

Geographic Information Systems



Geographic Information Systems (GIS) is a technology that manages, analyzes, and disseminates geographic knowledge. Essentially, GIS is maps on computers. Each characteristic of the Earth's surface is mapped on a layer which can be viewed independently, or in combination with other layers.

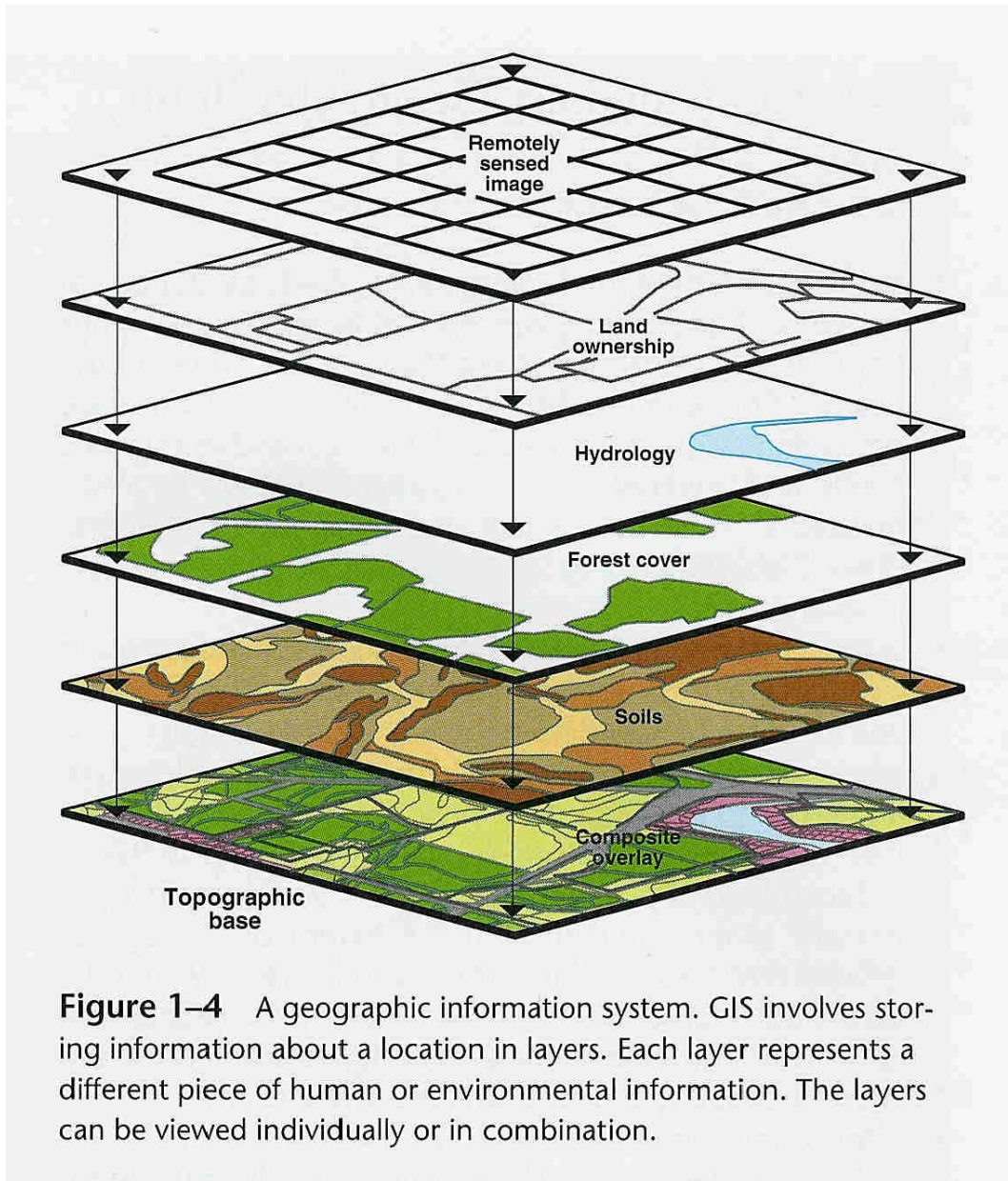


Figure 1–4 A geographic information system. GIS involves storing information about a location in layers. Each layer represents a different piece of human or environmental information. The layers can be viewed individually or in combination.

There are three ways of viewing a GIS: a database, map, and model.

1. **The Database View:** A GIS is a unique kind of database of the world—a geographic database (**geodatabase**). It is an "Information System for Geography." Fundamentally, a GIS is based on a structured database that describes the world in geographic terms.



2. **The Map View:** A GIS is a set of intelligent maps and other views that show features and feature relationships on the earth's surface. Maps of the underlying geographic information can be constructed and used as "windows into the database" to support queries, analysis, and editing of the information. This is called **geovisualization**.



3. **The Model View:** A GIS is a set of information transformation tools that derive new geographic datasets from existing datasets. These **geoprocessing** functions take information from existing datasets, apply analytic functions, and write results into new derived datasets.

