

Chapter (1): Data input and output

Data input ?The drum rotation provides the movement in the Y direction

Scanning (or scan digitizing) provides a faster means of data entry than manual digitizing in scanning, a digital image of the map is produced by moving an electronic detector across the map surface.

Data quality information includes the date of collection, positional accuracy, classification accuracy, completeness, and the method used to collect and encode the data.

A smaller device termed a digitizing table (usually equipped with a mouse instead of the more precise cursor) is commonly used as a device to operate the GIS.

The initial cost of building the database is commonly 5 to 10 times the cost of the GIS hardware and software.

The fineness/accuracy of detail captured by the scanner depends on the size of the map area viewed by the detector.

The creation of an accurate and well-documented database is critical to the operation of a GIS.

The non-spatial attribute data: provide descriptive information like the name of a street, the salinity of a lake...etc.

In many cases, these data can be obtained in digital form from an existing database into which they were keyboard entered.

The efficiency of digitizing depends on the quality of the digitizing software and the skill of the operator.

It is the procedure of encoding data into a computer-readable form and writing the data to the GIS database.

Data entry is usually the major bottleneck in implementing a GIS.

Documentation is needed that describes the quality of the data to assess their suitability for a specific application.

Keyboard entry and Coordinate geometry.

Coordinate geometry (COGO) procedures are used to enter the land record information.

A very high level of precision is obtained by entering the actual survey measurements.

A high level of precision may be needed when the maps must represent the land cadastral exactly as it is expressed in the legal description.

In manual digitizing the map is affixed to a digitizing table and a pointing device is used to trace the map features

Digitizing tables can be as large as 1 m x 1.5m or more.

Drum-scanner The map is mounted on a cylindrical drum. The detector is moved horizontally across the drum as it rotates. The sensor motion across the drum provides the movement in the X-direction.

The spatial data: represent the geographic location of features. Points, lines, and areas are used to represent geographic features like a street, a lake, or a forest stand.

The attributes must be logically attached to the features they describe.

Suitable verification procedures are needed to check that data quality standards are met.

The output from the scanner is a digital image.

Flat-bed scanner The map is placed on a flat scanning stage over which the detector is moved in both X and Y directions.

Accurate information can only be generated if the data on which it is based were accurate, to begin with.

Types of data entry systems used in GIS

1. Most attribute data are entered by the keyboard.

Manual digitizing.

Types of data entered in GIS

1. Scanning.

Types of scanners

1. ????
2. ???
3. ???