The Digital India initiative by the Government aims at reforming Government through technology and provides Electronic Delivery of Services (EDS). Digital India will transform India into a digitally empowered society and knowledge economy. It will transform the entire ecosystem of public services through the use of information technology. Digital India covers multiple government ministries and departments. It weaves together a large number of ideas and thoughts into a single, comprehensive vision so that each of them forms a part of a larger goal. It will make technology the vehicle to enable change.

According to Department of Electronics and Information Technology, Government of India, Digital India is centred on three key areas:

- Digital Infrastructure as a utility to every citizen
- Governance and services on demand
- Digital empowerment of citizens

Digital India will be coordinated by Department of Electronics & Information Technology and implemented by the entire government.

Geo-enabling Digital India

Geographic Information Systems are becoming a catalyst for several transformational changes in the world; primarily in natural resource management, planning, decision making, governance and citizen engagement. Location is an important parameter in virtually every aspect of the functioning of the government and hence GIS would always be a critical component of most of the mission mode projects conceptualized and implemented by the government. While e-governance is the current paradigm, the future lies in embedding GIS in governance and service delivery. GIS forms an important component of the Digital India project and should be leveraged for decision support systems and development.

Application of GIS can play key role in implementation of various government programs and build an effective review and monitoring mechanism. It will provide a new paradigm in decision making by enabling geographical visualization and representation of information. GIS based decision making is an important component of electronic service delivery. It will help the bureaucrats in taking more informed decisions leading to:

- Strengthening of governance
- Enhanced transparency
- Improvement in citizen services

GIS has been in use in India for more than two decades and forms the core of several mission critical projects in the government and private sector. However, the deployment has been at departmental level with minimal integration resulting in creation of silos and restricting the benefits. Some of the issues with the current scenario are:

- Very little collaboration and sharing of data between departments leading to duplication in data creation. This results in not only cost escalation but also delays in project implementation
- Lack of standards because of which data cannot be shared between various users
- Absence of a common data model to facilitate scalability and extensibility
- Some of the data available with data creators is not GIS ready and needs to be reengineered before it is deployed in GIS projects
- Absence of a platform to disseminate data and services
- Shortage of skilled GIS manpower which constraints adoption of GIS by the user departments

Now is the opportunity for the country to consolidate the work already done and build a comprehensive system that will enable g-governance and bring wide ranging benefits.

Keeping in mind the importance of geospatial content in achieving the growth objectives of the country, there is a need to set up a National GIS which would geo-enable Digital India. National GIS will enable the central and state governments to take a more integrated view of the issues and challenges and build comprehensive plans to deal with them. It will enable the government to deploy this technology to form the basis of all future planning and monitoring activities. National GIS will be the platform for integration of various programs and will facilitate a more holistic view of the developmental projects.

Key Attributes of National GIS

The mission of National GIS should be to embed GIS into various electronic services extended to citizens under the Digital India project. It should provide a platform to enable consumption of spatial data by various e-governance applications thereby bringing in geographic dimension in decision making and service delivery. It should also provide a decision support system which will integrate geospatial content into various business processes of the government. State government should be an active partner by way of State GIS which should be seamlessly integrated with the National GIS.

The core of National GIS will be a Cloud based service delivery platform which will host:

- GIS ready data sets – vector maps with attribute data, geo-referenced satellite imagery for visualization, thematic maps products, et al
- A host of applications for rendering various services to the citizens
- Decision support systems to enable more informed decision making by bureaucrats
- APIs to integrate external applications

National GIS should also encourage private sector to enrich the existing data sets by creating value added products and hosting them on the National GIS platform. Citizen engagement by way of crowd sourcing of both content and applications will further strengthen the platform. State GIS, which would be an integral part of the federated system, should participate both by contributing state level data as well as consume baseline data hosted on the National GIS platform. This approach will also leverage the enormous work done by the state governments in building state level data and also developing applications and deploying them.

We should also build a mechanism to access and integrate the spatial data created by various projects like R APDRP, NUIS, WRIS, NLRMP, et al. We should also access the rich data created by the industry and bring it into the National GIS infrastructure. The existing data sets may have to be reengineered to facilitate migration to the National GIS framework and geodatabase. In addition, existing business processes of various government departments will have to be reengineered in order to embed GIS into them and also their hosting on the National GIS platform. Further, instead of reinventing the wheel we should review the existing GIS based applications developed by states and central government users and extend their usage to others after carrying out the necessary enhancement to web enable them. This way we would be able to leverage the best practices developed across the country.

Virtually every department of the central and state governments would leverage the power of GIS by accessing and consuming the services hosted on it. Some of the major users would include Watershed Management, Land, Roads & Highways, Health, Education, Urban Local Bodies, Disaster Management, Utilities, Mining, Water Resources, Panchayati Raj, Rural Development, et al.

The Vision document developed by the Interim Core Group created by the Planning Commission under the chairmanship of Secretary, Ministry of Earth Sciences provides a good direction for the vision and mission for National GIS. It may be reviewed and amended keeping in mind the objectives of Digital India and also the advancements in technology. We should also have a look at the work being done in other countries which are developing similar programs.

Roadmap to National GIS:

Some of the immediate steps would be:

- Creation of National GIS framework and common data model for all the GIS assets
- Development and publishing of various standards for adoption by all the stakeholders
- Reengineering of the existing data sets available with National Mapping Agencies to comply with the requirements of the National GIS
- Creation of necessary regulatory framework to enable:
  - Collaboration and sharing of data
  - Dissemination of data and services from the Cloud
  - Maintenance of data sets by designated agencies
  - Crowd sourcing for content and applications
- Creation of institutional framework to operationalize and manage National GIS
- Conduct a pilot project to demonstrate NGIS platform concept. It should include not more than three central government ministries and three states. The pilot will involve setting up the platform, getting sample data GIS ready and building applications to embed GIS into existing processes
- On successful completion of the pilot extend it to other ministries and states.
- Engage with academic institutions to build capacity in user organisations and make them ready for National GIS

Of course, the starting point would be to induct a visionary leader to lead this extremely important project.

In conclusion, National GIS will be a critical component of the transformational Digital India project. By geo-enabling the e-governance projects. It will embed geographic dimension into various services being delivered by the government to the citizens. It will also introduce location as an important parameter in the decision making process thereby making it more comprehensive and holistic. It will be a system of systems which will consolidate the work already done by the states and central government in establishing GIS at ministry and departmental level and align it to the larger goal of transforming India into digitally empowered society and knowledge economy.

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