GIS

Geographical Information System

Objectives

What Is GIS?
Principle Of GIS.
Function Of GIS.
Components Of GIS.
Type Of GIS.
Advantages Of GIS.
Applications Of GIS.

What Is GIS?

"GIS is a computer system capable of assembling, storing, manipulating, and displaying geographically referenced information, ie. data identified according to their locations."

"A GIS is an organized collection of computer hardware, software, geographic data, and personnel to efficiently capture, store, update, manipulate, analyze, and display all forms of geographically referenced information."

Principle

Data Capture

Data sources are mainly obtained from manual digitization and scanning of aerial photographs, paper maps, and existing digital data sets.

Database Management and Update

data security, data integrity, and data storage and retrieval, and data maintenance abilities

Geographic Analysis

The collected information is analyzed and interpreted qualitatively and quantitatively.

Preparing Result

One of the most exciting aspects of GIS technology is the variety of different ways in which the information can be presented.

Functions

Data Capture

The input of data into a GIS can be achieved through many different methods of gathering. For example, aerial photography, scanning, digitizing, GPS or global positioning system is just a few of the ways a GIS user could obtain data.

Data Storage

Some data is stored such as a map in a drawer, while others, such as digital data, can be as a hardcopy, stored on CD or on your hard drive.

Data Manipulation

The digital geographical data can be edited, this allows for many attribute to be added, edited, or deleted to the specification of the project.

Query And Analysis

GIS was used widely in decision making process for the new commission districts. We use population data to help establish an equal representation of population to area for each district.

Visualization

This represents the ability to display your data, your maps, and information.

Components

Hardware

Computer System, Scanner, Printer, Plotter, Flat Board

Software

GIS software in use are MapInfo, ARC/Info, AutoCAD Map, etc. The software available can be said to be application specific.

Data

A GIS will integrate spatial data with other data resources and can even use a DBMS, used by most organization to maintain their data, to manage spatial data.

Geographic data and related tabular data can be collected in-house or purchased from a commercial data provider.

People

GIS users range from technical specialists who design and maintain.

Method

The map creation can either be automated raster to vector conversion or can be manually victories using the scanned images.

Data Types

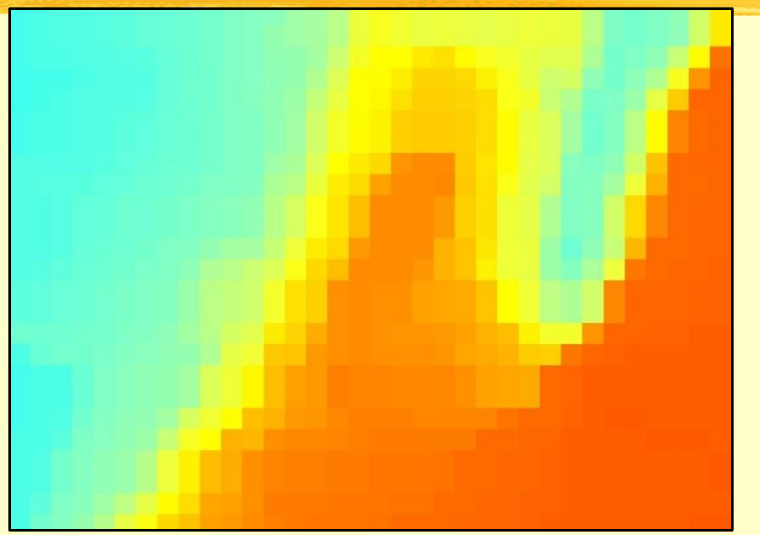
- Vector
  - Points
  - Lines
  - Polygons
- Raster
  - Cell
  - Pixels
  - Elements

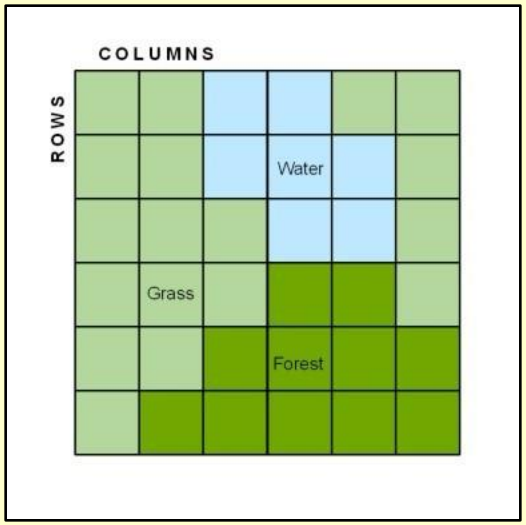
Vector

- Points, lines, polygons
- More closely resembles real world

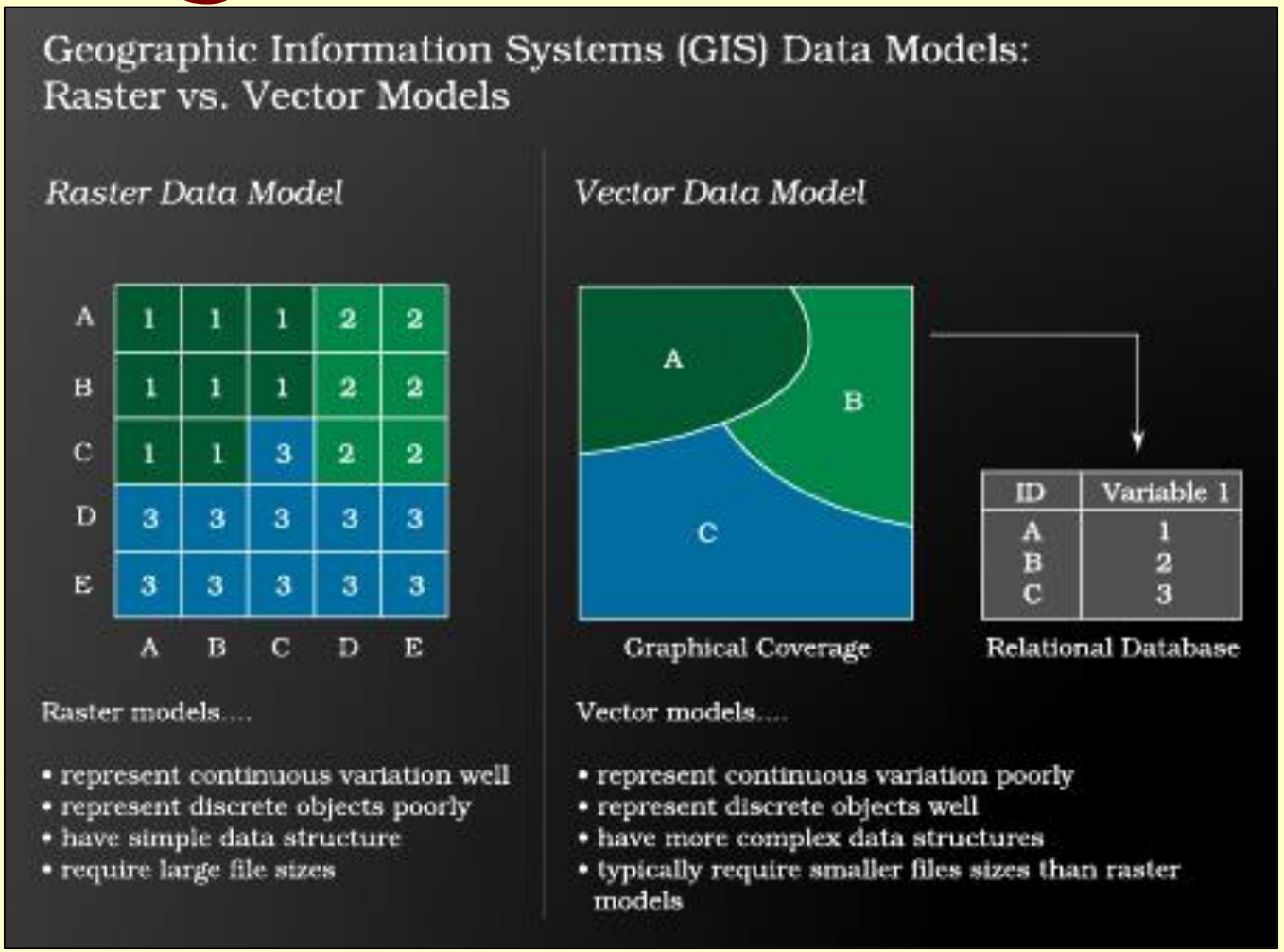
Raster

- Areas broken into 'pixels' or cells
- Each cell contains data
- Good at representing dense data
  - land cover
  - elevation





Raster V Vector S



Advantage (Vector) s

Good Representation of data.

Use small File Size.

Accurate map output.

Disadvantages (Vector)

Complex Data Structure.

Expensive Technology.

Analysis is Complex .

Advantage (Raster)
s

- Simple Data Structure.
- Cheap Technology.
- Analysis is Simple.
- Same grid cell for several attributes.

Disadvantages (Raster)

- Large Data Volume.
- Inefficient use of computer storage.
- Difficult network analysis.
- Less accurate or attractive maps
- Loss of information when using large cells.

Advantage of GIS

GIS allows us to view, understand, and visualize data in many ways that reveal relationships, patterns, and trends in the form of maps, globes, reports, and charts.

A GIS helps you answer questions and solve problems by looking at your data in a way that is quickly understood and easily shared.

GIS give the accurate Data.

Better Predictions and Analysis.

Disadvantages of GIS

Excessive damage in case of internal fault. Long outage periods as Repair of damaged part at site may be difficult.

Expensive software.

Integration with traditional map is difficult.

Any Questions ?

Thank You