COMPARISON OF INTERNET-BASED 3-D GEO-VISUALISATION SOFTWARE

Michael Hahn and Admire Kandawasvika
University of Applied Sciences Stuttgart
Faculty Surveying and Geoinformatics
Schellingstr. 24
70174 Stuttgart Germany
m.hahn.fbv@fht-stuttgart.de

KEYWORDS: 3-D visualisation software, Internet, streaming, photorealism

ABSTRACT

Currently, there are several dozens of software packages on the market that can be used for 3-D data visualisation. This software abundance has lead to duplication of functionality and efforts and as well confusion to the users when selecting the best software for handling their specific projects. The rate of development of visualisation software is on a fast track whilst thorough analysis of the technology is still lacking behind. On the Internet, there also exist many browsers or viewers for 3-D visualisation of geodata and this even makes the decision and selection problems of a software grow. At present, there are no standard rules set for guiding users in decision-making and selection of a particular visualisation software. In short, there are no standard criteria for comparison.

The main aim of this research is to carry out a comparison of some of the existing Internet-based photorealistic, interactive 3-D terrain visualisation software. The functionality duplicated by these software will be noted and a thorough analysis will be made for non-duplicated functionality. A rather more abstract criterion will be devised for comparing and ranking the software. Note that every visualisation is said to depend largely on the data it is supposed to present.

Two software packages seem to be particularly suited for Internet-based interactive geo-visualisation. These are the TerraBuilder/TerraExplorer from Skyline Software company and G-Scene/G-Vista from G-Graphix company. Comparison for these packages will focus on general aspects including data type for visualisation, data integration and visualisation algorithms, effectiveness, usability, applicability and quality of visualisation. For the viewers or explorers the issues such as data streaming, data compression schemes, capability of on-the-fly conversion of data from databases, dynamic levels-of-detail, texture handling, and rendering engines will be looked at. The software characteristics and functionality will also be noted. Some of the more specific functionality which will be analysed is as follows: a user should be able to move dynamically within the scene (virtual city), weather simulations such as snow and rain might be generated, 3-D objects (i.e. billboards or labels, buildings, trees, etc.) should be loaded on terrain and if possible removed from the scene at will; scene query or site selection, route-following, walk-throughs and fly-throughs should be possible.

Many applications that will be developed on the Internet might benefit from some of the conceptual and pragmatic ideas from this research. A thorough understanding of software is very necessary in building mental models about the software and will facilitate its ease-of-use. Analysis and understanding of existing software will help developers to develop better user-driven visualisation applications.