## **Geo-Innovation Challenge**

### Geo-Innovate for a Sustainable Nation: Addressing Crucial Ecosystem Challenges

## 25 - 27 July 2024



### Organized by

Institute of Remote Sensing (IRS), Department of Civil Engineering, College of Engineering Guindy, Anna University, Chennai, Tamil Nadu, India



### Supported by

National Geospatial Program, Department of Science and Technology, Government of India, New Delhi



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#### **Principal Investigator**

Dr. Shoba Periasamy, Assistant Professor, Institute of Remote Sensing (IRS), Department of Civil Engineering, College of Engineering Guindy, Anna University, Chennai, Tamil Nadu, India

### The GeoInnovation Challenge Program

In India's recent journey of sustainable economic growth, knowledge India has adopted a new information regime through its 'Digital India' program to support good governance, sustainable development goals and empowerment of its citizens. The challenges on our developmental path include inclusiveness, transparency, efficiency, and productivity, all while striking a delicate balance between economic growth and sustainable development. Geospatial technologies have emerged as powerful enablers over the last three decades, contributing significantly to addressing these challenges.

Innovations in geospatial technologies are crucial for enhancing governance and system efficiency. While these technologies have found widespread adoption across various sectors, true economic and social value emerges through innovation. Whether it's in the realms of food and water security, environmental sustainability, health, disaster risk reduction, location-based services, infrastructure and development planning, governance enhancement, or monitoring the Sustainable Development Goals (SDG), the integration of geospatial technologies with artificial intelligence, IoT, big data, and more opens up a world of possibilities.

The Geo Innovation Challenge Program is not just a competition; it's a repository of groundbreaking ideas that have the potential to shape our future. We invite participants to contribute ideas that go beyond conventional boundaries, proposing innovative solutions that merge geospatial technologies with cutting-edge advancements charting the course for a brighter future!

Apply now to be a catalyst for positive change!

# The National Geospatial Program of the Department of Science and Technology, Government of India

In the heart of India's technological advancement lies the National Geospatial Programme (NGP) of the Department of Science and Technology, Government of India. The Geospatial Capacity Building Program initiated in 2010 has over the years flourished, fostering capacities in geospatial science, technology, solutions, and entrepreneurship. Its transformative journey initiated with a modest ambition has evolved into a robust program, igniting minds and expanding horizons.

For a decade, the Geospatial Capacity Building Program under DST has been a cornerstone, conducting 166 comprehensive three-week programs conducted as Summer and Winter Schools in Geospatial Technologies at a basic (Level 1) and advanced level (Level 2). The 2024 cycle includes a 11 three week Level 1-(Standard) programs, 4 three week Level 1-(Spatial Thinking) programs, 8 Level 2-(Advanced) three week programs and 7 Geo Innovation Challenge Programs being conducted by various Universities across India selected through a stringent process by the DST.

The sessions at these programs comprise classroom, lab, fieldwork, and mini-projects. Central to this success is a structured curriculum and the advocacy of open-source software. The dedicated portal, https://dst-iget.in, is a reservoir of learning materials, connecting educators, professionals, and scientists, and catalyzing India's geospatial domain. The NGP-DST's geospatial capacity building program is coordinated nationally by the Bharati Vidyapeeth Deemed University, Department of Geoinformatics, Institute of Environment Education and Research, Pune.

The Institute of Remote Sensing (IRS), Department of Civil Engineering, College of Engineering Guindy, Anna University, Chennai is one of the selected institutions for conducting the Geo Innovation Challenge Program.

#### Anna University, Chennai, Tamil Nadu, India

Established in 1794, **Anna University** is Asia's oldest technical institute and the pioneer of its kind beyond Europe. A renowned public University for higher education in Tamil Nadu, Anna University emerged through the integration of four esteemed technical institutions in the city of Chennai: College of Engineering (CEG), Alagappa College of Technology (ACT), Madras Institute of Technology (MIT), and School of Architecture & Planning (SAP). Offering diverse programs, including Bachelor's, Master's, and Ph.D. degrees in Engineering, Technology, Architecture, Applied Sciences, and Management, Anna University addresses the current and evolving demands of traditional and contemporary fields. With its rich legacy, Anna University is home to nearly 1000 proficient and committed teaching staff members who impart invaluable technical knowledge to a student community exceeding 12,000 individuals. Beyond its educational mission, the university actively promotes research and facilitates collaboration between the academic and industrial realms.

Anna University has garnered noteworthy accolades across various assessments, affirming its standing as a distinguished institution. According to the Quacquarelli Symonds (QS) World University Ranking, Anna University commands the 10th position in India, the 105th position in Asia, and the 427th position globally among top-tier universities. In the QS WUR-Sustainability Ranking of 2024, Anna University demonstrates its commitment to sustainability by securing the 9th position among Indian universities with a notable rank of 496. The university's excellence is further underscored in THE ranking, where it claims the 8th position in SDG 7 Affordable and Clean Energy, evaluated based on research output and citation metrics. Additionally, in the Asian University ranking, Anna University holds a commendable position at 232.

According to the National Institutional Ranking Framework (NIRF) ranking for 2023, Anna University has achieved significant recognition, securing the 18th rank overall, the 14th rank in the university category, the 13th rank in research and engineering, and the 49th rank in management. Furthermore, Anna University maintains a distinguished status with an "A++" grade accreditation from the National Assessment and Accreditation Council (NAAC), attesting to its unwavering commitment to academic excellence and quality assurance. Visit us on: https://www.annauniv.edu/

#### Institute of Remote Sensing

The Institute of Remote Sensing (IRS) was established in 1982 by Anna University with funding from the Government of Tamil Nadu. IRS also functions as the **State Remote Sensing Application Center**. Over the years, IRS has developed its infrastructure with grants from various entities, extension services, including the Ministry of Human Resources Development, University Grants Commission, and Government of India. Today, it stands as a premier institution in Remote Sensing, Geographical Information System (GIS), and Large Scale Mapping. The Institute has about 2400 square metres of built-up space for various laboratories equipped with sophisticated instruments and machinery. The Institute functions as an autonomous unit of Anna University, governed by an executive committee headed by the Vice-Chancellor and the recurring grants for maintenance are provided by the Government of Tamil Nadu. It has also benefited from substantial external support from the Federal Republic of Germany and from the Royal Norwegian government. Additionally, IRS is a member of the UN-GGIM Network. The IRS aims to harness technology for sustainable management of natural resources and global security. Its mission includes transferring technology to government departments, supporting academic programs, providing undertaking R&D projects,

and organizing workshops and seminars. The IRS has achieved several distinctions, such as being the first State Centre in India to establish within Anna University in 1982, and initiating India's first PG program in Remote Sensing and the Asian sub-continent's to start undergraduate B.E. (Geoinformatics) course. Noteworthy accomplishments include operational projects exceeding Rs. 25 crores, training over 2000 government officers, producing 60 Ph.D's in Geomatics, and recognition by the Government of India for Coastal Zone Regulation Mapping.



Anna University, Chennai, Tamil Nadu

Institute of Remote Sensing (IRS), Chennai

#### Details of the Geo Innovation Challenge

The Geo Innovation Challenge aims to recognize, encourage, and nurture innovation among the youth of our nation. It serves as a platform for ideas that could evolve into full proposals, potentially receiving support from the Department of Science and Technology (DST) in the future.

#### Who can participate in the Geo-Innovation Challenge?

Candidates having or pursuing Doctoral / Masters/ Bachelors degree in any field from any recognized university under the age of 40 years with innovative original ideas OR Individuals under the age of 40 years with industry or field experience and innovative original ideas without the above required qualification are eligible to apply. The candidates whose ideas are selected for presentation can participate in the event.

# Do I need to have studied/ be studying Geospatial Science/ Geoinformatics to be eligible to apply?

Not at all! We strongly encourage candidates from all fields of study to apply and bring their innovative ideas on development and use of geospatial science and technology for the socio-economic development of the country. You could also team up with a member from a completely different field or somebody who is into geospatial technologies to develop your idea and apply!

#### Do I have to submit a project proposal?

No, you do not have to submit a project or a project proposal. You need to submit idea(s).

#### What is the difference between an Idea and a Project Proposal?

Any project begins with an idea. An idea lays the foundation stone for the starting of a project. In other words, without an idea there can be no project. In other words, without an idea there can be no project.

An idea forms the basis to either solve an impasse or to improve on how things are done. It's a creative process of coming up with possible solutions that address societal needs and problems. A project further develops the idea, its viability, its structure, its implementation, etc. We strongly encourage participants to submit ideas (introduce something new) and NOT project proposals. For example, the United Nations Sustainable Development Goals provide a good framework and starting point to address poverty, gender equality, environment protection, infrastructure development, etc.

All of these can benefit by the spatial perspective that geospatial technologies provide. Don't worry about how big or the big picture. We need thousands of ideas, both big and small, to ensure that the goals are met and to build a better world !

#### What is Innovation?

Innovation is a new idea or a method that is translated into a product or a service that creates value. The real essence of innovation is improvement – the ability to create something better that serves as a source of collective well-being, economic growth and sustainable development.

#### Can I team up when submitting my idea?

Yes. However there can be a maximum of three participants in a team. If you are a team, make sure both the participants apply for the challenge and register for the same.

#### What if only I can be present at the Geo-Innovation Challenge?

Only one of you will be funded to attended the event. The rest of the team may attend the event online. Participation of atleast one person physically is mandatory.

#### What is the purpose of conducting this Geo-Innovation challenge?

The Geo-Innovation challenge will serve as a repository of ideas leading to Call for Proposals by the Department of Science of Technology (DST), Government of India, in future. The ideas generated will be used for inviting 'Call for Proposals' by DST in future. The top three ideas with names of the participants will be displayed on the DST website.

Our primary goal is to support viable ideas that have potential to create unique products, services and methods, ultimately enhancing the life of people and contributing to sustainable development.

The PIs of the respective institution selected to conduct the Geo Innovation Challenge are conducting the Geo Innovation Challenge based on specific themes. Kindly go through the dst-iget portal and read the themes carefully before applying.

#### Can I submit an idea even if my area of research is not fully related to Geospatial technologies?

Yes. We suggest you team up with someone from the geospatial background to check the feasibility of realizing your idea. New knowledge can only be generated when we move out of our silos and work with interdisciplinary teams combining different strengths.

#### I am a student of B.Tech./M.Tech./ M.Sc./B.Sc./etc., do I qualify?

#### Yes.

#### What kind of ideas can I submit?

The Geo-Innovation Challenge program addresses different broad themes as given below. You could submit an idea related to any of the themes. Kindly check the brochures of the individual institutions for the theme.

#### What happens if my idea is short-listed?

The shortlisted participants will have to present their ideas in the Geo-Innovation Challenge in person (one team member). Once shortlisted you will have to submit 1000 words essay covering the points given in the following pages and you will need to travel to the University to present it at a three day event. Dates of all of the above are mentioned in this brochure.

#### Do I actually have to create my idea / work through all the details?

Remember idea is akin to a concept. A project proposal is a detailed plan. We expect ideas. You can just explain your idea using the guidelines provided. Having visuals in the presentation is encouraged and that may include a sketch, picture or even a prototype, work flow, etc.

#### How will the ideas be awarded?

• The three top innovative ideas will be awarded cash prizes and a certificate with an opportunity to be mentored in developing the idea into a full proposal/business proposition. Such candidates may also further develop the full project proposal and submit to DST, subject to eligibility, when the 'Call for Proposals' is released by DST.

First Prize: Merit Certificate and INR 12000/-

Second Prize: Merit Certificate and INR 8000/-

Third Prize: Merit Certificate and INR 5000/-

• A Compendium with all the innovative ideas will be published by DST on the website.

#### What tips can you give for improving my submission?

- Your writing and presentation should be clear, highlighting the problem identification process, current status, need for innovation and the innovation itself.
- Highlight the uniqueness.
- Clearly explain how the idea is different from what is already available.
- Describe your innovation as comprehensively as possible.
- Make it easy for the jury to assess your idea.
- Pitch well: How well can you convince the jury of your idea. Identify market/industry potential, social Impact, etc. and explain what is needed to move the idea closer to completion, as a product or tool or research project.
- Remember that the bright ideas should have clearly identified the idea, the market, the problem being solved or business case, the technology needed, and the next steps to develop or commercialize the idea, and submission of facts.
- What problem is your idea addressing? (Remember the problem could be societal, or in technology development, or in the development of a scientific concept, which can have an impact towards sustainable development)

- What is the current status?
- What is the proposed innovation?
- What will be its impact on any aspect of sustainable development or betterment of life of people?
- What is the proposed innovation?
- What will be its impact on any aspect of sustainable development or betterment of life of people?

Remember: DO NOT submit any research work/ algorithms to be used and/or results associated. We are mainly focusing on new ideas.

#### How the idea will be evaluated?

The submitted ideas will be evaluated based on the following:

Significance of the idea in solving an issue/problem, its innovative component and probable impact on sustainable development goals, adequacy in problem identification, novelty and innovation in the idea, relevance to the theme of the Geo-Innovation Challenge, approaches proposed, feasibility of the idea in producing disruptive technologies and impact in the area under consideration.

#### How to apply?

1. The first step is to send a 300-words abstract briefly mentioning about your idea, innovation versus current status, and how it can address an existing problem. Apply through the portal <u>http://dst-iget.in</u>. Upload the following documents as a single pdf

- Abstract (not more than 300 words) clearing stating the title of your idea, need for the proposed innovation, the key idea using geospatial technology, keywords and names of team members, email ids/mobile nos. (max. 3 team members)
- Your identity card /s from the institution where you are currently working/ studying which clearly mentions the validity.
- Your Google Scholar Id/ LinkedIn Id/ ORCID Id / Researchgate Id (atleast one of these)

2. All participants who have applied will be invited to a one day ONLINE orientation to provide inputs. Following this you will have approximately 20 days to submit your full idea. The full idea (as a 1000 word document) should be submitted **directly to the PI** of the program where you are applying by the due date mentioned in the brochure.

3. Selected candidates will be informed by mail by the PI. Once selected all further guidelines for presentation will be sent via email by the PI. Candidates should ensure that they are thoroughly prepared for their final presentation.

# What is the theme(s) for submitting ideas under the Geo Innovation Challenge Program being conducted by Anna University?

#### Theme: Geo-Innovate for a Sustainable Nation: Addressing Crucial Ecosystem Challenges

It is witnessed from the recent policy frameworks there has been an increasing global focus on using innovative geospatial technologies to address critical challenges of the ecosystem services. This is considered an essential step towards establishing a sustainable nation that can continue to provide vital services that support the well-being of the human population and the country's economic growth. Geospatial technology has been increasingly utilized in evaluating and managing ecosystem services. This technology allows for collecting and analyzing data on ecosystems' spatial distribution and characteristics, which can provide essential insights into their functioning, value, and vulnerability. By mapping ecosystem services, geospatial technology can help decision-makers identify areas critical for conservation or restoration efforts and regions where human activities may be causing adverse impacts. In addition, geospatial technology can be used to model and forecast changes in ecosystem services over time, which can be valuable for developing policies and strategies to promote sustainable land use and natural resource management. Hence leveraging geospatial technology's complete potential in this area is essential in selecting policies that sustain ecosystem services. This geo-innovation challenge program aims to encourage and nurture the participants to identify the real-time problems related to global challenges on the significant ecosystem services and impacts, including climate, agriculture, soil, water, urban heat islands, and natural disasters like floods, drought, desertification, landslides, earthquake, and forest fire. Participants are encouraged to devise innovative solutions aimed at effectively addressing these challenges.

#### Important Information

Last date of application on dst-iget portal: 15 May 2024 Online orientation of applicants: 25 May 2024 Submission of Full Idea: 10 June 2024 Intimation of acceptance for next round : 20 June 2024 Dates of the final event : 25 - 27 July 2024

Mode of conduct: Offline No. of seats: 25 Registration Fees: Nil

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#### **Address**

12, Sardar Patel Rd, Anna University, Guindy, Chennai, Tamil Nadu 600025

#### Certificate

A certificate of participation will be awarded to each participant only after attending the full course.

#### **Travel and Lodging**

Each participant (if applying singly) and one team member from each team (if applying as a group) will be reimbursed with 3 AC train fare. Lodging and boarding on a double sharing basis will be provided by the host institution.

#### **Infrastructure and Facilities**

The Institute of Remote Sensing has an auditorium for 100 people, a conference hall for 25 people, and classrooms with AV equipment. The institute also has a backup generator for uninterrupted power supply.

#### **Lodging and Boarding**

The Flora and Lavender International Hostel offers 206 rooms with attached washrooms, air conditioning, mini-fridges, microwave ovens, and two cots. The hostel also has an exclusive dining hall that can accommodate 176 participants and is monitored by CCTV cameras for safety.



GIS and Remote Sensing Lab



Conference Hall



Guest House



Guest House Room

Deputation Letter (Format) for DST Summer/Winter School/ Geoinnovation Program 2024-25 (Prospective participant must submit this on the letterhead of the respective institution where they are working)

This is to state that Dr./Mr./Ms. \_\_\_\_\_\_working at \_\_\_\_\_( name of the institute) as \_\_\_\_\_\_(Designation), since \_\_\_\_\_ ( year ) is being deputed/nominated to \_\_\_\_\_\_(program name in detail) from ------( date, month, year) to------( date, month, year). He/she will be re-lieved from his/her duties during this period.

Signature and Seal (Head of the Institute)