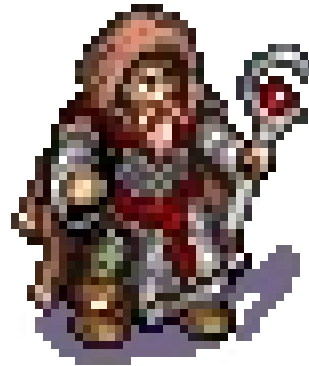


Topic : What is GIS?



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About the topic

- At the end of this class, you will be able to describe what GIS is, you will also be able to describe some basic terms
- This is a very basic, yet important (but also the easiest) topic, if you feel today's class is too hard, you have options:
 - Drop the subject, and never come back
 - Learn harder, that is the only way to survive

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)

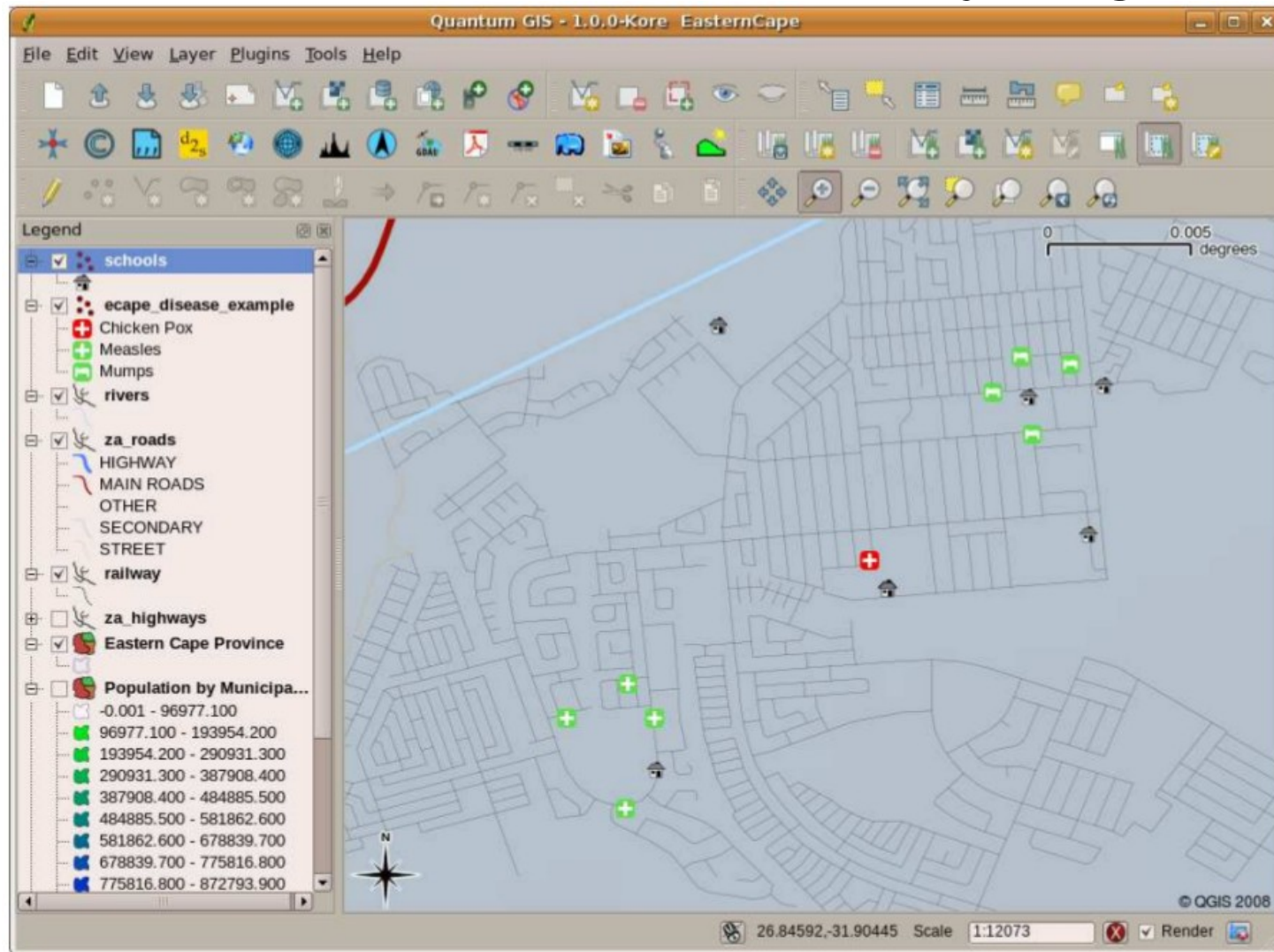
- What information you can retrieve from this data:

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

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
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26.855817	-31.921929	Measles	26/01/2009
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26.869072	-31.911988	Mumps	02/02/2009
26.863354	-31.916406	Chicken Pox	26/02/2009

Geographical Data

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

GIS Application Nowadays

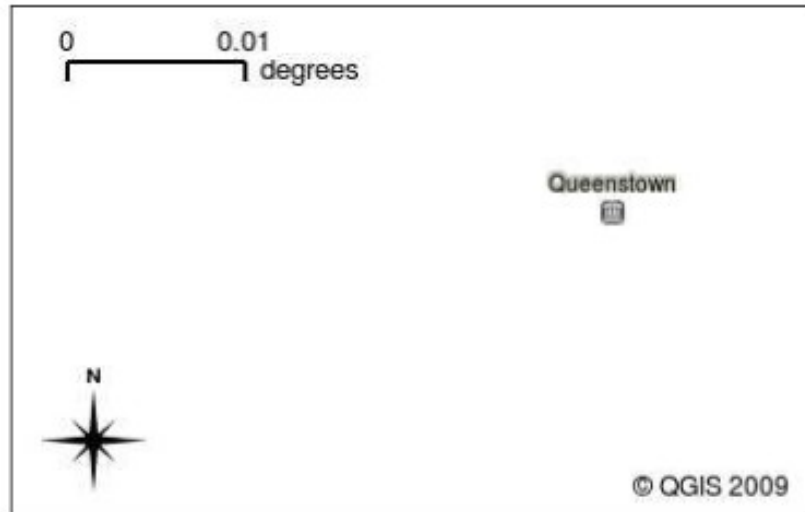
- Used for everyone's sake:
 - Google MAP
 - Google Earth
- If you need something specific:
 - ESRI Arcgis & Arcview ← using unlicensed version of this is called piracy
 - QGIS ← this is free and available for windows/mac/linux
 - Grass ← also free
 - Mapserver ← your map shown in your web (need some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

GIS Application

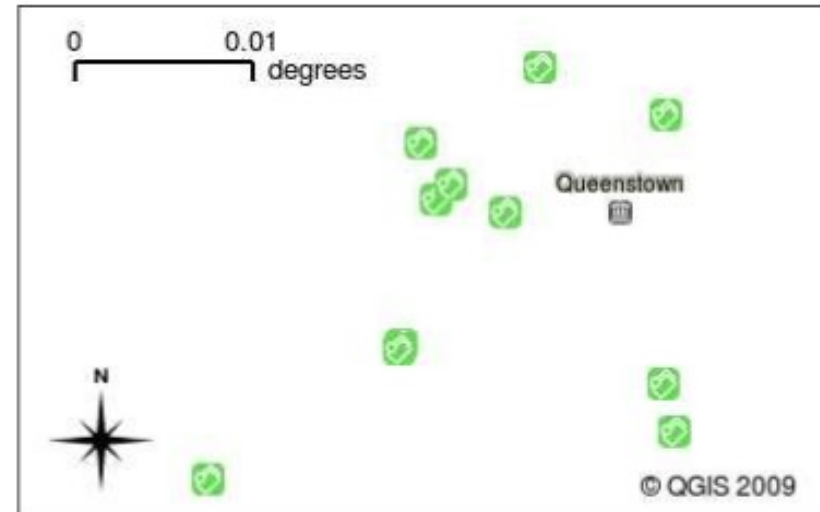
Something in Common

- 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

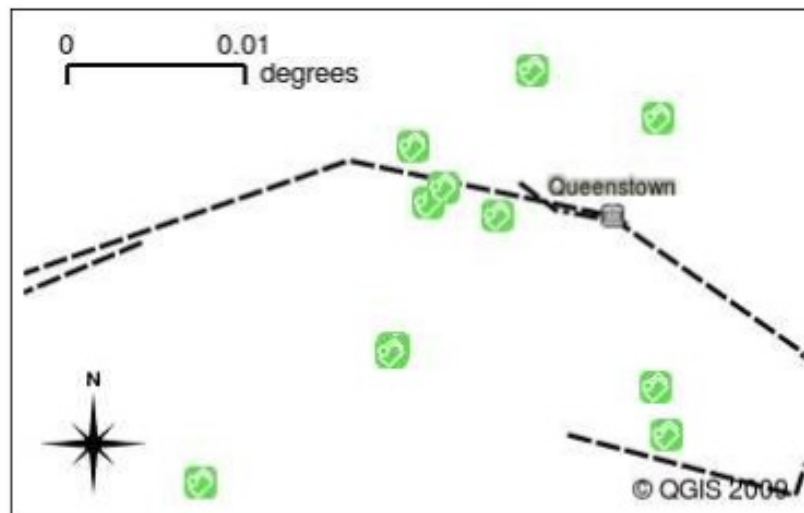
Map Layer & Map View



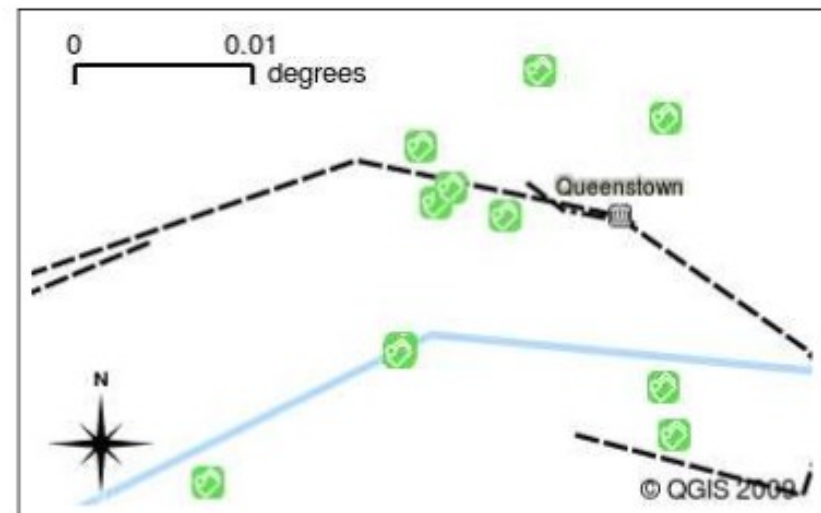
(a) A towns layer added to the map view



(b) A schools layer added to the map view

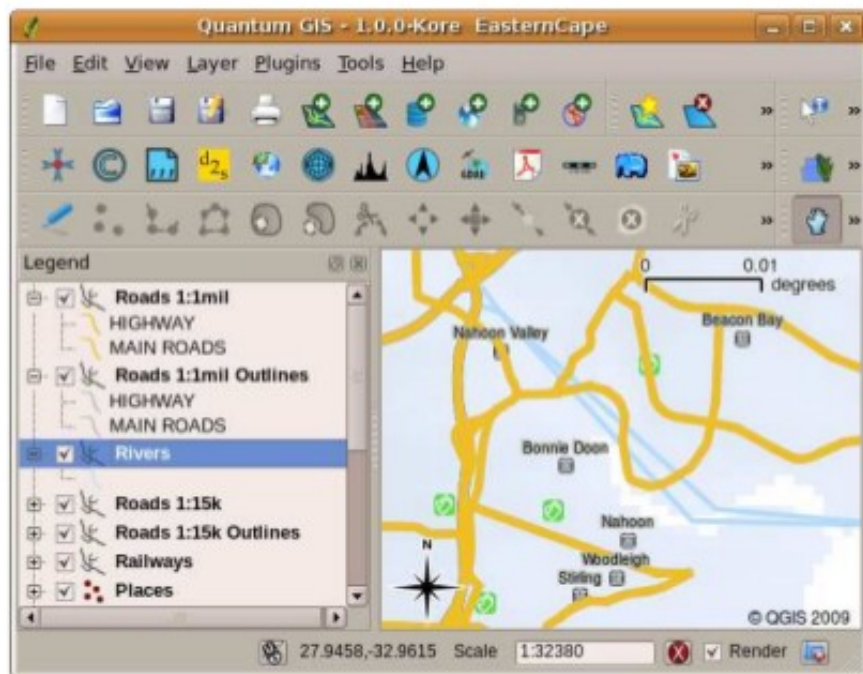


(c) A railways layer added to the map view

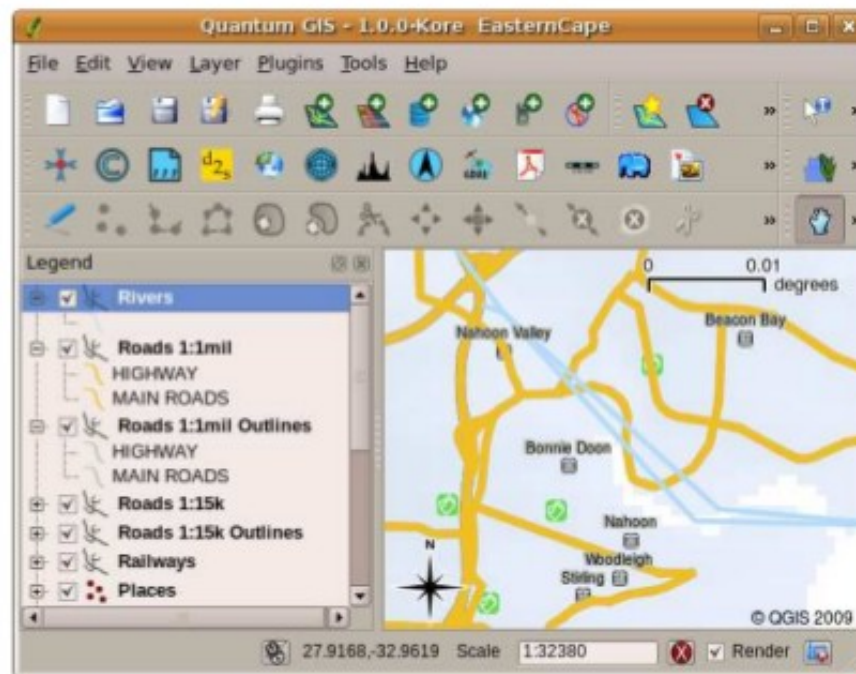


(d) A rivers layer added to the map view

Map Layer & Map View



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



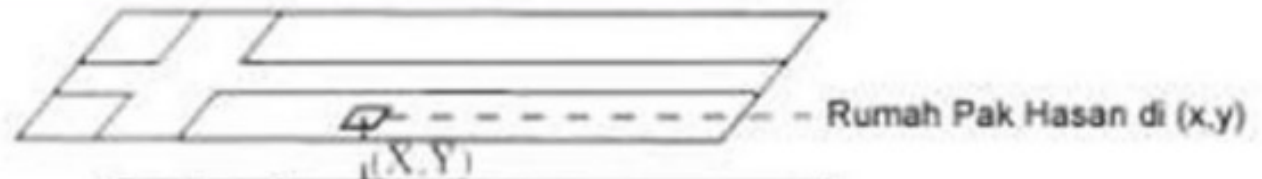
(b) After changing the layer order, rivers are drawn on top of roads

Map Layer & Map View – A fun 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 transparant slide
 - So why do you still need a computer?

What are they expect of GIS?

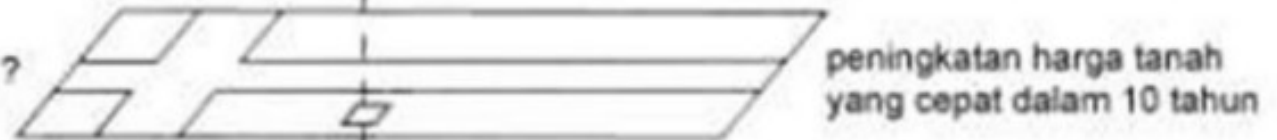
Apa ... ?



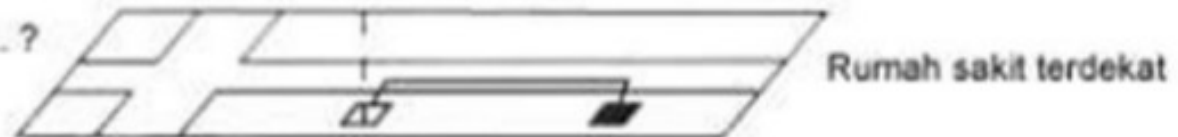
Dimana ... ?



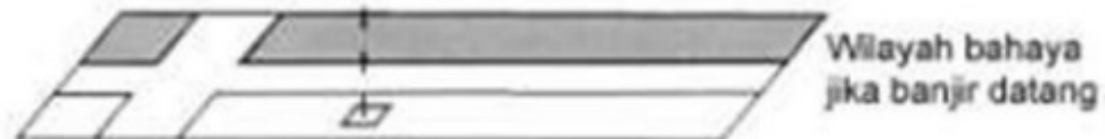
Bagaimana perubahannya ... ?



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

What's next?

- Homework :
 - Read about GIS classification
 - Read about GIS basic purpose
 - Describe about Geo-spatial data
 - Try these stuff:
 - Q-GIS (Quantum GIS) or ArcGIS
 - phpmapserver
- There will be a little 'quiz' next week :)



Questions?

Thank you