

## Development of a 3D Model of Real Estate Properties in Fort Bonifacio, Taguig City, Philippines Using Geographic Information Systems

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**Abstract :** As the real estate industry continually grows in the Philippines, Geographic Information Systems (GIS) provide advantages in generating spatial databases for efficient delivery of information and services. The real estate sector is not only providing qualitative data about real estate properties but also utilizes various spatial aspects of these properties for different applications such as hazard mapping and assessment. In this study, a three-dimensional (3D) model and a spatial database of real estate properties in Fort Bonifacio, Taguig City are developed using GIS and SketchUp. Spatial datasets include political boundaries, buildings, road network, digital terrain model (DTM) derived from Interferometric Synthetic Aperture Radar (IFSAR) image, Google Earth satellite imageries, and hazard maps. Multiple model layers were created based on property listings by a partner real estate company, including existing and future property buildings. Actual building dimensions, building facade, and building floorplans are incorporated in these 3D models for geovisualization. Hazard model layers are determined through spatial overlays, and different scenarios of hazards are also presented in the models. Animated maps and walkthrough videos were created for company presentation and evaluation. Model evaluation is conducted through client surveys requiring scores in terms of the appropriateness, information content, and design of the 3D models. Survey results show very satisfactory ratings, with the highest average evaluation score equivalent to 9.21 out of 10. The output maps and videos obtained passing rates based on the criteria and standards set by the intended users of the partner real estate company. The methodologies presented in this study were found useful and have remarkable advantages in the real estate industry. This work may be extended to automated mapping and creation of online spatial databases for better storage, access of real property listings and interactive platform using web-based GIS.

**Keywords :** geovisualization, geographic information systems, GIS, real estate, spatial database, three-dimensional model

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