

**Department of Science & Technology
(NRDMS & NSDI Divisions)**

Sub: Development of a Sub-Programme “GeoICT: An Integrated Research Programme on multi-dimensional Geo-spatial Data Modeling, Analysis and Applications”

Background:

The proposed Sub-Programme which aims at advancement and development of innovative Geo-spatial information and communication technology and integrate Geomatics and ICT technologies for innovative spatial applications. GeoICT is an enabling technology that is stemmed from the integration of geo-spatial information and imaging technologies with ICT. It is considered as a core emerging technology that forms a basis for spatial decision making, geo-computation and Location Based Services (LBS). It contributes significantly to the emerging markets and applications like Spatial Data Infrastructure (SDI), digital earth, location based commerce (L-Commerce), Mobile Commerce (M-Commerce), E-Commerce and E-Government etc. It was estimated that world-wide geomatics industry will grow at 15 to 20% rate i.e. extremely competitive to other major Industry sectors. Therefore, the Sub-Programme aims at forefronting the research activities by integrating all technologies.

International Scenario:

The synergy of technologies for common good was recognized by the International researchers and accordingly various groups are concentrating and developing the technologies which in turn foster the economic development. The linkages between academia, Industry and economic development are tightly integrated and working in tandem. The geo-connections of Canada, Geo ICT Lab at York University, USA, Spatial information processing Lab, University of Tokyo, Spatial Information and Research Group, Australia are some of the renowned International groups working in this area.

National Scenario:

India developed an edge in ICT technology particularly in software development, process management and outsourcing. ICT is the core driving force. In geo-spatial information and processing technologies, we are at the preliminary stage. Core competency needs to be created. However, in integration of geo-spatial information with ICT technologies, we are lagging far behind when compared with the international developments. There is a clear gap between the international developments and national capacity. Therefore, the proposed programme positions itself in filling the above gap.

Present Proposal:

Geo ICT contributes to the core of geomatics technology by integrating modern information and communication technologies. The methodologies, models, systems, prototypes and algorithms developed will be of profound impact to broad geomatic applications like

- Intelligent Transport System
- Efficient Traffic Management
- Emergency Response

- Disaster Management
- 3D Urban Mapping
- Fleet Management
- Object Identification and Tracking
- Miling Forest Inventory
- Environmental Monitoring
- Energy Explorations
- Fishing
- Wild Life Assessment
- Farming
- Real Estate Business
- Geo Marketing
- Sustainable Society

GeoICT will have a significant impact on geomatics sector, Industry, government, research and academia. This emerging technology will open up many new applications resulting from a great improvement of data flow efficiency, on-line data processing, management and measurable savings of operational costs.

Proposed R&D Streams under GeoICT

The research in GeoICT will have the following broad streams.

1. Geo-spatial information, acquisition and processing
 - Spatial sensor web
 - Network based real time 3D geo-spatial visualisations and data streaming
 - Open and distributed Internet and Wireless GIServers
 - Location based services
 - Intelligent geo-spatial algorithms for 3D data analysis

2. Geo-spatial Imaging, Media and Information Processing Stream
 - 3D mapping and modeling from high resolution remote sensing images
 - Automated 3D modeling from LiDAR systems
 - Automated feature extraction, data fusion and change detection
 - Automated feature extraction from imageries
 - Land based and air borne mobile mapping technologies

3. Integrated GeoICT Systems & Applications
 - 3D modeling of Heritage sites of India
 - Location based spatial decision support for security and risk assessment
 - Disaster Management
 - Location based health tracking and monitoring:
 - Communicable disease/invasive species monitoring and management

Proposed Road Map

Core researchers and expertise are available with various research and academic Institutes like IITs, IIIT, IISc. & Universities across the country. However, each group/researcher are confined to their own domain and working in an isolated manner. By combining all the strengths of individual research groups, a network of researchers needs to be brought to

forefront and guide towards this national requirement. To achieve the above objective it is proposed to constitute a Project Advisory & Monitoring Committee (PAMC) for this multi-disciplinary GeoICT Sub-Programme. The list of experts for PAMC are as given below:

1. Prof. Ashok Jhunjunwala, IIT Madras, Chennai	Chairman
2. Prof. Subhashis Banerjee, IIT Delhi, New Delhi	Member
3. Prof. P.J. Narayanan, IIIT, Hyderabad	Member
4. Prof. Sharat Chandran, IIT Bombay, Mumbai	Member
5. Brig(Retd) N Dhal, Mackenzi Chair Professor, Anna University, Chennai	Member
6. Dr. P. Anandan, Managing Director, Microsoft Research Bangalore	Member
7. Dr. K.R. Murali Mohan, DST, New Delhi	Member-Secretary

Tenure

1. The tenure of the PAMC is for three years and extendable with the approval of the Competent Authority, DST.