

COMPONENTS OF GIS – BALANCED FUNCTIONING OF ALL COMPONENTS IS ESSENTIAL

A Geographic Information System (GIS) links locational (spatial) and database (tabular) information and enables a person to visualize patterns, relationships, and trends. This process gives an entirely new perspective to data analysis that cannot be seen in a table or list format. The five components of a GIS are listed below.

HARDWARE

The hardware is the computer and peripherals on which the GIS operates. Today, this could be a centralized computer server running the UNIX or Windows NT operating systems, a desktop PC, or an Apple Macintosh. The computer may operate in isolation or in a networked configuration.

- Computers
- Networks
- Peripheral Devices
 - Printers
 - Plotters
 - Digitizers



SOFTWARE

GIS software provides the functions and tools users need to store, analyze, and display geographical information. The key software components are:

- GIS Software
- Database Software
- OS Software
- Network Software



DATA

One of the most important components of GIS is the data. It is absolutely essential that data be accurate. The following are different data types:

- Vector Data
- Raster Data
- Image Data
- Attribute Data



GIS

PEOPLE

GIS technology is clearly of limited value without people to manage the system and to develop plans for applying it. Users of GIS range from highly qualified technical specialists to planners, teachers, and market analysts who use GIS to help with their everyday work.

- Administrators
- Managers
- GIS Technicians
- Application Experts
- End Users
- Consumers



METHODS

Methods are well-designed plans and application-specific business rules describing how technology is applied. This includes the following:

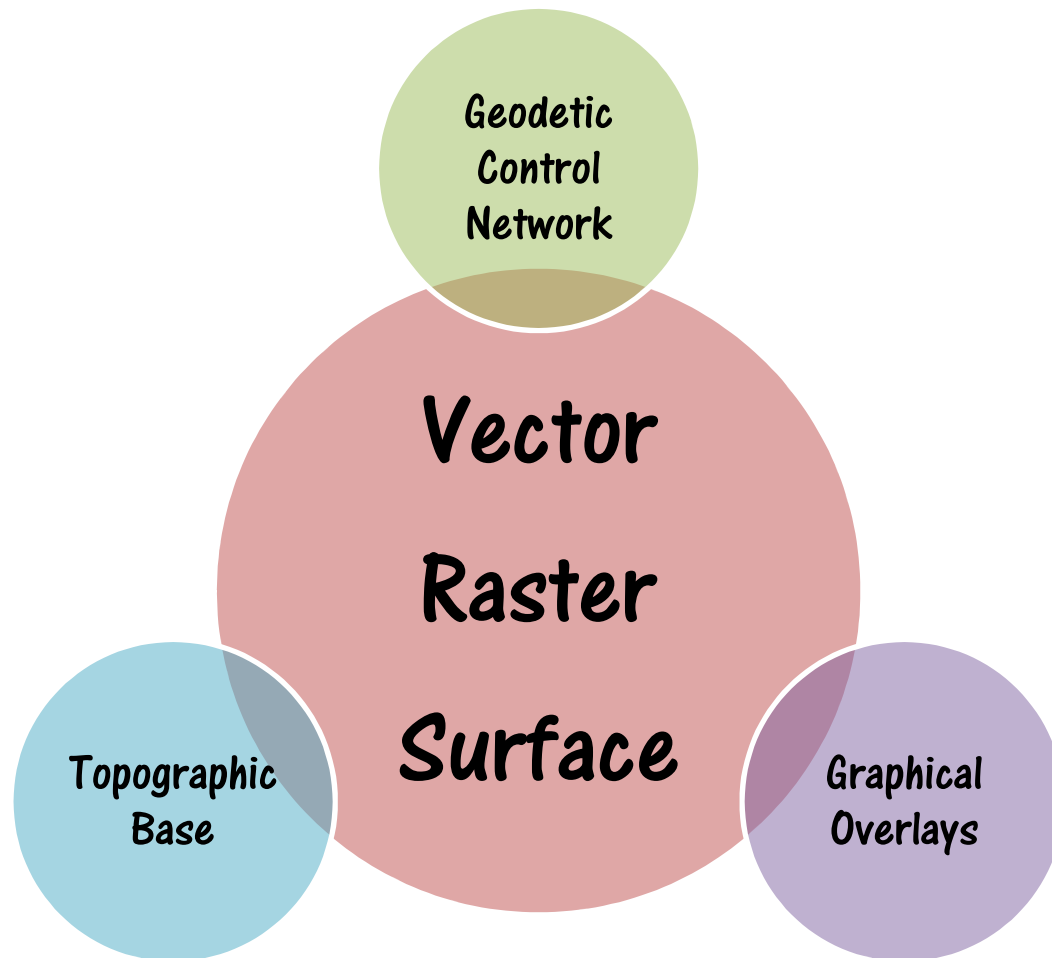
- Guidelines
- Specifications
- Standards
- Procedures



Hardware
+
Software
+
Data ware
+
Humanware
=GIS

THE DATA COMPONENT

Depending on the nature and function of geospatial data it can be categorized as under



Geodetic Control Network:

- Foundation of all geographic data
- Provides a geographical framework by which different sets of geospatial data can be cross-referenced with one another
- Established by high precision survey methods and vigorous computation at national/continental level

THE DATA COMPONENT

Topographic Base:

- Created through a basic mapping program by national, state or local governmental mapping agencies
- Contents of the database may be obtained by various methods of land surveying, or photogrammetry

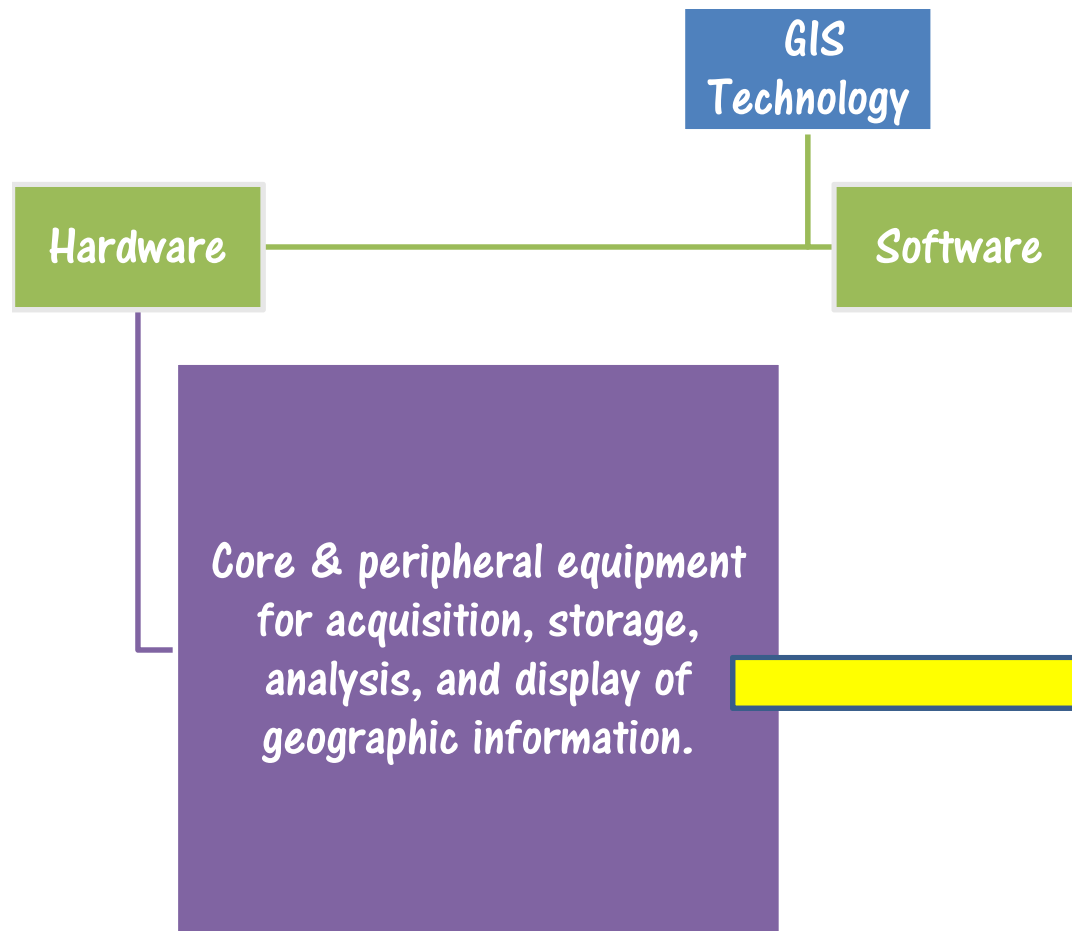
Within GIS database the above three types of geospatial data are represented by three basic forms :

- Vector
- Raster
- Surface

Graphical Overlay:

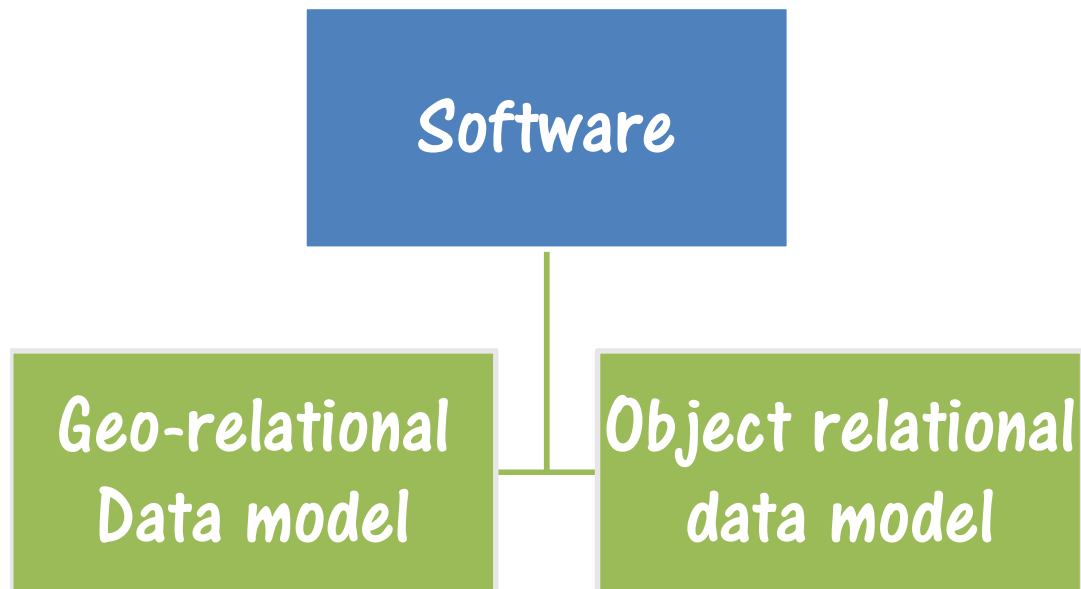
- Thematic Data pertaining to specific GIS applications
- Overlays of physical features may be directly derived from topographic base – road/drainage network, vegetation cover, buildings..
- Overlays pertaining to socio-economic activities – population, parcel boundaries, natural resource values, land use ...are collected by site investigation, field surveying, remote sensing, and existing records

THE TECHNOLOGY COMPONENT



- Computer including keyboard, mouse.
- Data storage devices- hard disk, external devices - CDs etc.
- Digitizer or Scanner - to convert hard copy maps to digital form
- Plotter or Printer - To display the results of data processing
- Networking system- for inter-computer communication

THE TECHNOLOGY COMPONENT



Five functional groups

1. Data input and verification
2. Data storage and database management
3. Data output and presentation
4. Data transformation-
 - (i) maintenance and updating
 - (ii) Utilization and analysis
5. Interaction with the user -
 - (i) Menu driven commands
 - (ii) Command Language Interpreter

HUMAN WARE/PEOPLE COMPONENT

