Development of a Smart Work System based on open BIM

Minjae Lee[a] , Gyung Kim[b] , Jongho Yoon[c] and Inhan Kim[d]

[a,b,c] BIMPeers, Republic of Korea , [d] Dept. of Architecture, KyungHee Univ, Republic of Korea

E-mail: mjlee@bimpeers.com

Abstract

Recently, in a construction environment, the efficient communications and managements of information among stakeholders of construction projects have been became very important issue because the buildings are functionalized and become immense and the demands that the cost and duration of projects should be shortened have been increased. However, the separation of construction site and management office and the deficiency of management of real-time information of construction process is a causing inefficiency and deterioration of construction productivity.

To solve this problem, Web-based PMIS has been developed as an alternative. In recent years, because of spreading of smart devices that can be used without restriction on place and time there are growing expectations for smart work systems that can quickly and accurately respond to exchange of construction information.

Therefore, this study has developed a smart work system, excellent applicable to construction projects through drawing out the definition of smart work system and the functions and analyzing existing systems and practitioner questionnaire. This presentation is introducing the development process and main functions of a smart work system.

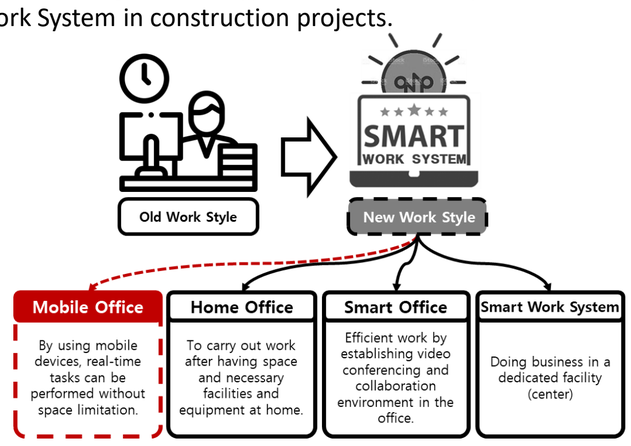
Keywords - Open BIM, Smart Work System, IFC, Messenger

1.Introduction

- Recently, as the construction projects, large-scale, complex, and fragmented, have been accelerated and the management of the project cost and period has been important
- Among of them, smart work systems are increasingly used in the construction projects, but currently used smart work systems are conversation type meeting-based solutions or messenger programs that are lacking adoption and study for smart work system specialized in construction.
- Therefore, in this study, we have conducted research to develop a smart system for efficient communication and management of project information between stakeholders in construction projects.

2. Development of BIM library property management program

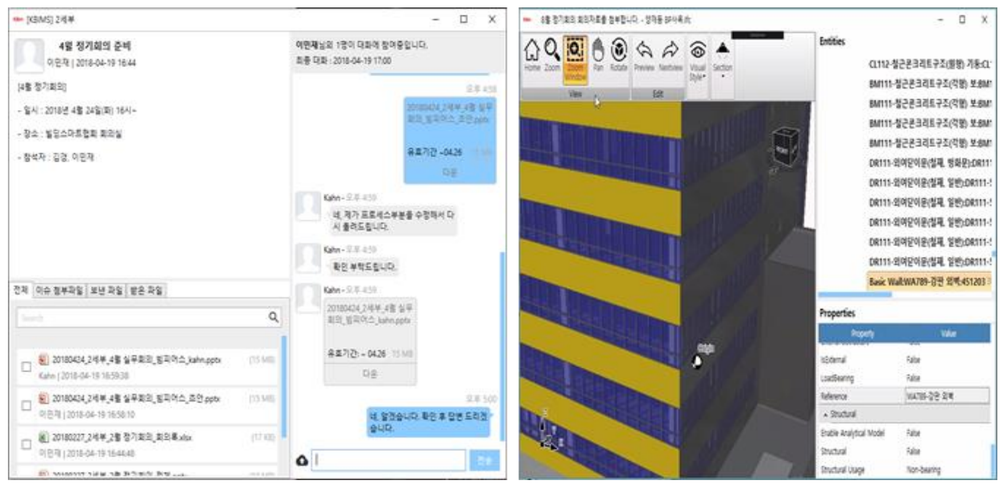
- **Deriving smart work system**
  - ✓ Smart work system means a business concept that enables convenient and efficient work anywhere and anytime, regardless of time and place, using mobile devices.
  - ✓ As a result of examining the four types of smart work system, Mobile office is appropriate for Smart Work System in construction projects.



- **Deriving the function of the smart work system based on architecture**

Category	Function
File Management	File Cloud File Online Viewer Document Viewer Sync files File Up/Download File History
Drawings/Model Management	2D&3D Viewer Model Viewer Drawings History Drawings comparison
Real-time Interworking	Project/Issue Management Checking Issue status Schedule Management Alert Changes Interworking PC and Mobile
Project/Issue Management	Create Action Item Edit / delete action items Update Action Item Response
Communication	Messenger Communication function Management of participating members by project

- **Implementation of KBim Mobile program**
  - ✓ KBim Mobile is an open BIM-based PC & mobile platform that enables users to check up-to-date information regardless of location,
  - ✓ If BIM model is made in the IFC format, open BIM, anyone can view the information of the model regardless of the BIM authoring tool.
  - ✓ KBim Mobile has the function to exchange files and check the BIM model during discussion.
  - ✓ Also, by applying the state change function for the completed issue, the issue and the project currently being discussed can be only checked.



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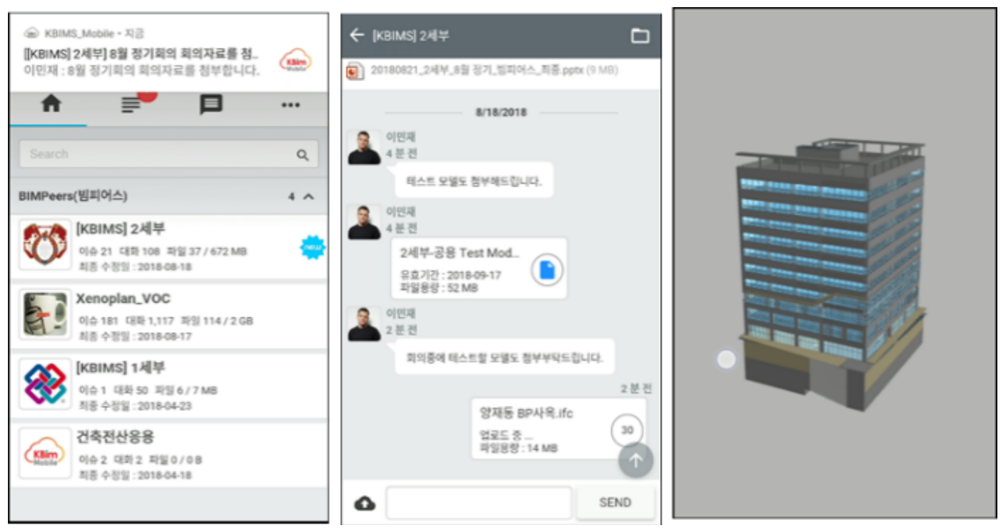

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3.Conclusion

- This study has investigated the concept of smart work system and developed the smart work system based on architecture by deriving necessary functions through interview with practitioner.
- With the system developed through this study, it is possible to communicate in real time using mobile devices, and it is expected to improve work efficiency, project quality by preventing loss due to delays and accuracy of information exchange and confirmation by quick decision making.

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