

Topic : What is GIS?



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What is GIS?

- Geographic Information System
 - What is geography?
 - What is information?
 - What is the difference between information and data?
 - What is system?
 - GIS is a system, but it deal with spatial data
 - What is spatial data?

How GIS can be useful?

(Conservative system)

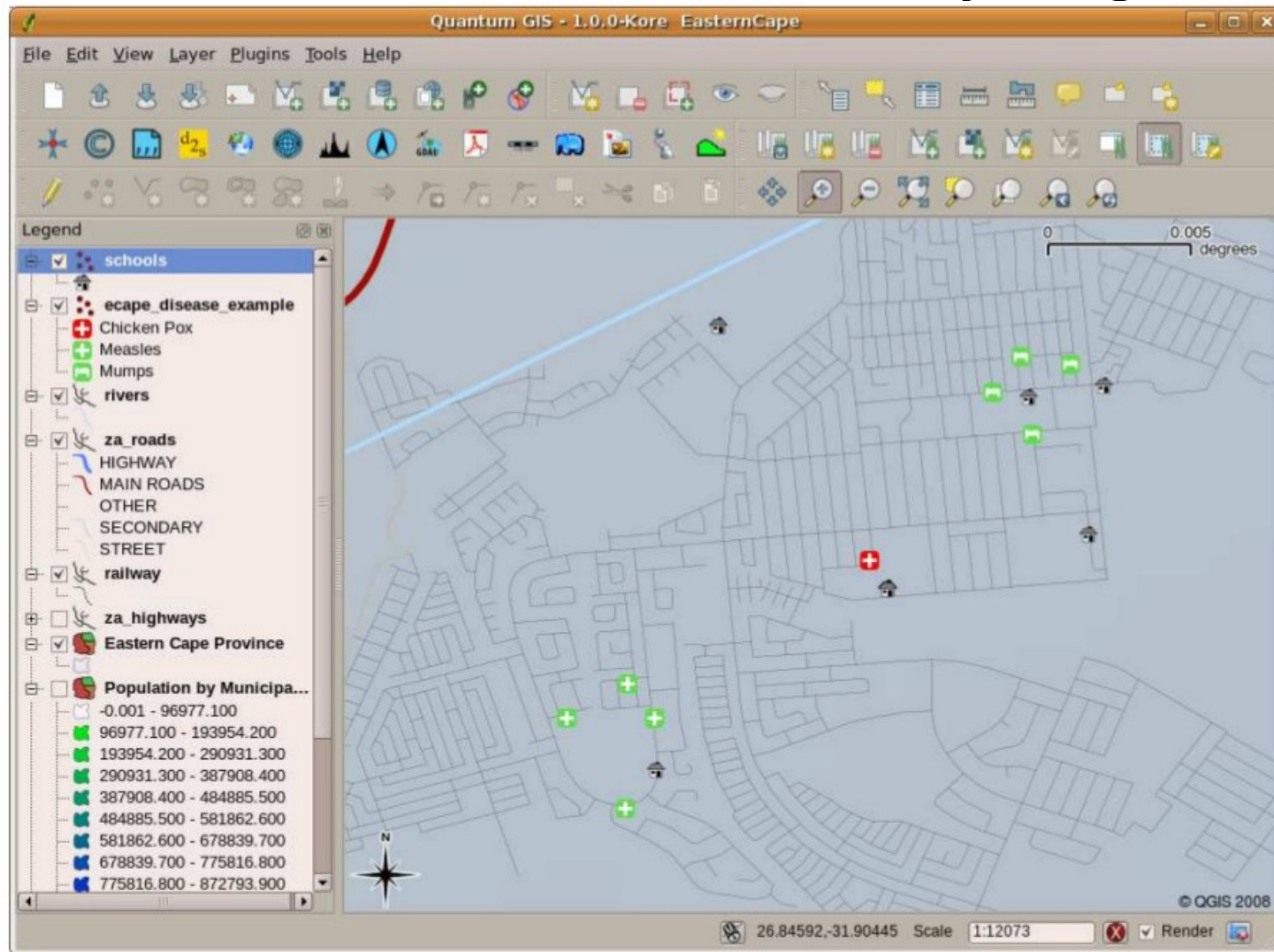
- What information you can retrieve from this data:

Longitude	Latitude	Disease	Date
26.870436	-31.909519	Mumps	13/12/2008
26.868682	-31.909259	Mumps	24/12/2008
26.867707	-31.910494	Mumps	22/01/2009
26.854908	-31.920759	Measles	11/01/2009
26.855817	-31.921929	Measles	26/01/2009
26.852764	-31.921929	Measles	10/02/2009
26.852764	-31.921929	Measles	22/02/2009
26.869072	-31.911988	Mumps	02/02/2009
26.863354	-31.916406	Chicken Pox	26/02/2009

How GIS can be useful?

(GIS Approach)

- The same data as before, what you get now ?



More about GIS

- GIS is **not only** about **computer application**
- GIS refers to **all aspect** of **managing** and **using digital geographical data**
- GIS was started at 1970's
- GIS consists of some elements
 - Digital data
 - Computer Hardware
 - Computer System (GIS Application)
 - Some people also include these :
 - Human (User, engineer, everyone related to the system)

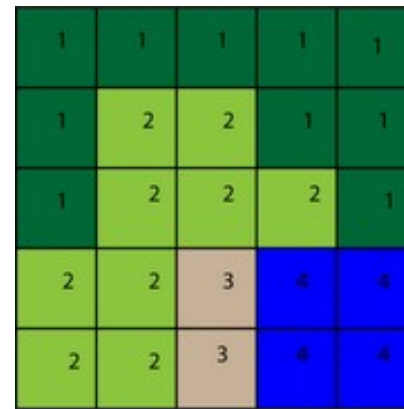
GIS Data

- Geographical
 - Longitude and Latitude
- Non Geographical
 - Disease and Date

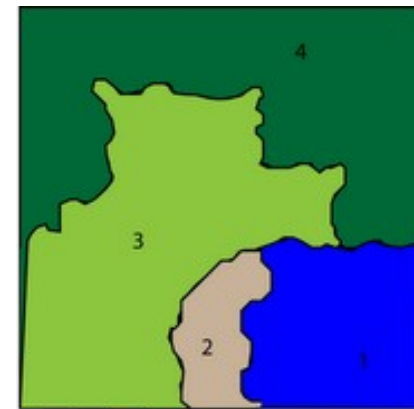
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Geographical Data

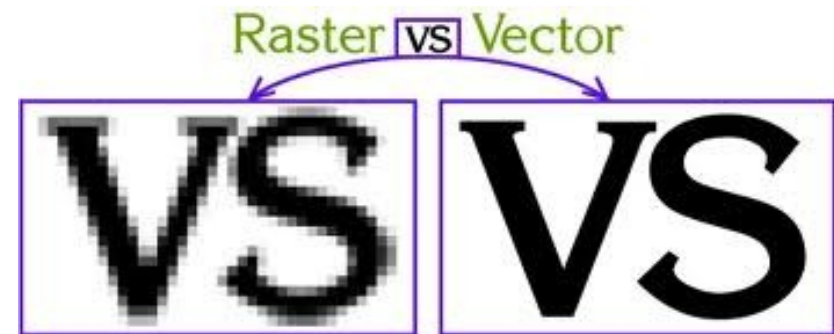
- Vector
 - Save the position of every point
 - Will never be jagged when zoomed in
- Raster
 - Also known as bitmap ← mapping pixel's color
 - Will be jagged when zoomed in



Values	Name	Count
1	Forest	10
2	Grass	9
3	Beach	2
4	Water	4



FID#	Name	value	Public?	Owner
1	Water	4	Yes	State
2	Beach	3	Yes	State
3	Grass	2	Yes	State
4	Forest	1	No	Warner



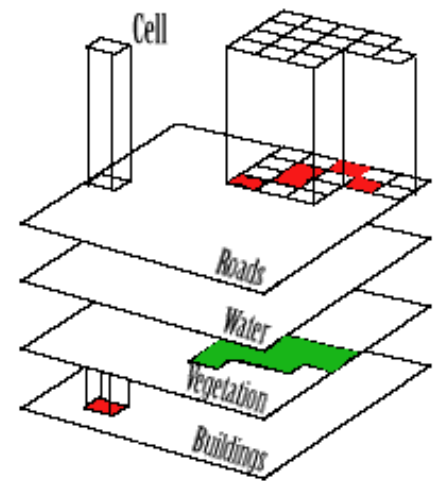
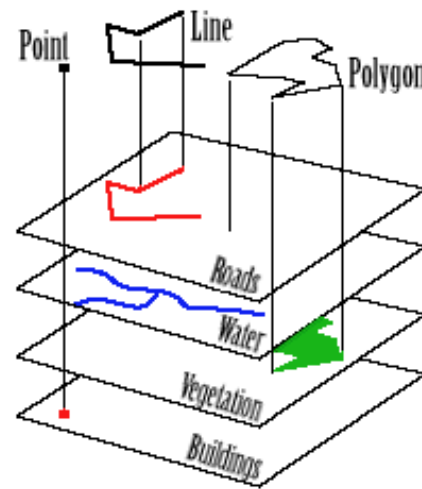
GIS Application Nowadays

- Used for everyone's sake:
 - Google MAP
 - Google Earth
 - Wikimapia
- If you need something specific:
 - ESRI Arcgis & Arcview ← using unlicensed version of this is called piracy
 - QGIS ← this is free and available for windows/mac/linux
 - Grass ← also free
 - Mapserver ← your map shown in your web (need some configuration)

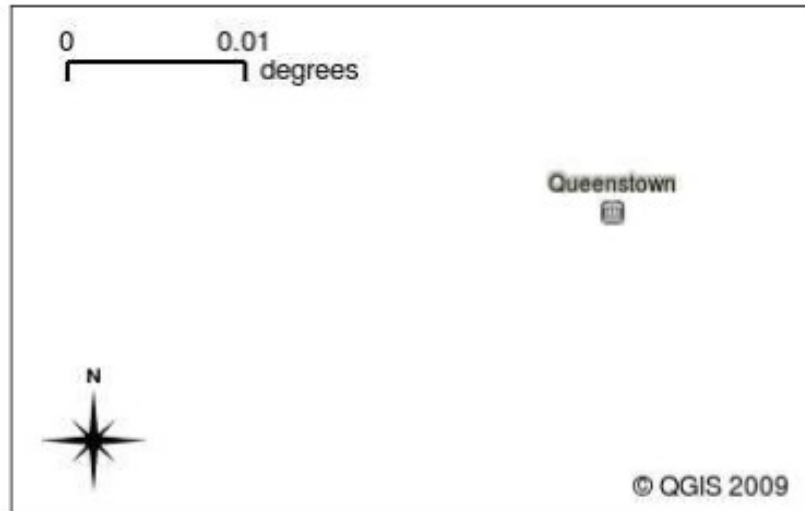
GIS Application

Something in Common

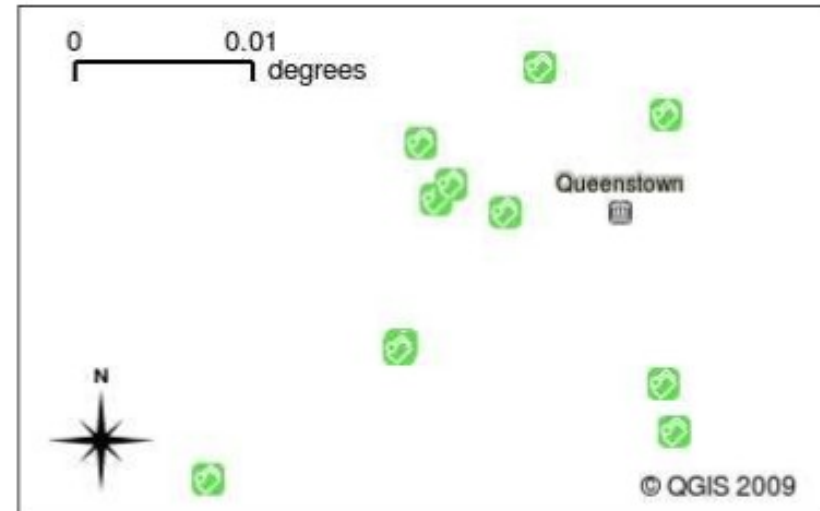
- Every GIS application usually has this:
 - Map Layer
 - Have you ever played with Adobe Photoshop or GIMP?
 - What is Layer?
 - Map View
 - You can put many layers into a view.
 - You can change
 - Layer order
 - Layer visibility



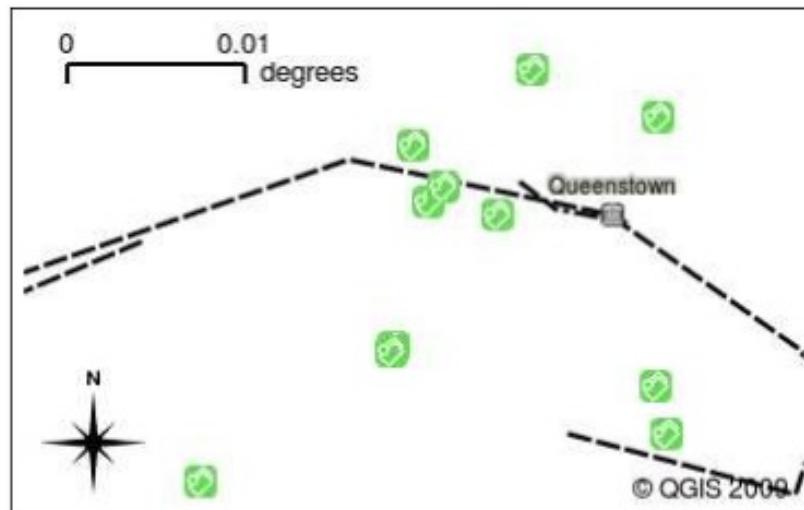
Map Layer & Map View



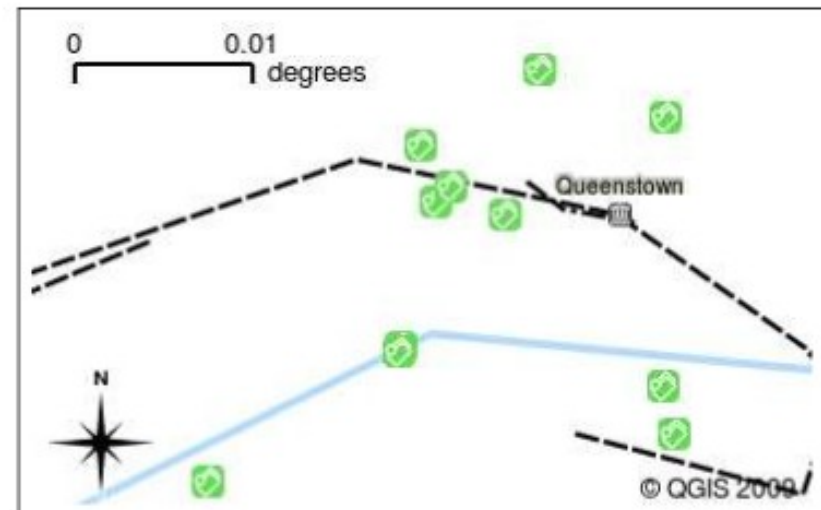
(a) A towns layer added to the map view



(b) A schools layer added to the map view



(c) A railways layer added to the map view



(d) A rivers layer added to the map view

Map Layer & Map View



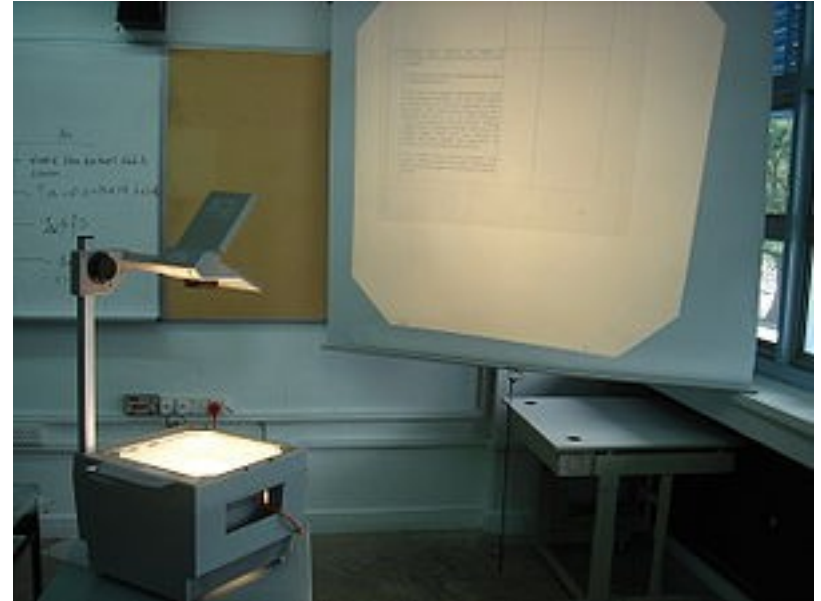
(a) Before changing the layer order, rivers are drawn underneath roads



(b) After changing the layer order, rivers are drawn on top of roads

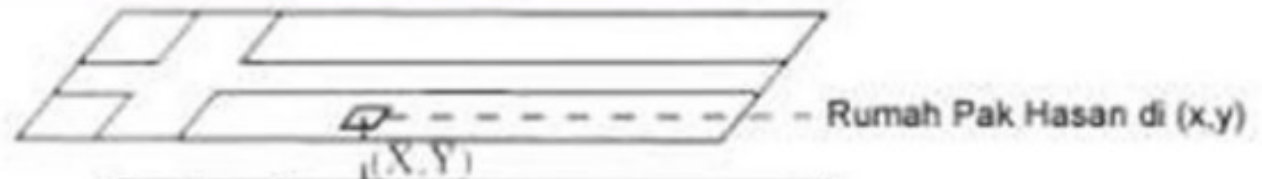
Map Layer & Map View – An analogy and a question

- Can you make Map Layer without using computer?
 - Long time ago, there is a magical electronic tools called OHP (Overhead Projector) which is still used today by some people
 - You can put a transparent slide in the top of another transparent slide
 - So why do you still need a computer?



What are they expect of GIS?

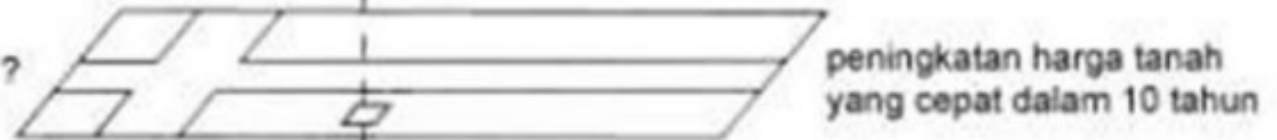
Apa ... ?



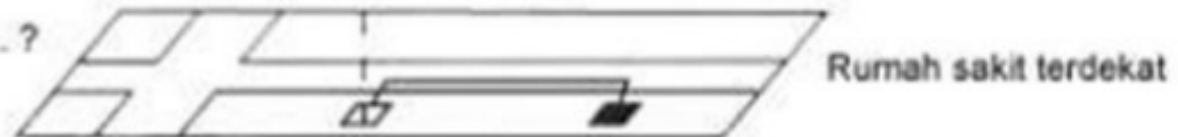
Dimana ... ?



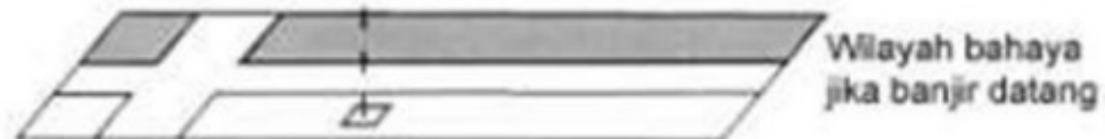
Bagaimana perubahannya ... ?



Apa saja yang berhubungan ... ?



Bagaimana jika ... ?



Gambar 1.4. Yang Diharapkan dari SIG

GIS vs Paper Map

- You are a backpacker, which one do you like? A bunch of paper map or a handy GPS?
- You want to look for the nearest restaurant around, so you don't want to see any airport, gas station and everything else in the map
- How fast can you find 'Kumamoto University' in the map?
- I have 10 years ago Malang's paper map, I don't know if they have build a new road around
- Damn, there is no internet access at the peak of mount Everest

Thank you ...

ありがとう ...

谢谢 ...

