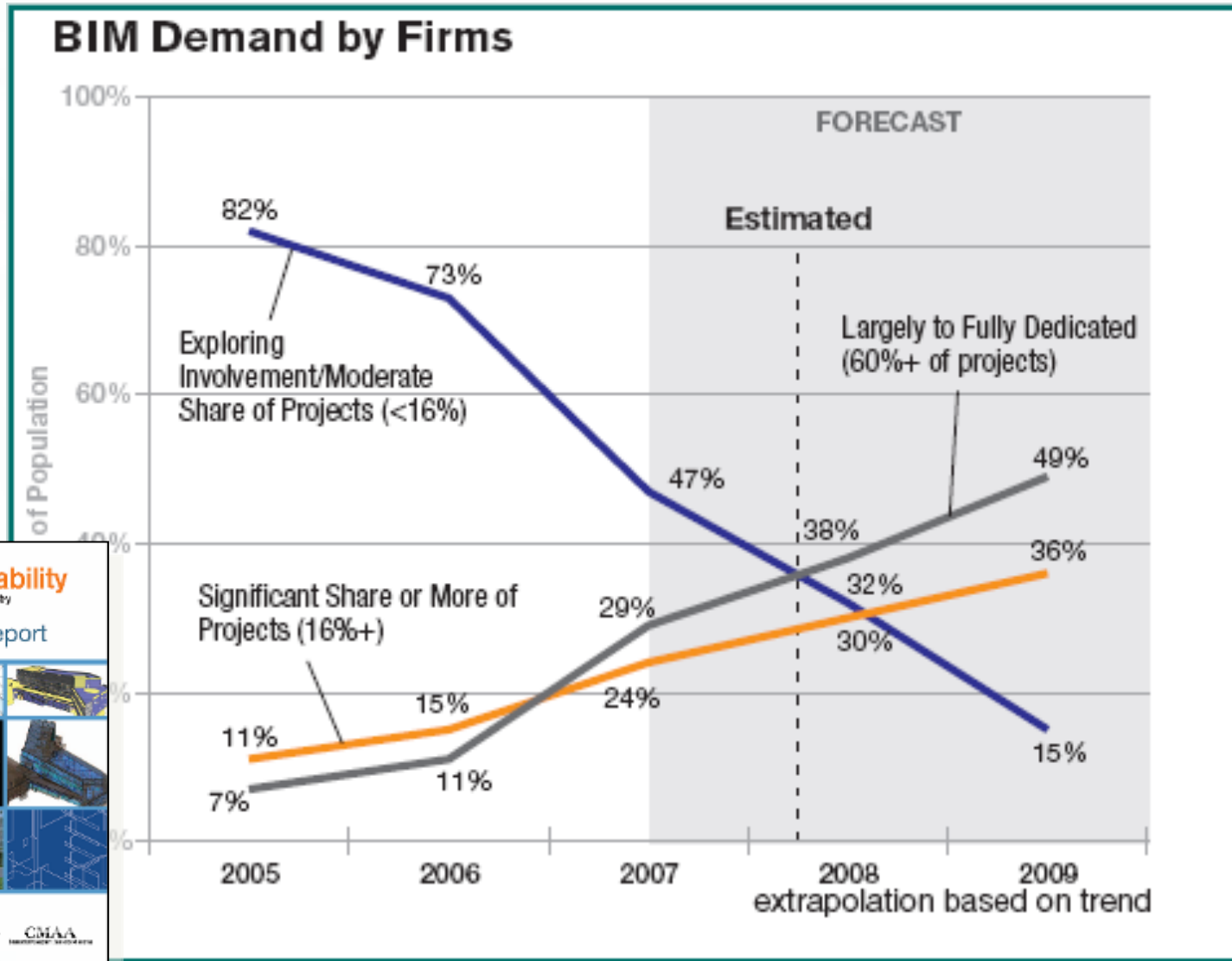
Companies



Software Vendors



# 2007 Tipping Point Prediction



McGraw Hill CONSTRUCTION Interoperability In the Construction Industry SmartMarket Report Large & Complex Construction

2007 Interoperability Issues

Sponsored by:

AIA

buildingSMART

COMA

CMAA

ES&S

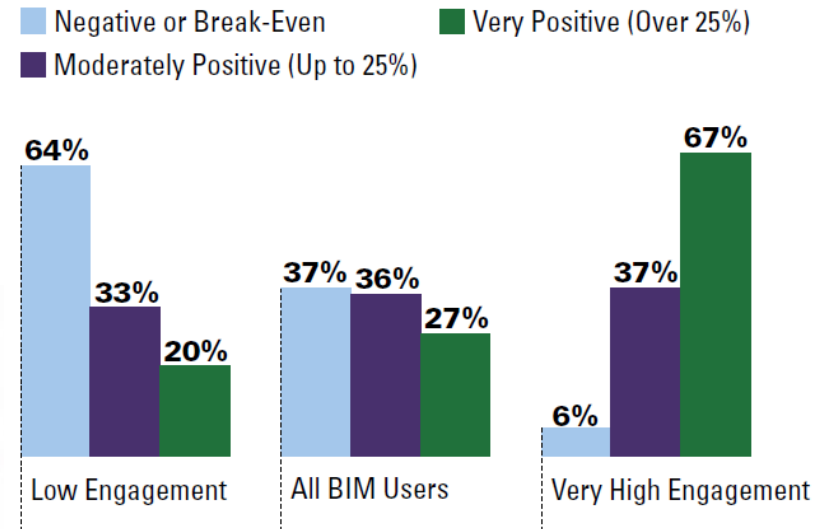
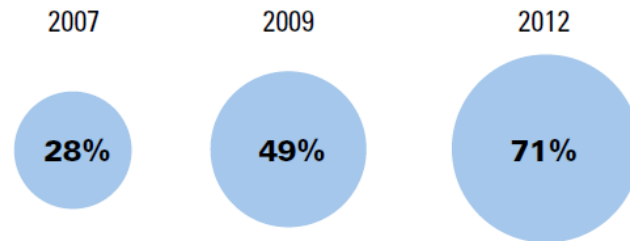
covering people, projects, products

# Smart Market Report 2012

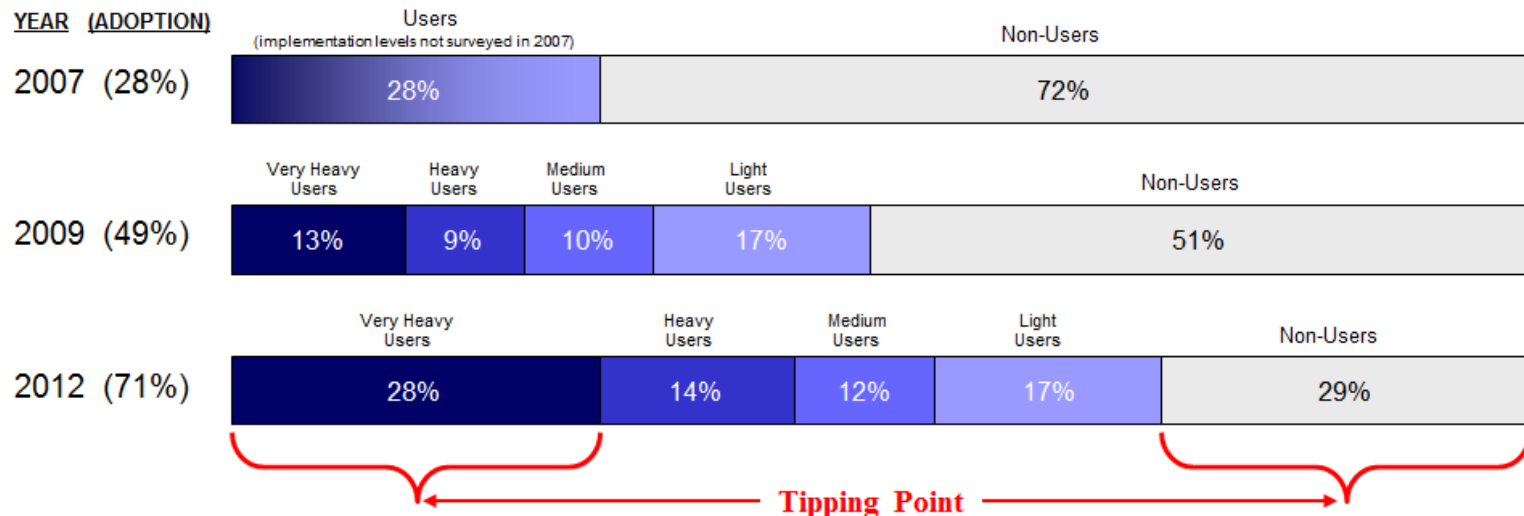
## Levels of BIM Adoption in North America BIM ROI for Users by Level of Engagement

Source: McGraw-Hill Construction, 2012

Source: McGraw-Hill Construction, 2012



## Progress in 5 Years

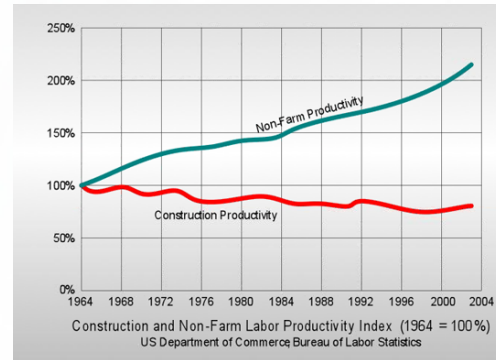


# Shifting Perceptions on the Cost of High Performance

We need HPB



Productivity is down



Earth's Limitations



## High Performance Buildings

- Operationally Cost effective
- Sustainable / Green / Energy Efficient
- Resilient / DR-COOP
- Supports Productivity / Mission
- Functional / Operational
- Preserve historical value
- Safe to work in
- Secure from threats
- Accessible
- Aesthetically pleasing



## Improved Facility Delivery

- Reduce product waste
- Prefabrication
- Improve supply chain



- Coordinate decision making
- Integrate scheduling
- Optimize design
- Design to sustain



## Results

- Achieve net zero energy
- Reduce water consumption
- Protect environment
- Reduced carbon footprint
- Meet LEED goals
- Meet Energy Star Goals
- Asset optimization

**Initial Investment Cost**

**Lifetime Cost Reductions**

**Zero or Net Positive Goals**





# National BIM Standard - United States™

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

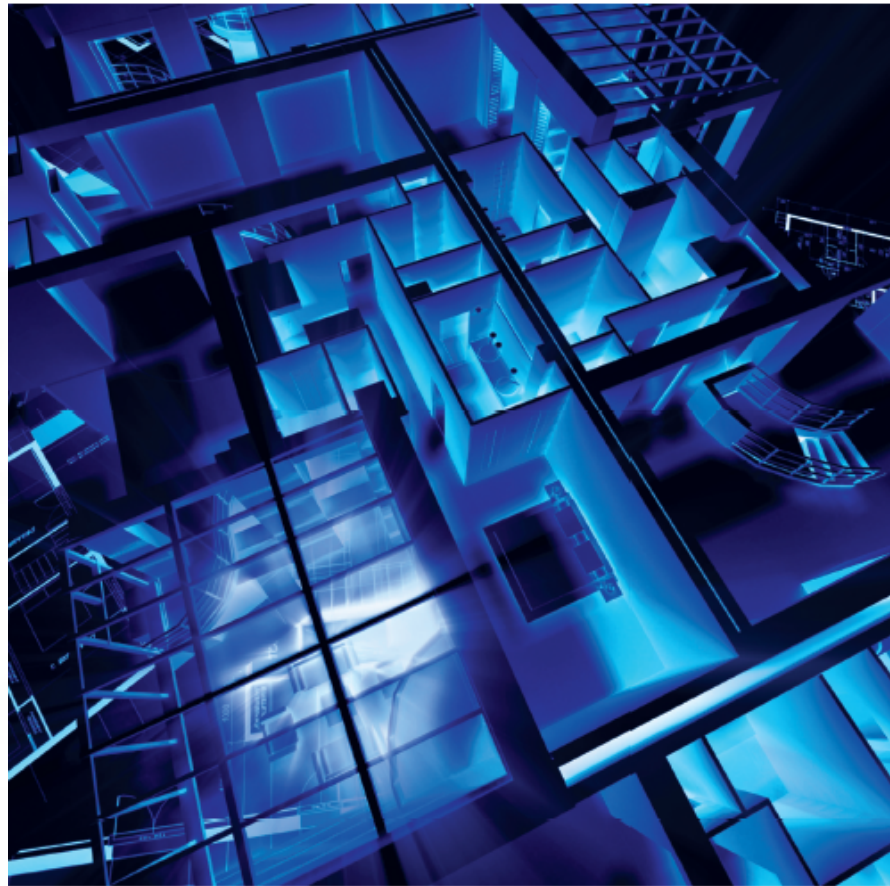


National Institute of  
BUILDING SCIENCES

buildingSMARTalliance™

# National BIM Standard - United States™ Version 2

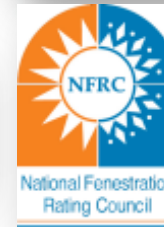
Transforming the Building Supply Chain Through Open and Interoperable Information Exchanges



*An Authoritative Source of Innovative Solutions for the Built Environment*

May 2012

# Memorandums of Agreement



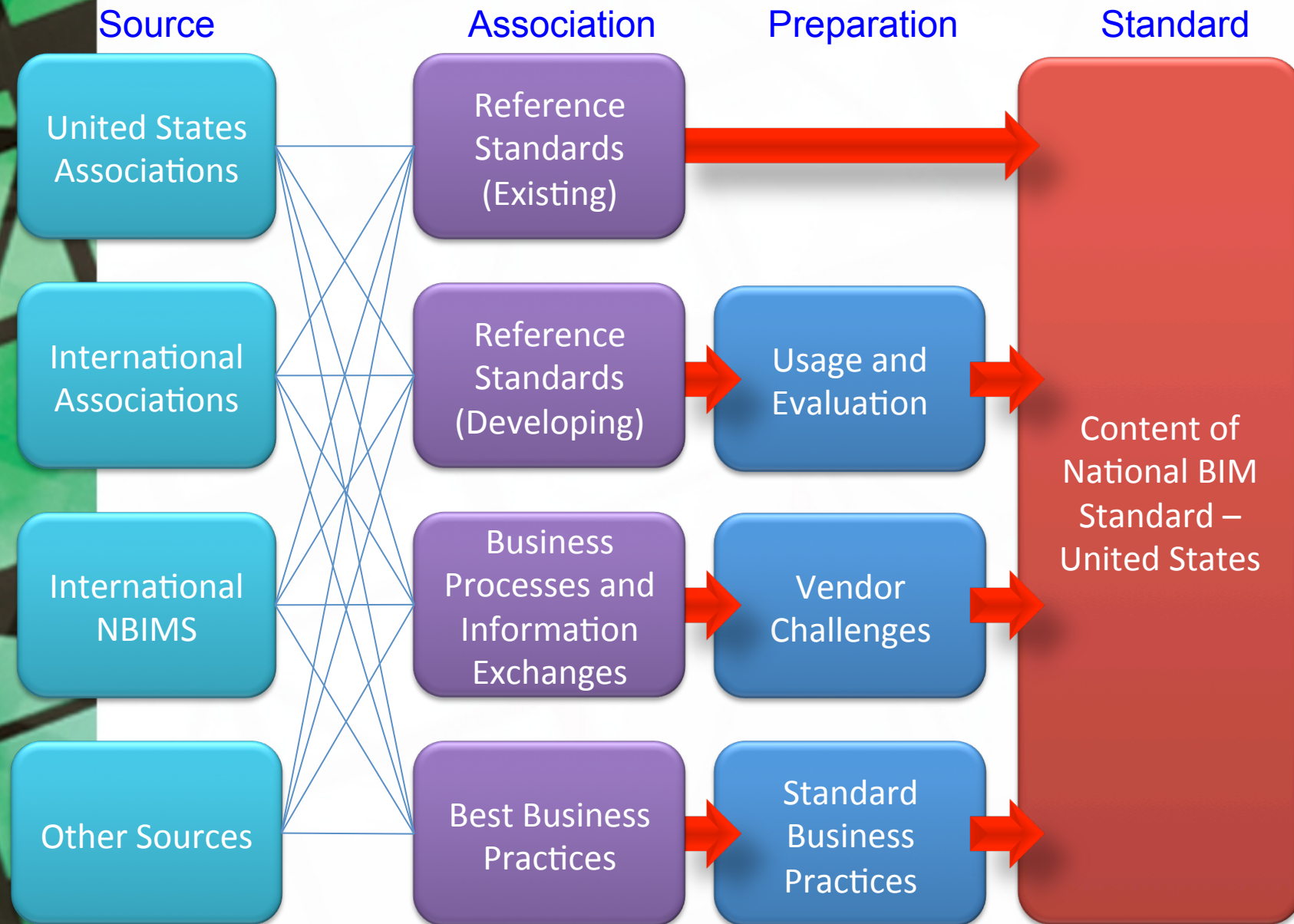
FIATECH

# Memorandums of Understanding

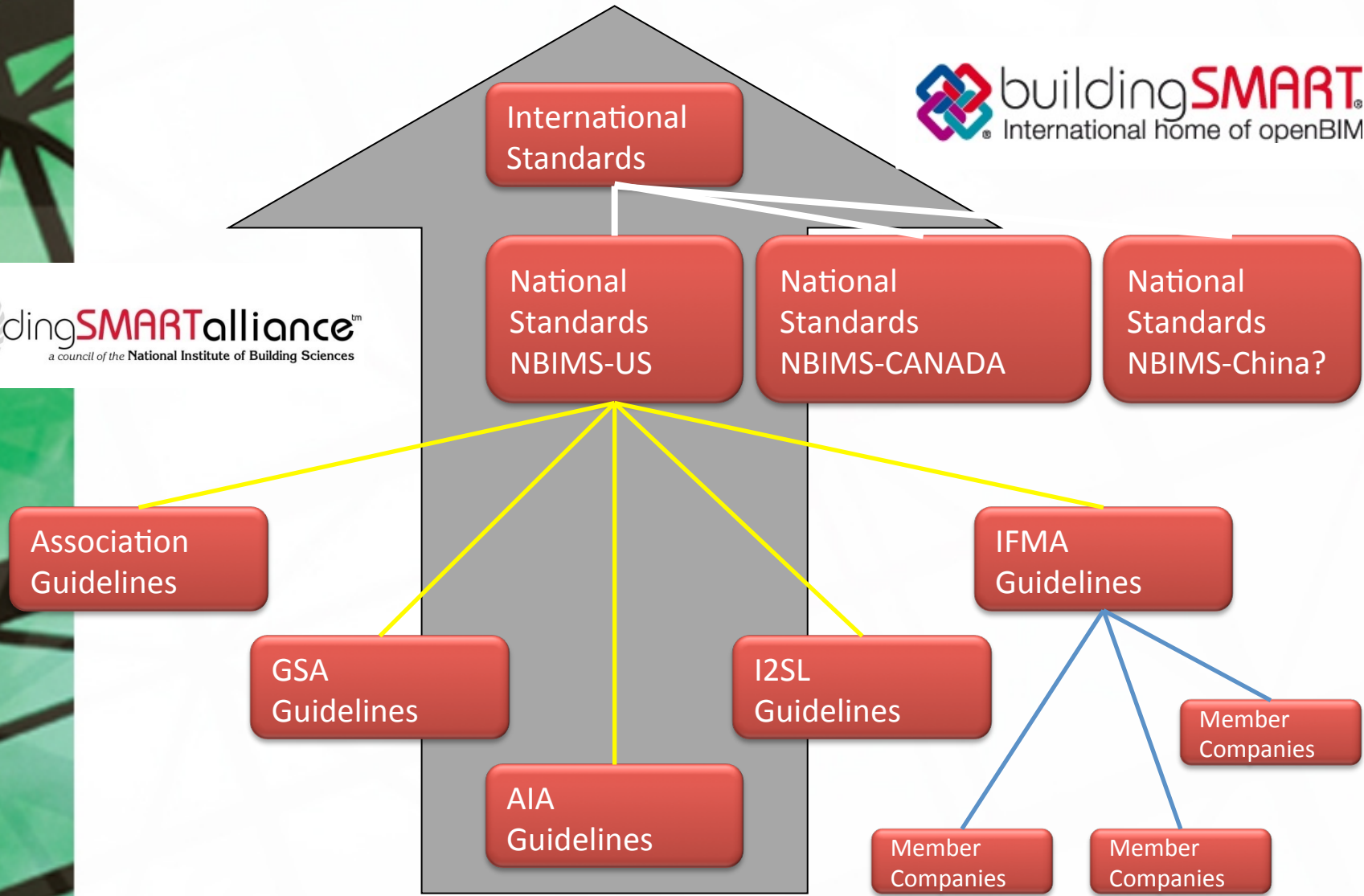


Added  buildingSMART  <sup>TM</sup>  
a council of the Institute for BIM in Canada

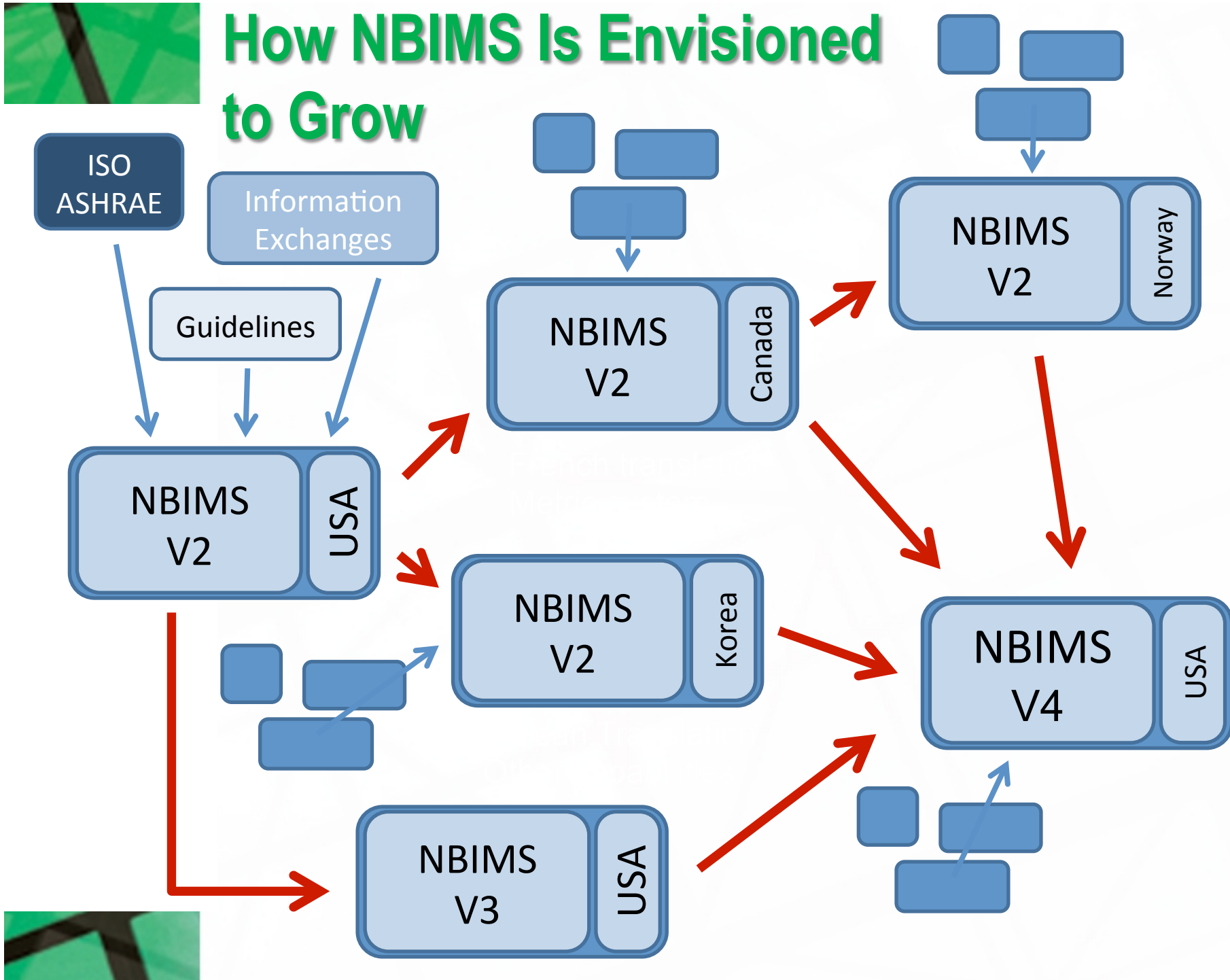
# Creating Content for NBIMS-US

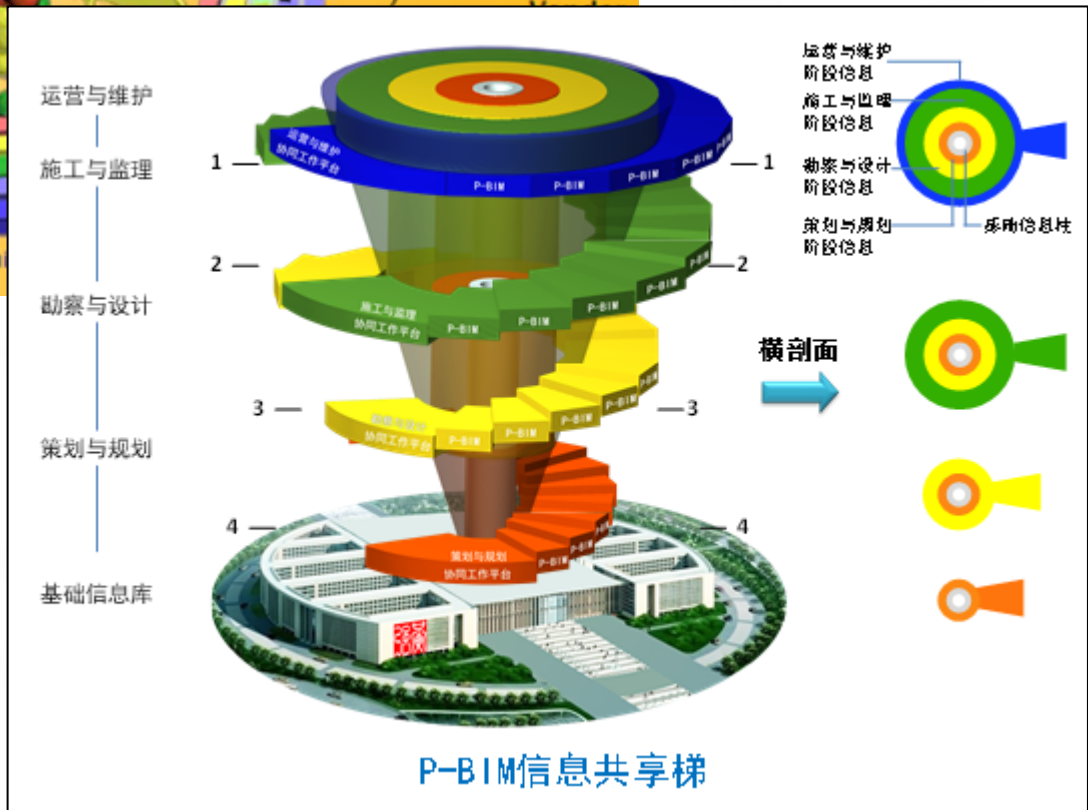
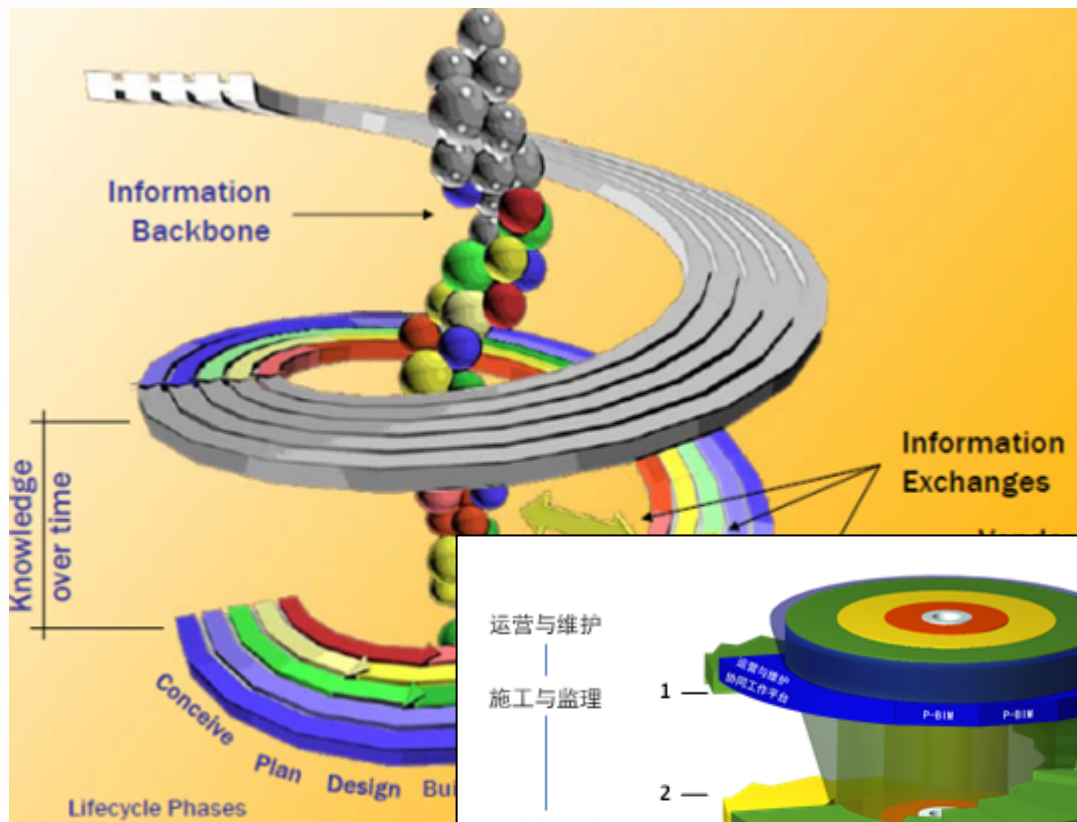


# Where Does Content Come From?



# How NBIMS Is Envisioned to Grow





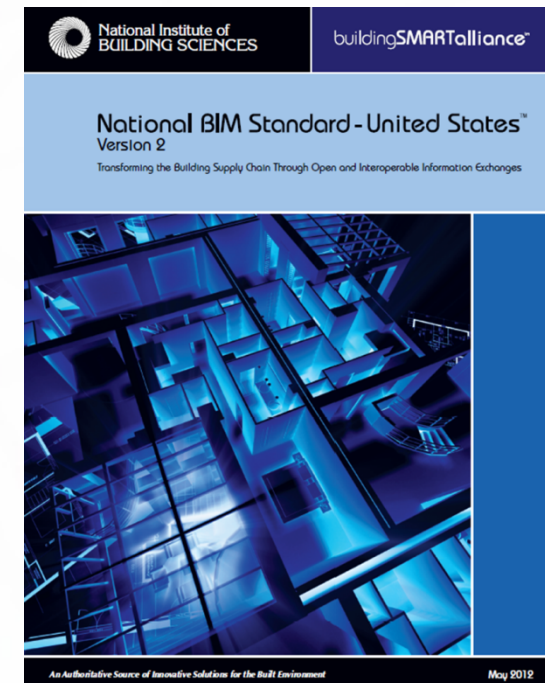


P-BIM协同工作台  
P-BIM INTEROPERABILITY PLATFORM

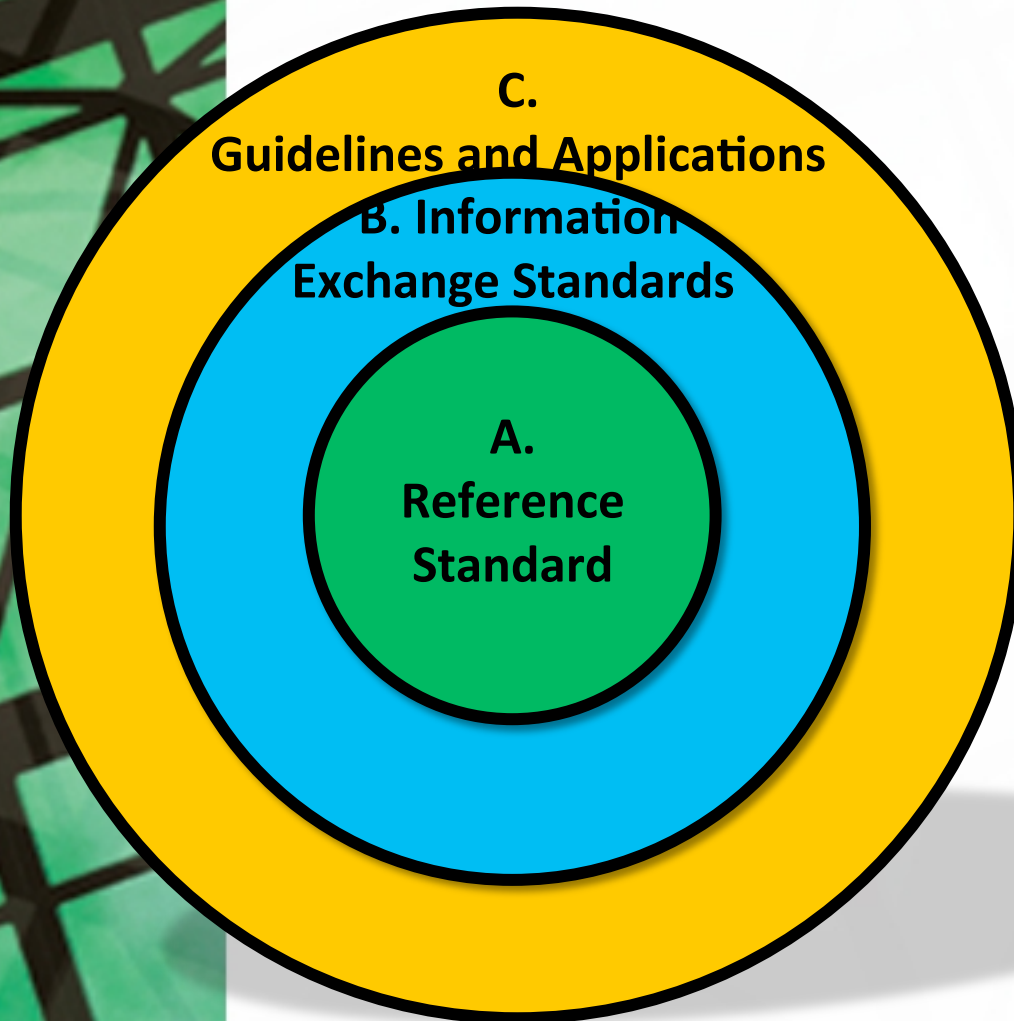


## Process To Improve Communication

1. Blue Sky Submission – open Call
2. Projects – open call
3. Ballots - versioned
4. Industry Wide Comment
5. Comment Resolution
6. Vote
7. Publish & Disseminate Standard
8. Education
9. Certification / Accreditation



# 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



## Included in Version 2

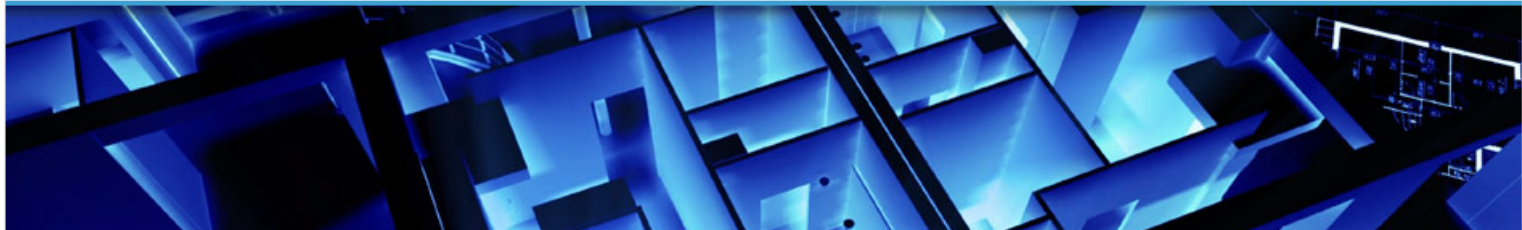
- Guidelines and Applications
  - Minimum BIM
  - BIM Project Execution Guide / Content
  - MEP Coordination
  - Planning, Executing and Managing Information Handover
- Information Exchange Standards
  - COBie
  - Design to Spatial Programming
  - Design to Energy Analysis
  - Design to Quantity Take-off
- Reference Standards
  - Industry Foundation Class (IFC 2x3 / ISO PAS 16739)
  - OmniClass Tables (13, 21, 22, 23, 32, 36)
  - IFD Library Update



# National BIM Standard-United States™ V2

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

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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](#)

[BOOKMARK AND SHARE SITE](#)

## NEWS

[VIEW ALL](#)

[Institute to Release NBIMS-US™ V2 During AIA Conference](#)  
May 4, 2012

## ADOPTERS



## ACCESS THE NBIMS-US™ V2

### bSa Member Login

Login Name

Password

[NON-BSA MEMBER ACCESS](#)

[Join the buildingSMART alliance™](#)

The key to success and longevity of a standard is long-term care and feeding...[read more](#)

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Opening screen – bSa member login (same as portal) or non-member access downloadable PDF



[Home](#) / [National BIM Standard – United States™ Version 2](#)

## National BIM Standard – United States™ Version 2

The following chapters are available as Adobe Acrobat PDFs

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- [1.1 Software developers and vendors](#)
- [1.2 Practice documents for Implementers](#)

#### 2 REFERENCE STANDARDS

- [2.1 Introduction to Reference Standards](#)
- [2.2 ISO 16739, Industry Foundation Class 2X3 – February 2006](#)
- [2.3 World Wide Web Consortium Extensible Markup Language Specification and Validation 1.0, Fifth Edition – November 2008](#)
- [2.4 OmniClass Table 13 – Spaces by Function – May 2011](#)
- [2.5 OmniClass Table 21 – Elements – February 2011](#)
- [2.6 OmniClass Table 22 – Work Results – April 2011](#)

Downloadable PDF version – clicking on topic opens the section.....



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NBIMS-US V2 | WAYFINDING | CUSTOM NBIMS-US

FOREWORD | ACKNOWLEDGMENTS | 1 SCOPE | 2 REFERENCE STANDARDS | 3 TERMS AND DEFINITIONS | 4 INFORMATION EXCHANGE STANDARDS | 5 PRACTICE DOCUMENTS | 6 ANNEX A | 7 ANNEX B

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- 2.5 OmniClass Table 21 – Elements – February 2011
- 2.6 OmniClass Table 22 – Work Results – April 2011
- 2.7 OmniClass Table 23 – Products – June 2011
- 2.8 OmniClass Table 32 – Services – June 2011
- 2.9 OmniClass Table 36 – Information – June 2010

bSa Member web based version provides additional tools on top bar



FOREWORD

ACKNOWLEDGMENTS

1 SCOPE

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## Wayfinding

RS		IES		PD	
A	B	M	O	I	S
D		P		A	
Search					

### Key

- RS** Reference Standards
- IES** Information Exchange Standard
- PD** Practice Document
- A** Architecture/Engineering
- B** Builder
- M** Manufacturer
- O** Owner/Operator
- I** Independent Consultant
- S** Software Developer
- D** Design
- P** Procure
- A** Assemble
- O** Operate

Throughout this document you will find a symbol indicating where you are in the NBIMS-US™ V2 and for what the section you are looking at is intended. On chapter pages, the top line provides the chapter number, title and the applicable ballot number, if any. Below this line is the type of document it represents: Practice Document, Information Exchange Standard or Reference Standard (as shown above). Each section is applicable to certain groups. These groups are identified on the third line as A/E's, Builders, Manufacturer, Owner/Operator, Independent Consultant, or Software Developer. This allows you to quickly determine the applicability of the chapter to your role in the facilities industry. The teratology of BIM, or the four interlocking squares of the buildingSMART International logo was used for the organization of the work groups for NBIMS-US™. Hence we code the applicable domain from which the ballot was submitted. Design, Procure, Assemble and Operate on the bottom line.

The tool above can be used to locate particular chapters that are applicable to your interest areas. Click on the blocks representing the type of document you would like, the group interest and the BIM teratology area then click the 'Search' button.

The wayfinding tool allows you to identify the sections you would like based on your role or the phase in the lifecycle you are interested in.



- FOREWORD
- ACKNOWLEDGMENTS
- 1 SCOPE
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## 1 Scope

The National BIM Standard-US™ Version 2 (NBIMS-US V2) is designed for two specific audiences:

- Software developers and vendors, and
- Practice documents for implementers who design, engineer, construct, own, and operate the built environment.

### 1.1 SOFTWARE DEVELOPERS AND VENDORS

Interoperability of data and information is an absolute requirement for designing and managing the life-cycle of the built environment. Software developers and vendors must develop and support programs to achieve the seamless exchange of data and information between users. The design and coding of software standards will allow developers to efficiently accomplish this task. NBIMS-US V2 has delineated the appropriate standards to cover all aspects of software development.

Two sections within the standard provide the developer with the necessary information:

- Reference standards: This set of standards provides a data dictionary, data model, web-based exchange, and structures and identifiers for building data and information.
- Exchange information standards: This section sets standards for data management, assurance, and validation, as well as exchange concepts; defines the design of exchanges for specific types of data related to building analysis; and includes Construction Operations Building information exchange (COBie).

The reference standards were developed by other allied standards organizations, while the exchange standards were written and balloted by the NBIMS-US project committee.

### 1.2 PRACTICE DOCUMENTS FOR IMPLEMENTERS

The second section of NBIMS-US V2 focuses on the industry implementer. These sections describe the necessary professional knowledge and judgment for all project participants, as well as critical project management tools.

+ ADD Custom NBIMS-US

1.0 Scope

RS	IES	FD
A	B	M
O	I	S
D	P	A
C		

A section of the NBIMS-US™ V2 showing the custom NBIMS-US functionality and the wayfinding applicability for that section.





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NBIMS-US V2 | WAYFINDING | CUSTOM NBIMS-US V2

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**5 PRACTICE DOCUMENTS**

**6 ANNEX A**

**7 ANNEX B**

**Custom NBIMS-US™**

This section contains the Custom NBIMS-US™ V2 you have built from browsing the standard. Sections can be added and removed by clicking on the 'Custom NBIMS-US V2' link in the upper-right-hand corner when viewing each section.

**1 Scope**

**1.0 SCOPE**

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1.0	Scope						
RS	IES	PD					
A	B	M	O	I	S		
D	F	A	D				

This is the custom NBIMS-US for a user. This capability will become more important as content expands and you only want to deal with a subset of the entire standard.

## Officers for Version 3

- Chris Moor – Chair
  - American Institute of Steel Construction
  - CIS/2 to IFC
- Jeff Ouellette – Vice Chair
  - Nemetschek / Vectorworks
  - Strong IFC background
  - International involvement on ISG
- Connor Christian – Secretary
  - BIM Manager - McCarthy Builders
  - Extensive field experience
- Positions elected from the Project Committee



# Organizational Structure

Subcommittees  
Workgroups

Content Development

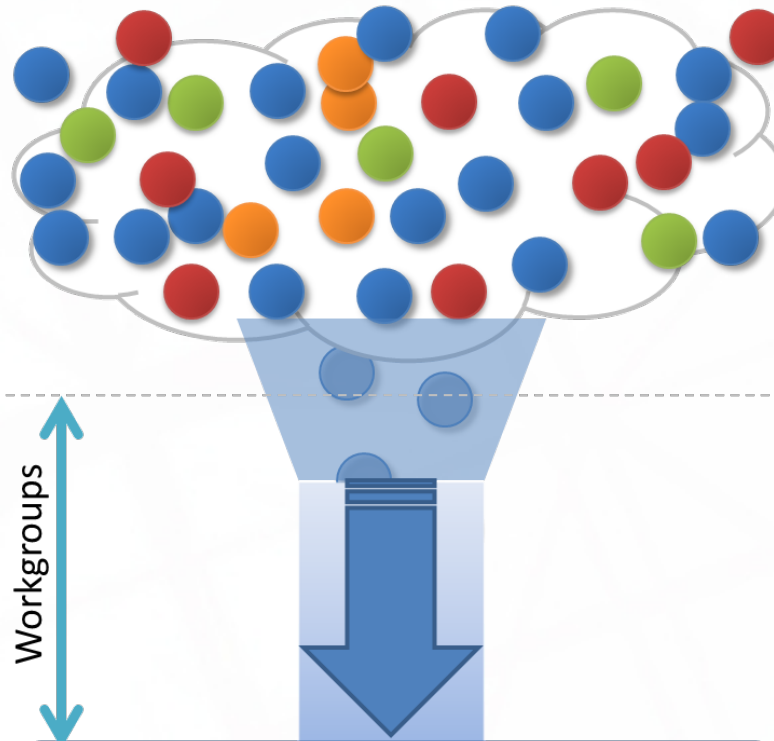
Product Development



Technical Standard Practice Implementation Terminology



Marketing & Education



Ideas & Concepts



Ballot Development



Ballot Submittals and Voting

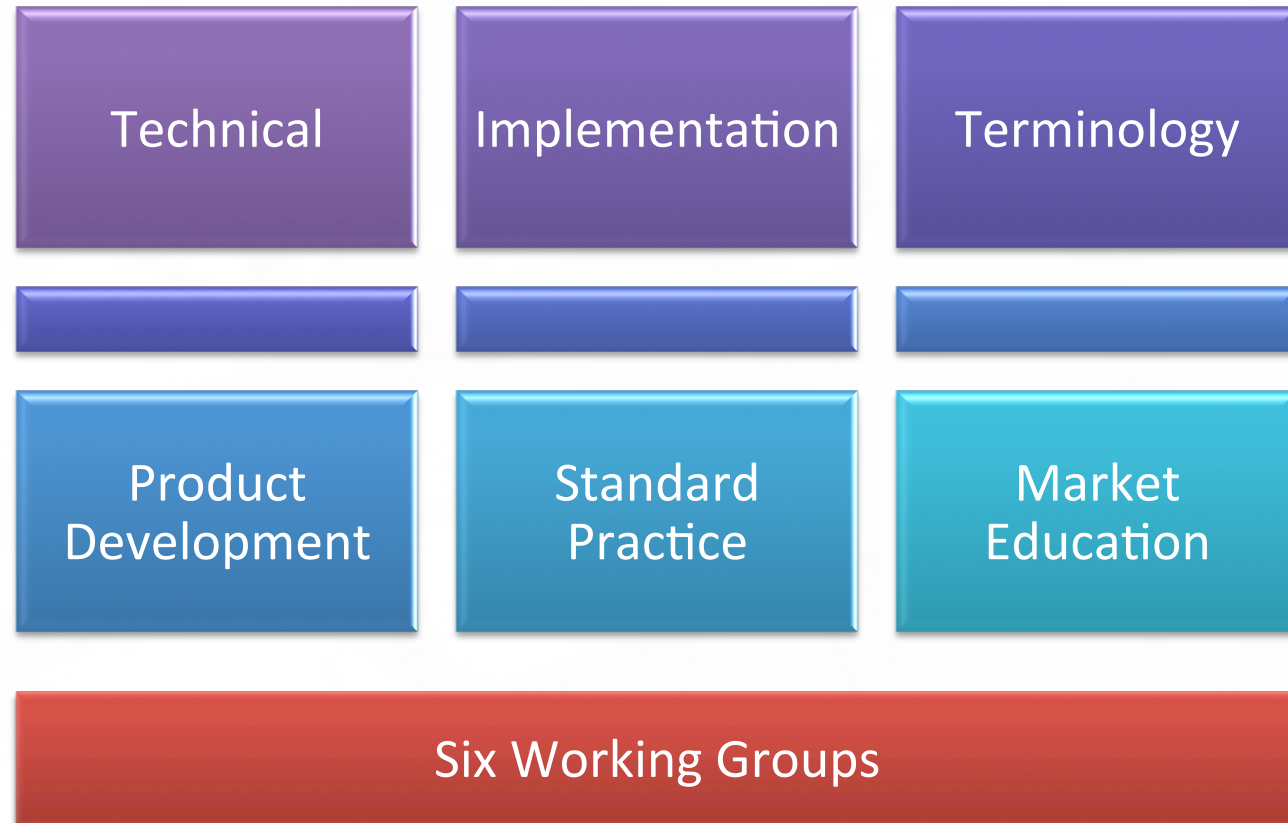


Acceptance to NBIMS

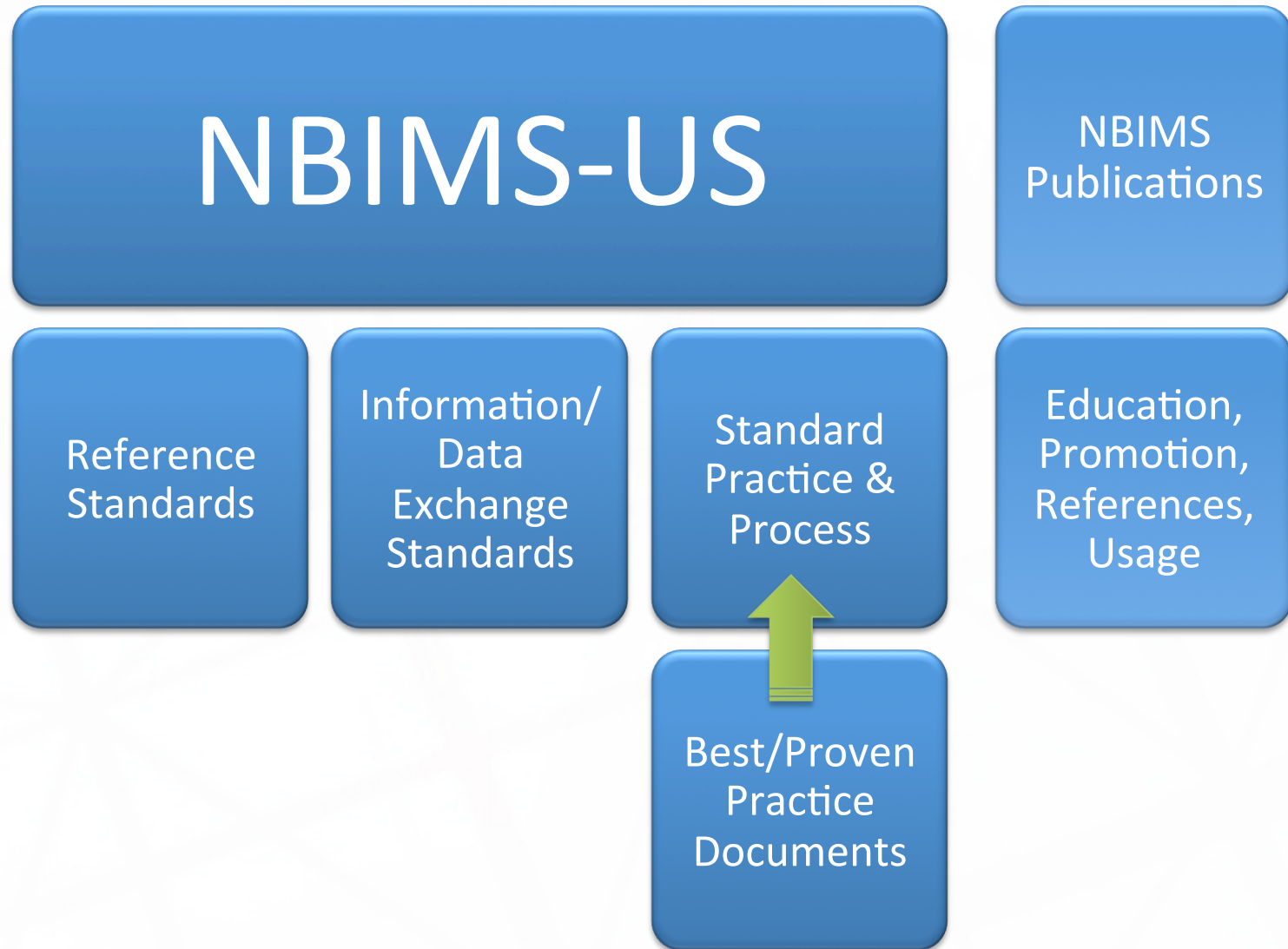


Adoption

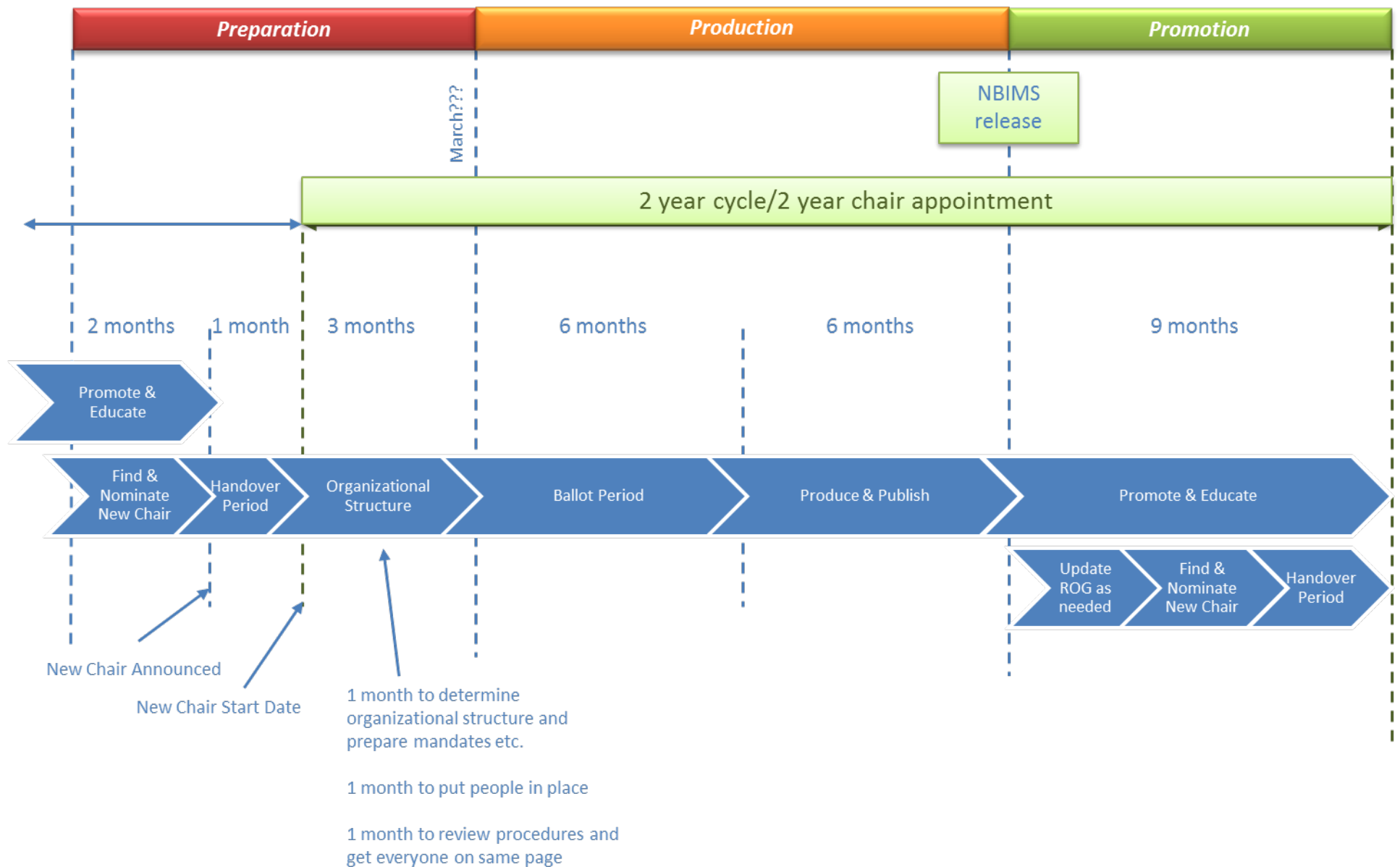
# Subcommittees & Workgroups – V3



# NBIMS-US: TOC Proposal



# NBIMS-US Cycle Proposal



# Outlook for V3 – Potential Ballots





## Fact Sheet

- National BIM Standard – United States V2
  - <http://www.nationalbimstandard.org/>
- NBIMS-US Information For V3
  - <http://www.buildingsmartalliance.org/index.php/nbims/>
- Rules of Governance For V3
  - [http://www.buildingsmartalliance.org/client/assets/files/bsa/NBIMS Rules of Governance May2012.pdf](http://www.buildingsmartalliance.org/client/assets/files/bsa/NBIMS_Rules_of_Governance_May2012.pdf)
- Committees For V3 – Still Forming
  - <http://www.buildingsmartalliance.org/index.php/nbims/committees/>





building**SMART**alliance<sup>™</sup>

*a council of the* National Institute of Building Sciences

For additional information please contact:

Deke Smith  
Executive Director  
[dsmith@nibs.org](mailto:dsmith@nibs.org)

Birgitta Foster  
Assisting Director  
[bfoster.c@nibs.org](mailto:bfoster.c@nibs.org)



[b\\_smart\\_all](https://twitter.com/b_smart_all)

**Thank You**