

# **BUILDING INFORMATION MODELING FOR BEGINNERS**

**6 KEY TERMS YOU NEED TO KNOW  
ABOUT BIM TECHNOLOGY**

e-book edition

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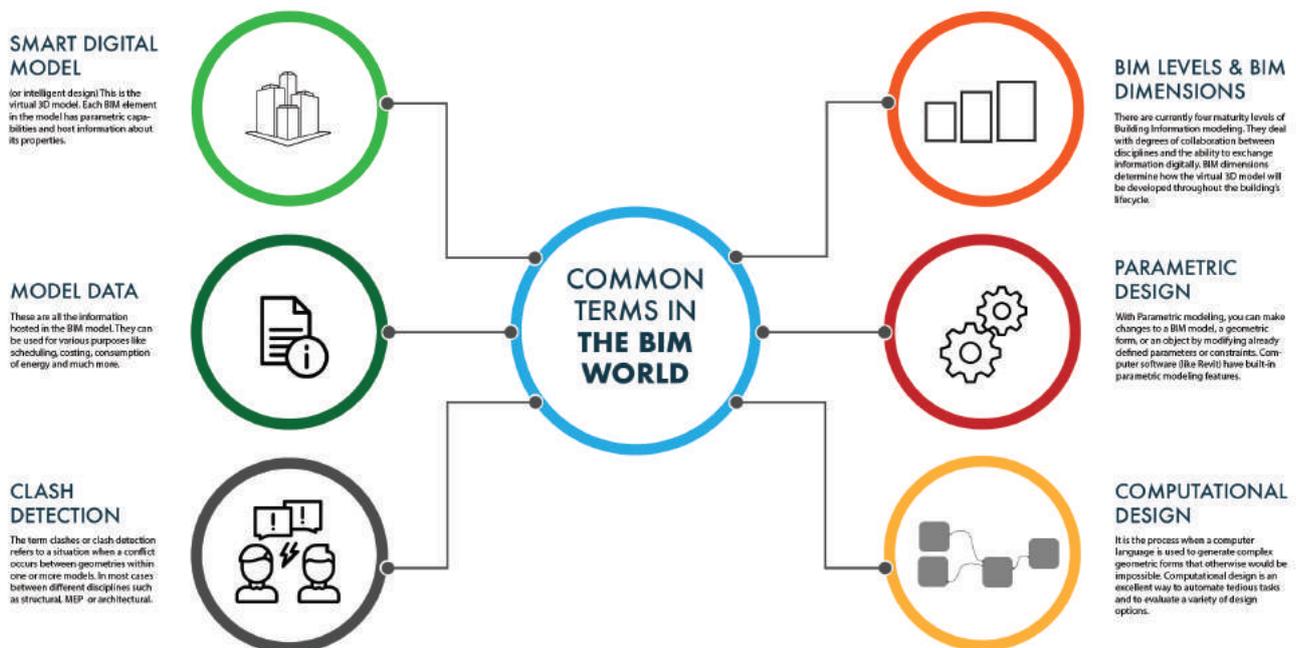
The following article will focus on terms related to BIM technology. This is the platform that connects project teams from various disciplines.

**Designers and engineers take advantage of the BIM tools available, they optimise design solutions and produce high-quality buildings.**

If you are just starting out with Building Information Modeling the terms explained below will help you understand exactly what a Building Information model is and what you can achieve with it.

Keep reading to find out more about the following 6 key terms:

1. Smart digital model or intelligent design
2. Model data
3. Clash detection
4. BIM levels & BIM dimensions
5. Parametric design/ modeling
6. Computational design or algorithmic modeling



# 1. SMART DIGITAL MODEL OR INTELLIGENT DESIGN:

This term is related to the virtual 3D model. BIM beginners notice the following two benefits when working with BIM tools:

Firstly, the parametric capabilities of all the geometries (or objects) in the model. And secondly, the data hosted in those objects. These are related to the object's properties and they tell the user about their performance throughout the building's lifecycle.

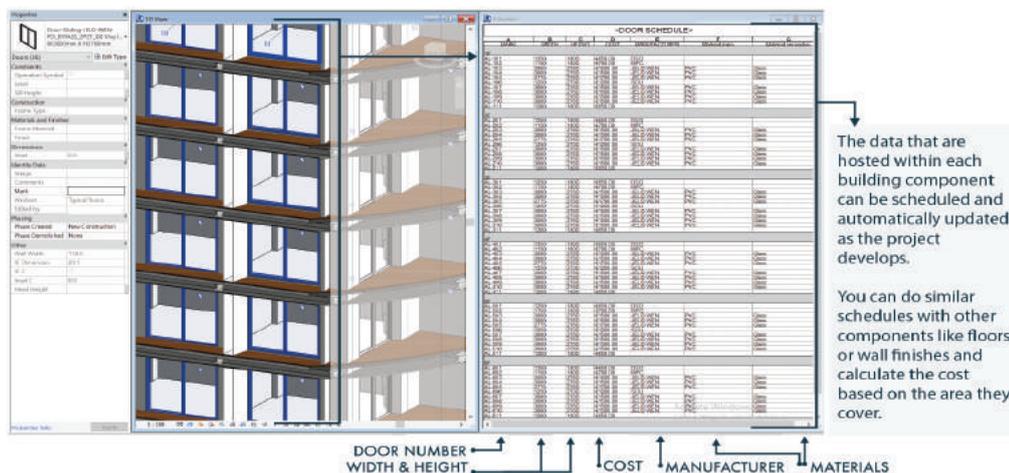
The image below illustrates an example of all the data you can get from a double sliding door. This door has been download from bimobject, which is a BIM content platform. Visit their website at [www.bimobject.com](http://www.bimobject.com) to find out more and download BIM objects.



# 2. MODEL DATA:

These are all the information hosted in the BIM model. They can be used for various purposes like scheduling, costing, consumption of energy and much more. Managing building information data is an on-going process. It starts at the conceptual stages and continues throughout the construction process. Data are very valuable for the owner during the hand-over of the project but also for the facilities managers for the operational phase.

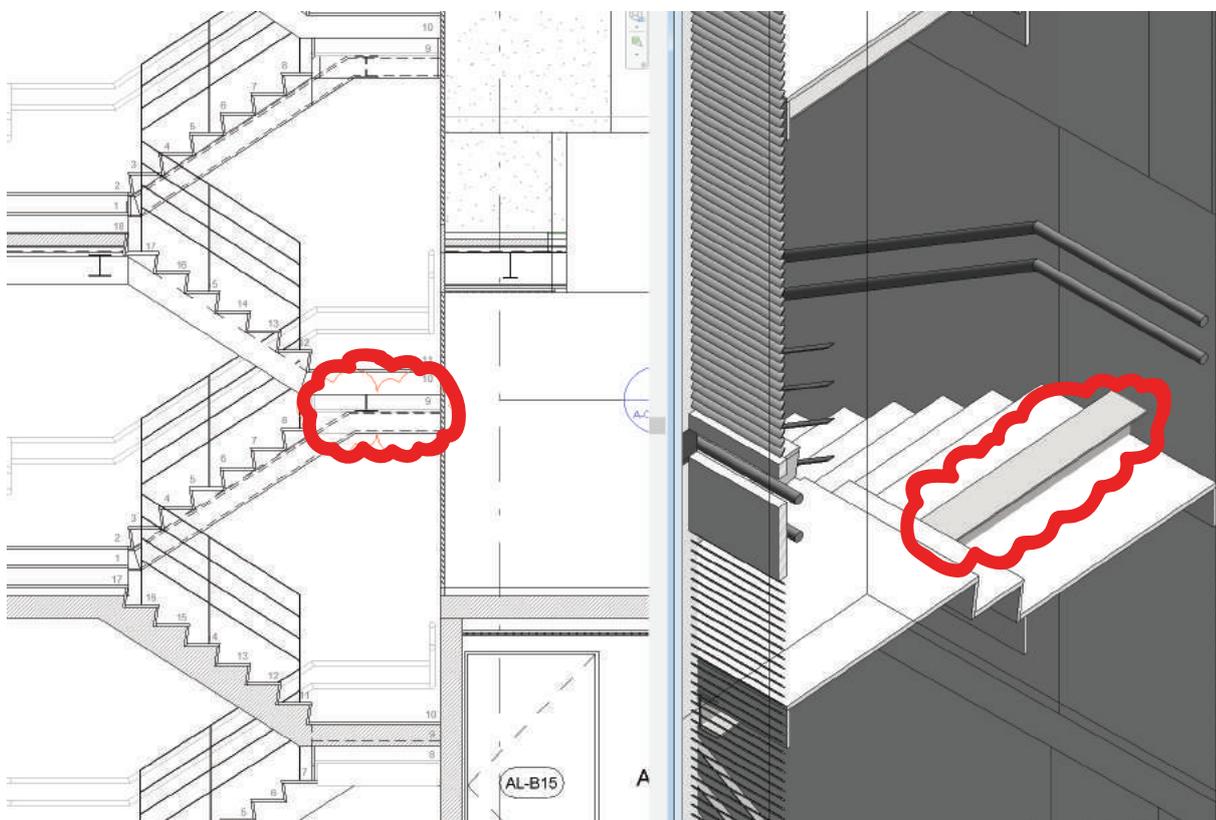
## GETTING ALL THE DATA FROM THE DOORS



### 3. CLASH DETECTION

This is a situation when a conflict occurs between geometries within one or more models. In most cases between different disciplines such as structural, MEP or architectural. (For example, beams or pipes passing through walls or Air-conditioning systems). In 4D BIM clashes refer to a sequence in construction that is out of order.

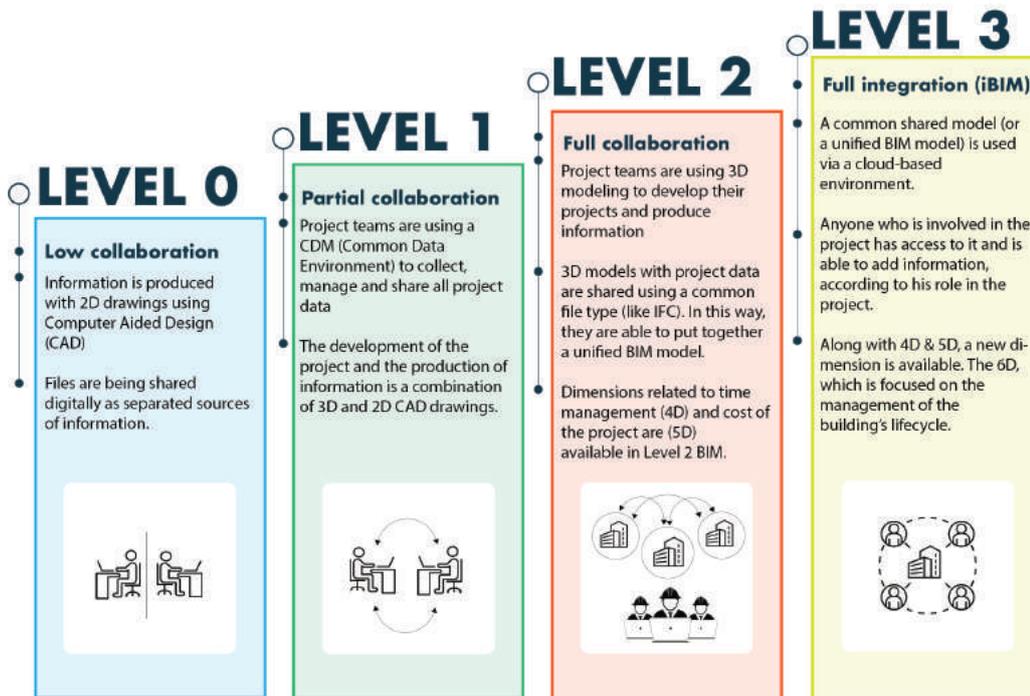
Clash detection can be automated with software like Navisworks or Solidworks. In this way, all constructibility issues can be resolved before construction begins. That will prevent conflicts, delays, design changes, material costs, and budget overruns.



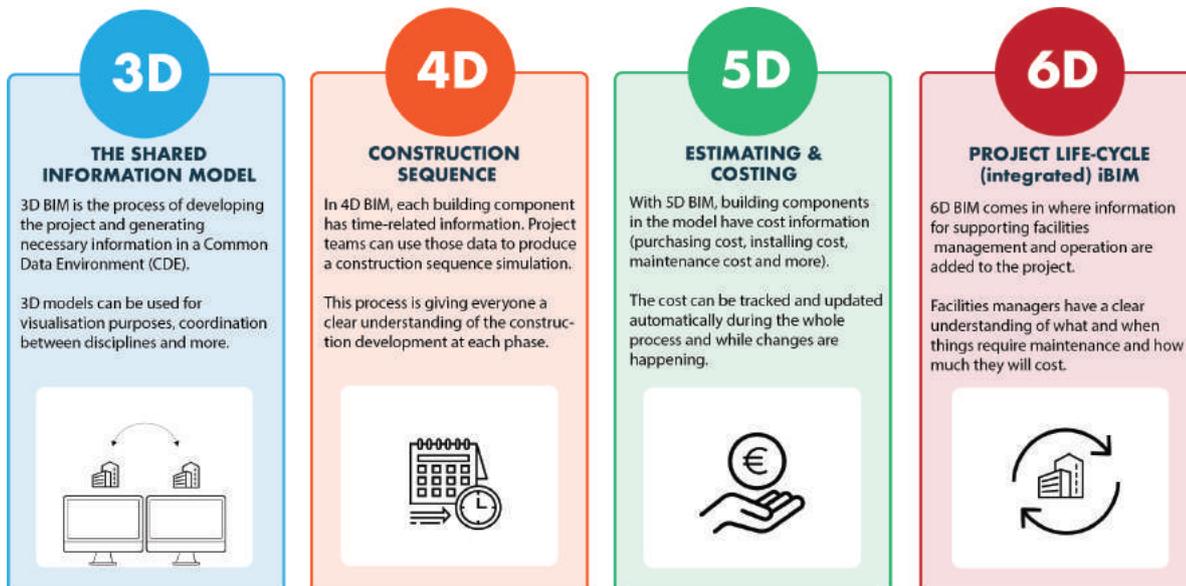
STEEL BEAM PASSING THROUGH A STAIR LANDING

## 4. BIM LEVELS & BIM DIMENSIONS

There are currently four maturity levels of Building Information modeling. They deal with degrees of collaboration between disciplines and the ability to exchange information digitally. BIM levels define the Level of Detail (LOD) that a BIM model will be developed at.

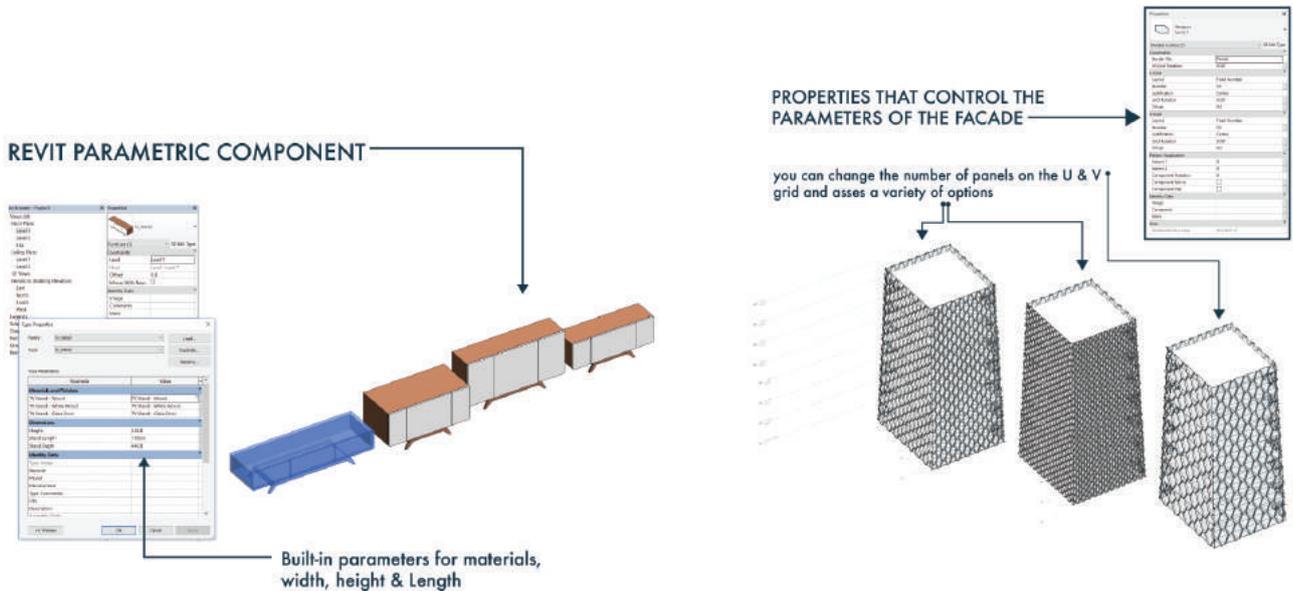


BIM dimensions determine how the virtual 3D model will be developed throughout the building's lifecycle. Based on the information hosted in the BIM model, the team can determine more accurately the time frame, the cost, and the performance of the building.



## 5. PARAMETRIC DESIGN/MODELING

With Parametric modeling, you can make changes to a BIM model, a geometric form, or an object by modifying already defined parameters or constraints. Computer software (like Revit) have built-in parametric modeling features, which means that the user does not need to write a script or a code to perform a command.



## 6. COMPUTATIONAL DESIGN

Computational design is an evolving field within a BIM context. It is the process when a computer language is used to generate complex geometric forms that otherwise would be impossible. Computational design is an excellent way to automate tedious tasks and to evaluate a variety of design options.

The most common computational design tools in architecture are dynamo for Revit and Grasshopper for Rhino. Both are user-friendly and they rely on visual programming (graphic representation of a script). Several designers are utilizing both platforms and there are multiple plugins that make them interoperable. These are two examples that facilitate interoperability between dynamo and grasshopper: rhynamo, Chameleon.

Check out a video by evolvelab on youtube where Bill Allen explains the difference between parametric design, computational design and generative design.

Visit the website for future blog posts where we discover BIM tech tools like virtual reality, augmented reality, 3D printing, cloud collaboration, 3D Laser scanning and much more.

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