S.R. LU, I.C. WU, B.C. HSIUNG. ***Applying building information modelling in environmental impact assessment for urban deep excavation projects.*** *Gerontechnology 2012;11(2):182;* doi:10.4017/gt.2012.11.02.614.00 **Purpose** Due to the rapid development of cities, underground structures, such as deep excavations and tunnels have been widely used to increase underground space. Since these underground structures are often adopted in old and crowded town area, accidents may easily do serious damage to adjacent structure and even cause some casualties. Professional engineering knowledge and experience can reduce or avoid this chain of events. But it is undeniably the case that in more complex urban engineering environments, risks are higher. Construction project teams must therefore consider a wide variety of information when managing risks and making project decisions. Urban deep excavation construction might cause unfavourable effects on the ground and to nearby structures. Environmental impacts need to be evaluated and monitored during the deep excavation construction. Generally, construction project teams will set up monitoring instruments to control and monitor overall environmental status, especially when retaining wall construction, retaining wall excavation, and during groundwater pumping. Voluminous monitoring data and project information are usually created along the delivery processes of construction. It is difficult to view and manage them comprehensively. **Method** Our research employs the concept of building information modelling (BIM)[1] in environmental impact assessment for urban deep excavation projects. BIM is a relatively new technology that facilitates better information integration and management. Many engineering companies employ BIM for information integration, visualization, and parametric design, to reduce both the duplication of work and the complexity of interface integration. In this research, a 3D-building model, an excavation model, environmental conditions, the results of ground surface settlement analysis, and measurement and monitoring data, were integrated into our system to assist construction project teams to execute environmental impact assessment accurately. The risks and issues affecting safety of excavation and nearby structures might be recognized earlier through conveying information visually in this system. Construction project teams can then handle them immediately. The implementation of the system was carried out in the MicroStation Visual Basic for Applications (MVBA) environment. The Bentley MicroStation supports visualization of the 3D-model and provides some capabilities for 3D-object manipulation and information query. **Results & Discussion** This system can provide construction project teams a full view of the ongoing project, along with functions to integrate and display information multidimensionally. We will demonstrate the functionalities we developed and verify its feasibility in the O6-underground station of the Kaohsiung metro system.

References

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