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# Building Information Modelling Technology for Risk Analysis and Mitigation

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**ABSTRACT:** The potential of Building Information Modeling (BIM) to support a transformation of the processes of design and construction has been evident in the construction industry. Although BIM is considered helpful in improving design quality by eliminating conflicts and reducing rework, there has been little research into using BIM throughout the project for construction quality control and efficient information utilization. Due to the consistency of design data with quality data and construction process with quality control process, the potential of BIM implementation in quality management lies in its ability to present multi-dimensional data including design data and time sequence. This paper explores and discusses the advantages of 6D BIM for a quality application based on construction codes.

**KEYWORDS:** BIM, 6D, REVIT, Risk Analysis, Mitigation

## I. INTRODUCTION

In this part a few contextual analyses; worldwide diaries are concentrated to comprehend BIM innovation. Through writing overview it can be presumed that BIM innovation ought to be executed in development industry. The BIM innovation can defeat impediment of traditional CAD displaying.

Building Information Modelling (BIM) has turned into an outstanding built up broad communitarian process and a vital zone of improvement in the Architecture, Engineering and Construction (AEC) industry and has risen above all orders. The utilization of BIM in development activities can expand the data quality required for settling on basic outline choices to get to a building's ecological effect.

Building Information Modelling (BIM) is broadly observed as an impetus for advancement and profitability in the development business. BIM can help a more feasible development process that thusly may add to annihilating destitution in creating nations (United Nation Millennium Goals). While BIM is progressively being received in created nations, executions in the creating nation setting are uncommon.

BIM has been generally utilized as a part of business building development to not just for all intents and purposes assemble an office before its real physical development, yet in addition mimic and investigate potential effects (Smith 2007).

Building data demonstrating (BIM) and related issues has been a subject of extreme innovative work, as detailed in the on-going insightful writing. Enhancements in the effectiveness of the arranging and configuration forms, development arranging and control, plan development coordination, and offices administration have been dissected. Moreover, benefits got from BIM usage have been characterized in light of upgrades accomplished all through building-related procedures.

### 1.1 Aim Of The Present Work

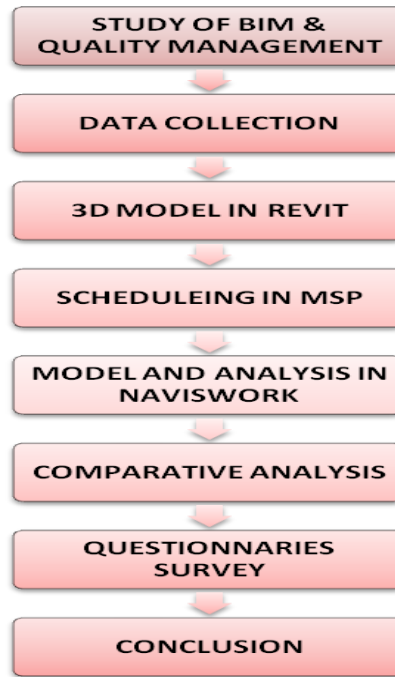
To analyses BIM for Commercial building site

### 1.2 Objectives:

- To understand BIM flow process for effective coordination with contractors, structural consultant and architects.
- To prepare 6D model for G+6 commercial building model which include cost, quantity, schedule
- To check BIM process for quality management of construction industry and its verification with questionnaires survey.



## II. METHODOLOGY



Building data appearing (BIM) and related issues has been a subject of certifiable creative work, as revealed in the advancing academic arrangement. Updates in the efficiency of the organizing and design structures, improvement orchestrating and control, plan advancement blend, and workplaces the boards have been poor down. Moreover, benefits got from BIM execution have been depicted in context on redesigns accomplished all through structure related methods. It is exhaustively perceived by specialists and assert by earlier research that BIM and 4D approaches can give quicker and all the additionally persuading correspondence regarding data between charmed endeavor social events and yield improved and imaginative courses of action beginning from better arrangement, close by various points of interest. Building data showing (BIM) is a framework including the age and association of electronic portrayals of physical and rational attributes of spots. Building data models (BIMs) are documents (regularly yet not all around in restrictive arrangements and containing particular information) which can be secluded, traded or sorted out to help essential authority with respect to a structure or other developed asset. Stream BIM writing computer programs is used by individuals, associations and government workplaces who plan, structure, create, work and keep up grouped physical establishments, for instance, water, decrease, power, gas, correspondence utilities, avenues, ranges, ports, tunnels, etc

## III. PROBLEM STATEMENT

About 19 years ago, we set out on an endeavor to redefine the premium and luxury housing experience for Pune. With a drive to assemble and give ultramodern ventures to Pune, we concentrated on conveying living spaces that are at standard with forthcoming patterns and measures. While we were grinding away, we likewise continued formulating better approaches to coordinate a feeling of all encompassing network living among Pride Purple inhabitants. With a solid establishment in the realm of condos, line houses, cabins, business squares, assembly halls and lodgings, today, we are equal with extravagance and premium living. Pride Purple Square is a business improvement by Pride Purple Group. It is situated in Wakad, Pune. It offers roomy and aptitude completely structured Shops, Showrooms and Offices. The project is well equipped with all the amenities to facilitate the needs of the business owners.



Fig 1. 3D View Of Pride Purple Square

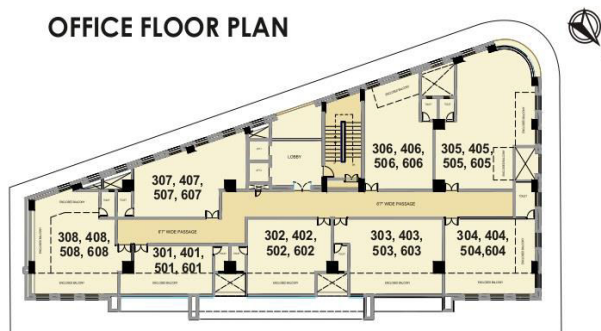


Fig 2 Floor plan

### IV.RESULT AND DISCUSSION

LOD 600 MODEL PREPARED IN REVIT SOFTWARE: Using Autodesk Revit software 3D model of building is prepared in LOD 300. Following are image of model, framing of model, development of model and final LOD 600 model. After 3D modelling proceed to scheduling in Microsoft Project software. And then 6D model in Autodesk Navisworks will work out.

#### 5.1 Modeling In Revit

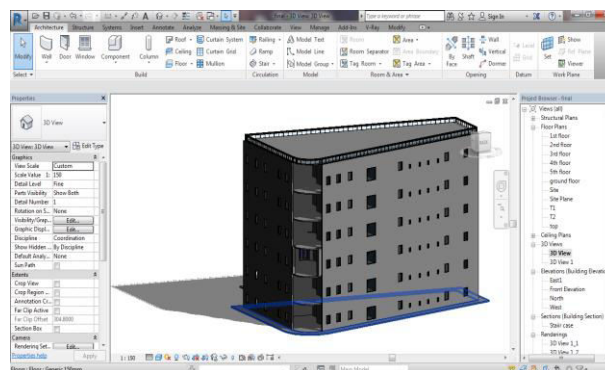


Fig 3 Modeling In Revit



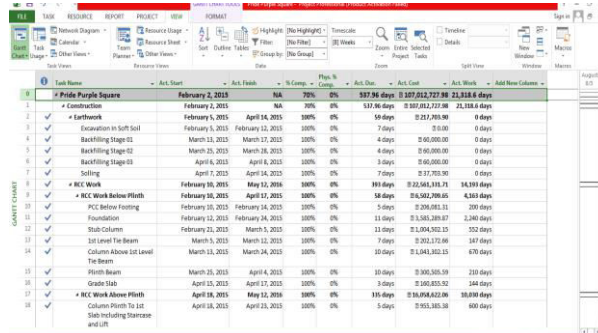
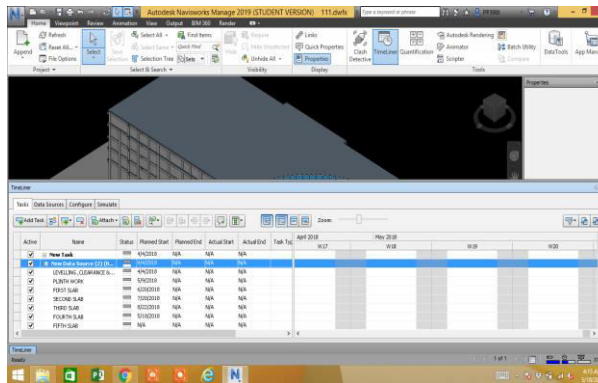


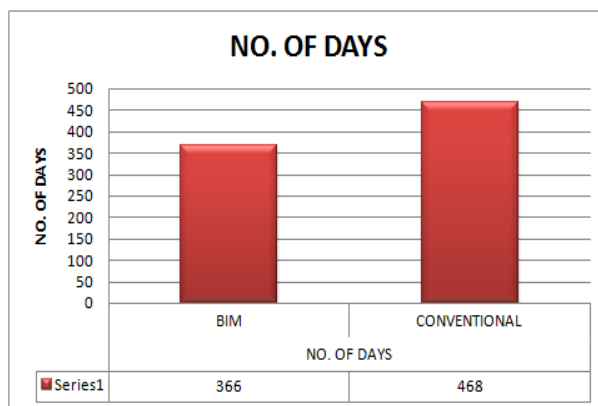
Fig4 Scheduling in MSP

3D model from Revit software and Schedule from MSP is imported to the Naviswork and 6D model is done in Naviswoks. In this software simulation is workout



Lod 600 Model+ Scheduling

It is observed that by using BIM technology we can save total 102 days of construction of building.



### V. CONCLUSIONS

BIM software accelerates the risk management process because the models created contain all the required information in a unified way, making it easier for project stakeholders to understand and accept the risk management process and outcome. A user-friendly and easy-to-understand approach enables clients to meet occupancy and sales targets, while quantity surveyors can take area and easement information from the model and calculate design costs more quickly. BIM visualization techniques use conflict detection, allowing design errors to be detected and corrected before it is too late. In the pre-production phase, BIM can keep cost savings



low and reduce waste, reducing the possibility of cost risks and missed deadlines in the process. This is due to parametric modeling, which involves the use of a relational database containing information regarding the elements of the structure and their relationships. As a result, it is possible to perform a high level of model analysis, which includes everything from generating spatial calculations, energy efficiency, structural analysis details and traditional design. The risk of incorrect measurements or inaccurate costs will thus be significantly reduced. In this paper the BIM method is used for effective construction management, the quality management improvement is studied and it is observed that using clash detection effective coordination of various parties can be maintained. Furthermore the number of schedule days can be reduced to 25-30% by reduction in planning, analysis and design days

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