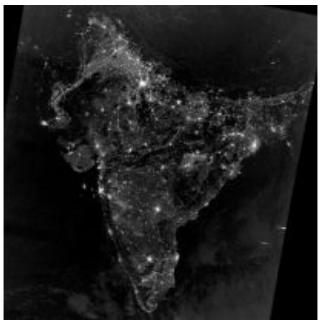
INDIA LAUNCHES NATIONAL WEB GIS APPLICATION FOR PMGSY

Nation Building through GIS in India



Geographical information systems (GIS) are proven to solve complex spatial problems, and accurate digital geospatial data is essential for planning and development activities to help the government of India achieve its ambitious aims. With the involvement of all the States and the Union Territories (UTs), the National Rural Road Development Agency (NRRDA), along with the Centre for Development of Advanced Computing (CDAC), is currently carrying out national implementation of a web-based geographic information system for the *Pradhan Mantri Gram Sadak Yojana* ('Prime Minister's Rural Road Programme'/PMGSY). To conform to PMGSY GIS spatial accuracy guidelines, all the States are creating digital geospatial data. The web-based GIS application that is being developed will be open to all.

Spatial Accuracy

The spatial accuracy of geospatial features such as locations of habitations, roads and administrative boundaries is extremely important for planning and development activities. It is crucial that a feature is placed on the map at the same location where it is spatially located on the ground.

Looking at the trend, it may be observed that a good part of GIS project time is spent on creating digital base data. While the national projects struggle to get reasonably accurate digital spatial data, many establishments own and operate with higher-accuracy geospatial data, such as the data for vehicle navigation systems.

The accuracy of the Survey of India topographic map (*topo-sheet*) is sometimes questioned, citing that it is generated from very old surveys. However, those maps are reasonably accurate unless there has been any positional change of features on ground. The major reason for spatial inaccuracy in digital data is the wrong data conversion process. Before digital conversion, the map components and particularly the map projection parameters should be well understood. Overlaying spatial data from different sources clearly reveals any positional shifts if the correct digital data conversion process has not been followed.

GIS Guidelines

The PMGSY geospatial data creation process deviated from the traditional way of digitisation to ensure position accuracy of features. The base data and the enforcing boundaries have been discarded. Along with that, unprojected Global Positioning System (GPS) latitude-longitude coordinate readings on WGS84 datum are enforced. At the same time, geographical features could directly be captured using GPS rather than losing spatial accuracy through map projection conversions. The State officials have been trained to achieve spatial accuracy through GIS guidelines, research articles, presentations and workshops. However, the States have the freedom to choose an appropriate digitisation methodology.

Policy and Change

The government agencies involved in planning and development should have access to accurate digital base data. Gone are the days of project handling using hard-copy map sheets that are projected in varying projection parameters. It should be a collective responsibility of the government and the domain experts to bring about a change – a change for making accurate digital spatial data easily available for nation building. Rather than focusing on the elementary data conversion domain, the GIS industry should diversify on location-based services, GIS data processing, complex geospatial data capture/updating, etc. This can propel requirements for advanced spatial data and software.

Various GIS technological advancements have been applied to the PMGSY National GIS so that the output could contribute immensely for the national GIS. In future, the officials could focus on analysis, planning, modelling, etc., rather than hunting for reliable digital spatial data. The proposed geospatial data service will change the way GIS projects are handled and the GIS initiative is expected to open up new and varied opportunities for the government as well as the GIS industry. This will help decision-makers to arrive at reliable judgments more

easily.

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