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SLUM REDEVELOPMENT MODEL BY AUTODESK REVIT

Ms. Savitri Prajapati[1], Mr. Mahadev Shingade[2], Mr. Kaushik Bhosale[3], Mr. Charudatta Patil[4] , Prof. Shreedhar Patil[5]

[1]*under Graduate Student, B.E.Civil, Dept. Of Civil Engineering, Dr.D.Y.Patil School Of Engineering And Technology, Lohegoan Pune*

[2]*under Graduate Student, B.E.Civil, Dept. Of Civil Engineering, Dr.D.Y.Patil School Of Engineering And Technology, Lohegoan Pune*

[3]*under Graduate Student, B.E.Civil, Dept. Of Civil Engineering, Dr.D.Y.Patil School Of Engineering And Technology, Lohegoan Pune*

[4]*under Graduate Student, B.E.Civil, Dept. Of Civil Engineering, Dr.D.Y.Patil School Of Engineering And Technology, Lohegoan Pune*

[5]*Professor, Dept. Of Civil Engineering, Dr D Y Patil School Engineering And Technology, Lohegoan Pune, India*

Corresponding Author: prajapatisavitri25@gmail.com

Corresponding Author: mahadevdattashin@gmail.com

Corresponding Author: kbhosale1999@gmail.com

Corresponding Author: patilcharudatta65@gamil.com

Corresponding Author: shreedhar.patil@dypic.in

Abstract: Building Information Modelling (BIM) is a high-technology process transformational method to address project complexity and rapid development. A BIM-based project produces digital assets that transform how supply chain partners work together to improve the design and construction process, enabling early problem identification and removal, generating cost and schedule benefits, and improving the facilities management and operations process after occupancy. Rather than the traditional two dimensional (2D) process used in facilities design and construction, the BIM delivery method uses three-dimensional (3D) digital model

BIM offers advantages in multidisciplinary collaboration, cost and schedule, project understanding, and design constructability. Access to digital models early in and during the design process offers a multidisciplinary view, with higher-order collaboration among project participants and better design understanding through visualization, reducing Requests For Information (RFIs) and field rework .

1. Introduction

BIM as Management involves working with the models to successfully maintain and communicate the project information. The process of managing a BIM project is different from the traditional way of working. BIM projects require all project stakeholders to be involved at the early stage. BIM encourages closer collaboration with the team members avoiding loss of information.

Traditional project life-cycle involves linear process of carrying out the activities.Linear project work-flow has obvious disadvantages of loss of information and ambiguity in critical decisions until the last minute. Linear work-flow does not involve all project stake holders early in the project to help avoid abortive work.

BIM project life-cycle encourages collaboration of the entire project team during the full life-cycle. BIM also provides access to seamless communication with minimal loss of information and enables the team to make critical project decisions early in the process. BIM is currently perceived as the only direction for the construction industry to increase productivity and to develop high

quality and sustainable construction projects. It has been made an industry wide mandatory process and is followed by many countries. Early adopters are already reaping the benefits of the change with greater efficiency. There has been a rise in productivity and also a gain in the competitive edge.

2. Literature Review

BIM Technology
Salman Azhar,PHD ,A.M.ASCE
Building information modeling (BIM) is one of the most promising development in architecture ,engineering, construction (AEC) industry with BIM technology , an accurate virtual model of building is digitally constructed it helps engineers to plan and visualize the structure before construction it gives precise information of this modal as schedule estimation , sections, layouts, solar study and structure analyze and other necessary information.

Streets As Tools For Urban Transformation In Slums:
A Street-Led Approach to Citywide Slum Upgrading
Dr. Joan Clos,
Under-Secretary-General of the United Nations Executive Director, UN-Habitat.
A presented the evidence-based argument that streets, by being natural parts of city networks and urban layouts, are a potentially vigorous tool to achieve physical improvements in slums as well as to integrate slums into the city, to regular rise land and security of tenure, and set the basis for sustained citywide transformation and local economic development.

Compendium Of Innovative Emerging Technologies
Durga Shanker Mishra
Secretary
Ministry of Housing & Urban Affairs Government of India
About 90% of the building work including finishing is complete in plant/casting yard leading to significant reduction in construction & occupancy time.

BIM Software In Architectural Modelling International Journal Of Innovative Technology And Exploring Engineering. Projects: Software programmesSoftware Authors:
Zeynep Onur
Near East University
Fatemeh Nouban
Near East University
The Computer Models Of Buildings That Contain All The Information About Future Facilities, Which Is Called BIM (Building Information Modeling) Technologies, Took An Important Place In
Architectural Offices And Architectural Design. By Means Of BIM Technologies, The Main Groups Of Specialists Had A Chance To Collaborate From The Very Beginning Of The Creation Of The Building Model And Its Use Up To The End Of The Design Of The Building. Since The 1960s, Computer Programs Were Mainly For Drawing, But With BIM
Technologies, It Is Possible To Present A Virtual
Reality Of A Building Process

Book Enhanced Building Information Models Using Iot Services And Integration Patterns Project: IoT BIM and GIS for Smart Cities Authors:
Umit Isikdag
Mimar Sinan Güzel Sanatlar Üniversitesi
This book explains how to combine and exploit sensor networks and internet-of-things (IoT) technologies and Web-service design patterns to enrich and integrate Building Information Models (BIMs). It provides approaches and software architectures for facilitating the interaction with (and between) BIMs through Web services, and for enabling and facilitating the fusion of the information residing in such models or of information acquired from IoT technologies. The proposed software architectures are presented in the form of design patterns. This information fusion will facilitate many novel application fields ranging from emergency response, to urban monitoring and surveillance, and to smart buildings. The book consists of 8 chapters. The first 2 chapters focus on the basics of BIMs, while chapter 3 presents fundamental service-oriented architecture patterns for complex information models.

The Future of Building Information Modelling: BIM 2.0
In book: Enhanced Building Information Models Project: IoT BIM and GIS for Smart Cities Authors:
Umit Isikdag
Mimar Sinan Güzel Sanatlar Üniversitesi
The first evolution of BIM was from being a shared warehouse of information to an information management strategy. Now the BIM is evolving from being an information management strategy to being a construction management method. This change in interpretation of BIM is fast and noticeable. Four newly emerging dimensions in management of building information towards transforming BIM to BIM 2.0 focus on enabling an (i) integrated environment of (ii) distributed information which is always (iii) up to date and open for (iv) derivation of new information. The chapter starts with providing recent trends in building information modelling and then elaborates on technologies that will enable BIM 2.0. BIM-based management of the overall construction processes is becoming a major requirement of the construction industry, and the final part of this chapter provides matrices that can be used as a tool for facilitating BIM-based projects and process management.

3D And Virtual Reality For Supporting Redevelopment Assessment
August 2018
In book: Real Estate and GIS: The application of mapping technologies (pp.162-185)Edition:

1stChapter: 9Publisher: Routledge, Taylor & Francis Group Authors:
Aida Afrooz
University of South Australia
Russell Lowe
UNSW Sydney
Simone Leao
UNSW Sydney
Christopher J. Pettit
UNSW Sydney
Development application (DA) assessment requires high technical planning skills since it is not an easy task to envisage and assess proposed buildings which are originally in two dimensions (2D) in three dimensions (3D). To respond to this necessity, this study aims to assist local governments and real estate agencies in improving the quality of their services by integrating 3D modelling and virtual reality (VR) technologies. The key argument discussed here relates to the usefulness of 3D digital modelling and VR for DA assessments at local governments to deliver faster and higher quality building information to real estate agencies and housing stakeholders. The study has two phases: firstly the implementation of 3D digital modelling and VR for DA assessments for municipalities are investigated. Focus group interviews were conducted at three local councils with the participation of professionals from Sydney, Australia. Secondly, different levels of detail (LODs) are examined to determine their perceived utility in supporting DA-related tasks. An experiment was designed to further investigate the importance of LODs in 3D modelling as part of the assessment of DAs.
Results show that LOD3+vegetation was the most appealing level for understanding urban design projects including planning proposals and DAs

Task Complexity And Learning Styles In Situated Virtual Learning Environments For Construction Higher Education Authors:
Rui Wang
Deakin University
Russell Lowe
UNSW Sydney
Sidney Newton
University of Technology Sydney
Tuba Kocaturk
Deakin University
This paper contributes to the ongoing discussion and research on the role of 3D virtual learning environments in teaching and learning. It specifically focuses on the use of video games as an enabling technology in construction higher education. As such, it investigates whether task complexity has any influence on an individual's preferred learning style while learning through virtual reality (VR) technology. To answer this question and address relevant issues, an educational experiment has been designed and conducted. An experimental virtual learning environment, the Situation Engine, was set up as a virtual construction site for undergraduate construction students to experience construction work in progress. The design and development of the Situation Engine has drawn on powerful pedagogical theories such as situated and experiential learning. 253 undergraduate students participated in the educational experiment. Three tasks of different complexity levels were designed as the experimental environments; with level
of complexity being the independent variable

Redevelopment of Slum and It's Challenges and Solution Rubiya R. Pathan
, Prof. Pushpendra Kumar Kushwaha
M. Tech. Scholar, Construction Technology and Management, RKDF, Bhopal, India
Assistant Professor, Construction Technology and Management, RKDF, Bhopal, India Developing countries are facing a challenges of slums and there appears to be no fool proof solution to eradicate them. For improving the quality of life there are three approaches of slum Development and In-situ up-gradation approach is found to be the best one. Urbanization has created a large housing demand of urban poor. Although different stakeholders are involved there's a challenge to meet the redevelopment of urban slum dwelling projects in an effective manner

Slum Redevelopment: Current Approaches And Alternate Models Authors:
Ramakrishna Nallathiga
National Institute of Construction Management and Research
This paper shows an alternate model of slum redevelopment based on information technology and contracting methods to address housing needs of urban poor. It reviews the current models before proceeding to it.

Factors Affecting Residential Satisfaction in Slum Rehabilitation Housing in Mumbai
Bangkim Kshetrimayum, Ronita Bardhan and Tetsu Kubota
Affordable housing for the low-income population, who mostly live in slums, is an endemic challenge for cities in developing countries. As a remedy for the slum-free city, most of the major metropolis are resorting to slum rehabilitation housing. Rehabilitation connotes the improved quality of life that provides contentment, yet what entails residential satisfaction in such low-income situations remains a blind spot in literature. The study aims to examine the factors affecting residential satisfaction of slum rehabilitation housing in Mumbai, India. Here, the moderation effects of sociodemographic characteristics between residential satisfaction and its predictors are elaborated using a causal model.

Streets As Tools For Urban Transformation In Slums A Street-Led Approach To Citywide Slum Upgrading

Dr. Joan Clos,
Under-Secretary-General of the United Nations Executive Director, UN-Habitat

Streets as Tools for Urban Transformation in Slums: A Street-Led Approach to Citywide Slum Upgrading A UN-Habitat Working Paper first published in Nairobi in 2012.

The virtual absence of the most basic urban common good, which is public space, disrupts the liveability, safety, security, mobility and local development of urban areas. This strategy paper on street-led slum upgrading supports this argument with unequivocal evidences drawn from
several cities around the world. It illustrates my belief that urban planning combined with a network of streets and public spaces provide a viable solution to start solving the problems of slums. This approach connects and reconnects slums with the rest of the city by opening up space for infrastructure provision and income generation, enhanced security of land tenure and setting the basis for slums to transform themselves into future vibrant neighbourhoods.

3. Objective

- To use Autodesk BIM Software tool as precise way to plan and modal this mass project.
- To create accurate virtual & digital model of building for better planning & visualisation of building before construction.

4. Methodology

As we know that the success of Slum Rehabilitation/Redevelopment Scheme is seen in terms of bringing some major improvements to the living of slum dwellers, the same has been attempted to be captured through a questionnaire survey of the beneficiary slum residents based on the following factors:
Improvements in the levels of physical infrastructure (water, sanitation, waste management, power etc)

Benefits of working in a BIM environment are evident across the project life cycle from design through maintenance

Technology

BIM Technology is radically developed with new tools introduced into the market frequently. Models require special hard-ware and software and it is one of the main aspects to consider before starting a BIM project. BIM Data is heavier in size and more complex and requires the team to gain the skills-set to manage a project using BIM.

Schedule Management
Project schedule in a BIM environment is organized differently from the traditional workflow. BIM Project encourages the team members to make decisions early in the project and provides the requires information for this. This requires the project schedule to accommodate more time for the pre-construction phases of the project.

Collaboration :

Collaboration is the key to succeed in any construction project. BIM models enable to team to work in more collaborative environment. BIM Collaboration enables all project stakeholders to access critical project information at all stages of the project more accurately. BIM Collaboration is made easy by having the team to follow a standard methodology for modelling and communication from the beginning.
Adopting BIM for a project requires upfront preparation with standards and workflows and BIM specific training to be conducted for the team members

5. Result And Discussion :

- Increased productivity
- Enhanced communication
- Reduced conflicts & RFIs
- Improved control over information
- Control on the budget
- Increase in over-all project quality
- Competitive advantage
- New business opportunities
- Control over consultants and other project stake holders

At an organisational level, implementing BIM not only keeps the organization up to date with the industry practices but also has several other benefits.

6. Conclusion

Using BIM and BIM-aware tools such as those described in this chapter can give you an early understanding of what the scale, site, and building conditions are and what the cost of a project is. Using BIM, and the technologies that support its varied uses, helps inform the project team and streamline processes. You can use site analysis tools to understand multiple sites and communicate potential advantages and drawbacks of each without leaving your desk. As a design model changes throughout the course of a project, you can use the BIM as a tool to coordinate takeoff and costs. Using this means of estimating creates a proactive design-to-budget approach with the architect and engineering team, as opposed to dealing with a reactive response to value engineering conditions later.

REFERENCES

[1] BIM Technology
[2] Streets As Tools For Urban Transformation In Slums: A Street-Led Approach to Citywide Slum Upgrading
[3] Compendium Of Innovative Emerging Technologies
[4] BIM Software In Architectural Modelling International Journal Of Innovative Technology And Exploring Engineering.
[5] Book Enhanced Building Information Models Using Iot Services And Integration Patterns
[6] The Future of Building Information Modelling: BIM 2.0
[7] 3D And Virtual Reality For Supporting Redevelopment Assessment
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[8] Task Complexity And Learning Styles In Situated Virtual Learning Environments For Construction Higher Education
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[11] Factors Affecting Residential Satisfaction in Slum Rehabilitation Housing in Mumbai
[12] Streets As Tools For Urban Transformation In Slums : A Street-Led Approach To Citywide Slum Upgrading

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https://ghtc-india.gov.in/Content/pdf/54_Tech_Compendium_with_Preface.pdf

https://www.researchgate.net/publication/335819954_BIM_Software_in_Architectural_Modelling

https://dl.acm.org/doi/10.5555/2845113

https://www.researchgate.net/publication/300344752_The_Future_of_Building_Information_Modelling_BIM_20

https://www.researchgate.net/publication/327134039_Chapter_9_3D_and_virtual_reality_for_supporting_redevelopment_assessment

https://www.researchgate.net/publication/339786243_Task_complexity_and_learning_styles_in_situated_virtual_learning_environments_for_construction_higher_education

http://www.ijirset.com/upload/2018/january/71_Redevelopment_jj.pdf

https://udri.org/wp-content/uploads/Mumbai%20Reader/MR%2018/24%20Slum%20Upgradation%20Policy%20An%20Alternative%20Approach_UDRI.pdf

https://www.researchgate.net/publication/340025954_Factors_Affecting_Residential_Satisfaction_in_Slum_Rehabilitation_Housing_in_Mumbai

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