An effective visualization and comparison of online terrain draped with multi-sensor satellite images

Abstract

The objective of this paper is to discuss the effectiveness of visualizing online 3D terrain draped with different satellite imageries. The topographic data of the study area were obtained from the contour maps of Universiti Putra Malaysia, Selangor, Malaysia. The high resolution satellite imageries used in this project involving QUICKBIRD (0.6 m resolution), IKONOS (1 m resolution), and SPOT5 (5 m resolution). R2V software was used for editing the contour data, whereas Arc GIS was used for overlaying the imageries over the 3D terrain data. Then the data were exported into Virtual Reality Markup Language to compare the effectiveness of different satellite imageries based on the data file size, imageries size, number of images tile, loading time during office hours (from 8 a.m. to 5 p.m.) and out of office hours (after 5 p.m.), frame rate per second, and visualization quality. The results revealed that IKONOS satellite imageries are better for an effective online 3D terrain visualization utilizing GIS data even though it has lower resolution compared to QUICKBIRD.