

Toward Automatic Production of Multi-Scale Maps

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ABSTRACT

In 1992, the Survey of Israel launched a re-mapping project. In this effort, the whole country was remapped using 1:40,000-scale air photographs. This project is based on a 2.5-D scaleless model and established the National Spatial Data Base of Israel. The Survey of Israel Commenced its digital mapping era in 1985, when it became evident that its two principal production lines, cadastral and topographical mapping, in their traditional form were doomed because of their labour-intensive and slow-performance character. Assessing map compilation as the bottleneck of the total production effort, the first intention was to enhance the cartographic capabilities by introducing CAD\CAM software, and adopting modern and new map compilation systems. The main conclusion of a two-year function of a steering committee was that the shift toward digital cartography should not be based on CAD\CAM systems, but rather on the more enhanced and advanced technology of Geographic Information Systems. Thus it was envisaged that the National Core database would serve both as a national source for basic spatial information and also for the Survey's map-series production.

Based on the National core spatial database, map production at the Survey went into a major transition from the traditional processes into computer assisted raster and vector environment. Yet, although processed digitally, the computer just replaced the drawing board. The full extent of the topologically structured data of the national GIS database, is not being used but serves as another source of information for the cartographers.

The paper presents the first steps toward automatic map production at the Survey. Focus is given to protocols, processes and standards, defined to accomplish this goal. Also will be presented the guidelines of the original GIS model, taking into consideration multi-scale presentation and visualization of the features and (complex) objects, collected in the mapping effort. In addition, the paper will discuss: (1) the existing process for automatic production of 1:5,000-25,000-scale work maps; (2) Non-spatial data integration into the national core data base, aimed for automatic mapping; (3) Experiments in automatic quality map production for mass printing; and (4) Future generalization research and development toward the automatic production of a 1:50,000-scale map, from the very same data base.