Application of Griddization Management to Construction Hazard Management

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Abstract : Hazard management that can prevent fatal accidents and property losses is a fundamental process during the buildings' construction stage. However, due to lack of safety supervision resources and operational pressures, the conduction of hazard management is poor and ineffective in China. In order to improve the quality of construction safety management, it is critical to explore the use of information technologies to ensure that the process of hazard management is efficient and effective. After exploring the existing problems of construction hazard management in China, this paper develops the griddization management model for construction hazard management. First, following the knowledge grid infrastructure, the griddization computing infrastructure for construction hazards management is designed which includes five layers: resource entity layer, information management layer, task management layer, knowledge transformation layer and application layer. This infrastructure will be as the technical support for realizing grid management. Second, this study divides the construction hazards into grids through city level, district level and construction site level according to grid principles. Last, a griddization management process including hazard identification, assessment and control is developed. Meanwhile, all stakeholders of construction safety management, such as owners, contractors, supervision organizations and government departments, should take the corresponding responsibilities in this process. Finally, a case study based on actual construction hazard identification, assessment and control is used to validate the effectiveness and efficiency of the proposed griddization management model. The advantage of this designed model is to realize information sharing and cooperative management between various safety management departments.

Keywords : construction hazard, griddization computing, grid management, process
Conference Title : ICCEM 2016 : International Conference on Construction Engineering and Management
Conference Location : Istanbul, Türkiye
Conference Dates : February 15-16, 2016

Open Science Index, Structural and Construction Engineering Vol:10, No:02, 2016 publications.waset.org/abstracts/43289.pdf