Is 3D Scanning and Modelling Beneficial for Housing Sector?

Kenneth Sungho PARK[1]*, Sungkon MOON[2]

[1] *Department of Civil Engineering, College of Engineering and Physical Sciences, Aston University, United Kingdom,* E-mail address: k.park@aston.ac.uk
[2] *Department of Civil Systems Engineering, College of Engineering, Ajou University, Republic of Korea,* E-mail address: skmoon@ajou.ac.kr

Abstract: The importance of housing construction and its solutions have been argued in the past decades; the increase in housing maintenance and refurbishment will also have significant implications for the UK and South Korea economy as the residential sector contributes almost a third of total UK construction output and 79% of those are low-income households in South Korea who are living in poor or serious condition. New technologies, including building information modelling (BIM), 3D scanning survey, 3D modeling and modular construction are essential in order to alleviate these problems. Therefore, the research reviews a 3D scanning and modelling in housing based on Scan-to-BIM concept and investigates applicable decision support and appraisal tools to enhance the practicality of housing information modelling. As a result, the housing sector in both UK and South Korea may benefit from their adoption as they make it possible to construct quicker, cheaper and safer buildings.

Key words: BIM, housing sector, 3D modelling, 3D scanning

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[1] *Department of Civil Engineering, College of Engineering and Physical Sciences, Aston University, United Kingdom,* E-mail address: k.park@aston.ac.uk

[2] *Department of Civil Systems Engineering, College of Engineering, Ajou University, Republic of Korea,* E-mail address: skmoon@ajou.ac.kr

1. BACKGROUND

As around 80% of the UK population lives in urban areas and the housing sector in UK is faced with challenges, South Korea is no exception. Despite economic growth, South Korea still has a substantial deficit of quality housing and housing is particularly a critical problem in cities like Seoul with new demand for housing as well as existing housing poverty. In order to challenge this issue, housing information modelling seems to be challenging due to the highly fragmented nature of construction practice, which makes the integration of diverse information throughout the project life-cycle difficult. Although Building Information Modelling (BIM) is becoming increasingly important in the housing sector in order to enhance the practicality of housing construction and management, the current uptake of BIM in housing is very low (i.e. UK housing sector: 25%) [1]. Therefore, the research reviews a 3D scanning and modelling in housing based on Scan-to-BIM concept and investigates applicable decision support and appraisal tools to enhance the practicality of housing information modelling.

2. METHODOLOGY - THE SCAN-TO-3D MODEL PROCESS MAP

The case study house has been examined according to the Scan-to-3D Model process where functions and stages were mapped based on the IDEF0 (Integration DEFinition language 0) in Figure 1.
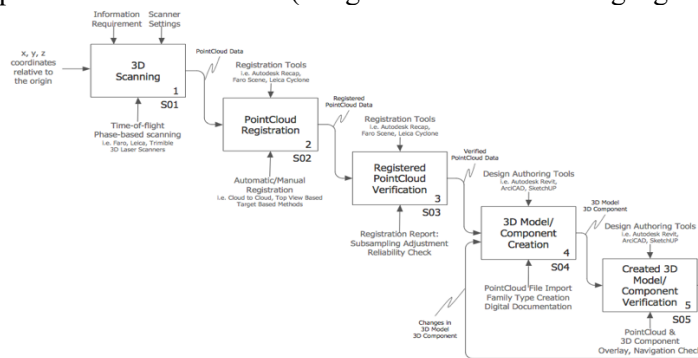

Figure 1. Process Map of Scan to 3D Model/Component

3. CONCLUSION

The results show that it is important to prepare and integrate detailed house element information into a 3D model from 3D scanning data for successful BIM use in the housing sector. The Scan-to-3D Model process enables the housing sector to improve efficiency and effectiveness although a 3D BIM model without reliable information and requirements cannot add more value to the housing sector.

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