



GEOSPATIAL TECHNIQUE: REMOTE SENSING & G.I.S.

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ABSTRACT:

At present, the level of technology is so high that we can now see, hear and know anything, anywhere, whether it's happening on Earth's surface inside or outside. Remote sensing and G.I.S. are the technologies that have made all this possible. Without them, the world today is unimaginable. It's because of this technology that the entire world is within our grasp.

KEYWORDS:

EARTH OBSERVATION, ENERGY SOURCE, ELECTROMAGNETIC SPECTRUM, DATA TRANSMISSION, S.I.S., L.I.S., GEOREFERENCING.

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SUBJECT PRESENTMENT:

Remote sensing and G.I.S. are the technical and quantitative branch of geography, which comes under Geo - Informatics Science and Geo- Spatial Techniques. Remote sensing is a process of obtaining information about distant events through sensor devices without coming in contact with the subject.

G.I.S. is a system in which results are reached by analyzing the data obtained through Remote sensing technology. Remote sensing and G.I.S. are complementary technologies that work together to analyze spatial data.

HISTORY OF REMOTE SENSING:

Space remote sensing started after world war II. Large areas can't be photographed by arial photography, hence space photography was started to solve this problem. Germany's 'V-2' rockets are said to be the ancestors of modern spacecraft. The former USSR launched the first satellite, named 'Sputnik-1' into space on 4 October, 1957. False color photography was used during the US-Vietnam War in 1960-61. USA launched a laboratory named 'Skylab' into space in 1973.

Remote sensing is the science that records pulses of reflected light from the surface of a location, object or event on Earth, captured by sensors on satellites or spacecraft in distant space. We analyze the pulses of reflected light recorded on the sensors. Then we use the received data or images to obtain essential information about a location, event or object and reach conclusions.

PROCESS OF REMOTE SENSING:

In this technique mainly two processes to be followed are:

(i) Acquisition of data:

Sensors can be used to capture data from any part of the Earth. Information about a person or an object is collected digitally through electromagnetic radiation and images are prepared from this data which are called pictorial forms.

(ii) Data Analysis:

The digital data recorded from space through remote sensing is used to create computer-assisted images called "Data Products". The process of obtaining these products and reaching on a decision is called data analysis.

STAGES OF REMOTE SENSING:

- (1) Energy source
- (2) Energy interaction with Atmosphere
- (3) Interaction of Energy with Earth's surface features.
- (4) Amplification of Energy reflected or Emitted from the atmosphere.
- (5) Recording of energy by sensors.
- (6) Data transmission and processing
- (7) Image processing analysis.
- (8) Convergence of information and data in the form of maps and tables.

ADVANTAGES OF REMOTE SENSING:

- (1) Aerial photograph or image is capable of presenting a panoramic view of a large area of the

Earth.

- (2) Useful in studying floods, traffic, forest fires, weather conditions etc.
- (3) Survey and observation of the Earth's natural resources (Soil classification, forest cover map, availability of water resources.)
- (4) To prepare maps of the settlements of big cities and their areas.
- (5) To provide information about cyclones storms, Tsunamis etc.

DEVELOPMENT OF GEOGRAPHICAL INFORMATION SYSTEM (G.I.S.):

Earlier format of G.I.S. was developed in 1960 by Census department of USA, Geographical Survey and Harvard University's laboratory. The world's first G.I.S. was created in 1962 in Canada by the 'Canadian Geographic Information system'. It was created by Dr. Roger Tomlinson. G.I.S. was developed in Britain by the Natural Experimental research center and the department of environment. In 1990, computer aided data- based development and commercial development of geo-information technology took place. American geographer Stock Gibson used G.I.S. in the assessment of municipal property tax in Mirzapur, Uttar Pradesh.

GENERAL CONCEPTS OF G.I.S.:

- (1) Obtaining or Presenting data.
- (2) Data management, including collection and maintenance is included.
- (3) Analyzing and processing of data.
- (4) Data presentation.
- (5) Modeling.

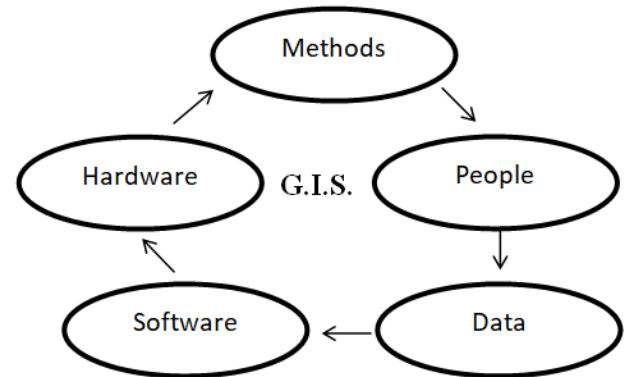
OBJECTIVE OF GEOGRAPHIC INFORMATION SYSTEM:

- To enhance human efficiency in terms of time, and cost in various types of planning and decision making operations.
- Providing efficient means of data distribution and processing.
- To analyze a mix form of geographic data to gain new insights.

GEOGRAPHIC INFORMATION SYSTEM IS TECHNICALLY EXPRESSED BY THE FOLLOWING TERMINOLOGY:

- (1) G.I.S. – Geographic Information System
- (2) G.S. – Geo Information System
- (3) L.I.S. – Land Information System
- (4) S.I.S. – Special Information System

COMPONENTS OF G.I.S.:



GETTING DATA FROM G.I.S.:

Two types of data are measured from geographic information system.

- (1) **Spatial Data** – Data, which are represented on the basis of their position, line, zoning and texture.
- (2) **Non- Spatial Data** – Data, which contain quantity number and specific details.

USES OF G.I.S.:

- In agriculture development sector.
- For analysis of ground assessment.
- To manage natural vegetation.
- For mapping of soil resources.
- Analysis of deforestation and related issues.
- Making of vegetation cover for management of land loss.
- For groundwater potential making.
- For forest fire management.
- For geological and mineral utilization.
- Production of the disposal of melting glaciers
- Management of Marine productivity.
- To identify changes in vegetation areas etc.

CONCLUSION:

Remote sensing and G.I.S. technology has proven to be a boon, that this has given us an access to every corner of the world. We can access information about every event occurring globally through this technology. The present world would be unimaginable, without this technology. Many problems facing human society and the global geo-political landscape, have been solved because of G.I.S. & Remote sensing.

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