3D Real Scene Technology Solution: Bridging the Digital Divide and Shaping a Beautiful Earth

Liang Zhai, Liang Zhai and Shen Ying (China, PR)

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SUMMARY

Globally, with the continued development of high precision measurement technologies based on laser scanning, UAV surveying and mapping, LiDAR and the combination of BIM and GIS platforms, buildings have achieved full lifecycle digital management from design through construction to operation and maintenance. This has significantly improved the efficiency and accuracy of building morphology data acquisition, facilitating seamless information integration and sharing. innovation of cutting-edge technologies such as cloud computing, big data, IoT and AI, the integrated application of these technologies provides unprecedented possibilities for the deep mining and intelligent analysis of building information, which makes it possible to comprehensively and accurately display the multi-dimensional characteristics of the building's morphology, function, and performance in the digital space.Therefore, how to achieve three-dimensional analysis and decision-making in digital space will undoubtedly be the next whole new stage of development of digitization. As the most representative target element in digital space, the 3D shape of buildings not only carries the most stable and intuitive physical characteristics of buildings, but also contains rich spatial information and application value. Therefore, this research actively responds to the technical needs of digital space analysis and decision-making, and focuses on the exploration of the metrics and computational methods of the 3D morphology of buildings, with the aim of establishing a set of scientific and systematic evaluation system, so as to realize the accurate quantification and intelligent interpretation of the morphological features of buildings. This research not only provides a new technical means for the intelligent recognition and understanding of buildings, but also supports the refined management of buildings in intelligent scenarios. It can strongly promote the formation of a comprehensive and dynamic building information ecosystem in the future, and inject new vigour into the sustainable development of the construction industry.