buildingSMART Data Dictionary
GIS-BIM WS Stockholm

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About interoperability

- Beyond the ability of two or more computer systems to exchange information, **semantic interoperability** is the **ability to automatically interpret the information exchanged meaningfully and accurately** in order to produce **useful results** as defined by the end users of both systems.
- Meaning of language, definitions...
- Terms and the relationship between terms ...

Source: Jacob Mehus, Standards Norway, Washington DC, 2009-12-08
buildingSMART Standards

12006-3: «Framework for object-oriented information»
Defines a taxonomy model that provide a means to define concepts («things») by means of properties, to group them, and to define relationships between them.

Data Model - IFC
- create a comprehensive information specification

Terminology - bSDD
- Uniquely identify properties and objects. Dynamically extend the IFC model.

Processes – IDM/MVD
- Identify exchange requirements and rules for particular business processes
- Map requirements to IFC

HOW to share data (syntax)
WHAT data you are sharing (semantics)
WHICH data and WHEN to share it

Source: Roger Grant, CSI bSI Product Room Leader
buildingSMART Data Dictionary

ISO 12006-3 based ontology for the building and construction industry.

Welcome to the buildingSMART Data Dictionary. You may browse and search the content of the buildingSMART Data Dictionary from this webpage. 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.

To join the community, where you can report issues, discuss use cases or just help each other out, please go to our community site.

Centralised repository of uniquely defined concepts/«things» (w/GUIDs) and ontologies utilizing them

bsdd.buildingsmart.org

Source: Roger Grant, CSI bSI Product Room Leader
bSDD Current Content

85,000 names
- Long names
- Short names

21 languages
- International English
- US English
- Canadian English
- UK English
- Norwegian
- Dutch
- Japanese
- Chinese
- IFC
- ...

20,000 objects
- Subjects
- Activities
- Actors

6,000 properties
- IFC PSets
- 3,000 values

60,000 relationships
- Specialization
- Properties
- Values
- Documents
- Components
- interaction

40,000 documents
- Reference documents
- Classifications - OmniClass

Source: Roger Grant, CSI bSI Product Room Leader
bSDD is a Type Library – Solving searching challenge

Type of Product in bSDD

Instance of Product Data in a Product Manufacturer Database

Generic door

- Thickness
- Hand of door
- Width
- Height
- Material
- Surface finishing
- Color
- Hinge

Specific door

- 92 millimeter
- Right
- 890 millimeter
- 2090 millimeter
- MDF
- Painted
- NCS S0502
- 2465 snap-in

Source: Roger Grant, CSI bSI Product Room Leader
bSDD as a Mapping Mechanism – Solving interoperability challenge

Source: Jacob Mehus, Standards Norway, Washington DC, 2009-12-08
and Roger Grant, CSI bSI Product Room Leader
Using bSDD in IFC

Source: «Using bSDD with IFC2x3 and IFC4» by Catenda: http://catenda.no/archives/2001
Context – Identifying only relevant information needed

- ‘Property’ of the creator
- Access restrictions
- Consists of a set of relationships
- Gives a specific data view
- Filters content

Examples of contexts:

- OmniClass
- Uniclass
- buildingSMART
- IFC Property Set
- NL-SfB
- NEN NEN 2767

Source: Roger Grant, CSI bSI Product Room Leader
Example Context

- IfcAnnotation (IFC)
  - contour (en-GB)
  - høydekurve (no-NO)

- IfcGeographicElement (IFC)
  - curve (en-GB)
  - kurve (no-NO)

- IfcGeographicElement (IFC)
  - road (en-GB)
  - vei (no-NO)

- IfcBuilding (IFC)
  - building (en-GB)
  - bygning (no-NO)
  - bygg (no-NO)

- IfcSite (IFC)
  - district (en-GB)
  - kommune (no-NO)

- IfcGeographicElement (IFC)
  - tree (en-GB)
  - tre (no-NO)

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Example Context – “bSN_Test_Ontology”
Demo?

Test/Staging: http://test.bsdd.buildingsmart.org/

[Example context, bSN_Test_Ontology, is in test]

Public/Operations: http://bsdd.buildingsmart.org/
Thank you!

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Linking bSDD to IFC
Linking bSDD to IFC
IFC in a nutshell

Industry Foundation Classes (IFC)

- What does it define?
  - Schema for structured information
  - Syntax for exchange (SPF, XML, ...)
  - Unique repository for all construction related information (elements, relationships, properties)

- What does it not define?
  - Scope for software implementation
  - Scope of information needs from use cases
IFC in a nut shell

Model View Definition (MVD)

- What does it define?
  - Based on all provided by IFC +
  - Scope for software implementation
  - Filter of the repository for relevant information for a serious of use cases

- What does it not define?
  - Scope of information needs from use cases
IFC in a nut shell

Exchange requirement (ER)

- What does it define?
  - Based on scope of Model View Definition + Information required for defined use case
  - Information needed at particular milestone

- What does it not define?
  - Registration of properties in dictionaries
IFC in a nut shell

Data dictionary (bSDD)

- What does it define?
  Unique definitions of properties
  Global identifier for properties
  Multilingual support for properties

- What does it not define?
  Product information
  Property values
  Property exchanges