IFC bSDD Policy Statement

Primary Author: Greg Schluenser, Co-lead, Technical Room

June 2019

IFC bSDD Policy Statement

Procedures for data management using buildingSMART Standards

During a joint session between technical and user rooms at the bSI Standards summit in Tokyo (Oct 2018) and a meeting involving the leadership of buildingSMART International in London in 2016, the following path forward was validated for connecting IFC and bSDD. The conclusions from the London meeting form the basis of this document and can be found here: https://docs.google.com/document/d/1MPJaFj8MOhpMn1uFyNRjZ5Znz8A0IVSRm5n05 xWWwew/edit?usp=sharing. This also built on a session that took place in the summer of 2018 in London.

The following key points were agreed upon to enable a smooth and non-disruptive connection between the two technologies with the goal of communicating how to most effectively use bSDD in conjunction with IFC to add entities and properties that are not currently in the IFC schema to increase quality and effectiveness of data exchanged using IFC.

1. Extending IFC from bSDD – Object Identification
It was agreed that existing IFC Entities, Types and Enumerations cannot be edited by users in bSDD. The definitions are copied from IFC to bSDD and are protected from changes.

New domain objects can be identified using bSDD within the scope of the existing IFC schema. The following approach should be used to expand the coverage of domain objects within the scope of IFC without changing the IFC schema.

   a. If an IFC entity closely represents the item to be added it should be chosen as the "basis" type and then a classification should be applied to identify it and distinguish it from the native IFC entity. In the bSDD the item is added as a Subject, supertyped or subtyped from the native IFD entity in bSDD, and the IsClassifiedBy relationship is used to add the classification to the new entity type. For advancing the entity to IFC, the existing mechanism to attach classifications, the *IfcClassificationReference*, is used.
   b. If no existing IFC entity meets the requirement for the new entity, the entity should be added to bSDD as a Subject with a Classification associated with it as above. This new concept should be related to other relevant concepts in bSDD. When adding the item to IFC, *IfcBuildingElementProxy* should be used along with a classification as described above.

2. Extending IFC from bSDD – Properties
It was agreed, that the existing property sets and properties, that are part of the IFC specification, are copied directly to bSDD from ifc.Doc to be stored, maintained and

extended. IFC translations from previous translation projects are also copied to bSDD and maintained there. A set of procedures and a GitHub repository has been created to facilitate new translation projects using bSDD.

When identifying new properties, those properties are added using the bSDD. When publishing new IFC releases, new properties are added first to bSDD, and then copied to the IFC specification (currently maintained in ifc.Doc) using the standard Pset (IFC property set) grouping mechanism. As agreed in London in 2016, properties are maintained in bSDD and then transferred to an IFC release using the ifc.Doc tool. A process to review and approve properties added using the bSDD to be published in the IFC schema needs to be identified,

Technical Improvements and processes needed to support using bSDD to extend IFC entities and properties;

To enable addition extensions to IFC and links to bSDD the following tools and workflows will need to be developed. These will be developed as required and as resources are available but do not all need to be in place to allow for deployment of the IFC-bSDD content strategy described above.

1. **Documentation on ownership and process to vet the additional Extended Elements and Psets**

   To enable this process to be successful it must be possible to properly associate new items added in bSDD to a proposing party

2. **Managing Ownership Separate from IFC**
   Currently ifc.Doc is used to publish both the Pset information and the IFC Schema that is represented in several data formats as well as mirrored in bSDD.   Work is nearly complete to connect the ifc.Doc tool and bSDD to allow for direct upload and download between the two applications. To manage separation of these two sources, a process that separates IFC from bSDD and treats them as two separate data sources that can be administered separately without the possibility of inadvertently mixing them must be developed.

   When a new IFC release is published, it needs to be ensured that the IFC specification contains both, the IFC schema and a read-only snapshot of the extended properties and classification that is externally defined as well as a link to the sources.

3. **Enable the Definitions of MVDs that reference extended IFC data that is defined by bSDD**

   To ensure the scope and content of an IFC can be validated it must be possible to craft a set of exchange requirements in such a way that directly references extended data stored in bSDD. This would then include the validation and or extension of mvdXML to enable the encoding of these references.

   When a new MVD release is published, it needs to be ensured that the MVD specification contains both, the IFC schema and a read-only snapshot of the extended properties and classification that is externally defined in bSDD as well as a link to the sources.

4. **Documentation for vender implementation of an "Override" classification from bSDD.**

   If IFC can now represent non-standard entities that are described in bSDD it must be possible to infer this relationship when authoring and reading IFC data by applications.   As such the mechanism by which a serialized IFC should encode this override must be documented and implemented as part of an MVD process.

5. **Documentation for vender implementation of bSDD defined Psets.**

   To enable application and definition of Psets in BIM tools bSI must document the specific process of adding the Pset to a serialized IFC and how it should reference the bSDD definition for this Pset.

6. **Determine the process of implementing the above when multiple BSDD sources are used.**

   It is possible that a country organization could maintain a Data Dictionary dataset separately from the one maintained by buildingSMART International. If this situation arises a process must be defined to incorporate these discreet datasets together into one scope and the process by which this information is captured in an MVD.

   The following assumptions must be made.
   - All Data Dictionaries are standardized against (Need ISO number we maintain of IFD? ISO 12006-3?)
   - A process has been developed in BSDD and other adjoined Dictionaries to assign authority of ownership.

Other Suggested Improvements

1. Standardizing the general process of encoding external definitions in IFC serializations.
2. Manage all PSET definitions not just extended PSET and Property Definitions via a similar process as described above.
3. When the official bSI IFC definitions, Entities, Types, Enumerations, Properties, etc., are stored within bSDD, it has to be ensured, that any proposed changes, removals, etc. require a confirmation from the IFC maintenance team, MSG. They have to act as "agents" in regard to this content. Endorse and manage the process for adding translations of the IFC schema and any related extensions developed and submitted to SCTE for preliminary approval.
4. Identify a similar process for the extension and management of Quantity sets (QSets).