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BUILDING INFORMATION MODELLING

BIM/CAD Training

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7+ YEARS OF BIM EXPERIENCE

WHAT IS BIM ?

Building Information Modeling
(BIM) is a digital representation of physical and functional characteristics of a facility.
BIM is the shared knowledge resource of information. It is also the life time quality administration of any project. BIM, not only manages and model graphics, but also all information. This information allows automatic generation of drawings and reports with design analysis, schedule simulation, facilities management, and much more.

EVOLUTION OF DESIGN PROCESS

- **2D SOLUTIONS**
Electronic drafting board

- **3D SOLUTIONS**
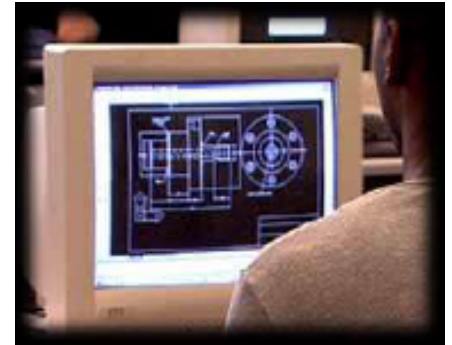Modeling for pure visualization process

- **BIM SOLUTIONS**
Modeled with Integrated architectural information

- **CONSTRUCTION COORDINATION (5D)**
Time, Scheduling & Cost Estimation

WORKING CONCEPT OF 2D CAD

- Draft everything in 2D

- No 3D model is created

- Design changes maintained manually on every drawing

- Typically, each drawing is saved in its own file
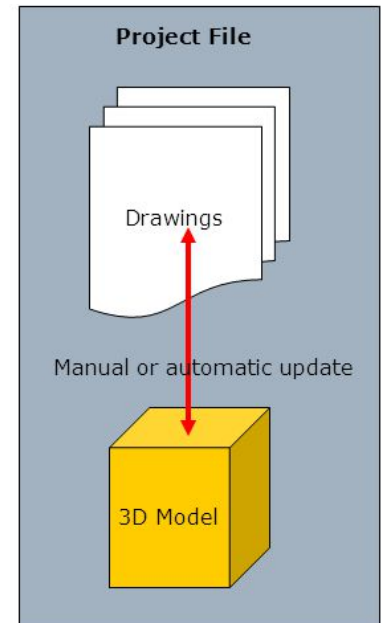
BENEFITS

- Compared to hand drafting Faster modifications

- Accuracy

- Smart drafting tools (fills, dimensions)

- Repetitive elements (blocks, xrefs)

DRAWBACKS

- Changes on one drawing don't influence other drawings

- Drawing coordination is essential

- No more content compared with hand drawing

- Collisions and other design problems are difficult to identify

WORKING CONCEPT OF 3D CAD

- The application has both 2D and 3D capabilities

- Buildings can be modeled in 3D if necessary

- 3D and 2D information can be included in a single file

- Drawings can be partially derived from the model

- No automatic documentation

- Application mostly works with 2D and 3D drawing tools instead of real architectural elements

- Additional content can be created including visualization and basic quantity take-offs

BENEFITS

- Compared to 2D CAD Easier checking of planning errors

- Managing changes is easier

- Visualization and calculation

- Smaller file size

- Easier to model complex geometries

DRAWBACKS

- Concept doesn't follow the architectural design process

- Documentation is not fully automatic

- No architectural content like in BIM applications

WORKING CONCEPT OF BIM

BIM= Building Information Modeling
Also known as Virtual Building or Building Simulation

Drawings, building views, visualizations, calculations and quantity take-offs are automatically derived from the 3D model.

BENEFITS

- Compared to 2D and 3D CAD Elements have architectural meaning

- Changes on one drawing have influence on all others

- Rich visualization content (animation, sun studies, renderings etc.)

- Automatic quantity take-offs, schedules

- Connection to structural, energy calculation,collision detection etc.

DRAWBACKS

- Higher training requirements

- Might be difficult to learn the BIM approach for people who were previously 2D users

- Operating Cost

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BIM IS A PROCESS!

- Generic term used to describe advanced 3D CAD technology for modeling and managing buildings and information related to them.

- BIM models are differentiated from traditional CAD systems in that the software objects in a BIM model are intelligible to computer programs as representations of real-world building components, unlike the graphic objects in a two-dimensional CAD file".

- The American Institute of Architects (AIA) defines BIM as "a model-based technology linked with a database of project information".

- BIM covers geometry, spatial relationships, geographic information,quantities and properties of building components.
(http://en.wikipedia.org/wiki/Building_Information_Modeling)

BIM USES

- Project Definition, Planning and

- Pre-Design

- Architectural Modelling (Design

- Structural Modelling and Analysis

- MEP Modelling and Analysis

- Construction Models

- Facilities Management/As-built Models

ADVANTAGES

- Design visualization

- Reduction of Errors

- Collision Detection

- Quantity Take Off

- 4D Construct ability

- 5D Cost Estimating

- Asset/Equipment Inventory

- Facility Operations

- Space assignment

- Maintenance repair

- Emergency response, etc.

BIM MATURITY LEVEL
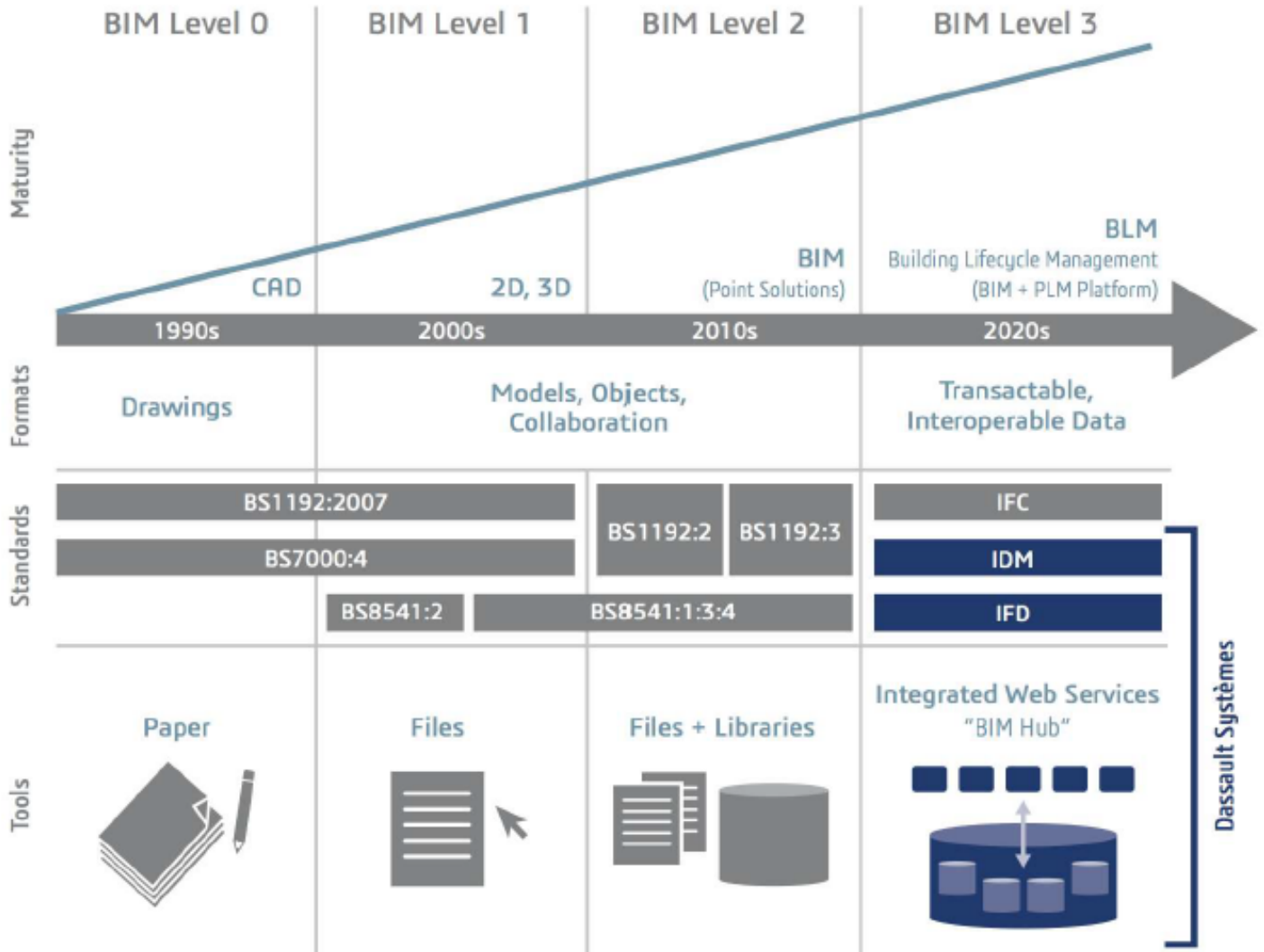
The BIM Maturity Model by Mark Bew and Mervyn Richards adapted to reflect BLM's relationship to Level 3.
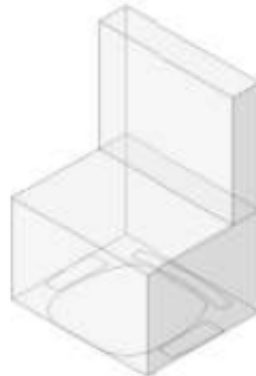
BIM MATURITY LEVEL

BIM DETAIL LEVEL

LEVEL of DEVELOPMENT

LOD 100	LOD 200	LOD 300	LOD 400	LOD 500
Concept (Presentation)	Design Development	Documentation	Construction	Facilities Management

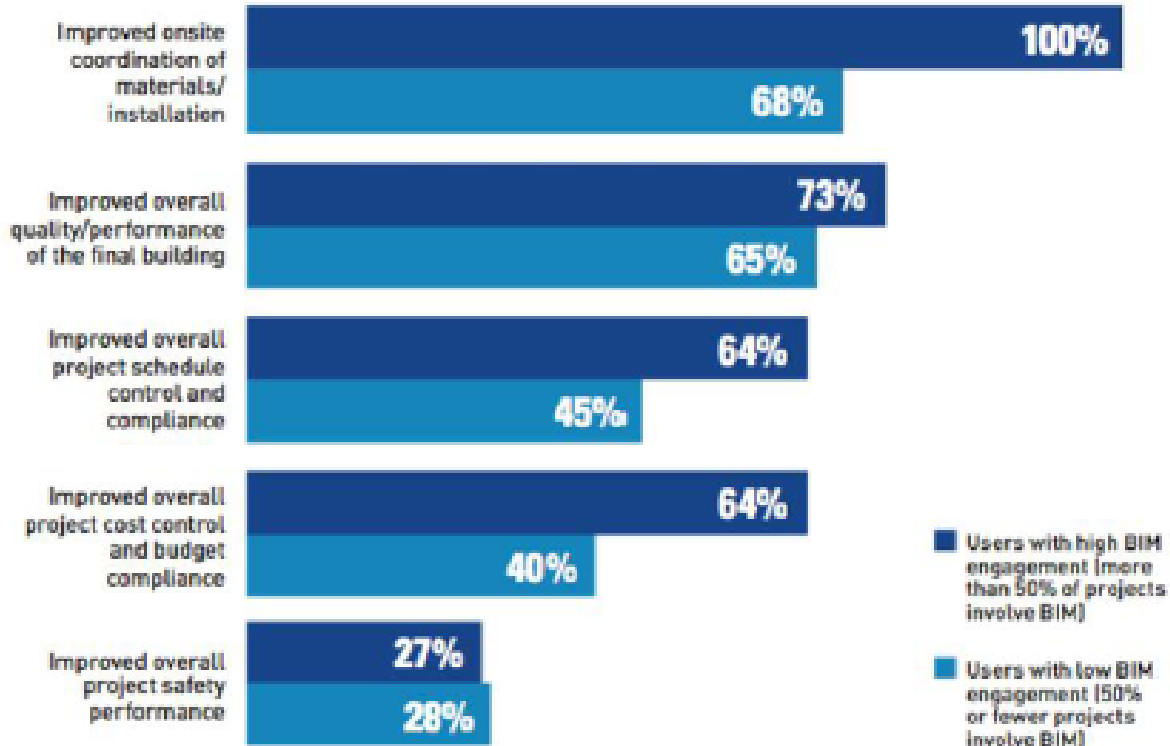| DESCRIPTION:	DESCRIPTION:	DESCRIPTION:	DESCRIPTION:	DESCRIPTION:
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	700	700	685	685
DEPTH:	DEPTH:	DEPTH:	DEPTH:	DEPTH:
	450	450	430	430
HEIGHT:	HEIGHT:	HEIGHT:	HEIGHT:	HEIGHT:
	1100	1100	1085	1085
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MODEL:	MODEL:	MODEL:	MODEL:	MODEL:
Mirra	Mirra	Mirra	Mirra	Mirra
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BIM DETAIL LEVEL
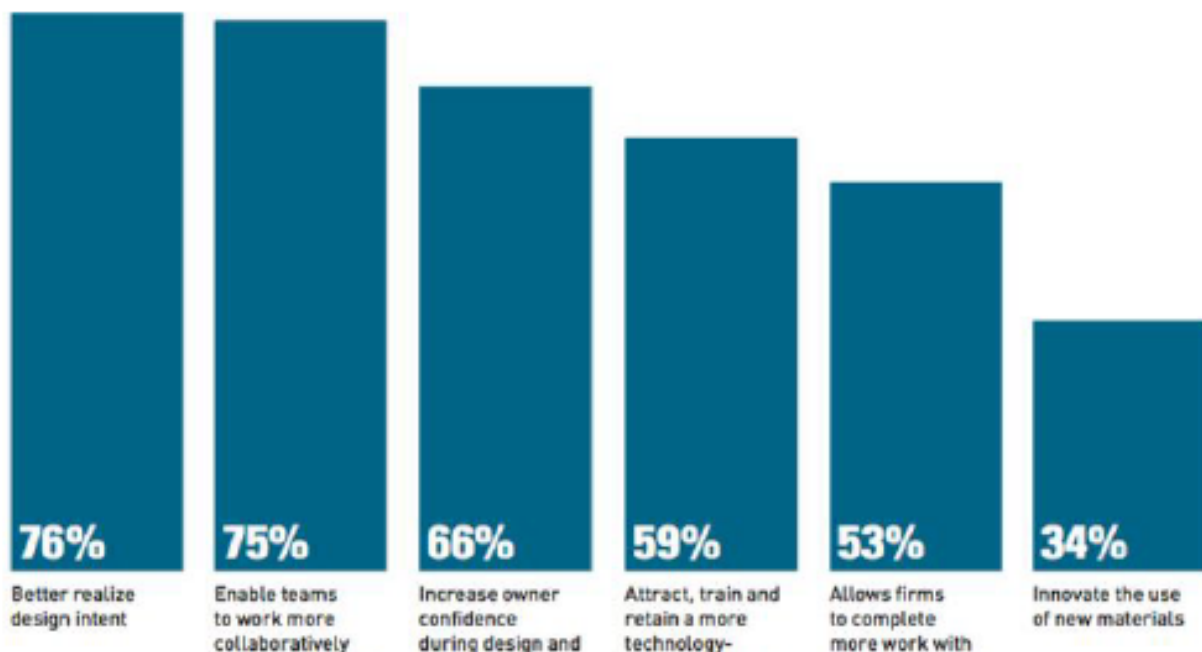
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BENEFITS OF LEARNING BIM

Benefits of BIM (High Engagement Users Only)

Percentage of highly engaged BIM users who cite each of five benefits generated by having other key team members engaged with BIM

Benefit		
Improved onsite coordination of materials/installation	100%	68%
Improved overall quality/performance of the final building	73%	65%
Improved overall project schedule control and compliance	64%	45%
Improved overall project cost control and budget compliance	64%	40%
Improved overall project safety performance	27%	28%

■ Users with high BIM engagement (more than 50% of projects involve BIM)

■ Users with low BIM engagement (50% or fewer projects involve BIM)

Predicted Future Benefits of Integrated Workflow

Percentage of respondents who predict high or very high impact in the future for each of 6 positive impacts of the integrated workflow

Better realize design intent	Enable teams to work more collaboratively	Increase owner confidence during design and	Attract, train and retain a more technology-	Allows firms to complete more work with	Innovate the use of new materials
76%	75%	66%	59%	53%	34%

BENEFITS OF LEARNING BIM

BIM TRAINING AT LUPITER

BIM Professional Training - 50 Days

Software's Used :

· Revit Arch/Structure / Mep Professional

· Navisworks Professional

BIM Advanced Training - 100 Days

Software's Used :

· Revit Arch/Structure/Mep Advanced

· Navisworks Advanced

· BIM 360

· Dynamo

Note: The Course Duration May Vary Depends On The Students Capability.

OPPORTUNITIES IN BIM

FUTURE IS BIM!!!

Of course BIM is the **future** and will change the **AECO** sector forever . BIM is the future in so far as it is the most information rich approach to planning and construction we have at the moment. BIM is really an impressive technology that no doubt holds brilliant promise for the future of some component of the AEC community. But trying to find out just how fast it is catching on in the building industry is an elusive undertaking. At the end it produces an database that can be used in many areas that we know like facility management, and some of areas that we yet need to develop. It is one dataset in one place that contains maximum of building data that we need.

Revit – BIM software is considered to be of the best technique for the implementation of BIM in the building construction industry. It has opened up a lot of avenues of growth in the digital building industry in future.

ROLES OF BIM :

Roles	Team
BIM JOB CAPTAIN (MODEL MANAGER)	BIM PROJECT SUPORT & PRODUCTION
BIM COORDINATOR	
BIM TECHNICIAN	BIM DESIGN COMMUNICATION
BIM MODELER	

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