

# GIS

A Geographic Information System (GIS) is a method to visualize, manipulate, analyse and display information that is tied to a spatial location. This involves linking database tables to geographic features, producing intelligent "layers" that can be mapped using GIS software.

"Maps are a kind of language, a geospatial, visual language."

- *Jack Dangermond*

"GIS . . . allows data from two very different sciences to share a common language: the easily understood image of a map. A study of disease outbreaks, say, might be in one scientific 'language'; the distribution of a certain kind of weather pattern might be in another 'language'. Combined on a single map, the researcher can suddenly see how weather influences disease."

*Michael Rogers*

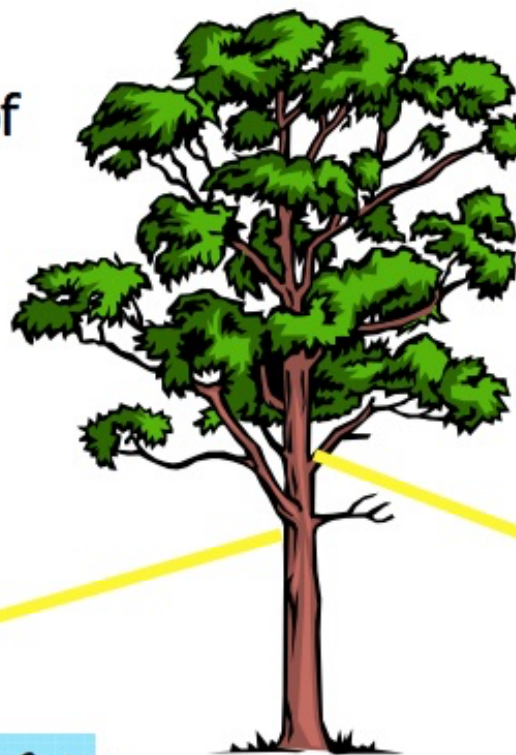
# What is a GIS?

We can describe any element of our world in **two** ways:

**Location Information:**  
*Where is it?*



**51° N, 112° W**



[1]

**Attribute Information:**  
*What is it?*

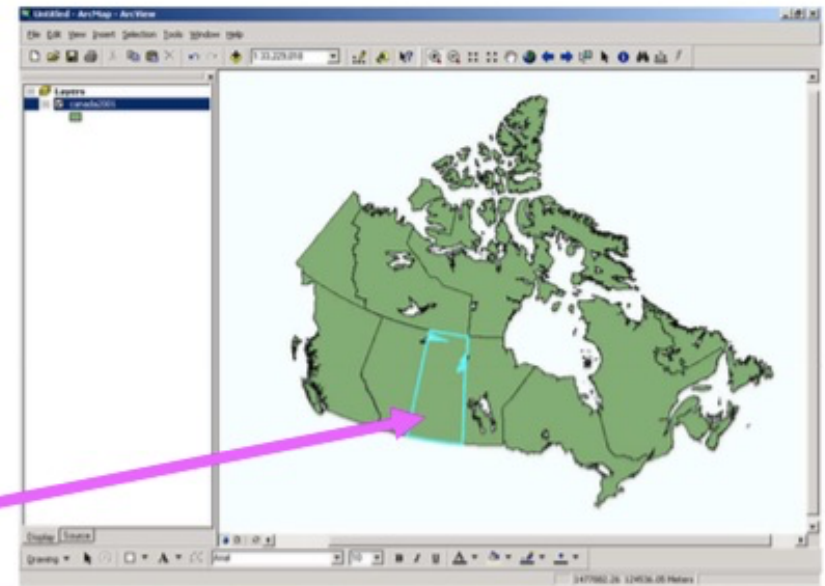
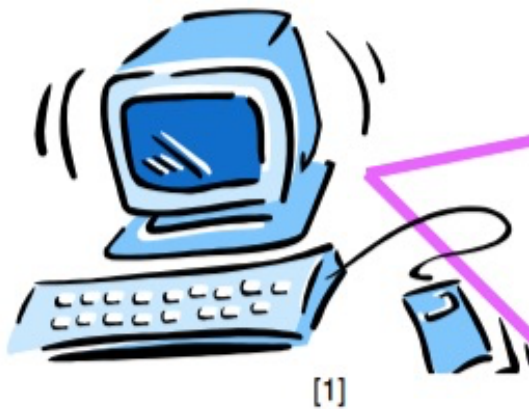
Species: Oak  
Height: 15m  
Age: 75 Yrs  
Condition:  
Good



# What is a GIS

GIS links datasets

GIS software links the location data and the attribute data:

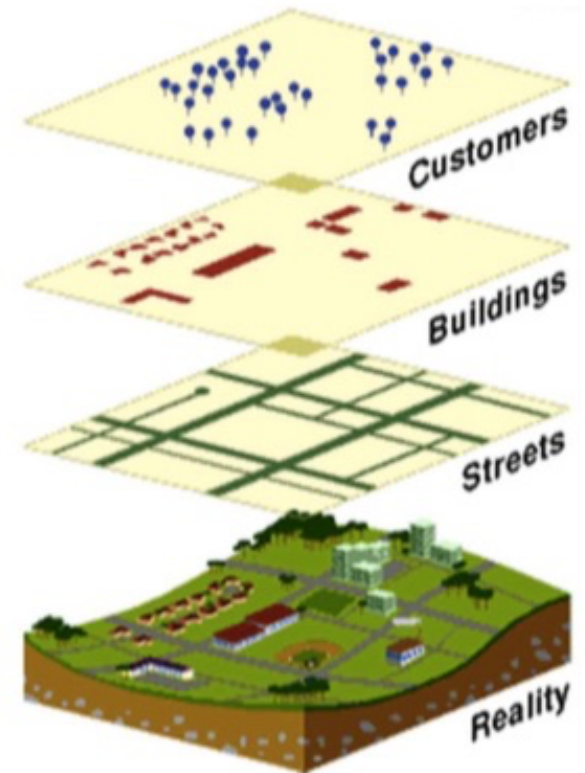


FID	Shape*	KEY	NAME	NOM	POP_2001	DWELL_2001	PI
0	Polygon	4800000	Alberta	Alberta	2789528	984275	
1	Polygon	5900000	British Columbia	Colombie-Britannique	3907738	1643969	
2	Polygon	4600000	Manitoba	Manitoba	1119583	477085	
3	Polygon	1300000	New Brunswick	Nouveau-Brunswick	729498	313609	
4	Polygon	1000000	Newfoundland and Labrador	Terre-Neuve	512930	227570	
5	Polygon	1200000	Nova Scotia	Nouvelle-cosse	908007	403819	
6	Polygon	3500000	Ontario	Ontario	11410046	4556240	
7	Polygon	1100000	Prince Edward Island	le-du-Prince-douard	137312	48630	
8	Polygon	2400000	Quebec	Québec	7237479	3230196	
9	Polygon	4700000	Saskatchewan	Saskatchewan	978933	431628	
10	Polygon	6000000	Yukon	Yukon	28674	13793	
11	Polygon	6200000	Northwest Territories	Territoires du Nord-Ouest	26745	8177	
12	Polygon	6100000	Nunavut	Nunavut	37360	14669	

Record: 1 | Show: All Selected | Records (1 out of 13 Selected) | Options

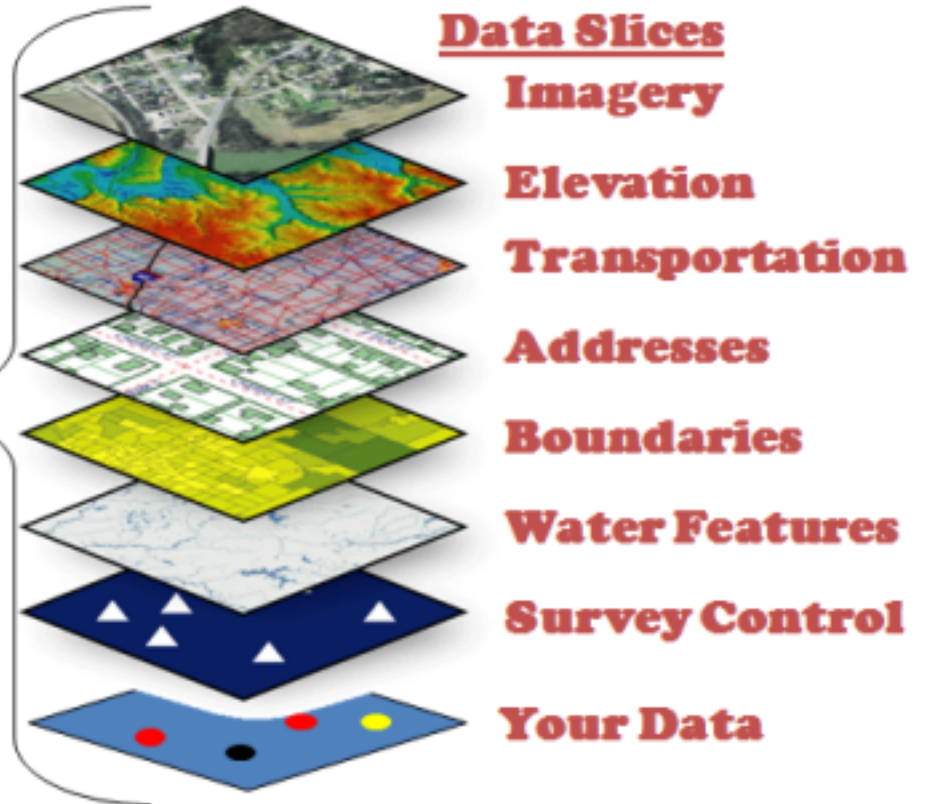
# What is a GIS?

- In a GIS, different types of information are represented as separate map layers
- Each layer is linked to descriptive information
- Layers are combined to make a map



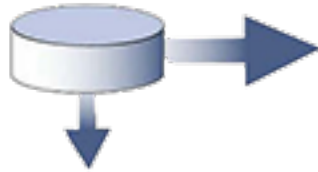
## GIS World Model

### The Real World

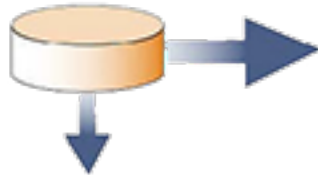


## Data source

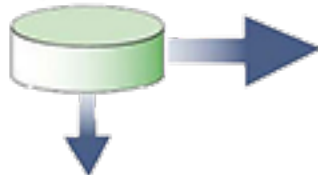
Street data



Buildings data



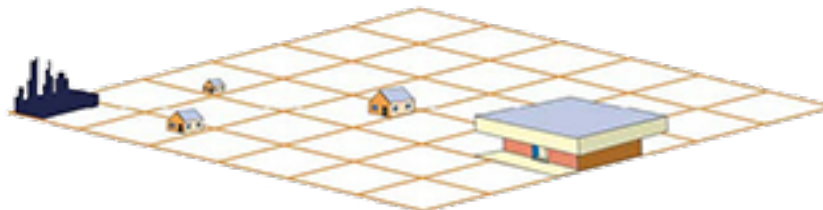
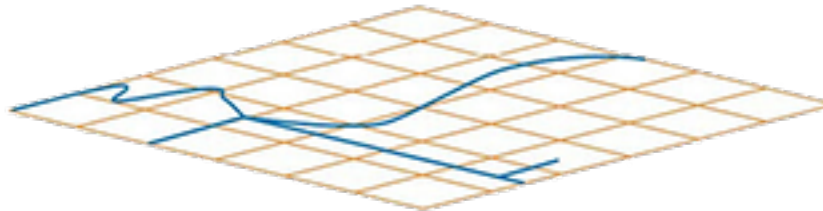
Vegetation data



Integrated data

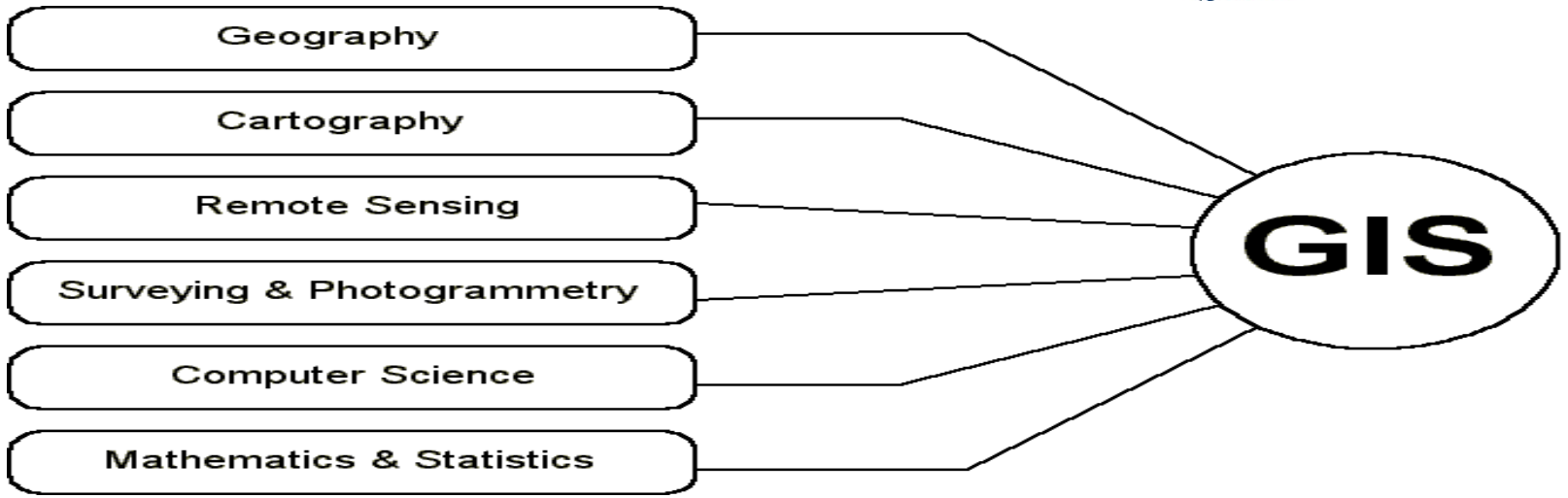
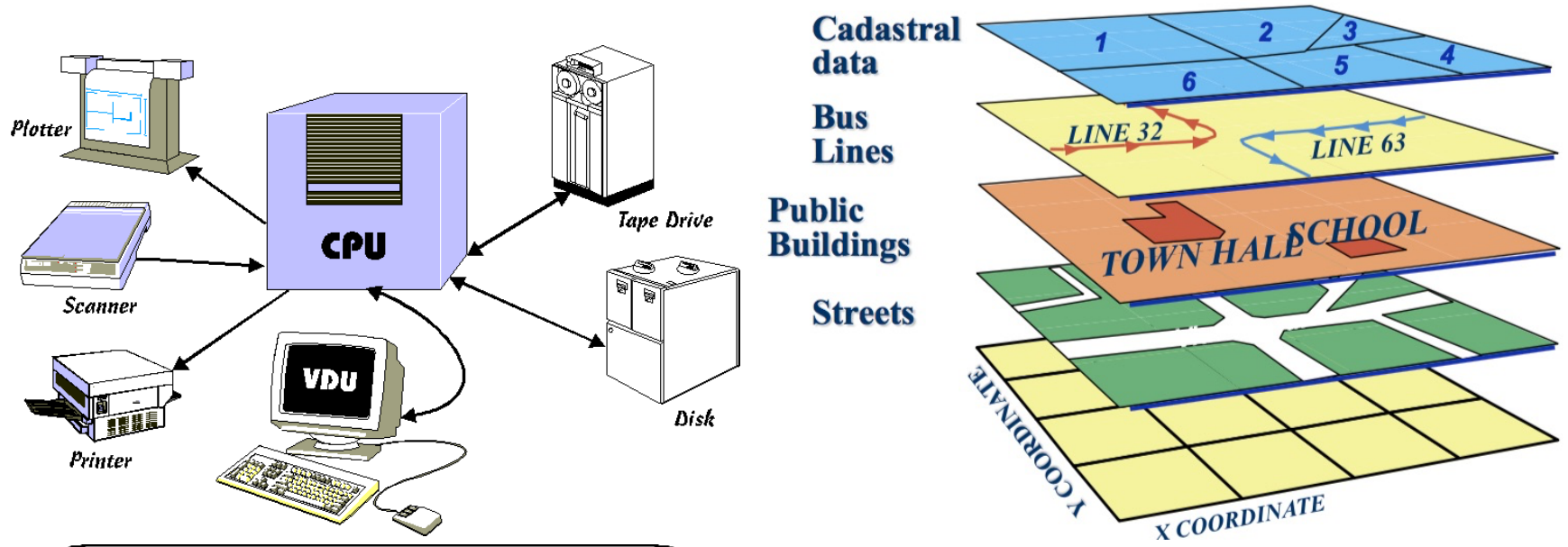


## Data layers



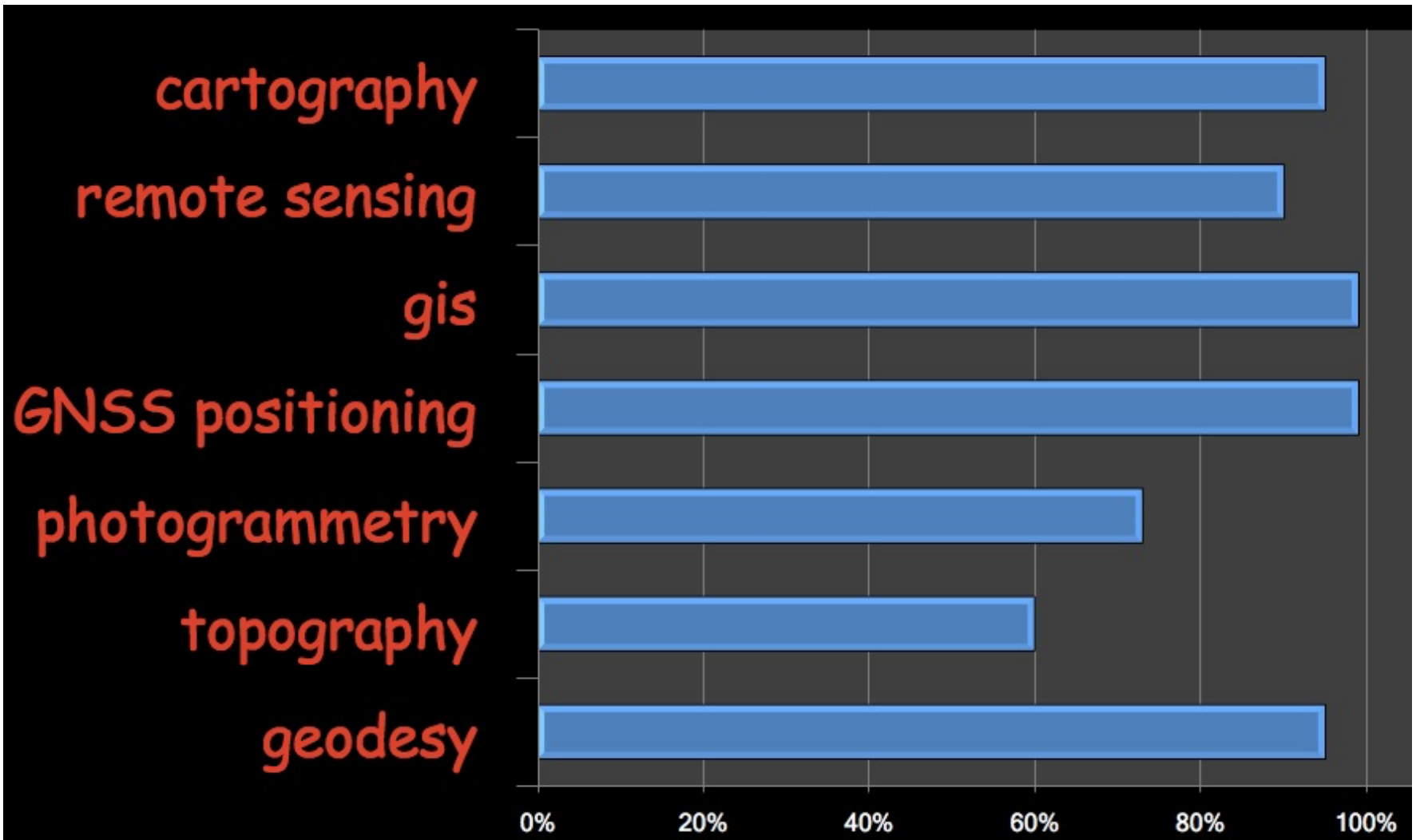


# geographic information systems



# geomatics

*Geomatic*: the mathematics of the earth; the science of the collection, analysis, and interpretation of data, especially instrumental data, relating to the earth's surface. (Oxford English Dictionary)



# Consumers of Geomatics Products & Services

## Geomatics Industry Sector

### Geospatial Data Infrastructure



Image courtesy of ESRI Canada

