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Project Title: Towards Building Information Modeling for Logistics Uncertainty Management in Modular Integrated Construction of High-rise Buildings

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Project Outline:

The proposed project will be conducted in the following three aspects:

1. Identification of critical risks in the logistics process of modular integrated construction (MiC) of high-rise buildings

A comprehensive literature review will be carried out to identify the risks in the logistics process of construction in general, and of modular, prefabricated, and off-site construction. The literature will be sourced from international refereed journals, conference proceedings, books, magazines, regulations, recognized standards, media, programs, recognized associations/institutes, etc. Based on the results of the literature review, a set of risk factors will be established. Interviews will then be conducted with Hong Kong industry practitioners to validate this set of risk factors and to identify the critical risks. The results would allow the development of suitable risk mitigation strategies for the logistics process of MiC of high-rise buildings.

2. Development of a framework and roadmap for integration of BIM into managing risks in the logistics process of MiC of high-rise buildings

A detailed review of the available BIM-based construction logistics management literature and current commercial BIM applications will be conducted. The review will not only afford an in-depth understanding of the common practices of BIM-based construction logistics management but will additionally inform on the potential issues that may arise during the logistics process. The literature review will also focus on identifying the core areas for the integration of BIM into risk management in the logistics process of MiC and explaining how BIM can work for the practice of managing risks in the logistics process of MiC of high-rise buildings. Based on the literature review, a conceptual framework will be developed, which will outline how BIM can work in risk management in the logistics process of MiC of high-rise buildings. Then, empirical research, including questionnaire survey and interviews, will be conducted to address the questions of: how BIM can work in the real practice of risk management in the logistics process of MiC of high-rise buildings; what the key focused areas to integrate BIM into the risk management in the logistics process of MiC of high-rise buildings are; and how can integrating BIM help to realize BIM-based risk management in the logistics process of MiC of high-rise buildings. Based on the results, a

BIM-based risk management roadmap for the logistics process of MiC of high-rise buildings will be developed. This project will also attempt applying the ethnographic action research approach in the development of the BIM-based risk management roadmap.

Objectives:

The proposed project has the following specific objectives:

1. To identify and analyze critical risks in the logistics process of MiC of high-rise buildings;
2. To develop a framework and roadmap for integration of BIM into managing risks in the logistics process of MiC of high-rise buildings.

Expected deliverables:

1. A comprehensive list of critical risks in the logistics process of MiC of high-rise buildings.
2. Risk mitigation strategies for the logistics process of MiC of high-rise buildings.
3. A framework and roadmap for integration of BIM into managing risks in the logistics process of MiC of high-rise buildings.