National BIM Standard - United States® Version 3

4 Information Exchange Standards

4.1 Introduction to Information Exchange Standards

This section includes documents that outline information exchange standards through process modeling, information delivery manuals (IDM), and their correlating model view definitions (MVD) developed to guide information exchange protocols that have been tested and documented.

Information exchange occurs at many different levels and stages, from project inception through building design and construction and into facility management. Projects utilizing BIM software applications are particularly in demand because they permit an integrated information exchange for the centralization of information, which can be in various formats both in modeling and team coordination practices, as well as interoperability of the applications for efficient exchanges. This section of NBIMS-US will grow as more portions of the building process are outlined in formats of IDM and MVD to form coordinated standard methods and guides for better information exchanges.

4.2 Construction Operations Building information exchange (COBie) – Version 2.4
Appendix A - Lifecycle information exchange for Product Data (LCie)

Since its publication in NBIMS-US V2, the COBie user community has requested three categories of enhancements. The first category of enhancements was to improve the precisions of the underlying Industry Foundation Class Facility Management (FM) Handover Model View Definition (MVD).   The second category of enhancement was to add the exchange of environmental and safety related issues. This enhancement allowed European users of COBie to apply NBIMS-US™.   The third category of enhancement was to improve mapping COBie data to XML.

4.3 Design to Spatial Program Validation (SPV)

The Design to Spatial Program Validation (SPV) information exchange is to provide a process using an SPV analysis application to load into the Building Information Model (BIM) the spatial program requirements and assess the performance of the building model in satisfying the owner's requirements.

4.4 Design to Building Energy Analysis (BEA)

The Design to Building Energy Analysis (BEA) information exchange provides a process using a BEA analysis application to load additional building energy modeling data into the Building information Model (BIM) in order to run a full building simulation of the energy that will be used by the building design.

4.5 Design to Quantity Takeoff for Cost Estimating (QTO)

The Design to Quantity Takeoff (QTO) information exchange provides a process using a QTO analysis application to load into the BIM, along with a database of construction recipes.

4.6 Building Programming information exchange (BPie) – Version 1.0

The objective of Building Programming information exchange is to standardize a Requirement Model Specification with sufficient flexibility to make it internationally robust. The standard requirements model will enable automated comparison between the required facility performance and the designed solution, i.e., continuous validation though design development, construction, and facility management.

4.7 Electrical information exchange (SPARKie) – Edition 2013

Electrical information exchange documents the process flow and data exchange requirements for the design of electrical distribution systems. A subsequent part of this project applies the understanding of the process flow and exchange requirements to a "real-world" situation, examining how the information exchanges can be handled in existing Building Information Model (BIM) software, using modified three example BIM based on the buildingSMART Industry Foundation Class (IFC) BIM schema.

4.8 Heating, Ventilating and Air Conditioning information exchange (HVACie) – Edition 2013

HVAC information exchange documents the process modelling and data-exchange requirements of HVAC engineering design practice, following Information Delivery Manual (IDM) and Model View Definition (MVD) procedures defined by the International Organization for Standardization (ISO) and buildingSMART.

4.9 Water Systems information exchange (WSie) – Edition 2013

Plumbing information exchange extends the detail described in the IFC4 specification to cover plumbing practices in North America. Specifically, it describes how to represent domestic water systems and sewage systems, where sourcing and treatment is provided by an external utility. It describes how to detail physical connectivity of valves, pipes, and fixtures.