" What is **BIM**? An overview of building information modeling: use of the application in building technology

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EuroSDR - AMS GeoBIM benchmark workshop

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CMAA Owners survey, CMAA Industry Report, Economist Megazine

Top 10 Cost over run factors



Fluctuation in prices of raw materials **02** Unstable cost of manufactured materials **03** High cost of machineries **1** Lowest bidding procure method 05 Inefficient project management /Inefficient cost control 06 Long period between design and time of bidding **07** Conventional method of cost estimation **08** Excessive change orders **O** Inadequate project planning **1** Inappropriate government policies

NED University survey







Jerry Laiserin widely uses the term in his US publications (2002).

Evolution of design process



History of Building Information Modelling



BIM - Definition

The American Institute of Architects (AIA) defines BIM as

"a model-based technology linked with a database of project"

WHAT IS SEEN

3D VISUALIZATIONS

BASIC QUANTITIES

THE TIP OF THE BIM ICEBERG

IS HID

THERMAL ANALYSIS STRUCTURAL ANALISYS LIGHTNING ANALISYS PREFABRICATION MANAGEMENT PHOTOGRAMMETRY GEOREFERENCE ADVANCED QUANTITIES

How BIM saves owners' time and money throughout the building lifecycle

64%

One main target is to really bridge and integrate design and final building production.



BIM vs CAD: different workflows



A NEW WORK PHILOSOPHY

the way of **DRAWING** has changed with **CAD**...

...the way of **DESIGN** will change with **BIM**

COMMUNICATION & KNOWLEDGE EXCHANGE

Increase the ease of dialogue between all IT tools.



Federated model



The federated model is a model that contains all the models making up the entire building.

The models are linked and are shared between the parties operating in the job order.



BuildingSmart International was founded in 1995, and produces a new standard, the IFC format.

THE INTERCHANGE FORMAT: IFC

Industry Foundation Classes

IFC

The IFC defines a single "interoperable" model among all compliant applications: it is an open, public and independent data format from any software manufacturer.

BIM

Application & Advantages

1_ UNIQUE MANAGEMENT OF PROJECT VIEWS

Every modification made to the drawing is automatically reported on each piece of the model, be it a drawing, an abacus or a calculation.



2_ SIMPLE VISUALIZATION OF THE PROJECT

Facilitated communication through cloud services, smartphone or tablet applications, BIM viewers, virtual reality.



3_ HIGH LEVEL OF CUSTOMIZATION

The parametric components are the basis of all building components designed in a BIM environment.

The parameters can be of all types: dimensional, thermophysical, material, structural, etc.

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4_ LEVEL OF DETAIL

LOD 200

LOD

100



it is possible define a unique object and use it for the different representation scales and the different design phases.

LOD 300





5_ 4D MODEL: TIME MODEL

Project phasing simulations.

The introduction of the time factor and the cost estimation factor within the project makes it possible to manage the building during its entire life cycle.



6 **5D MODEL: COST MODEL**

• Trade verifications from models

• Real time conceptual modeling and cost

Quantity extraction to support detailed cost (

ESTIMATING

planning

estimates

• Value Engineering

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<DOOR SCHEDULE>

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7_ 6D MODEL: ENERGY MODEL

SUSTAINABILITY

- Conceptual or Detailed energy analysis
- Life cycle energy performance building
- Lighting and daylighting analysis
- Sun & shadows studies
- Airflow Analysis and Climate Analysis
- Solar Radiation Analysis

8_ 7D MODEL: FACILITY MANAGEMENT

FACILITY MANAGEMENT APPLICATIONS

Computerized building database for record renovation and maintenance

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9_ INTERFERENCE CHECK

The real-time representation of the threedimensional model allows to check the interferences between the single components. The two-dimensional representation only becomes a possible piece of work that can be extracted from the project management database.

10_ NOT ONLY DRAWINGS

- Render
- Animations
- •

Other ADVANTAGES

Let repetitive work be done by the machine

Draw more precisely

Draw quicker

Get rid of papers by electronic documents



- Let Automations functionality take care of certain tasks
- Faster Project delivery
- Continual Improvement
- Concentrate on the building instead of the drawing

Some BIM Software

Architecture | Structure | MEP | Computational Design | Managing | Coordination



BIM around the Globe





I never think of the future. It comes soon enough.

Albert Einstein



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