

# New Centre for Spatial Analytics and Advanced GIS (C-SAG) in Bengaluru

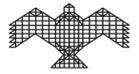
- First unique institution for developing Intellectual Property (IP) and Knowledge Assets based on Spatial Analytics (SA) and GIS for addressing societal and developmental issues and for governance

**BENGALURU:** Under the aegis of NIAS Council of Management (COM) and with support from Tata Trusts, Centre for Spatial Analytics and Advanced GIS (C-SAG) has been established in Bengaluru. This Centre will work in the field of Spatial Analytics and advanced GIS to develop Intellectual Property (IP) and GIS knowledge that will build deep and advanced capability in India in the GIS area.

## ABOUT SPATIAL ANALYTICS

Spatial data is extremely important to society, governments and citizens. Today, spatial data is generated in multitude of ways – through satellite measurements and imaging; through sensors on Unmanned Aerial Systems or aircrafts; embedded precise positioning using specialized hand-held devices; underground utilities data; indoor positions and mapping; mobile systems and Wi-Fi systems based on positions of transmitters; radio-frequency identification (RFID) using networks of fixed detectors/readers; laser imaging matched to 3D geometry and many, many more methods. Spatial Analytics (SA) is the logical processing of such spatial data using inherent topological, geometric, or geographic properties and is emerging at the forefront of advanced Geographical Information Systems (GIS) knowledge. Combined with Internet-of-Things (IoT) and using Artificial Intelligence principles, SA is charting the future of geographical data processing in the Big-Data and Cloud environment.

Spatial data and GIS can easily become a part-and-parcel of the process of decision-support – local area planning, agriculture and crops, rural development, urban management, roads and infrastructure, health, water resources, education, industries and infrastructure, Disaster Management support, Environment assessment, Weather modelling, Climate Change analysis, protection of Bio-diversity, Green Accounting, security applications and many other areas of national importance. GIS needs to be embedded into the important developmental initiatives that India has taken up - such as, Crop Insurance Schemes, Digital India, Make in India, Smart City, Swach Bharat, Housing for all, Clean Ganga, National Education Mission, Integrated Watershed Management Programme, National GIS, National Skill development Mission programmes and others.



## **THE CENTRE**

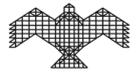
Mr S Ramadorai, Chairman of NIAS Council of Management, said “Spatial Analytics is important for a variety of citizen, governance, commercial and research purposes – there is a need for greater understanding in the management and analytics of spatial data. There is no institution in this country that is working in this knowledge area and understanding the fundamentals, technological, social and economic aspects of GIS knowledge. Even as many GIS applications have been taken up, the Spatial Analytics is still in a nascent stage. In the vision of JRD, furthering advanced studies, is the goal of NIAS – that is what we propose to do through C-SAG and build knowledge capability.”

Tata Trusts considers agricultural development and sustainable livelihoods for communities as one of the key focus areas. In conjunction with Bill and Melinda Gates Foundation, the Trusts is supporting Centre for Spatial Analytics and Advanced GIS (C-SAG), established under NIAS, for “empowering” farmers with timely advisories from real-time satellite images, GIS processing, beneficiary-level data analytics using advanced Spatial Analytics and Artificial Intelligence capabilities. Tata Trusts envisions that C-SAG will help Indian farmers and enable them to better plan and manage their on-farm and off-farm activities, thereby improving their agricultural income and their overall quality of life.

Dr Baldev Raj, Director of NIAS, who closely worked on the concept of the Centre, said “Knowledge is business of NIAS – thus the Centre is advancing the main vision of NIAS in a new and emerging area of GIS. GIS is an important discipline of great relevance to India’s problems and we need great capability in this area – which C-SAG will be able to develop.”

Dr Mukund Rao, Chief Executive, C-SAG and who “anchored” the initiative in NIAS, said “The Centre is a first of its kind – dealing with SA and GIS knowledge and focussing on crafting unique Intellectual Property (IP) suites for agriculture, health, urban planning and smart cities, e-Governance, citizen services and other areas of societal importance. C-SAG will also be working on several advanced technologies – Image Analytics, Fractals and scale invariance analysis, Spatial search tools, Spatial Decision Support tools, Real-time GIS, IoT – Spatial “things”, 3-dimensional GIS, Sensor Networks and Citizen as Sensor etc to bring a strong and sustained knowledge base in the country. The SA and GIS IPs developed by C-SAG will be very relevant for society and grass-root governance – say, in Digital India, Smart-City, Crop Insurance, Health, NR Management, Disaster Management, National GIS, State GIS, UAS Applications etc, many of which will be extremely relevant in India in coming years.”

The Centre is governed by NIAS Council of Management and is advised by an International Advisory Board (IAB) – which is Chaired by renowned space scientist, Dr K Kasturirangan and has Dr Baldev Raj, Director, NIAS; Dr PS Goel, Emeritus Professor,



NIAS; Dr Shailesh Nayak, Emeritus Professor, MoES; Dr Michael Goodchild, University of Southern California; Dr Jack Dangermond, President, ESRI; Dr Rebecca Moore, Director, Google; Prof S Sadagopan, Director, IIIT-B; Dr S Ayappan, Former Secretary, DARE; Dr Raman Srinivasan, Head, Ignite, TCS; Mr R Venkataramanan, Managing Trustee, Tata Trusts and Dr Mukund Rao, Chief Executive of C-SAG as Members.

## **CENTRE'S ACTIVITIES**

C-SAG is committed to advance knowledge in SA and address intersections between SA and GIS within domains of social issues, natural resources domain and decision-making process. C-SAG will integrate the power of GIS, Data Science and Data Analytics and Decision Theory to key problems of society.

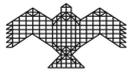
One of the initial focus of C-SAG is to quickly develop an Agri-GIS engine in 3 districts of S Orissa, alongwith Tata Trusts and Orissa Agricultural University. The Agri-GIS will support Smallholder Farmers – considering the natural, social and economic aspects of farmer beneficiaries. The Agri-GIS engine will be a techno-neutral platform, localised and beneficiary oriented GIS services administered through a local advisor. Latest technologies of automated farm-level agri-data aggregators, Spatial Analytics, geo-tagged real-time data, virtual geographical information etc are being adopted.

C-SAG is developing advanced modelling, automated software and analytical capabilities for Unmanned Aerial Systems (UAS), City-GIS modelling, Health GIS, Spatial Econometrics, Big data analysis, Social Analytics and many other areas.

Apart from generating high-end advanced knowledge in SA and advanced GIS technology, the Centre is taking up a variety of activities in Education Networking – create a common platform for universities/institutions for expanding and enhancing the research capabilities in SA; specialised advanced training and orientation programmes in SA and advanced GIS – for government, private industry and for faculty training; consulting to government, industries - creating assessments/evaluation and independent documents/reports related to SA and advanced GIS technology; partnerships at international level with high-capability SA and GIS institutions; partnerships at national level with government/industries for specific SA and advanced GIS activities and research/skill development.

### **About C-SAG and NIAS Council of Management:**

C-SAG is established as an independent Centre under the National Institute of Advanced Studies (NIAS) Council of Management. The NIAS is an autonomous organisation, registered as a Society under the Karnataka Societies Registration Act, 1960 on 20th June 1988. Sri S Ramadorai currently chairs the Council of Management. Over the years, NIAS



has evolved as a multidisciplinary institute - NIAS combines scientific and humanistic perspectives on topics of national and international importance. Activities of NIAS include research, analysis, publications and teaching.

Now, in 2017, because of the efforts of NIAS, the new Centre for Spatial Analytics and Advanced GIS (C-SAG) has emerged as a separate entity.

For more information please visit [www.csag.res.in](http://www.csag.res.in)

Twitter: @csag\_nias

Email: [admin@csag.res.in](mailto:admin@csag.res.in)

Mobile: M: +91 9740246482 (Mr AN Prasad)

Date: October 26, 2017