Introduction to GIS

Teacher: Dr. Atta-ur-Rahman
Course: Geographic Information System
Lecture 1

GIS Concept and Definition

Many expert used GIS for his own demand and that is the reason that they define GIS in that context.

- **Aronoff (1989) gives a general description of GIS as "any manual or computer-based set of procedures used to store and manipulate geographically-referenced data."**

GIS Concept and Definition

- More specifically, Aronoff (1990) defines GIS as
- "a computer-based system that provides four sets of capabilities to handle georeferenced data:
- i) data input
- ii) data management (data storage and retrieval)
- iii) manipulation and analysis
- iv) data output."

GIS Concept and Definition

- Cower (1988) defines GIS as “a decision support system involving the integration of spatially referenced data in a problem solving environment”.

Evolution of GIS

- revolution in **information technology**
    - Computer Technology
    - Remote Sensing
    - Global Positioning System (GPS)
    - Communication Technology
- rapidly **declining cost** of computer hardware
- enhanced **functionality** of software

COMPONENTS OF GIS

Several components are involved in GIS technology.

Hardware

A computer and the associated accessories are essential for handling spatial data in GIS. These devices are collectively known as hardware like scanners, CPUs, Digitizers, Workstations & plotters etc.

Software

Software refers to the programmes that run on computers; these include programmes to manage the computer and to perform specific functions. For example, DBMS, Corel draw, ILWIS, Arc/view, Mapinfow, ERDAS Imagine, IDRISI and Arc/info are specialised software programmes designed to perform certain tasks.

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Database

A central theme to GIS is the database. A GIS database deals with spatial data. GIS facilitate integration of spatial and attribute data and this makes GIS unique in contrast to other database systems. The beauty of GIS technology lies in the ability to assimilate divergent sources of data and analyse them.

Human Input (live ware)

People who work with GIS form the most important component. GIS constitute truly a interdisciplinary field and require varied backgrounds of expertise, depending upon the applications. In addition, for technical management, a Hardware Specialist, System Administrator, and Database Manager are required for corporating the GIS set-up.

Policy and Procedures

A methodology is must to derive the results users need. Basically, this includes spatial analysis for the particular application. By and large, this depends upon the institutional framework and its interest in exploiting GIS technology for decision-making

Geographic Information Systems

PEOPLE

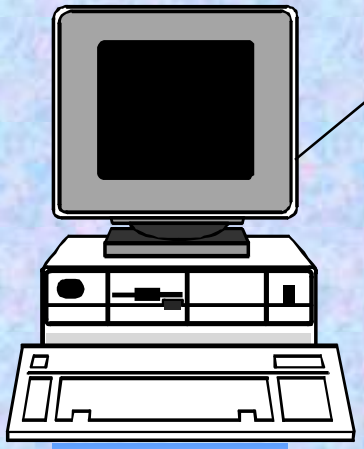
GIS

IDRISI

ILWIS

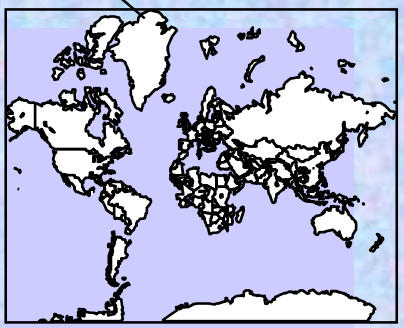
ARC/
INFO

SOFTWARE



HARDWARE

POLICY AND
PROCEDURES
FOR
RESOURCE
MANAGEMENT



DATA

Components of GIS