Topic : GIS – Vector, Raster and How to Get Them?

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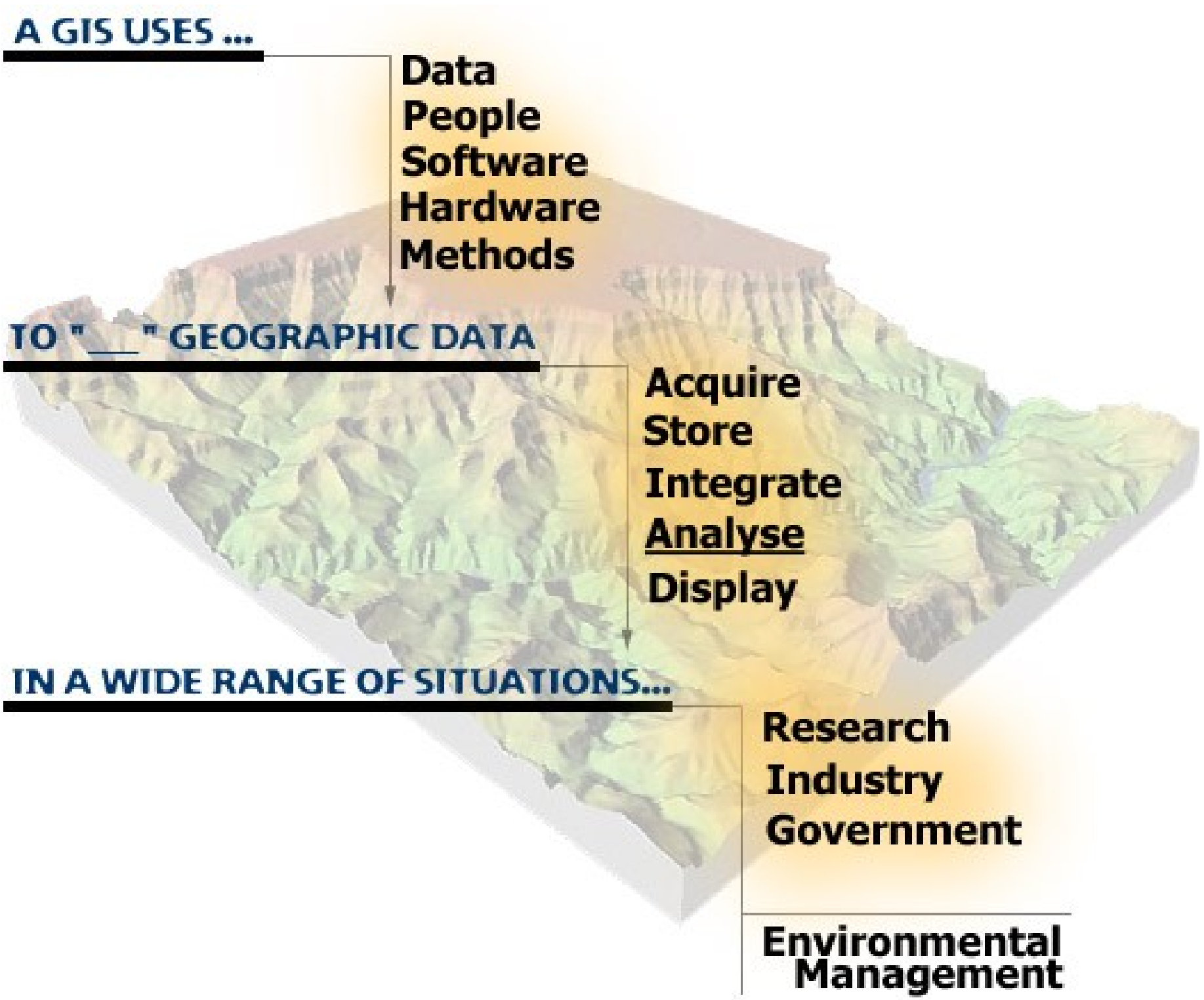
About the topic

- We will talk further about geographic data in vector and raster.
- We will also discuss about how to get them.
- Here you will have a crystal clear view about difference between map and GIS
- We will try to install qgis and do some practice

BTW, Please answer these questions first :D

- So, how many of you have try to install qgis?
  - How many of you have try to install, and success
  - How may of you have try to install, but failed
- What do you know about mapserver now?
- What is the purpose of GIS?
- What is geo spatial data?
- Read/Do something else related to GIS?


A GIS USES ...
Data
People
Software
Hardware
Methods
TO "___" GEOGRAPHIC DATA
Acquire
Store
Integrate
Analyse
Display
IN A WIDE RANGE OF SITUATIONS...
Research
Industry
Government
Environmental Management

Raster and Vector Layer in a View

Figure 45: This satellite image looks good when using a small scale...

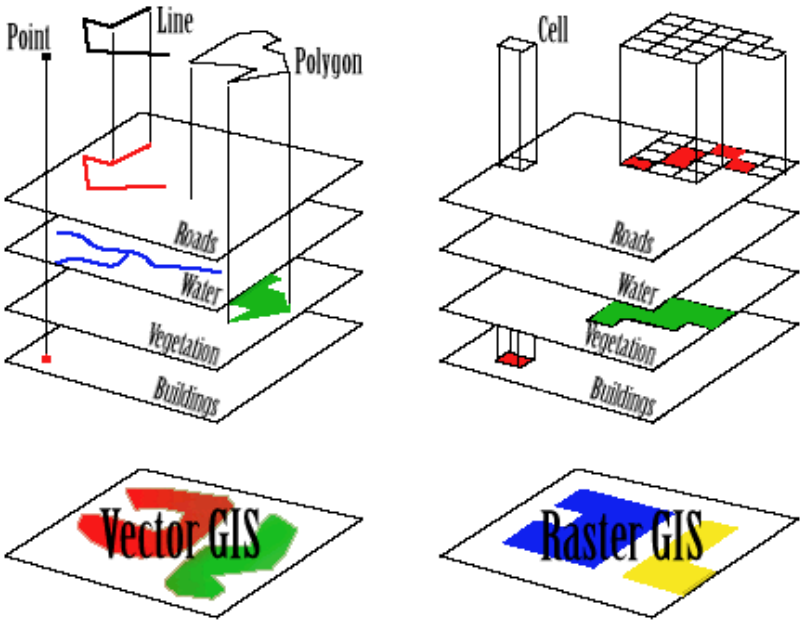


Figure 46: ...but when viewed at a large scale you can see the individual pixels that the image is composed of.

Vector VS Raster

- How much memory used to save high resolution raster image and high resolution vector image?
- Which one is best to model land surface?
- Which one is easier to be saved into database?
- Which one is easier to be edited?
- Which one is more “natural”?

Camera, Satelite and Eyes

- What kind of images are acquired by your cameras?
- What kind of images are acquired by satelite?
- What kind of images are acquired by your eyes?
- Is there any sensor in this world can acquire vector images?

BIG QUESTION

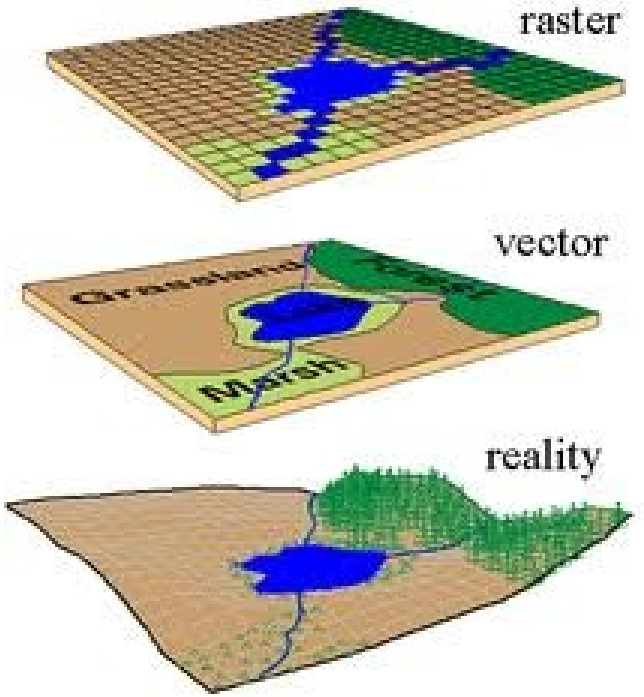
If every sensor can only acquire raster images, how could there be a vector image?

Who is the first one making vector images?

Vector images actually “never really exists”. We can only see raster images. Vector images are unseenable.

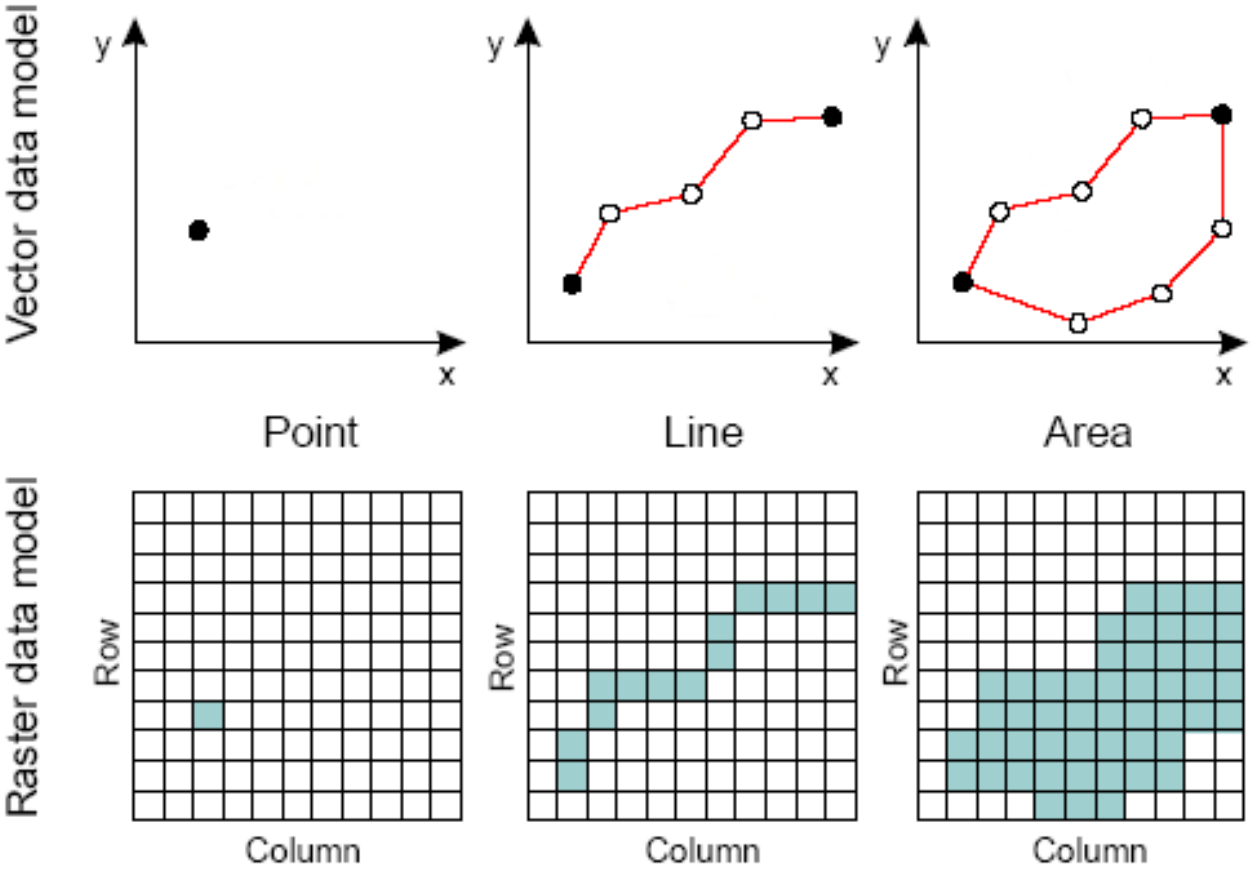
Projection-what really happens

- Reality → Raster → Vector → Raster
  - Reality to raster
    This is what happens when you take a picture with camera
  - Raster to vector
    If you concern about position, vector data do the best
  - Vector to raster
    Your monitor consists of pixels. So you should change any vector image into raster to show it



Point, Line, And Area

- We use these shape in vector image



Point, Line, And Area

- Will you use point, line, or area?
  - Home
  - Tree
  - Road
  - Mall
  - Town Area
- Could you use area to represent “river”?

Next we will go to practice.
Take a break for 10 minutes.

Installing QGIS

- Download QGIS from http://download.qgis.org (ensure to download the match version to your OS)
- Download the documentation http://www.qgis.org/en/documentation/manuals.html
- Installation
  - For windows, just double click the installer
  - For linux, you should also check dependency. Use dpkg -i
  - For mac OS, read the documentation

Play arround

- Download qgis_sample_data.zip or qgis_sample.tar.gz from http://download.qgis.com, extract it in your computer
- Double click qgis shortcut. If it is not there, run qgis from command prompt
- Add new raster layer from sample_data
- Add new vector layer from sample_data (the one with shp file)
- Play with the property of vector layer

What's next?

- Homework :
  - There are many way to describe position (e.g : coordinate system, longitude-altitude, polar coordinate, and even your own way, and labeling). Write up how do you usually describe your position. Write as much way as possible (minimum 6 ways), and show the pros & cons of each way. You may do this homework alone or in group.

Questions?

Thank you