

In Conversation with



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1. Today nation needs a GIS based decision support for governance, enterprises and citizens. Would you like to elaborate on this?

GIS today is the need of the hour. 'Digital India' is one of the important programs of the government with a vision to transform the entire ecosystem through the use of latest Information Technology, into a digitally empowered society and knowledge economy. There has been special emphasis from the Prime Minister's office to use space based technologies such as GIS, GPS etc for various e governance programs which are currently not part of decision making process. Worldwide GIS has been seen as a nerve system of planning and many innovative applications have been aligned using GIS for the purpose of governance, enterprises and citizen. The concept of GIS, though well appreciated, its deployment or use has not yet taken off in India. There is need to have a robust spatial information support infrastructure to aid decision making process for planning and implementation for various e-governance programs. In absence of such infrastructure, the source of spatial data is from Google, Microsoft, ESRI etc. These products provide rich satellite view and map content, however of these for governance requirements is a big question. I, therefore, feel that Digital India Program has rightly emphasized on need of GIS around which decision support systems can be built.

2. How is State GIS going to be different from National GIS?

Over the years India has created a good knowledge-base for adoption of GIS technology. This knowledge exists in pockets. For example we have spatial data policies, satellite image portal from DOS, Maps from NIC, SOI, GSI along with large number of MIS systems functional in different domains at national and state levels. A functional GIS however emphasizes on need of a common framework from which government professionals and citizens can better understand the complex workings of their nation and take informed action. A single large system to emerge may take long time. The initiative should be from state and national level to standardize and harmonize the process in due course of time while we talk about national GIS.

The potential of GIS for decision-support for planners, governance-process, decision-makers, citizens and many others is infinite. Some of the initiatives have certainly been successful to prove GIS application potentials through specific objectives but GIS is yet to get assimilated and become a part of the process of governance, planning and nation-building in a significant manner

For successful implementation of national GIS, it is very important to understand the complete ecosystem. When we talk about spatial data, the base map and satellite images of matching scale are two primary components that must be made available as data infrastructure in any country around which spatial data to be enriched using other technologies. Survey of India, is the prime agency which has mandate to provide the base maps and satellite images are provided from Deptt. of Space. The major gap is that availability of satellite images and maps do not match in scale. Images available today are with much higher resolution in comparison to the maps and are seen as much advanced component in GIS. For this reason, all around efforts are to update various data sets using satellite imageries only. Apart from there are many gap areas e.g non availability of a data sharing platform, standards and policies which need to be in place to avail the benefit of concepts.

PM's Digital India program while emphasizes on use of space based technologies, this means to work in conjunction with other related technologies as well e.g. GPS devices, mobile, total workstation, aerial photography including recently developing Drone systems and MIS data bases.

To discuss the national and state level GIS, it is important to understand the evolving GIS scenarios at these levels. The vision of National GIS has focus from whole to part, which means that we need to address the problems of the nation as a whole. The spatial data development at most of the central Govt organizations e.g Deptt of Space, DST, MOES, NIC, Water Resources etc is based on maps provided from Survey of India. In view of complex policy framework or not very clear policy directives, each of the national organizations have defined their own stand for publishing spatial data, however, all these have a whole to part approach. At state level, handling the policy issues seems to be much complex and hence most of the states where GIS has taken off have initiated work in reverse way means development of spatial data from part to whole. Our objective and standards should be national driven in order to adoption of the International Standards. Both the national and the state GIS have to merge at some point in terms of standards for holistic development of the nation.

Today we also have the data centres available with the concept of cloud that are operational in cyberspace, which will narrow down the challenges over period of time.

GIS has definitely made an impact and is a differentiator for decision making at all levels of governance and nation building be it in government, in enterprise or by citizens, be it central, state or local body level or be it for long term planning or for immediate decisions. Hence the priorities at the National level will differ the GIS Vision with that of state level priorities.

3. How State Government departments are responding to the concept of State GIS?

India is changing and has visualized that GIS is not just

essential but is now an urgent necessity—so as to empower the citizens and bring an inclusive economic growth and prosperity to the people. We at NIC have created a national level of village level information system, where 600,000 + villages can be addressed across India. This village level information is mapped in conjunction and linked with standard RGI census codes. This village level information system has been a major bench mark and received an immense popularity in the past with respect to the information displayed by the system. The displays of various village level thematic maps are on various parameters such as literacy, health, population variation, sex ratio modality, etc. NIC is providing network backbone and e-Governance support to all the states by their State NIC Centres. In view of implementing and building GIS across nation, as far as NIC is concerned the major activities at the state level, State NIC Centers are not processing any spatial data, though they have been provided with all the necessary products and capacity building at state level. We do have State GIS coordinators in each state that facilitate these GIS initiatives. Some states initiatives is evident from Bihar GIS portal, Madhya Pradesh has led many GIS initiatives such as PMGSY has many awards to its credit and Tamil Nadu for GIS platform. All these efforts are scattered and has progressed as per the need by the user department.

As mentioned along with the spatial data in an information system which is developed as GIS (geographical information system) it gives equal emphasis and importance to other datasets as well. The spatial datasets such as satellite imageries/thematic maps/GPS data/Aerial photography along with MIS dataset that needs to be integrated representing the dynamic system. A system developed exclusively on spatial data it has a role to play for citizen and governance services, in this whole system the dynamic component comes from the MIS dataset. Wherever we have a matured MIS, GIS has done very well in a sector, because when you flash a map the base map is of no use without any dynamic content information

Looking at this States are definitely responding to the concept of making itself GIS ready in a niche way. It's a long way ahead yet for a State GIS to achieve it full momentum.

4. What challenges do you think our State Government will come across in implementing State GIS along with National GIS?

As a democracy, India is constantly dealing with ways and means to comprehend social and economic challenges and bring a good quality of life to all its citizenry and visualizing State GIS as important—to understand the complex interplay of social order and economic growth. It hopes to reap demographic dividends, expedite development, and reduce disparity—thereby bringing more equity among its people.

There are many challenges that go hand in hand while implementing State GIS with National GIS, one such challenge are Data standards and formats adopted while creating GIS and integration of data from state to national level. Standardizations of data and formats from the national level to state level needs to be followed when the data is called from village to district so that data is integrated seamlessly. This is all possibly by first organizing the data of the same sector and then adoption to standard is a simpler task, aligning them with system, identifying the databases and ultimately putting the data service to use by the citizens

More so the National GIS vision is ultimately required for the priorities at National level, though the priorities at State level may be different. So the way GIS initiated at the State level

can be different. Though both National GIS and State GIS are same activity but have to merge at some point together fulfilling the national interests. Another biggest challenge today being faced is cadastral mapping. As per the mandate from the Ministry of Rural Development today we have both digitized khasra maps from the year 2000 and computerization of land records from the latest space based technologies. These both datasets needs to be integrated seamlessly. Technically both can be overlaid though both have different projection system which can be done by using some rubber sheeting method and bringing into same projection and georeferenced and thus seamlessly integrated. This has to be done at state level where national level groups cannot harp into it.

Some of the states have recently initiated for undertaking such tasks of overlaying the cadastral maps on the satellite imageries harmonising the two datasets. Gujarat, Maharashtra, Karnataka have attempted. We have Karnataka's web portal; in Gujarat, BISAG has become the service centre and Rajasthan NIC has done a proof of concept evolving the portal. However I feel it is a long way to go and eventually such portals shall share the data models on cloud and shall be crowd sourced. The rest of the states will have to take this initiative as early as possible. Adding to the above another challenge here at the State level is that land records available at Sarpanch level is not yet updated and state departments is trying to go for resettlement of land data which amounts to huge cost to the government. Hence we need to follow right administrative processes and re-engineered towards land resettlement and standardization. One of the important issues that come up or may come up while implementing GIS is sharing, duplicity and transparency of datasets available within the state and national agencies for various services and applications such as road information, education, natural disasters etc. let's take the example of Natural Disasters and calamities occurred recently in our country the J& K floods, the Uttarakhand flood disaster. If the datasets and information on disaster planning are available, then why it is not shared and concentrated on it looking at the 3rd dimension how proper mitigation plan can implemented for rescue operations for the human race and infrastructure. At the same time in developed and advance countries the GIS is operational at the county level. There are lots of challenges for state government to look into these issues follow proper administrative processes have partnerships with related national agencies to build the relevant databases and GIS for their state.

5. How do you envision the importance of GIS technology at leveraging the services at all levels?

In the recent past we have seen GIS has ultimately shown tremendous potential and has brought paradigm shift in such a way the IT systems are working, functioning, addressing all kinds of dataset and it has created a new kind of language in IT systems, RDBMS based systems MIS traditionally as we called them talked about the 2nd dimension system tabled but now with GIS visualization 3rd dimension can also be addressed and used to understand exposure data quality geographically. Hence addition of visualization helps in validation and becomes a powerful system. GIS has the potential to visualize of the datasets along with integration and standardization of the multiple datasets that can surface various facts giving rise to new visual language. I feel GIS has a main stay and role to play in the Digital India Program (Pillar 5 and e-kranti) and it has become essential in preparing a strong

(contnd. on page No. 20)