



GeoBIM



# BIM/GIS Integration

**A Standards Approach**

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# Brief Introduction

## Professional

- BIM/IT Director with Bullock Tice Associates
- Architecture & Interior Design
- Project Types
  - Various DoD Projects
  - Gulf Coast High Rise Condominiums
  - Other Private/Public Sector facilities

## Volunteer

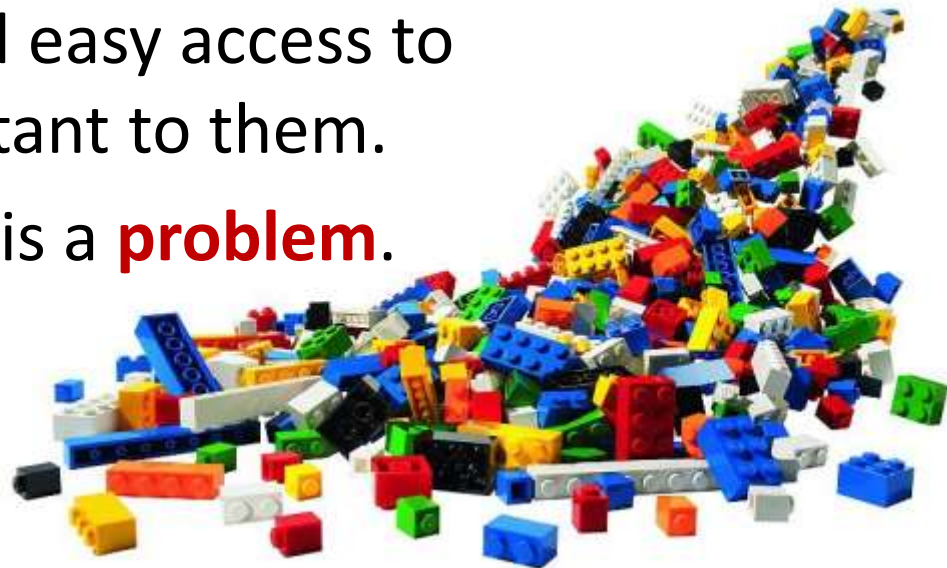
- Chair buildingSMART Alliance® Board of Direction
- Contributing Author
  - United States National CAD Standard® V6
  - National BIM Standard – United States® V3
- USACE/Industry BIM/CIM Consortia



US Army Corps  
of Engineers®

# Why BIM/GIS Integration

- BIMs contain untapped potential of data-rich models and it is realized that this technology can help to substantially reduce waste in the construction industry.
- Integrating BIM with GIS extends more opportunities of utilizing the power of information.
- Project stakeholders need easy access to information that is important to them.
- Unorganized information is a **problem**.

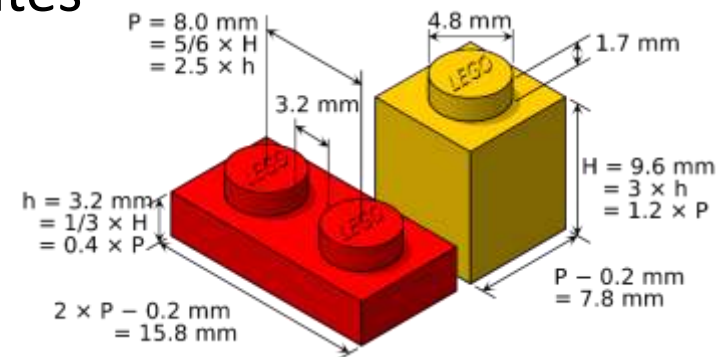


# Standardized Approach

BIM has experienced rapid adoption over the past decade. A standardized approach is crucial to ensuring the data is **reliable** and **usable**. BIM standards can help.

## BIM Standards

- Industry Foundation Class
- Recently updated standards
  - United States National CAD Standard®
  - National BIM Standard – United States®
- buildingSMART Data Dictionary



# Standardized Approach

## Industry Foundation Class (IFC)

Export from IFC compliant BIM software for use within GIS

*The IFC specification is developed and maintained by buildingSMART International as its "Data standard".*

<http://www.buildingsmart-tech.org>



# Standardized Approach

**NCS V6** (Sept. 2014)

## **BIM Implementation Section**

- **Model Coordination:**
  - Models to share the same coordinate system.
  - Models to share coordinated units and unit tolerance.
  - Models to share vertical reference datum.
- **Model Delivery:**
  - Models to be purged, cleaned, and audited
  - Models to free of any unused, unnecessary, and erroneous content
  - Provide composite model for entire building



# Standardized Approach

**NBIMS-US™ V3** (July 2015)

## Reference Standards

- Omniclass
- LOD Specification
- BCF, NCS

## Terms & Definitions

## Information Exchanges

- COBie

## Practice Documents

- Minimum BIM
- Practical BIM Requirements
- BIM PxP Guide, Uses of BIM



# Practice Documents

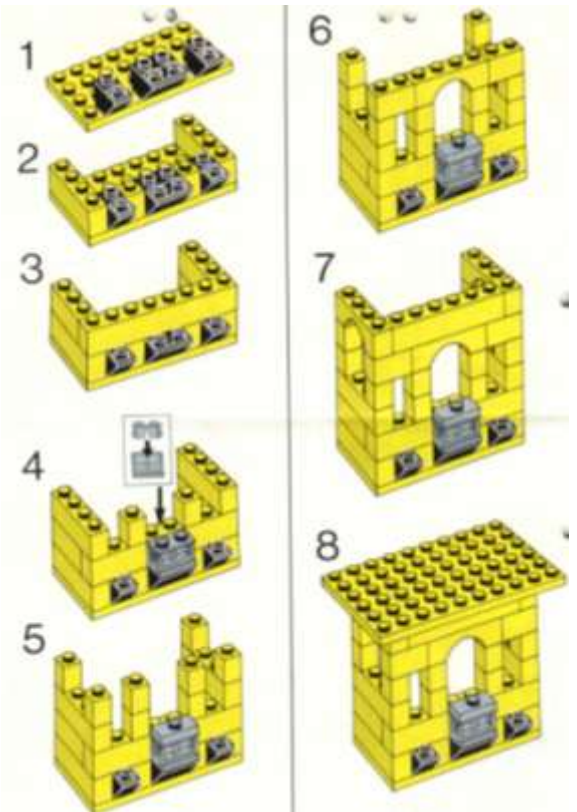
NBIMS-US™ V3 (July 2015)

## Practical BIM Requirements



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- **Contract Language**
  - General Requirements
  - Delivery Requirements
- **Minimum Modeling Matrix (M3)**
  - Identifies Scope
  - Defines Level of Development
- **Project Execution Plan (PxP)**
  - Service Provider Response
  - Process Identification & Planning

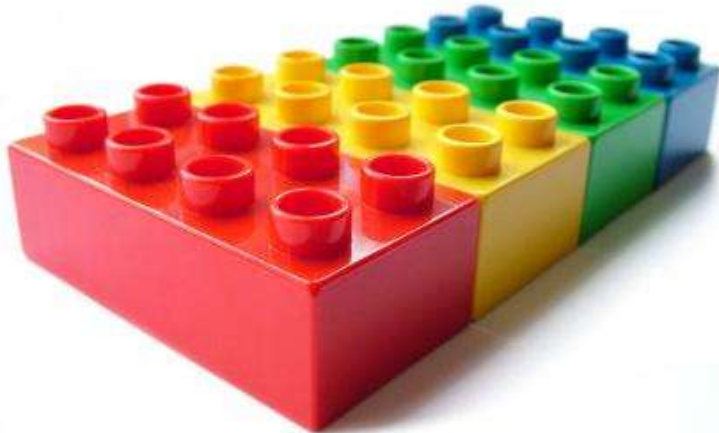




# Standardized Approach

## buildingSMART Data Dictionary

- Enables appropriate categorization of elements
- Enables filtering of content



A screenshot of the buildingSMART Data Dictionary website. The page features the title "buildingSMART Data Dictionary" and the subtitle "ISO 12006-3 based ontology for the building and construction industry". Below this is a navigation menu and a main content area with a welcome message and a search interface. The welcome message reads: "Welcome to the buildingSMART Data Dictionary. You may browse and search the content of the buildingSMART Data Dictionary from this web page. We highly recommend that you register as a user, but it is possible to access the Dictionary without registering. It is also possible to use the buildingSMART Data Dictionary Application Programming Interface (API) and data from the Data Dictionary in your own applications. For more information see below or contact the buildingSMART Data Dictionary Support Team. More information about the Data Dictionary is available at buildingSMART Data Dictionary's formal web site." Below this is a link to the community site: "To join the community, where you can report issues, discuss use cases or just help each other out, please go to our community site."

<http://bsdd.buildingsmart.org/>

# Integration Challenges

- Standard Content
- Appropriate Level of Detail
- Up-to-Date Content
- Data Security
- Technology Infrastructure
- Cost-effective solution
- User-friendly
- Collaboration & Communication



# What's Ahead

- Continual development of implementation standards and guidelines
- Evolving BIM Requirements
- Expanding technology requirements

under**construction**

