



# National BIM Standard - United States® Version 3

## 2 Reference Standards

### 2.1 Introduction to Reference Standards

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its development and application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

The Reference Standards are divided into two general categories:

- Model and Dictionary Standards
- Data Structure and Identifier Standards

The reference categories will provide the software developer with the primary source standard necessary for designing and writing code for BIM interoperable programs. This common property will allow professionals in the building industry to seamlessly exchange data and information. These standards, especially the Data Structure and Identifier Standards, may be used by professionals to develop cognitive-conceptual models and semantic systems to explain, analyze, and describe the project's life-cycle. Below is a synopsis of the Reference Standards in the NBIMS-US™ standard.

### 2.2 ISO 16739, Industry Foundation Class 2X3 – February 2006

The scope of ISO 16739, Industry Foundation Class (IFC) 2X3, February 2006, authored by buildingSMART International, is to provide a neutral exchange format based on STEP/XML. The approved exchanges within NBIMS-US™ is IFC 2X3.

### 2.3 World Wide Web Consortium Extensible Markup Language Specification and Validation 1.0 Fifth Edition – November 2008

The scope of World Wide Web Consortium Extensible Markup Language (WC3 XML) is to ensure NBIMS-US™ work products in XML conform to the W3C specification, and to utilize W3C XML validator to ensure NBIMS-US™ compliance with W3C requirements and related Internet protocols

### 2.4 OmniClass™ Tables

See “About OmniClass™.”

### 2.5 International Framework for Dictionaries (IFD) /buildingSMART Data Dictionary (BSDD) – Revised May 2012

This section provides background information on the buildingSMART International (bSI) standard — the buildingSMART Data Dictionary (bSDD), also known as the International Framework for Dictionaries (IFD) Library. Information about the bSDD is provided for reference in this version of the National BIM Standard-United States® (NBIMS-US™).

### 2.6 BIM Collaboration Format (BCF) – Version 1.0

The BIM Collaboration Format (BCF) represents a standard for communication between BIM Models.

### 2.7 LOD Specification – August 2013

The Level of Development (LOD) Specification is a reference that enables practitioners in the AECOO

Industry to specify and articulate with a high level of clarity the content and reliability of Building Information Models (BIMs) at various stages in the design and construction process.

## **2.8 United States National CAD Standard® (NCS) - V5**

The NCS is an existing industry consensus standard that is developed and managed under the oversight of the National Institute of Building Sciences' buildingSMART alliance®. It has been accepted and utilized by numerous public and private organizations, as well as educational institutions, to standardize CAD and paper-centric information delivery for more than a decade.