



India Geospatial Leadership Summit

December 6, 2018 | Dehradun, Uttarakhand

*Role and Requisites of National Geospatial
Infrastructure for New India 2022*

Report 2018

Overview

The third edition of India Geospatial Leadership Summit, one of its kind events successfully took place on December 6, 2018 in Dehradun, Uttarakhand. The Summit acted as the first collaborative platform between Survey of India (SOI), World Geospatial Industry Council (WGIC), Geospatial Media & Communications (GMC) and Association of Geospatial Industries (AGI) for knowledge exchange between senior executives and primary stakeholders of geospatial technology including industry, policy makers, academia and national mapping agency. With the theme 'Role and Requisites of National Geospatial Infrastructure for New India 2022', this one-day event featured four thematic panel discussions and was attended by 91 top-level delegates.

Summit Objectives

- Addressing the composition, regulation, development, access and delivery related policy issues
- Enabling an effective national geospatial infrastructure for India in digital age
- Demonstrating value of geospatial information in national development
- Connecting stakeholders and exchange knowledge to realize the vision of New India
- Interactive and collaborative forums

Achievements

- Hosted noteworthy sessions related to geospatial information infrastructure, policy framework, and capacity building
- DG and Secretary level participations from center and state government departments
- Participation from EOS-GNSS, Esri Singapore, and Trimble Inc USA
- Prolific talk between AGI, GMC, SOI and Secretary, Ministry of Skill Development and Entrepreneurship on geospatial training and skilling
- Industry experts shared their success stories and various challenges they are facing
- Consensus over geospatial capacity building and certification, to be more liberal in data sharing and breaking the silos

Inaugural Session

In his welcome address, **Rajan Aiyer, President, Association of Geospatial Industries** talked about how geospatial technologies are becoming central to nation building. Giving an overview of AGI and its future prospects he said, "For almost a decade now, the Association is being recognized as the face of the Indian geospatial industry. Taking this forward, AGI 2.0 intends to create a groundswell for use of geospatial technologies in national and technological development in India. "Aiyer also threw light on the dearth of skilled manpower; he said in countries like New Zealand, Netherland, UK, the bottom of pyramid is very strong i.e. their surveying capabilities are robust. It is imperative to work towards geospatial capacity building and skilling. He emphasized, "Collaboration is the key. We have a long way to go but this India Geospatial Leadership Summit will surely put us on a well-defined path of cooperation and collaboration. It is the start of a new beginning."

The inaugural session also witnessed an exclusive video message from the Godfather of GIS: **Jack Dangermond, Co-Founder and President, Esri**. "India is challenged and visionary—both at the same time. The vision of bringing us all together is yet to be achieved. In the last decade we have seen a new generation of geospatial technology upcoming up and this is built on concept of Web services. Around the world many organizations are beginning to deploy this new architecture without spending money, without going through organizational turbulence but by simply cooperating. Geospatial is integral to the New, Smart, Sustainable and Digital India vision. I want to encourage this Summit to be the spirit of collaboration," he emphasized.

Declaring the conference open **Sanjay Kumar, CEO, Geospatial Media & Communications, and WGIC**, gave a holistic view of the theme and stressed on the importance of national mapping agency, "There is no alternative of national geospatial agency in any country. The world is changing dynamically, so are

the roles of maps. It's fundamental to everything that we do." Elaborating on the mission of New India 2022 he said if India has to empower itself in this digital age then it would be only based on high quality information and knowledge network, "Gone are the days of vision, let's have a mission for 2022." Drawing on the public and private sector's role and collaborative approach, Kumar said that various stakeholders of geospatial network have to partner. The public sector has to provide a national integrated policy environment whereas private sector's role is not just giving efficient and low cost solutions but end-to-end solutions and also building industrial capacity. "There is a need for a stronger relationship to unleash the power of geospatial technologies. Every segment has to collaborate," he concluded.

Sarvesh Singhal, IFS, CEO, Jharkhand Agency for Promotion of Information Technology, hits the nail right on its head by highlighting the issue of working in silos, "There are number of government departments using geospatial technology but they don't work in coordination; there is duplication of work. Working in silos is waste of time and money and a great loss to the economy. Government departments have lot of data but it is restricted within the government itself, we have be more liberal about it. Also, there is an urgent need to train and build capacity within the government agencies for the non-GIS manpower so that proper planning can be done and the project in right direction."

Giving a special inaugural talk, **Lt Gen Girish Kumar, VSM, Surveyor General of India, Survey of India** acknowledged that location is all pervasive and various departments do work in isolation. "Technology has gone far ahead; we cannot work in silos. Organizations at every level need to be responsible for their data. If each department becomes a node of this bigger network rather than becoming hub, we can deliver collective benefit to the citizens." He stated that everything

cannot be restricted but there has to be a balance between restricted and non-restricted data. Collaboration and sharing is imperative to achieve sustainable development goals. Every department is important and has a particular role to play. Surveyor General also made a powerful presentation on various ongoing SOI projects: www.indiamaps.gov.in , www.g2g.indiamaps.gov.in , mobile app 'SAHYOG', and a collaborative project with India Meteorological Department. He invited geospatial industry leaders to come and discuss the challenges they are facing, "We can discuss on how we can facilitate each other's efforts and work for making a better digital India."

Tanvi Sundriyal, IAS, CEO, MapIT, and MD, Madhya Pradesh State Data Centre gave a brief introduction of her department and its structure. She also underlined her department projects in which GIS is helping for better planning, cost saving and increasing efficiency. She said Madhya Pradesh State Data Centre will support and collaborate with geospatial industry in the projects of national development and to further the technology.

At the end of the inaugural session **GV Sreeramam, Secretary General, AGI** gave the vote of thanks and earlier the session was moderated by **Prashant Joshi, Secretary, AGI**.

Key Highlights:

- AGI would be joining hands with different governments departments for the progress of technology, industry and nation at large
- SOI will support other departments and private industry with free data for commercial activities and different roles of national development. SOI is keen to discuss opportunities and challenges of the Indian geospatial industry
- Government should focus on creating infrastructure like geodetic infrastructure, geospatial information infrastructure, etc., which can be used for common applications.
- Industry should create a cohesive environment where the whole value chain of technology, solutions, and services can be integrated.

Panel 1: Value of Geospatial information in National Development

*Value of geospatial information in national development was the theme as the first session at the India Geospatial Leadership Summit witnessed interesting panel discussion, success stories and enthusiastic participation from the audience. Introducing the session, **Dr Manosi Lahiri, Founder & CEO, ML Infomap** emphasized that geospatial technologies have great potential to transform India via the mission mode projects. In India geospatial technologies are being used in both government and private sector from many years, challenges are there but they are been sorted out.*

A Rahman, GM - Centre for Railway Information Systems (CRIS), Indian Railways, first speaker from the panel, kick-started the session by highlighting that Indian Railways is the fourth-largest railway network in the world by size. And CRIS has already embarked on an ambitious mission of GIS mapping of every inch of Indian Railway asset, which is a humungous task. He further stated, as a major step towards digitization, the Indian Railways has launched a Web-based track management system on a real-time basis. Land asset management system, geo referencing, mapping of on-track and off-track assets is also going on. "We are soon going to have an MOU with SOI, where SOI will be establishing a node and we'll be exchanging data. Soon every asset of Indian Railways will be on GIS platform," Rahman informed the panel.

Giving a brief history on how GPS was augmented in aviation particular in navigation, **SV Satish, Executive Director (IT, GNSS, AVS), Airports Authority of India (AAI)** said, geospatial is the base on which aviation and navigation works. AAI along with ISRO embarked the wide area augmentation system and India is the 3rd country to do so for precision navigation. Satish stated that all most every airport in India has a handful of surveyors supported by Survey of India. He elaborated that AAI has developed NOCAS (No Objection Certificate Application System) to automate its aerodrome safeguarding system for accepting online applications for height clearance of the

build environment around the airports. NOCAS is a GIS-based system, which has brought India's ranking in airports from 112 to 50 in one year's efforts.

PK Parchure, Member, Central Ground Water Board (CGWB) underlined that the department has been using GIS since 25 years, it started with a small database and later on expanded into Groundwater Estimate Management Systems (GEMS). Mentioning the various GIS activities of the Board he said, "We are having active collaboration with SOI to map all the springs in India particularly in the Himalayan region. We have MoUs with SOI, NRSC, and GSI. Also, the department is working extensively on National Aquifer Mapping Program." However, Parhure clearly stated that many times maps data from various departments do not match, due to which projects get delayed. There is a need to standardize the data and focus on accuracy and availability of data.

Talking about the impact of geospatial technologies in various national and state level projects **Agendra Kumar, President, Esri India** highlighted the ongoing programs especially at state-level for public benefit wherein geospatial is helping in implementation, monitoring, and assessing the effectiveness. He adds, "In government whenever the leadership of project or department is strong in bringing the technology to solve common problems, the success is greater. And when IT and planning departments are together it becomes easier to coordinate." Addressing the issue of data sharing he said issue can be solved if the data is asked as a Web-service rather than asking any government department to share complete data. Further focusing on collaboration and smart cities Kumar emphasized, "Success of technology only comes when we collaborate. Smart cities are a very good example and geospatial is a very important component of it. Unless we have location element and all the systems are talking to each other, no city can be smart."

Dr Abhay Kimmatkar, Joint Managing Director, Ceinsys Tech Limited, addressed the panel by giving a detail on the geospatial technologies Ceinsys is using in various government projects – National Highways of India (NHAI) monetization project amongst them, where geospatial technologies such as LiDAR, UAV, NSV, FWD, and MBIU are used. He added, “GIS or geospatial has given valuations for road stretches and NHAI has monetized 9,600Cr from one of the concessionaire. Ceinsys Tech has also carried out real-time flood inundation model for entire MMR region for mitigation and preparedness of disaster due to heavy rains during high tides.” Dr Kimmatkar also mentioned the Sujala Watershed Project with Karnataka Government; the space-based imaging, coupled with the GIS and GPS technologies, has given a new way of looking into watershed development activities in the country. Its unique

DSS is helping the farmers understand the impact of climate change on crops in real-time.

Key Highlights:

- Upcoming MoU between CRIS and SOI; SOI will establish a node for data exchange. This will help in bringing every asset of Indian Railways on GIS platform.
- Need for standardization of data as many times data from various government departments itself do not match.
- Success of technology only comes when there is collaboration. It's high time for different departments and industry players to sit and discuss opportunities and challenges.
- Different agencies will share data if it is asked as a Web-service rather than asking to share complete data.

Guest Address

Momentum of the conference continued with a special guest address given by **Dr KP Krishnan, IAS, Secretary, Ministry of Skill Development and Entrepreneurship**. He talked on how India has a huge skill demand-supply gap and there is a lot of mismatch from domain and regional perspective. There is also a quality issue in terms of employability. He added, “We are trying to make skilling aspirational in India particularly in the sectors like geospatial. Given the number of people employed in Indian geospatial industry, this industry is clearly poised to become much bigger from its current size.” Dr Krishnan further elaborated that one of the major changes, which has been brought about in the Indian skilling ecosystem is the creation of Sector Skill Council—a completely industry led body. There are around 40 sector skill councils, which are responsible for formulation of job roles in their particular sector. They prescribe national occupational standards. “The sector skill councils have worked very well where industry has taken a lead. On similar lines, geospatial industry can take a lead. Money for skill development comes from government but the

actual skilling is to be done by the industry,” he said. Dr Krishnan highlighted the role of AGI and invited it to a part of the initiative, “It’s necessary to look at the current requirements of the geospatial industry, at what level we require people—to create capacity, skilled professionals. We need industry connect, in which AGI’s role is crucial. We would like AGI to be a part of skill development initiative for geospatial industries.”

On the behalf of AGI, **Rajan Aiyer, President, Association of Geospatial Industries** thanked Dr Krishnan for recognizing this opportunity for AGI and said, “We will completely endorse it and want to be a part of it. With the Survey of India in lead and with the help of industry councils we’ll increase the capacity as we move on to the mission of 2022.”

Lt Gen Girish Kumar, VSM, Surveyor General of India also acknowledged the initiative and said, “The entire geospatial community and society at large is going to be getting benefited. Now, the time has come that we work together, set up standards and take country forward.”

Panel 2: India Geospatial Information Infrastructure

An efficient geospatial data infrastructure facilitates access, distribution and use of geospatial information in a country. Geospatial information infrastructure will be key enabling platform facilitating socio-economic development for India in digital age and realizing the vision of New India. A panel with theme India Geospatial Information Infrastructure discussed holistic frameworks for geospatial information management and planning. The session was moderated by Nikhil Kumar, Director - Technical Marketing (SAARC Region), Trimble India.

Talking in detail about CORS, Lt Gen Girish Kumar, VSM, Surveyor General, Survey of India said that CORS is going to be a big game changer. Stations would be established across the country and they would be transmitting real-time positions of accuracy 2-3cms. SOI would be rolling it all over India within a year and to begin with it has been started with UP and parts of Bihar. Additionally, CORS will also be connected with a very high precision level network, which will help in converting ellipsoid height into geoid height. This will be available as a service to different organizations as per their requirements.

Dr Vishnu Chandra, DDG & Group Head – RS & GIS, National Informatics Centre elaborated how the nation's platform infrastructure is going to support huge networks such as CORS. NIC has a huge Cloud infrastructure, there are at least 4 high data centers in country – India already has a Gigabyte network called NKN. He also pinpointed that in terms of data sharing and access, policies need to change as per technological development. "Technology is forcing us to collaborate and geospatial plays a crucial role. Also, geospatial industry has to declare certain datasets as open data if it has to be released on government open data platform as per the National Data Sharing Policy," he underlined.

Dr KJ Ramesh, Director General, Indian Meteorological Department (IMD) described how geospatial is basic to IMD data and every weather information has geographical element embedded into it. IMD is moving to a framework called impact based forecasting at local levels, which will get converted into a normal warning and into a list-based warning systems. Giving an example of inclusion of industries Dr Ramesh said that IMD, SOI and NIC collaborated in Agriculture Marketing Network project – modelled to show how pricing and arrival are affected by weather and climate change – this kind of integration can be further used for crop insurance, crop vulnerability, etc.

Giving a view point of a technology provider Pramod Kaushik, President & Managing Director – India Region, Hexagon said, "From technology per se, as private and multinational industry player, whatever best practices and technology breakthroughs are happening outside the country we bring that competency within the country." However, he also stressed that the industry needs to be flexible as what may have worked outside may not work within the country. And one has to find several ways to work.

E Vikram, Deputy Director – Forest Geo-informatics Division, Forest Survey of India raised the concerns and difficulties in collaboration and sharing of data, "Within one ministry itself it becomes very difficult to collaborate. We need a single platform where we can put various kinds of spatial data at one place." He further highlighted that builder's pride is a set of mind, which can be worked upon – there are different ways of sharing the information which is just relevant and contextual to the user.

The main highpoint of the session was that the panel unanimously agreed upon the need to create capable and certified manpower. Survey General told the panel that SOI is in the process

of collaborating with industry for certificate courses at nominal rate, where they will provide infrastructure and manpower and industry will bring the technology part on the table. And the Ministry of Skill Development may also play a crucial role in it. To which Kaushik said, "We would really support this from industry side. We'll provide technology support and facilitate in state-of-art training centers."

Key Highlights:

- Geospatial community can come up with a National Geospatial Research & Capacity Building Grid on top of NKN.
- Water resource management – reservoir inflows; Agriculture banking, insurance and settlements; Renewable energy assessment, Power sector – online exchange are some of the sectors highlighted by the government officials wherein private industry can help immediately.
- There was a suggestion to industry to diversify more and provide country manufactured products, since there is a huge customer base to cater to.

Panel 3: Certification and Capacity Development

*It has been well established that geospatial data is a critical component for effective and efficient delivery of national development projects. However, its utility can only be realized when the data is accurate. Inaccurate data, incomplete data do not only result in humongous financial losses but delays in development projects and the resultant benefits to citizens. National development projects are also indicators for a nation's health and its position in world economy. The industry's growth is also largely stagnated due to the lack of availability of skilled workforce. In India, demand for a geospatial workforce is not being met by supply. It is important to connect the stakeholders to understand each other's role in finding the answer to this shortage of geospatial expertise. The panel moderated by **GV Sreeramam, Secretary General, Association of Geospatial Industries**, discussed the issues surrounding geospatial education and training initiatives as well as the challenges in producing competent human resources.*

Pankaj Mishra, Dy. Director, Survey of India gave his view on certificate courses and the requirement of mapping and surveying skills. He highlighted the urgent need of geospatial capacity building especially at mapping and surveying level. "For any national development project accurate data is required and if that is incorrect due lack of skills and knowledge, the whole project is jeopardized." He also said that with latest technological disruptions it has become imperative to not only create new certified manpower but also to upgrade the existing ones. He shared that Survey of India is already on the path of developing certificate courses for geospatial professionals keeping in mind the requirements of mapping and surveying skills within the survey agency as well in the geospatial domain at large.

Kunal Satyarthi, IFS, Member Secretary (EC), Aryabhata Geo-informatics & Space Application

Centre, Himachal Pradesh shared his experience of hiring consultants at various levels for doing projects for various departments. "The challenge is at the base level manpower or so called IT guys, who do not have basic knowledge of photogrammetry, mapping, etc. We need to work on that and magnify it." He stressed that there is a shortage of skilled manpower at base level and there is a need to fulfill so that a stopper can be put on the mistakes at the initial level itself. While there are a number of Indian education and research institutes offering a wide range of geospatial related research, postgraduate and undergraduate courses, there is need for short term certification courses both for professionals and vocational education seekers in the geospatial domain.

Dr A Senthil Kumar, Director, CSSTEAP talked about focusing on capacity building at the school-level itself when students of high school start to shape their careers. Geospatial industry is a customer of educational system. Along with government industry should actively participate in capacity building. There should be interaction between industry and academia – both at higher and elementary level. The interaction should be practical and not just on papers. Stressing on the need of working professionals and e-learning program, he said "These kind of program lack active industry participation. We need to keep updating our courses as per technology trends. The programs should be detailed otherwise it would just touching the tip of ice berg."

Shishir Verma, Sr. Vice President, CE Infosystems highlighted that the industry's growth is also largely stagnated due to the lack of availability of skilled workforce. This is mainly due to a lack of integrated approach in geospatial domain. There is a need for industry-oriented skill development and certification. Focused initiatives

on skill certification and development impacting the employee remuneration and service level standardization in the industry are required to meet the workforce requirement of the industry.

Key Highlights:

- SOI is collaborating with the industry to provide certificate courses to geospatial professionals.

- There is a shortage of skilled manpower at base level and there is a need to fulfill it
- There should be a practical interaction between industry and academia – both at higher and elementary level. Focus should be on capacity building and guiding the future professionals at school level itself.
- More industry involvement is required for capacity building.

Panel 4: Towards an Enabling Policy Framework

*Towards an enabling policy framework was the topic of the last panel discussion of the day. Framing a conducive policy environment to support wider democratization of geospatial data for enhanced commercialization with value-added services and applications development at the downstream, and proactive mechanisms for innovation and entrepreneurship promotion can lead to increased value addition as well as shift towards innovative product/service segment in the market. Moderating the session **Anusuya Datta, Executive Editor, Geospatial Media & Communications** said that there is a pressing need to comprehensively assess and address the composition, regulation, development and delivery related issues that are hindering the growth of the industry.*

Dr Sandeep Goyal, MapIT, Government of Madhya Pradesh started the discussion by giving the overview of MP State Geospatial Data Sharing Policy, which helps to bring the entire spatial data on one platform and standardize in single framework. It has helped to stop the duplicity of data and work by different government agencies and due this the government has been able to save Rs 50 Cr. He said, "We have centralized repository of the data, which is currently G2G. But private players can also be brought in if AGI and industry can take a lead." Stressing on the importance of knowledge sharing he said government agencies are reluctant to share their knowledge within the government itself. Dr Goyal shared that his department helped a Haryana Government Department to resolve the issue of data publishing. But when it came to share source code certain policy issues popped-up. However, by signing a MOU knowledge would be shared, which also included the value addition done in future. "Knowledge should be shared further; there is no use of reinventing the wheel again and again. Policies need to be updated with changing times and requirements," he concluded.

Dr Tapti Banerjee, Director, NATMO informed that NATMO adopted the use of geospatial technologies in 1980's but due several policy issues

its robust implementation was not possible. She pinpointed the issue of irregularity and mismatch of data, "When we superimpose data from SOI, NRSC, and Census data, they do not match. There should be uniformity and standardization of data. Geospatial policy is a must for harmonization of data." Dr Banerjee added that a uniform and single repository is required and while making any platform or solution app participation from general public should also be welcomed.

Giving the reasons of India contributing just 0.4% to global geospatial market despite being the 4th largest economy in the world and 2nd in terms of purchasing power parity **Rajan Aiyer, President, Association of Geospatial Industries** said that India has too many complex policies, which often create confusion. Policies should be unified, made simple and clear. Non-availability of data to private sector especially to entrepreneurs is another hurdle towards empowering Indian geospatial economy. "This industry will grow when startups and innovators are given real-time authenticated data by the government mapping agencies. For a country like India with myriad diversities and sources, we need to share data to unleash the power of entrepreneurship for national development but of course at the same time we need to be sensible about data sharing," he stressed.

Key Highlights:

- Policies should be unified, simple, clear and updated with changing times and requirements
- A single data repository is essential for uniform and standardized data
- Geospatial policy is a must for harmonization of data
- Data needs to be shared with private player to encourage innovation and entrepreneurship
- Private industry also needs to take initiatives to collaborate with government instead of just focusing on product sales.

The Way Forward

After daylong impactful panel discussions, the India Geospatial Leadership Summit ended up with yet another powerful and enthusiastic speech from **Lt Gen Girish Kumar, VSM, Surveyor General of India** wherein he thanked all the partners and participants for making the summit a success. He specially thanked Jack Dangermond for his motivational speech. Highlighting the motive of the Summit he said, "In this summit we have successfully discussed the various challenges we are facing and counter steps to be taken to resolve them. This is just a beginning. In coming months there will be more such platforms and discussions." Considering Dr KP Krishnan's suggestions for geospatial capacity building and skill development as the achievement of the Summit, Lt Gen Kumar said that a clear road map has been drawn in this direction in which AGI's involvement is also a breakthrough. He also shared that SOI is redefining its processes and products to make the data available for different government agencies, industry and innovation; he ensured to support the geospatial industry with the standardized data in the best possible way.

Following are the highpoints of the day, where AGI has to play a crucial role:

- There is a need to create capacity and skilled professionals at every level for which a strong industry connect is required. As an association AGI has a fundamental role to play – it is expected to be a part of skill development initiatives by Ministry of Skills Development for geospatial industries.
- AGI along with SOI and GMC will be coming up with certification courses for geospatial professionals.
- GeM (Government e Marketplace) platform has an issue of products and services. It only has a category of GIS, where there is no definite classification of products and services. AGI is expected to present some concept proposal – suggesting certain SLAs, System integration w.r.t. geospatial, N2N infrastructure, how to coordinate with various OEMs, AEMs and integration, to create Cloud infrastructure with GIS (such types of services are currently not on GeM).
- AGI would be joining hands with different governments departments for the progress of technology, industry and nation at large.
- SOI will support other departments and private industry with free data for commercial activities and different roles of national development. SOI is keen to discuss opportunities and challenges of the Indian geospatial industry.
- Geospatial community can come up with a National Geospatial Research & Capacity Building Grid on top of NKN.
- More industry involvement is required for capacity building and collaboration with government agencies.

