

BENEFITS OF BIM FOR CONSTRUCTION MANAGERS

Computer Mediated Construction
(CE6014)

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WHAT IS BIM?

- ✘ In early 1957, Dr. Patrick J. Hanratty developed Computer-Aided Manufacturing (CAM).
- ✘ In 1963, the first CAD with graphical user interface was developed by Ivan Sutherland at MIT Lincoln Labs.
- ✘ In early 1970s, the concept of BIM was first developed by academics with basic 2D and 3D Computer-Aided Design. (first used in 1986 by Robert Aish).
- ✘ In 1982, a Hungarian company Graphisoft started the development of the first BIM CAD software known as architectural CAD.
- ✘ (L Jimenez, 2012) To those familiar with the construction industry it may appear as though BIM appeared virtually overnight. In a traditionally slow moving field, the percentage of companies using BIM has jumped precipitously from 28% in 2007, to 49% in 2009, and to 71% in 2012. As of 2014 it can be assumed this number is edging ever higher. However, this recent proliferation of this technology belies a long iterative software development process of over 40 years.

WHAT IS BIM?

- ✘ In 1984, the first commercial version of ArchiCAD was released for the Apple Lisa personal computer the oldest continuously marketed BIM architectural design tool today.



WHAT IS BIM?

- ✘ BIM is a technology and a process to manage construction projects; it has transformed the way infrastructure is designed, analysed, constructed and managed. BIM can enhance and improve planning process, design and construction of projects.
- ✘ BIM software can be used by everyone involved in construction sectors including individuals, companies and government agencies who have to plan, design, construct, operate and maintain a variety of physical infrastructures, such as water, sewage, electricity, houses, apartments, schools, shops, offices, factories, warehouses and prisons. (Aryani Ahmad Latiffi et al, 2013)

DIMENSIONS

- ✘ Traditionally, building design used to rely upon 2-dimensional (2D) engineering/architect technical drawings; the arrival of BIM extended it beyond
- ✘ 3-dimensional (3D) (spatial dimensions – width, height and depth).
- ✘ 4-dimensional is considered the time.
- ✘ 5-dimensional is considered a cost.
- ✘ 6-dimensional is considered operational applications, e.g., CAFM -Computer-Aided facilities management.
- ✘ 7-dimensional is considered related applications, e.g., contracts, purchasing, suppliers, and procurement solutions.
- ✘ BIM covers spatial relationships, geographical information and light analysis regarding building components.

BIM 4D CONSTRUCTION MODELING AND PLANNING



BIM FOR CONSTRUCTION MANAGERS

- ✘ The use of BIM in construction industries has significantly improves communication and information sharing between parties involved in construction projects.
- ✘ Resulting improved efficiencies thus huge savings in projects with regard to all the aspects such as cost, time, changes to be made, etc.
- ✘ Proficient use of BIM by users (well trained) gives them several benefits to improve productivity and quality of works.

USE OF BIM IN CONSTRUCTION MANAGEMENT

PLAN	DESIGN	CONSTRUCT	OPERATE
Existing Conditions Modeling			
Cost Estimation			
Phase Planning			
Site Analysis			
Programming			
	Design Reviews		
	Code Validation		
	LEED Evaluation		
	Other Eng. Analysis		
	Mechanical Analysis		
	Lighting Analysis		
	Structural Analysis		
	Energy Analysis		
	Design Authoring		
		3D Coordination	
		3D Control and Planning	
		Digital Fabrication	
		Construction System Design	
		Site Utilization Planning	
			Record Model
			Disaster Planning
			Space Mgmt/Tracking
			Asset Management
			Building System Analysis
			Maintenance Scheduling

Primary BIM Uses
 Secondary BIM Uses

BENEFITS OF BIM

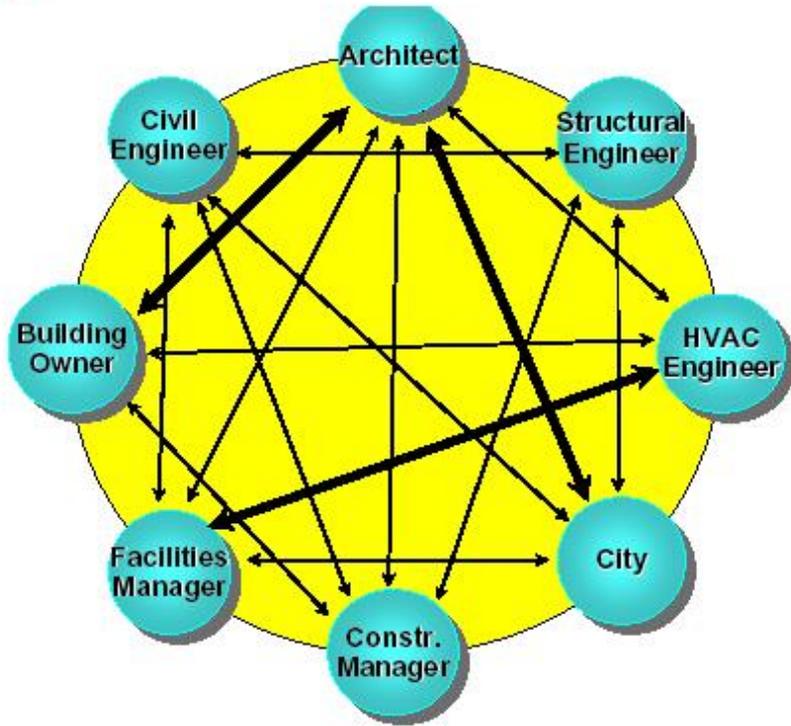
- × Improved virtualisation
- × Early identification of constructability issues
- × Estimating and Budgeting
- × Improved productivity due to easy retrieval of information
- × Increased coordination of construction documents and trades
- × Early Clash detection
- × Increased speed of delivery
- × Reduced costs
- × Planning tools for site logistics and lean construction
- × Safety management tools
- × Reduced errors and omissions

PROPOSED SOLUTIONS

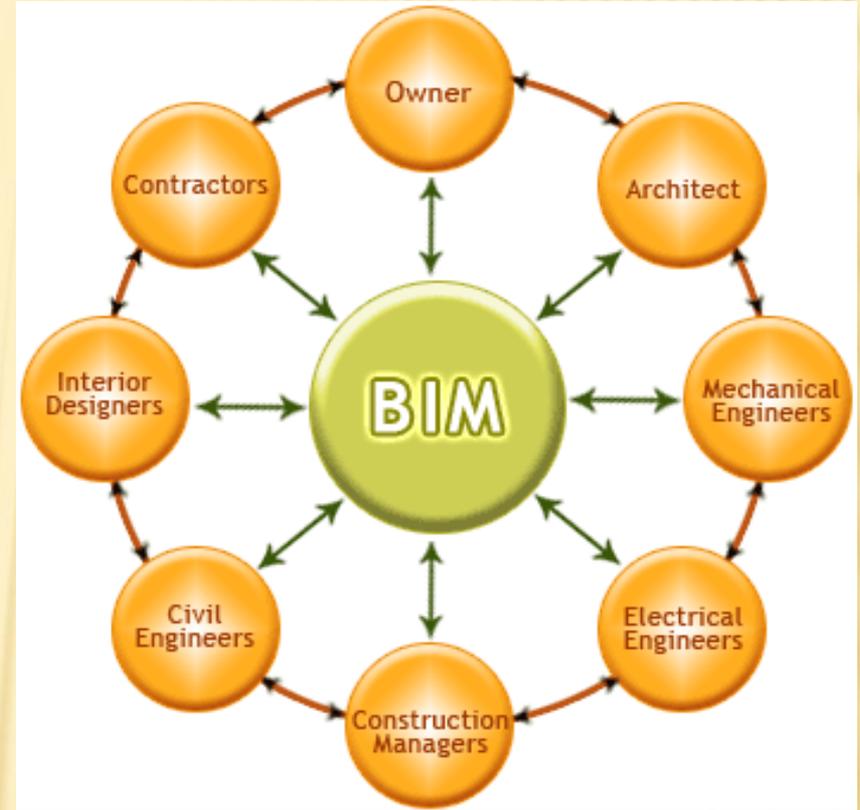
- ✘ Training professionals with modern technology
- ✘ Ability to communicate every idea identified
- ✘ Use BIM in all construction stages
- ✘ Assign responsibilities to team members so that each member knows their limitations, roles, rights and risks

TRADITIONAL INFORMATION EXCHANGE VS BIM INFORMATION EXCHANGE

Traditional Information Exchange



TRADITIONAL INFORMATION EXCHANGE



BIM INFORMATION EXCHANGE

Any questions?

THANK YOU.