

TopoL GIS System

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TopoL is a general Land/Geographic Information System software which can be adjusted for applications in many areas. It allows the creation, maintenance and analysis of geographical data. This original Czech product was first developed for the purpose of providing desktop-mapping and querying capabilities in forest-management applications. Now TopoL can meet many needs for GIS and remote-sensing image-analysis software. In this paper, we would like to introduce this system, to show our experience from the development and use of the system, and to outline its future.

TopoL is capable of handling both vector and raster data equally well from a display, query and functional perspective. Additional descriptive information can be attached to this graphical data and stored in local or external databases. Extensive care was focused on topology and support for topographic structures of vector data. The digitizing capabilities of TopoL are easy to use and the system is able to solve topologic relations in real-time, while data are digitized. TopoL is able to import and export data in many industry-standard formats. TopoL is especially strong in its ability to create composite black-and-white or colour raster-and-vector output – for example, property boundary outlines superimposed on a scanned aerial photograph.

Available for four years, TopoL now has nearly 1000 users in governmental bodies, commercial industry and agriculture in the Czech Republic, Slovakia, Germany and Italy. TopoL applications include: forest management and agriculture; land management and modifications; municipal information systems; regional development and ecology; inventory of graphical documentation for the Prague underground; satellite image and aerial photograph processing; and inventory of archaeological excavations.

TopoL is currently under a redesigning and reengineering process based on new object-oriented design techniques and methods. A future version of the system will become a modern object-oriented GIS system which provides an open environment for the development of GIS applications and geographical data processing within distributed heterogeneous computer networks. A quite new kind of user interface and powerful programming language will make full use of the object-oriented system features truly possible. It will give users the possibility to adjust the system to their needs. Expected applications range from map digitizing, simple data processing and desktop-mapping to complex geographic analyses, full cartographic output, and data animation.