

Fundamentals of GIS in Traffic and Transport

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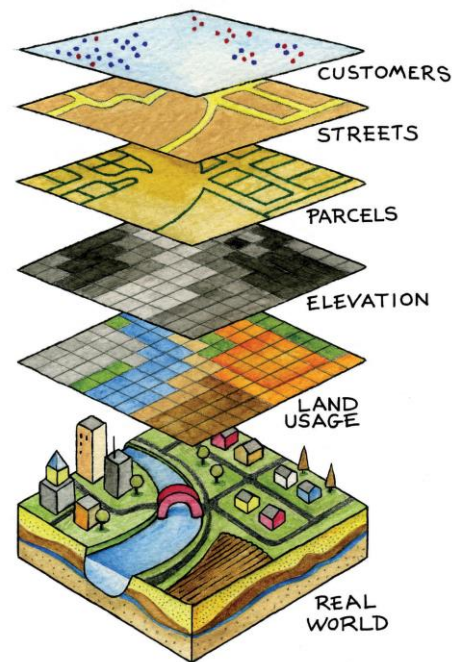
Sustainable Transportation within the Framework of Green Deal - SPHERE

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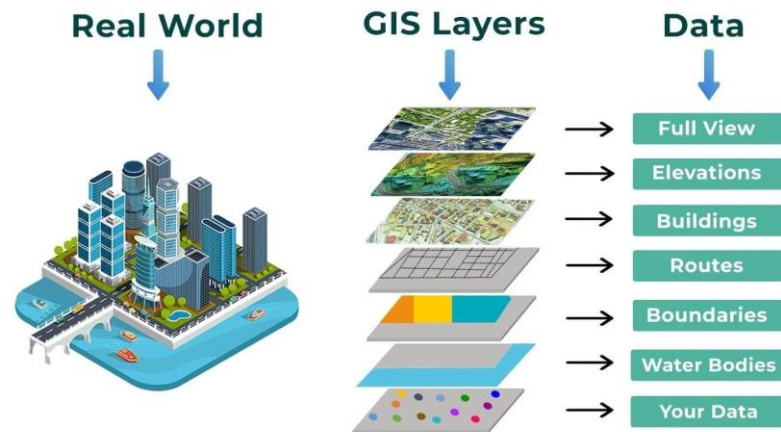
Fundamentals of GIS in Traffic and Transport

Geographic Information Systems represent a modern tool for collecting, processing, analysing and visualising spatial data. In traffic and transport, GIS enables a better understanding of the spatial distribution of road networks, traffic flows, crashes, stops, terminals and other elements of the transport system.



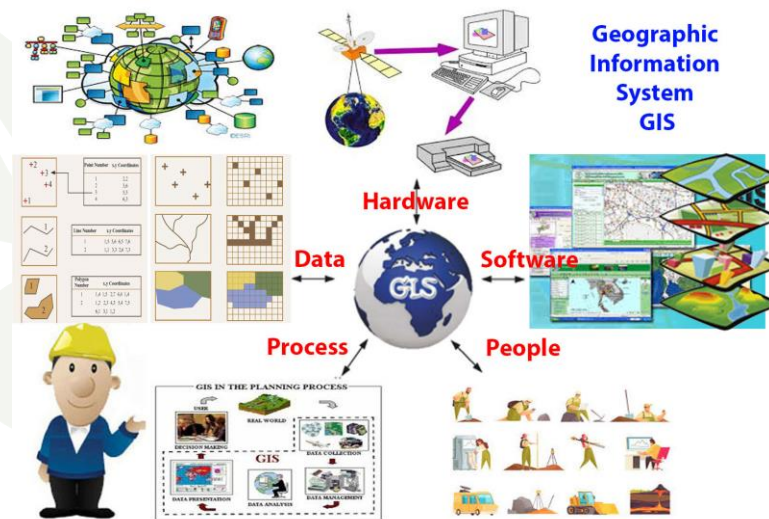
What Is GIS?

- ❑ GIS is a system that connects spatial data with descriptive information.
- ❑ This means that every object on a map, such as a road, intersection, pedestrian crossing or bus stop, can contain additional data: name, category, length, number of lanes, speed limit, traffic volume or number of crashes.



Main Components of GIS

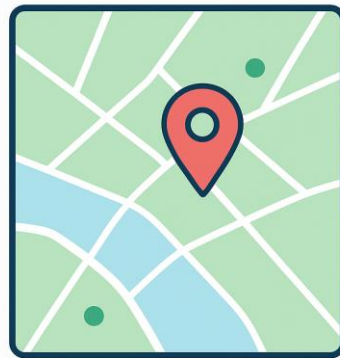
The main components of GIS are hardware, software, data, methods and users. Hardware and software enable data collection and processing. Data represent the basis of every analysis, while methods define how data are processed and interpreted. Users, or experts, draw conclusions and use the results for planning and decision-making.



Spatial and Attribute Data

GIS uses spatial and attribute data. Spatial data show the position of objects in space, while attribute data describe their characteristics. For example, a line on a map can represent a road, while its attributes may include street name, length, pavement width, road category, speed limit and annual average daily traffic.

SPATIAL DATA

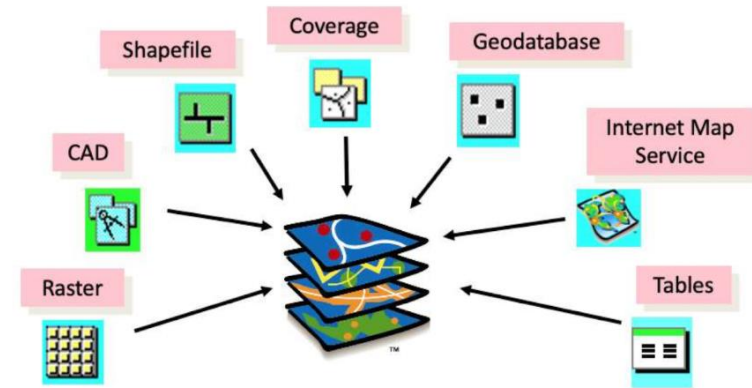


NON-SPATIAL DATA



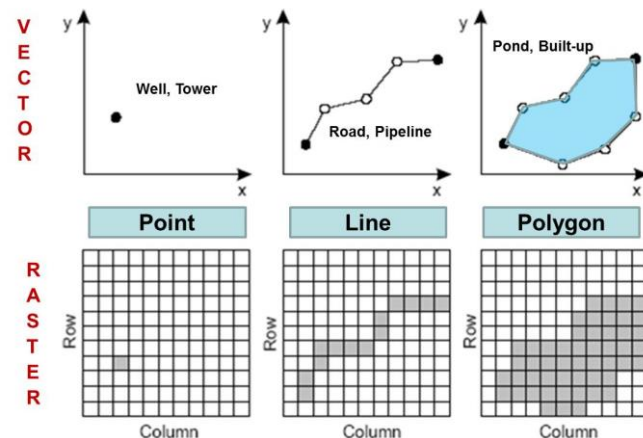
Vector Data Model

The vector data model represents spatial objects as points, lines and polygons. Points are used to display traffic crashes, stops, traffic signals or parking spaces. Lines represent roads, railway lines, cycling paths or public transport routes. Polygons are used to display zones, settlements, parcels or areas of influence.



Raster Data Model

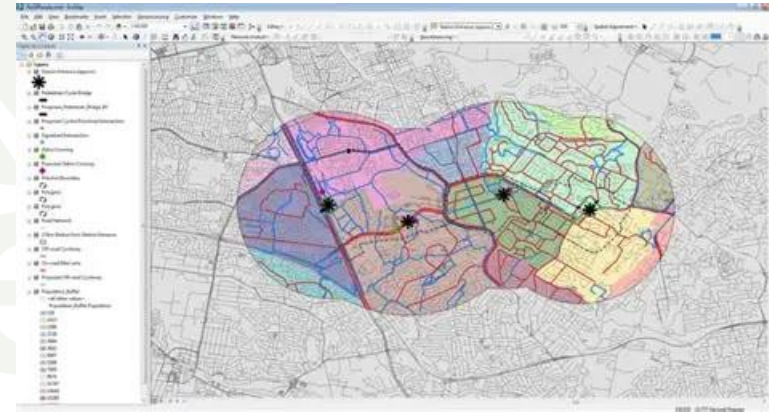
The raster data model consists of a grid of cells or pixels. Each pixel has a specific value. In traffic and transport, raster data can be used to analyse elevation, terrain slope, traffic density, spatial accessibility, pollutant emissions or spatial risk.



Vector and Raster Models

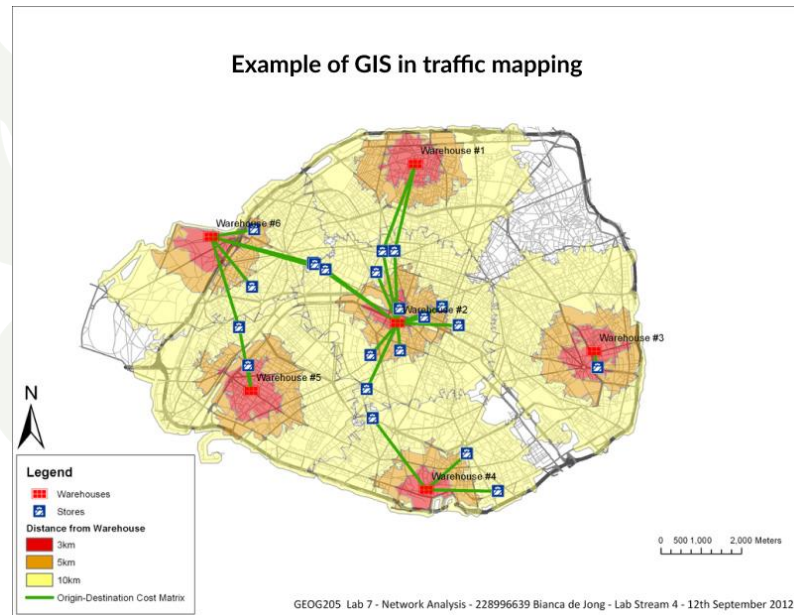
Application of GIS in Traffic and Transport

GIS has wide application in traffic and transport. It is used for road network mapping, traffic crash analysis, public transport planning, infrastructure management, analysis of pedestrian and cycling movements, parking planning, accessibility assessment and decision support in transport planning.



GIS in Public Transport Planning

In public transport planning, GIS is used to analyse routes, stops, service areas and user accessibility. Using GIS, it is possible to determine which settlements are well connected, where stops are missing and which parts of the city should be better connected with schools, hospitals, employment zones and the city centre.



HVALA NA PAŽNJI!