









The Pizza analogy for OpenBIM Standards and Services

UCM - Use Case Management database	The Cookbook	
BIM-Use Case	The Dish (Pizza → Margherita, Hawaii...)	
bSDD – buildingSMART Data Dictionary	All the available ingredients * in Fridge	
IDM - Information Delivery Manual	The Recipe	
Exchange requirements (with IDS**)	The Dish Ingredients and toppings	
BCF (BIM Collaboration Format)	The Complements and complaints to the chef	
IFC – Industry Foundation Classes (ISO 16739)	The Pizza	
MVD (Model View Definition) ***	A slice of Pizza	
<p>Original Credits : Mirbek Neumann (former Bekboliev) M.Sc. 2020 and with the contribution of Nicholas Nisbet and Sergio Muñoz, Franco Coin</p> <p>*in different languages, Dairy Products, Fruits, Vegetables etc. names and Properties like Manuf. Info, Exp. Date, Allergens **IDS – Information Delivery Specification *** IFC4 Reference View</p>		

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Figure 1 openBIM in a simple Language – Pizza Analogy (Credits: Mirbek Neumann (Bekboliev), 2020 with the contribution of Nicholas Nisbet, Sergio Muñoz, Franco Coin).

buildingSMART openBIM Standards and Services in Simple Language

Authors: Mirbek Neumann, Nicholas Nisbet, Sergio Muñoz, Franco Coin

Creating a building model is similar to constructing a real building: many activities must be managed in sequence and sometimes in parallel throughout the entire lifecycle of the asset.

To support this process in a fully open and collaborative environment, appropriate methodologies, semantic definitions, and logical structures are required for each activity involved. OpenBIM therefore consists of several standards and services, many of which are implemented as digital technologies¹. Together, they support the creation, exchange, validation, and management of building information throughout the project lifecycle.

Because openBIM includes many standards and services — often identified only by technical acronyms — understanding their purpose can sometimes be difficult for newcomers.

The objective of this article is to explain the most relevant buildingSMART standards and services using a simple and familiar analogy: ordering and preparing a pizza².

OpenBIM Pizza Analogy

Use Case Management (UCM) – The Cookbook

¹ <https://technical.buildingsmart.org/standards/>

² This example is intended for illustrative purposes only and should not be considered fully correct or complete, as the application of different standards may vary depending on the complexity of the asset, process and/or project.

In building modelling, a *use case* describes how people interact with information and digital models during a project. It explains a specific workflow, requirement, or scenario.

The buildingSMART Use Case Management³ (UCM) service can be compared to a cookbook. Just as a cookbook collects and organises recipes, UCM collects, manages, and shares BIM use cases in a structured way. It helps professionals describe processes clearly and consistently so that standards can later be developed from them.

bSDD – buildingSMART Data Dictionary – The Fridge or Supermarket

To ensure that digital building information is understandable by both humans and software, a common vocabulary is required.

The buildingSMART Data Dictionary⁴ (bSDD) is an online service that stores standardised terms, properties, units, classifications, allowed values, translations, and relationships between them.

In the pizza analogy, bSDD represents the fridge or supermarket containing all the ingredients needed to prepare the pizza. Everyone uses the same ingredients with the same names and definitions, ensuring consistency and interoperability across projects and software platforms.

IDM – Information Delivery Manual – The Recipe

In construction projects, all participants need to know what information must be exchanged, when it should be delivered, and by whom.

The Information Delivery Manual⁵ (IDM), defined in ISO 29481, provides a methodology for describing processes and information flows throughout the lifecycle of a facility.

In the pizza analogy, IDM is the recipe. It explains the sequence of steps required to prepare the pizza correctly. Similarly, IDM defines how information should flow between stakeholders during a project.

A standard may originate from a single use case or from multiple consolidated use cases developed by experts in a particular domain — just as a recipe may be developed by an experienced chef.

IDS – Information Delivery Specification – The Ingredients List

Project requirements define what information must be included in an exchanged model and the expected level of detail.

³ <https://ucm.buildingsmart.org/>

⁴ <https://technical.buildingsmart.org/services/bsdd/>

⁵ <https://technical.buildingsmart.org/standards/information-delivery-manual/>

An Information Delivery Specification⁶ (IDS) is a computer-readable document that defines model exchange requirements. It specifies which objects, classifications, properties, values, and units must be delivered.

In the pizza analogy, IDS is the ingredients list and toppings definition. It precisely describes what must be included in the pizza.

IDS can also be used to automatically validate IFC models with model-checking software, ensuring that delivered information complies with project requirements and Employer's Information Requirements (EIR).

BCF – BIM Collaboration Format – Requests, Comments, and Feedback

The BIM Collaboration Format⁷ (BCF) enables project participants to communicate efficiently about issues within BIM projects without exchanging entire models repeatedly.

BCF supports issue tracking, comments, task assignments, coordination requests, and documentation between architects, engineers, contractors, and other stakeholders.

In the pizza analogy, BCF represents customer requests or feedback to the cook — for example, asking for extra cheese, requesting the pizza to be baked longer, or complimenting the chef after a good meal.

IFC – Industry Foundation Classes – The Whole Pizza

IFC (Industry Foundation Classes) is the core openBIM standard for the digital description of buildings and infrastructure.

It is an open international standard (ISO 16739) used for the creation, exchange, and management of building information models. IFC files enable interoperability between different BIM software platforms.

In the pizza analogy, IFC is the complete pizza itself — the final product containing all the information about the building.

IFC has evolved through several versions, with IFC 4.3⁸ currently being the latest major release. Backward compatibility allows modern software to continue opening and working with older IFC versions such as IFC2x3.

All other openBIM standards and services are essentially focused on defining, managing, validating, or communicating aspects of the IFC model⁹.

⁶ <https://technical.buildingsmart.org/projects/information-delivery-specification-ids>

⁷ <https://www.buildingsmart.org/standards/bsi-standards/bim-collaboration-format-bcf/>

⁸ <https://www.buildingsmart.org/ifc-4-3-approved-as-a-final-standard>

⁹ <https://technical.buildingsmart.org/standards/ifc/ifc-examples>

MVD – Model View Definition – A Slice of Pizza

A complete IFC model may contain a huge amount of information: geometry, materials, manufacturer data, certificates, structural information, MEP systems, and much more.

However, not every stakeholder needs access to all this information at the same time.

For example:

- an architect may only need spatial and architectural information,
- a structural engineer may focus on structural elements,
- a plumber may only need plumbing systems.

Model View Definition (MVD) solves this problem by defining specific subsets, or “views,” of the IFC model tailored to particular workflows or stakeholders.

In the pizza analogy, MVD is a slice of pizza. Each person receives only the portion relevant to their needs, rather than the entire pizza.

MVD ensures that information is structured and exchanged efficiently without overwhelming users with unnecessary details.

Conclusion

OpenBIM is not a single standard but an ecosystem of interconnected standards and services that support collaboration throughout the building lifecycle.

Using the pizza analogy helps simplify these concepts:

- UCM defines the cooking ideas,
- bSDD provides the ingredients vocabulary,
- IDM describes the recipe,
- IDS specifies the required ingredients,
- BCF manages communication and feedback,
- IFC represents the pizza itself,
- MVD delivers the right slice to the right person.

Together, these buildingSMART standards enable open, consistent, and interoperable digital workflows across the construction industry.