Book

# Applications of Immersive Technology in Architecture, Engineering and Construction

## A Handbook

*Edited By Abhinesh Prabhakaran, Abdul-Majeed Mahamadu, Colin A. Booth, Patrick Manu*


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| Edition | 1st Edition |
| First Published | 2025 |
| eBook Published | 27 June 2025 |
| Pub. Location | London |
| Imprint | Routledge |
| DOI | https://doi.org/10.1201/9781032662909 |
| Pages | 320 |
| eBook ISBN | 9781032662909 |
| Subjects | Built Environment, Engineering & Technology |



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**Citation**

J. N. Uwa, & O.P. Agboola (2025). Applications of Immersive Technology in Building Construction Phase: Fostering Sustainability in the Global Context**. Book Chapter 8: In Applications of Immersive Technology in Architecture, Engineering and Construction: A Handbook.** Edited by Prabhakaran, A., Mahamadu, A.-M., Booth, C.A., & Manu, P. (Eds.). (2025). (1st ed.). eBook ISBN: 9781032662909. Taylor & Francis Ltd.Pp 1-320. https://doi.org/10.1201/9781032662909

**Chapter 8|12 pages**

Applications of Immersive Technology in Building Construction Phase: Fostering Sustainability in the Global Context

*By Joy Nanlop Uwa, Oluwagbemiga Paul Agboola*

**Abstract**

The research addresses the critical importance of adopting sustainable practices in the construction industry, particularly in light of environmental degradation caused by rapid urbanisation, globalisation, and climate change. The main argument raised by the chapter is that immersive technology, including Virtual Reality (VR), Augmented Reality (AR), and Building Information Modelling (BIM), can play a transformative role in promoting sustainability and effective environmental management practices within the construction sector. The chapter aims to critically analyse how immersive technology can address global environmental challenges and contribute to sustainable building practices throughout the construction lifecycle. The research employs a quantitative research methodology involving an examination of existing construction practices globally. The research findings suggest that when appropriately integrated, immersive technology can facilitate virtual design and visualisation processes, conduct energy simulations and analyses for optimised energy efficiency, support sustainable material selection and life cycle assessments, and promote efficient construction waste management. Consequently, these applications significantly reduce the environmental impacts of construction projects. The study underscores the critical importance of widespread adoption and utilisation of immersive technology to foster sustainable construction practices globally, highlighting its potential to mitigate environmental degradation and promote environmentally conscious decision-making throughout the construction industry. Future research could focus on developing advanced algorithms and tools within immersive technology platforms to optimise sustainable design parameters. This could involve incorporating machine learning and artificial intelligence techniques to automate the process of energy simulations, material selection, and life cycle assessments, thereby enhancing the efficiency and accuracy of sustainable design optimisation.