

Q. Usage and limitation of GIS in Planning?

1. What is GIS:

It is a system designed to capture, store, analyze, manage, and present spatial or geographic data. GIS technology integrates various types of data, including maps, satellite images, aerial photographs, and tabular data, allowing users to view, understand, interpret, and visualize data in ways that reveal patterns, trends and insights.

2. Components of a GIS:

Following are the components of GIS:

a. Hardware:

The hardware that a GIS contain

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Computer, GPS devices, and data storage devices used to collect and store geographic data.

b. Software:

GIS uses softwares like Google Earth

c. Data:

Geographic data can be in the form of vector data or raster data and it includes information about locations, attributes and relationships

3. Uses of GIS

a. Urban Planning:

GIS is

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used to plan and manage urban areas by mapping infrastructure, land use, transportation networks, and demographic data. It aids in city development and management.

b. Environmental Management :

GIS helps monitor and manage natural resources, track environmental changes, and assess the impact of human activities on the environment.

c. Disaster Management :

GIS is essential for

disaster preparedness, response, and recovery. It helps in identifying vulnerable areas, managing resources during emergencies, and assessing damage post-disaster.

d. Natural Resource Management:

GIS is used to monitor and manage forests, water resources, agriculture, and wildlife. It assists in conservation efforts and sustainable resource utilization.

e. Health care:

GIS can be used for epidemiological studies, disease mapping, and healthcare resource allocation. It helps track

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the spread of diseases
and understand their
spatial patterns

f. Transportation Planning:

GIS

is vital in designing
transportation networks, optimizing
routes, and managing traffic.
It helps reduce congestion
and improve transportation
efficiency.

g. Agriculture:

Farmers use

GIS for precision agriculture,
optimizing crop management,
and resource allocation based
on soil and weather data.

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h. Archaeology:

Archaeologists use GIS to map and analyze excavation sites and historical landscapes. It helps in understanding past civilization.

i. Military and Defense:

GIS is employed for intelligence analysis, mission planning, and logistics in military operations.

4. Limitation of GIS:

a. Data Quality:

GIS heavily relies on data, and if the data is inaccurate, the results can be unreliable.

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b. Costly :

Acquiring and maintaining GIS hardware and software can be expensive. Training staff to use GIS effectively is also a cost factor.

c. Data Privacy and Security :

Geographic data can contain sensitive information, and protecting it from unauthorized access is a challenge.

d. Complexity :

GIS system can be complex and require trained professional to operate. Small organizations may find it challenging

to implement and maintain GIS.

e. Scale Limitations:

The level of details in GIS data is often limited by the scale of data collection. Fine data can be costly to obtain.

f. Ethical and legal issues:

GIS can raise privacy and ethical concerns, particularly when it comes to the collection and use of location data.

g. Data Volume:

Large datasets in GIS can be challenging

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to manage and analyze,
requiring significant
computational resources.

h. User Skill level :

Effective
use of GIS requires specialized
knowledge and skills, which
may not be readily available
in all organizations or regions.

i. Interoperability :

Different GIS
software and data formats
may not always be compatible,
making it difficult to
share data between systems.