The Application of GIS 3D Modeling and Analysis Technology in Real Estate Mass Appraisal

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SUMMARY
ABSTRACT: Based on procedural modeling approach and residential property 2D GIS data of Shenzhen, 3D external models of buildings are generated by CityEngine in a quick and batch mode. And 3D internal model is generated by vectorization processing of rooms distribution within the target building. Then, the landscape analysis and the sunlight analysis that based on GIS visibility analysis method are applied on 3D model of the target building to get the concrete quantization indexes such as landscape visual range and sunshine duration. Those indexes could significantly influence real estate value. Finally, the drawing with 3D visualization effect for landscape information and sunshine information is produced. The results showed that: Compared with traditional manual modeling method, the rule-based 3D modeling method in CityEngine platform could take full advantage of existing GIS data. It could improve the efficiency of 3D modeling by rapidly and automatically generate refined building 3D model in batch mode. Meanwhile, compared with man-made subjective judgment, the building landscape and sunlight analysis model built by visibility analysis could quantify landscape and sunshine indexes more accurately. Furthermore, the application in real estate mass appraisal model for calculation and analysis will reduce the index errors brought by man-made subjective judgment. In addition, precise 3D visualization effect can provide appraisers with more intuitive and efficient view for real estate expression. It greatly improve the efficiency and accuracy in real estate appraisal.