

# A DBMS-BASED 3D TOPOLOGY MODEL FOR LASER RADAR SIMULATION

C. Jun<sup>\*a</sup> G. Kim<sup>a</sup>

<sup>a</sup> University of Seoul, Department of Geoinformatics, Jeonnong-Dong, Dongdaemun-Gu, 130-743, Seoul, Republic of Korea

Technical Commission VII Symposium 2010

**KEY WORDS:** Modelling, Simulation, Data Structures, Database, Laser scanning, Three-dimensional

## ABSTRACT:

Developing LADAR(Laser radar) is viewed to be an important technology for next generation guided weapons in many countries. However, experiments using real guided weapons are not practical and we need computing environment that can simulate the 3D detections by LADAR. Such simulations require dealing with large sized data representing buildings and terrain over large area. They also need the information of 3D target objects, for example, material and echo rate of building walls. However, currently used 3D models are mostly focused on visualization maintained as file-based formats and do not contain such semantic information. In this study, as a solution to these problems, a method to use a spatial DBMS and a 3D model suitable for LADAR simulation is suggested. The 3D models found in previous studies are developed to serve different purposes, thus, it is not easy to choose one among them which is optimized for LADAR simulations. In this study, 4 representative 3D models are defined, each of which is tested for different performance scenarios. As a result, one model, "BODY-FACE" structure, is selected as being the most suitable model for the simulation. A process to build a spatial DBMS and to compute and visualize with the proposed model was illustrated using a test area.

**TOPIC:** Geometric modeling

**ALTERNATIVE TOPIC:** Lidar and laser scanning