COMPONENTS OF GIS
(Geographic information system)

The components of a Geographic information system (GIS) are essential tool for urban planning, disaster management and environment conservation. The key components include:

① Hardware

The physical devices and equipments used in GIS operations, such as:

-> computers (Desktops, servers)
-> Gps devices
-> scanners and printers
-> storage devices for large spatial datasets.

② Software

GIS softwares provides tools for data capture, storage, analysis and visualization. Examples include:

-> ESRI ArcGIS
-> QGIS (open source)
-> GRASS GIS
-> Google Earth Engine

③ DATA

Data is the core of GIS, categorized into:

* Spatial Data:

It represents the geographic location (e.g. maps, satelites imagery).

* Attribute Data:

It represents descriptive information about spatial data (e.g, population linked to the city on a map). Sources include satelite imagery, surveys, census data.

④ people

Human expertise is crucial for operating GIS, interpreting results, and making decisions.

This include:

-> GIS analysts and technicians

-> cartographers

-> Researchers and decision-makers.

⑤ Methods

These are the procedures, models, and workflows used to collect, process and analyze GIS data.

Example include:

-> Data collection techniques (e.g, surveys, remote sensing)

-> spatial analysis methods (e.g. interpolation, overley analysis)

⑥ Network and communication

GIS system often rely on network infrastructure for data sharing and collaboration, especially in web-based GIS platforms.

This includes:

-> Internet and intranet connectivity

-> cloud service for GIS data storage and processing