

BIM *Building Information Modeling*

DETAILED INFORMATION 02

WHAT IS BIM?

Building Information Modeling is a process that allows people and information to work together effectively and efficiently through processes, policies and defined technologies.

BIM is therefore the process for controlling all phases of the building operation: planning, design, construction, and maintenance or management.

Forget the word building

One thing must be clear, BIM does not refer solely to buildings, but to all sectors that have to do with construction, including: roads, railways, utilities, bridges, tunnels, structures, architecture, topography, etc.

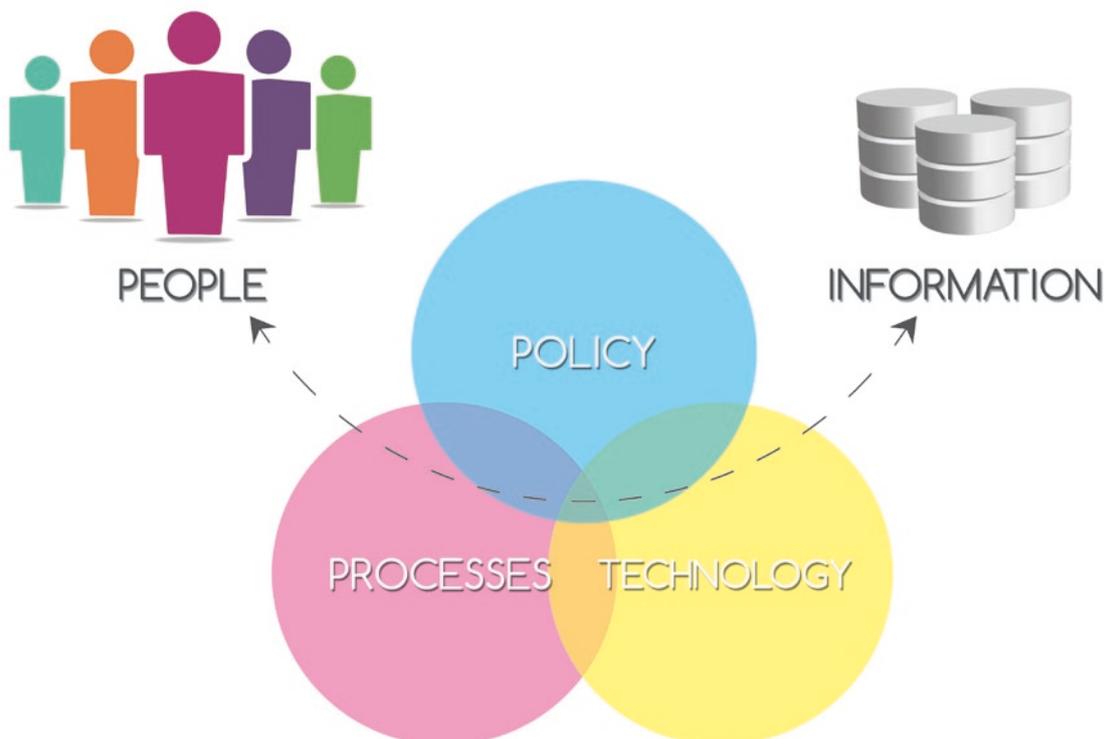
Share, communicate, collaborate

The aims of BIM are sharing of information, communication and collaboration, not coincidentally the European Directive 2014/24/EU on Public Procurement clearly expresses the indication to introduce Building Information Modeling in Article 22 which is entitled "Rules applicable to communication".

THE 5 ELEMENTS OF BIM

In order to function properly, BIM needs five elements to be present and perfectly integrated with one another. The two most important are people and information, which need to work together in order to generate efficiency and effectiveness by managing all phases of construction.

The other three elements are the engine of BIM: processes, policies, and technologies.



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THE PROCESSES

The process defines the specific order of work activities across time and space, with a beginning, an end, and a clear identification of the inputs and outputs of each stage. The process is, in other words, a structure for the action.

THE POLICIES

The policies are principles and rules to guide the decision making process.

The purpose of the policies is to analyze and develop standards and best practices in order to safeguard benefits and minimize disputes between the parties involved in BIM.

Within the policies we find: reference standards, adopted standards, best practices, benchmarks, contracts, etc.

For example, we specify the standards used for the exchange of information within the policies.

TECHNOLOGIES

Technologies are defined as the software and hardware tools needed to create and manage the BIM process.

Within technologies are software and hardware tools used to manage the various stages of the BIM process including model building, sharing, communication, and collaboration.

INFORMATION

Information in BIM is only digital; paper is banned.

To better understand the meaning of information, it is important to understand that in BIM there are two types of information: models and documents.

• Models

The models or "Information Models" are digital data that are the representation, reproduction, or simplified version of an object, road, bridge, building, etc.

They are made using special modeling software such as Autodesk Revit®, Archicad® by Graphisoft®, ProSt, or SierraSoft Roads by SierraSoft.

They are stored in a file format and can be exchanged and shared to support the decision making process for the construction of the infrastructure, buildings, etc.

An information model is therefore a set of organized data: significant, usable, and exchangeable. These data represent the virtual equivalents of real parts and have all the physical and logical characteristics of them.

Information models can be shared using standard formats that allow the transfer of data without the loss of information.

• Documents

To understand what documents are, we could say that they are the digital version of papers, drawings, prints, images, and video. They are called "documents" because the information is stored within the file in visual format for the ease of the user, even though they don't contain any BIM information, their data are only lines, arcs, or simple texts.

For example, the digital replacement for a paper drawing is usually a file in Autodesk® AutoCAD DWG format, and the digital substitute for a report or a paper printout is a file in Adobe® PDF format.

Clearly, then, DWG and PDF are not BIM formats.

In addition, a video with a three-dimensional representation of the finished project is not a BIM format and neither is a picture of a rendering, maybe the file that generated these results is, but videos and images are only documents in the same way a movie made with a video camera or a traditional photo is.

Not even a laser scan is BIM. A point cloud is not BIM as it has no information about the elements, it is just a collection of colored points. The point cloud is then a document, as are orthophotos.

A BIM Author is needed to extract BIM data from these types of documents.

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PEOPLE

People are always the element that makes the difference and therefore the most important, BIM is no exception. To have successful BIM, people are needed to manage it; there are many definitions of people's roles within BIM, some examples are: BIM director, BIM manager, BIM Champion, BIM Consultant, BIM Coordinator, BIM Author, BIM Technologist, BIM Support, etc.).

For simplicity here we focus only on three roles that we define as the most important for understanding the system.

- **BIM Manager**

The BIM Manager performs a wide range of activities, such as the development of company policies, processes, protocols, and technologies, as well as advice on strategic issues such as change management.

The BIM manager is a person to whom one can address difficult questions and who acts as a problem solver and facilitator, a guide who helps team members to make the right decisions.

The BIM manager defines project models and sets standards as well as protocols for BIM.

- **BIM Author**

A BIM Author is any individual or company that creates the information for BIM. Their contribution is related to the role of their area of expertise, the team to which they belong, and their position in the process. For example, BIM Authors are people (engineers, architects, etc.) that generate information models for buildings by using architecture, structural engineering, and infrastructure design software (BIM authoring tools). BIM Authors generate information in accordance with the processes, guidelines, and technologies defined for the BIM process in which they operate.

- **BIM Champion**

If you are just starting to use BIM, this role is crucial because the BIM Champion is responsible for encouraging and supporting others in the adoption and implementation of BIM.

Implementing BIM in a company is a process that can be difficult and sometimes has the danger of failing, this manager will help you to complete your BIM process.

The BIM Champion can come from different branches of the construction industry, but must be a champion of enthusiasm, adaptability, and determination.

Beware! BIM roles are not simply roles that already exist in the company with the word BIM placed in front. Roles and responsibilities are specific to building information modeling and must take the vision, strategy, and objectives of the company into account.

Is it or isn't it BIM?

If you have not understood and defined these five elements well (processes, policies, technologies, information, and people), it is very unlikely that you are doing BIM.

Given that by the end of 2016 the use of BIM will become mandatory, it is better to get to work right now.

.... to be continued...