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Digital topographic vector database for GIS users

A sound Topographic Database is a fundamental requirement for almost any type of GIS application. A Geographic Information System (GIS) is a combination of Digital Mapping and Database Management System. This has the ability to link, spatial information to attribute information and to retrieve and analyse spatially related information including the attribute information and related geographic features.

The Survey Department of Sri Lanka has produced topographic information in hardcopy form in 1:250,000, 1:50,000 scales, to cover the whole country. It is also in the process of producing 1:10,000 scale maps using topographic data collected in analogue and digital form from aerial photographs.

While converting the topographic data available in to digital database, the data should be properly structured, in order to use them efficiently for GIS applications. This paper is to elaborate on how the topographic database is structured and distributed to GIS users.

In principle, there is no single correct procedure for database design or structuring. Some of the major factors that influence a GIS database design include the data requirements of the applications that will be developed, availability and the format of existing topographic data, update and maintenance procedures, size of the database, hardware configuration, data model of the software used, number and organisational structure of users, cost involved and management support. In applying these principles in to Sri Lankan context, the topographic database designed by the Survey Department is of coverage data model and it consists of 11 data layers, namely BUILDINGS, TRANSPORT, LANDUSE, HYDROGRAPHY, TERRAIN, PLACES, ADMINISTRATION, CONTROL, UTILITIES, RESERVES and GRID.
The data in the topographic database will be available for GIS users in Sri Lanka in either ArcInfo coverage form. The spatial part of the information can be made available in DXF form for the CAD users. Users may add their own spatial and non spatial data and develop their own applications on top of the topographic database supplied by the Survey department.

Initially this database will be covering the entire island based on 1:250,000, 1:50,000 and 1:10,000 scale data, and will be expanding to 1:2000 and 1:1000 data depending on the demand and the availability of data.